

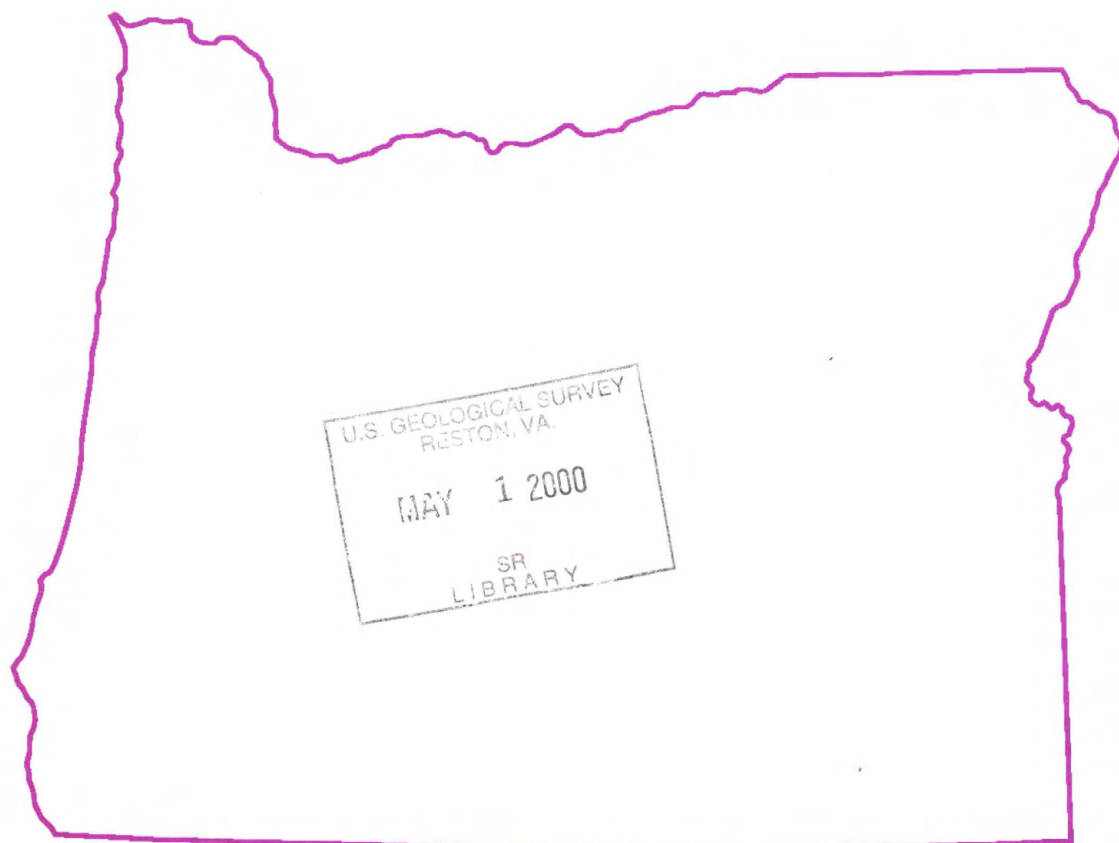
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Water Resources Data Oregon Water Year 1999

Water-Data Report OR-99-1



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



Prepared in cooperation with other agencies

CONVERSION FACTORS AND VERTICAL DATUM

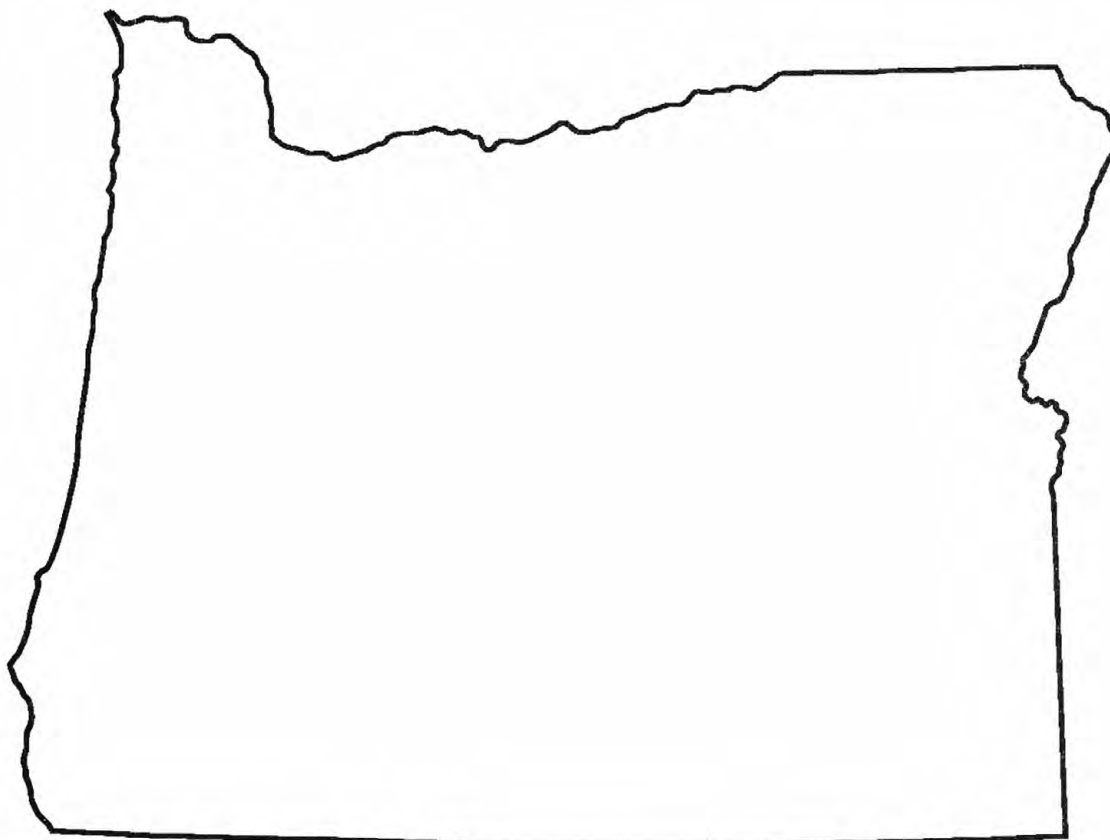
Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<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

Sea level: In this report “sea level” refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Water Resources Data Oregon Water Year 1999

By L.E. Hubbard, T.A. Herrett, J.E. Poole, G.P. Ruppert, and M.L. Courts

Water-Data Report OR-99-1



U.S. DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

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

2000

PREFACE

The annual Oregon 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 other agencies under the general supervision of Dennis D. Lynch, District Chief, and T. John Conomos, Regional Hydrologist, Western Region.

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Letter after station name designates type of data: (at) air temperature; (c) chemical, including periodic biological, microbiological, sediment, pesticide, and radio-chemical where applicable; (d) discharge; (do) dissolved oxygen; (e) elevation; (g) gage height; (k) specific conductance; (li) light incident; (ph) pH; (s) daily suspended sediment; (t) water temperature; (tb) turbidity; and (v) contents..

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
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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 Oregon have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation, (g) gage height]

Station name	Station number	Drainage area (mi ²)	Period of record
WARNER LAKES BASIN			
Twentymile Creek near Adel (d)	10366000	194	1910-16;1918-19;1921-22;1941-44;1945-91
Deep Creek above Dismal Creek, near Warner Lake (d)	10366500	13.0	1918-19
Dismal Creek above Big Valley, near Warner Lake (d)	10367000	12.5	1913
Dismal Creek near Warner Lake (d)	10367500	14.0	1919
Deep Creek below Dismal Creek, near Warner Lake (d)	10368000	27	1913;1918-19
Deep Creek at Big Valley, near Lakeview (d)	10368500	76	1912-15
Camas Creek near Plush (d)	10369000	32.0	1912
Mud Creek near Plush (d)	10369500	18.0	1912;1915;1928-30
Camas Creek near Lakeview (d)	10370000	63.0	1913-15;1951-73
Crane Creek near Lakeview (d)	10370500	7.00	1914
Drake Creek near Adel (d)	10371000	67.0	1915;1923;1951-64;1966-73
Deep Creek above Adel (d)	10371500	249	1923;1930-91
Givan Canal near Adel (d)	10373000	--	1915
Deep Creek at Adel (d)	10374500	274	1910-16;1918-19;1921-22
Mud Creek Ditch at Adel (d)	10375000	--	1915
Fish Creek near Plush (d)	10376500	38.0	1914
Honey Creek at Chalstrand's ranch, near Plush (d)	10377000	56.0	1911
Snyder Creek near Plush (d)	10377500	--	1911
Twelvemile Creek near Plush (d)	10378000	37.0	1911
Honey Creek near Plush (d)	10378500	170	1911-14;1915;1921;1922; 1930-91
ABERT LAKE BASIN			
Chewaucan River at damsite, near Paisley (d)	10382500	158	1913-16
Chewaucan River near Buck Mountain, near Paisley (d)	10382550	157	1983-86
Chewaucan River below Coffeepot Creek, near Paisley (d)	10382600	216	1983-86
Conn Ditch near Paisley (d)	10383500	--	1915-20
Chewaucan River near Paisley (d)	10384000	275	1912-21;1924-91
Chewaucan River at Paisley (d)	10384100	278	1905-07;1909-12
Smalls Canal at Paisley (d)	10384500	--	1914-21
Jones-Innis-ZX Ditch near Paisley (d)	10385500	--	1915-20
Chewaucan River at narrows, near Paisley (d)	10386000	380	1914-21
Chewaucan River at Hotchkiss Ford, near Paisley (d)	10386500	430	1914-20
Crooked Creek near Valley Falls (d)	10387000	--	1912-13
Ana River plus Summer Lake Canal, near Summer Lake (d)	10388001	--	1930-39;1940-42;1951-91
SUMMER LAKE BASIN			
West Fork Silver Creek near Silver Lake (d)	10389000	27	1919-23;1925-32
Silver Creek plus Silver Lake Ir Canal, near Silver Lake (d)	10390001	180	1905-07;1909-27;1928; 1929-91
Bridge Creek near Silver Lake (d)	10390500	30	1922-23
Buck Creek above Timothy Creek, near Silver Lake (d)	10390800	250	1922-23
Buck Creek near Silver Lake (d)	10391000	290	1905-06;1909-10;1919-21
Duncan Creek near Silver Lake (d)	10392000	58	1922-23
MALHEUR AND HARNEY LAKES BASIN			
Silvies River near Silvies (d)	10392500	510	1904;1909-11;1916;1921-23
Emigrant Creek near Burns (d)	10393000	240	1921
Silvies River near Burns (d)	10393500	934	1903-06;1909-12;1913-17; 1918-20;1921-22;1923-91
Poison Creek near Burns (d)	10394000	81	1921
Prater Creek near Burns (d)	10394500	20	1921-23
East Fork Silvies River near Lawen (d)	10395000	--	1916;1973-77
West Fork Silvies River near Lawen (d)	10395500	--	1916-17;1919;1922; 1973-77
Flood Bypass Silvies River near Burns (d)	10395505	--	1976
Rock Creek near Burns (d)	10395600	--	1976
Mud Creek near Diamond (d)	10396500	30	1911-16;1930
Bridge Creek near Frenchglen (d)	10397000	30.0	1911-16;1930;1938-70

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
MALHEUR AND HARNEY LAKES BASIN-Continued			
Krumbo Creek near Diamond (d)	10397500	37	1911;1930
Donner und Blitzen River near Narrows (d)	10398500	420	1915-20
Kiger Creek near Diamond (d)	10399000	75	1911-13;1916-21;1930; 1941
Cucamonga Creek near Diamond (d)	10399500	15	1916;1930
McCoy Creek near Diamond (d)	10400000	45	1910-11;1914;1916-21; 1930;1941
Riddle Creek near Smith (d)	10400500	60	1911
Riddle Creek near Diamond (d)	10401000	120	1917-21
Donner Und Blitzen River near Voltage (d)	10401500	760	1938-46;1973-77
Malheur Lake near Voltage (e)	10401800	2,150	1976-80;1983-89
Malheur Lake on west side Cole Island dike, at Voltage (e)	10401810	--	1983-84
Malheur Lake at break in Cole Island dike, near Voltage (e)	10401830	2,150	1972-79
Malheur Lake Outlet at Narrows (d)	10402000	2,150	1916;1973-77
Mud Lake Outlet near Narrows (d)	10402500	2,160	1916-18;1921-22
Silver Creek near Riley (d)	10403000	228	1952-80
Silver Creek above Suintex (d)	10403500	260	1904-06;1909-12;1914-23; 1925-26
Chickahominy Creek near Suintex (d)	10404000	90	1917;1922
Rock Quarry Creek near Suintex (d)	10404500	--	1921;1922
Silver Creek below Suintex (d)	10405000	550	1912-13;1921-23
Silver Creek near Narrows (d)	10406000	630	1917;1919-23
ALVORD LAKE BASIN			
Trout Creek near Denio, NV (d)	10406500	88	1911-12;1922-23;1925-31; 1932-91
CATLOW VALLEY BASIN			
Home Creek near Beckley (Narrows) (d)	10406300	38	1911-12;1915-17;1930
ALVORD LAKE BASIN			
Little Cottonwood Creek near Denio, NV (d)	10407000	8	1911-12
GOOSE LAKE (CLOSED BASIN)			
Dog Creek near Lakeview (d)	11338000	27	1912-13
North Drews Canal near Lakeview (d)	11339000	--	1976-81
Drews Creek near Lakeview (d)	11339500	212	1909-81
Cottonwood Creek near Lakeview (d)	11340500	32.9	1909-19;1924-81
Thomas Creek near Lakeview (d)	11341000	30	1912-17;1919;1927-31
LOST RIVER BASIN			
Miller Creek at Gerber Reservoir, near Lorella (d)	11483500	220	1905-08;1925-50
Miller Creek near Lorella (d)	11484000	270	1909-20
Lost River above Olene (d)	11484500	1,410	1915-17
Lost River at Olene (d)	11485000	1,590	1904;1907-12
Lost River Diversion Canal near Olene (d)	11486000	--	1961-68
Lost River at Wilson Bridge, near Olene (d)	11487000	1,620	1912-20
Lost River near Merrill (d)	11487500	1,670	1904-07
Lost River at Merrill (d)	11488000	1,680	1916
KLAMATH RIVER BASIN			
Williamson River below Sheep Creek, near Lenz (d)	11491400	205	1980-91
Williamson River near Silver Lake (d)	11491500	220	1917-18;1920-21
Miller Creek near Crescent (d)	11492000	23.7	1912;1914
Big Springs Creek blw Lenz Ranch, near Lenz (d)	11492400	--	1992-95
Sand Creek near Fort Klamath (d)	11492500	35	1917-22
Scott Creek near Fort Klamath (d)	11493000	10	1917-20
Williamson River near Klamath Agency (d)	11493500	1,290	1955-95
Williamson River above Spring Creek, near Klamath Agency (d)	11494000	1,330	1912-13;1918-25
Williamson River at Chiloquin (d)	11494500	1,400	1911-16;1917
South Fork Sprague River near Bly (d)	11495500	110	1925-26
North Fork Sprague River near Bly (d)	11496500	45	1917-18;1925-26
Fivemile Creek near Bly (d)	11497000	40	1917-20
Sprague River near Beatty (d)	11497500	513	1912-26;1953-91
Sycan River near Silver Lake (d)	11498000	100	1918-20
Sycan River at Sycan Marsh, near Silver Lake (d)	11498100	220	1905
Long Creek near Silver Lake (d)	11498500	40	1918-24;1927-29
Sycan River near Beatty (d)	11499000	540	1912-25
Sycan River below Snake Creek, near Beatty (d)	11499100	568	1980-91
Sprague River near Yainax (d)	11500000	1,270	1904

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
KLAMATH RIVER BASIN-Continued			
Sprague River at Chiloquin (d)	11502000	1,600	1911-19;1923;1925
Anna Creek near Fort Klamath (d)	11503500	40	1923-27
Wood River at Fort Klamath (d)	11504000	90.0	1911-36
Wood River near Fort Klamath (d)	11504100	87.7	1965-67
Crooked Creek near Fort Klamath (d)	11504200	5.68	1965-67
Fourmile Creek near Odessa (d)	11505500	10.6	1912-17
Fourmile Creek near Rocky Point (d)	11505600	105	1965-67
Varney Creek near Rocky Point (d)	11505700	7.43	1965-67
"A" Canal at Klamath Falls (d)	11507200	--	1911-50;1961-81
Keno Canal at Klamath Falls (d)	11507400	--	1967-83
Diversion from Klamath River to Lost River, near Olene (d)	11508500	--	1931-68
Spencer Creek near Keno (d)	11510000	90	1929-32
Klamath River at Spencer Bridge, near Keno (d)	11510500	4,050	1914-31
Howard Prairie Lake Outlet near Pinehurst (d)	11512920	--	1961-65
Keene Creek near Ashland (d)	11514500	12.1	1917-22;1949-65
Green Springs Powerplant Diversion near Ashland (d)	11516100	--	1961-65
OWYHEE RIVER BASIN			
Jordan Creek at DeLamar Mine, near Jordan Valley (d)	13177985	---	1994-96
Crooked Creek near Rome (d)	13181500	1,700	1950
Owyhee River above Owyhee Reservoir (d)	13182000	10,400	1929-51
Lake Owyhee near Nyssa (e)	13182500	11,160	1933-96
Owyhee River at Owyhee (d)	13184000	11,300	1890-96;1904-16; 1920-29;1980-86
MALHEUR RIVER BASIN			
Malheur River at Jones' Ranch, near Drewsey (d)	13213500	530	1914
Malheur River near Drewsey (d)	13214000	910	1920-23;1926-94
Warm Springs Reservoir near Riverside (e)	13214500	1,100	1920-91
South Fork Malheur River at Riverside (d)	13215500	630	1910-14;1919-20; 1927-29;1938
Malheur River at Riverside (d)	13216000	1,750	1909-15
North Fork Malheur River abv Beulah Reservoir, nr Beulah (d)	13216500	355	1914;1936-94
Beulah Reservoir at Beulah (e)	13217000	440	1936-96
North Fork Malheur River at Foley's Ranch, near Beulah (d)	13218000	470	1909-12;1914
North Fork Malheur River at Juntura (d)	13218500	530	1919-22;1926-32;1935-40
Malheur River near Namorf (d)	13219000	2,590	1913-23;1926-31
Malheur River near Westfall (d)	13219500	2,970	1904-05
Malheur River at Little Valley, near Hope (d)	13220000	3,010	1949-79
Malheur River near Hope (d)	13220500	3,030	1919-49
Malheur River near Little Valley (d)	13221500	3,030	1914
Malheur River at McLaughlin Bridge, near Vale (d)	13223500	3,060	1905-06
Bully Creek near Westfall (d)	13225500	160	1912-13;1923
Cottonwood Creek near Westfall (d)	13226000	82	1922-23
Bully Creek at Warm Springs, near Vale (d)	13226500	539	1903-07;1910-17; 1922-23;1964-86
Bully Creek Reservoir near Vale (e)	13226800	547	1964-96
Bully Creek near Vale (d)	13227000	570	1934-62
Bully Creek at Vale (d)	13227500	620	1904
Malheur River at Vale (d)	13228000	3,880	1890-91;1895-97; 1903-14;1919
Willow Creek near Malheur (d)	13229500	250	1912-15;1921-29
Willow Creek below reservoir, near Malheur (d)	13230500	290	1905-06;1911;1921-29
Cow Creek near Brogan (d)	13231000	75	1912-14
Willow Creek near Brogan (d)	13231500	420	1912-14
Willow Creek at Cole's Ranch, near Brogan (d)	13232000	455	1904-06
Pole Creek near Brogan (d)	13232500	14	1912
Pole Creek below Black Creek feed canal, near Brogan (d)	13233000	14	1913
Malheur River at Halliday Bridge, near Ontario (d)	13233500	4,620	1905
Malheur River near Ontario (d)	13234000	4,680	1904
BURNT RIVER BASIN			
North Fork Burnt River near Whitney (d)	13269300	110	1965-80
North Fork Burnt River at Audrey (d)	13269500	139	1915-16

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
BURNT RIVER BASIN-Continued			
Middle Fork Burnt River near Audrey (d)	13270000	9.54	1915-16
South Fork Burnt River near Unity (d)	13270500	30.9	1915-16
South Fork Burnt River above Barney Creek, near Unity (d)	13270800	38.5	1963-81
South Fork Burnt River at Hardman Ranch, near Unity (d)	13271000	44.4	1916-20;1938-41
Fleetwood Ditch near Unity (d)	13271500	--	1918-20
Sawmill Creek near Unity (d)	13272000	--	1915
Burnt River near Hereford (d)	13273000	309	1929-97
Burnt River at Bridgeport (d)	13274000	600	1915-16;1931-36
Burnt River near Bridgeport (d)	13274200	650	1957-80
Burnt River near Durkee (d)	13274500	700	1931-38
Burnt River at Huntington (d)	13275000	1,093	1929-32;1957-59;1962-80
POWDER RIVER BASIN			
Powder River near Sumpter (d)	13275300	168	1966-97
Powder River near Baker (d)	13275500	219	1904-14;1929-68
Old Settlers Slough at Baker (d)	13276000	--	1913-14
Baldock Slough at Baker (d)	13276500	--	1913-14
Powder River at Baker City (d)	13277000	352	1972-97
Pine Creek near Baker (d)	13277500	8.8	1913-14;1929-30
Goodrich Creek near Baker (d)	13278000	3.1	1913
Mill Creek near Baker (d)	13279000	3.9	1913-14;1929-30
Marble Creek near Baker (d)	13279500	3.9	1913-14;1929-30
Salmon Creek near Baker (d)	13280000	4.4	1913-14;1929
Willow Creek near Haines (d)	13280500	2.4	1913
Powder River at Haines (d)	13281000	539	1914
Powder River near Haines (d)	13281500	572	1947-53
North Powder River near North Powder (d)	13282000	47.7	1912
Anthony Fork near North Powder (d)	13282500	37	1912
North Powder River at North Powder (d)	13283000	129	1912-14
Wolf Creek at Bauer's Ranch, near North Powder (d)	13283500	30	1913-14
Wolf Creek near North Powder (d)	13284000	32.9	1947-53
Powder River near North Powder (d)	13284500	860	1913-16;1920-25
Thief Valley Reservoir near North Powder (e)	13285000	910	1980-96
Powder River below Thief Valley Reservoir (d)	13285500	910	1910-11;1979-97
Big Creek near Medical Springs (d)	13286000	35.5	1913-14
Goose Creek near Keating (d)	13286500	41.9	1913-14
Powder River near Richland (d)	13286700	1,310	1958-96
Eagle Creek above West Fork, near Baker (d)	13287000	18	1911
West Fork Eagle Creek near Baker (d)	13287500	15	1911
Eagle Creek near Baker (d)	13288000	42	1909-10
Eagle Creek above Skull Creek, near New Bridge (d)	13288200	156	1957-98
Eagle Creek near Newbridge (d)	13288500	170	1910-11;1914
Daly Creek near Richland (d)	13289000	40.5	1913
Powder River near Robinette (d)	13289500	1,660	1929-57
PINE CREEK BASIN			
Pine Creek near Oxbow (d)	13290190	230	1967-95
IMNAHA RIVER BASIN			
Imnaha River above Gumboot Creek (d)	13291000	99.6	1945-53
Big Sheep Creek near Joseph (d)	13291500	12.5	1920
GRANDE RONDE RIVER BASIN			
Meadow Creek near Starkey (d)	13318000	140	1932-35
Meadow Creek below Smith Creek, near Starkey (d)	13318050	33.2	1978-79
Meadow Creek above Bear Creek, near Starkey (d)	13318060	48.2	1978-79
Grande Ronde River near Hilgard (d)	13318500	505	1938-56
Grande Ronde River at Hilgard (d)	13318800	555	1967-81
Grande Ronde River at La Grande (d)	13319000	678	1904-15;1918-23;1926-89
Catherine Creek near Union (d)	13320000	105	1926-96
Little Creek near Union (d)	13321000	30.4	1918
Ladd Creek near Hot Lake (d)	13321500	40	1918
Mill Creek near Cove (d)	13322000	11.6	1918;1920-21
Mill Creek near Summerville (d)	13322500	--	1914-15
Grande Ronde River near Elgin (d)	13323500	1,250	1956-81
Indian Creek near Imbler (d)	13323600	22.0	1938-50
Grande Ronde River at Elgin (d)	13324000	1,400	1903-12;1918-19

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
GRANDE RONDE RIVER BASIN-Continued			
Wallowa Falls powerplant tailrace near Joseph (d)	13324500	--	1925-52;1967-83
East Fork Wallowa River near Joseph (d)	13325000	10.3	1925-52;1967-82
Wallowa River above Wallowa Lake, near Joseph (d)	13325500	43.0	1924-33;1937-38;1940-41
Wallowa Lake near Joseph (g)	13326000	50.8	1904-06;1912-15;1926-91
Joseph powerplant tailrace at Joseph (d)	13326500	--	1951-56
Wallowa River at Joseph (d)	13327500	50.9	1904-07;1908-14;1915; 1927-91
Hurricane Creek near Joseph (d)	13329500	29.6	1915;1924-78
Wallowa River at Wallowa (d)	13329900	--	1976-77
Wallowa River near Wallowa (d)	13331000	520	1904-07
Wallowa River at Minam (d)	13332000	880	1904-14
Grande Ronde River at Rondowa (d)	13332500	2,550	1927-91
Joseph Creek at Chico (d)	13333500	280	1931-33
WALLA WALLA RIVER BASIN			
South Fork Walla Walla River near Milton-Freewater (d)	14010000	63.0	1903;1906-17;1931-91
South Fork Walla Walla River blw PP&L plant, near Milton (d)	14010500	80.0	1904-06;1931-45
North Fork Walla Walla River near Milton-Freewater (d)	14010800	34.4	1970-91
North Fork Walla Walla River near Milton (d)	14011000	43.8	1930-69
Walla Walla River near Milton (d)	14011500	130	1905-06;1918-29
Walla Walla River at Milton (d)	14012000	155	1903-05
Walla Walla River below Freewater (d)	14012500	160	1941-48
COLUMBIA RIVER MAIN STEM			
Columbia River at McNary Dam, near Umatilla (d)	14019200	214,000	1951-81
UMATILLA RIVER BASIN			
North Fork Umatilla River near Gibbon (d)	14019500	31	1912-15;1940-43
Umatilla River at Gibbon (d)	14020500	310	1896-99;1900-01;1902-12
Umatilla River near Cayuse (d)	14020700	384	1969-75
Cottonwood Creek near Mission (d)	14020760	4.01	1992-97
Umatilla River at Pendleton (d)	14021000	637	1891-92;1904-05;1935-89
Umatilla River above McKay Creek, near Pendleton (d)	14022000	700	1921-34
McKay Creek near Pilot Rock (d)	14022500	180	1921;1927-89
McKay Reservoir near Pendleton (g)	14023000	186	1927-92
McKay Creek near Pendleton (d)	14023500	186	1919-23;1925-91
McKay Creek at mouth, near Pendleton (d)	14024000	190	1903-04;1922-24
East Birch Creek near Pilot Rock (d)	14024200	69.7	1968-73
Birch Creek near Pilot Rock (d)	14024500	240	1920-26
Birch Creek at Rieth (d)	14025000	291	1921-23;1927-76
Umatilla River near Yoakum (d)	14025500	1,260	1915-36
Umatilla River at Yoakum (d)	14026000	1,280	1903-91
Butter Creek near Pine City (d)	14032000	291	1928-88
WILLOW CREEK BASIN			
Rhea Creek near Heppner (d)	14034800	120	1960-91
Willow Creek near Morgan (d)	14035000	630	1921;1929-31
Willow Creek above Eightmile Canyon, near Arlington (d)	14035500	680	1905
Willow Creek near Arlington (d)	14036000	850	1906;1961-79
JOHN DAY RIVER BASIN			
Strawberry Creek above Slide Creek, near Prairie City (d)	14037500	7.00	1931-91
Strawberry Creek near Prairie City (d)	14038000	15	1916-17;1925-30
John Day River at Prairie City (d)	14038500	231	1916-17;1925-68
John Day River near John Day (d)	14038530	386	1969-94
John Day River near Dayville (d)	14039000	960	1909-14;1920-21;1925-26
South Fork John Day River near Dayville (d)	14039500	590	1952-56
South Fork John Day at Dayville (d)	14040000	600	1909-14;1920-21;1925-26
John Day River at Picture Gorge, near Dayville (d)	14040500	1,680	1986-91
Mountain Creek near Mitchell (d)	14040600	20.0	1986-89
Desolation Creek near Dale (d)	14041000	108	1915-17;1949-58
North Fork John Day River near Dale (d)	14041500	525	1930-58
Camas Creek near Lehman (d)	14042000	60.7	1951-70
Camas Creek near Ukiah (d)	14042500	121	1914-17;1920-24;1932-91
Cable Creek near Ukiah (d)	14043000	39	1914-17;1919-24;1932-37; 1939
Snipe Creek near Ukiah (d)	14043560	37.0	1968-73
Fox Creek at gorge, near Fox (d)	14044500	90.2	1931-58

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
JOHN DAY RIVER BASIN-Continued			
Cottonwood Creek near Monument (d)	14045000	210	1926-31
Cottonwood Creek at Monument (d)	14045500	232	1925
John Day River at Clarno (d)	14047000	5,940	1914-15;1920-21
Lone Rock Creek near Lonerock (d)	14047380	69	1966-74;1976-91
Rock Creek above Whyte Park near Condon (d)	14047390	297	1976-89
Rock Creek at Rock Creek (d)	14047500	500	1905;1911
DESCHUTES RIVER BASIN			
Deschutes River above Snow Creek, near La Pine (d)	14049000	109	1922-25
Snow Creek above Crane Prairie, near La Pine (d)	14049500	23.0	1922-25
Deschutes River below Snow Creek, near La Pine (d)	14050000	32	1938-91
Cultus River above Cultus Creek, near La Pine (d)	14050500	16.5	1923-25;1938-91
Cultus Creek abv Crane Prairie Reservoir, nr La Pine(d)	14051000	33.2	1924;1938-91
Cultus River below Cultus Creek, near La Pine (d)	14051500	52.8	1922
Deer Creek above Crane Prairie Reservoir, near La Pine (d)	14052000	21.5	1924;1938-91
Quinn River near La Pine (d)	14052500	--	1922-25;1938-91
Charlton Creek above Crane Prairie Reservoir, nr La Pine(d)	14053000	15.6	1923-24;1938-79
Crane Prairie Reservoir near La Pine (e)	14053500	254	1923-91
Deschutes River blw Crane Prairie Reservoir, nr La Pine (d)	14054000	254	1907-08;1912-17;1922-91
Brown Creek near La Pine (d)	14054500	21.0	1922-25;1938-91
Deschutes River above Davis Creek, near La Pine (d)	14055000	290	1925-32
Odell Creek near Crescent (d)	14055500	39.0	1912-14;1924;1933-76
Deschutes River below Wickiup Reservoir, near La Pine (d)	14056500	483	1938-91
Deschutes River at Pringle Falls, near La Pine (d)	14057000	507	1916-17;1922-60
Fall River near La Pine (d)	14057500	45.1	1938-91
Deschutes River near La Pine (d)	14058000	600	1910-17;1920;1922
Deschutes River near Lava (d)	14058500	659	1905-07;1909-12
Little Deschutes River at Crescent (d)	14059000	109	1905-08;1911-14
Crescent Lake near Crescent (e)	14059500	60.7	1922-91
Crescent Creek at Crescent lake, near Crescent (d)	14060000	60.7	1911;1912-15;1927;1928-91
Crescent Creek below Cold Creek, near Crescent (d)	14060500	77.0	1922-26;1931-32
Big Marsh Creek at Hoey Ranch, near Crescent (d)	14061000	51.5	1912-14;1924;1928-58
Crescent Creek near Crescent (d)	14061500	137	1912-14
Little Deschutes R above Walker Basin intake, nr La Pine(d)	14062000	307	1914-17;1919-26;1931-22
Little Deschutes River near La Pine	14063000	859	1911;1913-20;1924-94
East Lake near La Pine (e)	14063200	7.08	1992-95
Paulina Lake near La Pine (e)	14063250	10.1	1991-95
Paulina Creek near La Pine (d)	14063300	10.1	1982-89;1991-95
Little Deschutes River at Allen's Ranch, near La Pine (d)	14063500	1,020	1905-12;1913-15;1931-32 1943-44
Deschutes River at Benham Falls, near Bend (d)	14064500	1,759	1906-14;1921;1924-91
Deschutes River above Lava Island, near Bend (d)	14065000	1,790	1915-16;1943-50
Arnold Canal near Bend (d)	14065500	--	1913-90
Deschutes River below Lava Island, near Bend (d)	14066000	1,829	1926-65
Central Oregon Canal above Pilot Butte Canal (d)	14066500	--	1933-90
Deschutes County Mncpl Improvement Dist Canal at Bend (d)	14068500	--	1923-90
North Unit Main Canal near Bend (d)	14069000	--	1946-90
North Canal near Bend (d)	14069500	--	1913-90
Swalley Canal near Bend (d)	14070000	--	1913-90
Deschutes River below Bend (d)	14070500	1,899	1915-91
Bridge Creek near Bend (d)	14070700	6.58	1981-85
Tumalo Creek near Tumalo (d)	14071500	30.9	1906-14
Tumalo Creek near Bend (d)	14073000	47.3	1913-21;1922;1923-87
Deschutes River at Tumalo (d)	14074000	1,983	1910-12;1914-15
Deschutes River at Cline Falls, near Redmond (d)	14074500	2,080	1910-13;1928-46
Deschutes River at Lower Bridge, near Terrebonne (d)	14074630	2,160	1995-97
Snow Creek near Sisters (d)	14074900	1.65	1986-91
Squaw Creek near Sisters (d)	14075000	45.2	1906-18;1919-94
South Fork Beaver Creek near Paulina (d)	14077000	95	1944-53
North Fork Beaver Creek near Paulina (d)	14077500	64.4	1942-54
Beaver Creek near Paulina (d)	14078000	450	1943-75
North Fork Crooked River above Deep Creek (d)	14078500	159	1942-54
North Fork Crooked River below Deep Creek (d)	14079000	264	1947-53
Crooked River near Post (d)	14079500	2,160	1909-11;1940-60;1969-73
Crooked River above Prineville Reservoir, near Post (d)	14079800	2,400	1961-68
Bear Creek at Rickman Ranch, near Roberts (d)	14080000	44	1920-23

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
DESCHUTES RIVER BASIN--Continued			
Bear Creek near Prineville (d)	14080250	205	1976-81
Prineville Reservoir near Prineville (e)	14080400	2,700	961-91
Crooked River near Prineville (d)	14080500	2,700	909-14;1941-91
Crooked River at Prineville (d)	14081500	2,820	914
Marks Creek near Prineville (d)	14082500	61.0	916
Ochoco Creek above Mill Creek, near Prineville (d)	14083000	200	918-22;1924-33
Mill Creek near Prineville (d)	14083500	78.8	916-18;1920-22;1924-33
Ochoco Creek at Elliott Ranch, near Prineville (d)	14085000	300	909-10;1915-17
Ochoco Creek at Prineville (d)	14085500	358	912;1914-15
McKay Creek near Prineville (d)	14086000	76.6	925-32
McKay Creek above Old Dry Creek, near Prineville (d)	14086500	86.2	918-19;1920
McKay Creek below Old Dry Creek, near Prineville (d)	14087000	103	1915
Crooked River near Terrebonne (d)	14087300	4,240	1968-73
Crooked River near Culver (d)	14087500	4,330	1918-63
Lake Creek near Sisters (d)	14088000	22.2	1912-13;1915-91
Metolius River at Allingham ranger station, near Sisters (d)	14088500	81.5	1911-13;1915-17
First Creek near Sisters (d)	14089000	12.2	1915-17;1924-28
Jack Creek near Sisters (d)	14089500	16.0	1915-16
Canyon Creek near Sisters (d)	14090000	32.5	1915-16
Whitewater River near Grandview (d)	14090500	30.6	1911-13
Metolius River at Riggs Ranch, near Sisters (d)	14092000	347	1909-12
Seekseequa Creek near Warm Springs (d)	14092150	47.3	1987-93
Shitike Creek below Wolford Canyon, near Warm Springs (d)	14092885	75.8	1975-96
Deschutes River at Mecca (d)	14093500	7,940	1911-27
Trout Creek near Antelope (d)	14094000	220	1915-17
Trout Creek near Gateway (d)	14094500	--	1915-16
Hay Creek near Hay Creek (d)	14095000	78	1915-16
Mill Creek at outlet of Olallie Lake (d)	14096000	5.6	1915-16
Mill Creek near Warm Springs (d)	14096500	28.8	1915
Warm Springs River near Warm Springs (d)	14097000	517	1911-19
White River near Government Camp (d)	14097200	40.7	1970-1980
Clear Creek below Clear Lake, near Govt Camp (d)	14097400	8.32	1969-73
Clear Creek near Government Camp (d)	14097500	9.94	1941-41;1947-53
Clear Creek above intake, near Wapinitia (d)	14098000	17.7	1918-21;1934-35
Clear Creek Ditch near Government Camp (d)	14098100	--	1969-73
Clear Creek near Pine Grove (d)	14098600	38.3	1968-73
Gate Creek at Purcell Ranch, near Wamic (d)	14099500	23.9	1921-23
Gate Creek near Wamic (d)	14100000	28.3	1918
White River near Tygh Valley (d)	14100500	221	1911-18
White River below Tygh Valley (d)	14101500	417	1918-90
Deschutes River at Sherars Bridge (d)	14102000	10,200	1923-32
FIFTEENMILE CREEK BASIN			
Fifteenmile Creek near Dufur (d)	14104000	19.6	1918-19
Fifteenmile Creek near Wrentham (d)	14104500	171	1947-53
Eightmile Creek near Boyd (d)	14105000	56	1947-53
Fivemile Creek near The Dalles (d)	14105500	32.4	1926;1928;1930-31;1949-50
MILL CREEK BASIN			
South Fork Mill Creek near The Dalles (d)	14105850	28.0	1951-75
MOSIER CREEK BASIN			
Mosier Creek near Mosier (d)	14113200	41.5	1954-81
HOOD RIVER BASIN			
Dog River near Parkdale (d)	14113400	4.50	1951-71
East Fork Hood River above intake, near Mount Hood (d)	14113500	77.2	1915-22
East Fork Hood River near Mount Hood (d)	14115000	78.8	1913-14
East Fork Hood River near Dee (d)	14115500	108	1917
Clear Branch below Laurance Lake, near Parkdale (d)	14115815	8.62	1937-95
Hood River at Dee (d)	14116000	155	1913-17
Green Point Creek near Dee (d)	14116500	10.0	1919-21
North Fork Green Point Creek near Dee (d)	14117500	7.6	1919;1921
Green Point below North Fork, near Dee (d)	14118000	20.0	1919;1954
West Fork Hood River near Dee (d)	14118500	95.6	1914-16;1932-91
Hood River at Winans (d)	14119000	259	1906-07;1910-12;1913
Hood River near Hood River (d)	14121000	329	1913-64

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
COLUMBIA RIVER MAIN STEM			
Columbia River at Stevenson (g)	14128600	239,800	1974-97
Columbia River at Bonneville Dam (g)	14128860	239,900	1981-87
Columbia River at Warrendale (g)	14128910	240,000	1972-87
Columbia River at Washougal (g)	14129400	240,000	1972-81;1990-93
SANDY RIVER BASIN			
Lost Creek near Brightwood (d)	14130000	11.2	1913-18
Little Zigzag River at Twin Bridges, near Rhododendron (d)	14131000	3.70	1926-36
Zigzag River near Rhododendron (d)	14131400	14.8	1981-93
Zigzag River at Rhododendron (d)	14131500	31.0	1920-21;1926-30
Sandy River above Salmon River, at Brightwood (d)	14133500	117	1910-14;1926-31
Salmon River near Government Camp (d)	14134000	8.00	1910-12;1926-91
Salmon River below Linney Creek (d)	14134500	54.0	1928-50
Salmon River at Welches (d)	14135000	100	1913-14;1920-21;1925-36
Salmon River above Boulder Creek, near Brightwood (d)	14135500	106	1936-52
Bull Run River below Lake Ben Morrow (d)	14139500	74.0	1930-54
Little Sandy River near Marmot (d)	14140500	17.9	1913-19
WILLAMETTE RIVER BASIN			
Middle Fork Willamette River near Oakridge (d)	14144800	258	1959-97
Hills Creek above Hills Creek Reservoir, near Oakridge (d)	14144900	52.7	1959-81
Hills Creek near Oakridge (d)	14145000	59.0	1935-43
Salt Creek near Oakridge (d)	14146000	113	1913-14;1934-51
Salmon Creek near Oakridge (d)	14146500	117	1910;1913-19;1934-85; 1987-94
Gray Creek near Oakridge (d)	14146700	5.06	1979-86
Waldo Lake Outlet near Oakridge (d)	14147000	30.5	1937-53;1970-82;1984
N.Fork of Middle Fork Willamette River, nr Oakridge (d)	14147500	246	1910-16;1936-85;1987-94
Fall Creek above Winberry Creek, near Lowell (d)	14150500	127	1936-43
Winberry Creek near Lowell (d)	14150800	43.9	1964-81
Little Fall Creek near Fall Creek (d)	14151500	52.5	1936-48
Coast Fork Willamette River at London (d)	14152500	72.1	1936-87
Mosby Creek near Cottage Grove (d)	14156000	85.0	1936-46
Mosby Creek at mouth, near Cottage Grove (d)	14156500	95.3	1947-68;1970-81
Coast Fork Willamette River at Saginaw (d)	14157000	529	1924-26;1928-51
Willamette River at Springfield (d)	14158000	2,030	1912-13;1920-57
McKenzie River near Belknap Springs (d)	14158700	146	1958-62
Smith River near Belknap Springs (d)	14158800	23.7	1958-60
Budworm Creek near Belknap Springs (d)	14158930	3.00	1979-83;1984-86
McKenzie River above Boulder Creek, near Belknap Springs (d)	14158955	--	1983
McKenzie River at McKenzie Bridge (d)	14159000	348	1910-94
Horse Creek near McKenzie Bridge (d)	14159100	149	1963-69
South Fork McKenzie River above Cougar Lake, nr Rainbow (d)	14159200	160	1958-87
Blue River above Quentin Creek (d)	14161000	11.5	1948-55
Blue River near Blue River (d)	14162000	75.0	1936-64
Gate Creek at Vida (d)	14163000	47.6	1952-57;1967-90
McKenzie River near Springfield (d)	14164000	1,066	1906-15
Mohawk River near Springfield (d)	14165000	177	1936-52;1964-97
McKenzie River near Coburg (d)	14165500	1,337	1945-72
Coyote Creek near Crow (d)	14167000	95.1	1941-87
Amazon Creek at Eugene (d)	14169300	3.35	1963-75
Amazon Creek near Eugene (d)	14169500	21.3	1955-68;1980-82
Rock Creek near Philomath (d)	14170500	14.6	1946-52;1975-79
Marys River near Philomath (d)	14171000	159	1941-85
Muddy Creek near Corvallis (d)	14171500	107	1964-68
Calapooia River at Holley (d)	14172000	105	1936-90
Calapooia River at Albany (d)	14173500	372	1941-81
East Humbug Creek near Detroit (d)	14178700	7.32	1978-94
Breitenbush River above French Creek, near Detroit (d)	14179000	106	1933-87
Middle Santiam River near Upper Soda (d)	14185700	74.6	1981-94
Middle Santiam River near Cascadia (d)	14185800	104	1963-81
Packers Gulch near Cascadia (d)	14185880	7.45	1984-86;1988
Middle Santiam River near Foster (d)	14186000	271	1932-47
Middle Santiam River at mouth, near Foster (d)	14186500	287	1951-66
South Santiam River at Foster (d)	14186700	493	1967-73
Wiley Creek at Foster (d)	14187100	62.3	1974-88

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
WILLAMETTE RIVER BASIN--Continued			
Crabtree Creek near Crabtree (d)	14188700	111	1964-70
Thomas Creek near Scio (d)	14188800	109	1963-87
Luckiamute River near Hoskins (d)	14189500	34.3	1935-78
Luckiamute River at Pedee (d)	14190000	115	1940-70
Little Luckiamute River at Falls City (d)	14190100	22.7	1965-71
Rickreall Creek near Dallas (d)	14190700	27.4	1957-78
Mill Creek at Penitentiary Annex, near Salem (d)	14191500	104	1940-56
Mill Creek at Salem (d)	14192000	110	1940-78
South Yamhill River near Willamina (d)	14192500	133	1934-93
Willamina Creek near Willamina (d)	14193000	64.7	1934-91
Mill Creek near Willamina (d)	14193300	27.4	1958-73
South Yamhill River near Whiteson (d)	14194000	502	1940-91
North Yamhill River near Fairdale (d)	14194300	9.03	1959-66;1968-91
Haskins Creek near McMinnville (d)	14195000	6.48	1928-51
North Yamhill River near Pike (d)	14196500	47.8	1940-51
North Yamhill River at Pike (d)	14197000	66.8	1948-73
Willamette River at Wilsonville (d)	14198000	8,400	1948-73
Molalla River above Pine Creek, near Wilhoit (d)	14198500	97.0	1936-93
Molalla River near Molalla (d)	14199000	201	1906-09;1947-51
Molalla River near Canby (d)	14200000	323	1929-59;1964-78
Silver Creek at Silverton (d)	14200300	47.9	1954-68;1971-79
Pudding River near Mount Angel (d)	14201000	204	1940-66
Butte Creek at Monitor (d)	14201500	58.7	1936;1941-52;1967-85
Pudding River at Aurora (d)	14202000	479	1929-64;1994-97
Tualatin River near Gaston (d)	14202500	48.5	1941-56;1973-76;1979-84
Scoggins Creek above Henry Hagg Lake, near Gaston (d)	14202850	15.9	1973-76
Sain Creek near Gaston (d)	14202920	10.3	1973-76
Henry Hagg Lake near Gaston (e)	14202965	38.7	1976-97
Scoggins Creek near Gaston (d)	14203000	43.3	1941-74
Gales Creek near Glenwood (d)	14203750	7.3	1934-95
Gales Creek near Gales Creek (d)	14204000	33.2	1936-45;1964-70
Gales Creek near Forest Grove (d)	14204500	66.1	1941-56;1971-81
East Fork Dairy Creek at Mountindale (d)	14205500	43.0	1941-51
Dairy Creek near Cornelius (d)	14205800	147	1974-76
McKay Creek near North Plains (d)	14206000	27.6	1941-43;1949-56
McKay Creek near Hillsboro (d)	14206180	61.0	1973-76
Bronson Creek at 185th Ave, near Aloha (d)	14206298	4.15	1945-96
Tualatin River at Farmington (d)	14206500	568	1940-58;1973-76
Fanno Creek at Durham (d)	14206950	31.5	1944-96
Oswego Canal near Lake Oswego (d)	14207000	--	1949-91
Clackamas River at Big Bottom (d)	14208000	136	1940-70
Collawash River near Breitenbush (d)	14208300	142	1946-68
Oak Grove Fork at Timothy Meadows (d)	14208500	54.0	1943-14;1916-29
Roaring River near Estacada (d)	14209600	42.4	1946-68
Clackamas River near Clackamas (d,g)	14211000	930	(d)1963-83;(g)1988-89
Willamette River at Portland (d)	14211720	11,100	1973-94
COLUMBIA RIVER MAIN STEM			
Columbia River at Prescott (d)	14223780	254,200	1908
Columbia River at Columbia City (g)	14222880	254,000	1941-81
Columbia River at Longview, WA (g)	14245300	256,700	1944-90
Columbia River at Wauna (g)	14247295	257,000	1941-81
Bear Creek near Svensen (d)	14248700	3.33	1946-75
Youngs River near Astoria (d)	14251500	40.1	1948-58
NESTUCCA RIVER BASIN			
Trask River near Tillamook (d)	14302500	145	1942-55;1962-72
Nestucca River near McMinnville (d)	14303000	12.0	1949-44
Nestucca River near Beaver (d)	14303600	180	1945-91
SILETZ RIVER BASIN			
Sunshine Creek near Valsetz (d)	14304350	6.70	1943-91
Big Rock Creek near Valsetz (d)	14304850	6.90	1946-89
YAQUINA RIVER BASIN			
Yaquina River near Chitwood (d)	14306030	71.0	1943-91
Mill Creek near Toledo (d)	14306036	4.18	1941-73

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
ALSEA RIVER BASIN			
North Fork Beaver Creek near Seal Rock (d)	14306040	10.0	1966-67
North Fork Alsea River at Alsea (d)	14306100	63.0	1958-89
South Fork Alsea River near Alsea (d)	14306200	49.5	1961-63
Fall Creek near Alsea (d)	14306300	29.4	1961-63
Five Rivers near Fisher (d)	14306400	114	1961-63;1968-90
Drift Creek near Salado (d)	14306600	20.5	1959-63;1966-70
Needle Branch near Salado (d)	14306700	.27	1959-73
Flynn Creek near Salado (d)	14306800	.78	1959-73
Deer Creek near Salado (d)	14306810	1.17	1959-73
BIG CREEK BASIN			
Big Creek near Roosevelt Beach (d)	14306900	11.9	1973-91
SIUSLAW RIVER BASIN			
Siuslaw River above Wildcat Creek, at Austa (d)	14307000	267	1932-40
Lake Creek at Triangle Lake (d)	14307500	52.5	1932-55
Lake Creek near Deadwood (d)	14307580	174	1968-89
Siuslaw River near Mapleton (d)	14307620	588	1968-94
North Fork Siuslaw River near Minerva (d)	14307645	41.2	1968-85
UMPQUA RIVER BASIN			
Jackson Creek near Tiller (d)	14307700	152	1956-86
South Umpqua River at Days Creek (d)	14308600	641	1975-90
Days Creek at Days Creek (d)	14308700	55.3	1956-72
South Myrtle Creek near Myrtle Creek (d)	14310700	43.9	1956-72
North Myrtle Creek near Myrtle Creek (d)	14311000	54.2	1956-86
Olalla Creek near Tenmile (d)	14311200	61.3	1957-73
Tenmile Creek at Tenmile (d)	14311300	29.6	1968-73
Deer Creek near Roseburg (d)	14312200	53.2	1956-73
Silent Creek near Diamond Lake (d)	14312400	8.24	1972-77
Lake Creek near Diamond Lake (d)	14312500	54.9	1923-29;1930;1931-53 1972-84
North Umpqua River at Toketee Falls (d)	14315500	339	1926-45;1947-48
North Umpqua River above Rock Creek, near Glide (d)	14317500	886	1925-45
North Umpqua River below Lemolo Lake, near Toketee Falls (d)	14313501	170	1928-83
Rock Creek near Glide (d)	14317600	97.4	1958-73
Little River at Peel (d)	14318000	177	1955-89
North Umpqua River near Glide (d)	14318500	1,210	1916-18;1928-38
Sutherlin Creek at Sutherlin (d)	14319200	16.4	1956-67
Calapooya Creek at Nonpareil (d)	14319900	88.6	1977-88
Elk Creek near Drain (d)	14322000	104	1956-73
Umpqua River near Scottsburg (d)	14322900	4,095	1967-69
Smith River near Gardiner (d)	14323100	206	1966-73
Tenmile Creek near Lakeside (d)	14323200	87.0	1958-76
COOS RIVER BASIN			
West Fork Millicoma River near Allegany (d)	14324500	46.9	1955-81
COQUILLE RIVER BASIN			
South Fork Coquille River above Panther Creek, nr Illahe (d)	14324600	31.2	1957-70
South Fork Coquille River near Illahe (d)	14324700	40.6	1957-74
South Fork Coquille River near Powers (d)	14324900	93.2	1957-70
Middle Fork Coquille River near Myrtle Point (d)	14326500	305	1931-46
North Fork Coquille River near Fairview (d)	14326800	73.9	1964-81
North Fork Coquille River near Myrtle Point (d)	14327000	282	1929-46;1964-68
SIXES RIVER BASIN			
Sixes River at Sixes (d)	14327150	116	1968-70
Elk River near Sixes (d)	14327300	86.1	1968-70
ROGUE RIVER BASIN			
Rogue River above Bybee Creek, near Union Creek (d)	14327500	156	1930-52
Rogue River above Prospect (d)	14328000	312	1909-11;1923-98
Mill Creek near Prospect (d)	14329500	32.0	1926-35

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
ROGUE RIVER BASIN--Continued			
South Fork Rogue River above Imnaha Creek, near Prospect (d)	14330500	52.0	1932-49
Imnaha Creek near Prospect (d)	14331000	26.0	1932-49
Middle Fork Rogue River near Prospect (d)	14333000	56.5	1926-55
Red Blanket Creek near Prospect (d)	14333500	45.5	1926-32;1934-81
South Fork Rogue River south of Prospect (d)	14334700	246	1969-92
Rogue River below South Fork Rogue River, near Prospect (d)	14335000	650	1929-65
Rogue River at McLeod (d)	14335075	697	1978-81
South Fk Big Butte Creek, abv Willow Cr, nr Butte Falls (d)	14335200	67.6	1986-91
South Fork Big Butte Creek near Butte Falls (d)	14335500	138	1911;1915;1918-22;1925-91
South Fork Little Butte Collect Canal near Pinehurst (d)	14339400	--	1961-65
South Fork Little Butte Creek at Big Elk Ranger Station (d)	14339500	16.6	1927-50
Dead Indian Collect Canal near Pinehurst (d)	14340400	--	1961-65
South Fork Little Butte Creek near Lakecreek (d)	14341500	138	1922-57;1961-82
North Fork Little Butte Creek at Fish Lake, nr Lakecreek(d)	14342500	20.8	1915;1917-89
North Fork Little Butte Creek near Lakecreek (d)	14343000	43.8	1912-13;1917;1923-27; 1929-64;1966-85
N F Little Butte Creek abv Intake Canal, near Lakecreek (d)	14344500	60.4	1918-19;1922-50
Little Butte Creek above Eagle Point (d)	14347000	269	1917-26;1929
Little Butte Creek below Eagle Point (d)	14348000	293	1908-16;1924-26;1946-50
Emigrant Creek near Ashland (d)	14350000	64.3	1920-86
West Fork Ashland Creek near Ashland (d)	14353000	10.5	1925-33;1975-82
East Fork Ashland Creek near Ashland (d)	14353500	8.14	1925-33;1975-82
Evans Creek near Bybee Springs, near Rogue River (d)	14359500	116	1925-27;1951-53
Middle Fork Applegate River near Copper (d)	14361590	50.7	1980-87
Elliott Creek near Copper (d)	14361600	51.8	1978-87
Carberry Creek near Copper (d)	14361700	68.9	1978-87
Applegate River near Ruch (d)	14363000	302	1912-14;1926-53
Powell Creek near Williams (d)	14368500	8.17	1947-58
Slate Creek at Wonder (d)	14370000	31.4	1944-57
Grave Creek at Pease Bridge, near Placer (d)	14371500	22.1	1941-89
Grave Creek near Placer (d)	14372000	45.6	1914;1941-50
East Fork Illinois River near Takilma (d)	14372500	42.3	1926;1927-32;1941-91
Althouse Creek near Holland (d)	14373500	24.3	1947-53
Sucker Creek near Holland (d)	14375000	76.2	1942-65
Sucker Creek below Little Grayback Creek, near Holland (d)	14375100	83.9	1966-91
Elk Creek near O'Brien (d)	14375400	26.6	1986-91
West Fork Illinois River below Rock Creek, near O'Brien (d)	14375500	42.4	1955-85
West Fork Illinois River near O'Brien (d)	14376500	49.7	1947-54
Illinois River at Kerby (d)	14377000	364	1926-61
Deer Creek near Dryden (d)	14377500	22.0	1942-56
Illinois River near Selma (d)	14378000	665	1957-68
Illinois River near Agness (d)	14378200	988	1961-81

DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following continuous-record water-quality stations in Oregon have been discontinued. Continuous water-quality data were collected and published for the period of record shown for each station. For each station entry, a period of record, expressed in water years, is provided for each type of record listed. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page.

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

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
MALHEUR AND HARNEY LAKES BASIN				
Donner und Blitzen River near Frenchglen	10396000	200	t, sc	1976-81
OWYHEE RIVER BASIN				
Owyhee River near Rome	13181000	8,000	t	1973-77
Owyhee River at Owyhee	13184000	11,300	t, sc	1980-82
Bully Creek near Vale	13227000	570	t, sed	1959-62
POWDER RIVER BASIN				
Powder River at Baker	13277000	351	sed	1961
Powder River near Richland	13286700	1,310	t	1960-61
Eagle Creek above Smith Creek near New Bridge	13288200	156	t	1960-61
GRANDE RONDE RIVER BASIN				
Imnaha River at Imnaha	13292000	622	t	1966-68; 1977
Meadow Creek below Smith Creek near Starkey	13318050	33.2	t	1978-79
Meadow Creek above Bear Creek near Starkey	13318060	48.2	t	1978-79
Grande Ronde River at La Grande	13319000	678	t	1960-61
Wallowa River at Wallowa	13329900	--	t	1977
Lostine River near Lostine	13330000	70.9	t	1958
Lostine River at Lostine	13330200	--	t	1976-77
Minam River at Minam	13331500	240	t	1966-85
Grande Ronde River at Rondowa	13332500	2,555	t	1960-61
WALLA WALLA RIVER BASIN				
South Fork Walla Walla River near Milton-Freewater	14010000	63	t	1960-61
COLUMBIA RIVER MAIN STEM				
Columbia River at McNary Dam	14019200	214,000	t	1962
			sed	1966
Columbia River at Umatilla	14019250	214,000	t	1975-79
UMATILLA RIVER BASIN				
Umatilla River above Meacham Creek near Gibbon	14020000	131	t	1960-80
Umatilla River near Umatilla	14033500	2,290	t	1963-69
WILLOW CREEK RIVER BASIN				
Willow Creek at Heppner	14034500	96.8	t	1963-68; 1972-73
			sed	1963-68
Willow Creek near Arlington	14036000	850	t	1963-68
			sed	1963-70
JOHN DAY RIVER BASIN				
South Fork John Day River near Dayville	14039500	590	t	1952-56
Desolation Creek near Dale	14041000	108	t	1958
Middle Fork John Day River at Ritter	14044000	515	t	1967-68
North Fork John Day River at Monument	14046000	2,520	t	1967-68
John Day River at McDonald Ferry	14048000	7,580	t	1963-68 1976-81
			sc	1976-81
			sed	1963-70
Columbia River at Biggs Junction	14048330	226,400	t	1975-76

WATER RESOURCES DATA FOR OREGON, 1999
DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
DESCHUTES RIVER BASIN				
Paulina Creek near La Pine	14063300	10.1	sc	1992-95
Deschutes River at Benham Falls	14064500	1,759	t	1968-80
Deschutes River near Culver	14076500	2,705	t	1955-57; 1959-74
Crooked River at Post	14079500	2,160	t, sed	1960-62
Bear Creek in Prineville	14080250	205	t	1976
			sed	1976-80
Crooked River near Prineville	14080500	2,700	t, sed	1959
Crooked River below Opal Springs, near Culver	14087400	4,300	t	1964-74
Crooked River near Culver	14087500	4,330	t	1955-63
Metolius River near Grandview	14091500	316	t	1955-74
Deschutes River near Madras	14092500	7,820	t	1953-56
				1958; 1972-88
White River below Tygh Valley	14101500	417	t, sed	1982
			tb	1982-83
Deschutes River at Moody	14103000	10,500	t	1955-58; 1962-81
COLUMBIA RIVER MAIN STEM				
Columbia River at The Dalles	14105700	237,000	t	1956-70; 1974-76
			sc	1965-85
Columbia River at Warrendale	14128910	240,000	t, sc	1976-92
Columbia River at Vancouver	14144700	241,000	t	1968-70; 1973-79
			sed	1964-69
WILLAMETTE RIVER BASIN				
Middle Fork Willamette River above Salt Creek, near Oakridge	14145500	392	t	1961-97
Middle Fork Willamette River near Oakridge	14144800	258	t	1957-87
Hills Creek above Hills Creek Reservoir, near Oakridge	14144900	52.7	t	1959-81
Middle Fork Willamette River below North Fork, near Oakridge	14148000	924	t	1951-87
Middle Fork Willamette River near Dexter	14150000	1,001	t	1956-97
Fall Creek near Lowell	14150300	118	t	1964-87
Winberry Creek near Lowell	14150800	43.9	t	1964-81
Fall Creek below Winberry Creek, near Fall Creek	14151000	186	t	1951-97
Middle Fork Willamette River at Jasper	14152000	1,340	t	1954-87
Coast Fork Willamette River at London	14152500	72.1	t	1961-65; 1968-87
Coast Fork Willamette River near Goshen	14157500	642	t	1962-75
McKenzie River below Trail Bridge Dam, near Belknap Springs	14158850	184	t, sc	1977-85
McKenzie River at McKenzie Bridge	14159000	348	t, sc	1977-85
Horse Creek near McKenzie Bridge	14159100	149	t	1963-69; 1984
South Fork McKenzie River above Cougar Lake, near Rainbow	14159200	160	t	1958-87
Blue River below Tidbits Creek, near Blue River	14161100	45.8	t	1964-87
Lookout Creek near Blue River	14161500	24.1	t	1952-55; 1964-81
Blue River near Blue River	14162000	75	t	1962-64
McKenzie River at Finn Rock	14162400	--	t	1984
McKenzie River near Vida	14162500	930	t	1962-85
			sc	1977-85
Gate Creek at Vida	14163000	47.6	t	1984
McKenzie River at Leaburg Dam	14163100	--	t	1984
McKenzie River near Springfield	14164000	1,066	t	1984
Walterville Canal near Walterville	14164200	--	t	1984
McKenzie River above Hayden Bridge, at Springfield	14164900	--	t	1984
Mohawk River near Springfield	14165000	177	t	1964-69; 1984
McKenzie River near Coburg	14165500	1,337	t	1964-75; 1984
Willamette River at Harrisburg	14166000	3,420	t	1962-87
			sc, do	1970-76
			ph	1970-75
Willamette River above Calapooia River at Albany	14171750	4,460	t	1964-87
North Santiam River below Boulder Creek, near Detroit	14178000	216	t	1952-87
Breitenbush River above French Creek, near Detroit	14179000	108	t	1951; 1954-87
North Santiam River at Niagra	14181500	453	t	1954-97
North Santiam River at Fisherman's Bend, near Mill City	14181800	--	t	1986
Little North Santiam River near Mehama	14182500	112	t	1986
North Santiam River at Mehama	14183000	655	t	1986

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
WILLAMETTE RIVER BASIN--Continued				
North Santiam River near Jefferson	14184100	736	t	1985-86
South Santiam River below Cascadia	14185000	174	t	1963-63;1967; 1970-87
Middle Santiam River near Cascadia	14185800	104	t	1964-79;1981-82
Quartzville Creek near Cascadia	14185900	99.2	t	1964-87
Middle Santiam River at mouth, near Foster	14186500	287	t	1954-64;1966
South Santiam River at Foster	14186700	493	t	1968;1970-73; 1985
South Santiam River near Foster	14187200	557	t	1954-97
South Santiam River at Waterloo	14187500	640	t	1964-87
Crabtree Creek near Scio	14188750	--	t	1985
Thomas Creek near Scio	14188800	109	t	1963-75
Thomas Creek near Crabtree	14188850	--	t	1986
South Santiam River below Thomas Creek, near Jefferson	14188900	--	t	1986
Santiam River at Jefferson	14189000	1,790	t	1964-65;1967-87
Luckiamute River at Pedee	14190000	115	t	1965-70
Willamette River at Salem	14191000	7,280	t sc	1964-87 1952-60;1965-72 1976-84
Willamina Creek near Willamina	14193000	64.7	t	1964-68
South Yamhill River near Whiteson	14194000	502	t	1964-68
North Yamhill River at Pike	14197000	66.8	t	1964-69
Molalla River above Pine Creek, near Wilhoit	14198500	97	t	1964-69
Molalla River near Canby	14200000	323	t	1964-69
Silver Creek at Silverton	14200300	47.9	t	1964-68
Pudding River at Aurora	14202000	479	sc,t	1994-97
Tualatin River near Gaston	14202500	48.5	t	1979-84
Tualatin River near Dilley	14203500	125	t	1964-68
Gales Creek near Glenwood	14203750	7.3	t	1994-95
Gales Creek near Gales Creek	14204000	33.2	t	1964-69
Fanno Creek at Durham	14206950	31.5	t, sc	1994-96
Tualatin River at West Linn	14207500	706	t sc	1964-68;1976-81 1976-81
Willamette River at Oregon City	14207700	10,000	t	1963-67
Clackamas River near Clackamas	14211000	930	t	1964-76
Willamette River at Portland	14211720	11,100	t, sc	1976-81
Willamette River above St. Johns Bridge, at Portland	14211805	11,450	t	1972-75
COLUMBIA RIVER MAIN STEM				
Columbia River at Columbia City	14222880	254,000	t	1971
Columbia River near Columbia City	14222890	253,900	t	1969-72
Columbia River at Kalama	14222910	254,000	t	1969-79
Columbia River at Prescott	14223780	254,200	t	1968-69
Columbia River at Rainier	14245295	256,700	t	1972-79
Columbia River at Longview, WA	14245300	256,700	t	1968-72
Columbia River at Beaver Army Terminal, near Quincy	14246900	256,900	t	1968-70
Columbia River at Wauna	14247295	256,900	t	1972-76
Columbia River at Bradwood	14247400	257,100	t	1977-81
Columbia River at Altoona, WA	14248600	258,000	t	1972-79
Bear Creek near Svenson	14248700	3.33	t	1966-75
PACIFIC SLOPE BASINS IN OREGON				
NEHALEM RIVER BASIN				
Nehalem River near Foss	14301000	667	t sc	1975-81 1981
NESTUCCA RIVER BASIN				
Trask River near Tillamook	14302500	145	t	1962-71
Nestucca River near Beaver	14303600	180	t	1965-87

WATER RESOURCES DATA FOR OREGON, 1999
DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
SILETZ RIVER BASIN				
Big Rock Creek near Valsetz	14304850	6.90	t	1979-85
Siletz River at Siletz	14305500	202	t	1979-85
YAQUINA RIVER BASIN				
Yaquina River near Chitwood	14306030	71	sed	1973-74
ALSEA RIVER BASIN				
North Fork Beaver Creek near Seal Rock	14306040	10	t	1966-67
North Fork Alsea River at Alsea	14306100	63	t	1958-66
South Fork Alsea River near Alsea	14306200	49.5	t	1958-63
Fall Creek near Alsea	14306300	29.4	t	1959
Five Rivers near Fisher	14306400	114	t	1959
Alsea River near Tidewater	14306500	334	t, sc sed	1980-81 1973-74
Drift Creek near Salado	14306600	20.5	t	1959-63; 1969-70
Needle branch near Salado	14306700	0.27	t, sed	1959-73
Flynn Creek near Salado	14306800	0.78	t, sed	1959-73
Deer Creek near Salado	14306810	1.17	t, sed	1959-73
SIUSLAW RIVER BASIN				
Siuslaw River near Mapleton	14307620	588	t sc sed	1968-75; 1978-81 1978-81 1968-75
UMPQUA RIVER BASIN				
South Umpqua River at Days Creek	14308600	641	t tb sc, ph, do	1971-82; 1991-92 1973-82 1991-92
South Umpqua River near Roseburg	14312260	1,798	sc ph do	1971-95 1972-95 1971-95
North Umpqua River above Rock Creek, near Glide	14317500	886	sc, ph, rt, do	1992-98
North Umpqua River at Winchester	14319500	1,344	t	1971-91
Umpqua River near Elkton	14321000	3,683	t	1971-92
COOS RIVER BASIN				
West Fork Millicoma River near Allegany	14324500	46.9	t	1973-76
COQUILLE RIVER BASIN				
South Fork Coquille River near Illahe	14324700	40.6	t	1971-74
Rock Creek near Illahe	14324800	--	t	1958
South Fork Coquille River near Powers	14324900	93.2	t	1957-70
SIXES RIVER BASIN				
Sixes River at Sixes	14327150	116	t sed	1968 1968-70
ROGUE RIVER BASIN				
South Fork Rogue River south of Prospect	14334700	246	t sed	1969-92 1977-81
Rogue River at Grants Pass	14361500	2,459	t	1956-58; 1974-87
Middle Fork Applegate River near Copper	14361590	50.7	t	1980-87
Elliott Creek near Copper	14361600	51.8	t sed	1978-87 1978-80
Carberry Creek near Copper	14361700	68.9	t sed	1978-87 1981
Rogue River near Merlin	14370400	3,268	t	1975-87
Rogue River at Marial	14372250	3,812	t	1975-87
Rogue River near Agness	14372300	3,939	t	1961-87
Illinois River near Selma	14378000	665	t	1962-68

WATER RESOURCES DATA FOR OREGON 1999

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with state agencies, obtains a large amount of data pertaining to the water resources of Oregon 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 - Oregon."

This report includes records on both surface and ground water in the State and contains discharge records for 185 stream-gaging stations, stage only records for 6 gaging stations, 71 partial-record or miscellaneous streamflow stations, and 1 crest-stage, partial-record streamflow station; stage and content records for 26 lakes and reservoirs; water-quality records for 81 streamflow-gaging stations; water-quality for 2 atmospheric disposition stations; air-temperature records for 1 data site; and light incident for 1 record.

This series of annual reports for Oregon 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 or two volumes, data on quantities of surface water, quality of surface and ground water, and ground-water levels. In 1981, the annual report was divided into two volumes: Volume 1 described the activities for Eastern Oregon, while Volume 2 described the activities for Western Oregon. In 1991, the annual report returned to a single volume report.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Oregon 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 10, 11, 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, Books and Open-File Reports, Federal Center, Building 41, Box 25425, Denver, CO 80225. For further ordering information, telephone (303) 236-7476.

Publications similar to this report are published annually by the Geological Survey 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 OR-99-1". 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. For further ordering information, the Customer Inquiries telephone number is (703) 487-4650.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at The address given on back of title page or by telephone (503) 251-3201.

The USGS is continually updating the availability of its information on the internet. Current streamflow conditions (via satellite) for Oregon and other water resource information can be found at the following Universal Resource Locator (URL): <http://oregon.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 and organizations of the State of Oregon have had cooperative agreements for the systematic collection of surface-water records since 1905. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

State of Oregon Water Resources Department,
Martha O. Pagel, Director.

State of Oregon Department of Fish and
Wildlife, Rudy Rosen, Director.

State of Oregon Department of Environmental
Quality, Debrah Marriott, Director.

Clackamas County, Helene K. Lichtman,
Director.

Coos Bay-North Bend Water Board, Robert
K. Schab, General Manager.

Eugene Water and Electric Board, Everett
Jordan, General Manager.

Coos County, Board of Commissioners,
Beverly Owen, Chair.

Douglas County, Natural Resources Division
of Public Works, Frank M. Nielsen,
Division Manager.

City of Albany, Steve Bryant, City Manager.

City of Ashland, Department of Public Works,
Paula C. Brown, Director.

City of Brookings, Beverly Adams, Finance
Director and Recorder.

City of Gresham, Department of
Environmental Services, Mel Miracle.

City of Lake Oswego, Mark Schoening, City
Engineer.

City of McMinnville, Kent Taylor, City
Manager.

City of Portland, Bureau of Environmental
Services, Dean Marriott, Director.

City of Portland, Bureau of Water Works,
Michael F. Rosenberger, Administrator.

City of West Linn, David Monson, Director of
Public Works.

City of Woodburn, Public Works, Frank
Tiwari, Director.

The Confederated Tribes of the Warm Springs
Indian Reservation, Bruce Brunoe, Chair
of Tribal Council.

Tillamook Bay National Estuary Project,
Steve Nelson, Project Director.

Unified Sewage Agency, Bill Gaffi, General
Manager.

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Regulatory Commission licenses: Eugene Water & Electric Board; Grayco Resources, Inc.; Idaho Power Co.; Pacific Power Co.; Portland General Electric Co.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

The hydrology of Oregon is influenced by five mountain ranges with the Cascade Range providing a natural division between western and eastern Oregon. These ranges divide the state into drainage basins and greatly affect the distribution of precipitation. Hydrologic patterns are generally uniform from drainage basin to drainage basin throughout western Oregon; whereas in eastern Oregon, hydrologic patterns vary widely between drainage basins.

Western Oregon, which composes about one-third of the total area of the state, has a climate characterized by moderate temperatures, wet winters, and dry summers. About 80 percent of the precipitation occurs between October and March. Annual precipitation ranges from about 20 inches per year in the lower elevations in the southern part of the area to about 200 inches per year in the Coast and Cascade Ranges. In general, streamflow characteristics are similar, with most of the runoff and flooding on both large and small streams being caused by winter rains. Major floods have occurred when winter rains combine with melting snow.

Eastern Oregon has more complex hydrologic patterns than western Oregon. Precipitation is less than 10 inches per year in the semiarid regions, such as parts of the north-central area, the closed basin in south-central Oregon, and southeastern Oregon. The northeastern part of the state receives as much as 80 inches of precipitation per year, much of it occurring as snowfall. On large streams, flooding can result from winter rains and (or) seasonal snowmelt; in smaller drainage basins, flooding can result from winter rains, seasonal snowmelt, and convection storms. Monthly and annual mean discharges for four representative gages are compared with the 30-year median in figures 3 and 4.

Surface-water Conditions

Streamflow for the 1999 water year generally remained above average for the fifth consecutive year due, in part, to above average snowpacks coupled with abundant precipitation. By the end of April, as reported by the Natural Resources Conservation Service, the snow water equivalent of the snowpack ranged from a high of 285 percent of average for the Rogue and Umpqua River Basins in southwestern Oregon to a low of 105 percent of average for the Owyhee River Basin located in southeastern Oregon.

Precipitation across the state for the water year, as reported by the State Climatologist, ranged from a high of 135 percent of normal in the North Coast Basins of northwestern Oregon to a low of 80 percent of normal in the Owyhee Basin of southeastern Oregon.

The water year began with fairly average precipitation and flows until late November when strong jet stream winds brought a series of storms into the Northwest. By the end of the month, most of Oregon had received considerably more than normal precipitation for the month and streamflows were well above their November average. A number of rivers in southwest Oregon reached their maximum flows for the water year on November 21 and 22.

December repeated the pattern, starting out with normal precipitation and ending with a large rain and flood event on December 27 and 29. The greatest impact was in northwest Oregon where many rivers reached their peak flow for the water year and the Siletz River reached a peak flow of record.

January and February continued with a very wet trend, building large snowpacks in the higher elevations and maintaining higher than normal streamflows in western Oregon. The State Climatologist reported that February 1999 was one of the wettest on record in one of our wettest winters. The Nehalem River near Foss and the Wilson River near Tillamook both reported record high monthly mean flows, the highest in 60 and 69 years, respectively.

In early March, the National Weather Service issued a Flood Outlook statement addressing the potential for flooding in eastern Oregon. With snowpacks in the central and southern Cascades and southern Oregon reaching 150 to 190 percent of normal any rapid melting could have caused flooding. Fortunately, cooler than normal temperatures over the next four months allowed a gradual melting of the snowpack while maintaining higher than normal streamflows throughout most of the state for the remainder of the year.

Table 1. Maximum stage, discharge and recurrence interval for the 1999 water year at selected gaging stations.
[mi², square miles; ft, feet; ft³/s, cubic feet per second; ND, not determined; <, less than.

Station Number	Stream and Location	Drainage Area (mi ²)	Period of Record	Maximum for Period of Record			Maximum during Water Year			
				Date	Stage (ft)	Discharge (ft ³ /s)	Date	Stage (ft)	Discharge (ft ³ /s)	Estimate of Recurrence interval (years)
10396000	Donner und Blitzen River near Frenchglen	200	1912-13, 15,16,18,21, 1938-	04-26-78	7.15	4,270	03-20-99	4.44	1,150	<2
11502500	Williamson River below Sprague River, near Chiloquin	3,000	1918-	01-05-97	10.27	17,100	04-23-99	7.29	4,540	<5
13181000	Owyhee River near Rome	8,000	1950-	03-18-93	20.11	55,700	03-27-99	8.87	9,570	regulated
13292000	Imnaha River at Imnaha	622	1929-	01-01-97	11.44	20,200	05-26-99	5.75	3,890	5
13333000	Grande Ronde River at Troy	3,275	1944-	02-09-96	13.76	51,800	05-26-99	8.85	13,600	2
14033500	Umatilla River near Umatilla	2,290	1903-	01-30-65	10.75	19,800	12-31-98	6.00	5,250	regulated
14046500	John Day River at Service Creek	5,090	1930-	12-23-64	17.85	40,200	03-01-99	10.29	13,700	2
14120000	Hood River at Tucker Bridge, near Hood River	279	1898-99, 1914-17, 1965-	02-07-96	17.11	23,300	12-28-98	13.45	14,100	<5
14137000	Sandy River near Marmot	263	1912-	12-22-64	--	61,400	12-28-98	738.37	19,800	<5
14150300	Fall Creek near Lowell	118	1964-	11-19-96	12.48	12,700	12-28-98	9.90	8,400	5
14301000	Nehalem River near Foss	667	1940-	02-08-96	29.56	70,300	12-28-98	18.91	34,400	5
14305500	Siletz River at Siletz	202	1906-12, 1925-	12-28-98	24.70	40,500	12-28-98	24.70	40,500	50
14308500	Elk Creek near Drew	54	1955-82, 1987-	01-09-95	11.09	9,120	02-28-99	7.53	2,860	2
14311500	Lookingglass Creek at Brockway	158	1956-	12-26-55	24.93	35,000	11-21-98	11.18	5,920	<2
14316700	Steamboat Creek near Glide	227	1957-	12-22-64	25.60	51,000	11-21-98	14.39	20,100	5
14320700	Calapooya Creek near Oakland	210	1956-73, 1987-	11-18-96	21.62	27,100	11-21-98	15.89	8,410	2
14321000	Umpqua River near Elkton	3,683	1906-	12-23-64	51.95	265,000	11-22-98	31.39	117,000	<5
14327250	Elk River above Anvil Creek, near Port Orford	83.4	1994-	11-18-96	22.58	28,900	11-21-98	17.14	14,600	ND
14337800	Elk Creek near Cascade Gorge	78.8	1974-	01-15-74	8.90	6,780	02-28-99	7.07	3,350	<5
14357500	Bear Creek at Medford	289	1921-81, 1985-	01-01-97	14.69	17,600	11-21-98	6.19	2,930	regulated
14361500	Rogue River at Grants Pass	2,459	1939-	12-23-64	35.15	152,000	11-21-98	16.40	43,400	regulated
14372300	Rogue River near Agness	3,939	1961-	12-23-64	68.03	290,000	02-28-99	19.23	66,200	regulated

NOTE.--The recurrence interval, or return period, of a flood of a given magnitude is the average interval of time within which the given flood will be exceeded once by the annual maximum discharge. The recurrence interval is inversely related to the chance of a specific flood discharge being exceeded by any one year. Thus, a flood with a 50-year recurrence interval would have 1 chance in 50 of being exceeded in any one year. Recurrence intervals are average figures based on historical data; because the occurrence of floods is erratic, the 50-year flood may not necessarily occur in any given 50-year period, or floods of this magnitude may occur several times during that period. A similar relation is true for a flood of any given recurrence interval.

Ground Water

The seasonal level of the water table reflects natural recharge and discharge, and indirectly reflects long-term climatic trends. Changes in the water table are represented by seasonal averages of measurements made in shallow-aquifer wells.

The relation of seasonal water-table levels during 1999 to the long-term means, or normals, was evaluated for the six wells that comprise the Oregon District portion of the U.S. Geological Survey's Office of Ground Water's Collection of Basic Records (CBR) network of wells. These are wells that show a high correlation to climatic variability.

The normal water level for a season is defined as being within one-half the standard deviation of the seasonal mean for the period of record. The seasons are defined as: FALL, October to December; WINTER, January to March; SPRING, April to June; and SUMMER, July to September.

The water-table levels in the Oregon CBR network were generally above normal throughout the 1999 water year. The Clackamas County well was at least one standard deviation above normal all four seasons. The Marion County well was above normal except during Summer. The Linn County well was above normal only in Winter. The northern Deschutes County well was above normal all four seasons and at least one standard deviation above normal during both Fall and Winter. The southern Deschutes County well was at least one standard deviation above normal except in Fall. Finally, the Jackson County well was a late addition to the network and has partial record for the 1999 water year. Of the record collected, it was above normal in both Spring and Summer.

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 hydrology, including water quality, and related factors in representative 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.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. 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 remobilization 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.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives; (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO₂ emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) Provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO₂ and NO_x scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

<http://nadp.nrel.colostate.edu/NADP>

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

53 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 is available through the world wide web at:

http://www.rvares.er.usgs.gov/nawqa/nawqa_home.html

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1999 water year that began October 1, 1998, and ended September 30, 1999. 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, and water-quality data for surface water. 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 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 two systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations where only miscellaneous measurements are made. Basin designation is based on the Hydrologic Unit Map for Oregon prepared in cooperation with the U.S. Water Resources Council (1974).

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 indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention 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 14105700, which appears just to the left of the station name, includes the two-digit Part number "14" plus the six-digit downstream-order number "105700." The Part number designates the major river basin; for example, part "14" refers to the Pacific slope basins in Oregon and lower 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 (figure 1). 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 rare 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.

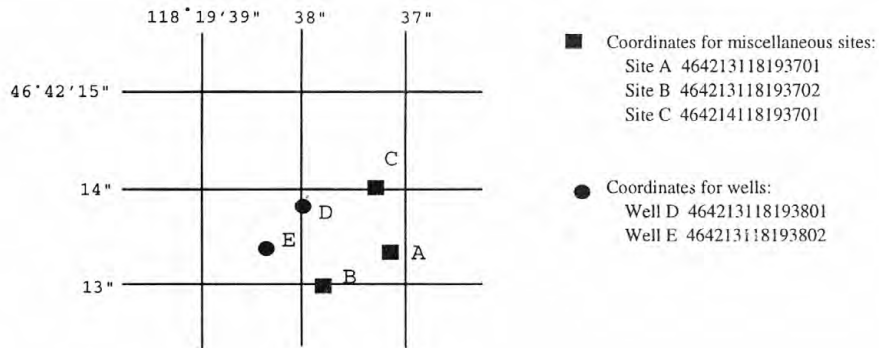


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude).

Local Identifier Well-Numbering System

In addition to the latitude-longitude based site identification number, wells in Oregon are assigned local well numbers (figure 2). The State is divided into 36 square mile townships numbered according to their location relative to the east-west Willamette baseline and a north-south Willamette meridian. The position of a township is given by its north-south "Township" position relative to the baseline and its east-west "Range" position relative to the meridian. Each township is divided into 36 sections approximately one-square-mile, (640-acre) in area and numbered from 1 to 36. For example, a well designated as 01S/03E-33DCA is located in Township 1 south, Range 3 east, section 33. The

letters following the section number correspond to the location within the section; the first letter (D) identifies the quarter section (160 acres); the second letter (C) identifies the quarter-quarter section (40 acres); and the third letter (A) identifies the quarter-quarter-quarter section (10-acres). Thus, well 33DCA is located in the NE quarter of the SW quarter of the SE quarter of section 33 (figure 2). When more than one designated well occurs in the quarter-quarter-quarter section, a serial number is included.

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

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the Geological Survey that 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, Chapter 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 daily mean 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 to 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 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 discharges 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, daily, and instantaneous 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 further 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, locations, 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 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 a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

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 Oregon 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 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 for the month; and 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 computerized data for 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.)

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 Oregon office, includes discharge measurements, gage-height records, and rating tables. Many gaging-station records in Oregon through 1987 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 Oregon 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 continuing-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 "continuing 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. 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.

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 Measurements 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. 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 Oregon office.

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 several 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 values for each constituent measured and are based upon hourly 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, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Oregon 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." 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 biochemical-oxygen demand (BOD), samples for identification of biological populations, 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 sediment samples and to compute sediment records are described in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; and 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.

Data Presentation

For continuing-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 report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
<	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)
ND	Materials specifically analyzed for but not detected
V	Analyte was detected in both the environmental sample and the associated blanks.

Water-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 Sample

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:

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 all 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.

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.

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 sequential samples. Sequential samples are 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.

Records of Ground-Water Levels

Water-level records for selected wells are included in this report. These wells are part of the U.S. Geological Survey's nationwide Collection of Basic Records (CBR) network of observation wells. The primary purpose of the network is to monitor the effect of climatic variability on the nation's regional aquifers. Well locations are shown in Figure 36.

Ground-water level records obtained through cooperative efforts of many Federal, State, and local agencies for many observation wells throughout Oregon are not included in this report. These records may be 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, Oregon District, U.S. Geological Survey,
10615 S.E. Cherry Blossom Drive, Portland, Oregon
97216.

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.

The water-level data tables and hydrographs are published in alphabetical order by county and then in ascending order of latitude within the county. Each well is identified by means of (1) a 15-digit site identification number that is based on the grid system of latitude and longitude, and (2) a local designation based on the official system for the rectangular subdivision of public lands, referenced to the Willamette base line and meridian. Both of these identification number systems are described in the "Station Identification Numbers" section.

Water-level measurements are reported in feet below the land-surface datum (LSD). The land-surface datum is a horizontal plane coincident with land surface at each well. The altitude of the land-surface datum at each well has been estimated from U.S. Geological Survey 7.5 minute quadrangle topographic maps and is relative to the National Geodetic Vertical Datum (NGVD) of 1929.

The measuring point (MP) is reported in feet above the land-surface datum at each well and is the point at which measurements are taken.

Water levels are published 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.

Data Presentation

Each well record consists of three parts, a station description, a table of water levels for the entire period of record through the current water year, and a hydrograph of that record. Topical headings of the station description section are explained below.

WELL NUMBER.--This entry reports the 15-digit site identification number and the local well

number previously mentioned and explained more completely in the section entitled, "Station Identification Numbers" under the headings, "Latitude-Longitude system" and Local identifier well numbering system".

LOCATION.--This paragraph reports the latitude and longitude (given in degrees, minutes, and seconds); 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 and geologic age the aquifer 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 (periodic or continuous) and the collection method used.

DATUM.--This entry describes both the land-surface elevation at the well and the measuring point. The elevation of the land-surface datum is described in feet above the National Geodetic Vertical Datum of 1929 or mean sea level and is reported with a precision respective to the method of determination. The measuring point's physical description and height, in feet, relative to the land-surface datum is also noted.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It may be used to acknowledge the assistance of local 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.

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

EXTREMES FOR CURRENT YEAR.--For wells equipped with a recorder, this entry contains the highest and lowest water levels of the year measured by the recorder. Because all values are not published for wells with recorders the extremes may be values

not listed in the table following the station description.

A table of water levels follows the station description for each well. Water levels are reported in feet below the land-surface datum. For wells equipped with a recorder a table of the daily means is given. Missing records are indicated with a triple hyphen (---) in place of the water level.

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean water levels for each month is provided below the mean values table.

Following the tabular summary of water levels is a hydrograph of the measurements. The water levels, in feet below land surface, are on the ordinate (y-axis) which has been reversed to imply depth. The dates, in calendar years, are on the abscissa (x-axis). The hydrograph is provided to aid the reader in better understanding the fluctuations of the water levels seasonally and over time. The first point on these hydrographs is usually the driller's reported static water level. A note on the hydrograph will state the driller's reported water level if it was drilled some years prior to development of the water level record. Also, breaks in the graph line correspond to extended breaks of time in collecting water level measurements at the site.

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 Water Resources Division District Offices (see address on the back of the title page).

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English 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.

Acre-foot (AC-FT, acre-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.

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

Algae are mostly aquatic single-celled, colonial, or multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

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.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while 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.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which 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 (mL) of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often

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.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which 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.

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded 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 which produce pink to red colonies with black or reddish-brown precipitate after incubation at 41°C on mE agar and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis*, *Streptococcus feacium*, *Streptococcus avium*, and their variants.

Bedload is the sediment which moves along in essentially continuous contact with the streambed by rolling, sliding, and making brief excursions into the flow a few diameters above the bed.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Benthic invertebrates are invertebrate animals inhabiting the bottoms of lakes, streams, and other water bodies. 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 micro-organisms, such as

bacteria.

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

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. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, 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.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which 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, usually milliliters (mL) or liters (L).

Cfs-day 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, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,447 cubic meters.

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 natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common

green pigments in plants.

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

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.

Continuing -record station is a specified site which meets one or all conditions listed:

1. When chemical samples are collected daily or monthly for 10 or more months during the water year.
2. When water temperature records include observations taken one or more times daily.
3. When sediment discharge records include periods for which sediment loads are computed and are

considered to be representative of the runoff for the water year.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

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

Instantaneous discharge is the discharge at a particular instant of time.

Annual 7-day minimum is 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.)

Dissolved refers to that material in a representative water sample which passes through a 0.45- μm membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water 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 of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

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

Extractable organic halides (EOX) are organic compounds which contain halogen atoms such as chlorine. These organic compounds are semi-volatile and extractable by ethyl acetate from air-dried stream bottom sediments. 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 stream bottom sediments.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent

cations and is expressed as the equivalent concentration of calcium carbonate (CaCO_3).

High tide is the maximum height reached by each rising tide.

Hydrologic Bench-Mark Network is a network of more than 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Low tide is the minimum height reached by each falling tide.

Mean high tide is the average of all high tides over a specified period.

Mean low tide is the average of all low tide over a specified period.

Mean water level is the average of all tides over a specified period

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.

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 ($\mu\text{g/g}$) 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 liter ($\mu\text{g/L}$) is a unit

expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Microsiemens per centimeter ($\mu\text{S/cm}$, US/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 solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

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. It 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.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. 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.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites, (2) provide the mechanism to evaluate the effectiveness of the significant reduction in SO₂ emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred, (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO₂ and NO_x scheduled to begin in 2000.

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.

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit 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.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey's data system, National Water Information System (NWIS), to uniquely identify a specific constituent. The codes used in NWIS are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and (or) water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) 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 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 - 0.0004	Sedimentation
Silt.....	0.0004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel...	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. 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.

Percent composition 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, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa,

rotifers, and other small organisms.

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

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

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

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 are commonly known as algae.

Blue-green algae 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.

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.

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.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often 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.

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

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic 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 by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [$\text{mg C}/(\text{m}^2/\text{time})$] for periphyton and macrophytes and [$\text{mg C}/(\text{m}^3/\text{time})$] for phytoplankton are units for expressing primary productivity. They define 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 in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [$\text{mg O}/(\text{m}^2/\text{time})$] for periphyton and macrophytes and [$\text{mg O}/(\text{m}^3/\text{time})$] for phytoplankton are units for expressing primary productivity. They define 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.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from 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.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

River mile as used herein, is the distance above the mouth of a river, measured along the center line of the channel or the main stem of the river.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sea level, in this report, refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it 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 influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed very close to the bed surface. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in

a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

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 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Suspended total residue at 105 Deg. C concentration is the concentration of suspended sediment in the sampled zone expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). A small aliquot of the sample is used for the analysis.

Total-sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Seven-day 10-year low flow (7 Q10) is the

discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

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. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 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.

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

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.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which 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 taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for

benthic organism collection, and plexiglass strips for periphyton.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) 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 associated with the material retained on a 0.45-um filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-um 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 analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-um membrane filter. 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 determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more

commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

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.

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..... *Hexagenia*
Species..... *Hexagenia limbata*

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings 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 that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 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) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment

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 all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment 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, equivalent digestion procedures are required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

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 man-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 (U.S. Environmental Protection Agency, 1996).

Water year in Geological Survey 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, 1980, is called the "1980 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.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material 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. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

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, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS-TWRI Book 1, Chapter D2. 1976. 24 pages.

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, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P.

Haeni: USGS-TWRI Book 2, Chapter D2. 1988. 86 pages.

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, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS-TWRI Book 2, Chapter E2. 1990. 150 pages.

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, Chapter F1. 1989. 97 pages.

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, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M.A. Benson: USGS-TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G.L. Bodhaine: USGS-TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H.F. Matthai: USGS-TWRI Book 3, Chapter A4. 1967. 44 pages.
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- 3-A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS-TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurement at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter A7. 1968. 28 pages.
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WATER-RESOURCES INVESTIGATIONS

- 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, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS-TWRI Book 3, Chapter A12. 1986. 34 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS-TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS-TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS-TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS-TWRI Book 3, Chapter A17. 1985. 38 pages.
- 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, Chapter A18. 1989. 52 pages.
- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A19. 1990. 31 pages.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS-TWRI Book 3, Chapter A20. 1993. 38 pages.
- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS-TWRI Book 3, Chapter A21. 1995. 56 pages.
- Section B. Ground-Water Techniques**
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS-TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS-TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS-TWRI Book 3, Chapter B3. 1980. 106 pages.
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- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI Book 3, Chapter C3. 1972. 66 pages.

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, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS-TWRI Book 4, Chapter A2. 1968. 15 pages.

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- 4-B3. *Regional analyses of streamflow characteristics*, by H.C. Riggs: USGS-TWRI Book 4, Chapter B3. 1973. 15 pages.

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, Chapter D1. 1970. 17 pages.

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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, Chapter A1. 1988. 586 pages.
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- 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, Chapter A3. 1993. 136 pages.
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- 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, Chapter A5. 1993. 243 pages.
- 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. 1996. 125 pages.

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**Book 7. Automated Data Processing and
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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, Chapter C1. 1976. 116 pages.
- 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, Chapter C2. 1978. 90 pages.
- 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, Chapter C3. 1981. 110 pages.

Book 8. Instrumentation

**Section A. Instruments for Measurement of Water
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- 8-A1. *Methods of measuring water levels in deep wells*, by M.S. Garber and F.C. Koopman: USGS-TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D.

Craig: USGS-TWRI Book 8, Chapter A2. 1983. 57 pages.

**Section B. Instruments for Measurement of
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- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 8, Chapter B2. 1968. 15 pages.

**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, Chapter 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, Chapter 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, Chapter A3. 1998. 75 p.

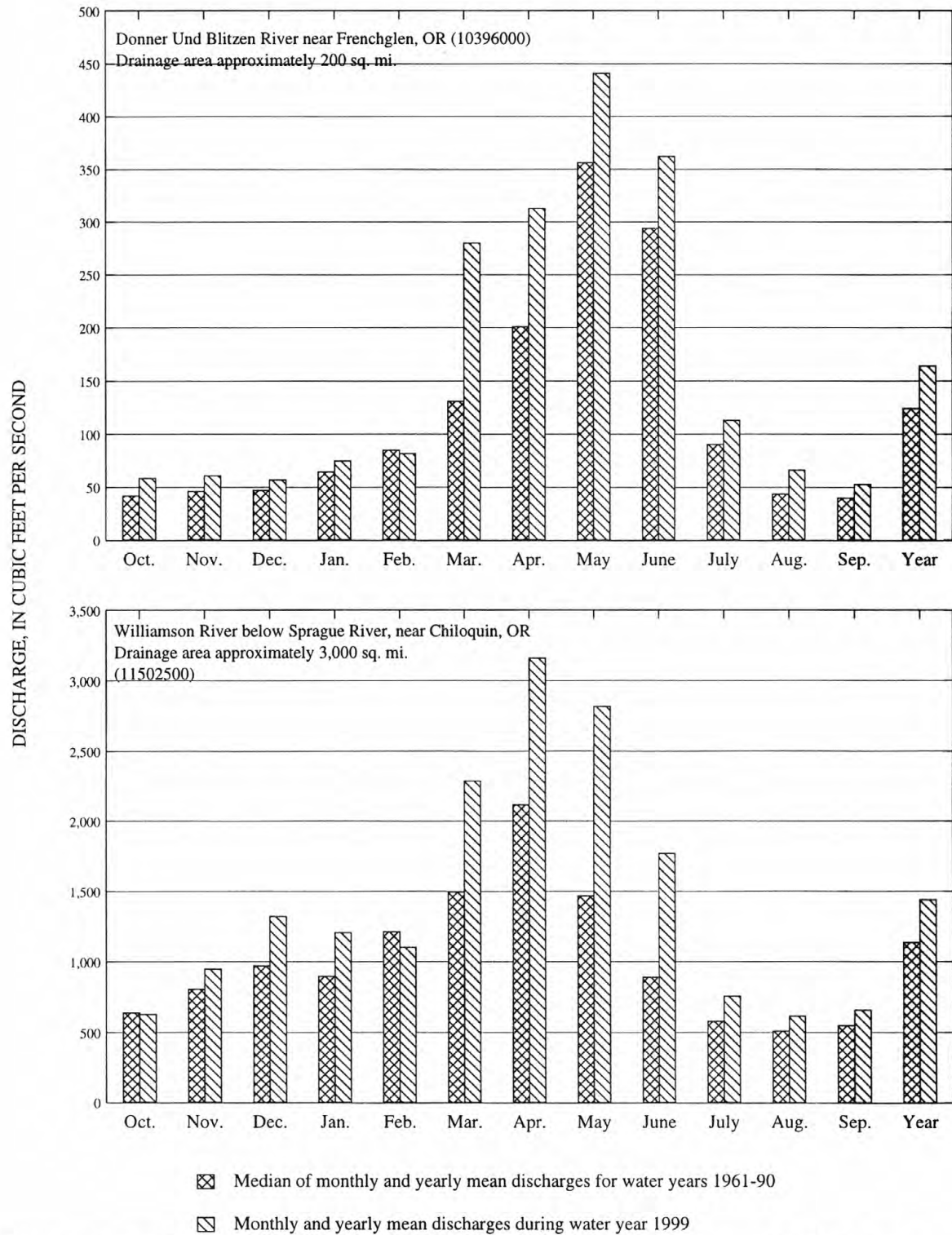


Figure 3. Discharge during 1999 water year compared with median discharge for period 1961-90 for two representative gaging stations in Eastern Oregon.

WATER RESOURCES DATA FOR OREGON 1999

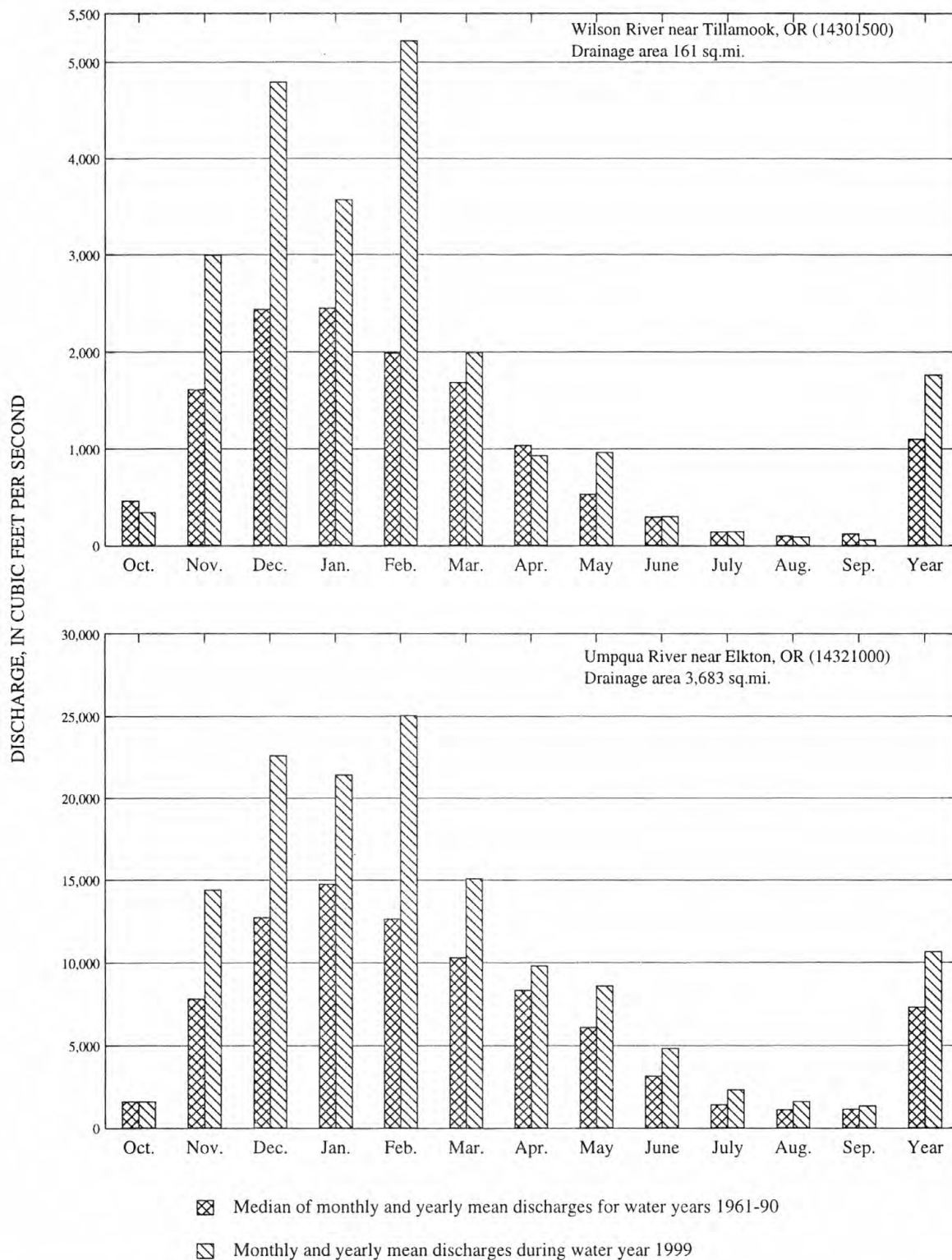


Figure 4. . Discharge during 1999 water year compared with median discharge for period 1961-90 for two representative gaging stations in Western Oregon.

SURFACE-WATER RECORDS

Remark Codes

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

PRINTED OUTPUT	REMARK
E	Estimated value
<	Actual value is known to be less than the value shown
>	Actual value is known to be greater 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.

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.

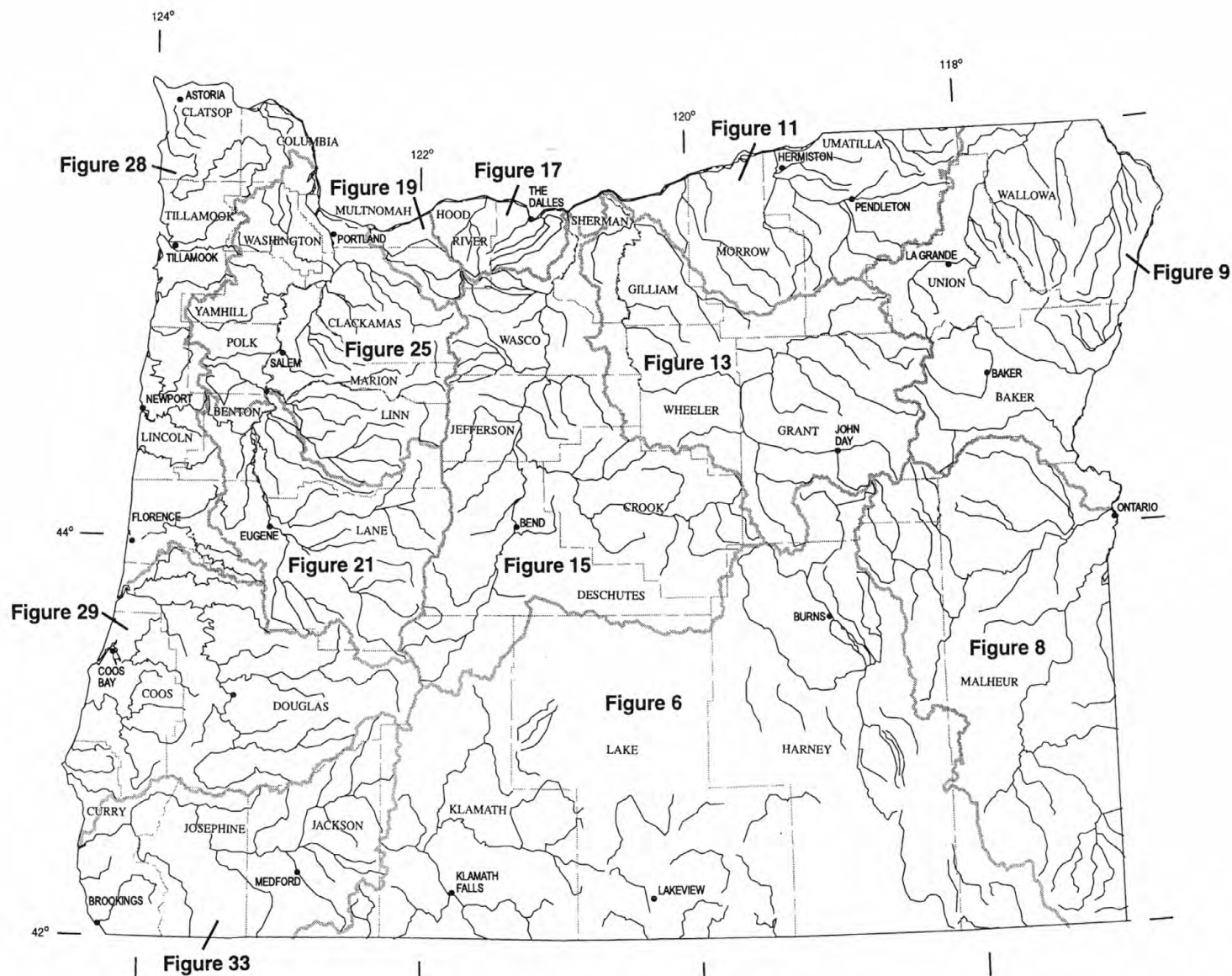
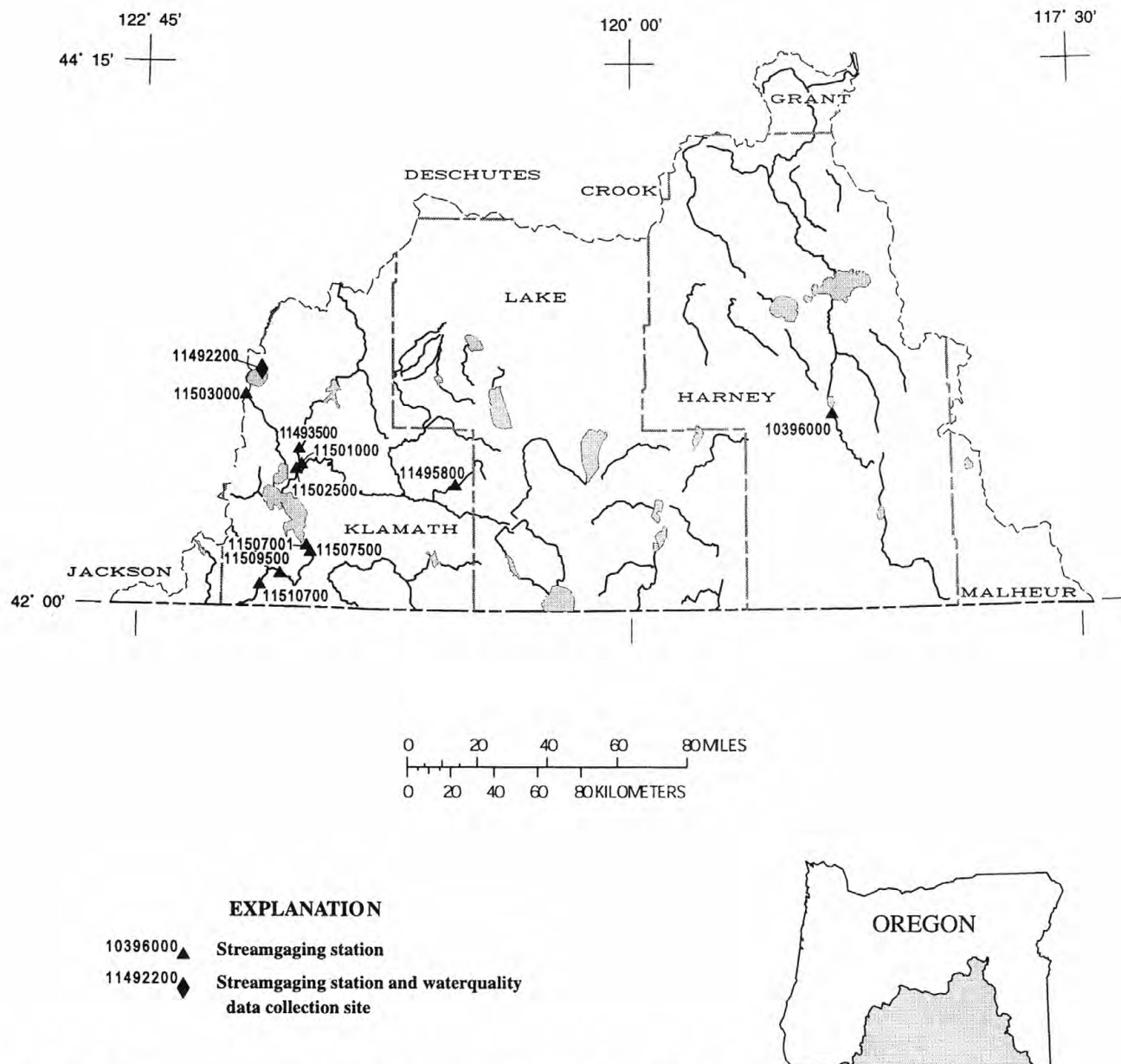


Figure 5. Location map of major drainage basins in Oregon.



6. Location of surface-water and water-quality stations in The Great Basin and the Klamath River Basin.

GAGING STATION RECORDS

THE GREAT BASIN

MALHEUR AND HARNEY LAKES BASIN

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR

LOCATION.--Lat 42°47'28", long 118°52'00", in NW 1/4 NW 1/4 sec.20, T.32 S., R.32-1/2 E., Harney County, Hydrologic Unit 17120003, Bureau of Land Management land, on left bank 1.5 mi upstream from upper diversions for Malheur National Wildlife Refuge, 2.0 mi downstream from Fish Creek, and 3.5 mi southeast of Frenchglen.

DRAINAGE AREA.--200 mi², approximatly.

PERIOD OF RECORD.--March 1911 to September 1913, March 1914 to September 1916, April 1917 to September 1921, August to November 1929, April to September 1930, December 1937 to current year. Monthly discharge only for some periods, published in WSP 1314. Published as "near Diamond" 1911-21. Records of discharge for January 1909 to September 1910 (published in WSP 270, 290, and 370, for a nonequivalent site as "near Diamond") have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 330: Drainage area (former site). WSP 860: Drainage area (present site). WSP 1564: 1938-39(M), 1942-43(M), 1948(M), 1951(P), 1952-53. WSP 1714: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,254 ft above sea level (levels by Fish and Wildlife Service). Prior to December 1937, nonrecording gage at several sites within 2 mi downstream at different datums. Dec. 6, 1937, to Feb. 14, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Periodic water-quality records for the period March 1975 to September 1986 and continuous water-quality records for the period October 1975 to September 1981 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--69 years (water years 1912-13, 1915-16, 1918-21, 1939-99), 128 ft³/s, 92,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge, 4,270 ft³/s Apr. 26, 1978, gage height, 7.15 ft, from floodmarks, from rating curve extended above 1,900 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 4.2 ft³/s Dec. 9, 1972, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 20	2230	*1,150	*4.44	May 28	2330	956	4.19
Apr. 18	2230	657	3.74				

Minimum discharge, 14 ft³/s Dec. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	62	92	e48	53	313	189	354	566	211	71	58
2	60	60	66	e48	56	195	215	396	507	186	71	58
3	59	59	71	e48	55	202	212	450	432	164	70	57
4	59	61	67	e48	56	162	157	383	448	152	69	56
5	59	60	e48	e48	51	111	179	288	429	142	70	55
6	59	58	e48	e48	59	99	183	316	430	140	74	54
7	58	60	e55	e46	68	91	216	389	382	146	72	54
8	58	59	e50	e46	62	77	264	355	334	136	69	54
9	58	59	e38	e50	89	74	174	313	311	127	66	53
10	58	59	e48	e48	74	67	150	279	310	123	66	53
11	58	59	e60	e48	60	65	175	262	323	124	100	53
12	57	57	78	e48	72	64	252	318	347	122	92	53
13	57	60	102	54	63	113	332	329	393	120	75	52
14	58	60	82	55	61	228	313	285	436	119	71	52
15	58	61	63	170	56	292	280	271	494	112	69	52
16	58	60	63	179	61	285	327	243	454	102	66	52
17	57	62	e55	76	72	335	387	241	430	100	64	51
18	58	60	e48	278	70	456	443	295	427	98	62	52
19	57	59	e42	149	67	492	471	349	413	93	62	51
20	57	58	e30	105	60	593	509	378	362	94	60	51
21	57	61	e14	79	63	665	439	428	386	95	59	51
22	57	65	e15	66	60	469	351	481	339	88	59	51
23	56	61	e16	73	66	512	312	533	301	85	60	51
24	57	65	e34	53	124	422	371	653	285	84	59	51
25	66	61	e85	53	127	460	438	733	279	83	58	51
26	61	59	e75	68	87	600	551	772	225	80	57	51
27	60	66	e65	61	125	341	481	753	202	78	56	52
28	60	65	e60	60	375	220	383	782	188	77	57	52
29	60	62	e55	59	---	231	324	799	193	76	57	52
30	58	69	e55	57	---	260	302	673	220	74	56	52
31	58	---	e75	56	---	187	---	561	---	72	57	---
TOTAL	1811	1827	1755	2325	2292	8681	9380	13662	10846	3503	2054	1585
MEAN	58.4	60.9	56.6	75.0	81.9	280	313	441	362	113	66.3	52.8
MAX	66	69	102	278	375	665	551	799	566	211	100	58
MIN	56	57	14	46	51	64	150	241	188	72	56	51
AC-FT	3590	3620	3480	4610	4550	17220	18610	27100	21510	6950	4070	3140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1999, BY WATER YEAR (WY)

MEAN	43.9	48.0	55.9	68.3	92.0	154	225	385	292	100	48.7	42.9
MAX	86.4	94.3	181	277	310	500	666	826	802	320	113	87.3
(WY)	1985	1985	1965	1997	1921	1993	1952	1998	1917	1984	1994	1984
MIN	24.2	25.3	25.2	25.0	27.8	40.5	61.2	105	44.7	28.9	21.1	22.2
(WY)	1993	1962	1960	1916	1964	1977	1968	1992	1992	1968	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1912 - 1999

ANNUAL TOTAL	79857		59721				
ANNUAL MEAN	219		164			128	
HIGHEST ANNUAL MEAN						273	1984
LOWEST ANNUAL MEAN						49.1	1992
HIGHEST DAILY MEAN	1840	May 14	799	May 29	2700		Mar 17 1993
LOWEST DAILY MEAN	14	Dec 21	14	Dec 21	11		Nov 16 1961
ANNUAL SEVEN-DAY MINIMUM	28	Dec 18	28	Dec 18	14		Jan 2 1974
ANNUAL RUNOFF (AC-FT)	158400		118500		92990		
10 PERCENT EXCEEDS	628		428		332		
50 PERCENT EXCEEDS	75		71		58		
90 PERCENT EXCEEDS	54		52		32		

e Estimated

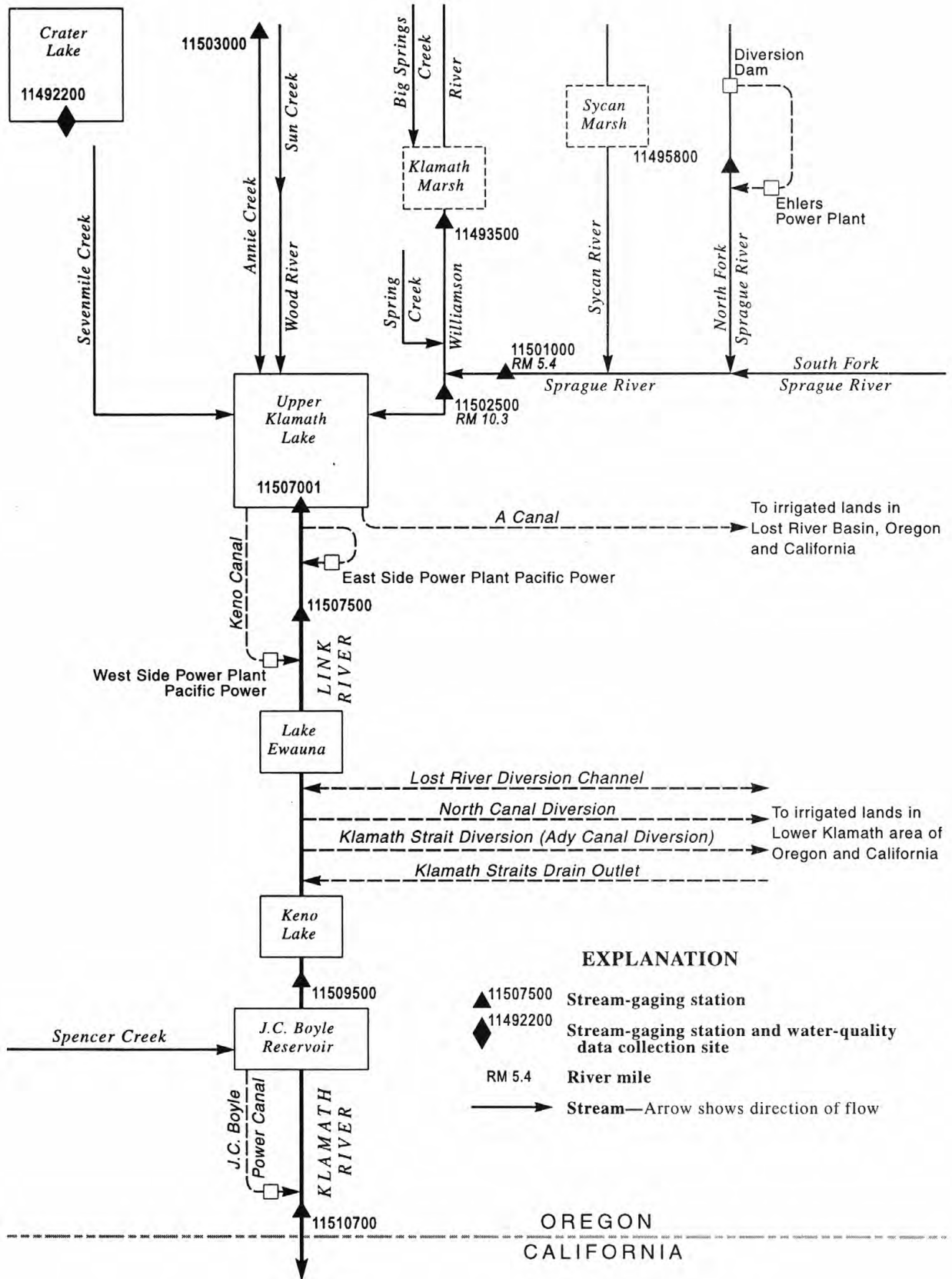


Figure 7. Schematic diagram showing gaging stations and major diversions in the Klamath Basin in Oregon.

KLAMATH RIVER BASIN

11492200 CRATER LAKE NEAR CRATER LAKE, OR
(Hydrologic bench-mark station)

LOCATION.--Lat 42°58'33", long 122°05'17", Crater Lake National Park and Vicinity Quadrangle, Klamath County, Hydrologic Unit 18010201, at boat harbor at end of trail in Cleetwood Cove and 6 mi northeast of Crater Lake post office.

DRAINAGE AREA.--26.2 mi², of which 20.5 mi² is lake area at elevation 6,176 ft.

WATER-ELEVATION RECORDS

PERIOD OF RECORD.--October 1961 to current year. 1878 to September 1961 (fragmentary records) available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is sea level. Prior to September 1961, nonrecording gage and various reference points used near old boat landing at abandoned trail (Eagle Cove) directly across Lake.

REMARKS.--Crater Lake occupies the caldera of prehistoric Mount Mazama. It has no visible inlet or outlet. Over a period of years precipitation and runoff from snowmelt on the walls of the crater are offset by seepage and evaporation. Records of accumulated annual precipitation, collected at the north rim of Crater Lake as part of the operation of this station, are published annually in reports of the National Weather Service. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 6,179.34 ft Mar. 25, 1975; minimum elevation observed, 6,163.2 ft Sept. 10, 1942.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 6,180.5 ft, average of several observations of line of crustose lichens made between 1916 and 1960; that stage may have occurred near the close of the 19th century. The occurrence of living pine trees slightly higher suggests that the lake has not been materially higher for several centuries.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,177.00 ft Mar. 3, 4, 8; minimum elevation, 6,173.94 Nov. 3, 4.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6174.41	6173.97	6174.90	6175.26	6175.78	6176.91	6176.92	6176.73	6176.77	6176.68	6176.40	6176.16
2	6174.39	6173.95	6175.10	6175.25	6175.81	6176.96	6176.92	6176.81	6176.77	6176.67	6176.39	6176.14
3	6174.38	6173.96	6175.08	6175.24	6175.82	6176.99	6176.91	6176.87	6176.76	6176.66	6176.38	6176.11
4	6174.36	6173.97	6175.06	6175.23	6175.81	6176.99	6176.90	6176.86	6176.75	6176.65	6176.37	6176.10
5	6174.35	6173.97	6175.11	6175.22	6175.80	6176.97	6176.92	6176.85	6176.75	6176.65	6176.38	6176.08
6	---	6173.96	6175.11	6175.20	6176.04	6176.96	6176.90	6176.86	6176.74	6176.64	6176.39	6176.05
7	6174.30	6174.06	6175.15	6175.18	6176.11	6176.93	6176.91	6176.84	6176.73	6176.63	6176.39	6176.04
8	6174.31	6174.04	6175.15	6175.17	6176.15	6176.99	6176.93	6176.83	6176.72	6176.63	6176.37	6176.03
9	6174.30	6174.02	6175.14	6175.16	6176.19	6176.97	6176.92	6176.81	6176.72	6176.62	6176.41	6176.00
10	6174.27	6174.05	6175.13	6175.14	6176.18	6176.95	6176.95	6176.81	6176.71	6176.62	6176.43	6175.99
11	6174.24	6174.04	6175.14	6175.16	6176.15	6176.94	6176.94	6176.83	6176.70	6176.61	6176.43	6175.97
12	6174.23	6174.01	6175.12	6175.14	6176.13	6176.99	6176.93	6176.82	6176.70	6176.61	6176.40	6175.96
13	6174.24	6174.00	6175.13	6175.12	6176.16	6176.96	6176.91	6176.82	6176.70	6176.60	6176.40	6175.94
14	6174.22	6174.00	6175.10	6175.31	6176.14	6176.96	6176.89	6176.83	6176.70	6176.59	6176.38	6175.93
15	6174.20	6174.01	6175.09	6175.37	6176.16	6176.95	6176.87	6176.81	6176.70	6176.58	6176.37	6175.92
16	6174.18	6173.99	6175.08	6175.39	6176.27	6176.93	6176.86	6176.79	6176.70	6176.56	6176.35	6175.91
17	6174.16	6174.03	6175.08	6175.54	6176.28	6176.91	6176.86	6176.82	6176.70	6176.55	6176.34	6175.88
18	6174.13	6174.01	6175.05	6175.53	6176.46	6176.90	6176.84	6176.81	6176.70	6176.54	6176.32	6175.87
19	6174.10	6174.01	6175.03	6175.60	6176.43	6176.89	6176.85	6176.81	6176.70	6176.53	6176.31	6175.86
20	6174.08	6174.15	6174.99	6175.71	6176.50	6176.88	6176.83	6176.80	---	6176.52	6176.30	6175.84
21	6174.07	6174.52	6174.98	6175.76	6176.50	6176.85	6176.84	6176.79	6176.71	6176.52	6176.29	6175.83
22	6174.06	6174.54	6174.96	6175.95	6176.56	6176.85	6176.82	6176.78	6176.70	6176.50	6176.28	6175.81
23	6174.02	6174.71	6174.94	6175.95	6176.61	6176.81	6176.80	6176.78	6176.70	6176.50	6176.26	6175.80
24	6174.05	6174.75	6174.98	6175.94	6176.65	6176.83	6176.79	6176.78	6176.72	6176.49	6176.25	6175.77
25	6174.03	6174.71	6175.04	6175.92	6176.69	6176.85	6176.78	6176.78	6176.70	6176.48	6176.24	6175.72
26	6174.01	6174.77	6175.02	6175.90	6176.69	6176.87	6176.77	6176.77	6176.70	6176.47	6176.23	6175.70
27	6174.02	6174.75	6175.18	6175.88	6176.82	6176.87	6176.76	6176.77	6176.69	6176.46	6176.23	6175.67
28	6174.00	6174.75	6175.28	6175.86	6176.93	6176.89	6176.74	6176.78	6176.69	6176.45	6176.24	6175.65
29	6173.98	6174.80	6175.27	6175.81	---	6176.90	6176.73	6176.77	6176.69	6176.43	6176.22	6175.64
30	6173.96	6174.89	6175.26	---	---	6176.94	6176.71	6176.76	6176.69	6176.43	6176.21	6175.62
31	6173.98	---	6175.28	6175.80	---	6176.95	---	6176.77	---	6176.42	6176.19	---
MAX	---	6174.89	6175.28	---	6176.93	6176.99	6176.95	6176.87	---	6176.68	6176.43	6176.16
MIN	---	6173.95	6174.90	---	6175.78	6176.81	6176.71	6176.73	---	6176.42	6176.18	6175.62

KLAMATH RIVER BASIN

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11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1963 to current year.

INSTRUMENTATION.--Temperature recorder from October 1963 to current year. Elevation of probe is approximately 6,157 ft above sea level.

REMARKS.--Samples were collected at boat harbor at end of trail in Cleetwood Cove and 6 mi northeast of Crater Lake post office. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 18.5°C Aug. 9, 10, 1978, several days in July and August, 1994, Aug. 14-16, 1998; minimum recorded, 0.5°C on several days in 1969, but may have been as low or lower during period of missing record Oct. 29, 1985 to July 1, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 16.5°C Aug. 29, 30; minimum, 2.0°C Apr. 19.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.5	12.0	12.5	8.5	8.5	8.5	5.0	5.0	5.0	4.0	4.0	4.0
2	12.5	12.0	12.0	8.5	8.5	8.5	5.0	4.5	5.0	4.0	4.0	4.0
3	12.0	12.0	12.0	8.5	8.0	8.5	5.0	4.5	5.0	4.0	4.0	4.0
4	12.0	11.5	12.0	8.5	8.0	8.0	5.0	4.5	4.5	4.0	4.0	4.0
5	12.0	11.5	11.5	8.5	8.0	8.0	5.0	4.5	4.5	4.5	4.0	4.0
6	---	---	---	8.0	8.0	8.0	4.5	4.5	4.5	4.5	4.0	4.0
7	11.5	11.5	11.5	8.0	7.5	7.5	4.5	4.5	4.5	4.0	3.5	4.0
8	11.5	11.0	11.5	7.5	7.5	7.5	4.5	4.5	4.5	4.0	3.5	4.0
9	11.0	11.0	11.0	7.5	7.5	7.5	4.5	4.5	4.5	4.0	4.0	4.0
10	11.0	10.5	11.0	7.5	7.0	7.5	4.5	4.5	4.5	4.0	3.5	4.0
11	11.0	10.5	10.5	7.5	7.0	7.0	4.5	4.5	4.5	4.0	4.0	4.0
12	10.5	10.5	10.5	7.0	7.0	7.0	4.5	4.5	4.5	4.0	4.0	4.0
13	10.5	10.0	10.5	7.0	7.0	7.0	4.5	4.5	4.5	4.0	4.0	4.0
14	10.5	10.0	10.0	7.0	6.5	7.0	4.5	4.0	4.5	4.0	4.0	4.0
15	10.0	10.0	10.0	7.0	7.0	7.0	4.5	4.5	4.5	4.0	3.5	4.0
16	10.0	10.0	10.0	7.0	7.0	7.0	4.5	4.5	4.5	4.0	4.0	4.0
17	10.0	10.0	10.0	7.0	6.5	7.0	4.5	4.5	4.5	4.0	4.0	4.0
18	10.0	9.5	10.0	6.5	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
19	10.0	9.5	9.5	6.5	6.0	6.5	4.5	4.0	4.0	4.0	4.0	4.0
20	9.5	9.0	9.5	6.5	6.5	6.5	4.5	4.0	4.0	4.0	4.0	4.0
21	9.5	9.0	9.0	6.5	6.0	6.0	4.5	4.0	4.0	4.0	3.5	4.0
22	9.5	9.0	9.5	6.0	6.0	6.0	4.0	4.0	4.0	4.0	3.5	3.5
23	9.5	9.0	9.5	6.0	5.5	6.0	4.0	4.0	4.0	4.0	3.5	3.5
24	9.5	9.0	9.0	5.5	5.5	5.5	4.0	4.0	4.0	3.5	3.0	3.5
25	9.0	9.0	9.0	5.5	5.5	5.5	4.0	4.0	4.0	4.0	3.5	3.5
26	9.0	8.5	9.0	5.5	5.5	5.5	4.0	4.0	4.0	3.5	3.5	3.5
27	9.0	---	---	5.5	5.5	5.5	4.0	4.0	4.0	4.0	3.5	3.5
28	9.0	9.0	9.0	5.5	5.0	5.5	4.0	4.0	4.0	4.0	3.5	4.0
29	9.0	8.5	9.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0	3.5	3.5
30	8.5	8.5	8.5	5.0	5.0	5.0	4.0	4.0	4.0	---	---	---
31	8.5	8.5	8.5	---	---	---	4.0	4.0	4.0	3.5	3.5	3.5
MONTH	12.5	8.5	10.2	8.5	5.0	6.8	5.0	4.0	4.3	4.5	3.0	3.9

KLAMATH RIVER BASIN

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	3.5	3.5	3.0	3.0	3.0	3.0	2.5	3.0	---	---	---
2	3.5	3.5	3.5	3.0	2.5	3.0	3.5	3.0	3.0	4.0	3.5	3.5
3	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.5	3.5
4	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
5	3.5	3.0	3.5	3.5	3.0	3.0	3.0	3.0	3.0	4.0	3.5	4.0
6	3.5	3.0	3.5	3.0	3.0	3.0	3.0	2.5	3.0	4.0	3.0	4.0
7	3.5	3.5	3.5	3.5	3.0	3.0	3.5	3.0	3.0	4.0	3.5	4.0
8	3.5	3.5	3.5	3.0	2.5	2.5	3.0	3.0	3.0	---	4.0	4.0
9	3.5	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	4.5	4.0	4.0
10	3.5	3.0	3.5	3.0	2.5	2.5	3.0	2.5	3.0	4.0	4.0	4.0
11	3.0	3.0	3.0	3.0	2.5	3.0	3.0	2.5	3.0	4.0	4.0	4.0
12	3.0	3.0	3.0	3.0	2.5	2.5	3.5	3.0	3.0	4.5	4.0	4.0
13	3.5	3.0	3.0	2.5	2.5	2.5	3.5	3.0	3.0	4.0	4.0	4.0
14	3.5	3.0	3.0	2.5	2.5	2.5	3.5	3.0	3.0	4.0	4.0	4.0
15	3.5	3.0	3.0	3.0	2.5	3.0	3.5	2.5	3.0	4.5	3.5	4.0
16	3.0	3.0	3.0	3.0	2.5	3.0	3.5	3.0	3.0	4.0	3.0	4.0
17	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.5	4.0	3.5	4.0
18	3.0	3.0	3.0	3.0	3.0	3.0	3.5	---	3.5	4.5	4.0	4.0
19	3.5	3.0	3.0	3.0	2.5	3.0	3.5	2.0	3.0	4.5	4.0	4.5
20	3.0	3.0	3.0	3.0	2.5	3.0	3.5	3.5	3.5	4.5	4.0	4.5
21	3.0	3.0	3.0	3.0	2.5	3.0	3.5	3.5	3.5	5.0	4.0	4.5
22	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.5	---	---	---
23	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.5	4.5	3.5	4.5
24	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.5	3.5	5.0	4.5	4.5
25	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	5.0	4.5	4.5
26	3.0	3.0	3.0	3.5	3.0	3.0	4.0	3.5	3.5	5.0	4.0	4.5
27	3.0	3.0	3.0	3.5	3.0	3.0	4.0	3.5	3.5	---	4.5	5.0
28	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	---	4.5	5.0
29	---	---	---	3.0	3.0	3.0	---	---	---	5.0	4.5	4.5
30	---	---	---	3.0	3.0	3.0	4.0	---	3.5	5.0	4.5	4.5
31	---	---	---	3.0	3.0	3.0	---	---	---	5.0	4.5	5.0
MONTH	4.0	3.0	3.2	3.5	2.5	2.9	4.0	2.0	3.2	5.0	3.0	4.2

DAYS	MIN	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	5.0	4.5	4.5	8.5	7.0	8.0	14.0	12.0	13.5	15.0	14.5	14.5
2	4.5	4.5	4.5	8.0	7.0	8.0	14.0	11.0	12.5	14.5	13.5	14.0
3	4.5	4.5	4.5	7.5	7.0	7.0	14.0	11.0	12.5	13.5	13.0	13.0
4	5.0	4.5	4.5	7.5	7.0	7.5	14.5	---	13.0	13.0	12.5	13.0
5	5.0	4.0	4.5	8.0	7.0	7.5	15.0	12.5	14.0	13.5	13.0	13.0
6	5.0	4.5	4.5	8.0	7.0	7.5	14.5	12.5	13.5	13.5	13.0	13.5
7	---	4.5	5.0	9.5	7.0	8.5	14.5	14.0	14.0	14.0	13.5	13.5
8	---	4.5	4.5	9.0	---	8.5	14.0	13.5	14.0	14.0	13.0	13.5
9	5.0	4.5	5.0	8.5	8.0	8.5	13.5	13.5	13.5	13.5	13.5	13.5
10	5.0	4.0	5.0	8.0	7.5	8.0	---	---	---	14.0	13.5	13.5
11	5.0	4.5	5.0	8.5	8.0	8.5	13.5	12.0	13.5	14.0	13.5	13.5
12	5.0	5.0	5.0	9.0	8.0	8.5	14.0	13.5	14.0	13.5	13.0	13.5
13	5.0	4.5	5.0	8.5	8.0	8.0	14.0	13.5	14.0	13.5	13.0	13.5
14	5.0	4.5	5.0	10.5	8.0	9.0	14.0	---	13.5	13.5	13.0	13.0
15	5.0	---	5.0	13.0	9.0	11.5	14.0	13.5	14.0	13.5	13.5	13.5
16	---	---	---	12.0	8.5	10.0	14.0	---	13.5	14.0	13.0	13.5
17	---	---	---	13.0	11.0	12.5	14.5	14.0	14.0	14.0	13.0	13.5
18	5.0	4.5	5.0	10.5	10.0	10.5	14.5	---	14.0	14.0	13.0	13.5
19	---	---	---	10.5	9.5	10.0	14.5	14.0	14.0	14.0	13.5	13.5
20	5.5	4.5	5.0	10.5	9.5	10.5	14.5	14.0	14.0	13.5	13.0	13.5
21	---	---	---	11.5	9.5	11.0	14.5	14.0	14.5	13.5	13.5	13.5
22	5.5	---	5.0	11.5	10.0	11.0	15.0	13.5	14.5	14.0	13.5	13.5
23	5.5	4.5	5.5	11.5	10.0	10.5	15.5	14.5	15.0	14.0	13.5	13.5
24	---	---	---	---	---	---	15.5	---	---	14.0	13.5	13.5
25	---	---	---	12.5	10.5	12.0	---	---	---	13.5	13.0	13.5
26	5.5	5.0	5.5	13.0	---	12.0	---	---	---	13.0	12.0	12.5
27	6.0	5.5	6.0	12.5	11.0	12.0	15.5	15.0	15.5	12.0	11.5	12.0
28	6.5	5.5	6.0	13.0	12.0	12.5	16.0	15.0	15.5	12.0	11.5	11.5
29	7.0	6.0	6.5	13.0	11.5	12.0	16.5	---	---	11.5	11.5	11.5
30	8.0	---	---	12.5	11.0	11.5	16.5	15.0	16.0	12.0	11.5	11.5
31	---	---	---	13.0	12.0	12.5	15.0	14.5	15.0	---	---	---
MONTH	8.0	4.0	5.0	13.0	7.0	9.8	16.5	11.0	14.0	15.0	11.5	13.2

LOCATION: --Lat 42°44'25", long 121°50'00", in NW 1/4 SW 1/4 sec.1, T.33 S., R.7 E., Klamath County, Hydrologic Unit 18010201, on right bank 250 ft downstream from highway bridge, 0.6 mi southwest of railroad station at Kirk, 10 mi upstream from Spring Creek, and 10 mi northeast of Klamath Agency.

PERIOD OF RECORD.--March 1908 to January 1909, April 1909 to June 1910, October 1954 to September 1995, October 1998 to September 1999. Monthly discharge only June 1910, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 4,483.16 ft above sea level. Mar. 25, 1908, to June 30, 1910, nonrecording gage or water-stage recorder at two sites about 0.5 mi upstream at different datums. Oct. 1, 1954, to Sept. 30, 1955, water-stage recorder at present site at datum 2.05 ft higher.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,590 ft³/s Mar. 13, 1910, gage height, 3.7 ft, site and datum then in use, from rating curve extended above 800 ft³/s; maximum gage height, 5.75 ft Mar. 3, 1958; no flow at times most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1999, BY WATER YEAR (WY)

MEAN	40.9	118	221	224	292	429	447	262	125	46.0	15.0	13.5
MAX	255	391	580	730	799	1039	1081	952	531	332	146	95.8
(WY)	1958	1957	1956	1956	1965	1986	1956	1956	1956	1958	1958	1958
MIN	.000	.000	.000	.000	.000	58.6	22.3	7.35	.000	.000	.000	.000
(WY)	1962	1965	1991	1992	1993	1994	1992	1992	1992	1981	1961	1960

WATER YEARS 1955 - 1999

ANNUAL TOTAL	93630.35				
ANNUAL MEAN	257			185	
HIGHEST ANNUAL MEAN				468	1956
LOWEST ANNUAL MEAN				7.84	1992
HIGHEST DAILY MEAN	783	Apr 23	1250		Mar 1 1958
LOWEST DAILY MEAN	.30	Oct 2		.00	Jul 23 1960
ANNUAL SEVEN-DAY MINIMUM	.37	Oct 2		.00	Jul 23 1960
ANNUAL RUNOFF (AC-FT)	185700		134300		
10 PERCENT EXCEEDS	613		484		
50 PERCENT EXCEEDS	229		107		
90 PERCENT EXCEEDS	11		.00		

KLAMATH RIVER BASIN

11495800 NORTH FORK SPRAGUE RIVER AT POWERPLANT, NEAR BLY, OR

LOCATION.--Lat 42°30'06", long 120°59'13", in SW 1/4 SE 1/4 sec.30, T.35 S., R.15 E., Klamath County, Hydrologic Unit 18010202, at powerplant 0.1 mi upstream from Yaden Creek, and 7.6 mi northeast of Bly.

DRAINAGE AREA.--77.7 mi².

PERIOD OF RECORD.--May 1993 to current year.

GAGE.--Water-stage record. Elevation of gage is 4,750 ft above sea level, from topographic map.

REMARKS.--Records good. All records given herein do not include flow diverted through powerplant.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 81.4 ft³/s, 58,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft³/s Apr. 24, 1996, gage height, 7.12 ft; minimum discharge, 12 ft³/s Dec. 10, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 801 ft³/s May 23, gage height, 7.04 ft; minimum discharge, 25 ft³/s Aug. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e30	32	51	30	e31	30	31	336	e570	e30	28	27
2	e30	31	33	30	e31	29	31	339	e480	e30	28	27
3	e30	31	35	30	e31	29	31	233	e460	e30	28	27
4	e30	31	33	41	e31	28	30	188	e450	e30	28	27
5	e30	31	43	55	e31	28	30	171	e400	e30	28	27
6	e35	31	32	48	e31	28	29	209	e340	e30	28	27
7	30	32	33	37	e31	29	30	304	e320	e30	27	27
8	30	31	32	45	e31	29	30	277	e300	e30	27	27
9	30	31	38	34	e31	28	29	282	e290	e30	28	28
10	30	31	33	34	e31	36	29	254	e260	e30	28	28
11	30	32	32	34	e31	31	29	236	e240	e30	28	27
12	30	31	32	32	e31	29	31	301	e220	e30	28	27
13	31	36	34	30	e31	28	34	396	e210	e30	28	27
14	31	57	33	30	e31	28	39	358	e200	e30	27	27
15	31	58	39	37	e31	29	46	332	e180	e30	27	27
16	31	48	46	35	e30	29	63	341	e170	e30	28	27
17	31	34	31	32	e30	29	76	394	e160	e30	28	27
18	31	31	30	34	e30	30	91	437	e150	27	28	27
19	31	31	45	32	e30	31	170	483	e140	27	28	27
20	31	31	50	e32	e30	34	170	489	e140	28	28	27
21	31	32	50	e33	e30	35	163	517	e135	28	28	27
22	31	30	58	e35	e30	35	117	591	e125	28	28	27
23	31	37	61	e35	e30	35	109	614	e115	29	38	27
24	32	34	67	e33	e30	35	169	632	e110	56	43	27
25	31	33	63	e32	e29	56	253	654	e100	28	28	27
26	30	33	52	e31	27	68	278	616	e70	29	28	27
27	30	33	31	e31	28	42	281	623	e60	29	28	28
28	31	33	31	e31	30	39	211	637	e55	28	28	28
29	30	32	30	e31	---	37	185	e640	e50	28	29	31
30	31	39	30	e31	---	34	214	e640	e40	28	27	32
31	31	---	30	e31	---	32	---	e650	---	28	27	---
TOTAL	952	1037	1238	1066	849	1040	3029	13174	6540	931	888	823
MEAN	30.7	34.6	39.9	34.4	30.3	33.5	101	425	218	30.0	28.6	27.4
MAX	35	58	67	55	31	68	281	654	570	56	43	32
MIN	30	30	30	30	27	28	29	171	40	27	27	27
AC-FT	1890	2060	2460	2110	1680	2060	6010	26130	12970	1850	1760	1630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999
MEAN	39.5	43.1	46.9	64.4	46.4	58.3	144
MAX	51.2	75.7	81.4	211	83.1	91.4	257
(WY)	1997	1997	1996	1997	1996	1998	1999
MIN	30.2	29.5	30.4	32.6	30.3	33.5	52.6
(WY)	1995	1995	1995	1998	1999	1994	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1993 - 1999

ANNUAL TOTAL	34037	31567	81.4
ANNUAL MEAN	93.3	86.5	93.4
HIGHEST ANNUAL MEAN			37.6
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	598	May 8	735
LOWEST DAILY MEAN	26	Jul 26	16
ANNUAL SEVEN-DAY MINIMUM	26	Sep 1	23
ANNUAL RUNOFF (AC-FT)	67510	62610	58970
10 PERCENT EXCEEDS	305	267	244
50 PERCENT EXCEEDS	33	31	38
90 PERCENT EXCEEDS	28	28	29

e Estimated

KLAMATH RIVER BASIN

45

11501000 SPRAGUE RIVER NEAR CHILOQUIN, OR

LOCATION.--Lat 42°35'05", long 121°50'55", in NE 1/4 NW 1/4 sec.35, T.34 S., R.7 E., Klamath County, Hydrologic Unit 18010202, on right bank 1.0 mi northeast of Chiloquin, 4.6 mi upstream from Modoc Point Canal intake, and at mile 5.4.

DRAINAGE AREA.--1,580 mi², approximately.

PERIOD OF RECORD.--July to October 1920, March 1921 to current year. Monthly discharge only July 1920, published in WSP 1315-B. Prior to October 1931, published as "at McCready Ranch, near Chiloquin."

REVISED RECORDS.--WSP 591: 1922(M). WSP 1011: 1943(M). WSP 1565: 1921-22.

GAGE.--Water-stage recorder. Datum of gage is 4,202.43 ft above sea level. Prior to Oct. 1, 1931, nonrecording gage at site 12 mi upstream at different datum.

REMARKS.--Records good. Minor regulation from irrigation diversions upstream from station.

AVERAGE DISCHARGE.--78 years (water years 1922-99), 590 ft³/s, 427,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft³/s Dec. 26, 1964, gage height, 10.37 ft; minimum daily discharge, 50 ft³/s May 26, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,770 ft³/s Apr. 24, gage height, 5.84 ft; minimum daily discharge, 227 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	306	344	772	473	531	1000	2230	2790	2360	528	262	302
2	299	344	886	466	505	1410	1970	2620	2350	497	267	340
3	294	348	1180	451	477	1820	1740	2490	2310	483	265	325
4	284	349	1190	423	487	2100	1630	2470	2210	464	262	301
5	285	349	1070	402	487	2150	1610	2510	2090	457	259	288
6	295	349	903	397	488	2040	1550	2590	1980	455	297	275
7	302	356	636	398	487	1660	1480	2590	1840	457	313	265
8	299	363	686	389	512	1280	1490	2410	1700	407	327	257
9	293	363	619	372	536	1110	1520	2210	1560	375	351	266
10	302	363	579	382	543	1020	1590	2120	1410	358	372	250
11	307	363	512	390	465	918	1610	2110	1290	355	381	263
12	310	363	519	384	483	851	1540	2100	1210	333	353	267
13	308	361	546	395	502	809	1500	2070	1120	328	341	258
14	308	360	573	400	497	829	1560	2020	1050	326	331	248
15	312	360	852	416	489	936	1720	1980	1000	323	320	255
16	310	366	993	447	484	1080	1920	1980	985	316	309	253
17	308	376	798	492	492	1260	2110	1960	937	315	301	240
18	312	378	643	630	501	1440	2300	1900	918	322	300	241
19	315	379	581	751	503	1550	2520	1790	884	338	289	232
20	316	379	398	1050	501	1670	2780	1720	825	319	272	240
21	316	441	e280	1180	498	1760	3100	1740	799	306	259	245
22	319	512	e340	1110	491	1900	3500	1800	780	297	259	238
23	334	681	e390	1040	489	2060	3700	1890	744	293	256	227
24	342	930	e410	796	495	2140	3740	1970	702	282	270	248
25	338	1050	e405	659	551	2160	3600	2040	681	284	290	258
26	340	1240	e410	517	710	2230	3290	2090	658	274	286	266
27	338	1190	e410	551	866	2310	3030	2160	653	272	267	264
28	333	830	459	581	887	2410	2970	2230	635	279	254	281
29	330	765	449	529	---	2510	2950	2320	603	278	250	275
30	334	771	461	539	---	2550	2890	2360	568	284	272	275
31	341	---	468	562	---	2440	---	2380	---	272	285	---
TOTAL	9730	15623	19418	17572	14957	51403	69140	67410	36852	10877	9120	7943
MEAN	314	521	626	567	534	1658	2305	2175	1228	351	294	265
MAX	342	1240	1190	1180	887	2550	3740	2790	2360	528	381	340
MIN	284	344	280	372	465	809	1480	1720	568	272	250	227
AC-FT	19300	30990	38520	34850	29670	102000	137100	133700	73100	21570	18090	15750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1999, BY WATER YEAR (WY)

	294	345	471	544	698	956	1280	1159	623	282	219	237
MEAN	294	345	471	544	698	956	1280	1159	623	282	219	237
MAX	848	789	2853	3017	2877	2904	4250	3211	1762	560	405	374
(WY)	1963	1974	1965	1997	1996	1972	1956	1956	1983	1983	1956	1956
MIN	183	218	215	196	223	286	263	119	93.8	85.1	76.9	125
(WY)	1934	1995	1933	1937	1933	1992	1977	1992	1992	1994	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1921 - 1999

ANNUAL TOTAL	330785	330045	
ANNUAL MEAN	906	904	590
HIGHEST ANNUAL MEAN			1395
LOWEST ANNUAL MEAN			199
HIGHEST DAILY MEAN	3260	3740	14500
LOWEST DAILY MEAN	187	227	50
ANNUAL SEVEN-DAY MINIMUM	201	238	65
ANNUAL RUNOFF (AC-FT)	656100	654600	427200
10 PERCENT EXCEEDS	2000	2210	1350
50 PERCENT EXCEEDS	650	492	345
90 PERCENT EXCEEDS	248	272	200

e Estimated

KLAMATH RIVER BASIN

11502500 WILLIAMSON RIVER BELOW SPRAGUE RIVER, NEAR CHILOQUIN, OR

LOCATION.--Lat 42°33'54", long 121°52'42", in NE 1/4 SE 1/4 sec.4, T.35 S., R.7 E., Klamath County, Hydrologic Unit 18010201, on right bank 0.8 mi downstream from Sprague River and 1.2 mi southwest of Chiloquin, and at mile 10.3.

DRAINAGE AREA.--3,000 mi², approximately.

PERIOD OF RECORD.--June 1917 to current year. Monthly discharge only for October 1922 to August 1923 published in WSP 1315-B.

REVISED RECORDS.--WSP 981: 1938(M). WSP 1565: 1920(M), 1927(M), 1938.

GAGE.--Water-stage recorder. Datum of gage is 4,148.50 ft above sea level. September 1, 1923 to July 12, 1991 at site 0.6 mi upstream at datum 7.05 ft higher. Prior to Sept. 1, 1923, at different datum.

REMARKS.--No estimated daily discharges. Records good. Some regulation by diversion dams and logpond operations on Sprague River. Diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--81 years (water years 1918-22, 1924-99), 1,047 ft³/s, 758,800 acre-ft/yr, includes monthly data published in WSP 1315-B.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s Jan. 5, 1997, gage height, 10.27 ft; minimum discharge, 285 ft³/s Aug. 6, 8, 9, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,540 ft³/s Apr. 23, gage height, 7.29 ft; minimum discharge, 586 ft³/s Oct. 4, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	615	665	1450	1160	1160	1490	3040	3550	2840	1040	564	624
2	608	665	1540	1150	1140	1870	2830	3350	2820	1010	564	668
3	602	669	1820	1130	1100	2310	2650	3220	2800	984	565	662
4	591	672	1880	1100	1110	2540	2560	3170	2730	963	560	637
5	590	674	1770	1070	1110	2590	2540	3190	2630	948	559	623
6	599	678	1570	1060	1120	2540	2500	3260	2510	944	603	614
7	609	695	1390	1050	1110	2240	2440	3250	2410	941	637	624
8	608	700	1420	1040	1120	1870	2440	3090	2280	892	635	636
9	603	700	1350	1010	1140	1700	2450	2900	2140	851	658	658
10	615	711	1330	1010	1130	1620	2500	2810	1980	828	687	658
11	620	714	1260	1020	1050	1540	2530	2800	1850	819	703	674
12	625	716	1250	1010	1050	1490	2480	2780	1760	792	678	688
13	627	721	1300	1010	1080	1460	2440	2750	1680	763	672	681
14	625	728	1320	1010	1070	1480	2490	2700	1610	749	664	672
15	627	741	1550	1040	1050	1580	2620	2670	1560	733	653	678
16	629	753	1710	1070	1050	1740	2780	2660	1540	713	640	676
17	631	775	1550	1120	1050	1920	2950	2630	1490	703	631	662
18	631	772	1390	1270	1060	2120	3140	2560	1470	699	632	661
19	636	780	1310	1400	1040	2240	3340	2460	1440	711	620	649
20	638	791	1050	1680	1030	2370	3600	2400	1380	685	607	656
21	638	913	860	1830	1030	2460	3910	2410	1350	666	591	664
22	638	973	959	1760	1010	2580	4220	2440	1340	645	594	654
23	649	1190	1030	1650	1010	2720	4470	2510	1300	635	587	638
24	664	1470	1070	1430	1010	2810	4520	2570	1260	620	598	652
25	652	1620	1070	1260	1060	2850	4350	2610	1220	613	612	660
26	652	1800	1080	1180	1190	2930	4040	2640	1190	602	609	668
27	657	1800	1080	1170	1350	3010	3810	2690	1190	589	589	672
28	653	1490	1150	1180	1400	3120	3740	2740	1170	587	577	682
29	647	1420	1140	1160	---	3220	3730	2820	1140	579	576	678
30	651	1450	1130	1160	---	3280	3680	2880	1090	583	595	676
31	659	---	1160	1200	---	3210	---	2860	---	573	607	---
TOTAL	19489	28446	40939	37390	30830	70900	94790	87370	53170	23460	19069	19745
MEAN	629	948	1321	1206	1101	2287	3160	2818	1772	757	615	658
MAX	664	1800	1880	1830	1400	3280	4520	3550	2840	1040	703	688
MIN	590	665	860	1010	1010	1460	2440	2400	1090	573	559	614
AC-FT	38660	56420	81200	74160	61150	140600	188000	173300	105500	46530	37820	39160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1999, BY WATER YEAR (WY)

	MEAN	651	758	946	1021	1250	1626	1988	1676	1017	612	538	564
MAX	1237	1345	3682	4067	3846	4256	5488	4376	2658	1278	934	872	
(WY)	1963	1974	1965	1997	1958	1972	1952	1956	1953	1958	1958	1958	
MIN	488	530	545	524	547	619	583	391	338	311	304	382	
(WY)	1993	1995	1993	1937	1933	1992	1992	1992	1992	1994	1994	1994	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1918 - 1999

ANNUAL TOTAL	520998	525598											
ANNUAL MEAN	1427	1440											
HIGHEST ANNUAL MEAN										1052			
LOWEST ANNUAL MEAN										2187			1956
HIGHEST DAILY MEAN										483			1992
LOWEST DAILY MEAN				3920	Mar 28		4520	Apr 24		16000		Dec 26	1964
ANNUAL SEVEN-DAY MINIMUM				489	Aug 22		559	Aug 5		288		Aug 6	1994
ANNUAL RUNOFF (AC-FT)				501	Aug 17		567	Jul 30		294		Aug 4	1994
10 PERCENT EXCEEDS	1033000						1043000			762300			
50 PERCENT EXCEEDS	2670						2820			2020			
90 PERCENT EXCEEDS	1350						1100			747			
	558						618			507			

KLAMATH RIVER BASIN

47

11503000 ANNIE SPRING NEAR CRATER LAKE, OR

LOCATION.--Lat 42°52'18", long 122°10'04", unsurveyed, Klamath County, Hydrologic Unit 18010203, in Crater Lake National Park, at highway bridge 0.1 mi downstream from source.

DRAINAGE AREA.--Indeterminate, normal flow is entirely from Annie Spring.

PERIOD OF RECORD.--June 1977 to current year. Discharge measurement and fragmentary gage-height record August to October 1913. Discharge measurements only Oct. 11, 1967, June 26, Sept. 13, 1968.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 5,982.65 ft above sea level (National Park Service bench mark).

REMARKS.--No estimated daily discharges. Records good. Fluctuations caused by pumps 0.1 mi upstream. Diversion for domestic use by National Park Service 0.1 mi upstream.

COOPERATION.--Records of diversion by pumping furnished by National Park Service.

AVERAGE DISCHARGE.--22 years (water years 1978-99), 2.96 ft³/s, 2,140 acre-ft/yr, adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18 ft³/s July 6, 1984, gage height, 1.56 ft; minimum daily discharge, 0.28 ft³/s Mar. 2-5, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13 ft³/s several days in June and July, gage height, 3.52 ft; minimum daily discharge, 0.67 ft³/s several days in April.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	2.4	2.0	1.5	1.4	1.2	.90	1.4	9.2	13	11	5.7
2	3.0	2.4	2.0	1.5	1.4	1.2	.90	1.6	9.5	13	11	5.5
3	3.1	2.4	2.0	1.5	1.3	1.2	.90	1.6	9.8	13	10	5.4
4	3.1	2.3	2.0	1.5	1.3	1.2	.88	1.7	9.8	13	10	5.2
5	3.1	2.3	1.9	1.5	1.3	1.2	.87	1.7	9.8	13	10	5.1
6	3.1	2.3	1.9	1.5	1.3	1.2	.89	1.8	9.5	13	9.8	5.1
7	3.0	2.3	1.8	1.5	1.3	1.1	.89	1.8	9.4	12	9.6	4.8
8	3.0	2.3	1.8	1.5	1.2	1.1	.85	1.8	9.4	12	9.6	4.7
9	2.9	2.3	1.7	1.4	1.3	1.1	.85	1.8	9.4	12	9.4	4.6
10	2.8	2.3	1.6	1.4	1.2	1.1	.86	1.8	9.4	12	9.2	4.5
11	2.9	2.3	1.8	1.5	1.2	1.1	.86	1.8	9.3	12	9.1	4.5
12	2.9	2.2	1.8	1.4	1.3	1.1	.85	1.8	9.4	12	9.1	4.4
13	2.9	2.2	1.7	1.4	1.2	1.1	.83	1.7	9.5	12	8.9	4.5
14	2.9	2.2	1.7	1.4	1.2	1.1	.81	1.8	9.8	13	8.8	4.5
15	2.8	2.2	1.7	1.5	1.2	1.1	.82	1.9	10	13	8.7	4.4
16	2.8	2.2	1.7	1.5	1.2	1.1	.83	1.9	11	13	8.5	4.5
17	2.8	2.2	1.7	1.5	1.2	1.1	.86	2.0	11	13	8.4	4.5
18	2.8	2.1	1.6	1.5	1.2	1.0	.87	2.0	11	13	7.9	4.5
19	2.7	2.1	1.7	1.5	1.2	.99	.90	2.1	12	12	7.5	4.3
20	2.7	2.1	1.7	1.6	1.2	.99	.92	2.3	12	12	7.2	4.1
21	2.7	2.2	1.7	1.5	1.2	.99	.98	2.5	12	12	7.1	4.0
22	2.7	2.1	1.6	1.5	1.2	.99	1.0	2.7	12	12	6.9	3.8
23	2.7	2.1	1.6	1.5	1.3	.98	1.1	3.1	12	12	6.8	3.7
24	2.6	2.0	1.5	1.5	1.2	.98	1.1	3.8	12	11	6.6	3.6
25	2.6	2.1	1.6	1.5	1.2	.98	1.1	4.5	13	11	6.5	3.6
26	2.5	2.0	1.6	1.5	1.2	.96	1.2	5.4	13	11	6.4	3.5
27	2.5	2.0	1.6	1.5	1.2	.95	1.2	5.8	13	11	6.4	3.5
28	2.5	2.0	1.6	1.5	1.2	.93	1.3	6.7	13	11	6.3	3.3
29	2.5	2.0	1.6	1.4	---	.91	1.3	7.7	13	11	6.2	3.2
30	2.5	2.0	1.5	1.4	---	.91	1.4	8.4	13	11	6.1	3.3
31	2.4	---	1.5	1.4	---	.93	---	8.9	---	11	5.8	---
TOTAL	86.6	65.6	53.2	45.8	34.8	32.79	29.02	95.8	326.2	375	254.8	130.3
MEAN	2.79	2.19	1.72	1.48	1.24	1.06	.97	3.09	10.9	12.1	8.22	4.34
MAX	3.1	2.4	2.0	1.6	1.4	1.2	1.4	8.9	13	13	11	5.7
MIN	2.4	2.0	1.5	1.4	1.2	.91	.81	1.4	9.2	11	5.8	3.2
AC-FT	172	130	106	91	69	65	58	190	647	744	505	258
MEAN†	2.86	2.20	1.75	1.50	1.26	1.07	0.98	3.12	10.95	12.22	8.33	4.43
AC-FT†	176	131	108	92	70	66	59	192	652	751	512	264

CAL YR 1998 TOTAL 1278.7 MEAN 3.50 MAX 10 MIN 1.3 AC-FT 2540 MEAN† 3.56 AC-FT† 2576
WTR YR 1999 TOTAL 1529.91 MEAN 4.19 MAX 13 MIN .81 AC-FT 3030 MEAN† 4.24 AC-FT† 3072

† Adjusted for diversion by pumping.

KLAMATH RIVER BASIN

11507001 UPPER KLAMATH LAKE NEAR KLAMATH FALLS, OR

LOCATION.--Lat 42°15'00", long 121°48'55", in NW 1/4 SW 1/4 sec.19, T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010203, at southeast end of lake, 1.4 mi upstream from outlet and 2.5 mi northwest of Main Street Bridge at Klamath Falls.

DRAINAGE AREA.--3,810 mi², approximately, including 26.2 mi² in closed basin of Crater Lake.

PERIOD OF RECORD.--May 1904 to September 1922 (gage heights only), October 1922 to current year. Monthend contents only October 1923 to September 1927, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 4,098.22 ft above sea level, or 4,100.00 ft above Bureau of Reclamation datum. Gage readings have been reduced to elevations above Bureau of Reclamation datum. See WSP 1735 for history of changes prior to Nov. 10, 1923. Since Oct. 1, 1974, supplementary water-stage recorders at sites 7 mi north and 21 mi northwest at same datum (water-surface transfer by Pacific Power and Light Co.).

REMARKS.--Reservoir is formed by concrete dam at outlet of natural lake, completed in 1921, replacing a temporary dam built in 1919; controlled storage began Apr. 15, 1919. Capacity, 523,700 acre-ft between elevations 4,136.0 ft and 4,143.3 ft. Dead storage below elevation 4,136.0 ft is 211,300 acre-ft. Stored water may be diverted through "A" Canal for irrigation on land under Klamath project of Bureau of Reclamation, or released to Link River through dam or powerplants at Klamath Falls. Contents given herein represent those above elevation 4,136.0 ft. Prior to Oct. 1, 1973, contents given represented those above elevation 4,135.0 ft. Prior to Sept. 30, 1974, contents at end of month obtained by averaging elevations for last 3 days of month and first 3 days of following month to compensate for wind effect. Since Oct. 1, 1974, daily elevations are weighted mean of elevations at base and supplementary gages; contents at end of month are obtained from weighted midnight elevations of base and supplementary gages.

COOPERATION.--Capacity table furnished by Bureau of Reclamation, Klamath Project.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 4,144.98 ft about Apr. 20, 1904, from high-water marks; minimum recorded, 4,135.55 ft Oct. 30, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum weighted daily elevation, 4,143.07 ft June 8, 9; minimum weighted daily, 4,139.90 ft Oct. 12.

Capacity table (elevation, in feet, and contents, in acre-feet)

4,136	0	4,139	193,700	4,142	414,400
4,137	61,300	4,140	262,600	4,143	498,300
4,138	127,000	4,141	335,400	4,143.3	523,700

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4139.99	4140.30	4141.37	4141.55	4141.70	4141.99	4141.80	4142.24	4142.94	4142.55	4141.26	4140.83
2	4140.00	4140.31	4141.42	4141.54	4141.68	4141.94	4141.76	4142.29	4142.97	4142.52	4141.22	4140.81
3	4139.97	4140.31	4141.54	4141.53	4141.68	4142.02	4141.71	4142.27	4143.00	4142.47	4141.18	4140.76
4	4139.97	4140.34	4141.56	4141.51	4141.67	4142.07	4141.71	4142.34	4143.02	4142.42	4141.16	4140.75
5	4139.96	4140.37	4141.55	4141.49	4141.64	4142.09	4141.72	4142.41	4143.03	4142.40	4141.15	4140.74
6	4139.95	4140.36	4141.60	4141.47	4141.62	4142.08	4141.73	4142.40	4143.06	4142.36	4141.09	4140.73
7	4139.92	4140.39	4141.59	4141.45	4141.73	4142.03	4141.72	4142.44	4143.06	4142.32	4141.08	4140.72
8	4139.94	4140.45	4141.62	4141.42	4141.74	4141.89	4141.71	4142.47	4143.07	4142.29	4141.10	4140.69
9	4139.94	4140.46	4141.62	4141.39	4141.82	4141.96	4141.72	4142.49	4143.07	4142.24	4141.10	4140.65
10	4139.94	---	4141.62	4141.36	4141.81	4141.89	4141.81	4142.52	4143.06	4142.21	4141.10	4140.65
11	4139.93	---	4141.61	4141.33	4141.82	4141.84	4141.80	4142.52	4143.04	4142.18	4141.08	4140.63
12	4139.90	4140.52	4141.62	4141.31	4141.82	4141.76	4141.82	4142.51	4143.03	4142.14	4141.08	4140.60
13	4139.94	4140.53	4141.60	4141.29	4141.82	4141.66	4141.84	4142.54	4143.03	4142.09	4141.11	4140.58
14	4139.94	4140.54	4141.62	4141.27	4141.85	4141.63	4141.88	4142.54	4143.02	4142.05	4141.10	4140.57
15	4139.92	4140.54	4141.62	4141.30	4141.85	4141.67	4141.90	4142.56	4143.00	4141.98	4141.08	4140.57
16	4139.92	4140.58	4141.64	4141.32	4141.85	4141.66	4141.94	4142.58	4143.00	4141.90	4141.08	4140.58
17	4139.94	4140.61	4141.65	4141.34	4141.90	4141.66	4141.98	4142.58	4142.98	4141.84	4141.06	4140.57
18	4139.98	4140.62	4141.66	4141.38	---	4141.66	4142.01	4142.61	4142.96	4141.81	4141.07	4140.57
19	4140.02	4140.64	4141.65	4141.42	4141.94	4141.66	4142.03	4142.64	4142.94	4141.76	4141.04	4140.55
20	4140.02	4140.61	4141.64	4141.47	4141.92	4141.63	4142.07	4142.63	4142.92	4141.74	4141.04	4140.54
21	4140.04	4140.80	4141.63	4141.53	4141.93	4141.58	4142.13	4142.65	4142.91	4141.70	4141.02	4140.51
22	4140.06	4141.00	4141.60	4141.61	4141.92	---	4142.23	4142.66	4142.90	4141.67	4140.99	4140.50
23	4140.08	4141.05	4141.58	4141.72	4141.91	---	4142.25	4142.68	4142.87	4141.64	4140.95	4140.48
24	4140.10	4141.16	4141.56	4141.76	4141.87	---	4142.24	4142.70	4142.83	4141.59	4140.94	4140.45
25	4140.21	4141.07	4141.55	4141.74	4141.95	4141.52	4142.24	4142.73	4142.80	4141.56	4140.93	4140.42
26	4140.24	4141.21	4141.54	4141.72	4141.94	4141.48	4142.21	4142.76	4142.76	4141.52	4140.91	4140.42
27	4140.24	4141.30	4141.53	4141.71	4141.94	4141.52	4142.23	4142.77	4142.71	4141.46	4140.90	4140.40
28	4140.26	4141.30	4141.54	4141.70	4141.96	4141.64	4142.27	4142.81	4142.68	4141.42	4140.86	4140.37
29	4140.30	4141.28	4141.55	4141.69	---	4141.66	4142.30	4142.86	4142.62	4141.38	4140.85	4140.32
30	4140.28	4141.30	4141.54	4141.68	---	4141.75	4142.28	4142.89	4142.58	4141.34	4140.87	4140.31
31	4140.27	---	4141.55	4141.70	---	4141.76	---	4142.89	---	4141.31	4140.82	---
MEAN	4140.04	---	4141.58	4141.51	---	---	4141.97	4142.58	4142.93	4141.93	4141.04	4140.58
MAX	4140.30	---	4141.66	4141.76	---	---	4142.30	4142.89	4143.07	4142.55	4141.26	4140.83
MIN	4139.90	---	4141.37	4141.27	---	---	4141.71	4142.24	4142.58	4141.31	4140.82	4140.31
(†)	282500	364600	378000	389200	412800	396400	435900	493200	462700	358400	320500	284000
(‡)	-1500	+82100	+13400	+11200	+23600	-16400	+39500	+57300	-30500	-104300	-37900	-292100

† Contents, in acre-feet, on last day of month.

‡ Change in contents, in acre-feet.

KLAMATH RIVER BASIN

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11507500 LINK RIVER AT KLAMATH FALLS, OR

LOCATION.--Lat 42°13'25", long 121°47'35", in SW 1/4 NW 1/4 sec.32, T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010204, on right bank 600 ft upstream from outlet of Keno Canal and 0.4 mi upstream from Main Street Bridge at Klamath Falls.

DRAINAGE AREA.--3,810 mi², approximately, including 26.2 mi² in closed basin of Crater Lake.

PERIOD OF RECORD.--May 1904 to current year. Records since October 1983 equivalent to earlier records if flow in Keno Canal is added to flow past station.

GAGE.--Water-stage recorder. Datum of gage is 4,083.71 ft above sea level, or 4,085.50 ft above Bureau of Reclamation datum. Prior to Sept. 14, 1912, water-stage recorder or nonrecording gages at several sites within 0.5 mi of present site at various datums. Sept. 14, 1912, to Nov. 23, 1923, at site 600 ft downstream at datum 5.42 ft lower. Nov. 24, 1923, to Nov. 15, 1961, at site on left bank at present datum.

REMARKS.--Records good. Flow regulated since 1919 by Upper Klamath Lake (station 11507001). Large diurnal fluctuation caused by powerplant upstream from station. Water diverted upstream from station by main or "A" Canal of Klamath project. Many other diversions upstream from lake. All records presented herein do not include flow in Keno Canal which, since September 1908, has diverted from Upper Klamath Lake at Link River Dam for power generation, and returns flow to Link River downstream from station.

AVERAGE DISCHARGE.--79 years (water years 1905-83), 1,593 ft³/s, 1,154,000 acre-ft/yr, not adjusted for "A" Canal. 16 years (water years 1984-99), 1,295 ft³/s, 938,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,400 ft³/s May 12, 1904, gage height at Main Street Bridge, 7.30 ft, datum then in use, from floodmarks; minimum daily discharge, 17 ft³/s Dec. 13, 1937.

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 6,130 ft³/s Mar. 6; minimum, 119 ft³/s Oct. 24, result of regulation from Upper Klamath Lake, minimum daily, 124 ft³/s Oct. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	634	809	1900	2270	2290	2380	4760	3630	1060	1330	870	796
2	635	923	1530	2390	2460	2590	4390	2950	1530	1250	886	932
3	632	640	1300	2410	2310	2630	4390	2750	918	1260	885	682
4	629	693	1860	2440	2290	2660	4470	2920	1030	1260	1210	900
5	622	1130	2010	2700	2330	3060	3960	1970	1100	1140	1190	895
6	614	1120	1940	2840	2170	4780	3020	2260	1190	1060	1260	876
7	610	1150	2060	2810	2180	5750	2840	2250	985	1350	673	1000
8	615	1200	2070	2890	2310	5270	2820	2450	1370	1290	681	1110
9	615	1200	2150	2840	1630	5810	2760	2150	1540	1100	716	1300
10	644	1070	2240	2830	1630	5650	2740	2080	1500	1130	652	732
11	603	1010	2170	2790	1670	5600	2630	2050	1480	1120	626	944
12	482	1080	2230	2690	1850	5390	2250	2240	1470	1170	627	982
13	1230	1010	2210	2720	1830	4700	2500	2100	1540	1400	582	445
14	1240	860	2370	2410	1840	4450	2410	2290	1570	1230	455	270
15	1040	784	1510	1690	1900	4300	2240	2280	1460	2010	450	274
16	502	788	1740	2240	1850	2970	2250	2070	1370	1790	501	394
17	482	941	1970	2240	1780	2710	2260	2110	1560	e1310	693	711
18	490	1270	2110	2150	1730	3830	2560	2330	1850	e1080	807	840
19	506	1370	2280	1760	2440	4640	2510	1870	1590	e1030	925	792
20	342	899	2260	1770	2220	4990	2350	1740	1360	e789	740	726
21	126	492	2280	1900	2350	4740	2780	1010	1290	e916	804	1120
22	126	978	2270	1840	2390	4030	3550	1110	1260	e992	758	1010
23	143	1510	2480	2220	2320	3660	4140	1000	1270	e1200	563	988
24	124	1470	2390	2300	2280	3170	4820	940	1710	e1010	701	946
25	127	1590	2330	2330	2320	2830	4580	1110	1910	e762	804	834
26	461	2020	2260	2330	2140	2900	4450	1540	1900	e1040	679	804
27	930	2180	2160	2260	2610	2860	3990	1360	1580	e1550	686	690
28	923	1870	2400	2350	2520	2130	4120	1190	1790	e1540	681	1020
29	916	1940	2180	2060	---	2350	3640	966	1910	e1200	564	1200
30	1280	2020	2550	2350	---	2490	3400	1050	1890	e940	494	797
31	1290	---	2420	2190	---	3970	---	1300	---	873	472	---
TOTAL	19613	36017	65630	73010	59640	119290	99580	59066	43983	37122	22635	25010
MEAN	633	1201	2117	2355	2130	3848	3319	1905	1466	1197	730	834
MAX	1290	2180	2550	2890	2610	5810	4820	3630	1910	2010	1260	1300
MIN	124	492	1300	1690	1630	2130	2240	940	918	762	450	270
AC-FT	38900	71440	130200	144800	118300	236600	197500	117200	87240	73630	44900	49610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	975	1164	1395	1506	1610	2094	1953	1440	1071	809	768	775				
MAX	2125	3739	4075	5832	4797	5261	3801	3338	1998	1197	1032	1205				
(WY)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996				
MIN	606	434	451	372	214	119	342	286	648	543	551	362				
(WY)	1990	1992	1995	1995	1994	1992	1991	1991	1990	1987	1991	1992				

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1984 - 1999
ANNUAL TOTAL	668793	660596	
ANNUAL MEAN	1832	1810	1295
HIGHEST ANNUAL MEAN			2200
LOWEST ANNUAL MEAN			547
HIGHEST DAILY MEAN	5150	5810	6920
LOWEST DAILY MEAN	124	124	95
ANNUAL SEVEN-DAY MINIMUM	207	207	96
ANNUAL RUNOFF (AC-FT)	1327000	1310000	938000
10 PERCENT EXCEEDS	3670	2960	2850
50 PERCENT EXCEEDS	1390	1590	912
90 PERCENT EXCEEDS	660	635	404

e Estimated

KLAMATH RIVER BASIN

11509500 KLAMATH RIVER AT KENO, OR

LOCATION.--Lat 42°08'00", long 121°57'40", in NW 1/4 SE 1/4 sec.35, T.39 S., R.7 E., Klamath County, Hydrologic Unit 18010206, on left bank 1.7 mi northwest of Keno and 4.5 mi upstream from Spencer Creek, and at mile 231.9.

DRAINAGE AREA.--3,920 mi², approximately (not including Lost River or Lower Klamath Lake basins).

PERIOD OF RECORD.--June 1904 to December 1913, October 1929 to current year. Monthly discharge only October to December 1929, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 3,961 ft above sea level (from river-profile survey). See WSP 1735 for history of changes prior to Nov. 6, 1954.

REMARKS.--Records good. Flow regulated since 1919 by Upper Klamath Lake (station 11507001). Fluctuation by Keno powerplant 0.9 mi upstream. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--79 years (water years 1905-13, 1930-99), 1,656 ft³/s, 1,200,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Feb. 28, 1986, gage height, 12.82 ft, caused by regulation from Keno powerplant 0.9 mi upstream; minimum discharge, 26 ft³/s Sept. 23, 1956; minimum daily, 60 ft³/s May 19, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 15.3 ft, from floodmark (original datum), about May 10, 1904, discharge, 9,250 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,820 ft³/s Mar. 6, gage height, 12.02 ft; minimum discharge, 233 ft³/s Oct. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	1220	2770	2750	2720	6080	5770	3770	1250	869	841	720
2	1010	1390	2900	2750	2780	5970	5760	3560	1260	866	841	779
3	1060	949	2710	2750	2810	5950	6560	3440	1240	867	840	810
4	1060	1000	2680	2760	2810	5780	6710	3170	1230	866	974	807
5	1060	1290	2750	2780	2800	6150	5780	2630	1350	860	915	807
6	1050	1290	2730	2790	2790	7180	4860	2580	1460	848	755	833
7	1060	1300	2730	2790	2790	7860	4840	2610	1520	865	638	965
8	1070	1290	2770	2800	2760	7970	4840	2610	1630	873	732	818
9	1060	1360	2770	2800	2690	8200	5010	2610	1670	859	745	1050
10	1060	1520	2790	2800	2680	8070	4970	2610	1660	857	631	1150
11	730	1520	2800	2800	2680	7900	4550	2600	1590	878	744	1300
12	782	1520	2790	2770	2690	7720	4690	2600	1520	874	808	1220
13	1650	1460	2800	2710	2680	7260	4740	2600	1550	799	966	570
14	1460	1420	2820	2500	2680	6870	4610	2600	1510	970	1130	340
15	1030	1420	2790	1740	2690	6360	4200	2600	1400	1270	669	264
16	833	1420	2660	2780	2710	5280	4190	2600	1390	1070	605	531
17	608	1540	2620	2790	2720	5000	4200	2600	1440	921	602	648
18	719	1630	2760	2760	3070	6300	3990	2340	1520	885	669	712
19	717	1630	2770	2750	3730	7860	3770	1960	1400	826	719	743
20	545	1420	2760	2560	3830	7320	3760	1650	1400	720	719	906
21	311	503	2760	2530	4410	6970	4020	1440	1320	802	718	1030
22	276	1480	2760	2710	4420	6960	4320	1400	1320	795	720	1030
23	268	2700	2760	3390	4410	e5900	5390	1070	1510	797	715	1070
24	270	2750	2760	3480	4600	e5380	5630	1320	1610	801	709	1110
25	386	2690	2760	3480	4990	5140	5330	1280	1660	794	720	1110
26	600	2690	2760	3370	5300	5130	4850	1170	1640	998	721	1110
27	812	2730	2760	3190	5310	4950	4620	1260	1690	1180	718	1140
28	953	2750	2770	3130	5560	4660	4290	1260	1720	1030	716	1450
29	1110	2740	2770	2990	---	4510	4160	1260	1320	825	704	1310
30	1350	2740	2750	2910	---	4570	4120	1250	1100	940	744	1300
31	1450	---	2750	2750	---	5550	---	1250	---	843	835	---
TOTAL	27380	51362	85530	87860	96090	196800	144530	67700	43880	27648	23563	27633
MEAN	883	1712	2759	2834	3432	6348	4818	2184	1463	892	760	921
MAX	1650	2750	2900	3480	5560	8200	6710	3770	1720	1270	1130	1450
MIN	268	503	2620	1740	2680	4510	3760	1070	1100	720	602	264
AC-FT	54310	101900	169600	174300	190600	390400	286700	134300	87040	54840	46740	54810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1999, BY WATER YEAR (WY)

	1389	1642	1901	2045	2213	2614	2329	1773	1174	845	950	1172
MEAN	1389	1642	1901	2045	2213	2614	2329	1773	1174	845	950	1172
MAX	3055	4673	5732	7702	7564	8197	6594	5258	7075	4177	2513	2214
(WY)	1957	1985	1984	1965	1972	1956	1956	1904	1904	1904	1904	1943
MIN	564	290	391	542	254	215	166	109	97.6	114	146	246
(WY)	1982	1935	1935	1935	1992	1992	1931	1931	1931	1931	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1904 - 1999

ANNUAL TOTAL	929041	879976	
ANNUAL MEAN	2545	2411	
HIGHEST ANNUAL MEAN			1656
LOWEST ANNUAL MEAN			3582
HIGHEST DAILY MEAN	7210	Mar 26	8200
LOWEST DAILY MEAN	268	Oct 23	264
ANNUAL SEVEN-DAY MINIMUM	379	Oct 20	379
ANNUAL RUNOFF (AC-FT)	1843000	1745000	1200000
10 PERCENT EXCEEDS	5670	5130	3250
50 PERCENT EXCEEDS	1860	1660	1270
90 PERCENT EXCEEDS	719	726	413

e Estimated

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LOCATION.--Lat 42°05'05", long 122°04'20", in SE 1/4 SE 1/4 sec.14, T.40 S., R.6 E., Klamath County, Hydrologic Unit 18010206, on right bank 0.7 mi downstream from John C. Boyle powerplant, 8 mi downstream from Spencer Creek, and 8.5 mi southwest of Keno, and at mile 219.7.

PERIOD OF RECORD.--January 1959 to current year. Prior to Oct. 1, 1961, published as "below Big Bend powerplant."

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3,274.82 ft above sea level (levels by Pacific Power & Light Co.).

AVERAGE DISCHARGE.--40 years (water years 1960-99), 1,843 ft³/s, 1,335,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s Feb. 21, 1996, gage height, 9.50 ft; minimum discharge, 283 ft³/s Feb. 17, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,010 ft³/s Mar. 7, gage height, 8.66 ft; minimum discharge, 362 ft³/s Oct. 16.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	1550	3140	3150	3110	6280	5930	4250	1660	1360	1360	921
2	1390	1480	3160	3150	3110	6240	5890	4080	1660	1260	1270	1120
3	1290	1250	3180	3140	3110	6140	6530	4000	1650	1090	1160	978
4	1300	1310	3160	3140	3120	6110	6890	3550	1650	985	1230	1070
5	1400	1600	3150	3140	3120	6160	6010	3160	1820	954	1300	1110
6	1030	1620	3140	3160	3140	6980	5090	3140	1960	1390	1000	1310
7	1620	1620	3130	3160	3140	8460	5030	3150	1980	1420	1050	1000
8	1530	1600	3140	3170	3140	8180	5030	3150	2010	1000	1010	1330
9	1290	1610	3140	3170	3130	8460	5170	3150	1960	1170	992	1070
10	1320	1760	3140	3170	3120	8310	5160	3030	1890	1170	1030	1670
11	1090	1610	3140	3170	3110	8070	4760	3110	1900	1220	1010	1720
12	1180	1770	3140	3160	3110	7840	4860	3130	1900	1270	886	1630
13	1780	1740	3150	3150	3100	7420	4940	3140	1910	999	1270	662
14	1240	1710	3150	3140	3090	7050	4820	3140	1870	1320	1210	369
15	1980	1720	3140	2000	3080	6420	4490	3140	1850	1520	1070	439
16	831	1870	3120	3130	3080	5590	4470	3130	1760	1470	1230	1000
17	739	2120	3110	3160	3080	5260	4480	3120	1820	1180	757	1180
18	899	1730	3120	3170	3320	6300	4360	2890	1870	1070	1000	860
19	988	2050	3110	3140	3980	7910	4150	2390	1670	1180	949	1230
20	938	1620	3110	3060	4050	7850	4180	2170	1650	1170	980	1070
21	681	842	3110	2970	4600	7210	4340	1740	1570	1050	968	1230
22	529	1950	3110	3130	4620	7170	4620	1520	1890	1160	974	1390
23	415	3140	3110	3710	4610	6080	5550	1520	1920	1010	1080	1310
24	603	3150	3110	3740	4780	5570	5870	1930	1800	1140	1230	1410
25	604	3140	3110	3610	5140	5350	5760	1740	1900	949	822	1420
26	811	3130	3110	3330	5340	5330	5280	1610	2000	1460	959	1530
27	1110	3120	3110	3360	5460	5160	5110	1590	2050	1470	1070	1440
28	1240	3120	3120	3270	5660	4880	4780	1850	1890	1220	1050	1620
29	1440	3130	3120	3120	---	4750	4500	1640	1740	1240	950	1530
30	1970	3140	3120	3120	---	4740	4490	1660	1490	1160	1140	1470
31	1710	---	3130	3110	---	5680	---	1660	---	944	1240	---
TOTAL	36158	61202	97030	98300	104450	202950	152540	82480	54690	37001	33247	36089
MEAN	1166	2040	3130	3171	3730	6547	5085	2661	1823	1194	1072	1203
MAX	1980	3150	3180	3740	5660	8460	6890	4250	2050	1520	1360	1720
MIN	415	842										

MEAN	1537	1911	2361	2536	2616	3096	2555	1814	972	673	896	1198
MAX	3157	4506	5733	7905	7780	8755	5645	5156	2995	1339	1102	1876
(WY)	1985	1985	1984	1965	1965	1972	1974	1998	1998	1982	1998	1965
MIN	786	735	792	771	489	450	537	418	391	349	349	457
(WY)	1982	1992	1995	1993	1992	1992	1994	1992	1992	1992	1992	1992

WATER YEARS 1960 - 1999

ANNUAL TOTAL	1017465			996137					
ANNUAL MEAN	2788			2729				1843	
HIGHEST ANNUAL MEAN								3024	1984
LOWEST ANNUAL MEAN								564	1992
HIGHEST DAILY MEAN	7550	Mar 26		8460	Mar 7			10800	Mar 5 1972
LOWEST DAILY MEAN	415	Oct 23		369	Sep 14			302	Aug 30 1995
ANNUAL SEVEN-DAY MINIMUM	654	Oct 20		654	Oct 20			338	Aug 30 1992
ANNUAL RUNOFF (AC-FT)	2018000			1976000				1336000	
10 PERCENT EXCEEDS	5650			5330				3560	
50 PERCENT EXCEEDS	2170			2000				1330	
90 PERCENT EXCEEDS	999			1000				609	

KLAMATH RIVER BASIN

11516530 KLAMATH RIVER BELOW IRON GATE DAM, CA

LOCATION.--Lat 41°55'41", long 122°26'35", in SE 1/4 NE 1/4 sec.17, T.47 N., R.5 W., Siskiyou County, Hydrologic Unit 18010206, on left bank 0.1 mi downstream from Bogus Creek, 0.6 mi downstream from Iron Gate Dam, and 5.9 mi northeast of Hornbrook.

DRAINAGE AREA.--4,630 mi², approximately (not including Lost River, Butte Creek, or Lower Klamath Lake basins).

PERIOD OF RECORD.--October 1960 to current year. Chemical data available October 1961 to September 1981. Water temperature data available October 1962 to September 1980.

GAGE.--Water-stage recorder. Datum of gage is 2,162.44 ft above sea level (levels by Pacific Corp., formerly Pacific Power and Light Co.).

REMARKS.--Records good. Flow regulated by Upper Klamath Lake (station 11507001), capacity, 523,700 acre-ft, Iron Gate Reservoir, other smaller reservoirs, and diversions upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft³/s Dec. 22, 1964, gage height, 13.63 ft, from rating curve extended above 15,000 ft³/s, on basis of slope-area measurement of peak flow; minimum daily discharge, 389 ft³/s Aug. 25-28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,220 ft³/s Mar. 20, gage height, 9.20 ft; minimum daily discharge, 1,100 ft³/s Aug. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1410	1410	3540	3150	2980	7340	6510	4790	2000	1430	1310	1320
2	1410	1390	3380	3140	3080	7310	6420	4670	1820	1400	1310	1320
3	1410	1380	3630	3120	3130	7510	6540	4550	1900	1400	1230	1320
4	1410	1380	3360	3120	3210	7170	6900	4100	1900	1400	1140	1320
5	1410	1390	3300	3100	3200	7050	6910	3490	1910	1400	1100	1320
6	1410	1390	3270	3070	3280	7480	6150	3460	1900	1400	1110	1320
7	1410	1380	3250	3070	3940	8690	5820	3480	1900	1400	1130	1320
8	1420	1380	3230	3070	3510	8830	5750	3460	1900	1370	1130	1320
9	1410	1530	3180	3070	3550	8990	5640	3450	1890	1320	1130	1320
10	1390	1770	3110	3070	3680	9070	5510	3440	2030	1310	1130	1330
11	1400	1770	3110	3070	3620	8820	5250	3430	2100	1310	1130	1330
12	1400	1770	3130	3080	3580	8630	5070	3460	2040	1310	1130	1330
13	1380	1770	3260	3100	3450	8150	5330	3520	1950	1310	1130	1340
14	1380	1770	3330	3110	3560	7810	5630	3560	1990	1310	1130	1350
15	1380	1770	3240	3150	3530	7420	5550	3540	1990	1310	1130	1350
16	1380	1760	3230	3230	3520	6570	5470	3520	1990	1310	1140	1350
17	1400	1760	3160	3390	3600	5820	5460	3460	1990	1320	1130	1350
18	1400	1760	3150	3770	4040	6280	5540	3400	1980	1320	1130	1350
19	1400	1770	3140	3500	4610	8210	5410	3320	1970	1320	1130	1350
20	1400	1770	3130	3640	4560	9060	4950	2710	1980	1320	1130	1350
21	1400	1910	3100	3590	5060	8270	4720	2160	1930	1310	1130	1360
22	1400	1840	3110	4720	5020	7850	4850	2110	1920	1320	1130	1360
23	1400	3500	3100	5060	5020	7160	5560	2100	2030	1320	1130	1350
24	1400	3710	3100	4740	5280	6470	6970	2090	2140	1320	1140	1350
25	1390	3840	3110	4540	5800	6110	7010	2140	1970	1310	1140	1350
26	1380	3930	3100	4310	5920	6130	6640	2150	1800	1310	1140	1350
27	1380	3850	3100	3930	6040	6100	6150	2150	1790	1310	1140	1360
28	1390	3630	3120	3690	6780	5740	5690	2130	1780	1310	1140	1350
29	1400	3370	3150	3300	---	5550	5210	2130	1770	1310	1140	1350
30	1380	3480	3140	2950	---	5330	4910	2110	1770	1310	1150	1380
31	1400	---	3150	2880	---	5740	---	2100	---	1310	1220	---
TOTAL	43330	65130	99410	107730	116550	226660	173520	96180	58030	41410	35630	40220
MEAN	1398	2171	3207	3475	4162	7312	5784	3103	1934	1336	1149	1341
MAX	1420	3930	3630	5060	6780	9070	7010	4790	2140	1430	1310	1380
MIN	1380	1380	3100	2880	2980	5330	4720	2090	1770	1310	1100	1320
AC-FT	85950	129200	197200	213700	231200	449600	344200	190800	115100	82140	70670	79780

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

	MEAN	1645	2114	2751	3035	3178	3709	3069	2165	1135	784	980	1299
	MAX	3353	5254	6735	9553	9150	10780	6922	5559	3289	1429	1208	2052
	(WY)	1985	1985	1984	1997	1965	1972	1971	1998	1998	1982	1965	1965
	MIN	852	873	889	888	525	511	572	512	506	428	398	538
	(WY)	1982	1992	1992	1992	1992	1992	1994	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1961 - 1999

ANNUAL TOTAL	1116100	1103800	
ANNUAL MEAN	3058	3024	2150
HIGHEST ANNUAL MEAN			3657
LOWEST ANNUAL MEAN			641
HIGHEST DAILY MEAN	8680	Mar 25	25000
LOWEST DAILY MEAN	1110	Aug 2	389
ANNUAL SEVEN-DAY MINIMUM	1110	Jul 31	390
INSTANTANEOUS PEAK FLOW			29400
INSTANTANEOUS PEAK STAGE			13.63
INSTANTANEOUS LOW FLOW			389
ANNUAL RUNOFF (AC-FT)	2214000	2189000	1558000
10 PERCENT EXCEEDS	6380	6100	4290
50 PERCENT EXCEEDS	2390	2140	1410
90 PERCENT EXCEEDS	1120	1310	732

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 sea level. 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 sea level (river-profile survey).

REMARKS.--No estimated daily discharges. Records excellent except those below 30,000 ft³/s, which are fair. 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.--82 years (water years 1918-99), 119,800 ft³/s, 86,830,000 acre-ft/yr, unadjusted.
40 years (water years 1960-99), 120,600 ft³/s, 87,370,000 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 at 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, 261,000 ft³/s July 13, elevation, 415.15 ft; minimum discharge, 16,300 ft³/s Nov. 7, elevation, 392.41 ft; minimum daily discharge, 44,900 ft³/s Oct. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66700	72800	99100	81100	132000	112000	153000	178000	173000	210000	130000	142000
2	70500	78800	87900	109000	164000	141000	141000	177000	185000	188000	136000	121000
3	58500	82700	110000	136000	174000	138000	136000	184000	189000	189000	176000	137000
4	54200	81400	71700	139000	179000	154000	135000	192000	202000	188000	183000	101000
5	83600	83300	87200	149000	170000	156000	157000	180000	219000	178000	166000	80200
6	79200	72800	75400	163000	171000	146000	150000	162000	187000	181000	165000	108000
7	70300	75000	104000	146000	159000	140000	147000	165000	201000	188000	156000	140000
8	72300	92500	101000	132000	154000	147000	147000	151000	201000	194000	139000	126000
9	73000	92400	109000	150000	144000	149000	132000	172000	215000	178000	172000	117000
10	57200	98900	108000	124000	163000	160000	102000	151000	192000	203000	163000	115000
11	60000	99600	107000	135000	167000	156000	110000	151000	204000	196000	166000	78100
12	73200	107000	105000	148000	168000	148000	115000	143000	209000	195000	186000	81900
13	80100	92600	78700	155000	150000	126000	131000	163000	168000	224000	193000	109000
14	78500	72800	82200	146000	135000	134000	124000	165000	181000	225000	185000	121000
15	88800	57400	111000	145000	115000	145000	109000	179000	195000	188000	141000	113000
16	78600	66400	118000	144000	154000	145000	93900	164000	192000	217000	167000	102000
17	62500	86500	125000	136000	147000	131000	95600	178000	187000	192000	182000	102000
18	44900	91000	110000	137000	153000	127000	121000	160000	176000	160000	174000	91700
19	79000	110000	116000	145000	155000	118000	128000	172000	159000	179000	179000	91300
20	77200	106000	150000	147000	124000	113000	126000	176000	156000	177000	169000	118000
21	83400	96500	143000	141000	114000	93900	125000	152000	151000	187000	130000	144000
22	67800	71500	170000	148000	159000	118000	171000	126000	192000	174000	137000	133000
23	73000	97700	156000	129000	168000	120000	178000	111000	201000	184000	161000	130000
24	64900	102000	152000	101000	147000	125000	172000	133000	208000	188000	161000	107000
25	58900	88700	86100	132000	123000	128000	169000	134000	213000	152000	162000	80500
26	60100	55300	61400	161000	118000	135000	166000	161000	199000	166000	159000	83000
27	72000	51100	61400	161000	91700	139000	177000	177000	181000	178000	169000	116000
28	79000	45600	76800	160000	72700	153000	187000	170000	181000	190000	157000	119000
29	89100	48100	66600	149000	---	158000	200000	178000	209000	160000	141000	129000
30	95800	89500	91600	141000	---	156000	197000	155000	209000	138000	138000	112000
31	86000	---	99100	131000	---	153000	---	161000	---	135000	164000	---
TOTAL	2238300	2465900	3220200	4321100	4071400	4264900	4295500	5021000	5735000	5702000	5007000	3348700
MEAN	72200	82200	103900	139400	145400	137600	143200	162000	191200	183900	161500	111600
MAX	95800	110000	170000	163000	179000	160000	200000	192000	219000	225000	193000	144000
MIN	44900	45600	61400	81100	72700	93900	93900	111000	151000	135000	130000	78100
AC-FT	4440000	4891000	6387000	8571000	8076000	8459000	8520000	9959000	11380000	11310000	9931000	6642000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1999, BY WATER YEAR (WY)

	MEAN	18360	88220	99720	106800	111700	110500	117300	165800	211200	160600	112400	81190
MAX	118300	121200	163800	168400	195000	201800	189100	271700	461400	294300	191000	126700	
(WY)	1998	1991	1996	1996	1996	1996	1996	1997	1997	1961	1964	1976	1976
MIN	61550	56100	52570	55070	72700	58170	57920	79060	78810	71850	66740	60050	
(WY)	1964	1964	1962	1964	1964	1962	1993	1973	1977	1977	1985	1994	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1960 - 1999

ANNUAL TOTAL	42090300	49691000											
ANNUAL MEAN	115300	136100											
HIGHEST ANNUAL MEAN										120600			
LOWEST ANNUAL MEAN										165600			1997
HIGHEST DAILY MEAN	255000	Jun 2	225000	Jul 14	533000	Jun 10	1961						
LOWEST DAILY MEAN	44900	Oct 18	44900	Oct 18	36400	Jan 1	1962						
ANNUAL SEVEN-DAY MINIMUM	67100	Sep 21	68000	Oct 22	44700	Dec 28	1961						
ANNUAL RUNOFF (AC-FT)	83490000		98560000		87370000								
10 PERCENT EXCEEDS	167000		188000		192000								
50 PERCENT EXCEEDS	111000		141000		105000								
90 PERCENT EXCEEDS	68600		77000		65000								



Figure 8. Location of surface-water stations in the Owyhee and Malheur River Basins.

LOCATION.--Lat 42°52'02", long 117°38'52", in SE 1/4 NE 1/4 sec.14, T.31 S., R.41 E., Malheur County, Hydrologic Unit 17050107, on right bank 0.5 mi downstream from Jordan Creek, 2.6 mi north of Rome, and at mile 122.4.

PERIOD OF RECORD.--October 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,344.20 ft above sea level. Prior to Feb 10, 1960, at datum 0.24 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Antelope Reservoir, capacity, 70,000 acre-ft, increased in 1970, and Wild Horse Reservoir, capacity, 32,690 acre-ft, and numerous small reservoirs. Diversions upstream from station for irrigation. Continuous water-quality records for the period October 1972 to June 1977 have been collected at this location. U. S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1950-99), 974 ft³/s, 705,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,700 ft³/s Mar. 18, 1993, gage height, 20.11 ft; minimum discharge, 42 ft³/s Aug. 12, 1954, July 28, Aug. 5, 1961, July 31, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,570 ft³/s Mar. 27, gage height, 8.87 ft; minimum discharge, 86 ft³/s Dec. 23, gage height, 1.30 ft.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	246	299	355	284	2710	2410	1840	1550	370	154	186
2	193	246	314	367	277	3190	2070	1820	1490	355	158	172
3	191	246	353	314	277	2640	1870	2480	1440	342	158	166
4	193	246	375	286	292	2250	1750	3160	1580	324	174	172
5	191	250	358	265	282	1830	1620	3710	2010	309	180	178
6	190	241	328	256	270	1500	1530	3410	2040	305	199	170
7	193	227	312	253	316	1260	1560	3100	1740	325	203	153
8	199	231	358	247	361	1100	1700	2780	1560	304	198	153
9	201	232	271	243	412	993	2190	2550	1450	274	200	162
10	203	249	e220	241	620	913	2340	2440	1320	260	200	164
11	203	263	e240	239	661	829	1930	2300	1200	246	206	164
12	203	265	251	239	601	778	1700	2170	1090	234	210	162
13	208	265	280	244	550	712	2130	2060	1030	229	245	159
14	212	269	289	242	496	784	3820	1980	943	224	268	147
15	211	280	308	248	446	1100	4370	1970	872	240	267	139
16	207	272	296	423	415	1580	3610	1880	818	236	251	136
17	204	263	292	482	422	1820	3440	1820	812	213	253	134
18	210	259	e280	587	566	2070	3870	1790	790	202	243	133
19	213	341	270	712	557	2710	4160	1730	775	197	234	146
20	211	270	e260	649	583	5030	4210	1650	731	199	227	155
21	203	247	196	715	566	6260	4040	1580	663	203	216	150
22	200	236	174	587	511	6940	3570	1530	631	200	213	145
23	200	262	150	511	459	6130	2890	1510	626	193	214	147
24	200	270	172	461	554	6080	2470	1510	600	198	209	161
25	208	302	213	401	2070	6470	2400	1520	560	198	187	157
26	213	313	237	382	1530	7240	2300	1560	520	196	186	153
27	212	316	235	388	1040	8390	2460	1610	478	178	188	149
28	217	312	243	351	1440	6090	2410	1650	453	e170	188	145
29	240	308	246	312	---	4130	2160	1590	439	e160	194	141
30	246	303	252	308	---	3410	1990	1560	396	e150	195	141
31	246	---	276	288	---	2860	---	1560	---	150	190	---
TOTAL	6418	8030	8348	11596	16858	99799	78970	63820	30607	7384	6408	4640
MEAN	207	268	269	374	602	3219	2632	2059	1020	238	207	155
MAX	246	341	375	715	2070	8390	4370	3710	2040	370	268	186
MIN	190	227	150	239	270	712	1530	1510	396	150	154	133
AC-FT	12730	15930	16560	23000	33440	198000	156600	126600	60710	14650	12710	9200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1999, BY WATER YEAR (WY)

MEAN	164	217	391	700	1269	2533	2932	2051	917	262	156	140
MAX	442	593	2898	4461	8820	9404	16960	10470	4870	1035	452	361
(WY)	1976	1971	1965	1971	1986	1972	1952	1984	1984	1984	1984	1984
MIN	85.3	107	104	114	129	233	144	86.5	89.6	61.2	56.0	62.5
(WY)	1955	1955	1955	1955	1955	1977	1992	1992	1992	1968	1992	1955

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1950 - 1999
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ANNUAL TOTAL	436765		342878			
ANNUAL MEAN	1197		939		971	
HIGHEST ANNUAL MEAN					3400	1984
LOWEST ANNUAL MEAN					162	1992
HIGHEST DAILY MEAN	13000	May 14	8390	Mar 27	46900	Mar 18 1993
LOWEST DAILY MEAN	150	Dec 23	133	Sep 18	44	Aug 1 1968
ANNUAL SEVEN-DAY MINIMUM	162	Aug 24	141	Sep 14	47	Jul 26 1968
ANNUAL RUNOFF (AC-FT)	866300		680100		703600	
10 PERCENT EXCEEDS	2920		2420		280	
50 PERCENT EXCEEDS	320		304		238	
90 PERCENT EXCEEDS	191		172		110	

e Estimated

OWYHEE RIVER BASIN

13183000 OWYHEE RIVER BELOW OWYHEE DAM, OR

LOCATION.--Lat 43°39'17", long 117°15'16", in SE 1/4 sec.18, T.22 S., R.45 E., Malheur County, Hydrologic Unit 17050110, on left bank 0.8 mi downstream from Owyhee Dam, 20 mi southwest of Nyssa, and at mile 27.3.

DRAINAGE AREA.--11,160 mi², approximately.

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

REVISED RECORDS.--WSP 983: 1941-42. WSP 1397: 1930, 1933, 1946.

GAGE.--Water-stage recorder. Datum of gage is 2,343.67 ft above sea level (levels by Bureau of Reclamation).

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since October 1932 by Lake Owyhee (station 13182500), and by many smaller reservoirs. Diversion of up to 457,000 acre-ft from Lake Owyhee during the year for irrigation of lands downstream from station and outside the basin. Many smaller diversions upstream from Lake Owyhee for irrigation upstream from station. Computation of monthly and annual adjusted flows discontinued in 1991.

AVERAGE DISCHARGE.--67 years (water years 1933-99), 425 ft³/s, 307,900 acre-ft/yr, not adjusted for storage or diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,900 ft³/s Apr. 15, 1952, gage height, 15.70 ft; no flow for part of Aug. 8, 9, 1932, when temporary diversion tunnel at Owyhee Dam was closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,560 ft³/s Apr. 20, gage height, 7.03 ft; minimum daily discharge, 2.1 ft³/s Nov. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245	2.1	19	19	19	448	250	303	290	257	248	242
2	245	3.8	19	19	20	798	263	325	280	260	248	242
3	245	6.6	18	19	20	965	264	342	277	261	247	242
4	245	11	17	20	20	1370	264	395	280	261	246	242
5	245	16	17	19	20	1690	265	511	283	261	245	242
6	245	16	17	19	21	1680	266	700	301	259	245	242
7	245	17	17	19	20	1680	266	1320	327	258	245	242
8	245	17	17	19	20	2040	266	1970	343	258	245	242
9	245	17	17	19	21	2380	266	1850	339	258	244	242
10	245	17	17	18	19	2360	266	1710	337	258	243	242
11	245	18	18	19	18	2360	266	1380	316	260	242	242
12	245	20	18	19	18	2350	266	915	286	260	242	242
13	245	20	18	19	18	2340	266	666	269	258	242	242
14	245	20	18	19	18	2340	266	662	257	258	242	242
15	245	21	18	19	18	2330	267	652	251	258	242	243
16	245	22	18	20	18	2330	268	644	253	257	243	245
17	246	24	18	20	18	2310	411	625	254	256	242	245
18	245	23	17	20	19	2310	956	609	253	256	241	246
19	245	23	17	19	e19	2310	1760	591	253	253	240	247
20	245	21	e17	20	e19	2310	2560	563	254	253	240	245
21	245	21	e17	19	e19	2310	2250	531	255	253	240	245
22	245	20	e17	19	e20	2310	2360	498	256	253	240	245
23	245	20	e17	18	e20	2320	2080	464	257	253	240	244
24	245	20	e18	18	e20	2050	1620	441	255	253	240	245
25	245	20	e18	18	204	1150	1470	399	255	250	241	245
26	245	20	e18	18	385	735	683	365	255	248	242	245
27	245	21	18	18	448	475	266	345	255	248	242	245
28	245	21	18	18	448	486	266	332	258	248	242	245
29	245	20	19	18	---	487	268	320	219	246	242	245
30	218	20	19	19	---	361	283	306	258	246	242	244
31	80	---	20	19	---	263	---	297	---	248	242	---
TOTAL	7404	538.5	551	587	1947	51648	21468	21031	8226	7906	7525	7307
MEAN	239	18.0	17.8	18.9	69.5	1666	716	678	274	255	243	244
MAX	246	24	20	20	448	2380	2560	1970	343	261	248	247
MIN	80	2.1	17	18	18	263	250	297	219	246	240	242
AC-FT	14690	1070	1090	1160	3860	102400	42580	41710	16320	15680	14930	14490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1999, BY WATER YEAR (WY)

	MEAN	64.9	9.65	24.5	150	406	1082	1711	875	338	172	154	127
MAX	242	196	703	2751	5198	7799	12790	8565	3246	618	312	248	
(WY)	1986	1933	1985	1971	1986	1972	1984	1984	1984	1933	1933	1933	
MIN	2.80	1.00	1.31	1.17	1.13	1.66	28.2	39.5	45.8	44.3	22.4	8.00	
(WY)	1955	1953	1993	1993	1993	1992	1955	1955	1948	1948	1948	1948	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1933 - 1999

ANNUAL TOTAL	230071.3	136138.5	425	
ANNUAL MEAN	630	373	2991	1948
HIGHEST ANNUAL MEAN			22.3	1948
LOWEST ANNUAL MEAN			21800	Apr 16 1952
HIGHEST DAILY MEAN	10200	May 16		
LOWEST DAILY MEAN	2.1	Nov 1	1.0	Oct 18 1952
ANNUAL SEVEN-DAY MINIMUM	4.1	Feb 5	1.0	Oct 18 1952
ANNUAL RUNOFF (AC-FT)	456300	270000	307900	
10 PERCENT EXCEEDS	2010	931	734	
50 PERCENT EXCEEDS	249	245	84	
90 PERCENT EXCEEDS	5.5	18	2.7	

e Estimated

SNAKE RIVER BASIN

57

13213100 SNAKE RIVER AT NYSSA, OR

LOCATION.--Lat 43°52'34", long 116°58'53", in NW 1/4 SW 1/4 NE 1/4 sec.7, T.6 N., R.5 W., Canyon County, Hydrologic Unit 17050115, on right bank, 300 upstream from U.S. Highway 20-26 bridge at Nyssa, 2.3 mi downstream from Boise River and at mile 385.2.

DRAINAGE AREA.--58,700 mi², approximately.

PERIOD OF RECORD.--November 1974 to September 1986, February 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,170 ft above sea level, from topographic map. Prior to 1989, station located on left bank, in Oregon.

REMARKS.--No estimated daily discharges. Records good. Station equipment includes satellite telemetry. Flow regulated by many reservoirs upstream from station.

AVERAGE DISCHARGE.--21 years (water years 1976-86, 1989-98), 14,690 ft³/s, 10,650,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,900 ft³/s Apr. 19, 1984, gage height, 13.34 ft; minimum discharge, 4,110 ft³/s June 7, 1992, gage height, 4.32 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32,200 ft³/s Apr. 11, gage height, 9.67 ft; minimum discharge, 7,730 ft³/s July 29, gage height, 5.16 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13700	14400	17100	17200	15400	23100	26400	16700	21400	13700	8640	10100
2	13100	13900	16600	17200	15800	22900	26800	16000	22200	11500	9110	10600
3	13100	13700	16700	17900	16800	24900	26600	19300	22800	10200	9270	11300
4	12800	13700	16700	17900	16600	25100	23700	21800	25100	9250	9410	10700
5	12600	13200	16600	17300	15700	24000	26100	22900	28000	9680	8970	10800
6	12800	13200	16800	16700	16000	24900	26900	23600	29000	9230	9410	11500
7	13500	13300	17500	17300	16800	26200	25500	20500	30100	9500	9930	10700
8	13000	12600	17800	17300	16400	26000	26600	22100	29700	8750	9430	11300
9	12800	12700	17200	16800	16700	26400	29100	26200	30400	8970	9940	11500
10	13500	12200	16400	16600	17000	26700	29800	27100	29500	8480	10100	10700
11	12300	13300	17700	17100	18000	26600	31800	27500	29600	8320	9950	10700
12	12300	12900	16900	17400	18500	26500	27800	25800	28900	8690	9810	10600
13	12600	13200	17500	16900	17100	25500	28800	24700	28500	9180	10300	10500
14	12400	13400	17600	16900	17300	25100	28300	24000	28400	9060	10900	10800
15	12600	12800	17700	17600	17200	23400	27500	24800	26800	8960	10900	11300
16	11900	13200	17500	17500	16600	23100	27000	23800	27600	8260	10900	11200
17	12700	13000	17000	17600	18000	21700	26500	24500	27500	8830	10300	10500
18	12800	12100	16700	18000	19100	21700	26400	24200	25700	8970	11000	11700
19	12700	10900	16800	17300	19400	21200	26300	23700	23000	9050	10200	10500
20	12200	11600	17300	16900	19600	22000	27400	23400	21100	9580	10300	11400
21	12000	12200	16300	16900	19600	25500	27300	23200	22100	9300	9970	10900
22	12500	12800	16500	17400	20800	29000	25400	23000	21100	9070	9650	11700
23	12600	14500	15900	18600	20600	30800	24900	23500	20700	9160	10200	11900
24	12500	15300	16500	18100	21300	30200	23300	24300	20300	9260	10500	10500
25	12600	14600	18000	17900	22500	30800	22200	22800	18700	9010	10500	11200
26	12300	17000	18600	17700	22600	29500	20500	22400	17400	9000	10500	11100
27	12400	16500	16600	17000	22300	28800	19400	21700	17100	8980	10200	11100
28	12300	16300	16600	17700	23200	30400	18200	19900	18100	9570	10100	11600
29	13200	16700	17800	18300	---	28300	17100	18600	17300	8540	10300	12000
30	13700	16600	17700	17000	---	27700	17400	20300	16800	8500	10600	12500
31	13100	---	18500	16600	---	28200	---	21900	---	9730	10800	---
TOTAL	394600	411800	531100	538600	516900	806200	761000	704200	724900	288280	312090	332900
MEAN	12730	13730	17130	17370	18460	26010	25370	22720	24160	9299	10070	11100
MAX	13700	17000	18600	18600	23200	30800	31800	27500	30400	13700	11000	12500
MIN	11900	10900	15900	16600	15400	21200	17100	16000	16800	8260	8640	10100
AC-FT	782700	816800	1053000	1068000	1025000	1599000	1509000	1397000	1438000	571800	619000	660300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1999, 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
MEAN	12480	13100	13690	14940	16240	18960	21590	20610	17720	9081	8879	10860													
MAX	21360	24660	24320	30290	38580	40010	43970	49060	41100	16480	12620	17110													
(WY)	1985	1985	1984	1984	1997	1986	1984	1984	1984	1983	1997	1997													
MIN	8102	8924	8902	8908	8562	8018	6033	5367	5223	5546	5075	6664													
(WY)	1993	1993	1993	1993	1992	1991	1992	1992	1992	1992	1992	1992													

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1975 - 1999

	1998	1999	1975-1999
ANNUAL TOTAL	6400880	6322570	
ANNUAL MEAN	17540	17320	14820
HIGHEST ANNUAL MEAN			26260
LOWEST ANNUAL MEAN			7365
HIGHEST DAILY MEAN	49500	May 18	57400
LOWEST DAILY MEAN	8500	Jul 23	4240
ANNUAL SEVEN-DAY MINIMUM	8980	Jul 19	4520
ANNUAL RUNOFF (AC-FT)	12700000		10740000
10 PERCENT EXCEEDS	26000		27700
50 PERCENT EXCEEDS	15800		11300
90 PERCENT EXCEEDS	9810		7430

MALHEUR RIVER BASIN

13215000 MALHEUR RIVER BELOW WARMSPRINGS RESERVOIR, NEAR RIVERSIDE, OR

LOCATION.--Lat 43°34'29", long 118°12'31", on line between NW 1/4 SW 1/4 and SW 1/4 NW 1/4 sec.17, T.23 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank 0.9 mi downstream from Warm Springs Dam, 3.0 mi upstream from South Fork, 4.0 mi northwest of Riverside, and at mile 113.

DRAINAGE AREA.--1,100 mi², approximately.

PERIOD OF RECORD.--January 1906 to March 1907 and December 1908 (gage heights only), January 1909 to September 1910, December 1914 to July 1917, March 1919 to current year. Monthly discharge only for some periods, published in WSP 1317. Figures of discharge for January 1906 to March 1907, published in WSP 272 and 370, have been found to be unreliable and should not be used. Published as Middle Fork of Malheur River at Riverside 1906-7, as Middle Fork of Malheur River above South Fork, at Riverside 1909-10, as Malheur River above South Fork, at Riverside in WSP 370, 1906-10, and as Malheur River at Warm Springs reservoir site, near Riverside 1914-17.

REVISED RECORDS.--WSP 833: 1936. WSP 1063: 1942-45. WSP 1397: 1909-10, 1917. WSP 1447: 1955. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,305 ft above sea level, by barometer. See WSP 1317 or 1737 for history of changes prior to Sept. 29, 1949.

REMARKS.--No estimated daily discharges. Records good except for those below 10 ft³/s, which are poor. Flow completely regulated since November 1919 by Warm Springs Reservoir (station 13214500). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--80 years (water years 1920-99), 191 ft³/s, 138,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,200 ft³/s Mar. 1, 1910, gage height, 10.7 ft, site and datum then in use, from rating curve extended above 820 ft³/s; maximum discharge since storage began November 1919, 3,150 ft³/s Mar. 22, 1984, gage height, 9.70 ft, from floodmark; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,790 ft³/s Apr. 21, gage height, 7.48 ft; minimum discharge, no flow Dec. 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	.13	.22	.15	.40	897	401	834	495	542	542	499
2	81	.14	.20	.17	.41	684	288	509	439	542	551	510
3	81	.14	.29	.18	.40	428	288	632	363	542	564	516
4	81	.14	.27	.18	.37	137	288	979	347	542	568	516
5	81	.16	.24	.17	.33	.81	288	1040	356	542	566	515
6	81	.15	.25	.18	.35	.87	288	925	360	541	563	513
7	91	.17	.26	.18	.43	.90	193	848	356	538	612	504
8	97	.21	.23	.16	.42	.94	142	838	343	538	639	486
9	97	.18	.24	.16	.57	1.0	277	832	328	538	636	464
10	97	.18	.26	.15	.53	1.0	351	526	326	546	635	438
11	97	.18	.25	.14	.45	1.1	269	345	334	551	634	428
12	83	.17	.24	.14	.43	1.1	1.2	375	386	551	632	426
13	75	.16	.26	.12	.41	1.2	471	392	410	549	624	424
14	75	.16	.26	.12	.41	1.2	1060	378	429	547	612	397
15	75	.16	.24	.15	.41	1.2	899	375	454	545	584	383
16	29	.15	.25	.32	.44	1.2	809	375	462	542	574	383
17	.01	.18	.26	.30	.65	1.2	809	375	464	542	568	375
18	.06	.16	.24	.44	65	1.2	825	351	476	542	560	371
19	.09	.17	.22	.46	90	1.2	1160	339	480	540	560	371
20	.10	.15	.20	.61	90	1.1	1470	339	480	538	559	360
21	.10	.18	.10	.63	90	1.1	1700	344	482	534	556	336
22	.10	.20	.01	.55	204	1.1	1770	347	481	536	555	336
23	.10	.20	.00	.61	319	1.1	1530	347	478	538	555	335
24	.11	.21	.00	.50	672	344	1330	409	490	541	554	335
25	.11	.17	.03	.45	1150	807	1290	474	506	542	552	291
26	.11	.17	.09	.43	1350	1080	1550	536	509	540	550	339
27	.11	.18	.10	.43	1450	1470	1730	577	508	538	533	310
28	.12	.22	.11	.40	1260	1560	1640	591	508	538	525	291
29	.12	.24	.11	.40	---	947	1200	579	513	541	525	259
30	.11	.23	.14	.40	---	547	900	575	533	542	525	241
31	.11	---	.14	.40	---	547	---	521	---	542	510	---
TOTAL	1302.46	5.24	5.71	9.68	6747.41	9468.52	25217.2	16907	13096	16790	17723	11952
MEAN	42.0	.17	.18	.31	241	305	841	545	437	542	572	398
MAX	97	.24	.29	.63	1450	1560	1770	1040	533	551	639	516
MIN	.01	.13	.00	.12	.33	.81	1.2	339	326	534	510	241
AC-FT	2580	10	11	19	13380	18780	50020	33540	25980	33300	35150	23710

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1999, BY WATER YEAR (WY)

	MEAN	34.7	.80	7.21	19.0	40.0	88.5	323	427	345	434	358	201
MAX	138	19.8	323	452	763	1440	1603	1162	558	677	575	398	
(WY)	1953	1920	1984	1971	1983	1983	1984	1958	1953	1945	1946	1999	
MIN	.000	.000	.000	.000	.000	.000	.000	31.4	92.0	30.3	.041	.000	
(WY)	1934	1933	1933	1933	1933	1933	1935	1932	1942	1992	1988	1988	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1920 - 1999

ANNUAL TOTAL	88148.45	119224.22	191
ANNUAL MEAN	242	327	566
HIGHEST ANNUAL MEAN			1983
LOWEST ANNUAL MEAN			46.8
HIGHEST DAILY MEAN	1130	1770	3030
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.05	.00
ANNUAL RUNOFF (AC-FT)	174800	236500	138200
10 PERCENT EXCEEDS	591	652	505
50 PERCENT EXCEEDS	94	328	4.9
90 PERCENT EXCEEDS	.02	.15	.00

MALHEUR RIVER BASIN

59

13217500 NORTH FORK MALHEUR RIVER AT BEULAH, OR

LOCATION.--Lat 43°54'28", long 118°09'08", in NW 1/4 NE 1/4 sec.22, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank at Beulah, 0.3 mi downstream from Agency Valley Dam, 12 mi northwest of Juntura, and at mile 14.5.

DRAINAGE AREA.--440 mi², approximately.

PERIOD OF RECORD.--June 1926 to current year. Published as "near Beulah" June 1926 to September 1935.

REVISED RECORDS.--WSP 1397: 1927-32, 1934, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,261.20 ft above sea level. Prior to Apr. 25, 1926, water-stage recorder at site 1 mi downstream at different datum. Apr. 25, 1936, to Sept. 30, 1949, nonrecording gage at site 20 ft downstream at datum 1.0 ft higher. Oct. 1, 1949, to June 30, 1964, at present site at datum 1.0 ft higher.

REMARKS.--Records good except those below 20 ft³/s and estimated daily discharges, which are poor. Flow regulated since 1935 by Beulah Reservoir (station 13217000). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--64 years (water years 1936-99), 146 ft³/s, 105,400 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s May 7, 1942, gage height, 9.4 ft, present datum, from floodmark, caused by failure of gates at Agency Valley Dam, from rating curve extended above 1,100 ft³/s on basis of computation of peak flow over dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,120 ft³/s Apr. 20, 29, gage height, 5.09 ft; minimum daily discharge, no flow many days October to January.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	.42	.00	.90	1.1	241	557	488	636	413	332	137
2	47	.42	.00	.95	1.2	243	496	491	587	412	330	136
3	43	.29	.00	.90	1.3	244	458	494	583	405	316	134
4	44	.23	.00	.95	1.4	244	435	497	581	399	297	134
5	81	.19	.00	.95	1.4	244	392	497	483	398	290	134
6	100	.19	.00	.90	1.4	243	392	497	428	391	284	134
7	101	.19	.01	.85	1.4	241	392	431	417	386	229	134
8	102	.19	.09	.90	1.5	240	393	399	392	386	203	134
9	102	.15	.09	.95	1.6	238	393	403	384	386	203	134
10	102	.09	.08	.90	1.6	238	392	423	372	383	203	134
11	102	.09	.09	.85	1.5	238	302	424	371	382	198	134
12	102	.09	.24	.80	1.3	235	188	426	370	379	179	134
13	102	.07	.55	.85	1.2	235	428	427	369	379	156	134
14	102	.05	.56	.90	1.1	236	497	426	368	379	148	134
15	102	.04	.53	.95	1.2	238	543	427	368	379	148	134
16	39	.00	.52	1.1	1.4	240	572	427	369	379	148	132
17	1.2	.04	.52	1.0	1.5	242	638	427	368	375	148	132
18	1.1	.01	e.45	1.1	1.6	245	772	429	367	372	148	132
19	.96	.00	e.40	1.2	31	249	1020	443	386	366	148	132
20	.86	.00	e.35	1.3	92	256	1100	450	395	356	148	132
21	.75	.00	e.30	1.2	94	304	1100	454	394	345	148	132
22	.67	.00	e.35	1.0	139	363	1100	457	392	340	148	131
23	.64	.02	e.35	.90	177	374	973	459	390	340	150	130
24	.61	.06	e.45	.80	218	429	902	488	387	340	150	130
25	.57	.00	e.50	.70	285	465	903	592	398	338	150	130
26	.52	.00	e.45	.90	342	520	907	710	411	332	150	130
27	.52	.00	.46	.80	280	554	912	778	408	330	150	130
28	.52	.00	.46	.90	238	555	912	786	408	327	150	130
29	.51	.00	.62	.90	---	555	839	724	408	327	150	130
30	.47	.00	.78	1.0	---	555	560	706	411	331	155	130
31	.45	---	.87	1.1	---	555	---	679	---	333	144	---
TOTAL	1343.35	2.83	10.07	29.40	1920.7	10059	19468	15759	12601	11388	5901	3978
MEAN	43.3	.094	.32	.95	68.6	324	649	508	420	367	190	133
MAX	102	.42	.87	1.3	342	555	1100	786	636	413	332	137
MIN	.45	.00	.00	.70	1.1	235	188	399	367	327	144	130
AC-FT	2660	5.6	20	58	3810	19950	38610	31260	24990	22590	11700	7890

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1999, BY WATER YEAR (WY)

	MEAN	36.4	1.01	1.70	10.9	30.6	89.2	301	358	284	275	218	138
MAX	134	35.5	62.7	287	478	936	856	810	510	402	399	341	
(WY)	1954	1936	1943	1943	1965	1983	1958	1983	1974	1979	1980	1945	
MIN	.086	.000	.000	.000	.000	.000	.000	2.29	120	53.7	39.5	30.4	31.9
(WY)	1974	1938	1938	1938	1936	1938	1938	1981	1977	1939	1992	1992	1961

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1936 - 1999

ANNUAL TOTAL	67332.66	82460.35		
ANNUAL MEAN	184	226		
HIGHEST ANNUAL MEAN			146	
LOWEST ANNUAL MEAN			335	1983
HIGHEST DAILY MEAN	759	Apr 26	54.6	1936
LOWEST DAILY MEAN	.00	Jan 1	.00	Dec 22 1935
ANNUAL SEVEN-DAY MINIMUM	.00	Nov 25	.00	Dec 22 1935
ANNUAL RUNOFF (AC-FT)	133600	163600	105400	
10 PERCENT EXCEEDS	418	497	368	
50 PERCENT EXCEEDS	117	148	49	
90 PERCENT EXCEEDS	.17	.19	.10	

e Estimated

MALHEUR RIVER BASIN

13233300 MALHEUR RIVER BELOW NEVADA DAM, NEAR VALE, OR

LOCATION.--Lat 43°59'20", long 117°13'10", in NE 1/4 SW 1/4 sec.21, T.18 S., R.45 E., Malheur County, Hydrologic Unit 17050117, on right bank, 510 ft downstream from dam and headgates of Nevada Canal, and 1.5 mi northeast of Vale.

DRAINAGE AREA.--3,880 mi², approximately.

PERIOD OF RECORD.--June 1926 to September 1934, April 1936 to March 1942, March 1944 to September 1954, October 1993 to current year. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Elevation of gage is 2,220 ft above sea level, from topographic map. Prior to Nov. 17, 1930, at datum 1.00 ft higher.

REMARKS.--Records good. Many diversions for irrigation upstream from station. Since March 1930, Vale-Oregon Canal has diverted in sec.31 T.20 S., R.41 E., for irrigation upstream from station and on Willow Creek, a tributary which enters partly above and partly below station. Gilleman-Frohman Canal diverts on left bank in sec.8 T.19 S., R.44 E., for irrigation above and below station. Nevada Canal diverts on right bank 300 ft above station for irrigation below station. Flow regulated by Warm Springs Reservoir and, since December 1935, by Beulah Reservoir.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 329 ft³/s, 238,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,530 ft³/s Feb. 28, 1940, gage height, 8.88 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 24, 1957 reached a stage of 14.6 ft, discharge 21,000 ft³/s. Flood of Mar. 19, 1993 reached a stage of 13.31 ft, discharge 16,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,600 ft³/s Mar. 2, gage height, 8.44 ft; minimum daily discharge, 118 ft³/s Dec. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	274	154	158	169	187	3820	1770	1250	575	136	177	172
2	263	202	157	153	184	4080	1550	1080	531	156	197	168
3	246	177	159	136	178	2760	1260	1040	488	175	186	174
4	235	176	157	121	181	2050	1160	824	524	189	201	183
5	222	179	155	131	179	1750	1140	1200	435	204	213	188
6	217	180	154	142	199	1300	1140	1200	401	209	236	198
7	220	180	148	141	235	1200	1150	1090	382	213	240	201
8	224	185	146	133	227	1110	1150	938	384	185	241	208
9	232	185	144	129	249	903	1090	893	364	174	255	218
10	236	181	134	129	268	830	1170	903	326	161	251	214
11	240	179	141	128	244	791	1240	728	292	156	254	224
12	242	174	147	131	223	762	1190	429	242	164	272	224
13	242	172	146	126	235	732	548	392	220	156	288	244
14	241	171	143	128	243	827	931	409	227	150	287	247
15	239	169	139	131	238	899	1790	405	188	138	289	256
16	237	159	135	136	232	1130	1760	387	184	149	273	255
17	237	171	133	134	243	1350	1710	347	179	156	237	254
18	286	173	128	142	270	1270	1720	328	160	157	232	256
19	274	164	120	148	376	1320	1800	316	133	182	218	254
20	221	163	e110	184	427	1630	2290	290	131	181	207	256
21	208	163	e100	262	482	2240	2650	260	165	190	201	251
22	194	164	e110	251	481	2750	2840	228	182	192	202	243
23	184	163	e120	278	478	2560	2870	226	157	185	201	237
24	175	163	118	245	1020	2240	2540	235	149	186	204	217
25	173	163	120	220	2280	2310	2150	230	135	199	201	213
26	161	162	121	210	3500	2580	2010	303	137	206	191	204
27	161	163	120	189	3110	2900	2100	479	164	200	180	219
28	158	164	139	229	2840	3070	2240	616	178	187	173	218
29	155	163	161	219	---	2970	2120	651	173	185	176	240
30	155	160	163	212	---	2350	1760	621	166	177	177	251
31	160	---	176	188	---	1830	---	598	---	165	172	---
TOTAL	6712	5122	4302	5275	19009	58314	50839	18896	7972	5463	6832	6687
MEAN	217	171	139	170	679	1881	1695	610	266	176	220	223
MAX	286	202	176	278	3500	4080	2870	1250	575	213	289	256
MIN	155	154	100	121	178	732	548	226	131	136	172	168
AC-FT	13310	10160	8530	10460	37700	115700	100800	37480	15810	10840	13550	13260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999
MEAN	168	144	158	420	649	716
MAX	224	171	314	1589	1322	1881
(WY)	1994	1999	1997	1997	1999	1999
MIN	74.1	100	78.9	128	94.2	65.9
(WY)	1995	1995	1995	1994	1994	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1994 - 1999

ANNUAL TOTAL	154793	195423	
ANNUAL MEAN	424	535	
HIGHEST ANNUAL MEAN			535
LOWEST ANNUAL MEAN			87.0
HIGHEST DAILY MEAN	2320	4080	6230
LOWEST DAILY MEAN	49	100	8.0
ANNUAL SEVEN-DAY MINIMUM	100	114	9.8
ANNUAL RUNOFF (AC-FT)	307000	387600	238600
10 PERCENT EXCEEDS	1100	1710	842
50 PERCENT EXCEEDS	240	219	162
90 PERCENT EXCEEDS	132	142	67

e Estimated

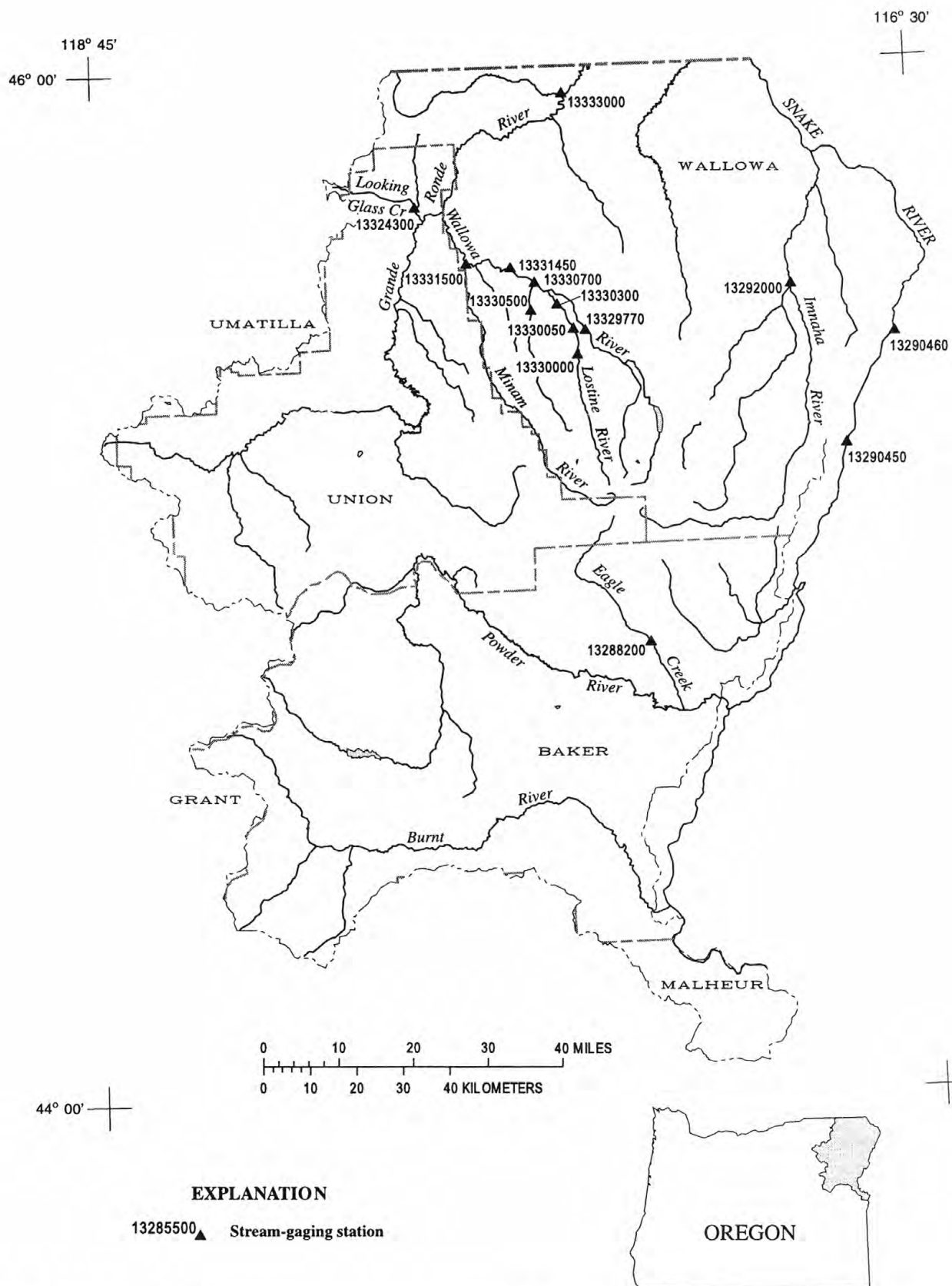


Figure 9. Location of surface-water and water-quality stations in the Powder River, Snake River Main Stem, Pine Creek, Imnaha River, and Grande Ronde River Basins.

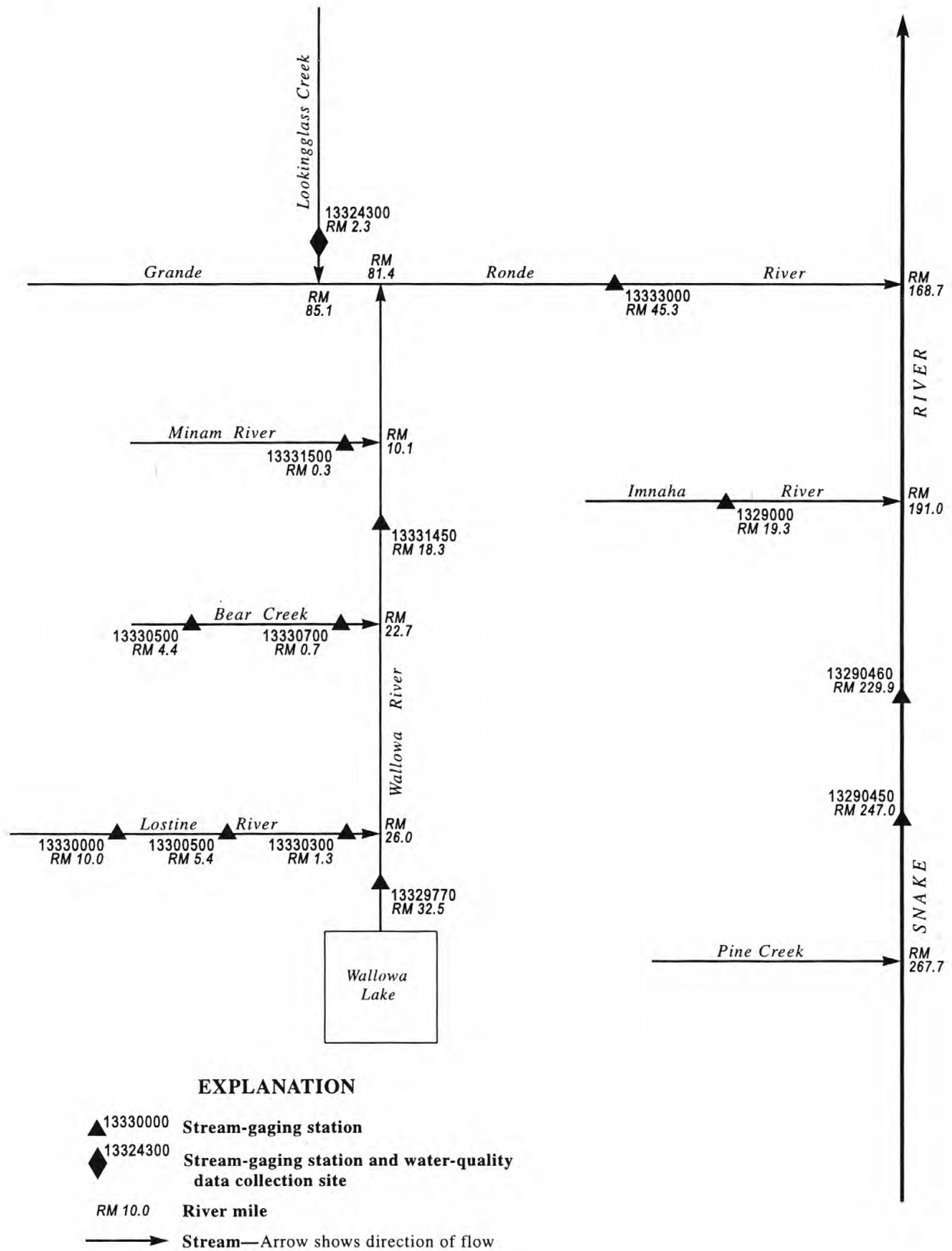


Figure 10. Schematic diagram showing gaging stations in the Imhaha and Grande Ronde River Basins, and Snake River Main Stem.

SNAKE RIVER MAIN STEM

63

13290450 SNAKE RIVER AT HELLS CANYON DAM, IDAHO-OREGON STATE LINE

LOCATION.--Lat 45°15'05", long 116°41'50", in SE 1/4 SE 1/4 sec.33, T.3 S., R.49 E., unsurveyed (Willamette meridian), Wallowa County, Wallowa-Whitman National Forest, Hydrologic Unit 17050201, on left bank, 0.2 mi upstream from Hells Canyon Creek, 0.4 mi downstream from Deep Creek, 0.6 mi downstream from Hells Canyon Dam, 15.5 mi northeast of Homestead, Oregon, and at mile 247.0.

DRAINAGE AREA.--73,300 mi², approximately.

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

REVISED RECORDS.--WDR ID-78-2: 1969-70, 1972-76, WDR ID-79-2: 1972-73(m).

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above sea level (levels by Idaho Power Company).

REMARKS.--No estimated daily discharges. Records good. Station equipment includes satellite telemetry. 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, 38 mi upstream. Diurnal fluctuations caused by Hells Canyon powerplant. Diversions upstream from station for irrigation of about 3,820,000 acres, of which 742,000 acres are irrigated by withdrawals from ground water (1966 determination).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103,000 ft³/s Jan. 2, 1997, gage height, 86.17 ft; minimum discharge, 1,580 ft³/s Mar. 19, 1967, gage height, 59.9 ft; minimum daily discharge, 4,360 ft³/s May 8, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 67,800 ft³/s Mar. 27, gage height, 80.32 ft; minimum discharge, 6,860 ft³/s Aug. 8, gage height, 63.74 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20000	9610	9580	24200	27900	41800	44000	35300	46100	24400	18600	15500
2	20200	9620	9590	20900	27200	42800	45200	32700	42500	22400	18600	15700
3	20200	9560	9540	18700	25900	46200	45300	34900	35500	19400	17900	16700
4	20200	9550	9560	23900	25800	46000	45200	39500	28900	18400	14200	12300
5	20100	9570	9540	24400	26300	44800	42800	39800	31100	17800	12400	8770
6	20200	9580	9550	25300	26200	39600	40300	38300	31100	18600	11900	8750
7	20000	9600	13000	25700	25800	38600	39700	35300	37300	17600	11700	14200
8	19400	9570	19600	26500	27200	39900	39800	32600	39600	18000	8290	14000
9	20300	9560	19500	26600	27000	44500	40700	34200	38900	19000	14300	16200
10	20300	9600	19600	25000	27500	45500	42700	34700	36300	19400	11300	15400
11	20300	9640	19600	26400	29500	46900	44600	31400	36200	20200	12400	13700
12	20300	9680	19500	26800	29700	49800	45400	32100	33000	19400	13900	11400
13	20300	9670	20800	27800	29300	50000	46800	30600	31400	22400	14500	16400
14	20300	9630	21500	27400	28900	50100	45000	30200	34100	23100	12300	17300
15	20300	9620	24800	27400	28200	50200	45100	29600	31500	22500	13700	17000
16	20300	9610	26600	27500	27900	49800	43900	30400	30700	20800	15700	15400
17	20200	9550	22800	27400	26900	49700	42900	30700	28200	21500	16800	12200
18	11600	9530	21700	27400	26500	52900	43000	30700	35200	21000	14800	10600
19	9550	9570	21400	29500	28100	51700	48200	30500	40000	19400	15400	9550
20	9590	9550	22200	29500	30100	51000	49700	29200	43200	19000	18400	17100
21	9670	9550	26600	29500	30400	54500	50100	31800	36900	19400	13100	15600
22	9580	9550	25600	29500	30400	56300	53200	31500	39700	20000	11400	13600
23	9520	9540	25800	29900	30300	60900	47000	27200	34800	20400	17100	17400
24	9520	9580	24700	30300	30300	58300	44500	29000	33000	19200	16500	15800
25	9520	9570	16600	30200	33900	58700	43600	30400	31900	19800	16500	13500
26	9610	9540	24500	29800	39500	59000	41700	44700	31900	19500	14800	14000
27	9580	9620	24400	29700	39400	63600	47300	24100	31900	19700	16000	16200
28	9580	9640	25500	29400	39400	61000	36300	15100	30500	18900	12300	12900
29	9580	9600	25000	29300	---	56700	37100	19400	29000	18900	11300	17500
30	9600	9640	24200	29300	---	49000	36400	33000	28800	18900	12500	18000
31	9590	---	24600	29300	---	46500	---	46000	---	18800	14200	---
TOTAL	478990	287700	617460	844500	825500	1556300	1317500	994900	1039200	617800	442790	432670
MEAN	15450	9590	19920	27240	29480	50200	43920	32090	34640	19930	14280	14420
MAX	20300	9680	26600	30300	39500	63600	53200	46000	46100	24400	18600	18000
MIN	9520	9530	9540	18700	25800	38600	36300	15100	28200	17600	8290	8750
AC-FT	950100	570700	1225000	1675000	1637000	3087000	2613000	1973000	2061000	1225000	878300	858200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1999, BY WATER YEAR (WY)

MEAN	15650	15770	18460	22810	25050	29710	30950	28080	25450	14390	11560	14170
MAX	24140	28630	30410	50150	58220	66340	61960	68840	59080	25550	19860	24960
(WY)	1972	1985	1984	1997	1997	1986	1984	1984	1984	1983	1997	1997
MIN	9962	9193	9391	12850	11570	10600	7371	6401	5868	6901	6583	6887
(WY)	1989	1993	1993	1991	1988	1991	1988	1977	1992	1977	1992	1977

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1966 - 1999
ANNUAL TOTAL	9397380	9455310	
ANNUAL MEAN	25750	25900	
HIGHEST ANNUAL MEAN			20970
LOWEST ANNUAL MEAN			36560
HIGHEST DAILY MEAN	93400	May 27	9746
LOWEST DAILY MEAN	8590	Aug 16	98100
ANNUAL SEVEN-DAY MINIMUM	9550	Nov 17	4360
ANNUAL RUNOFF (AC-FT)	18640000	18750000	5330
10 PERCENT EXCEEDS	41400	45200	15190000
50 PERCENT EXCEEDS	24000	24500	39600
90 PERCENT EXCEEDS	9600	9600	16900
			9210

SNAKE RIVER MAIN STEM

13290460 SNAKE RIVER AT JOHNSON BAR, ID

LOCATION.--Lat 45°27'50", long 116°33'16", in SE 1/4 NE 1/4 sec.22, T.1 S., R.50 E., (Willamette meridian), Wallowa County, Hydrologic Unit 17060101, Hells Canyon National Recreation Area, on left bank opposite lower end of Johnson Bar, 0.5 mi upstream from mouth of Sheep Creek, and at mile 229.9.

DRAINAGE AREA.--73,400 mi², approximately.

PERIOD OF RECORD.--July 1959 to September 1992 (gage heights only), October 1992 to September 1995, October 1995 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,226.341 ft above sea level (levels by Corps of Engineers.)

REMARKS.--Records good. Station equipment includes satellite telemetry. Diurnal fluctuations in stage are caused by Hells Canyon Powerplant. Records for years prior to the 1991 water year were not published, but are available from the Boise, Idaho Field Office.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,600 ft³/s June 13, 1995, gage height, 15.18 ft; minimum daily discharge, 5,360 ft³/s Aug. 3, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 18.82 ft Mar. 27; minimum gage height, 4.54 ft Aug. 7.

FROM DCP
GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.16	5.44	5.48	9.14	10.22	13.50	14.07	12.03	14.68	9.27	7.86	7.04
2	8.21	5.44	5.49	8.43	9.95	13.75	14.34	11.40	13.92	8.96	7.88	7.10
3	8.22	5.42	5.47	7.91	9.60	14.53	14.35	11.92	12.23	7.97	7.73	7.35
4	8.22	5.43	5.46	9.05	9.53	14.51	14.33	12.99	10.45	7.91	6.74	6.26
5	8.22	5.43	5.45	9.32	9.78	14.26	13.81	13.12	11.04	7.67	6.30	5.21
6	8.24	5.43	5.44	9.38	9.73	13.01	13.20	12.82	11.03	7.91	6.06	5.17
7	8.24	5.43	6.05	9.54	9.53	12.78	13.04	12.06	12.47	7.65	5.92	6.65
8	8.03	5.43	8.11	9.75	9.93	13.04	13.07	11.35	13.12	7.63	5.04	6.63
9	8.26	5.42	8.10	9.79	9.92	14.11	13.24	11.70	12.97	7.99	6.75	7.27
10	8.24	5.44	8.10	9.40	9.84	14.38	13.74	11.91	12.36	8.12	6.04	7.05
11	8.27	5.45	8.12	9.74	10.53	14.69	14.20	11.06	12.30	8.25	6.24	6.60
12	8.26	5.46	8.10	9.81	10.55	15.36	14.32	11.22	11.56	8.16	6.49	5.95
13	8.25	5.46	8.32	10.09	10.49	15.44	14.77	10.84	11.10	8.74	6.86	7.19
14	8.25	5.46	8.58	9.98	10.35	15.44	14.31	10.75	11.77	8.99	6.20	7.55
15	8.26	5.46	9.21	10.00	10.22	15.46	14.34	10.57	11.21	8.86	6.59	7.44
16	8.26	5.44	9.82	10.00	10.10	15.38	14.07	10.79	10.97	8.49	7.11	7.06
17	8.27	5.43	8.95	9.99	9.90	15.36	13.84	10.88	10.33	8.53	7.42	6.18
18	6.20	5.42	8.57	9.97	9.79	16.02	13.84	10.87	11.98	8.50	6.85	5.77
19	5.41	5.43	8.52	10.50	10.10	15.83	15.01	10.83	13.23	8.10	7.03	5.44
20	5.42	5.44	8.59	10.52	10.66	15.62	15.44	10.53	14.04	7.99	7.82	7.33
21	5.45	5.45	9.31	10.51	10.74	16.41	15.50	11.11	12.45	8.12	6.43	7.13
22	5.43	5.45	9.55	10.52	10.74	16.77	16.12	11.17	13.17	8.19	5.88	6.51
23	5.42	5.45	9.62	10.60	10.74	17.67	14.90	10.05	11.99	8.34	7.45	7.56
24	5.43	5.49	9.28	10.70	10.74	17.19	14.15	10.52	11.53	7.99	7.34	7.20
25	5.41	5.47	7.52	10.68	11.49	17.27	14.09	10.89	11.21	8.22	7.28	6.59
26	5.46	5.46	9.18	10.56	12.99	17.33	13.52	14.17	11.20	8.04	6.86	6.63
27	5.46	5.45	9.20	10.55	12.98	18.16	14.93	9.67	11.20	8.13	7.16	7.31
28	5.45	5.46	9.62	10.48	12.98	17.66	12.35	7.14	10.87	7.98	6.23	6.43
29	5.42	5.46	9.40	10.47	---	16.86	12.39	7.95	10.49	7.99	5.89	7.48
30	5.42	5.46	9.24	10.46	---	15.24	12.31	11.43	10.43	7.94	6.29	7.73
31	5.44	---	9.30	10.47	---	14.64	---	14.55	---	7.95	6.68	---
MEAN	6.99	5.45	8.10	9.95	10.50	15.41	14.05	11.24	11.91	8.21	6.72	6.76
MAX	8.27	5.49	9.82	10.70	12.99	18.16	16.12	14.55	14.68	9.27	7.88	7.73
MIN	5.41	5.42	5.44	7.91	9.53	12.78	12.31	7.14	10.33	7.63	5.04	5.17

LOCATION.--Lat 45°33'45", long 116°50'00", in NW 1/4 SW 1/4 sec.16, T.1 N., R.48 E., Wallowa County, Hydrologic Unit 17060102, on left bank at Imnaha, 0.3 mi downstream from Big Sheep Creek, and at mile 19.3.

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

REVISED RECORDS.--WSP 833: 1938. WSP 1397: 1929, 1932(M), 1949. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,941.14 ft above sea level. Prior to Aug. 6, 1934, nonrecording gage at site 0.25 mi upstream at different datum. Aug. 6-31, 1934, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station. Water is diverted from Big Sheep Creek and tributaries upstream from station for irrigation in Wallowa River basin. National Weather Service satellite telemeter at station. Continuous water-quality records for the period August 1965 to September 1968 and from May 1976 to September 1977 have been collected at this location.

AVERAGE DISCHARGE.--71 years (water years 1929-99), 517 ft³/s, 374,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s Jan. 1, 1997, gage height, 11.44 ft, from floodmark, curve extended above 7,900 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge observed, 16 ft³/s Nov. 22, 1931, result of freezeup; minimum daily, 25 ft³/s Nov. 22, 23, 1931.

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)
Apr. 20	0900	2,140	4.67	May 26	0030	*3,890	*5.75
Apr. 26	0530	2,270	4.78	June 18	0300	2,620	4.88
May 2	0800	1,820	4.35				

Minimum daily discharge recorded, 140 ft³/s Dec. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	169	390	261	200	597	558	1500	2320	1300	414	210
2	189	170	483	249	205	534	518	1780	2550	1260	396	207
3	187	166	547	227	195	492	509	1790	2160	1120	388	205
4	179	167	471	234	206	447	491	1650	1920	1090	381	202
5	177	172	399	257	188	391	477	1470	1950	963	377	197
6	174	182	376	244	210	369	452	1420	1870	927	370	192
7	170	170	335	238	201	361	448	1680	1720	1020	358	188
8	166	184	332	231	200	335	526	1600	1620	1060	346	186
9	165	178	276	225	204	325	535	1450	1440	998	329	185
10	169	165	261	222	202	303	499	1290	1330	1010	319	182
11	169	173	279	222	194	289	484	1210	1300	1050	320	177
12	167	170	275	221	215	274	504	1300	1380	1090	328	175
13	176	167	274	217	234	280	577	1450	1580	1060	330	174
14	181	174	274	215	229	337	712	1350	1790	970	339	172
15	185	178	254	228	212	384	755	1260	2090	873	322	169
16	183	178	251	227	222	424	835	1190	2360	791	297	166
17	178	195	248	220	225	418	1050	1330	2340	755	280	164
18	179	198	e200	226	222	426	1370	1650	2360	722	270	163
19	177	185	e160	226	222	477	1890	2040	2310	680	261	161
20	175	183	e140	229	198	636	2070	2370	2020	640	255	160
21	174	210	e150	229	206	921	1820	2620	2010	651	248	160
22	173	284	e160	227	194	985	1520	2620	1890	600	243	160
23	172	287	e170	228	200	951	1290	2790	1770	583	238	159
24	170	400	e190	219	237	986	1480	3090	1680	578	233	157
25	170	371	e200	165	309	1150	1820	3290	1650	549	227	157
26	171	341	e220	201	349	1460	2180	3300	1470	515	222	157
27	170	326	e230	235	336	1210	2100	2890	1320	496	218	161
28	172	337	257	215	477	934	1760	2820	1270	489	221	163
29	170	319	280	217	---	784	1460	2800	1250	474	217	158
30	166	309	276	208	---	700	1290	2600	1300	462	211	157
31	165	---	262	212	---	615	---	2320	---	435	214	---
TOTAL	5388	6708	8620	6975	6492	18795	31980	61920	54020	25211	9172	5224
MEAN	174	224	278	225	232	606	1066	1997	1801	813	296	174
MAX	189	400	547	261	477	1460	2180	3300	2550	1300	414	210
MIN	165	165	140	165	188	274	448	1190	1250	435	211	157
AC-FT	10690	13310	17100	13830	12880	37280	63430	122800	107100	50010	18190	10360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1999, BY WATER YEAR (WY)

MEAN	157	185	215	213	244	418	942	1575	1336	569	198	146
MAX	501	625	806	1343	570	1026	1760	2804	2612	1348	380	256
(WY)	1963	1974	1942	1997	1996	1995	1956	1948	1974	1975	1982	1978
MIN	81.5	80.0	88.6	69.3	82.4	114	345	445	361	123	78.8	82.8
(WY)	1937	1937	1936	1937	1937	1977	1977	1977	1992	1977	1931	1931

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1929 - 1999
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ANNUAL TOTAL	242226			240505					
ANNUAL MEAN	664			659				517	
HIGHEST ANNUAL MEAN								897	1974
LOWEST ANNUAL MEAN								184	1977
HIGHEST DAILY MEAN	5960	May 26		3300	May 26		12400	Jan 1	1997
LOWEST DAILY MEAN	100	Jan 11		140	Dec 20		25	Nov 22	1931
ANNUAL SEVEN-DAY MINIMUM	128	Jan 9		159	Sep 20		43	Jan 8	1993
ANNUAL RUNOFF (AC-FT)	480500			477000			374700		
10 PERCENT EXCEEDS	1780			17			1400		
50 PERCENT EXCEEDS	274			309			231		
90 PERCENT EXCEEDS	167			170			112		

e Estimated

GRANDE RONDE RIVER BASIN

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

LOCATION.--Lat 45°43'55", long 117°51'50", in NW 1/4 NW 1/4 sec.19, T.3 N., R.40 E., Union County, Hydrologic Unit 17060104, on left bank at Oregon State Fish and Wildlife Service fish hatchery, 310 ft upstream from Jarboe Creek, 2.3 mi northwest of Looking Glass, and at mile 2.3.

DRAINAGE AREA.--78.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,530 ft above sea level, from topographic map.

REMARKS.--Records poor. Records include a diversion by the fish hatchery 0.3 mi upstream from station of up to 50 ft³/s that is returned through the fish ladder to the gage pool.AVERAGE DISCHARGE.--17 years (water years 1983-99), 140 ft³/s, 101,300 acre-ft/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 ft³/s Feb. 9, 1996, gage height, 7.41 ft, from rating curve extended above 1,000 ft³/s; minimum discharge, 25 ft³/s Oct. 11, 1983, result of regulation at fish hatchery upstream.EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 380 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 26	2115	386	5.27	Apr. 26	0200	577	5.80
Apr. 20	0100	514	5.63	May 25	1715	*893	*6.54

Minimum daily discharge, 37 ft³/s Oct. 1.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	e50	e90	e94	e75	296	198	437	572	113	55	62
2	38	e48	e120	e92	e74	249	195	435	531	104	54	60
3	47	e48	e125	e90	e72	225	195	436	502	94	52	65
4	40	e50	e115	e88	e70	195	182	399	494	89	55	64
5	41	e52	e95	e86	e72	174	173	354	463	88	55	62
6	44	e52	e80	e82	e72	156	166	359	451	82	55	60
7	46	e55	e65	e79	e72	146	164	405	415	85	58	61
8	47	e52	70	e79	e70	136	183	370	387	88	64	59
9	47	e50	66	e80	e68	130	176	348	328	83	58	59
10	47	e50	63	e82	e65	120	167	324	315	81	58	57
11	48	e50	63	e78	e65	117	161	333	314	86	58	59
12	49	e50	64	e80	e67	113	170	351	315	74	59	58
13	48	e50	66	e95	e70	115	185	352	318	71	65	60
14	48	e52	67	e105	e68	120	201	343	360	70	62	59
15	49	e55	e62	e110	e68	129	213	339	358	68	63	57
16	48	e56	e60	e100	e68	142	238	358	299	75	67	65
17	48	e58	e55	e95	e65	136	284	404	278	65	67	55
18	49	e58	e48	e92	e64	135	364	528	248	64	64	56
19	48	e54	e40	e92	e62	144	455	586	231	70	64	60
20	48	e54	e42	e90	e64	183	486	623	214	62	63	54
21	49	e65	e45	e90	e64	223	461	608	186	61	61	57
22	50	e70	e48	e88	e62	244	420	611	169	59	63	54
23	51	e86	e52	e85	e77	265	414	658	162	56	62	54
24	51	e90	e58	e76	158	278	465	731	150	60	63	55
25	51	e80	e62	e72	181	304	516	773	168	59	62	54
26	49	e78	e74	e70	162	360	523	731	143	62	65	52
27	49	e76	e80	e75	170	322	485	675	128	55	62	53
28	49	e76	e120	e75	283	275	448	646	114	53	59	53
29	e50	e72	e115	e80	---	239	418	605	122	52	64	54
30	e50	e80	e110	e78	---	220	431	576	116	51	62	58
31	e50	---	e100	e76	---	209	---	550	---	51	63	---
TOTAL	1466	1817	2320	2654	2528	6100	9137	15248	8851	2231	1882	1736
MEAN	47.3	60.6	74.8	85.6	90.3	197	305	492	295	72.0	60.7	57.9
MAX	51	90	125	110	283	360	523	773	572	113	67	65
MIN	37	48	40	70	62	113	161	324	114	51	52	52
AC-FT	2910	3600	4600	5260	5010	12100	18120	30240	17560	4430	3730	3440

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1983	53.0	66.7	1986	45.2	1995
1984	71.7	167	1996	46.8	1988
1985	83.7	288	1996	53.2	1988
1986	90.9	213	1997	52.9	1987
1987	141	483	1996	54.8	1993
1988	203	431	1997	83.3	1985
1989	327	564	1997	202	1988
1990	368	608	1997	114	1992
1991	166	425	1984	57.4	1992
1992	69.0	117	1984	47.0	1994
1993	53.7	65.3	1985	37.1	1994
1994	52.1	61.9	1984	40.1	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1983 - 1999

ANNUAL TOTAL	39776	55970	140
ANNUAL MEAN	109	153	227
HIGHEST ANNUAL MEAN			97.9
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	580	773	May 25
LOWEST DAILY MEAN	37	37	Oct 1
ANNUAL SEVEN-DAY MINIMUM	40	42	Oct 1
ANNUAL RUNOFF (AC-FT)	78900	111000	101300
10 PERCENT EXCEEDS	222	409	333
50 PERCENT EXCEEDS	76	76	71
90 PERCENT EXCEEDS	48	50	49

e Estimated

GRANDE RONDE RIVER BASIN

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13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR--Continued
WATER-QUALITY RECORDS

PERIOD OF RECORD.--May to September 1999.

PERIOD OF DAILY RECORD.--May to September 1999.

INSTRUMENTATION.--Temperature recorder since May 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 20.0°C Aug. 24; minimum recorded, 2.0°C May 14-16, 21, 22.

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	4.5	---	---	7.0	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	6.5	3.0	4.0
14	---	---	---	---	---	---	---	---	---	6.5	2.0	4.0
15	---	---	---	---	---	---	---	---	---	8.0	2.0	4.5
16	---	---	---	---	---	---	---	---	---	8.5	2.0	4.5
17	---	---	---	---	---	---	---	---	---	8.0	3.5	5.0
18	---	---	---	---	---	---	---	---	---	8.0	3.0	5.0
19	---	---	---	---	---	---	---	---	---	8.5	2.5	4.5
20	---	---	---	---	---	---	---	---	---	7.0	2.5	4.5
21	---	---	---	---	---	---	---	---	---	8.0	2.0	4.5
22	---	---	---	---	---	---	---	---	---	9.0	2.0	5.0
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	9.0	3.5	5.0
26	---	---	---	---	---	---	---	---	---	9.0	2.5	5.0
27	---	---	---	---	---	---	---	---	---	14.5	4.0	8.5
28	---	---	---	---	---	---	---	---	---	18.5	5.5	8.5
29	---	---	---	---	---	---	---	---	---	15.0	4.5	8.5
30	---	---	---	---	---	---	---	---	---	14.5	4.5	8.5
31	---	---	---	---	---	---	---	---	---	13.5	4.0	7.5
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.5	5.0	7.5	13.0	8.0	10.0	14.0	6.5	10.5	13.0	5.5	9.0
2	9.0	4.5	6.0	10.0	7.0	8.5	17.0	8.0	12.0	10.0	5.5	8.0
3	10.0	4.5	6.5	12.0	4.5	8.0	13.0	8.5	11.0	13.0	5.0	8.5
4	12.5	4.5	8.0	11.0	7.0	8.5	17.5	8.5	12.5	12.0	5.5	8.5
5	10.0	5.5	7.0	14.0	5.0	9.0	15.5	8.5	12.0	13.5	6.5	10.0
6	7.5	4.0	5.5	15.5	6.5	11.0	16.5	8.5	12.0	12.5	8.5	10.0
7	9.0	3.0	5.5	15.0	9.0	11.5	---	---	---	12.5	5.5	9.0
8	8.0	4.0	6.0	15.0	6.5	10.5	---	---	---	12.5	5.5	9.0
9	13.0	2.5	6.5	15.5	7.5	11.0	17.5	9.5	13.0	12.0	6.0	9.0
10	11.5	3.5	7.0	16.5	8.0	12.0	17.5	9.5	13.0	13.0	7.0	9.5
11	11.5	4.0	8.0	17.5	9.0	13.0	16.5	11.5	14.0	12.5	5.5	8.5
12	13.5	5.5	9.0	17.5	9.0	13.0	17.5	10.0	13.5	12.5	5.0	8.5
13	14.0	7.5	10.0	17.5	8.5	12.5	13.0	10.0	11.5	12.5	5.5	9.0
14	15.0	7.0	10.5	15.5	8.5	11.5	14.0	9.0	11.5	13.0	6.0	9.5
15	15.5	8.0	11.0	15.0	7.5	11.0	14.0	8.0	11.0	13.0	6.5	10.0
16	15.0	8.5	11.5	15.5	7.5	11.5	16.5	8.0	12.0	13.0	6.5	9.5
17	13.5	8.0	10.5	15.0	8.0	11.0	17.5	9.0	12.5	13.0	6.0	9.5
18	14.5	8.5	11.0	15.5	6.5	10.5	15.5	9.5	12.5	13.5	6.5	9.5
19	13.5	7.0	10.0	16.5	7.5	11.5	18.0	9.5	13.5	13.0	6.5	9.5
20	13.5	7.5	10.0	16.0	9.0	12.0	16.5	9.5	13.0	12.5	6.0	9.0
21	13.0	8.5	10.0	16.0	8.5	12.0	17.0	9.5	13.0	13.0	6.0	9.5
22	12.5	8.0	9.5	16.5	8.0	12.0	16.5	8.0	12.0	13.0	6.5	9.5
23	14.5	7.5	10.0	17.0	8.0	12.5	16.5	8.5	12.0	13.0	6.0	9.5
24	14.5	8.0	10.0	15.5	9.0	11.0	20.0	10.0	13.0	11.5	7.0	9.5
25	10.0	7.0	8.5	16.0	7.5	11.0	16.5	9.0	12.5	10.5	7.5	8.5
26	11.0	5.5	8.0	16.0	7.0	11.5	16.5	8.5	12.5	10.5	6.0	7.5
27	12.0	5.5	8.5	17.5	8.5	12.5	17.0	9.5	13.0	9.0	4.5	6.0
28	10.5	6.0	8.5	17.5	9.0	12.5	17.0	9.5	13.0	8.5	3.0	5.5
29	13.0	8.0	10.0	17.0	8.0	12.0	16.0	10.0	12.5	10.5	4.0	7.0
30	12.5	8.5	10.0	16.5	7.0	11.5	12.5	8.5	10.5	11.0	5.0	7.5
31	---	---	---	16.0	6.5	11.0	11.0	7.5	9.0	---	---	---
MONTH	15.5	2.5	8.7	17.5	4.5	11.2	---	---	---	13.5	3.0	8.8

GRANDE RONDE RIVER BASIN

13329770 WALLOWA RIVER ABOVE CROSS COUNTRY CANAL, NEAR ENTERPRISE, OR

LOCATION.--Lat 45°29'18", long 117°24'10", in SW 1/4 SE 1/4 sec.11, T.1 S., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank 300 ft upstream from Cross Country canal, 6 mi northwest of Enterprise, and at mile 32.5.

DRAINAGE AREA.--272 mi².

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,330 ft above sea level, from topographic map.

REMARKS.--Records poor. Regulation by Wallowa Lake. Many diversions for irrigation upstream from gage. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--4 years (water years 1996-99), 322 ft³/s, 233,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,590 ft³/s July 9, 1997, gage height, 4.17 ft; maximum gage height, 4.27 ft May 16, 1997; minimum recorded discharge, 112 ft³/s Jan. 31, 1996, result of freeaeup, but may have been less during period of ice effect Feb. 1-5, 1996.

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)
May 28	1630	860	3.22	June 16	0145	*866	*3.23
June 2	0600	833	3.18				

Minimum daily discharge, 115 ft³/s Dec. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	e200	242	266	170	387	221	252	566	467	188	258
2	232	e200	242	260	170	287	212	252	704	434	191	249
3	230	e190	237	248	168	271	210	270	582	383	184	253
4	228	e200	218	246	e170	248	202	269	517	369	194	264
5	223	213	200	250	e185	221	196	276	563	336	203	257
6	221	216	187	248	e190	212	191	255	549	314	227	260
7	216	203	184	245	e190	210	186	246	508	363	287	273
8	213	212	187	241	e190	202	197	247	463	381	294	273
9	211	214	182	238	e190	199	199	239	428	366	284	273
10	215	205	180	239	e190	190	188	238	391	368	266	263
11	211	205	192	242	e185	196	185	250	377	392	279	263
12	211	208	197	240	e180	192	176	253	403	407	282	268
13	206	221	214	238	e180	220	172	248	457	407	359	270
14	206	229	223	248	e180	249	172	244	522	357	415	259
15	206	214	210	267	e175	256	169	227	652	320	393	248
16	206	206	213	253	e170	245	169	219	712	298	382	249
17	203	217	218	252	e170	220	174	221	718	304	348	244
18	203	211	220	250	e165	223	185	230	739	312	320	225
19	201	202	e170	254	160	227	214	252	716	294	302	222
20	202	207	e120	260	162	245	246	266	608	285	290	220
21	201	269	e115	e240	160	262	259	279	656	330	285	218
22	199	251	e120	203	e152	252	264	308	607	284	277	209
23	204	244	e140	194	164	244	267	339	585	270	270	213
24	204	264	e160	188	241	238	263	419	580	280	259	220
25	202	232	183	185	309	240	270	495	663	276	255	223
26	202	215	201	184	224	274	284	629	560	272	252	235
27	205	212	246	183	204	247	285	580	486	246	242	249
28	212	223	461	182	334	227	310	690	435	227	248	259
29	213	217	329	181	---	227	300	550	407	219	252	263
30	210	219	302	178	---	232	274	499	459	214	257	254
31	e200	---	283	175	---	219	---	444	---	197	261	---
TOTAL	6512	6519	6576	7078	5328	7362	6640	10186	16613	9972	8546	7434
MEAN	210	217	212	228	190	237	221	329	554	322	276	248
MAX	232	269	461	267	334	387	310	690	739	467	415	273
MIN	199	190	115	175	152	190	169	219	377	197	184	209
AC-FT	12920	12930	13040	14040	10570	14600	13170	20200	32950	19780	16950	14750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1999, BY WATER YEAR (WY)

	1996	1997	1998	1999
MEAN	233	233	237	214
MAX	294	272	356	233
(WY)	1998	1996	1996	1997
MIN	200	199	183	180
(WY)	1997	1997	1998	1998

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1996 - 1999

ANNUAL TOTAL	110778	98766		
ANNUAL MEAN	304	271		
HIGHEST ANNUAL MEAN			322	
LOWEST ANNUAL MEAN			358	1996
HIGHEST DAILY MEAN	1030	739	271	1999
LOWEST DAILY MEAN	115	115	115	May 16 1997
ANNUAL SEVEN-DAY MINIMUM	144	144	144	Dec 21 1998
ANNUAL RUNOFF (AC-FT)	219700	195900	144	Dec 19 1998
10 PERCENT EXCEEDS	715	423	609	
50 PERCENT EXCEEDS	211	240	251	
90 PERCENT EXCEEDS	169	184	180	

e Estimated

GRANDE RONDE RIVER BASIN

69

13330000 LOSTINE RIVER NEAR LOSTINE, OR

LOCATION.--Lat 45°26'20", long 117°25'35", in NW 1/4 sec.34, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 3.5 mi south of Lostine, and at mile 10.0.

DRAINAGE AREA.--70.9 mi².

PERIOD OF RECORD.--August 1912 to March 1914, April to September 1915, July 1925 to September 1991, April 1995 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1913, 1942. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,650 ft above sea level, by barometer. See WSP 1317 or 1737 for history of changes prior to Dec. 16, 1953. Dec. 16, 1953 to Aug. 23 1977, at datum 1.04 ft higher.

REMARKS.--Records good. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Diversions for irrigation upstream from station. Continuous water-quality records for the period October 1957 to September 1958 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--70 years (water years 1926-91, 1996-99), 194 ft³/s, 140,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,550 ft³/s June 16, 1974, gage height, 8.59 ft, present datum; minimum discharge, 7.5 ft³/s Mar. 2, 1966, result of freezeup; minimum daily, 10 ft³/s Nov. 28-30, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 25	2300	1,160	6.40	June 16	0030	*1,920	*8.06
June 1	2345	1,150	6.37				

Minimum discharge, 19 ft³/s Dec. 19, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	33	53	58	42	70	73	183	1080	791	249	75
2	48	32	55	53	42	58	70	191	988	704	239	71
3	47	30	51	50	42	55	68	187	716	600	239	69
4	45	32	43	50	40	52	66	178	623	536	221	66
5	45	33	42	48	38	49	64	167	708	467	218	62
6	44	33	42	47	39	45	62	166	701	527	231	59
7	42	31	41	46	40	47	61	195	615	684	217	57
8	40	34	41	44	39	44	64	191	535	689	188	56
9	40	33	33	43	41	43	63	181	459	657	170	54
10	40	32	37	44	37	41	61	170	416	687	176	52
11	40	32	37	47	33	41	60	164	450	766	171	50
12	39	31	39	44	35	40	61	165	569	800	157	49
13	39	36	47	43	36	42	64	167	809	753	162	48
14	42	52	46	51	38	43	67	160	1090	662	153	47
15	41	45	43	66	37	44	69	153	1480	558	135	46
16	41	41	e42	60	37	45	76	147	1720	508	123	45
17	38	42	e42	57	38	43	92	149	1660	498	115	44
18	42	40	e38	57	36	44	123	182	1640	472	111	52
19	39	38	25	54	36	46	182	241	1480	440	109	56
20	38	42	21	54	34	52	220	301	1170	423	105	55
21	38	61	22	53	36	63	192	369	1200	426	102	54
22	37	55	26	51	35	67	169	447	1100	398	98	52
23	36	51	29	50	37	69	155	533	1010	406	93	51
24	36	54	33	46	53	73	162	750	989	391	90	50
25	35	54	35	e42	50	83	196	962	1020	345	88	49
26	36	47	39	e39	45	98	242	989	757	327	85	49
27	35	45	43	38	45	94	229	890	669	331	83	49
28	34	45	72	41	76	87	211	948	651	338	87	49
29	34	43	70	41	---	83	189	961	708	332	85	49
30	30	45	71	45	---	80	175	869	807	308	81	47
31	32	---	63	44	---	76	---	740	---	270	79	---
TOTAL	1216	1222	1321	1506	1137	1817	3586	12096	27820	16094	4460	1612
MEAN	39.2	40.7	42.6	48.6	40.6	58.6	120	390	927	519	144	53.7
MAX	48	61	72	66	76	98	242	989	1720	800	249	75
MIN	30	30	21	38	33	40	60	147	416	270	79	44
AC-FT	2410	2420	2620	2990	2260	3600	7110	23990	55180	31920	8850	3200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1999, BY WATER YEAR (WY)

	MEAN	56.4	64.6	59.5	50.4	48.4	55.8	160	512	790	390	87.0	50.0
MAX	291	226	212	158	191	169	393	909	1374	913	180	104	
(WY)	1960	1928	1959	1974	1996	1986	1934	1928	1974	1975	1943	1978	
MIN	18.0	14.7	15.3	15.0	14.8	16.3	35.7	203	332	59.7	30.6	23.0	
(WY)	1937	1937	1937	1937	1937	1955	1975	1977	1926	1977	1931	1931	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1926 - 1999

ANNUAL TOTAL	63421	73887	194	
ANNUAL MEAN	174	202	288	1974
HIGHEST ANNUAL MEAN			90.9	1977
LOWEST ANNUAL MEAN				
HIGHEST DAILY MEAN	865	Jun 13	1720	Jun 17 1974
LOWEST DAILY MEAN	21	Dec 20	21	Nov 28 1936
ANNUAL SEVEN-DAY MINIMUM	27	Dec 19	27	Nov 26 1936
ANNUAL RUNOFF (AC-FT)	125800	146600	140300	
10 PERCENT EXCEEDS	583	685	605	
50 PERCENT EXCEEDS	52	57	64	
90 PERCENT EXCEEDS	35	36	28	

e Estimated

GRANDE RONDE RIVER BASIN

13330050 LOSTINE RIVER AT CAUDLE LANE, AT LOSTINE, OR

LOCATION.--Lat 45°29'22", long 117°26'08", in NW 1/4 SW 1/4 sec.10, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 500 ft downstream from bridge at Caudle Lane, at Lostine, and at mile 5.4.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,360 ft above sea level, from topographic map.

REMARKS.--Records poor. Minam Lake, capacity 400 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--4 years (water years 1996-99), 206 ft³/s, 149,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft³/s June 1, 1997, gage height, 6.73 ft; maximum gage height, 7.28 ft June 16, 1999, from high-water mark; minimum discharge, 7.3 ft³/s Sept. 2-4, 1998.

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)
May 25	1900	1,330	6.43	July 1	0230	1,300	6.95
June 16	unknown	*1,990	a*7.28				

Minimum discharge, 9.3 ft³/s Sept. 17, 18.
a From high-water mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	30	46	45	40	69	74	162	1160	1120	324	33
2	39	30	49	44	40	58	72	170	1030	1070	298	30
3	38	29	47	e42	40	55	70	167	728	948	305	29
4	37	30	41	e40	39	54	67	161	566	912	278	28
5	36	31	41	41	37	52	66	155	727	686	271	27
6	36	31	40	40	39	50	65	154	707	738	298	25
7	35	29	39	39	40	50	64	174	534	1020	283	24
8	34	31	40	38	39	47	68	171	e530	1050	247	23
9	33	31	e32	38	e40	47	66	164	e440	1020	237	23
10	33	30	e38	38	e36	45	63	158	e400	1090	245	21
11	34	30	38	40	e34	45	63	151	e430	1100	e240	20
12	34	30	37	38	e34	45	66	148	e540	1150	e200	20
13	34	32	41	38	e36	47	68	149	e780	1110	e190	20
14	36	43	41	41	39	47	70	172	e1000	1000	e150	19
15	36	40	38	51	38	48	73	116	e1400	874	e120	13
16	36	37	39	47	38	49	79	109	e1600	803	e100	10
17	34	38	38	45	39	48	91	107	e1400	787	e90	9.5
18	36	36	e36	46	38	49	116	128	e1400	733	e90	9.6
19	34	35	e24	45	39	51	160	168	1340	678	e80	9.9
20	33	38	e20	45	38	56	185	213	1120	655	e80	11
21	33	52	e20	45	39	62	164	284	1120	659	e80	13
22	33	49	e23	44	38	66	150	350	1230	596	e60	12
23	32	45	e24	44	39	69	139	428	1210	600	e50	12
24	32	47	e26	e38	51	73	144	714	1110	603	e50	12
25	32	46	e28	e36	51	80	168	1140	1220	528	e48	12
26	32	43	e30	e34	46	93	207	1120	763	484	e40	12
27	31	41	e35	e32	46	87	195	1010	680	496	e40	13
28	32	42	e40	e36	72	81	180	1090	661	516	39	14
29	32	40	56	39	---	80	165	1110	683	496	34	16
30	30	41	55	41	---	78	158	1020	825	441	33	18
31	30	---	49	40	---	76	---	819	---	350	33	---
TOTAL	1050	1107	1151	1270	1145	1857	3316	12142	27334	24313	4633	539.0
MEAN	33.9	36.9	37.1	41.0	40.9	59.9	111	392	911	784	149	18.0
MAX	39	52	56	51	72	93	207	1140	1600	1150	324	33
MIN	30	29	20	32	34	45	63	107	400	350	33	9.5
AC-FT	2080	2200	2280	2520	2270	3680	6580	24080	54220	48220	9190	1070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999
MEAN	45.3	82.4	78.6	69.4	85.3
MAX	60.1	172	170	118	166
(WY)	1996	1996	1996	1997	1996
MIN	33.9	36.9	37.1	41.0	40.9
(WY)	1999	1999	1999	1999	1999

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1996 - 1999

ANNUAL TOTAL	56952.4	79857.0		
ANNUAL MEAN	156	219	206	
HIGHEST ANNUAL MEAN			235	1997
LOWEST ANNUAL MEAN			160	1998
HIGHEST DAILY MEAN	1030	May 6	1600	Jun 16 1999
LOWEST DAILY MEAN	7.6	Sep 4	9.5	Sep 17 1998
ANNUAL SEVEN-DAY MINIMUM	7.8	Aug 31	11	Sep 16 1998
ANNUAL RUNOFF (AC-FT)	113000		158400	
10 PERCENT EXCEEDS	532		793	601
50 PERCENT EXCEEDS	44		47	72
90 PERCENT EXCEEDS	29		29	31

e Estimated

GRANDE RONDE RIVER BASIN

71

13330300 LOSTINE RIVER AT BAKER ROAD, NEAR LOSTINE, OR

LOCATION.--Lat 45°32'14", long 117°28'43", in NW 1/4 SW 1/4 sec.29, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 300 ft upstream from bridge at Baker road, 4 mi northwest of Lostine, and at mile 1.3.

DRAINAGE AREA.--90.9 mi².

PERIOD OF RECORD.--June 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,050 ft above sea level, from topographic map.

REMARKS.--Records good except for those below 20 ft³/s, which are poor. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from gage.

AVERAGE DISCHARGE.--4 years (water years 1996-99), 204 ft³/s, 147,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,970 ft³/s June 9, 1996, gage height, 6.88 ft; minimum discharge, 6.3 ft³/s Aug. 22, 1995.

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)
June 16	0245	*1,780	*6.36	No other peak greater than base discharge.			

Minimum discharge, 13 ft³/s Sept. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	63	50	62	43	76	70	176	814	695	167	52
2	80	63	54	57	43	64	68	204	809	622	161	41
3	82	62	52	55	43	61	66	198	587	543	168	38
4	81	62	44	54	41	58	64	189	496	498	160	35
5	79	61	44	52	39	53	63	177	558	412	155	31
6	78	57	44	50	40	50	62	174	566	443	161	28
7	76	53	43	49	41	52	61	199	501	562	129	28
8	75	56	44	48	40	47	63	199	431	564	109	30
9	74	55	39	46	e39	48	62	191	376	540	99	30
10	75	52	41	46	e36	44	59	183	339	591	108	30
11	72	47	42	49	e34	45	58	177	349	654	112	31
12	69	36	40	47	e36	43	60	167	451	701	114	28
13	70	35	45	46	38	45	62	162	657	661	146	25
14	73	44	46	49	41	46	63	140	963	563	146	24
15	73	41	43	65	40	47	63	114	1430	451	126	24
16	72	37	44	61	39	48	67	105	1560	393	112	25
17	69	39	43	58	40	46	81	97	1530	378	104	24
18	70	37	40	59	39	46	105	107	1540	372	99	25
19	68	35	e30	56	39	47	152	142	1360	345	98	24
20	67	37	e20	56	37	52	185	181	1080	325	95	16
21	66	55	e22	55	40	61	166	232	1130	341	86	17
22	66	54	e26	53	38	65	151	305	1030	313	80	19
23	65	48	e31	53	39	67	141	370	934	307	75	17
24	65	51	e34	49	53	70	144	548	907	300	68	22
25	64	50	e36	e44	56	78	169	724	945	259	70	26
26	64	45	e40	e39	50	93	210	782	677	229	70	31
27	63	44	43	e38	48	89	200	687	596	232	75	43
28	64	45	95	42	75	82	184	725	579	247	66	55
29	64	44	76	44	---	80	166	722	612	248	58	52
30	63	44	73	46	---	78	155	643	708	222	58	49
31	63	---	66	45	---	74	---	533	---	181	53	---
TOTAL	2178	1452	1390	1573	1187	1855	3220	9553	24515	13192	3328	920
MEAN	70.3	48.4	44.8	50.7	42.4	59.8	107	308	817	426	107	30.7
MAX	82	63	95	65	75	93	210	782	1560	701	168	55
MIN	63	35	20	38	34	43	58	97	339	181	53	16
AC-FT	4320	2880	2760	3120	2350	3680	6390	18950	48630	26170	6600	1820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999
MEAN	72.2	109	98.5	79.8	96.4
MAX	95.0	243	218	148	198
(WY)	1996	1996	1996	1997	1996
MIN	58.7	48.4	44.8	43.4	42.4
(WY)	1997	1999	1999	1998	1999

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1996 - 1999

ANNUAL TOTAL	53881.7	64363	
ANNUAL MEAN	148	176	
HIGHEST ANNUAL MEAN			204
LOWEST ANNUAL MEAN			251
HIGHEST DAILY MEAN	751	1560	150
LOWEST DAILY MEAN	8.7	16	1620
ANNUAL SEVEN-DAY MINIMUM	11	20	7.4
ANNUAL RUNOFF (AC-FT)	106900	127700	11
10 PERCENT EXCEEDS	495	562	607
50 PERCENT EXCEEDS	56	64	36
90 PERCENT EXCEEDS	30	37	35

e Estimated

13330500 BEAR CREEK NEAR WALLOWA, OR

LOCATION.--Lat 45°31'37", long 117°33'05", in NW 1/4 NE 1/4 sec.34, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, at private road bridge, 3.0 mi southwest of Wallowa, and at mile 4.4.

DRAINAGE AREA.--68 mi², approximately.

PERIOD OF RECORD.--April to September 1915, April 1924 to September 1985, April 1995 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1915, 1927, 1929-30, 1932, 1936-40, 1945, 1949.

GAGE.--Water-stage recorder. Elevation of gage is 3,250 ft above sea level, by barometer. Apr. 13 to Sept. 16, 1915, nonrecording gage at site 1.0 mi upstream at different datum. Apr. 22, 1924 to Nov. 2, 1931, water-stage recorder at site 1.5 mi upstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station. Water for irrigation in Lostine River basin diverted from Little Bear Creek, a tributary upstream from station, in sec.32, T.1 S., R.43 E. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--65 years (water years 1925-85, 1996-99), 115 ft³/s, 83,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,730 ft³/s June 15, 1974, gage height, 3.58 ft; maximum gage height, 5.38 ft Jan. 24, 1984 (result of ice jam); minimum daily discharge, 3 ft³/s Jan. 20, Feb. 1, 1937.

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. 26	0430	(a)	*4.16	June 1	1900	818	3.52
May 26	0015	1,050	3.72	June 15	2030	*1,270	3.88

Minimum discharge, 10 ft³/s Oct. 30, Nov. 3, 7, 10, 12.

(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	11	33	81	33	169	86	158	635	360	e58	20
2	15	11	42	71	33	139	79	175	558	329	e56	20
3	13	11	43	63	31	117	74	179	406	289	e54	20
4	13	11	40	56	31	102	70	169	324	263	e52	19
5	13	12	38	51	30	82	67	152	363	232	e60	19
6	13	12	36	47	30	71	63	147	357	257	e49	18
7	12	11	35	44	30	65	60	183	315	306	e48	18
8	12	12	33	40	29	59	61	178	274	297	e47	17
9	12	12	30	38	e28	55	59	163	237	283	e46	17
10	12	11	30	37	e27	50	57	146	230	289	e43	17
11	12	11	30	38	e26	47	56	132	271	306	e43	16
12	11	11	30	37	e28	43	57	132	344	308	e44	16
13	12	12	33	36	e29	43	60	133	469	290	e45	16
14	13	15	36	42	30	44	66	126	657	258	e45	15
15	13	16	40	67	27	46	72	117	878	220	e42	15
16	13	17	40	71	24	51	81	109	823	198	e39	15
17	12	19	39	71	25	54	104	109	829	186	35	14
18	13	18	39	70	24	55	148	146	803	170	32	14
19	13	17	e36	67	24	57	233	216	716	154	30	14
20	12	19	e42	65	e23	69	251	264	620	143	29	14
21	12	32	e47	62	24	102	228	304	605	140	27	14
22	12	30	e52	58	24	117	196	345	534	128	26	13
23	12	28	e54	55	25	119	170	419	493	121	24	13
24	11	31	e62	50	41	117	169	615	503	118	24	13
25	12	33	e70	44	62	129	201	812	487	104	23	13
26	11	32	e84	e43	67	162	240	679	363	91	22	13
27	11	31	e105	e42	64	157	255	591	328	85	21	13
28	12	30	e110	e40	125	136	206	582	316	81	21	13
29	12	29	e105	38	---	121	177	555	332	76	21	13
30	11	29	e95	36	---	107	154	499	365	69	20	13
31	11	---	89	35	---	96	---	417	---	e62	21	---
TOTAL	378	574	1598	1595	994	2781	3800	8952	14435	6213	1147	465
MEAN	12.2	19.1	51.5	51.5	35.5	89.7	127	289	481	200	37.0	15.5
MAX	15	33	110	81	125	169	255	812	878	360	60	20
MIN	11	11	30	35	23	43	56	109	230	62	20	13
AC-FT	750	1140	3170	3160	1970	5520	7540	17760	28630	12320	2280	922

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1999, BY WATER YEAR (WY)

	25.4	41.1	50.9	45.2	49.1	67.2	170	373	403	122	20.4	15.9
MEAN	25.4	41.1	50.9	45.2	49.1	67.2	170	373	403	122	20.4	15.9
MAX	160	220	195	141	192	186	422	682	869	388	37.5	44.2
(WY)	1928	1928	1996	1984	1996	1972	1936	1928	1974	1943	1975	1941
MIN	7.58	8.20	7.29	5.16	4.46	11.1	49.6	138	112	18.6	8.10	6.33
(WY)	1936	1953	1937	1937	1937	1977	1975	1977	1926	1977	1940	1935

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1925 - 1999

ANNUAL TOTAL	34515	42932	
ANNUAL MEAN	94.6	118	
HIGHEST ANNUAL MEAN			115
LOWEST ANNUAL MEAN			178
HIGHEST DAILY MEAN	573	May 2	878
LOWEST DAILY MEAN	10	Sep 6	11
ANNUAL SEVEN-DAY MINIMUM	11	Sep 1	11
ANNUAL RUNOFF (AC-FT)	68460	85160	83590
10 PERCENT EXCEEDS	287	319	352
50 PERCENT EXCEEDS	32	49	43
90 PERCENT EXCEEDS	12	13	11

e Estimated

GRANDE RONDE RIVER BASIN

73

13330700 BEAR CREEK AT WALLOWA, OR

LOCATION.--Lat 45°34'50", long 117°32'21", in NW 1/4 SW 1/4 sec.11, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on right bank, 5 ft upstream from bridge crossing, 0.5 mi northwest of Wallowa, and at mile 0.7.

DRAINAGE AREA.--72.8.

PERIOD OF RECORD.--May 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,900 ft above sea level, from topographic map.

REMARKS.--Records fair. No regulation. Many diversions for irrigation upstream from station. Water for irrigation in the Lostine River basin is diverted from Little Bear Creek, a tributary upstream from station.

AVERAGE DISCHARGE.--4 years (water years 1996-99), 125 ft³/s, 90,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft³/s May 16, 1997, June 15, 1999; maximum gage height, 6.53 ft, June 15, 1999; minimum discharge, 2.3 ft³/s Sept. 7, 1998.

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)
May 25	0930	1,130	6.31	June 15	1400	*1,410	*6.53
May 31	1645	820	6.01				

Minimum discharge, 3.3 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	15	34	81	32	187	87	170	732	360	30	9.6
2	5.6	15	47	74	30	153	82	182	548	301	26	9.5
3	4.8	13	50	61	27	129	78	179	395	258	26	9.4
4	4.9	12	45	55	27	105	74	166	431	216	23	9.8
5	4.6	12	41	51	26	88	72	150	452	194	51	10
6	4.4	12	38	48	26	76	67	177	395	257	31	8.0
7	4.1	11	36	45	27	67	67	194	333	290	26	9.1
8	4.0	12	34	41	26	60	69	180	263	263	22	9.5
9	4.2	12	30	39	25	56	65	162	214	248	16	9.5
10	4.3	11	30	37	e24	50	64	146	213	271	25	8.5
11	4.1	11	27	37	e23	47	62	138	274	288	21	8.2
12	4.3	10	26	36	e24	43	65	140	386	275	20	8.2
13	4.3	11	28	35	e25	43	69	134	571	237	27	8.2
14	4.5	9.2	32	40	26	44	76	107	802	192	28	8.2
15	4.6	6.3	36	69	25	46	82	97	1080	160	22	8.2
16	4.6	7.0	36	72	21	52	99	88	1040	147	22	7.7
17	4.6	7.6	36	75	19	55	133	92	901	136	20	5.8
18	4.7	6.9	35	77	18	57	209	154	969	122	17	4.9
19	5.1	6.7	e28	67	19	58	292	222	702	103	16	4.9
20	5.2	7.1	e36	69	e17	71	297	282	685	100	17	4.9
21	5.2	16	e44	69	18	106	279	331	629	99	14	4.8
22	5.1	20	e52	59	18	126	214	380	554	90	11	5.0
23	5.2	31	e54	54	20	128	170	448	509	81	9.3	5.1
24	5.3	34	e60	46	36	126	192	690	562	78	9.9	5.2
25	5.5	35	e78	41	62	138	238	904	430	66	12	5.4
26	6.9	35	e82	e39	65	175	254	745	354	55	12	5.5
27	12	33	e115	e37	64	159	237	749	330	52	11	5.7
28	15	32	e110	e35	129	137	192	731	319	49	11	5.9
29	15	30	e98	e34	---	123	164	640	366	45	10	6.6
30	15	30	e94	33	---	107	152	509	391	38	9.4	6.5
31	14	---	84	33	---	97	---	635	---	35	9.7	---
TOTAL	196.4	503.8	1576	1589	899	2909	4201	9922	15830	5106	605.3	217.8
MEAN	6.34	16.8	50.8	51.3	32.1	93.8	140	320	528	165	19.5	7.26
MAX	15	35	115	81	129	187	297	904	1080	360	51	10
MIN	4.0	6.3	26	33	17	43	62	88	213	35	9.3	4.8
AC-FT	390	999	3130	3150	1780	5770	8330	19680	31400	10130	1200	432

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999	1995	1996	1997	1998	1999		
MEAN	18.1	67.5	87.8	65.1	88.0	88.8	164	370	392	136	10.6	7.56
MAX	33.0	164	202	114	224	100	199	494	528	182	19.5	9.45
(WY)	1996	1996	1996	1996	1996	1997	1996	1997	1999	1997	1999	1997
MIN	6.34	16.8	24.8	23.8	31.3	78.6	119	281	263	79.6	5.29	5.81
(WY)	1999	1999	1998	1998	1998	1998	1998	1996	1998	1998	1998	1995

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1996 - 1999
ANNUAL TOTAL	32484.2	43555.3	
ANNUAL MEAN	89.0	119	125
HIGHEST ANNUAL MEAN			149
LOWEST ANNUAL MEAN			91.0
HIGHEST DAILY MEAN	558 May 4	1080 Jun 15	1080 Jun 15 1999
LOWEST DAILY MEAN	2.7 Sep 6	4.0 Oct 8	2.7 Sep 6 1998
ANNUAL SEVEN-DAY MINIMUM	3.1 Sep 3	4.2 Oct 7	3.1 Sep 3 1998
ANNUAL RUNOFF (AC-FT)	64430	86390	90770
10 PERCENT EXCEEDS	303	330	366
50 PERCENT EXCEEDS	29	45	55
90 PERCENT EXCEEDS	4.8	5.9	7.0

e Estimated

GRANDE RONDE RIVER BASIN

13331450 WALLOWA RIVER BELOW WATER CANYON, NEAR WALLOWA, OR

LOCATION.--Lat 45°36'30", long 117°36'55", in NW 1/4 SW 1/4 sec.31, T.2 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 160 ft upstream from bridge, approximately 6 mi east of Wallowa, and at mile 18.3.

DRAINAGE AREA.--628 mi².

PERIOD OF RECORD.--August 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,760 ft above sea level, from topographic map.

REMARKS.--Records fair except for the period June 18 to Aug. 25, those below 250 ft³/s, and estimated daily discharges, which are poor. Flow regulated by Wallowa Lake. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--4 years (water years 1996-99), 782 ft³/s, 566,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,640 ft³/s Feb 9, 1996, gage height, 4.76 ft; minimum discharge, 102 ft³/s July 29, 1998.

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)
May 26	0245	2,710	3.55	June 16	0115	*4,090	*4.43
June 2	0730	2,530	3.42				

Minimum discharge, 190 ft³/s Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	358	310	400	e530	350	1360	611	717	2200	1740	459	321
2	375	309	485	e500	358	971	587	757	2300	1610	426	311
3	360	295	495	e480	351	826	583	786	1770	1470	504	310
4	368	294	414	e470	351	705	539	756	1570	1390	469	314
5	358	309	380	e460	341	607	514	724	1670	1230	481	308
6	350	318	353	e460	346	551	492	692	1690	1210	528	312
7	341	303	334	e440	376	526	488	754	1570	1390	555	319
8	330	312	328	e430	362	487	530	759	1430	1400	556	308
9	329	308	315	e420	365	471	531	727	1310	1350	523	305
10	335	299	309	e440	329	437	495	685	1200	1360	509	297
11	333	300	320	e450	314	436	487	654	1210	1430	543	304
12	328	299	322	e420	318	423	495	638	1370	1490	512	300
13	330	306	344	e440	333	458	514	612	1680	1430	568	288
14	333	325	370	e470	343	541	528	585	2150	1270	615	279
15	336	316	352	e560	328	618	531	543	3000	1090	531	262
16	334	312	355	e540	327	651	552	518	3380	976	497	245
17	326	329	350	e530	335	570	607	493	3120	957	465	234
18	329	320	350	e520	333	580	702	532	3090	939	453	224
19	323	309	296	e510	334	636	876	661	2730	877	434	231
20	322	307	283	e520	320	780	989	789	2170	817	422	217
21	318	395	e250	e500	325	887	907	897	2230	863	406	213
22	315	409	e280	497	318	885	827	1090	2050	778	393	195
23	314	407	e310	481	330	891	766	1280	1880	753	385	207
24	312	450	e330	441	453	876	755	1720	1780	758	361	220
25	314	402	e360	390	793	921	817	2190	1910	707	354	249
26	313	378	e400	370	694	1090	916	2320	1480	653	342	270
27	313	359	e420	382	619	931	878	1980	1330	626	331	292
28	315	367	e840	380	1040	787	847	2010	1290	628	308	322
29	313	360	e730	371	---	738	793	1950	1520	616	305	329
30	310	366	e630	363	---	709	741	1770	1740	586	315	325
31	312	---	e560	362	---	648	---	1590	---	542	324	---
TOTAL	10247	10073	12265	14127	11386	21997	19898	32179	57820	32936	13874	8311
MEAN	331	336	396	456	407	710	663	1038	1927	1062	448	277
MAX	375	450	840	560	1040	1360	989	2320	3380	1740	615	329
MIN	310	294	250	362	314	423	487	493	1200	542	305	195
AC-FT	20320	19980	24330	28020	22580	43630	39470	63830	114700	65330	27520	16480

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999
MEAN	366	486	536	504	630
MAX	436	743	864	747	1124
(WY)	1998	1996	1996	1997	1997
MIN	318	336	327	340	389
(WY)	1997	1999	1998	1998	1998

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1996 - 1999

	1998	1999	1996	1997	1998	1999
ANNUAL TOTAL	240511	245113				
ANNUAL MEAN	659	672				
HIGHEST ANNUAL MEAN			782			
LOWEST ANNUAL MEAN			952			1997
HIGHEST DAILY MEAN	3240	May 26	670			1998
LOWEST DAILY MEAN	109	Jul 29	3900			Feb 9 1996
ANNUAL SEVEN-DAY MINIMUM	152	Jul 24	109			Jul 29 1998
ANNUAL RUNOFF (AC-FT)	477100		152			Jul 24 1998
10 PERCENT EXCEEDS	1690		566900			
50 PERCENT EXCEEDS	373		1430			
90 PERCENT EXCEEDS	272		480			
			309			

e Estimated

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 sea level. Aug. 17, 1944, to Sept. 30, 1949, noirecording 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.--Records fair. Flow lightly regulated by Wallowa Lake and small reservoirs. Diversions for irrigation upstream from station, chiefly in vicinity of La Grande, Enterprise, and Wallowa; one transbasin diversion from Big Sheep Creek and tributaries in Imnaha River basin for irrigation in Wallowa Valley. U.S. Geological Survey satellite telemeter and National Weather Service telemeter at station.

AVERAGE DISCHARGE.--55 years (water years 1945-99), 3,101 ft³/s, 2,247,000 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)
Dec. 30	1000	9,460	7.85	Apr. 20	0200	10,800	8.21
Mar. 1	0530	12,100	8.53	May 26	0730	*13,600	*8.85
Mar. 26	0700	11,900	8.48	June 16	0830	10,300	8.09

Minimum discharge, 570 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	852	860	2120	7080	1940	10900	5490	6960	9500	4230	1170	798
2	899	844	4140	6200	1930	8530	5010	7010	9670	3960	1110	786
3	911	839	5250	4870	1820	7120	4850	7080	8340	3600	1080	768
4	930	825	3580	3780	1820	6040	4530	6810	7430	3330	1090	761
5	923	834	2770	3240	1790	5140	4180	6320	7370	3030	1070	753
6	922	881	2310	2860	1810	4460	3910	6020	7200	2830	1140	734
7	912	887	1980	2640	1960	4050	3750	6410	6640	3020	1190	740
8	876	919	1820	2470	2180	3690	4090	6270	6060	3180	1250	747
9	868	924	1630	2300	2070	3430	4230	5930	5500	3050	1140	732
10	868	897	1450	2230	1900	3160	4030	5570	5010	2930	1100	721
11	866	877	1390	2420	1710	2940	3900	5240	4840	3050	1120	700
12	865	870	1410	2450	1610	2790	4150	5260	5000	3160	1120	705
13	856	915	1550	2470	1620	2750	4480	5220	5740	3130	1140	694
14	865	989	1870	2610	1750	3160	5040	5050	6830	2870	1290	681
15	890	998	1860	5950	1710	3910	5400	4790	8170	2550	1250	669
16	900	1010	1810	5840	1720	4790	5870	4620	9580	2270	1180	650
17	880	1020	1750	5050	1870	4740	6740	4700	9370	2150	1130	634
18	875	1050	1680	4530	2050	4580	8160	5600	8980	2100	1040	620
19	867	1020	1490	4190	2090	4790	9870	6530	8700	2000	986	611
20	852	1050	1220	4300	2120	6080	10500	7060	7350	1880	948	614
21	846	1710	e1050	4630	2020	7890	9750	7440	6960	1870	927	599
22	838	2070	e1150	4580	1950	8320	8670	7890	6510	1810	887	594
23	834	1730	e1400	4130	1970	8530	8130	8500	6060	1680	866	580
24	835	2120	e1500	3550	4530	8820	8410	10000	5630	1670	848	586
25	835	2350	e1600	3030	6850	9430	8970	12200	6030	1640	830	594
26	828	2650	e1800	2600	6440	11400	9360	12700	5220	1530	833	622
27	826	2190	e2200	2450	5400	10100	8940	11400	4570	1440	822	649
28	831	1980	4650	2400	7520	8680	8200	11100	4240	1410	801	683
29	833	1880	7810	2290	---	7770	7390	10800	3980	1380	762	717
30	854	1890	9200	2150	---	6940	6880	10100	4170	1330	776	720
31	867	---	8160	2040	---	6160	---	9120	---	1250	805	---
TOTAL	26904	39079	83600	111330	74150	191090	192880	229700	200650	75330	31701	20462
MEAN	868	1303	2697	3591	2648	6164	6429	7410	6688	2430	1023	682
MAX	930	2650	9200	7080	7520	11400	10500	12700	9670	4230	1290	798
MIN	826	825	1050	2040	1610	2750	3750	4620	3980	1250	762	580
AC-FT	53360	77510	165800	220800	147100	379000	382600	455600	398000	149400	62880	40590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1999, BY WATER YEAR (WY)

MEAN	881	1246	2018	2234	3248	4321	6307	7443	5750	2206	857	773
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	414
(WY)	1988	1988	1945	1979	1977	1977	1968	1977	1992	1977	1992	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1945 - 1999

ANNUAL TOTAL	1133372			1276876					
ANNUAL MEAN	3105			3498				3101	
HIGHEST ANNUAL MEAN								5253	1996
LOWEST ANNUAL MEAN								1136	1977
HIGHEST DAILY MEAN	16300	May 27		12700	May 26			42200	Feb 9 1996
LOWEST DAILY MEAN	617	Sep 4		580	Sep 23			344	Aug 20 1977
ANNUAL SEVEN-DAY MINIMUM	631	Sep 1		597	Sep 19			361	Aug 18 1977
ANNUAL RUNOFF (AC-FT)	2248000			2533000				2247000	
10 PERCENT EXCEEDS	7710			8160				7520	
50 PERCENT EXCEEDS	1980			2230				1660	
90 PERCENT EXCEEDS	832			826				700	

e Estimated

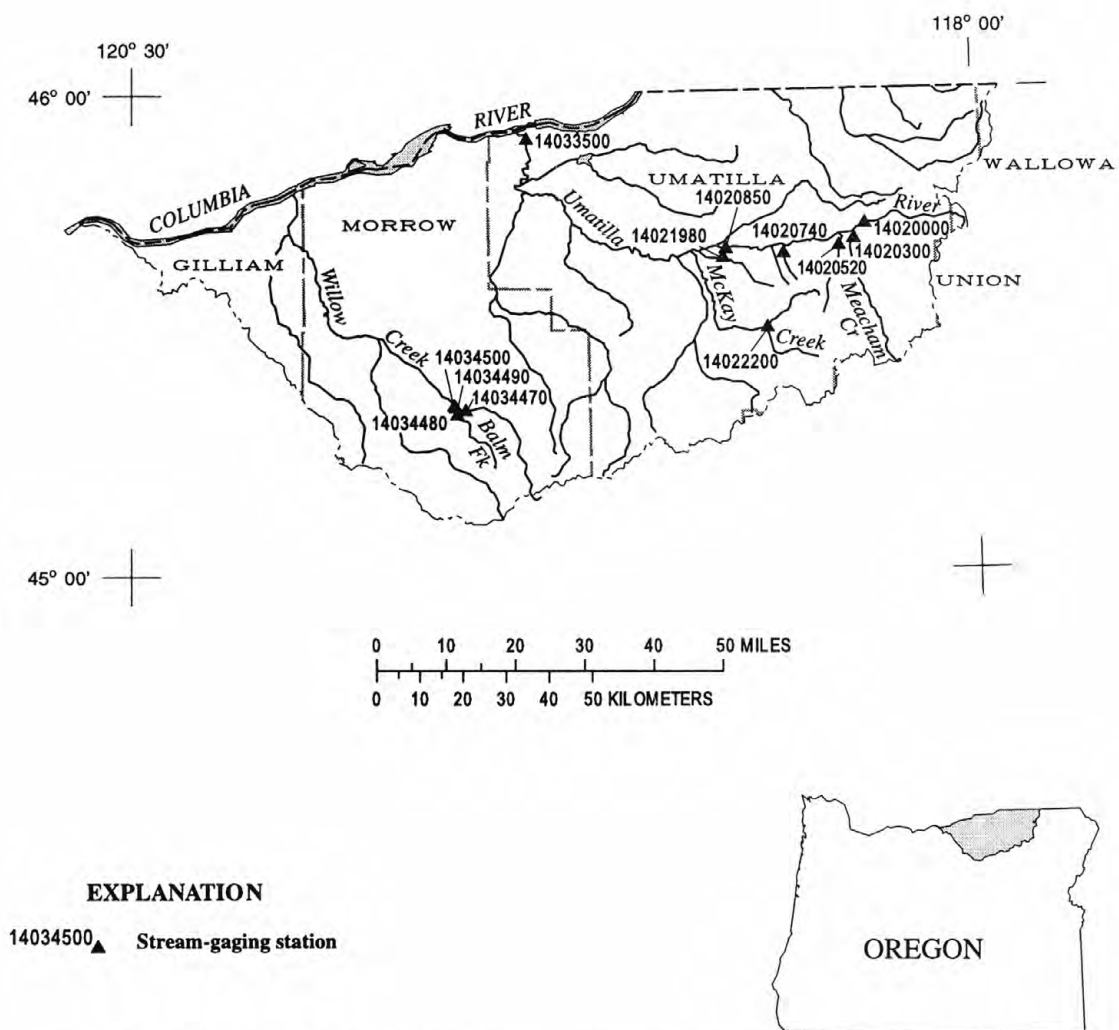


Figure 11. Location of surface-water stations in the Umatilla and Willow Creek Basins.

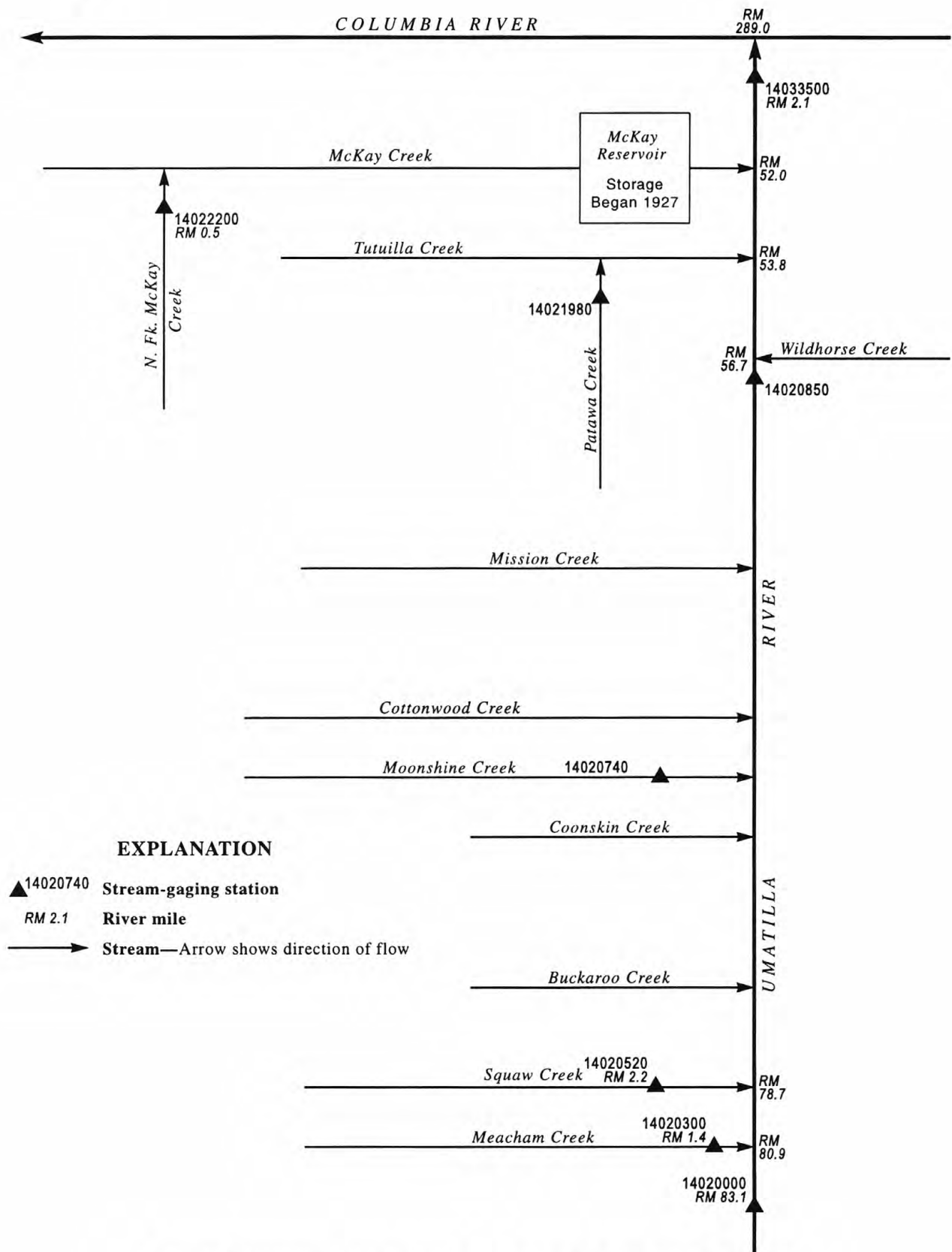


Figure 12. Schematic diagram showing gaging stations in the Umatilla River Basin.

UMATILLA RIVER BASIN

79

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR

LOCATION.--Lat 45°43'11", long 118°19'20", in SE 1/4 SW 1/4 sec.21, T.3 N., R.36 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank 0.8 mi downstream from Ryan Creek, 2.2 mi upstream from Meacham Creek, 2.5 mi northeast of Gibbon, and at mile 83.1.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--April 1933 to current year.

REVISED RECORDS.--WSP 1935: 1946-48(M), 1950(M), 1953(M), 1956-59(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,854.81 ft above sea level. Prior to June 27, 1939, at site 1 mi downstream at datum 43.94 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1959 to September 1980 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--66 years (water years 1934-99), 228 ft³/s, 23.62 in/yr, 165,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,220 ft³/s Nov. 28, 1995, gage height, 9.40 ft (high-water mark), from rating curve extended above 3,500 ft³/s; maximum gage height, 9.50 ft Jan. 29, 1965; minimum discharge, 16 ft³/s Nov. 9, 1965, momentary regulation from unknown source.

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)
Dec. 30	1215	*2,230	*6.46	Feb. 28	2300	1,500	5.74

Minimum discharge, 37 ft³/s Sept. 21-26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	48	285	884	166	1230	299	475	380	79	46	43
2	48	48	729	605	163	803	280	494	328	76	46	42
3	48	48	774	443	157	598	282	511	283	74	47	42
4	54	49	453	353	156	469	263	463	267	72	47	42
5	50	66	316	306	150	382	252	408	259	70	46	41
6	49	69	254	276	155	333	241	407	236	67	48	40
7	48	57	210	254	159	303	235	543	213	66	48	41
8	48	64	187	231	161	276	259	496	200	64	49	41
9	48	64	161	213	162	257	263	448	184	62	47	41
10	49	61	148	224	151	231	270	399	173	61	46	41
11	49	59	168	274	140	214	279	378	166	60	47	41
12	47	59	238	291	134	202	288	420	162	58	47	40
13	47	65	325	285	132	201	304	422	162	57	56	40
14	47	76	363	317	138	233	331	383	159	56	54	40
15	47	80	294	1190	138	311	340	370	154	56	49	40
16	47	88	244	969	153	353	375	353	148	56	47	40
17	47	95	217	696	232	319	480	410	135	55	45	40
18	46	102	204	567	240	298	648	647	126	54	45	40
19	46	110	e180	477	233	323	786	690	117	54	45	40
20	46	137	e160	465	215	491	753	682	110	53	44	40
21	47	516	e130	520	202	663	633	654	114	53	43	39
22	47	457	e115	524	190	588	528	622	106	52	43	38
23	47	291	e105	457	200	579	486	646	98	51	43	38
24	46	273	e100	362	407	592	590	705	96	51	42	39
25	46	478	e98	303	590	690	711	731	115	51	42	38
26	47	424	e96	272	514	766	745	640	97	50	41	38
27	46	313	155	237	475	603	646	567	89	49	40	39
28	48	272	759	217	1060	471	537	528	85	49	40	39
29	47	246	1310	202	---	408	444	476	83	48	40	39
30	47	234	1980	189	---	364	407	423	81	47	44	39
31	47	---	1320	180	---	329	---	381	---	47	46	---
TOTAL	1473	4949	12078	12783	6973	13880	12955	15772	4926	1798	1413	1201
MEAN	47.5	165	390	412	249	448	432	509	164	58.0	45.6	40.0
MAX	54	516	1980	1190	1060	1230	786	731	380	79	56	43
MIN	46	48	96	180	132	201	235	353	81	47	40	38
AC-FT	2920	9820	23960	25360	13830	27530	25700	31280	9770	3570	2800	2380
CFSM	.36	1.26	2.97	3.15	1.90	3.42	3.30	3.88	1.25	.44	.35	.31
IN.	.42	1.41	3.43	3.63	1.98	3.94	3.68	4.48	1.40	.51	.40	.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1999, BY WATER YEAR (WY)

	MEAN	57.4	131	238	267	331	393	539	451	188	64.7	47.2	46.7
MAX	169	405	716	656	1074	989	885	1135	591	110	63.4	81.6	
(WY)	1952	1948	1976	1965	1996	1972	1974	1948	1974	1948	1975	1959	
MIN	39.1	40.2	44.4	45.7	71.8	189	162	67.0	49.4	39.5	36.9	34.9	
(WY)	1936	1936	1966	1937	1977	1955	1941	1934	1992	1934	1939	1935	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1933 - 1999

ANNUAL TOTAL	81862	90201	
ANNUAL MEAN	224	247	
HIGHEST ANNUAL MEAN			228
LOWEST ANNUAL MEAN			415
HIGHEST DAILY MEAN	1980	1980	5130
LOWEST DAILY MEAN	42	38	28
ANNUAL SEVEN-DAY MINIMUM	42	38	31
ANNUAL RUNOFF (AC-FT)	162400	178900	165000
ANNUAL RUNOFF (CFSM)	1.71	1.89	1.74
ANNUAL RUNOFF (INCHES)	23.25	25.61	23.62
10 PERCENT EXCEEDS	485	591	554
50 PERCENT EXCEEDS	163	161	119
90 PERCENT EXCEEDS	46	43	44

e Estimated

UMATILLA RIVER BASIN

14020300 MEACHAM CREEK AT GIBBON, OR

LOCATION.--Lat 45°41'20", long 118°21'20", in SE 1/4 SE 1/4 sec.31, T.3 N., R.36 E., Umatilla County, Hydrologic Unit 17070103, on left bank 250 ft downstream from Union Pacific railroad bridge, 0.9 mi southeast of Gibbon, and at mile 1.4.

DRAINAGE AREA.--176 mi².

PERIOD OF RECORD.--August 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,803.05 ft above sea level.

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

AVERAGE DISCHARGE.--24 years (water years 1976-99), 206 ft³/s, 15.94 in/yr, 149,600 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s Nov. 28, 1995, gage height, 7.67 ft, from rating curve extended above 4,600 ft³/s; maximum gage height, 8.16 ft, from floodmark; minimum discharge, 6.6 ft³/s Aug. 29, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 25, 1975, reached a stage of 7.21 ft, from floodmark, discharge, about 8,200 ft³/s.

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)
Dec. 30	1445	*2,110	*5.23	No other peak greater than base discharge.			

Minimum discharge, 10 ft³/s several days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	15	340	1220	148	1390	390	381	153	33	13	12
2	15	15	574	847	145	1070	352	397	138	31	13	11
3	15	15	723	601	138	818	355	427	117	30	13	11
4	16	15	518	470	132	633	331	435	105	29	13	11
5	15	19	364	365	129	513	303	400	103	28	13	11
6	15	20	262	289	128	439	272	372	98	27	13	11
7	15	18	201	246	131	388	250	439	91	26	14	11
8	15	24	166	212	133	339	289	415	85	25	15	12
9	15	e24	135	e190	139	303	307	376	79	24	14	11
10	15	e23	115	e250	130	255	297	326	72	23	13	11
11	15	e22	125	e300	126	231	298	289	68	22	14	11
12	14	e18	179	e330	125	210	335	289	65	21	14	11
13	15	e16	241	333	125	212	410	293	64	20	17	11
14	14	e16	326	353	125	272	526	255	64	20	16	11
15	17	e16	298	1010	125	465	565	233	64	20	14	11
16	15	16	238	1100	129	584	630	210	63	19	14	11
17	15	26	203	880	187	533	790	221	59	19	13	11
18	14	37	186	712	211	490	992	335	55	18	13	11
19	14	46	170	583	213	529	1100	373	51	18	13	11
20	14	66	143	569	193	839	1040	370	47	17	13	11
21	14	315	109	611	183	1240	877	350	47	17	13	11
22	14	477	106	595	175	1120	696	323	46	17	13	11
23	14	298	90	531	189	1120	575	326	42	16	12	11
24	14	237	87	435	520	1130	619	359	41	16	12	11
25	14	483	85	350	844	1270	701	375	47	16	12	11
26	14	508	82	305	760	1370	710	314	43	15	12	11
27	14	357	115	257	639	1030	602	247	40	15	11	12
28	15	278	460	223	999	752	490	222	38	15	10	12
29	14	239	920	200	---	600	410	196	36	14	10	12
30	14	222	1810	182	---	511	359	170	35	14	11	12
31	14	---	1570	167	---	448	---	148	---	14	12	---
TOTAL	453	3881	10941	14716	7221	21104	15871	9866	2056	639	403	336
MEAN	14.6	129	353	475	258	681	529	318	68.5	20.6	13.0	11.2
MAX	17	508	1810	1220	999	1390	1100	439	153	33	17	12
MIN	14	15	82	167	125	210	250	148	35	14	10	11
AC-FT	899	7700	21700	29190	14320	41860	31480	19570	4080	1270	799	666
CFSM	.08	.74	2.01	2.70	1.47	3.87	3.01	1.81	.39	.12	.07	.06
IN.	.10	.82	2.31	3.11	1.53	4.46	3.35	2.09	.43	.14	.09	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1999, BY WATER YEAR (WY)

	MEAN	15.9	83.8	210	252	405	510	540	325	101	24.4	13.0	12.2
MAX	26.7	323	582	583	1074	1016	956	668	354	52.2	20.7	16.7	
(WY)	1985	1996	1976	1997	1996	1997	1985	1991	1984	1984	1993	1978	
MIN	8.48	11.2	18.0	22.2	27.1	134	228	58.3	21.7	13.2	8.48	9.37	
(WY)	1988	1988	1977	1977	1977	1977	1986	1992	1992	1977	1986	1987	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1975 - 1999
ANNUAL TOTAL	76263	87487	
ANNUAL MEAN	209	240	
HIGHEST ANNUAL MEAN			206
LOWEST ANNUAL MEAN			352
HIGHEST DAILY MEAN	1810	Dec 30	4820
LOWEST DAILY MEAN	10	Sep 1	7.5
ANNUAL SEVEN-DAY MINIMUM	10	Aug 31	7.7
ANNUAL RUNOFF (AC-FT)	151300	173500	149600
ANNUAL RUNOFF (CFSM)	1.19	1.36	1.17
ANNUAL RUNOFF (INCHES)	16.12	18.49	15.94
10 PERCENT EXCEEDS	548	623	554
50 PERCENT EXCEEDS	125	125	68
90 PERCENT EXCEEDS	13	12	11

e Estimated

UMATILLA RIVER BASIN

81

14020520 SQUAW CREEK NEAR GIBBON, OR

LOCATION.--Lat 45°40'22", long 118°24'00", in NW 1/4 NE 1/4 sec.11, T.2 N., R.35 E., Umatilla County, Hydrologic Unit 17070103, on right bank, 2 mi southwest of townsite of Gibbon, and at mile 2.2.

DRAINAGE AREA.--32.6 mi².

PERIOD OF RECORD.--October 1998 to September 1999.

GAGE.--Water-stage recorder. Elevation of gage is 1,850 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--1 year (water year 1999), 33.3 ft³/s, 13.89 in/yr, 24,140 acre-ft/yr

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 900 ft³/s Dec. 30, gage height, 3.71 ft, from highwater mark; minimum discharge, 0.75 ft³/s July 30, Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.5	e2.5	e48	e350	20	391	35	21	6.7	1.9	.89	1.2
2	e2.5	e2.5	e96	e180	20	209	33	23	6.5	1.9	.90	1.1
3	e2.5	e2.5	e120	e90	19	141	33	29	6.0	1.8	1.0	1.1
4	e2.7	e2.5	e74	e60	19	101	31	33	5.4	1.7	.97	1.0
5	e2.5	e3.2	e52	e48	19	77	30	33	5.0	1.6	.94	.99
6	e2.5	e3.2	e39	e37	19	63	29	32	4.6	1.5	1.0	.97
7	e2.5	e3.0	e32	e32	20	54	29	35	4.3	1.5	1.2	1.0
8	e2.5	e3.8	e27	e28	20	46	32	33	4.4	1.4	1.2	.99
9	e2.5	e3.8	e22	e26	20	42	33	31	4.1	1.4	1.1	.98
10	e2.5	e3.7	e19	e27	19	36	36	29	3.8	1.3	.99	.98
11	e2.5	e3.5	e20	e30	18	32	38	27	3.6	1.2	1.1	.99
12	e2.3	e2.7	e27	e32	18	30	39	25	3.3	1.2	1.1	.97
13	e2.5	e2.5	e40	e32	18	31	42	23	3.0	1.1	1.8	.95
14	e2.3	e2.5	e48	e34	20	48	45	21	2.8	1.2	1.6	.94
15	e2.8	e2.6	e44	e163	22	69	43	19	2.8	1.2	1.4	.94
16	e2.5	e2.7	e35	e165	26	71	44	18	2.8	1.2	1.2	.95
17	e2.5	e4.5	e30	e118	54	61	48	18	2.5	1.3	1.1	.95
18	e2.3	e5.8	e28	e108	53	57	54	21	2.3	1.4	1.1	.97
19	e2.3	e7.4	e26	e93	48	67	53	19	2.1	1.4	1.1	.98
20	e2.3	e11	e23	e111	43	98	47	19	2.1	1.5	1.0	.98
21	e2.3	e54	e17	e120	37	128	41	18	2.2	1.5	1.0	.96
22	e2.3	e72	e16	e108	36	108	35	17	2.0	1.4	1.0	.96
23	e2.3	e45	e14	e85	49	102	30	16	1.9	1.2	1.0	.95
24	e2.3	e40	e14	e65	203	98	30	14	2.3	1.2	1.0	.98
25	e2.3	e78	e13	e52	190	108	30	13	2.9	1.3	.98	.98
26	e2.3	e80	e15	e43	132	111	29	12	2.2	1.2	.97	.99
27	e2.4	e54	e17	e35	127	78	27	11	2.2	1.0	.93	1.0
28	e2.5	e42	e70	e31	508	56	24	9.5	2.1	1.0	.91	1.1
29	e2.4	e38	e200	e28	---	47	22	8.4	2.0	.97	.90	.92
30	e2.3	e36	e830	e25	---	42	21	7.5	2.0	.94	1.1	.92
31	e2.3	---	e700	e22	---	38	---	6.8	---	.91	1.3	---
TOTAL	75.2	614.9	2756	2378	1797	2640	1063	642.2	99.9	41.32	33.78	29.69
MEAN	2.43	20.5	88.9	76.7	64.2	85.2	35.4	20.7	3.33	1.33	1.09	.99
MAX	2.8	80	830	350	508	391	54	35	6.7	1.9	1.8	1.2
MIN	2.3	2.5	13	22	18	30	21	6.8	1.9	.91	.89	.92
AC-FT	149	1220	5470	4720	3560	5240	2110	1270	198	82	67	59
CFSM	.07	.63	2.73	2.35	1.97	2.61	1.09	.64	.10	.04	.03	.03
IN.	.09	.70	3.14	2.71	2.05	3.01	1.21	.73	.11	.05	.04	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 1999, BY WATER YEAR (WY)

	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999
MEAN	2.43	20.5	88.9	76.7	64.2	85.2	35.4	20.7	3.33	1.33	1.09	.99
MAX	2.43	20.5	88.9	76.7	64.2	85.2	35.4	20.7	3.33	1.33	1.09	.99
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999
MIN	2.43	20.5	88.9	76.7	64.2	85.2	35.4	20.7	3.33	1.33	1.09	.99
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999

SUMMARY STATISTICS

FOR 1999 WATER YEAR

ANNUAL TOTAL	12170.99
ANNUAL MEAN	33.3
HIGHEST DAILY MEAN	830
LOWEST DAILY MEAN	.89
ANNUAL SEVEN-DAY MINIMUM	.94
ANNUAL RUNOFF (AC-FT)	24140
ANNUAL RUNOFF (CFSM)	1.02
ANNUAL RUNOFF (INCHES)	13.89
10 PERCENT EXCEEDS	77
50 PERCENT EXCEEDS	14
90 PERCENT EXCEEDS	1.0

e Estimated

UMATILLA RIVER BASIN

14020740 MOONSHINE CREEK NEAR MISSION, OR

LOCATION.--Lat 45°39'37", long 118°35'42", in NW 1/4 NE 1/4 sec.16, T.2 N., R.34 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on left bank, 60 ft upstream from county road crossing, 5.7 mi west of Mission, and at mile 1.1.

DRAINAGE AREA.--4.62 mi².

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

REVISED RECORDS.--WDR OR-93-1: 1992(M); WDR OR-94-1: 1993.

GAGE.--Water-stage recorder. Elevation of gage is 1,600 ft above sea level, from topographic map.

REMARKS.--Records poor. No known regulation.

AVERAGE DISCHARGE.--7 years (water years 1993-99), 3.42 ft³/s, 2,480 acre-ft per year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 247 ft³/s Feb. 7, 1996, gage height, 6.67 ft, from rating curve extended above 75 ft³/s; no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 83 ft³/s Feb. 28, gage height, 5.92 ft; minimum discharge, 0.05 ft³/s Oct. 1, 4-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.14	6.4	11	3.7	47	4.3	1.2	.66	.18	e.07	e.15
2	.06	.12	17	8.1	4.0	28	4.2	1.6	.66	.16	e.07	e.14
3	.07	.12	11	6.4	3.8	21	4.6	3.4	.61	.16	e.08	e.13
4	.07	.12	6.6	5.3	3.7	16	4.3	4.0	.52	.16	e.10	e.12
5	.06	.13	5.1	4.9	3.5	13	4.2	3.9	.50	.16	e.13	e.11
6	.05	.15	4.5	4.6	3.4	11	4.3	3.9	.50	.16	e.13	e.12
7	.06	.21	4.2	4.2	3.4	9.7	4.5	4.8	.47	.16	e.12	e.12
8	.07	.31	4.2	3.8	3.3	8.5	5.3	4.7	.45	.14	e.11	e.11
9	.07	.24	3.7	3.5	3.4	8.0	5.7	4.6	.42	.13	e.09	e.11
10	.07	.26	3.4	3.3	3.0	7.2	6.4	4.2	.39	.13	e.09	e.10
11	.07	.27	9.6	3.1	2.8	6.7	6.7	3.9	.37	.12	e.11	e.09
12	.09	.28	18	2.9	2.8	6.3	6.7	3.6	.37	.12	e.13	e.10
13	.09	.34	14	2.7	2.7	6.0	6.5	3.3	.35	.11	e.16	e.10
14	.09	.37	9.5	2.8	3.7	6.6	6.1	2.9	.33	.10	e.12	e.11
15	.09	.37	6.9	12	4.1	7.4	5.5	2.6	.27	.10	e.11	e.10
16	.08	.37	5.6	18	4.7	7.6	5.0	2.3	.26	e.10	e.11	e.10
17	.09	.42	4.8	15	10	7.1	4.5	2.4	.24	e.10	e.10	e.10
18	.09	.39	4.5	14	11	7.0	4.1	2.6	.24	e.10	e.10	e.10
19	.09	.40	3.9	12	10	7.2	3.7	2.2	.24	e.09	e.10	e.10
20	.09	.45	e2.8	18	8.2	8.0	3.4	2.2	.23	e.08	e.10	e.10
21	.09	1.4	e2.7	21	7.4	8.8	3.2	2.0	.20	e.08	e.10	e.11
22	.08	2.7	e2.6	16	11	8.3	3.0	1.8	.18	e.08	e.11	e.13
23	.08	2.4	e2.4	13	14	7.8	2.4	1.4	.18	e.08	e.10	.16
24	.10	2.3	e2.2	11	17	7.1	2.1	1.3	.36	e.08	e.10	.15
25	.12	4.4	2.5	8.6	19	6.9	1.9	1.1	.39	e.08	e.10	.14
26	.12	3.5	2.7	7.1	15	7.3	1.8	.99	.21	e.08	e.10	.16
27	.11	3.5	5.1	6.0	19	6.0	1.6	.87	.18	e.07	e.10	.15
28	.07	3.9	9.0	5.5	49	5.3	1.5	.77	.18	e.07	e.15	.15
29	.10	4.1	19	5.1	---	5.1	1.4	.70	.18	e.07	e.15	.13
30	.11	4.9	24	4.8	---	4.8	1.1	.67	.18	e.07	e.16	.12
31	.12	---	16	4.3	---	4.6	---	.66	---	e.07	e.15	---
TOTAL	2.61	38.56	233.9	258.0	246.6	311.3	120.2	76.56	10.32	3.39	3.45	3.61
MEAN	.084	1.29	7.55	8.32	8.81	10.0	4.01	2.47	.34	.11	.11	.12
MAX	.12	4.9	24	21	49	47	6.7	4.8	.66	.18	.16	.16
MIN	.05	.12	2.2	2.7	2.7	4.6	1.3	.66	.18	.07	.07	.09
AC-FT	5.2	76	464	512	489	617	238	152	20	6.7	6.8	7.2
CFSM	.02	.28	1.63	1.80	1.91	2.17	.87	.53	.07	.02	.02	.03
IN.	.02	.31	1.88	2.08	1.99	2.51	.97	.62	.08	.03	.03	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999
MEAN	.14	1.71	5.82	7.42	8.26	8.25	4.34
MAX	.33	3.65	14.2	9.67	25.1	12.0	7.80
(WY)	1997	1995	1997	1997	1996	1993	1996
MIN	.084	.26	.48	5.72	1.90	4.52	1.23
(WY)	1999	1994	1994	1993	1994	1998	1997

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1993 - 1999

ANNUAL TOTAL	924.15	1308.50	
ANNUAL MEAN	2.53	3.58	
HIGHEST ANNUAL MEAN			3.42
LOWEST ANNUAL MEAN			4.95
HIGHEST DAILY MEAN	24	Dec 30	1.59
LOWEST DAILY MEAN	.05	Sep 24	.00
ANNUAL SEVEN-DAY MINIMUM	.06	Sep 24	.00
ANNUAL RUNOFF (AC-FT)	1830	2600	2480
ANNUAL RUNOFF (CFSM)	.55	.78	.74
ANNUAL RUNOFF (INCHES)	7.44	10.54	10.06
10 PERCENT EXCEEDS	6.1	9.5	9.0
50 PERCENT EXCEEDS	1.1	1.3	.76
90 PERCENT EXCEEDS	.07	.09	.07

e Estimated

UMATILLA RIVER BASIN

83

14020850 UMATILLA RIVER AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR

LOCATION.--Lat 45°40'18", long 118°44'08", in NE 1/4 NW 1/4 sec.7, T.2 N., R.33 E., Umatilla County, Hydrologic Unit 17070103, on left bank, 0.5 mi east of west line of boundary for Umatilla Indian Reservation, 1.6 mi upstream from Wildhorse Creek, 2.5 mi east of Post Office in Pendleton, and at mile 58.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,130 ft above sea level, from topographic map.

REMARKS.--Records good. No known regulation. Many diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--4 years (water years 1996-99), 637 ft³/s, 461,400 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s Feb. 9, 1996, gage height, 11.64 ft; minimum discharge, 36 ft³/s Aug. 25, 26, 30, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,550 ft³/s Dec. 30, gage height, 8.04 ft; minimum discharge, 38 ft³/s Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	73	817	2780	421	3690	815	888	599	101	44	47
2	59	73	1640	1890	403	2600	738	944	557	96	43	46
3	60	73	2360	1340	388	1910	748	1010	474	92	44	45
4	65	73	1460	1040	375	1480	700	1010	418	90	48	45
5	66	82	997	860	360	1180	653	923	400	87	45	45
6	63	106	768	734	358	1030	621	865	378	82	47	43
7	60	96	614	654	364	911	590	1060	341	78	48	44
8	61	114	539	593	369	813	635	1040	314	76	51	44
9	64	109	457	539	387	754	690	948	289	73	48	44
10	64	107	412	522	366	659	693	850	265	71	45	44
11	64	103	427	602	339	609	714	774	249	67	45	44
12	63	100	751	682	320	555	742	788	236	64	47	44
13	63	100	939	705	308	537	813	807	230	61	49	43
14	64	107	1010	704	341	600	958	741	226	58	62	43
15	64	113	879	2150	352	863	1020	693	217	59	53	42
16	68	122	716	2610	381	1090	1090	646	215	58	48	42
17	64	138	616	2010	577	1040	1290	675	197	57	47	42
18	64	168	564	1710	715	943	1680	968	182	58	45	43
19	64	190	519	1400	718	968	1980	1120	167	56	45	43
20	64	220	476	1370	655	1360	1920	1130	156	54	44	44
21	65	681	e420	1500	602	2070	1680	1090	154	54	43	43
22	67	1210	e380	1490	597	1940	1370	1060	150	51	43	43
23	67	777	e340	1320	649	1880	1150	1060	131	50	43	42
24	65	670	e320	1100	1180	1840	1220	1150	135	48	42	44
25	64	1220	309	914	1870	2050	1450	1210	172	49	41	45
26	65	1340	309	796	1740	2420	1540	1110	153	48	41	45
27	67	933	319	682	1480	1920	1370	926	125	47	40	46
28	71	776	1340	604	2630	1440	1140	852	114	45	40	47
29	73	707	2600	546	---	1180	958	772	107	45	39	46
30	71	656	4690	495	---	1040	832	675	103	44	42	45
31	70	---	4070	460	---	918	---	613	---	44	49	---
TOTAL	2008	11237	32058	34802	19245	42290	31800	28398	7454	1963	1411	1323
MEAN	64.8	375	1034	1123	687	1364	1060	916	248	63.3	45.5	44.1
MAX	73	1340	4690	2780	2630	3690	1980	1210	599	101	62	47
MIN	59	73	309	460	308	537	590	613	103	44	39	42
AC-FT	3980	22290	63590	69030	38170	83880	63080	56330	14790	3890	2800	2620

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1999, BY WATER YEAR (WY)

	1996	1997	1998	1999
MEAN	66.1	403	882	1040
MAX	70.7	717	1186	1360
(WY)	1996	1996	1997	1998
MIN	64.2	164	262	703
(WY)	1996	1998	1998	1998

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1996 - 1999

	1998	1999	1996-1999
ANNUAL TOTAL	181941	213989	637
ANNUAL MEAN	498	586	777
HIGHEST ANNUAL MEAN			416
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	4690	Dec 30	11700
LOWEST DAILY MEAN	43	Aug 30	37
ANNUAL SEVEN-DAY MINIMUM	43	Aug 29	38
ANNUAL RUNOFF (AC-FT)	360900	424400	461400
10 PERCENT EXCEEDS	1120	1420	1480
50 PERCENT EXCEEDS	374	375	352
90 PERCENT EXCEEDS	49	45	46

e Estimated

UMATILLA RIVER BASIN

14021980 PATAWA CREEK AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR

LOCATION.--(revised)Lat 45°39'11", long 118°44'39", in NW 1/4 SW 1/4 sec. 18, T.2 N., R.33 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank, at downstream side of county road crossing, 2 mi southwest of Pendleton City Hall, and at mile 2.9.

DRAINAGE AREA.--30 mi², excludes about 1 mi² in upper basin where water has been diverted directly to the Umatilla River.

PERIOD OF RECORD.--December 1973 to April 1975 (discharge measurements only), October 1991 to current year.

REVISED RECORDS.--WDR OR-94-1: 1993 (M).

GAGE.--Water-stage recorder. Elevation of gage is 1,220 ft above sea level, from topographic map.

REMARKS.--Records poor. No known regulation.

AVERAGE DISCHARGE.--8 years (water years 1992-99), 6.08 ft³/s, 4,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 378 ft³/s Feb. 7, 1996, gage height, 7.94 ft; minimum discharge, 0.01 ft³/s July 22, 23, 27, 28, July 30 to Aug. 1, 1999.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 57 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 28	1800	*50	*5.56				

Minimum discharge, 0.01 ft³/s July 22, 23, 27, 28, July 30 to Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	e.34	11	14	4.9	38	e7.0	3.6	e2.6	e1.0	.04	.23
2	.25	e.30	11	11	4.7	29	e6.5	4.2	e2.5	e.95	.05	.24
3	.23	e.28	7.1	8.7	4.5	25	e6.5	6.3	e2.3	e.90	.05	.24
4	.26	.29	5.4	7.3	4.1	21	e6.0	5.7	e2.1	e.80	.04	.22
5	.23	.29	4.1	6.5	3.6	18	e5.8	e5.4	e1.9	e.70	.04	.23
6	.23	.35	3.5	5.9	3.2	16	e6.0	e6.6	e1.8	e.65	.06	.37
7	.25	.55	3.1	5.2	2.8	14	e7.0	e8.0	e1.7	e.60	.06	.79
8	.25	.36	2.8	4.5	2.5	12	e9.0	e7.4	e1.8	e.60	.05	.97
9	.25	.35	2.5	4.0	2.7	12	e12	e7.0	e1.6	e.50	.06	e.80
10	.27	.36	11	3.5	2.1	e10	e14	e6.4	e1.4	e.45	.10	e.50
11	.24	.36	23	3.3	1.8	e8.5	e17	e5.8	e1.2	e.44	.09	e.30
12	.25	.35	16	2.9	1.8	e8.0	e17	e5.4	e1.1	e.40	.09	e.20
13	.23	.36	10	2.5	1.9	e9.0	16	e5.0	e1.1	e.38	.09	e.11
14	.23	.39	7.7	2.1	2.8	e10	14	e4.6	e1.0	e.36	.07	e.11
15	.23	.39	6.2	17	3.9	e12	13	e4.2	e.94	e.35	.12	e.11
16	.23	.50	5.4	30	5.9	e12	11	e4.0	e1.0	e.35	.13	e.11
17	.23	.50	4.6	23	14	e11	9.5	e4.4	e.94	.20	.13	e.11
18	.25	.52	4.3	22	15	e11	8.2	e5.0	e.86	.14	.13	e.11
19	.28	.58	e3.4	18	13	e12	7.5	e4.6	e.84	.14	.16	e.11
20	.26	.61	e2.8	18	11	e14	7.1	e4.4	e.90	.07	.20	e.11
21	.23	.57	e2.4	23	10	e16	6.6	e4.0	e1.0	.06	.19	e.11
22	.23	.60	e2.0	19	11	e16	6.3	e3.8	e1.1	.03	.15	e.11
23	.25	.58	e1.7	16	17	e15	5.9	e3.6	e1.0	.03	.16	.14
24	.25	.57	e1.4	14	22	e14	5.4	e3.6	e1.2	.04	.17	.17
25	.26	.58	e1.2	12	21	e15	5.0	e3.4	e2.0	.04	.23	.17
26	.25	.58	e1.3	10	19	e16	4.9	e3.4	e1.4	.05	.22	.19
27	.28	.87	1.4	9.0	21	e12	4.6	e3.2	e1.3	.03	.23	.22
28	.29	1.8	5.9	8.1	34	e10	4.1	e3.0	e1.1	.04	.22	.22
29	.33	3.2	16	7.3	---	e9.0	4.0	e2.9	e1.0	.03	.22	.22
30	.29	5.1	22	6.5	---	e8.0	3.7	e2.8	e1.0	.03	.23	.22
31	.29	---	18	5.6	---	e7.5	---	e2.7	---	.03	.22	---
TOTAL	7.90	22.48	218.2	339.9	261.2	441.0	250.6	144.4	41.68	10.39	4.00	7.74
MEAN	.25	.75	7.04	11.0	9.33	14.2	8.35	4.66	1.39	.34	.13	.26
MAX	.33	5.1	.23	30	34	38	17	8.0	2.6	1.0	.23	.97
MIN	.23	.28	1.2	2.1	1.8	7.5	3.7	2.7	.84	.03	.04	.11
AC-FT	16	45	433	674	518	875	497	286	83	21	7.9	15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1999, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	.52	2.31	6.00	11.6	12.7	15.6	9.44	11.0
MAX	.71	5.88	14.5	21.8	34.6	26.7	16.8	37.0
(WY)	1994	1992	1997	1996	1997	1993	1995	1998
MIN	.25	.75	.65	1.30	2.84	5.19	1.81	1.01
(WY)	1999	1999	1993	1992	1992	1992	1992	1992

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1992 - 1999
ANNUAL TOTAL	1755.26	1749.49	
ANNUAL MEAN	4.81	4.79	6.08
HIGHEST ANNUAL MEAN			10.6
LOWEST ANNUAL MEAN			2.08
HIGHEST DAILY MEAN	39 Jan 17	38 Mar 1	218 Feb 7 1996
LOWEST DAILY MEAN	.15 Sep 14	.03 Jul 22	.03 Jul 22 1999
ANNUAL SEVEN-DAY MINIMUM	.18 Sep 9	.04 Jul 25	.04 Jul 25 1999
ANNUAL RUNOFF (AC-FT)	3480	3470	4400
10 PERCENT EXCEEDS	13	14	16
50 PERCENT EXCEEDS	2.1	1.9	1.7
90 PERCENT EXCEEDS	.25	.12	.36

e Estimated

UMATILLA RIVER BASIN

85

14022200 NORTH FORK MCKAY CREEK NEAR PILOT ROCK, OR

LOCATION.--Lat 45°30'24", long 118°36'57", in NE 1/4 SE 1/4 sec.1, T.1 S., R.33 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on left bank 10 mi northeast of Pilot Rock and at mile 0.5.

DRAINAGE AREA.--48.6 mi².

PERIOD OF RECORD.--May 1973 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,870 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation. Minor diversion upstream from station.

AVERAGE DISCHARGE.--26 years (water years 1974-99), 43.1 ft³/s, 31,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,980 ft³/s Jan. 25, 1975, gage height, 8.48 ft, from floodmark, from rating curve extended above 150 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.22 ft³/s June 26, 1985 (result of temporary construction upstream).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 290 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 30	0400	468	3.73	Feb. 28	2200	*481	*3.78

Minimum discharge, 0.47 ft³/s Oct. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.58	1.9	e220	208	40	359	65	25	11	4.0	.67	1.3
2	.77	1.9	e210	141	40	252	60	31	10	3.8	.69	1.3
3	.76	1.7	147	105	38	203	61	57	9.6	3.6	.80	1.2
4	1.2	e1.9	99	86	37	154	56	70	8.4	3.5	.81	1.1
5	.71	e2.0	77	74	35	123	54	66	7.8	3.2	.81	1.1
6	.61	e1.9	64	66	35	108	56	61	7.2	2.7	1.1	1.0
7	.51	e1.8	55	60	35	97	61	81	6.7	2.4	1.4	1.1
8	.59	e1.9	50	53	35	85	72	75	6.9	2.4	1.3	1.1
9	.63	e1.8	44	49	36	80	81	69	6.4	2.1	1.0	1.1
10	.71	e1.8	42	52	34	73	91	61	5.7	1.9	.89	1.0
11	.58	e1.7	75	55	32	69	99	55	5.1	1.8	.90	1.0
12	.52	e1.8	191	54	30	67	98	50	4.7	1.6	.88	1.0
13	.68	e2.0	192	54	30	74	94	44	4.3	1.5	1.4	1.0
14	.89	e2.1	134	57	33	98	87	40	4.0	1.4	1.6	1.0
15	1.1	e1.8	97	209	36	113	80	36	3.8	1.4	1.3	1.0
16	1.4	e2.0	78	221	42	114	75	32	4.1	1.4	1.1	1.0
17	1.1	e3.5	69	181	82	105	72	31	3.8	1.3	1.0	1.0
18	1.1	e12	63	158	88	104	69	38	3.5	1.3	.95	1.0
19	.88	e25	59	145	77	112	66	33	3.4	1.2	.95	1.0
20	.86	e75	e45	172	68	134	63	31	3.6	1.1	.90	1.0
21	.84	e70	e36	179	65	155	56	29	4.2	1.0	.89	.98
22	.76	e45	e35	149	63	149	51	27	4.3	.91	.95	.99
23	.77	e40	e34	127	88	143	45	24	3.8	.84	.99	1.0
24	.73	e70	e30	106	166	134	41	22	4.7	.84	.96	1.0
25	.74	e65	e29	91	205	140	37	20	7.9	.86	.97	.97
26	.85	e50	34	80	166	150	34	18	6.3	.82	.99	1.0
27	.99	e40	43	69	188	112	32	16	5.3	.76	.96	1.2
28	1.5	e35	126	61	375	93	30	14	4.7	.74	.93	1.2
29	1.4	e33	305	55	---	85	28	13	4.2	.68	.93	1.2
30	1.4	e42	392	49	---	78	26	12	4.2	.67	1.3	1.2
31	1.4	---	278	45	---	72	---	11	---	.68	1.6	---
TOTAL	27.56	635.5	3353	3211	2199	3835	1840	1192	169.6	52.40	31.92	32.04
MEAN	.89	21.2	108	104	78.5	124	61.3	38.5	5.65	1.69	1.03	1.07
MAX	1.5	.75	392	221	375	359	99	81	11	4.0	1.6	1.3
MIN	.51	1.7	29	45	30	67	26	11	3.4	.67	.67	.97
AC-FT	55	1260	6650	6370	4360	7610	3650	2360	336	104	63	64

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1999, BY WATER YEAR (WY)

	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
MEAN	2.46	23.0	56.6	78.5	95.2	114	82.5	49.3	14.1	2.30	1.12	1.21														
MAX	8.50	74.6	197	170	225	223	200	154	60.4	4.97	2.77	2.74														
(WY)	1983	1992	1974	1976	1996	1984	1974	1995	1984	1991	1993	1977														
MIN	.89	1.30	3.11	5.01	4.39	29.3	16.2	5.08	2.26	.73	.53	.78														
(WY)	1999	1988	1977	1977	1977	1992	1992	1992	1992	1985	1998	1987														

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1974 - 1999	
ANNUAL TOTAL	15144.01		16579.02			
ANNUAL MEAN	41.5		45.4		43.1	
HIGHEST ANNUAL MEAN					72.5	
LOWEST ANNUAL MEAN					10.7	
HIGHEST DAILY MEAN	392	Dec 30	392	Dec 30	1070	Feb 23 1986
LOWEST DAILY MEAN	.34	Aug 15	.51	Oct 7	.34	Aug 15 1998
ANNUAL SEVEN-DAY MINIMUM	.41	Aug 11	.59	Oct 6	.41	Aug 11 1998
ANNUAL RUNOFF (AC-FT)	30040		32880		31210	
10 PERCENT EXCEEDS	120		126		122	
50 PERCENT EXCEEDS	19		26		12	
90 PERCENT EXCEEDS	.56		.89		1.0	

e Estimated

WILLOW CREEK BASIN

87

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR

LOCATION.--Lat 45°20'27", long 119°30'53", in NE 1/4 NE 1/4 sec.1, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank 1.5 mi southeast of Heppner, 1.7 mi upstream from Willow Creek dam, and at mile 54.1.

DRAINAGE AREA.--67.6 mi².

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,085.41 ft above sea level (levels by Corps of Engineers).

REMARKS.--Records fair. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--17 years (water years 1983-99), 23.2 ft³/s, 16,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 544 ft³/s Feb. 1, 1997, gage height, 9.60 ft, from crest-stage gage; minimum discharge, 0.01 ft³/s July 31 to Sept. 14, 1988, Aug. 20, 1992, but may have been less during period of no gage-height record July 31 to Sept. 14, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 26	0100	*82	*6.43				

Minimum discharge, 0.05 ft³/s Aug. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	5.1	15	32	15	65	35	25	17	5.2	.85	.54
2	3.1	4.8	15	28	14	57	32	31	17	4.7	.88	.49
3	3.1	4.4	17	24	14	51	32	37	16	3.4	.88	.47
4	3.5	4.6	14	21	13	45	30	34	13	3.3	.87	.38
5	3.4	6.0	12	19	12	40	28	31	12	3.3	1.1	.44
6	2.1	6.7	11	18	13	36	27	32	12	3.1	2.8	.50
7	2.9	5.6	10	17	14	33	27	42	11	3.3	2.7	1.1
8	2.6	6.4	9.8	15	13	30	31	42	10	2.8	2.0	1.3
9	2.7	6.0	8.2	14	12	29	32	42	11	2.7	1.9	1.4
10	2.8	5.7	9.4	14	11	26	32	39	11	2.8	1.6	1.4
11	2.5	5.4	9.6	14	12	25	32	37	11	2.1	1.2	1.7
12	2.3	5.2	11	14	12	24	31	34	10	1.5	1.0	e1.6
13	2.1	4.8	14	14	12	26	33	34	9.4	1.6	.68	e1.2
14	1.6	5.6	15	14	13	32	36	32	9.1	1.5	.68	e.90
15	.54	6.1	14	20	13	37	37	29	8.5	1.7	e1.0	e1.0
16	.49	6.3	13	24	13	41	38	27	7.8	1.6	e1.0	e1.1
17	.49	6.9	12	25	18	40	43	29	7.4	1.4	e1.2	1.2
18	.55	6.7	11	29	20	39	56	38	7.0	1.7	e1.2	1.1
19	.51	6.4	e8.0	28	20	42	68	41	7.2	1.6	e1.3	1.2
20	.47	6.4	e7.8	29	19	52	67	43	7.0	.82	1.3	1.3
21	.41	7.6	e8.0	28	18	67	59	39	7.1	1.5	1.4	1.2
22	.37	9.8	e8.4	26	17	64	53	36	6.5	1.9	1.3	1.2
23	.33	9.2	e8.6	25	17	62	47	32	6.3	2.0	1.3	1.2
24	.99	11	e9.0	23	23	62	44	29	7.0	1.3	.92	1.2
25	1.5	9.1	11	20	34	67	47	29	11	1.0	.19	1.3
26	1.6	8.2	10	21	32	77	49	27	8.1	1.1	.13	1.3
27	2.2	8.6	9.7	20	34	66	47	25	7.2	1.2	.09	1.5
28	3.2	8.7	12	18	52	55	42	23	6.2	1.3	.07	1.7
29	3.7	8.4	15	17	---	49	37	21	5.9	1.1	.06	1.7
30	3.7	8.6	24	16	---	43	31	19	5.5	.80	.09	1.8
31	4.0	---	32	16	---	39	---	17	---	.85	.36	---
TOTAL	62.95	204.3	384.5	643	510	1421	1203	996	285.2	64.17	32.05	34.42
MEAN	2.03	6.81	12.4	20.7	18.2	45.8	40.1	32.1	9.51	2.07	1.03	1.15
MAX	4.0	11	32	32	52	77	68	43	17	5.2	2.8	1.8
MIN	.33	4.4	7.8	14	11	24	27	17	5.5	.80	.06	.38
AC-FT	125	405	763	1280	1010	2820	2390	1980	566	127	64	68

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1999, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	3.31	8.66	17.4	23.9	39.5	62.6	52.0	46.2	18.6	4.61	1.60	1.66					
MAX	7.10	21.2	72.8	78.2	109	128	116	110	55.4	11.2	3.99	6.13					
(WY)	1983	1987	1997	1997	1996	1993	1984	1995	1984	1993	1997	1984					
MIN	.20	2.79	4.02	6.68	7.52	9.81	11.9	2.73	1.60	.88	.010	.064					
(WY)	1989	1988	1991	1990	1994	1988	1992	1992	1992	1985	1988	1988					

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1983 - 1999

ANNUAL TOTAL	7471.25	5840.59	
ANNUAL MEAN	20.5	16.0	23.2
HIGHEST ANNUAL MEAN			44.3
LOWEST ANNUAL MEAN			6.84
HIGHEST DAILY MEAN	180	77	450
LOWEST DAILY MEAN	.33	.06	.01
ANNUAL SEVEN-DAY MINIMUM	.45	.14	.01
ANNUAL RUNOFF (AC-FT)	14820	11580	16840
10 PERCENT EXCEEDS	50	40	63
50 PERCENT EXCEEDS	11	10	9.3
90 PERCENT EXCEEDS	1.9	1.0	.80

e Estimated

WILLOW CREEK BASIN

14034480 BALM FORK NEAR HEPPNER, OR

LOCATION.--Lat 45°19'56", long 119°32'24", in NW 1/4 SE 1/4 sec.2, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank, 0.7 mi upstream from bridge on Willow Creek Road, 1.0 mi southeast of Heppner, 1.2 mi upstream from Willow Creek dam, and at mile 1.1.

DRAINAGE AREA.--26.3 mi².

PERIOD OF RECORD.--May 1982 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area. WDR OR-88-1: 1987(M).

GAGE.--Water-stage recorder. Concrete control since Aug. 24, 1982. Datum of gage is 2,101.52 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records poor. Diversion for irrigation of about 170 acres upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--17 years (water years 1983-99), 2.97 ft³/s, 2,150 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190 ft³/s Mar. 4, 1983, gage height, 4.90 ft, from rating curve extended above 82 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.12 ft Dec. 29, 1996; no flow for part or all of several days in 1982, 1990, 1991, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, by computation of slope-area measurement (see WSP 96).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 60 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 27	0915	*14	*3.93				

Minimum discharge, 0.03 ft³/s several days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.61	1.1	2.1	2.3	12	1.5	1.2	.48	.14	.05	.04
2	.14	.58	1.3	2.1	2.2	9.6	1.4	1.5	.49	.27	.05	.05
3	.14	.58	1.2	2.1	2.1	9.5	1.8	1.4	.49	.15	.04	.05
4	.15	.60	1.2	2.1	2.1	9.4	1.5	1.3	.42	.13	.05	.05
5	.15	.68	1.3	1.9	2.1	8.9	1.6	1.2	.49	.11	.05	.05
6	.15	.63	1.2	1.8	2.4	8.7	1.6	1.2	.46	.10	.07	.04
7	.15	.65	1.2	1.8	2.5	8.3	1.6	1.3	.46	.10	.09	.04
8	.15	.81	1.3	1.8	2.4	7.7	1.4	1.3	.46	.09	.06	.04
9	.17	.72	1.2	1.7	3.1	7.9	1.4	1.4	.42	.09	.06	.05
10	.18	.71	1.2	1.6	2.6	7.4	1.3	1.4	.36	.08	.06	.06
11	.18	.70	1.4	1.6	2.7	7.3	1.3	1.4	.30	.07	.06	.06
12	.20	.67	1.3	1.6	2.8	7.3	1.2	1.1	.25	.07	.07	.07
13	.25	.67	1.2	1.6	2.9	7.3	1.2	.70	.23	.07	.06	.06
14	.51	.67	1.2	1.5	3.9	7.5	1.3	.67	.22	.08	.06	.06
15	.37	.69	1.2	2.3	3.7	8.0	1.5	.78	.20	.08	.06	.05
16	.38	.68	1.2	3.6	4.1	6.2	1.6	.73	.19	.08	.06	.04
17	.37	.82	1.2	4.2	5.7	3.7	1.6	.82	.17	.08	.05	.04
18	.38	.77	1.4	3.4	6.8	4.4	1.6	.86	.17	.07	.05	.04
19	.47	.73	e1.1	3.7	7.2	3.6	1.5	.71	.19	.09	.05	.04
20	.50	.78	e1.0	4.1	7.7	3.1	1.4	.77	.18	.08	.04	.04
21	.50	.88	e.90	4.1	8.2	4.1	1.4	.88	.18	.08	.04	.04
22	.50	.85	e.85	4.3	7.8	4.6	1.6	.70	.17	.08	.04	.04
23	.49	.88	e.90	4.7	7.7	4.1	1.7	.66	.15	.09	.04	.04
24	.47	.87	e.95	3.9	8.7	3.2	1.5	.66	.14	.09	.04	.04
25	.50	.86	1.0	3.8	11	1.8	1.4	.66	.14	.11	.03	.04
26	.50	.84	1.1	3.6	12	1.8	1.4	.62	.14	.09	.04	.04
27	.50	.88	1.3	3.2	13	1.8	1.4	.67	.14	.09	.09	.04
28	.51	1.0	1.3	3.2	13	1.7	1.3	.60	.25	.08	.03	.04
29	.52	.98	1.2	3.1	---	1.7	1.3	.56	.20	.07	.03	.04
30	.54	1.1	1.3	2.7	---	1.8	1.2	.51	.14	.06	.04	.04
31	.54	---	1.7	2.6	---	1.9	---	.49	---	.05	.04	---
TOTAL	10.70	22.89	36.90	85.8	152.7	176.3	43.5	28.75	8.28	2.92	1.60	1.37
MEAN	.35	.76	1.19	2.77	5.45	5.69	1.45	.93	.28	.094	.052	.046
MAX	.54	1.1	1.7	4.7	13	12	1.8	1.5	.49	.27	.09	.07
MIN	.14	.58	.85	1.5	2.1	1.7	1.2	.49	.14	.05	.03	.04
AC-FT	21	45	73	170	303	350	86	57	16	5.8	3.2	2.7

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1999, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	.36	1.01	2.85	3.84	6.46	9.33	4.84	4.48	1.80	.43	.16	.21					
MAX	1.53	3.97	20.1	12.3	19.2	21.0	16.4	13.0	5.95	1.24	.51	1.02					
(WY)	1985	1997	1997	1997	1997	1993	1984	1995	1998	1993	1984	1984					
MIN	.000	.002	.038	.28	.66	.47	.29	.24	.077	.034	.012	.006					
(WY)	1992	1992	1991	1991	1990	1992	1992	1992	1992	1992	1992	1991					

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1983 - 1999
ANNUAL TOTAL	1167.49	571.71	
ANNUAL MEAN	3.20	1.57	2.97
HIGHEST ANNUAL MEAN			6.23
LOWEST ANNUAL MEAN			.24
HIGHEST DAILY MEAN	54	May 30	80
LOWEST DAILY MEAN	.09	Sep 4	.00
ANNUAL SEVEN-DAY MINIMUM	.10	Aug 31	.00
ANNUAL RUNOFF (AC-FT)	2320	1130	2150
10 PERCENT EXCEEDS	8.9	4.1	8.7
50 PERCENT EXCEEDS	1.4	.73	.88
90 PERCENT EXCEEDS	.14	.05	.05

e Estimated

WILLOW CREEK BASIN

89

14034490 WILLOW CREEK LAKE AT HEPPNER, OR

LOCATION.--Lat 45°20'50", long 119°32'37", in NW 1/4 SE 1/4 sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Corps of Engineers land, on top left side of spillway on dam on Willow Creek, 2,000 ft upstream from Court Street bridge and at mile 52.4.

DRAINAGE AREA.--96.6 mi².

PERIOD OF RECORD.--February 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Prior to Dec. 22, 1983, nonrecording gage at nearby site at present datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Lake is formed behind roller-compacted, concrete dam; storage began Feb. 16, 1983. Capacity, 14,020 acre-ft between elevations 2,000.0 ft, sill of outlet gates, and 2,113.5 ft, crest of spillway. Average minimum lake elevation 2,047.0 ft, storing 2,540 acre-ft. Dead storage, 73 acre-ft below elevation 2,000.0 ft. Reservoir used for flood control. Figures given herein represent total contents. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,340 acre-ft May 8, 1995, elevation, 2,083.06 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 6,330 acre-ft May 20, elevation, 2,077.02 ft; minimum contents, 4,240 acre-ft Feb. 2, elevation, 2,062.36 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

2,050	2,840	2,060	3,950	2,070	5,280	2,080	6,820
2,055	3,370	2,065	4,590	2,075	6,020		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2074.08	2069.98	2062.84	2064.85	2062.37	2063.92	2071.56	2075.04	2075.96	2075.74	2074.38	2073.33
2	2074.07	2069.75	2063.02	2065.19	2062.36	2063.82	2071.61	2075.14	2076.08	2075.67	2074.35	2073.27
3	2074.05	2069.53	2063.24	2065.47	2062.42	2063.76	2071.63	2075.27	2076.21	2075.60	2074.33	2073.23
4	2074.04	2069.33	2063.29	2065.55	2062.47	2063.84	2071.63	2075.37	2076.32	2075.53	2074.29	2073.18
5	2074.04	2069.15	2063.23	2065.52	2062.52	2063.89	2071.62	2075.49	2076.39	2075.48	2074.29	2073.13
6	2074.03	2068.96	2063.16	2065.47	2062.56	2063.89	2071.59	2075.66	2076.47	2075.43	2074.33	2073.07
7	2074.03	2068.78	2063.08	2065.39	2062.61	2063.85	2071.55	2075.93	2076.56	2075.36	2074.32	2073.03
8	2074.01	2068.61	2062.98	2065.29	2062.68	2063.90	2071.62	2076.21	2076.62	2075.30	2074.30	2073.00
9	2074.03	2068.40	2062.91	2065.19	2062.75	2064.15	2071.71	2076.46	2076.67	2075.24	2074.29	2072.95
10	2074.03	2068.19	2062.90	2065.08	2062.76	2064.40	2071.79	2076.51	2076.67	2075.18	2074.27	2072.91
11	2074.03	2067.98	2062.91	2064.97	2062.81	2064.63	2071.88	2076.45	2076.66	2075.11	2074.22	2072.87
12	2074.04	2067.76	2062.98	2064.86	2062.82	2064.87	2071.99	2076.38	2076.65	2075.05	2074.18	2072.83
13	2074.04	2067.51	2062.99	2064.77	2062.88	2065.11	2072.23	2076.35	2076.62	2075.00	2074.14	2072.79
14	2073.99	2067.31	2063.07	2064.64	2062.97	2065.43	2072.55	2076.30	2076.58	2074.94	2074.10	2072.75
15	2073.80	2067.09	2063.16	2064.68	2063.09	2065.82	2072.89	2076.22	2076.54	2074.92	2074.07	2072.72
16	2073.55	2066.88	2063.25	2064.75	2063.09	2066.27	2073.23	2076.11	2076.49	2074.89	2074.04	2072.68
17	2073.32	2066.66	2063.30	2064.87	2063.17	2066.69	2073.64	2076.36	2076.43	2074.85	2074.01	2072.64
18	2073.08	2066.39	2063.35	2065.03	2063.30	2067.14	2074.20	2076.76	2076.35	2074.83	2073.98	2072.61
19	2072.85	2066.14	2063.28	2065.03	2063.40	2067.66	2074.50	2076.97	2076.30	2074.81	2073.95	2072.57
20	2072.63	2065.87	2063.19	2064.87	2063.52	2068.31	2074.59	2076.98	2076.24	2074.76	2073.91	2072.53
21	2072.40	2065.60	2063.15	2064.50	2063.60	2069.19	2074.60	2076.89	2076.18	2074.74	2073.87	2072.50
22	2072.20	2065.40	2063.15	2064.07	2063.61	2069.57	2074.54	2076.77	2076.13	2074.72	2073.83	2072.46
23	2071.98	2065.18	2063.17	2063.62	2063.60	2069.72	2074.47	2076.62	2076.08	2074.70	2073.81	2072.41
24	2071.80	2064.94	2063.21	2063.13	2063.66	2069.91	2074.44	2076.51	2076.05	2074.65	2073.76	2072.37
25	2071.59	2064.43	2063.31	2062.75	2063.77	2070.23	2074.43	2076.38	2076.06	2074.62	2073.70	2072.30
26	2071.38	2063.84	2063.39	2062.76	2063.69	2070.68	2074.57	2076.29	2076.02	2074.60	2073.66	2072.26
27	2071.14	2063.31	2063.46	2062.75	2063.61	2071.00	2074.75	2076.23	2075.99	2074.56	2073.61	2072.22
28	2070.89	2062.81	2063.58	2062.69	2063.77	2071.19	2074.86	2076.18	2075.93	2074.53	2073.55	2072.18
29	2070.64	2062.47	2063.74	2062.62	---	2071.29	2074.98	2076.08	2075.87	2074.50	2073.50	2072.15
30	2070.40	2062.59	2064.03	2062.51	---	2071.38	2075.05	2076.02	2075.81	2074.46	2073.43	2072.11
31	2070.19	---	2064.44	2062.41	---	2071.49	---	2075.94	---	2074.42	2073.38	---
MAX	2074.08	2069.98	2064.44	2065.55	2063.77	2071.49	2075.05	2076.98	2076.67	2075.74	2074.38	2073.33
MIN	2070.19	2062.47	2062.84	2062.41	2062.36	2063.76	2071.55	2075.04	2075.81	2074.42	2073.38	2072.11
(†)	5300	4270	4510	4250	4420	5490	6020	6160	6140	5930	5770	5580
(‡)	-580	-1030	+240	-260	+170	+1070	+530	+140	-20	-210	-160	-190
CAL YR 1998	TOTAL 755791.68 MEAN 2070.66 MAX 2079.04 MIN 2062.01 AC-FT† +240											
WTR YR 1999	TOTAL 755704.68 MEAN 2070.42 MAX 2076.98 MIN 2062.36 AC-FT‡ -300											

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

‡ Change in contents, in acre-feet.

WILLOW CREEK BASIN

14034500 WILLOW CREEK AT HEPNER, OR

LOCATION.--Lat 45°21'02", long 119°32'56", in SE 1/4 NW 1/4 sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank at Heppner, 100 ft upstream from Court Street bridge, 800 ft southeast of Morrow County courthouse, 0.2 mi downstream from Willow Creek Dam and at mile 52.2.

DRAINAGE AREA.--96.8 mi².

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

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Concrete control since September 1985. Datum of gage is 1,952.73 ft above sea level.

REMARKS.--Records fair. Flow regulated by Willow Creek Lake, 0.2 mi upstream, since Feb. 16, 1983. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Continuous water-quality records for the period February 1963 to June 1968 and March 1972 to September 1973 have been collected at this location. Chemical analysis Oct. 1984 to September 1987.

AVERAGE DISCHARGE.--31 years (water years 1952-82), 19.1 ft³/s, 13,840 acre-ft/yr.
16 years (water years 1984-99), 23.6 ft³/s, 17,100 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 812 ft³/s May 10, 1957, gage height, 6.15 ft, from rating curve extended above 230 ft³/s; maximum gage height, 6.46 ft May 25, 1971, backwater from Shobe Canyon; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, result of slope-area measurement (see WSP 96). Discharge for flood of Feb. 22, 1949, was 1,700 ft³/s, result of slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 77 ft³/s Mar. 1, gage height, 3.95 ft; minimum discharge, 2.3 ft³/s Aug. 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.0	e22	5.1	7.8	22	63	33	26	16	9.8	2.6	3.1
2	e3.0	e22	5.1	7.8	14	72	33	26	10	9.4	2.6	3.1
3	e3.0	e21	5.1	7.6	12	60	33	26	7.2	9.4	2.6	3.1
4	e3.0	e21	13	18	12	41	33	26	7.2	8.3	2.6	3.1
5	e3.0	e21	17	23	12	38	33	22	7.2	7.6	2.6	3.0
6	e3.0	e21	17	23	12	38	33	20	7.2	7.6	2.7	3.0
7	e3.0	e21	17	23	12	38	33	20	7.2	7.5	2.6	3.0
8	e3.0	e21	17	23	11	29	28	20	7.2	7.6	2.6	3.0
9	e3.0	e21	14	23	e11	16	25	20	9.0	7.6	2.6	3.0
10	e3.0	e21	12	23	e11	12	25	35	13	7.6	2.6	3.0
11	e3.0	e21	12	23	e12	12	25	42	13	7.6	2.6	3.0
12	e3.0	e21	12	23	e13	12	25	37	13	5.4	2.6	3.0
13	e3.0	e21	12	23	e14	12	17	35	12	3.8	2.6	3.0
14	e9.0	e21	12	23	e14	12	13	35	12	3.6	2.6	3.0
15	e17	e21	10	23	e15	12	13	35	12	2.7	2.6	3.0
16	e18	e21	10	23	e16	12	13	34	12	2.7	2.8	3.0
17	e18	e25	10	23	e16	12	13	15	12	2.7	2.6	3.0
18	e18	e25	10	23	16	9.6	13	6.3	12	2.7	2.6	3.0
19	e18	e25	10	32	16	7.5	43	23	12	2.6	2.6	3.0
20	e18	e25	10	46	16	7.4	58	41	12	2.6	2.6	3.0
21	e18	25	8.7	58	16	7.1	58	47	12	2.6	2.6	3.0
22	e18	24	8.0	62	19	39	58	47	11	2.6	2.6	3.0
23	e18	24	8.0	62	20	55	54	46	11	2.6	2.5	3.0
24	e18	28	8.0	62	20	52	48	39	11	2.6	2.4	3.0
25	e18	43	7.7	50	31	48	48	36	11	2.6	3.0	3.0
26	e22	43	7.7	24	43	47	38	35	11	2.6	3.0	3.0
27	e22	43	7.6	24	43	47	33	30	11	2.6	3.0	3.0
28	e22	43	7.8	24	43	47	33	28	11	2.6	3.0	3.0
29	e22	31	7.8	24	---	47	28	28	11	2.6	3.0	3.0
30	e22	5.1	7.8	24	---	43	26	26	11	2.6	3.0	3.0
31	e22	---	7.8	24	---	35	---	23	---	2.6	3.1	---
TOTAL	377.0	747.1	317.2	879.2	512	982.6	966	929.3	324.2	147.4	83.5	90.4
MEAN	12.2	24.9	10.2	28.4	18.3	31.7	32.2	30.0	10.8	4.75	2.69	3.01
MAX	22	43	17	62	43	72	58	47	16	9.8	3.1	3.1
MIN	3.0	5.1	5.1	7.6	11	7.1	13	6.3	7.2	2.6	2.4	3.0
AC-FT	748	1480	629	1740	1020	1950	1920	1840	643	292	166	179

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	7.48	12.6	15.8	28.0	35.2	53.5	50.5	45.0	20.6	6.18	4.78	4.18				
MAX	15.6	26.3	48.3	110	110	113	152	127	54.2	10.5	14.3	12.4				
(WY)	1994	1997	1997	1997	1996	1993	1984	1995	1984	1993	1992	1988				
MIN	1.93	1.69	2.65	3.40	5.95	8.09	10.4	2.15	2.17	2.39	2.69	2.56				
(WY)	1992	1992	1993	1991	1994	1988	1994	1992	1992	1987	1999	1991				

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1984 - 1999

ANNUAL TOTAL	8787.1	6355.9	
ANNUAL MEAN	24.1	17.4	
HIGHEST ANNUAL MEAN			23.6
LOWEST ANNUAL MEAN			45.5
HIGHEST DAILY MEAN	154	Jun 1	7.79
LOWEST DAILY MEAN	2.7	Jul 29	2.4
ANNUAL SEVEN-DAY MINIMUM	2.8	Jul 29	2.6
ANNUAL RUNOFF (AC-FT)	17430		17100
10 PERCENT EXCEEDS	52		41
50 PERCENT EXCEEDS	16		12
90 PERCENT EXCEEDS	3.0		2.7

e Estimated

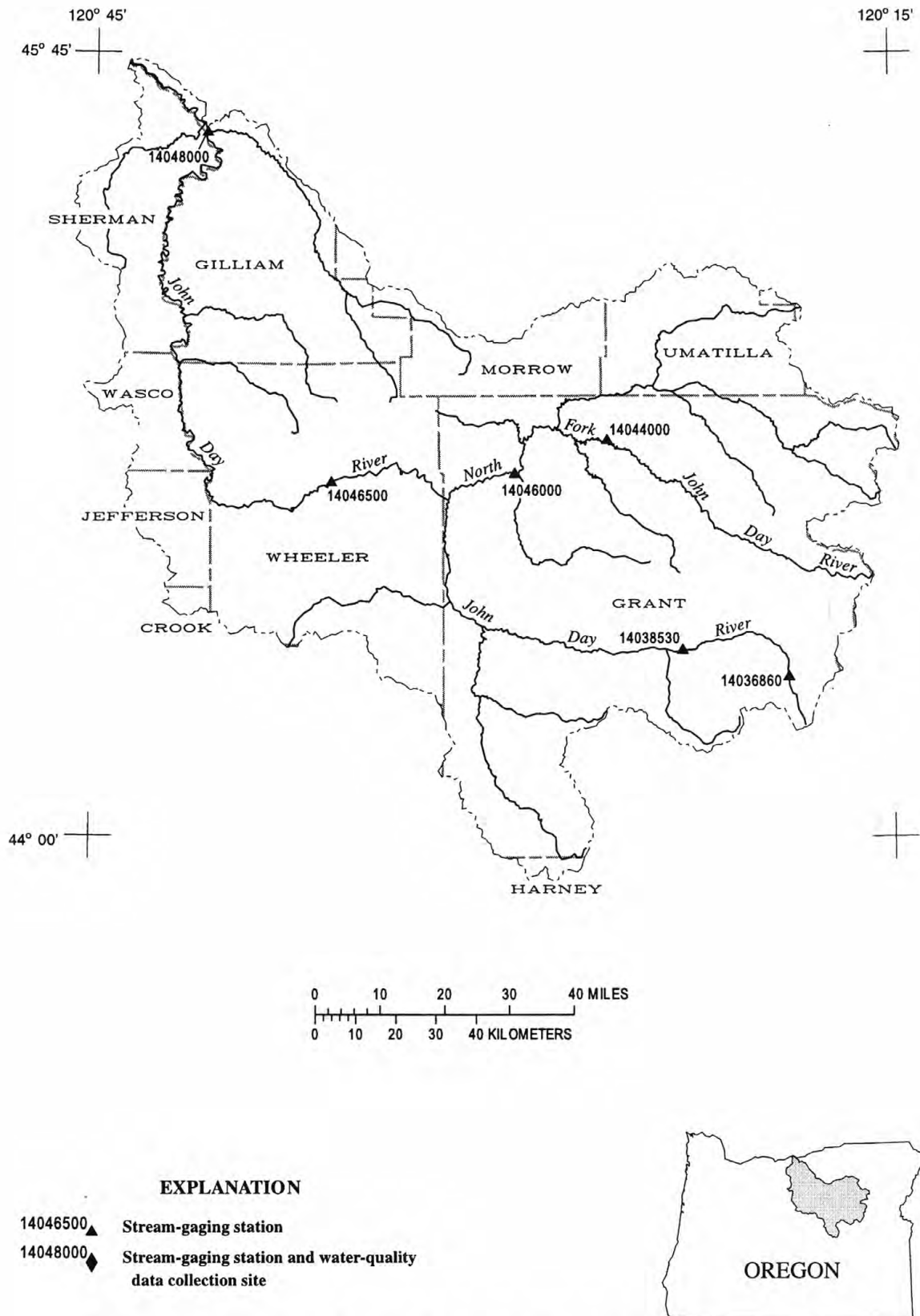


Figure 13. Location of surface-water and water-quality stations in the John Day River Basin.

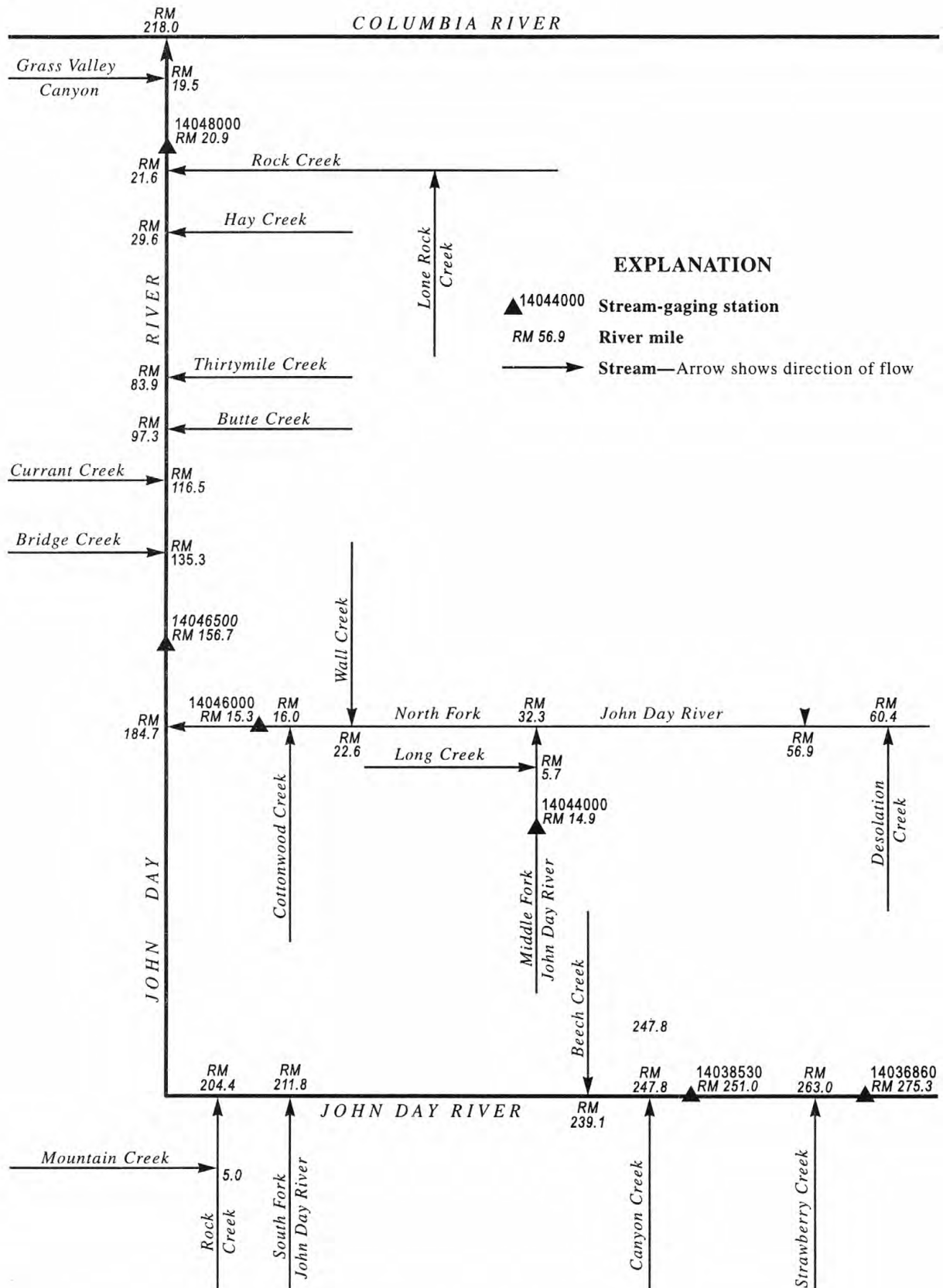


Figure 14. Schematic diagram showing gaging stations in the John Day River Basin.

JOHN DAY RIVER BASIN

93

14036860 JOHN DAY RIVER AT BLUE MOUNTAIN HOT SPRINGS, NEAR PRAIRIE CITY, OR

LOCATION.--Lat 44°21'29", long 118°34'30", in SE 1/4 NW 1/4, sec. 13, T.14 S., R.34 E., Grant County, Hydrologic Unit 17070201, on right bank at private road crossing, 0.25 mi downstream from Blue Mountain Hot Springs, 0.6 mi downstream from Rail Creek, 8 mi southeast of Prairie City, and at mile 275.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,200 ft above sea level, from topographic map.

REMARKS.--Records good except for those above 300 ft³/s and estimated daily discharges, which are poor. No regulation. Some diversions for irrigation.

AVERAGE DISCHARGE.--3 years (water year 1997-99), 62.3 ft³/s, 45,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 950 ft³/s May 25, 1998, gage height, 3.90 ft, from crest-stage gage, from rating curve extended above 300 ft³/s; minimum daily discharge, 25 ft³/s Dec. 23, 34, 1998.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 330 ft³/s May 25, gage height, 2.96 ft; minimum daily discharge, 25 ft³/s Dec. 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	37	e37	e52	e35	75	59	85	225	62	40	35
2	39	37	e40	e44	e36	65	56	94	222	60	40	35
3	39	37	e42	e37	e36	59	55	99	177	59	40	35
4	39	36	e39	e36	e35	54	53	87	154	57	40	34
5	39	38	e38	e34	e34	52	52	80	136	54	41	34
6	39	37	e39	e34	e37	50	50	82	135	51	41	34
7	38	37	e38	e34	e39	48	50	99	121	50	40	34
8	38	38	e38	e33	e36	47	52	103	114	48	39	33
9	38	37	e37	e32	e34	46	50	97	100	48	39	34
10	39	36	e37	e33	e34	44	49	88	84	49	39	33
11	39	37	e39	e34	e34	42	49	83	83	49	41	33
12	38	e36	e42	e35	e33	42	50	91	95	49	39	35
13	38	e36	e50	e33	e33	43	54	102	118	49	39	36
14	38	e36	e46	e35	e34	44	58	99	137	48	40	36
15	38	e36	e44	e46	e35	45	63	88	152	48	39	36
16	36	e38	e40	e52	e36	48	73	82	161	47	37	36
17	37	e39	e36	e54	e38	50	90	83	147	47	37	36
18	37	e41	e35	e64	e37	52	111	96	142	45	37	36
19	38	e39	e32	e56	35	57	138	118	136	45	37	36
20	37	e38	e30	e50	35	72	146	136	118	45	36	36
21	36	e38	e28	e48	36	90	136	163	110	45	36	36
22	36	e38	e27	e46	36	88	116	178	100	44	36	36
23	36	e40	e25	e42	38	86	96	194	88	42	36	36
24	37	e45	e25	e39	43	85	100	224	83	42	36	37
25	38	e42	e26	e37	44	87	115	271	79	41	35	37
26	38	e38	e28	e39	42	95	125	280	75	41	35	38
27	37	e38	e33	e37	45	90	121	264	70	41	35	38
28	37	e39	e48	e35	72	81	113	268	68	41	36	38
29	36	e38	e52	e34	---	73	99	254	67	41	35	37
30	36	e37	e56	e35	---	68	86	240	63	41	35	37
31	36	---	e64	e35	---	64	---	228	---	40	35	---
TOTAL	1166	1139	1191	1255	1062	1942	2465	4456	3560	1469	1171	1067
MEAN	37.6	38.0	38.4	40.5	37.9	62.6	82.2	144	119	47.4	37.8	35.6
MAX	39	45	64	64	72	95	146	280	225	62	41	38
MIN	36	36	25	32	33	42	49	80	63	40	35	33
AC-FT	2310	2260	2360	2490	2110	3850	4890	8840	7060	2910	2320	2120

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1999, BY WATER YEAR (WY)

	1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999
MEAN	38.4	41.7	46.1	54.2	41.2	58.6	84.0	157	103	46.8	38.2	36.2
MAX	40.3	49.8	64.6	84.7	47.8	62.6	101	174	119	53.0	39.4	36.8
(WY)	1998	1997	1997	1997	1997	1999	1997	1998	1999	1998	1997	1997
MIN	37.2	37.5	35.2	37.5	37.8	56.6	68.4	144	76.8	40.1	37.5	35.6
(WY)	1997	1998	1998	1998	1998	1997	1998	1999	1997	1997	1998	1999

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1997 - 1999
ANNUAL TOTAL	22237	21943	
ANNUAL MEAN	60.9	60.1	62.3
HIGHEST ANNUAL MEAN			65.8
LOWEST ANNUAL MEAN			60.1
HIGHEST DAILY MEAN	290	280	303
LOWEST DAILY MEAN	25	25	25
ANNUAL SEVEN-DAY MINIMUM	27	27	27
ANNUAL RUNOFF (AC-FT)	44110	43520	45110
10 PERCENT EXCEEDS	136	113	130
50 PERCENT EXCEEDS	40	41	41
90 PERCENT EXCEEDS	35	35	34

e Estimated

JOHN DAY RIVER BASIN

14038530 JOHN DAY RIVER NEAR JOHN DAY, OR

LOCATION.--Lat 44°25'07", long 118°54'19", in SW 1/4 SE 1/4 sec.19, T.13 S., R.32 E., Grant County, Hydrologic Unit 17070101, on left bank 1,200 ft downstream from Dog Creek, 2.5 mi east of John Day, and at mile 250.8.

DRAINAGE AREA.--386 mi².

PERIOD OF RECORD.--October 1968 to September 1994, May 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,130.56 ft above sea level.

REMARKS.--Records good. No regulation upstream. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--29 years (water years 1969-94, 1997-99), 207 ft³/s, 150,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,830 ft³/s June 9, 1969, gage height, 10.80 ft, from floodmark; minimum discharge, 3.5 ft³/s Aug. 26-28, 1969.

EXTREMES FOR PERIOD MAY TO SEPTEMBER.--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)
May 26	0645	*923	*5.92	No other peak greater than base discharge.			
Minimum discharge, 38 ft ³ /s Aug. 28-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	127	180	275	164	530	312	408	618	210	48	57
2	132	127	179	216	166	393	294	432	634	211	55	59
3	132	125	215	194	163	355	291	457	563	213	58	55
4	138	126	196	185	163	318	280	433	490	218	58	42
5	134	138	178	179	153	288	269	395	453	203	72	56
6	130	134	176	176	162	267	257	376	441	168	101	51
7	129	130	165	174	178	257	249	414	423	152	87	47
8	127	134	166	168	164	240	268	413	404	148	83	44
9	128	135	150	162	164	237	265	409	357	143	80	42
10	130	131	154	171	153	220	254	385	320	137	75	42
11	130	131	156	173	157	212	247	356	302	133	99	41
12	126	129	197	181	159	205	247	366	310	120	100	46
13	124	131	253	172	151	229	257	378	362	114	95	49
14	126	133	226	188	165	243	275	373	428	106	98	48
15	133	134	194	334	168	248	295	353	522	100	93	45
16	135	133	186	348	181	265	327	327	589	100	86	48
17	132	147	182	271	258	257	384	322	600	101	81	50
18	130	146	174	329	226	271	481	355	556	104	74	54
19	129	140	146	279	224	297	588	374	521	105	71	51
20	128	142	e120	282	201	370	647	427	484	100	70	51
21	126	177	e90	275	191	477	627	481	481	101	64	53
22	126	198	e85	249	188	478	556	505	434	97	64	57
23	124	194	e90	245	274	451	484	543	382	82	60	56
24	124	245	e100	225	670	440	481	692	360	74	59	54
25	130	191	e120	190	509	439	529	856	359	78	53	54
26	126	173	e150	202	360	479	582	870	320	82	48	60
27	126	173	e165	192	335	449	575	756	294	69	41	66
28	125	181	318	183	647	405	527	713	258	64	39	70
29	125	173	313	179	---	369	473	702	234	63	39	76
30	124	168	281	174	---	346	428	675	214	57	46	84
31	124	---	343	172	---	329	---	601	---	55	55	---
TOTAL	3986	4546	5648	6743	6694	10364	11749	15147	12713	3708	2152	1621
MEAN	129	152	182	218	239	334	392	489	424	120	69.4	54.0
MAX	138	245	343	348	670	530	647	870	634	218	101	84
MIN	124	125	85	162	151	205	247	322	214	55	39	41
AC-FT	7910	9020	11200	13370	13280	20560	23300	30040	25220	7350	4270	3220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	MEAN	95.3	128	164	212	235	321	341	446	334	113	44.2	56.7
MAX	156	244	435	613	689	746	718	845	810	314	116	145	
(WY)	1983	1974	1997	1997	1982	1984	1984	1984	1982	1982	1984	1984	
MIN	65.8	87.5	90.0	88.1	88.8	88.6	88.1	85.4	53.9	25.9	10.4	24.2	
(WY)	1989	1979	1989	1977	1977	1977	1977	1992	1992	1973	1973	1990	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR				FOR 1999 WATER YEAR				WATER YEARS 1969 - 1999			
ANNUAL TOTAL	88972				85071							
ANNUAL MEAN	244				233							
HIGHEST ANNUAL MEAN									207			
LOWEST ANNUAL MEAN									393			1984
HIGHEST DAILY MEAN	1230				870				73.5			1977
LOWEST DAILY MEAN	30				39				2640			May 19 1991
ANNUAL SEVEN-DAY MINIMUM	32				44				3.5			Aug 27 1969
ANNUAL RUNOFF (AC-FT)	176500				168700				4.3			Aug 24 1969
10 PERCENT EXCEEDS	561				481				466			
50 PERCENT EXCEEDS	169				178				131			
90 PERCENT EXCEEDS	78				58				41			

e Estimated

JOHN DAY RIVER BASIN

95

14044000 MIDDLE FORK JOHN DAY RIVER AT RITTER, OR

LOCATION.--Lat 44°53'20", long 119°08'25", in SW 1/4 NW 1/4 sec.8, T.8 S., R.30 E., Grant County, Hydrologic Unit 17070203, on left bank 0.2 mi south of Ritter, 0.8 mi downstream from Twelvemile Creek, and at mile 14.9.

DRAINAGE AREA.--515 mi².

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

REVISED RECORDS.--WSP 739: 1931. WSP 1218: 1950. WSP 1448: 1930-32, 1937, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,544.56 ft above sea level.

REMARKS.--Records good except those above 3,000 ft³/s and below 30 ft³/s and estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Continuous water-quality records for the period July 1966 to September 1968 have been collected at this location.

AVERAGE DISCHARGE.--70 years (water years 1930-99), 259 ft³/s, 187,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,730 ft³/s Jan. 30, 1965, gage height, 8.39 ft, from rating curve extended above 2,200 ft³/s; maximum gage height, 9.13 ft Feb. 1, 1963, ice jam; minimum discharge, 0.90 ft³/s Aug. 19, 20, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 31	1530	1,030	5.16	Apr. 26	0800	1,720	5.74
Mar. 26	0200	1,820	5.81	May 26	0230	1,710	5.73
Apr. 20	1200	*2,160	*6.02				

Minimum discharge, 39 ft³/s Sept. 16-20, 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	60	151	e620	167	722	582	897	906	156	53	53
2	54	65	153	e450	162	542	544	949	850	144	56	50
3	57	60	269	e400	153	477	549	1030	711	137	57	49
4	59	59	222	e320	156	432	515	980	621	141	57	49
5	62	67	173	e280	133	385	479	852	602	145	57	47
6	59	86	158	e270	151	350	455	796	571	132	77	45
7	56	70	145	e255	156	341	459	861	509	120	71	44
8	54	73	e130	e220	147	306	547	832	482	113	65	45
9	54	72	e120	e210	e145	300	541	782	440	108	61	45
10	55	65	e100	221	e130	261	496	726	399	103	57	44
11	57	68	115	238	116	261	474	680	389	96	62	43
12	54	69	126	220	119	247	510	685	390	91	78	42
13	54	69	207	209	132	287	599	709	418	87	69	42
14	57	75	235	201	145	354	719	668	445	82	66	42
15	59	83	151	374	133	394	771	635	468	79	66	42
16	63	84	161	431	140	498	837	583	479	79	60	41
17	60	92	145	372	161	455	1050	577	470	78	53	39
18	60	106	e130	368	153	471	1510	664	419	79	51	41
19	59	93	e110	361	150	534	1920	742	378	77	51	40
20	57	86	e90	360	141	917	2040	836	336	75	50	40
21	56	104	e70	351	155	1430	1870	919	317	74	48	41
22	55	172	e65	316	150	1320	1480	976	297	72	47	40
23	55	154	e70	299	166	1300	1210	1090	267	69	46	42
24	55	303	e80	e220	393	1350	1330	1320	248	65	48	42
25	60	190	e90	e185	433	1270	1530	1530	256	67	50	43
26	60	173	e110	187	367	1690	1650	1480	225	65	47	43
27	57	150	e150	219	326	1310	1540	1290	206	66	45	44
28	59	150	e300	213	555	957	1320	1240	188	62	47	45
29	60	140	e450	198	---	807	1060	1150	178	58	48	46
30	57	131	e550	179	---	741	896	1000	165	55	48	46
31	56	---	e700	176	---	657	---	867	---	53	54	---
TOTAL	1775	3169	5726	8923	5435	21366	29483	28346	12630	2828	1745	1315
MEAN	57.3	106	185	288	194	689	983	914	421	91.2	56.3	43.8
MAX	63	303	700	620	555	1690	2040	1530	906	156	78	53
MIN	54	59	65	176	116	247	455	577	165	53	45	39
AC-FT	3520	6290	11360	17700	10780	42380	58480	56220	25050	5610	3460	2610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1999, BY WATER YEAR (WY)

	MEAN	44.3	74.2	132	167	251	476	750	716	354	81.6	32.7	32.4
MAX	99.5	231	482	727	1073	1214	1426	1457	1127	285	98.4	108	
(WY)	1983	1974	1956	1997	1996	1972	1984	1984	1984	1984	1984	1984	
MIN	17.4	20.2	29.0	23.4	31.3	69.8	175	79.2	56.6	17.4	3.75	10.0	
(WY)	1937	1937	1933	1937	1937	1977	1968	1934	1992	1973	1966	1935	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1930 - 1999

ANNUAL TOTAL	102446	122741	
ANNUAL MEAN	281	336	
HIGHEST ANNUAL MEAN			259
LOWEST ANNUAL MEAN			538
HIGHEST DAILY MEAN	1660	Mar 24	2040
LOWEST DAILY MEAN	35	Jan 9	39
ANNUAL SEVEN-DAY MINIMUM	38	Aug 30	40
ANNUAL RUNOFF (AC-FT)	203200	243500	187500
10 PERCENT EXCEEDS	749	901	733
50 PERCENT EXCEEDS	145	153	93
90 PERCENT EXCEEDS	49	49	25

e Estimated

JOHN DAY RIVER BASIN

14046000 NORTH FORK JOHN DAY RIVER AT MONUMENT, OR

LOCATION.--Lat 44°48'50", long 119°25'50", in SE 1/4 sec.2, T.9 S., R.27 E., Grant County, Hydrologic Unit 17070202, on right bank just downstream from entrance to canyon, 0.7 mi downstream from Cottonwood Creek, 0.8 mi west of Monument, and at mile 15.3.

DRAINAGE AREA.--2,520 mi², approximately.

PERIOD OF RECORD.--March 1925 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 754: 1932(M). WSP 1448: 1927, 1931(M), 1949.

GAGE.--Water-stage recorder. Datum of gage is 1,959.64 ft above sea level. Prior to Nov. 24, 1925, nonrecording gage and Nov. 24, 1925, to Oct. 16, 1928, water-stage recorder at datum 1.10 ft higher. Oct. 17, 1928, to Sept. 30, 1930, water-stage recorder at datum 1.00 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Very slight regulation by small reservoirs upstream. Many small diversions for irrigation upstream from station. Continuous water-quality records for the period July 1966 to September 1968 have been collected at this location. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--74 years (water years 1926-99), 1,307 ft³/s, 946,900 acre-ft/yr.
71 years (water years 1929-99), 1,312 ft³/s, 950,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge, 33,400 ft³/s Jan. 30, 1965, gage height, 18.45 ft, from rating curve extended above 17,000 ft³/s; minimum discharge, 6 ft³/s sometime during period Nov. 2-13, 1936 (result of freezeup); minimum daily, 17 ft³/s Dec. 12, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 29	0115	(a)	*12.35	Apr. 19	0930	8,380	9.10
Mar. 1	0130	*9,030	9.43	Apr. 26	1000	7,530	8.70
Mar. 26	0900	8,380	9.10	May 25	0830	7,860	8.84

Minimum discharge, 95 ft³/s Sept. 23.
(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	200	1180	4200	1090	7360	3070	4350	4110	757	190	168
2	166	207	1360	2890	1050	4830	2800	4650	4060	717	192	167
3	167	213	2180	2140	1020	4050	2700	4960	3390	672	193	158
4	183	201	1570	1740	997	3380	2550	4770	2870	640	216	154
5	189	215	1200	1620	911	2790	2390	4240	2720	658	212	152
6	191	248	981	1450	880	2460	2250	3980	2680	607	240	146
7	186	254	889	1340	1030	2310	2140	4720	2410	550	289	139
8	176	230	832	1210	1060	2010	2390	4730	2230	511	283	135
9	170	233	692	1110	962	1960	2530	4340	2060	486	250	135
10	170	232	614	1070	834	1720	2340	3860	1830	461	222	136
11	170	202	715	1150	791	1650	2290	3560	1760	433	206	133
12	174	223	754	1140	777	1550	2360	3540	1770	409	252	129
13	171	213	1380	1100	818	1640	2640	3750	1900	385	280	127
14	169	223	1740	1060	919	2090	3200	3610	2080	362	254	124
15	175	244	1280	1780	872	2400	3540	3370	2250	343	247	123
16	185	277	1080	2870	920	2980	4060	3020	2390	333	230	123
17	193	305	961	2420	1150	2790	5100	2980	2460	325	207	120
18	191	344	890	2610	1210	2890	6640	3670	2140	315	188	116
19	187	325	e700	2770	1200	3220	8070	4280	1920	311	183	115
20	189	299	e500	2760	1150	4470	8080	4960	1670	301	173	113
21	182	350	e300	2770	1100	6400	7500	5290	1540	300	163	112
22	178	801	e280	2480	1100	6360	6410	5390	1450	291	158	110
23	173	742	e280	2200	1230	6230	5400	5650	1310	278	153	105
24	171	998	e300	2000	2640	6390	5740	6410	1210	261	152	104
25	179	853	e350	1580	4070	6440	6710	7220	1270	258	147	103
26	191	747	e450	1360	3450	7870	7150	6860	1170	261	146	105
27	189	652	e600	1480	2680	6570	6780	5910	1000	245	139	108
28	184	656	e1000	1430	5680	5230	5850	5640	907	236	133	110
29	192	660	e2000	1380	---	4440	4910	5310	843	220	133	113
30	193	647	e3500	1250	---	3920	4250	4750	798	203	140	116
31	186	---	e4000	1180	---	3500	---	4110	---	193	161	---
TOTAL	5591	11994	34548	57540	41591	121900	131840	143880	60198	12322	6132	3799
MEAN	180	400	1114	1856	1485	3932	4395	4641	2007	397	198	127
MAX	193	998	4000	4200	5680	7870	8080	7220	4110	757	289	168
MIN	166	200	280	1060	777	1550	2140	2980	798	193	133	103
AC-FT	11090	23790	68530	114100	82500	241800	261500	285400	119400	24440	12160	7540

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1999, BY WATER YEAR (WY)

MEAN	162	321	740	967	1478	2481	3637	3644	1696	387	136	122
MAX	420	1621	3374	4126	6103	6456	6695	8794	5227	1211	345	423
(WY)	1983	1974	1965	1965	1996	1983	1943	1948	1948	1982	1984	1984
MIN	58.5	64.5	96.6	75.8	134	345	822	378	259	97.4	36.6	45.2
(WY)	1937	1937	1937	1937	1929	1977	1968	1934	1992	1973	1931	1934

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1929 - 1999

ANNUAL TOTAL	521288		631335			
ANNUAL MEAN	1428		1730		1312	
HIGHEST ANNUAL MEAN					2608	1984
LOWEST ANNUAL MEAN					441	1977
HIGHEST DAILY MEAN	8060	Mar 24	8080	Apr 20	31900	Jan 30 1965
LOWEST DAILY MEAN	103	Sep 4	103	Sep 25	17	Dec 12 1932
ANNUAL SEVEN-DAY MINIMUM	106	Sep 1	106	Sep 22	29	Aug 28 1931
ANNUAL RUNOFF (AC-FT)	1034000		1252000		950200	
10 PERCENT EXCEEDS	4000		4760		3780	
50 PERCENT EXCEEDS	850		981		432	
90 PERCENT EXCEEDS	154		158		99	

e Estimated

97

e Estimated

JOHN DAY RIVER BASIN

14048000 JOHN DAY RIVER AT McDONALD FERRY, OR

LOCATION.--Lat 45°35'16", long 120°24'30", in NE 1/4 NW 1/4 sec.11, T.1 N., R.19 E., Sherman County, Hydrologic Unit 17070204, on left bank at McDonald Ferry, 0.8 mi downstream from Rock Creek, 10 mi east of Klondike, and at mile 20.9.

GAGE AREA.--7,580 mi², approximately.

PERIOD OF RECORD.--December 1904 to September 1996, October 1997 to current year. Prior to Oct. 1, 1930, published as "at McDonald."

REVISED RECORDS.--WSP 1094: 1894(M), 1932(M). WSP 1448: 1908-9, 1912, 1916, 1920(M), 1922, 1932.

GAGE.--Water-stage recorder. Datum of gage is 392.27 ft above sea level. Prior to Aug. 30, 1930, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Many diversions for irrigation upstream from station. Additional water-quality data available for this site. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--93 years (water years 1906-96, 1998-99), 2,095 ft³/s, 1,518,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,800 ft³/s Dec. 24, 1964, gage height, 13.59 ft, from floodmark, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; no flow for part of Sept. 2, 1966, Aug. 15 to Sept. 16, 1973, Aug. 13, 14, 19-25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1894 reached a stage of 12.8 ft, from floodmarks, discharge, 39,100 ft³/s, from rating curve extended above 22,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 2	0445	*13,500	*8.70	Apr. 27	1445	10,100	7.53
Mar. 27	1315	12,100	8.25	May 26	1430	9,650	7.36
Apr. 21	1100	11,700	8.09				

Minimum recorded discharge, 144 ft³/s Sept. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	453	486	1320	6100	2120	7330	5910	6730	6110	1360	291	195
2	422	490	1310	6000	2030	11800	5400	6500	5650	1260	274	218
3	402	493	2060	4550	1900	8170	4940	6770	5810	1200	262	211
4	412	502	2450	3570	1870	6690	4680	7210	5300	1140	255	232
5	449	523	2920	2840	1810	5760	4580	7180	4650	1090	256	248
6	464	524	2320	2530	1760	5020	4330	6590	4190	1070	270	245
7	469	534	1930	2410	1680	4470	4130	6140	4090	1040	267	243
8	473	561	1690	2200	1670	4090	3910	6480	3900	961	283	239
9	475	574	1590	2060	1870	3830	3950	6910	3640	865	310	241
10	480	579	1490	1910	1900	3550	4330	6540	3440	794	353	239
11	468	558	1380	1790	1730	3400	4190	6040	3100	736	368	230
12	468	557	1180	1760	1570	3020	4020	5540	2790	697	344	214
13	471	553	1280	1830	1500	2920	3970	5320	2670	649	351	e205
14	471	529	1390	1810	1520	2820	4140	5470	2620	599	322	e200
15	475	533	2360	1770	1620	3270	4570	5490	2790	570	309	e200
16	473	531	2580	1830	1760	3940	5130	5260	3010	534	373	e190
17	475	542	2060	3360	1820	4460	5660	4940	3280	498	382	e185
18	487	575	1820	4160	2190	4690	6680	4660	3420	483	388	e185
19	498	612	1670	3860	2790	4640	8420	5040	3400	472	358	e180
20	506	645	e1500	4410	2640	5060	10700	5680	3020	467	334	e175
21	512	692	e960	4360	2480	6400	11500	6360	2780	454	317	e170
22	495	669	e500	4470	2300	9110	10900	6900	2490	460	291	e170
23	481	755	e480	4200	2200	9940	9610	7130	2370	451	279	e170
24	481	1190	e500	3830	2230	9510	8340	7340	2220	435	264	e160
25	477	1410	e540	3560	3200	9580	8020	8000	2000	426	244	e155
26	472	1670	e600	3170	6150	9590	8930	9070	1880	414	244	e145
27	464	1560	e700	2570	6060	11300	9730	9200	1890	398	241	e150
28	467	1420	e1000	2390	4940	10200	9590	8270	1770	374	231	e155
29	478	1300	1790	2500	---	8390	8600	7690	1610	356	203	157
30	481	1300	2730	2380	---	7230	7580	7320	1490	336	199	157
31	480	---	5240	2290	---	6530	---	6780	---	310	195	---
TOTAL	14579	22867	51340	96470	67310	196710	196440	204550	97380	20899	9058	5864
MEAN	470	762	1656	3112	2404	6345	6548	6598	3246	674	292	195
MAX	512	1670	5240	6100	6150	11800	11500	9200	6110	1360	388	248
MIN	402	486	480	1760	1500	2820	3910	4660	1490	310	195	145
AC-FT	28920	45360	101800	191300	133500	390200	389600	405700	193200	41450	17970	11630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1999, BY WATER YEAR (WY)

	331	612	1200	1676	2671	4045	5661	5247	2732	664	198	185
MEAN	892	2310	7030	6402	9736	11450	11900	13180	9531	2131	700	923
MAX (WY)	1985	1974	1965	1965	1996	1983	1984	1917	1948	1984	1984	1984
MIN (WY)	59.9	157	221	217	374	557	964	533	285	88.0	5.70	23.8
	1937	1937	1937	1937	1933	1977	1968	1934	1992	1926	1973	1934

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1906 - 1999

ANNUAL TOTAL	913497	983467	
ANNUAL MEAN	2503	2694	
HIGHEST ANNUAL MEAN		4724	1984
LOWEST ANNUAL MEAN		603	1977
HIGHEST DAILY MEAN	15600	May 30	11800
LOWEST DAILY MEAN	160	Sep 10	145
ANNUAL SEVEN-DAY MINIMUM	167	Sep 5	154
ANNUAL RUNOFF (AC-FT)	1812000	1951000	1518000
10 PERCENT EXCEEDS	6290	6830	5870
50 PERCENT EXCEEDS	1670	1760	800
90 PERCENT EXCEEDS	332	247	144

e Estimated

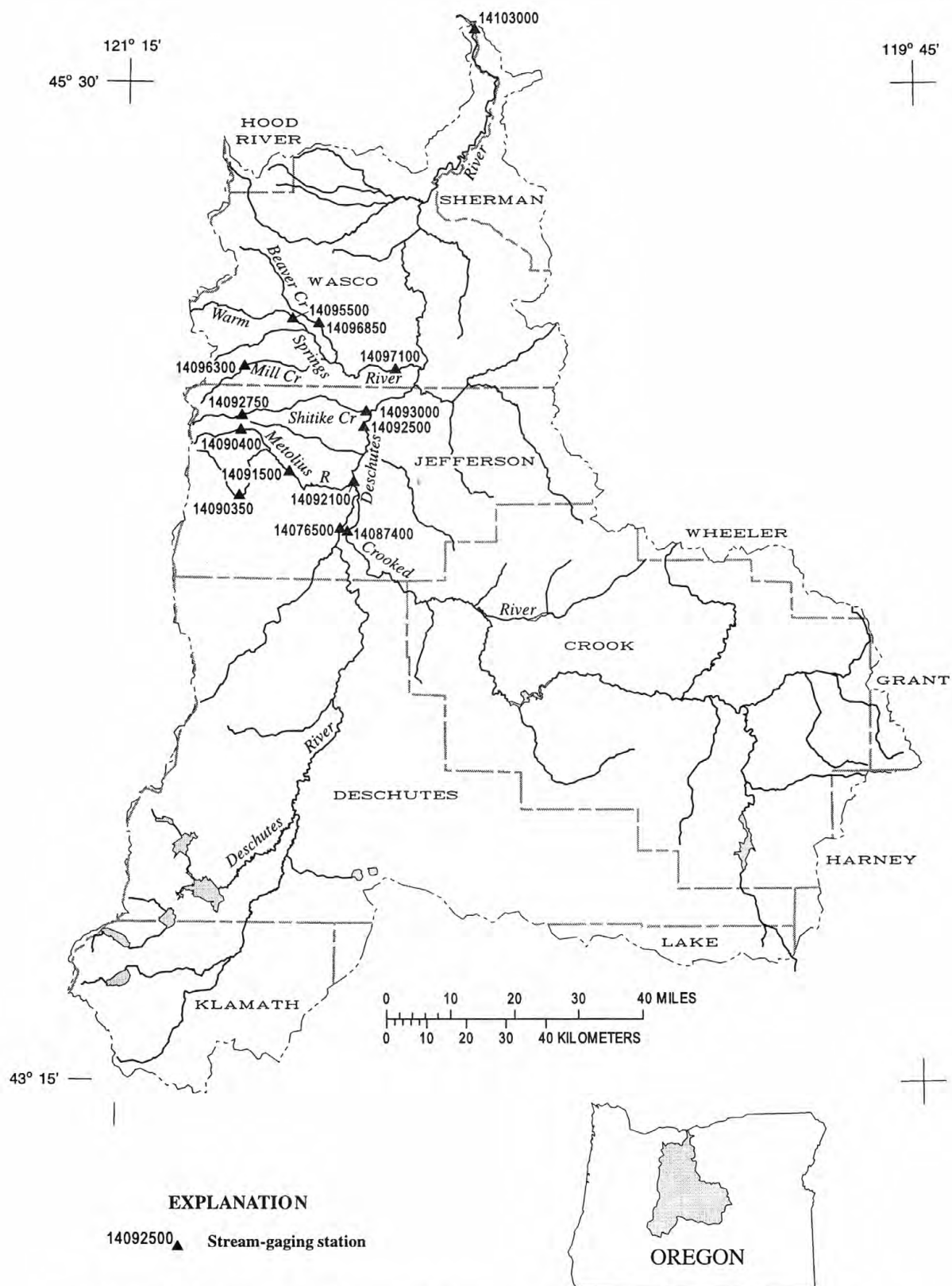


Figure 15. Location of surface-water and water-quality stations in the Deschutes River Basin.

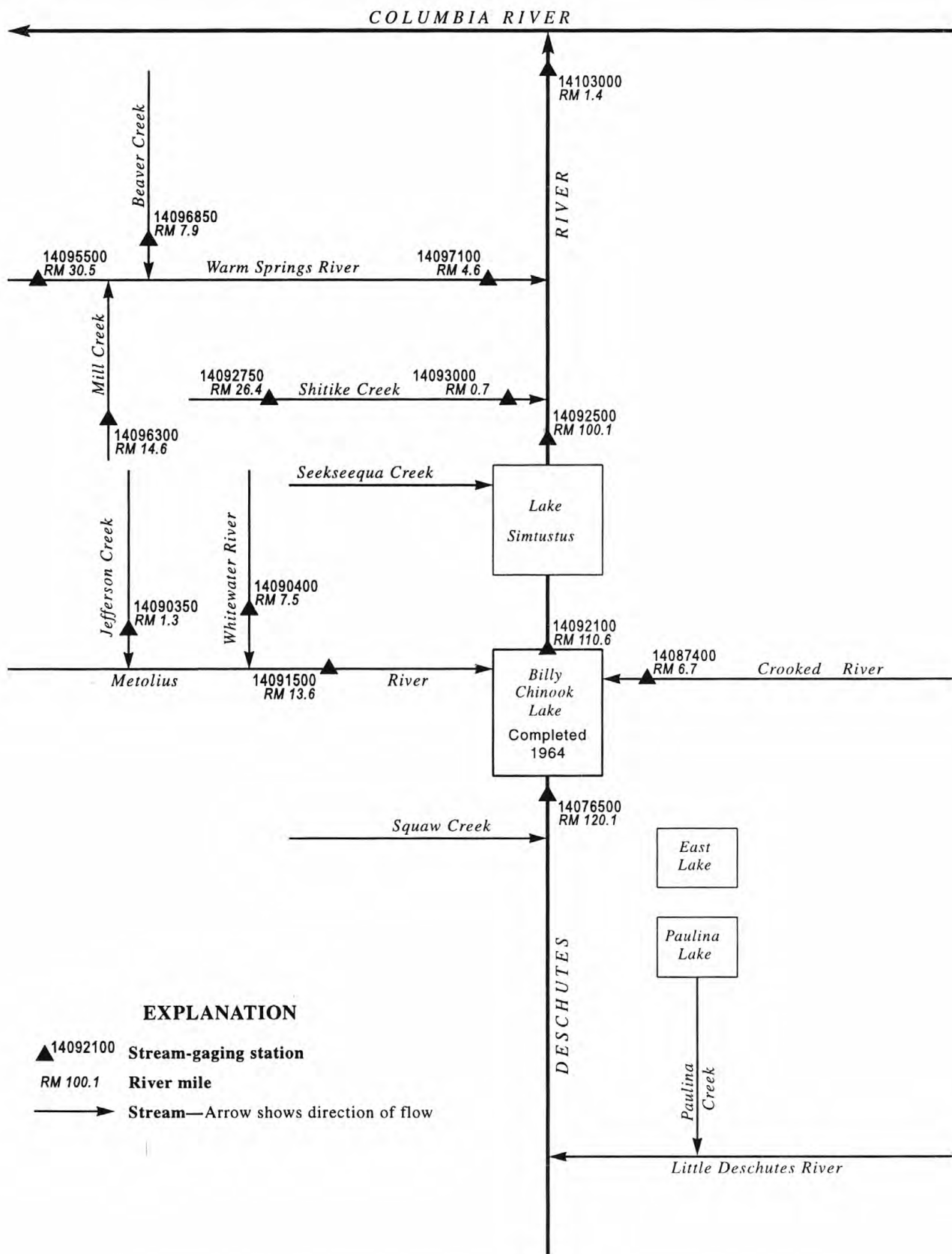


Figure 16. Schematic diagram showing gaging stations in the Deschutes River Basin.

DESCHUTES RIVER BASIN

101

14076500 DESCHUTES RIVER NEAR CULVER, OR

LOCATION.--Lat 44°29'56", long 121°19'12", in NW 1/4 SE 1/4 sec.29, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, on right bank 2.5 mi downstream from Squaw Creek, 6.0 mi southwest of Culver, and at mile 120.1.

DRAINAGE AREA.--2,705 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,980 ft above sea level (river-profile survey). July 14, 1952, to Sept. 30, 1961, at site 4.1 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Crescent Lake and Crane Prairie and Wickiup Reservoirs. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1954 to September 1957 and January 1959 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--47 years (water years 1953-99), 922 ft³/s, 667,700 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,680 ft³/s Dec. 24, 1964, gage height, 10.00 ft, from rating curve extended above 3,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 418 ft³/s July 7, 8, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,150 ft³/s Mar. 3, gage height, 5.62 ft; minimum discharge, 665 ft³/s Oct. 1-3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	672	1330	1560	1610	1680	2120	1810	926	975	1170	829	821
2	674	1330	1600	1610	1610	2110	1790	932	1060	1110	804	850
3	753	1290	1600	1600	1630	2090	1780	942	1010	1000	801	842
4	794	1330	1580	1620	1620	2080	1760	952	1060	918	811	796
5	763	1340	1590	1610	1630	2050	1770	921	1040	877	895	795
6	765	1340	1590	1580	1680	2040	1750	924	1090	870	919	795
7	778	1350	1560	1520	1820	2000	1570	962	1040	932	954	789
8	810	1350	1550	1490	1720	1990	1300	930	1020	904	1020	773
9	832	1350	1510	1480	1690	1940	1310	882	998	849	1000	765
10	819	1290	1480	1470	1680	1930	1390	852	967	873	997	715
11	803	1290	1510	1450	1700	1920	1400	838	949	952	1100	695
12	805	1290	1530	1430	1720	1910	1400	833	924	977	1130	717
13	790	1290	1560	1420	1730	1980	1290	840	939	986	1070	718
14	783	1330	1550	1430	1780	1980	1310	828	982	981	1020	705
15	773	1350	1040	1540	1750	1910	1330	842	975	935	989	701
16	813	1340	1020	1560	1270	1440	955	875	1000	889	954	707
17	971	911	965	1580	1330	1430	945	877	1010	908	939	711
18	1310	871	996	1620	1360	1440	932	889	1030	878	870	687
19	1240	833	1420	1150	1490	1470	935	920	1090	884	815	686
20	1460	858	1360	1170	1800	1930	891	862	1080	968	780	723
21	1460	1460	1350	1200	1780	1980	865	840	1040	993	730	710
22	1460	1580	1350	1270	1780	1980	847	762	1080	1010	706	709
23	1440	1580	1350	1730	1820	1950	853	803	1090	1040	681	733
24	1410	1620	1430	1660	1840	1890	852	856	1120	1060	688	748
25	1370	1670	1580	1640	1870	1870	881	875	1290	1040	687	752
26	1350	1690	1540	1640	1920	1850	899	862	1270	980	699	790
27	1330	1700	1500	1650	1980	1840	879	864	1160	966	696	796
28	1330	1670	1720	1660	2080	1840	878	874	1060	991	689	823
29	1320	1610	1690	1670	---	1840	874	886	1070	985	688	878
30	1320	1600	1680	1690	---	1840	888	902	1170	950	704	902
31	1320	---	1640	1680	---	1840	---	900	---	889	751	---
TOTAL	32518	40843	45401	47430	47760	58480	36334	27251	31589	29765	26416	22832
MEAN	1049	1361	1465	1530	1706	1886	1211	879	1053	960	852	761
MAX	1460	1700	1720	1730	2080	2120	1810	962	1290	1170	1130	902
MIN	672	833	965	1150	1270	1430	847	762	924	849	681	686
AC-FT	64500	81010	90050	94080	94730	116000	72070	54050	62660	59040	52400	45290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1999, BY WATER YEAR (WY)

	733	1158	1278	1351	1413	1372	880	605	643	558	535	563
MEAN	733	1158	1278	1351	1413	1372	880	605	643	558	535	563
MAX	1598	1894	2130	2760	2679	2360	1799	1228	1053	960	852	997
(WY)	1998	1998	1985	1997	1997	1972	1984	1956	1999	1999	1999	1997
MIN	470	783	813	853	892	839	510	457	455	430	441	455
(WY)	1964	1995	1995	1995	1993	1964	1968	1964	1964	1964	1964	1963

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1953 - 1999
ANNUAL TOTAL	417476	446619	
ANNUAL MEAN	1144	1224	922
HIGHEST ANNUAL MEAN			1461
LOWEST ANNUAL MEAN			677
HIGHEST DAILY MEAN	2110	Mar 30	2120
LOWEST DAILY MEAN	497	Aug 18	672
ANNUAL SEVEN-DAY MINIMUM	507	Aug 14	690
ANNUAL RUNOFF (AC-FT)	828100	885900	667700
10 PERCENT EXCEEDS		1750	1630
50 PERCENT EXCEEDS		1010	773
90 PERCENT EXCEEDS	562	776	490

LOCATION.--Lat 44°29'33", long 121°17'50", in NW 1/4 NE 1/4 sec.33, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070305, on right bank 0.2 mi downstream from Opal Springs, 4.8 mi southwest of Culver, and at mile 6.7.

PERIOD OF RECORD.--October 1961 to current year.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1960 by Prineville Reservoir, active capacity of 152,800 acre-ft and Ochoco Reservoir, active capacity, 46,500 acre-ft. Dam and powerplant 500 ft upstream, completed in 1985, causes brief fluctuations in flow. Many diversions for irrigation upstream from station. Practically all of the summer flow comes from Opal Springs and other springs within 15 mi upstream from station. Simultaneous records (1961-63) at former gaging station 5.6 mi downstream indicated over 15 percent increase to summer flow from springs downstream from this station. Continuous water-quality records for the period October 1963 to September 1974 have been collected at this location.

EXTREMES FOR PERIOD OF RECORD: --Maximum discharge, 6,660 ft³/s Dec. 24, 1964, gage height, 9.36 ft; minimum daily discharge, 1,090 ft³/s May 11, 1981, minimum instantaneous discharge after October 1989, 656 ft³/s many days in the 1990 water year, prior to that date minimum instantaneous discharge was not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,170 ft³/s Mar. 4, gage height, 7.93 ft, due to powerplant operation;
minimum discharge, 675 ft³/s July 25, due to powerplant operation.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1560	1390	1340	1660	1800	2180	4460	2790	1290	1300	1300	1440
2	1570	1350	1450	1690	1810	3220	3840	2800	1300	1290	1310	1420
3	1580	1360	1600	1670	1800	4040	3230	2820	1300	1290	1310	1420
4	1580	1360	1690	1660	1790	4060	3130	2800	1320	1310	1300	1430
5	1590	1360	1760	1650	1790	4060	3110	2780	1310	1350	1320	1410
6	1590	1360	1780	1640	1800	4040	2720	2730	1330	1340	1330	1430
7	1600	1370	1780	1630	1800	4010	2430	2720	1340	1300	1340	1450
8	1570	1370	1780	1630	1790	3910	2290	2550	1360	1270	1340	1420
9	1570	1360	1740	1640	1800	2800	2310	2500	1350	1250	1400	1380
10	1580	1360	1690	1650	1780	2060	2310	2510	1350	1250	1370	1380
11	1580	1360	1600	1650	1780	1860	2320	2200	1360	1250	1460	1370
12	1600	1350	1530	1650	1780	1830	2340	2040	1360	1270	1480	1360
13	1610	1350	1500	1650	1740	1820	2210	1870	1360	1270	1420	1390
14	1600	1350	1500	1650	1690	1870	2270	1800	1370	1230	1450	1390
15	1610	1350	1520	1650	1680	1900	2250	1800	1340	1220	1450	1390
16	1620	1340	1530	1650	1690	1930	2260	1800	1320	1230	1450	1380
17	1640	1350	1540	1680	1750	1910	2310	1820	1330	1420	1420	1370
18	1680	1380	1550	1680	1800	1910	2350	1720	1340	1270	1390	1380
19	1650	1390	1530	1710	1830	1930	2350	1540	1340	1290	1380	1400
20	1620	1410	1460	1760	1760	2000	2290	1430	1340	1300	1370	1390
21	1610	1410	1410	1790	1690	2160	2270	1410	1390	1320	1360	1360
22	1610	1410	1460	1790	1670	2210	2260	1390	1390	1320	1360	1330
23	1610	1380	1470	1800	1660	2490	2220	1380	1380	1300	1370	1320
24	1600	1360	1500	1810	1730	2970	2220	1350	1360	1290	1360	1350
25	1610	1350	1520	1810	1800	3570	2230	1350	1380	1300	1360	1370
26	1620	1340	1500	1820	1820	3890	2250	1280	1370	1330	1340	1430
27	1610	1340	1500	1800	1790	4280	2690	1290	1400	1330	1340	1470
28	1500	1340	1520	1810	1880	4510	2820	1260	1410	1310	1330	1490
29	1420	1340	1620	1810	---	4500	2820	1260	1390	1300	1340	1490
30	1400	1350	1600	1800	---	4490	2810	1250	1340	1300	1370	1470
31	1400	---	1580	1800	---	4480	---	1280	---	1300	1430	---
TOTAL	48990	40870	48550	53090	49500	92890	77370	59520	40520	39920	42550	42080
MEAN	1580	1362	1566	1713	1768	2996	2579	1920	1351	1288	1373	1403
MAX	1680	1410	1780	1820	1880	4510	4460	2820	1410	1350	1480	

MEAN	1428	1377	1516	1626	1819	1993	2122	1707	1357	1272	1303	1367
MAX	1650	2069	2686	3551	3490	4208	4793	3295	2614	1475	1593	1541
(WY)	1970	1985	1965	1965	1965	1972	1984	1998	1998	1983	1976	1965
MIN	1239	1232	1179	1182	1245	1232	1192	1173	1196	1122	1133	1187
(WY)	1969	1964	1964	1964	1989	1977	1977	1964	1977	1981	1980	1980

ANNUAL TOTAL	629900			635850			
ANNUAL MEAN	1726			1742			1572
HIGHEST ANNUAL MEAN							2196
LOWEST ANNUAL MEAN							1250
HIGHEST DAILY MEAN	5590	May 31		4510	Mar 28		6130
LOWEST DAILY MEAN	1230	Jul 18		1220	Jul 15		1090
ANNUAL SEVEN-DAY MINIMUM	1240	Jul 16		1240	Jul 11		1100
ANNUAL SURF (AC-FT)	1249000			1261800			1139000
10 PERCENT EXCEEDS	2420			2490			2250
50 PERCENT EXCEEDS	1520			1530			1360
90 PERCENT EXCEEDS	1310			1310			1200

DESCHUTES RIVER BASIN

103

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°34'18", long 121°38'17", in SW 1/4 SE 1/4 sec.34, T.11 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 100 ft upstream from bridge, 7.6 mi north of Camp Sherman, and at mile 1.3.

DRAINAGE AREA.--27.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,780 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges for the period Dec. 19-23, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--16 years (water years 1984-99), 94.9 ft³/s, 46.39 in/yr, 68,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 730 ft³/s Feb. 7, 1996, gage height, 3.94 ft, not including 390 ft³/s which flowed out of the channel 150 ft upstream of gage and flowed into Candle Creek; minimum daily discharge, 36 ft³/s Dec. 22, 1990, but could have been lower during period of ice effect Dec. 19-25, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0200	*280	*2.52	June 30	2030	243	2.24
June 16	0200	247	2.25	July 11	0300	227	2.17
June 24	2330	259	2.31	Aug. 5	2330	245	2.24

Minimum discharge, 51 ft³/s Dec. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e73	72	75	111	81	95	71	92	199	213	186	145
2	76	70	93	103	83	88	71	91	181	194	187	e144
3	e75	71	82	98	82	86	70	88	165	177	185	e142
4	e77	74	76	95	80	83	70	85	169	174	190	140
5	e74	73	74	93	79	80	69	82	191	177	192	138
6	e74	71	73	91	83	79	69	85	185	186	194	137
7	e72	71	73	90	83	78	69	88	170	198	185	e135
8	75	70	72	88	81	78	68	85	162	188	181	133
9	78	69	69	86	80	76	68	82	160	182	178	132
10	e74	70	72	86	78	75	68	81	162	197	177	130
11	e72	70	91	87	77	74	67	81	168	203	177	128
12	e71	69	103	85	76	74	67	85	177	202	172	e127
13	75	70	100	83	76	75	67	85	191	202	171	124
14	74	70	87	112	75	75	67	83	206	198	169	124
15	e72	98	81	132	74	74	67	82	222	186	166	123
16	e71	84	78	108	75	73	68	82	226	185	164	123
17	e73	71	77	106	75	73	71	95	210	184	165	122
18	e75	67	76	109	77	72	80	126	209	179	166	120
19	e74	65	e70	102	75	72	84	122	200	180	163	119
20	e72	102	e56	102	74	73	82	117	190	186	162	118
21	e72	161	e56	100	74	75	79	121	190	186	161	116
22	e72	95	e54	98	74	75	76	125	194	187	159	114
23	e71	88	e54	97	80	74	77	137	199	190	158	113
24	e71	83	63	92	87	73	82	156	210	193	157	112
25	e71	94	78	91	84	73	89	171	225	186	157	112
26	e71	103	81	89	80	74	89	168	197	184	156	e111
27	e71	85	97	87	88	74	84	164	186	187	155	e109
28	71	79	145	88	106	73	81	177	184	188	153	e109
29	71	76	153	86	---	73	81	177	196	192	151	e108
30	70	77	150	84	---	72	83	177	216	188	152	107
31	71	---	125	83	---	72	---	177	---	186	149	---
TOTAL	2259	2418	2634	2962	2237	2361	2234	3567	5740	5858	5238	3715
MEAN	72.9	80.6	85.0	95.5	79.9	76.2	74.5	115	191	189	169	124
MAX	78	161	153	132	106	95	89	177	226	213	194	145
MIN	70	65	54	83	74	72	67	81	160	174	149	107
AC-FT	4480	4800	5220	5880	4440	4680	4430	7080	11390	11620	10390	7370
CFSM	2.62	2.90	3.06	3.44	2.87	2.74	2.68	4.14	6.88	6.80	6.08	4.45
IN.	3.02	3.24	3.52	3.96	2.99	3.16	2.99	4.77	7.68	7.84	7.01	4.97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	MEAN	77.0	83.8	80.3	84.3	91.1	86.3	94.5	119	131	114	95.6	82.5
MAX	124	131	155	160	244	148	135	179	191	189	169	124	
(WY)	1998	1996	1996	1997	1996	1996	1996	1997	1999	1999	1999	1999	
MIN	55.5	59.3	58.6	57.8	50.6	57.9	68.9	83.3	80.0	70.5	62.0	56.8	
(WY)	1993	1988	1993	1993	1989	1985	1994	1991	1992	1992	1994	1994	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1984 - 1999

ANNUAL TOTAL	33254	41223	
ANNUAL MEAN	91.1	113	94.9
HIGHEST ANNUAL MEAN			137
LOWEST ANNUAL MEAN			66.8
HIGHEST DAILY MEAN	164	May 6	226
LOWEST DAILY MEAN	54	Dec 22	54
ANNUAL SEVEN-DAY MINIMUM	61	Dec 18	61
ANNUAL RUNOFF (AC-FT)	65960	81770	68760
ANNUAL RUNOFF (CFSM)	3.28	4.06	3.41
ANNUAL RUNOFF (INCHES)	44.50	55.16	46.39
10 PERCENT EXCEEDS	114	187	141
50 PERCENT EXCEEDS	87	88	86
90 PERCENT EXCEEDS	72	71	60

e Estimated

DESCHUTES RIVER BASIN

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°43'06", long 121°38'18", in SW 1/4 NW 1/4 sec.11, T.10 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on right bank bridge abutment, 18 mi north of Camp Sherman, and at mile 7.5.

DRAINAGE AREA.--22.8 mi².

PERIOD OF RECORD.--July 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,230 ft above sea level, from topographic map. July 1982 to Feb. 7, 1996, at comparable site 1/4 mi downstream, at different datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--17 years (water years 1983-99), 86.6 ft³/s, 51.59 in/yr, 62,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,320 ft³/s Feb. 7, 1996, from slope-area measurement of peak flow, gage height, unknown; maximum gage height, 8.30 ft Feb. 9, 1996, from outside highwater mark caused by debris, channel fill, and channel reconfiguration, datum then in use; minimum daily discharge, 28 ft³/s Dec. 22, 1990, but could be less because of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0200	349	6.83	June 24	2400	313	6.84
Dec. 28	unknown	*398	*6.93	June 30	2230	229	6.69
June 1	1530	292	6.72	Aug. 5	2330	263	6.74
June 17	0200	285	6.76				

Minimum daily discharge, 42 ft³/s Oct. 23, 25, 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	46	73	e190	e74	114	75	117	276	210	186	115
2	53	45	146	e160	e76	115	76	123	232	178	195	101
3	51	45	94	e135	e75	106	76	121	206	144	197	93
4	52	47	81	e120	e72	100	73	113	200	127	209	91
5	50	47	76	e110	e70	97	72	110	234	126	218	95
6	49	46	72	e98	e75	96	69	111	230	133	208	92
7	49	46	72	e92	e80	92	73	111	195	146	182	87
8	52	45	68	e85	e74	96	67	107	174	139	172	89
9	52	44	64	e82	e72	85	66	104	158	142	174	93
10	49	44	67	e82	e70	82	68	100	152	156	183	89
11	48	44	83	e82	e67	79	67	100	153	168	187	85
12	47	44	97	e80	e65	82	65	101	156	167	175	82
13	51	49	111	e78	e65	86	65	98	180	172	158	83
14	50	47	98	e110	e65	82	66	97	211	171	149	86
15	48	73	89	e210	e62	80	70	95	241	152	135	88
16	47	67	84	e180	e63	75	73	95	275	144	132	86
17	47	58	83	e160	e63	75	77	109	257	134	142	84
18	47	52	81	e180	e64	74	86	139	235	125	154	82
19	45	50	74	e150	e64	74	98	146	227	129	149	82
20	45	114	e66	e140	e63	79	105	146	208	145	146	81
21	45	189	e59	e130	e62	86	105	149	199	149	151	81
22	44	86	e56	e122	e65	86	100	153	209	142	140	84
23	44	78	e56	e112	e70	85	101	169	221	146	140	88
24	44	72	e60	e103	87	89	107	204	245	157	152	85
25	43	112	e70	e95	80	89	114	250	248	152	157	87
26	43	120	e80	e90	71	86	123	239	184	149	153	80
27	45	89	e130	e84	105	83	116	227	160	160	148	75
28	47	78	e360	e82	133	84	111	239	150	174	147	72
29	46	74	e330	e80	---	86	109	231	170	188	151	74
30	45	71	e260	e78	---	84	111	221	208	186	145	77
31	45	---	e220	e76	---	80	---	226	---	179	129	---
TOTAL	1478	2022	3360	3576	2052	2707	2584	4551	6194	4790	5064	2587
MEAN	47.7	67.4	108	115	73.3	87.3	86.1	147	206	155	163	86.2
MAX	55	189	360	210	133	115	123	250	276	210	218	115
MIN	43	44	56	76	62	74	65	95	150	125	129	72
AC-FT	2930	4010	6660	7090	4070	5370	5130	9030	12290	9500	10040	5130
CFSM	2.09	2.96	4.75	5.06	3.21	3.83	3.78	6.44	9.06	6.78	7.16	3.78
IN.	2.41	3.30	5.48	5.83	3.35	4.42	4.22	7.43	10.11	7.82	8.26	4.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1999, BY WATER YEAR (WY)

	MEAN	52.8	67.4	74.5	81.2	93.7	82.9	93.1	114	124	107	85.3	63.1
MAX	93.4	122	174	220	329	147	148	188	206	155	163	96.6	
(WY)	1998	1996	1996	1997	1996	1997	1997	1997	1999	1999	1999	1997	
MIN	36.0	34.7	45.5	38.4	37.1	50.1	50.3	64.5	60.7	54.0	54.8	42.2	
(WY)	1993	1994	1994	1993	1994	1985	1991	1991	1992	1992	1994	1994	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1983 - 1999

ANNUAL TOTAL	32130	40965	
ANNUAL MEAN	88.0	112	86.6
HIGHEST ANNUAL MEAN			142
LOWEST ANNUAL MEAN			54.0
HIGHEST DAILY MEAN	360	Dec 28	1400
LOWEST DAILY MEAN	43	Oct 25	28
ANNUAL SEVEN-DAY MINIMUM	44	Oct 20	31
ANNUAL RUNOFF (AC-FT)	63730	81250	62720
ANNUAL RUNOFF (CFSM)	3.86	4.92	3.80
ANNUAL RUNOFF (INCHES)	52.42	66.84	51.59
10 PERCENT EXCEEDS	119	198	141
50 PERCENT EXCEEDS	83	92	75
90 PERCENT EXCEEDS	49	50	44

e Estimated

105

LOCATION.--Lat 44°37'33", long 121°28'55", in SE 1/4 SW 1/4 sec.12, T.11 S., R.10 E., Jefferson County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 1.6 mi upstream from maximum controlled pool of Lake Billy Chinook, 15.0 mi northwest of Culver, and at mile 13.6.

PERIOD OF RECORD.--April 1910 to February 1912 (gage heights and discharge measurements only), March 1912 to December 1913, October 1921 to current year. Published as "at Hubbard's ranch, near Sisters" 1910, and as "at Hubbard's ranch, near Grandview" 1910-13.

GAGE.--Water-stage recorder datum of gage is 1,974.36 ft above sea level (levels by Portland General Electric Co.). Prior to Dec. 31, 1913, nonrecording gage at site 2.3 mi upstream at different datum. Oct. 1, 1921, to May 3, 1949, nonrecording gage and May 4, 1949, to June 18, 1963, water-stage recorder at site 2.7 mi downstream at datum 64 ft lower.

AVERAGE DISCHARGE, --79 years (water years 1913, 1922-99), 1,495 ft³/s, 1,083,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,290 ft³/s Dec. 28, gage height, 3.21 ft; minimum discharge, 1,430 ft³/s Nov. 12, 13.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1480	1440	1610	2300	1820	2250	1790	1940	2330	2170	e1930	1750
2	1480	1440	1980	2170	1850	2170	1800	1970	2290	2120	e1930	1730
3	1480	1440	1850	2090	1850	2170	1800	1980	2190	2030	e1920	1720
4	1490	1450	1720	2040	1850	2100	1780	1940	2160	2000	1950	1710
5	1470	1450	1680	2000	1800	2040	1780	1900	2230	1980	1960	1710
6	1470	1450	1650	1960	1890	2010	1760	1890	2220	1990	1980	1710
7	1470	1460	1630	1880	2050	1980	1760	1910	2100	2030	1940	1700
8	1470	1450	1620	1860	1960	1960	1750	1880	2070	2000	1900	1700
9	1480	1440	1590	1840	1920	1930	1740	1860	2040	1980	1880	1700
10	1480	1440	1580	1820	1880	1900	1740	1860	2020	2010	1890	1700
11	1470	1440	1650	1810	1830	1870	1730	1850	2010	2050	1910	1690
12	1470	1440	1720	1790	1810	1860	1730	1850	2020	2040	1880	1680
13	1470	1440	1760	1770	1800	1880	1720	1850	2080	2050	1860	1680
14	1470	1440	1710	1870	1800	1860	1720	1850	2140	2050	1840	1680
15	1470	1500	1670	2190	1780	1850	1730	1840	2210	2000	1820	1680
16	1460	1530	1650	2080	1820	1840	1740	1830	2280	1980	1810	1670
17	1460	1490	1640	2060	1890	1830	1760	1860	2280	1970	1810	1670
18	1460	1460	1630	2250	1890	1830	1810	1980	2240	1930	1830	1670
19	1450	1440	1600	2220	1920	1820	1860	1990	2230	1930	1820	1670
20	1450	1550	e1520	2240	1860	1830	1860	2000	2200	1970	1810	1660
21	1450	2130	e1470	2280	1840	1870	1870	e2000	2160	1980	1820	1660
22	1450	1750	e1450	2220	1850	1890	1870	2020	2180	1960	1800	1660
23	1450	1660	e1440	2150	1970	1880	1860	2060	2200	1970	1800	1660
24	1450	1640	e1490	2070	2110	1880	1880	2140	2220	1990	1810	1660
25	1450	1670	1560	2010	2150	1880	1930	2260	2280	e1950	1810	1650
26	1440	1720	1570	1980	2060	1890	1920	2300	2140	e1940	1810	1640
27	1440	1650	1770	1940	2100	1890	1910	2270	2080	e1950	1800	1640
28	1450	1600	3130	1930	2320	1860	1920	2280	2050	e1950	1790	1640
29	1440	1600	2820	1910	---	1860	1900	2250	2080	e1980	1790	1630
30	1440	1610	2630	1880	---	1840	1900	2230	2150	e1950	1800	1630
31	1440	---	2460	1860	---	1820	---	2200	---	e1930	1780	---
TOTAL	45300	46220	55250	62470	53670	59540	54320	62040	64880	61830	57480	50350
MEAN	1461	1541	1782	2015	1917	1921	1811	2001	2163	1995	1854	1678
MAX	1490	2130	3130	2300	2320	2250	1930	2300	2330	2170	1800	

[illegible]

ANNUAL TOTAL	601900		673350			
ANNUAL MEAN	1649		1845		1495	
HIGHEST ANNUAL MEAN					1949	1997
LOWEST ANNUAL MEAN					1167	1941
HIGHEST DAILY MEAN	3130	Dec 28	3130	Dec 28	7100	Dec 24 1964
LOWEST DAILY MEAN	1440	Oct 26	1440	Oct 26	1080	Feb 17 1932
ANNUAL SEVEN-DAY MINIMUM	1440	Oct 26	1440	Oct 26	1080	Oct 2 1942
ANNUAL RUNOFF (AC-FT)	194000		1336000		1083000	
10 PERCENT EXCEEDS	1800		2170		1800	
50 PERCENT EXCEEDS	1650		1850		1450	
90 PERCENT EXCEEDS	1470		1470		1230	

e Estimated

DESCHUTES RIVER BASIN

14092100 LAKE BILLY CHINOOK NEAR METOLIUS, OR

LOCATION.--Lat 44°36'14", long 121°16'40", in SW 1/4 NE 1/4 sec.22, T.11 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, near left end of Round Butte Dam on Deschutes River, 5.0 mi west of Metolius, and at mile 110.6.

DRAINAGE AREA.--7,490 mi², approximately.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by rock fill dam completed in June 1964 by Portland General Electric Co.; storage began Jan. 2, 1964. Total capacity is 534,700 acre-ft at elevation 1,945.0 ft proposed upper limit of operation, and usable capacity is 273,900 acre-ft between elevations 1,860.0 ft, proposed lower limit of operation, and 1,945.0 ft. Reservoir used for power generation under FERC license 2030. Figures given herein represent total contents.

COOPERATION.--Gage readings and capacity tables furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 538,700 acre-ft July 15, 16, 1972, elevation, 1,946.00 ft; minimum contents observed since first filling, 431,100 acre-ft Feb. 13, 1972, elevation, 1,917.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 535,200 acre-ft Jan. 19, elevation, 1,945.12 ft; minimum contents observed, 497,600 acre-ft Apr. 8, elevation, 1,935.35 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,944.41	532,400	--
Oct. 31.....	1,943.69	529,600	-2,800
Nov. 30.....	1,942.45	524,700	-4,900
Dec. 31.....	1,941.61	521,400	-3,300
CAL YR 1998.....	--	--	+6,900
Jan. 31.....	1,939.53	513,500	-7,900
Feb. 28.....	1,938.63	510,000	-3,500
Mar. 31.....	1,937.16	504,400	-5,600
Apr. 30.....	1,940.16	515,900	+11,500
May 31.....	1,943.49	528,800	+12,900
June 30.....	1,944.32	532,000	+3,200
July 31.....	1,944.22	531,600	-400
Aug. 31.....	1,944.47	532,600	+1,000
Sept. 30.....	1,944.42	532,400	-200
WTR YR 1999.....	--	--	0

DESCHUTES RIVER BASIN

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14092500 DESCHUTES RIVER NEAR MADRAS, OR

LOCATION.--Lat 44°43'34", long 121°14'45", in SE 1/4 SW 1/4 sec.1, T.10 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, on right bank 400 ft downstream from reregulating dam, 2.7 mi downstream from Pelton Dam, 8.5 mi northwest of Madras, and at mile 100.1.

DRAINAGE AREA.--7,820 mi², approximately.

PERIOD OF RECORD.--December 1923 to current year.

REVISED RECORDS.--WSP 1398: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft above sea level (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Nov. 23, 1957.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diurnal fluctuation caused by Lake Simtustus and reregulating reservoir since 1957, combined capacity for normal operation, 6,500 acre-ft. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 47,500 acre-ft, in Crescent Lake, Crane Prairie and Wickiup Reservoirs, combined capacity, 354,600 acre-ft, and since 1960, in Prineville Reservoir, capacity, 152,800 acre-ft, and since 1964, in Lake Billy Chinook, capacity, 534,700 acre-ft. Large diversions in upper basin for irrigation. Continuous water-quality records for the period October 1978 to September 1988 have been collected at this location.

AVERAGE DISCHARGE.--75 years (water years 1925-99), 4,566 ft³/s, 3,308,000 acre-ft/yr.
36 years (water years 1964-99), 4,699 ft³/s, 3,404,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s July 16, 1983, accidental release from Pelton Dam, gage height, 7.70 ft, from floodmarks; minimum discharge, 916 ft³/s July 4, 1982, caused by power company testing control gates on dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,420 ft³/s Mar. 3, 7, gage height, 4.64 ft; minimum discharge, 4,160 ft³/s Sept. 16, result of regulation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4420	5010	5400	6520	6190	7730	8980	5720	4460	5400	4710	4580
2	e4470	4970	5290	6520	6060	8400	8690	6020	4690	5270	4720	4570
3	e4490	4840	5550	6520	6040	9290	8110	6080	4930	5270	4720	4700
4	e4510	4840	5860	6520	6040	9340	7680	6170	4970	4940	4730	4700
5	e4500	4840	5880	6510	6050	9340	7530	e6180	4970	4700	4730	4700
6	e4480	4840	5880	6380	6040	9340	7540	e6190	4980	4700	4830	4710
7	e4480	4840	5880	6370	6030	9340	7250	6200	5100	4700	4830	4710
8	e4620	4830	5880	6370	6400	9340	6230	6400	5100	4670	4830	4700
9	e4630	4830	5580	6220	6390	8590	5890	6360	5100	4690	4820	4700
10	e4630	4830	5560	5910	6220	7280	5880	6330	5100	4710	4830	4550
11	e4620	4710	5440	5870	6230	6700	5880	5860	4970	4690	4980	4430
12	e4630	4700	5380	5720	6210	6520	6180	5600	4840	4830	4990	4420
13	e4610	4720	5410	5570	6160	6380	6050	5400	4830	4960	5270	4420
14	e4610	4720	5400	5580	6170	6380	5910	5300	4830	4980	5020	4320
15	e4630	4710	5400	5290	6190	6370	5900	5290	5070	4960	4960	4320
16	e4590	4830	5150	5830	6190	6370	5680	5110	5100	4830	4960	4320
17	e4550	4970	4970	6030	5940	6370	5270	5110	5090	4580	4840	4320
18	e4760	4710	5230	6040	6200	6370	5270	4830	5250	4570	4830	4310
19	e4920	4460	5550	6350	6520	6070	5280	4840	5260	4560	4830	4320
20	e4920	4330	5860	6360	6510	6040	5400	4570	5270	4690	4720	4320
21	e4970	4600	6220	6370	6420	6360	5400	4340	5400	4830	4580	4320
22	e5190	5540	6320	6360	6200	6650	5560	4320	5400	4840	4440	4310
23	e5280	5600	6010	6360	6340	6960	5400	4320	5390	5100	4440	4320
24	e5270	5680	5690	6490	6530	7520	5110	4320	5400	5130	4340	4320
25	e5110	5730	5390	6510	6750	7870	5110	4320	5400	5410	4330	4320
26	e5050	5900	5090	6360	6890	8480	5100	4320	5390	5090	4310	4320
27	e5120	5910	4830	6370	6920	8700	5380	4320	5400	4840	4320	4560
28	e5120	5900	5190	6200	6920	8840	5980	4440	5390	4700	4310	4580
29	e5120	5720	6250	6190	---	8840	6050	4450	5390	4700	4440	4570
30	5110	5410	6510	6190	---	8840	5740	4450	5390	4700	4450	4700
31	5020	---	6520	6190	---	9060	---	4450	---	4700	4440	---
TOTAL	148430	151520	174570	192070	176750	239680	185430	161610	153860	150740	145550	134440
MEAN	4788	5051	5631	6196	6312	7732	6181	5213	5129	4863	4695	4481
MAX	5280	5910	6520	6520	6920	9340	8980	6400	5400	5410	5270	4710
MIN	4420	4330	4830	5290	5940	6040	5100	4320	4460	4560	4310	4310
AC-FT	294400	300500	346300	381000	350600	475400	367800	320600	305200	299000	288700	266700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

MEAN	4201	4700	5150	5422	5440	5569	5175	4487	4301	4038	3957	3993
MAX	5410	6124	7253	9600	8974	9590	8988	6346	5899	4863	4718	4911
(WY)	1998	1985	1997	1997	1996	1972	1984	1984	1998	1999	1976	1997
MIN	3085	3521	3951	3305	3094	3455	3602	3554	3492	3059	3064	3081
(WY)	1965	1965	1970	1964	1964	1964	1968	1964	1964	1964	1964	1964

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1964 - 1999
ANNUAL TOTAL	1875730	2014650	
ANNUAL MEAN	5139	5520	4699
HIGHEST ANNUAL MEAN			5980
LOWEST ANNUAL MEAN			3558
HIGHEST DAILY MEAN	9490	Jun 1	17800
LOWEST DAILY MEAN	3680	Sep 4	2770
ANNUAL SEVEN-DAY MINIMUM	3860	Aug 30	3040
ANNUAL RUNOFF (AC-FT)	3721000	3996000	3404000
10 PERCENT EXCEEDS	6230	6520	6200
50 PERCENT EXCEEDS	5030	5270	4330
90 PERCENT EXCEEDS	4010	4450	3640

e Estimated

DESCHUTES RIVER BASIN

14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'02", long 121°37'56", in NW 1/4 NE 1/4 sec.35, T.9 S., R.9 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank 0.5 mi downstream from Peters Pasture, and 18 mi west of town of Warm Springs, and at mile 26.4.

DRAINAGE AREA.--22.9 mi².

PERIOD OF RECORD.--July 1982 to current year.

REVISED RECORDS.--WDR OR-96-1: 1983, 1985, 1986, 1988, 1990, 1995.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--17 years (water years 1983-99), 80.1 ft³/s, 47.51 in/yr, 58,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,430 ft³/s Feb. 7, 1996, gage height, 6.66 ft, from rating curve extended above 800 ft³/s on basis of slope area measurement of peak flow; minimum discharge, 17 ft³/s Dec. 22, 1990.

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. 23	2300	(a)	*3.19	Dec. 28	0530	*582	2.84

Minimum discharge, 31 ft³/s, oct. 31.
(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	32	65	213	68	149	62	121	311	235	116	75
2	35	32	127	170	70	130	61	133	254	198	125	72
3	36	32	100	145	69	115	60	130	193	152	124	69
4	39	33	82	127	66	101	57	119	182	133	130	67
5	36	35	73	114	64	92	56	108	238	129	130	67
6	35	35	66	105	71	85	55	105	239	138	126	67
7	35	35	63	97	72	80	54	109	184	168	121	65
8	37	34	59	91	67	77	54	106	149	149	107	64
9	42	33	55	86	64	73	53	100	130	134	103	62
10	41	32	54	82	63	68	51	94	120	149	106	62
11	38	32	69	80	61	65	51	90	129	168	115	61
12	36	32	108	77	59	64	52	92	151	163	100	60
13	38	33	150	75	59	64	54	92	195	165	93	59
14	41	33	130	127	58	63	55	91	245	162	92	59
15	40	51	106	268	56	62	57	89	280	135	89	59
16	37	64	91	200	57	61	60	88	314	128	87	58
17	36	49	85	172	56	60	67	97	293	125	88	57
18	36	44	80	193	57	60	82	176	257	112	89	56
19	35	41	72	165	55	60	102	196	239	115	87	56
20	34	65	e65	149	54	63	121	183	225	134	84	56
21	33	258	e60	135	53	70	118	177	207	135	87	56
22	32	127	e55	122	54	71	109	173	230	129	81	55
23	32	94	e55	112	62	70	106	190	240	131	78	54
24	32	82	e57	103	75	71	110	242	258	138	80	54
25	32	104	e68	95	77	73	126	329	299	125	80	54
26	32	158	74	90	72	74	142	320	204	113	78	54
27	32	122	150	84	86	72	133	260	171	122	76	54
28	32	91	542	81	136	70	119	279	162	132	76	54
29	32	77	479	77	---	68	110	267	188	134	75	53
30	32	69	384	74	---	65	109	240	228	122	80	52
31	31	---	287	71	---	63	---	228	---	114	83	---
TOTAL	1092	1959	3911	3780	1861	2359	2446	5024	6515	4387	2986	1791
MEAN	35.2	65.3	126	122	66.5	76.1	81.5	162	217	142	96.3	59.7
MAX	42	258	542	268	136	149	142	329	314	235	130	75
MIN	31	32	54	71	53	60	51	88	120	112	75	52
AC-FT	2170	3890	7760	7500	3690	4680	4850	9970	12920	8700	5920	3550
CFSM	1.54	2.85	5.51	5.32	2.90	3.32	3.56	7.08	9.48	6.18	4.21	2.61
IN.	1.77	3.18	6.35	6.14	3.02	3.83	3.97	8.16	10.58	7.13	4.85	2.91

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1999, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	39.4	69.6	79.4	85.9	103	89.5	100	124	115	74.1	47.2	35.8					
MAX	98.8	175	205	218	363	166	151	207	217	142	96.3	59.7					
(WY)	1988	1996	1996	1997	1996	1986	1997	1997	1999	1999	1999	1999					
MIN	20.3	23.4	34.9	35.9	28.2	41.4	50.4	69.4	41.7	33.4	24.5	20.1					
(WY)	1988	1994	1991	1993	1994	1985	1991	1991	1992	1992	1992	1994					

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1983 - 1999

	1998	1999	1983-1999
ANNUAL TOTAL	28152	38111	
ANNUAL MEAN	77.1	104	80.1
HIGHEST ANNUAL MEAN			136
LOWEST ANNUAL MEAN			43.2
HIGHEST DAILY MEAN	542	542	2020
LOWEST DAILY MEAN	31	31	17
ANNUAL SEVEN-DAY MINIMUM	32	32	18
ANNUAL RUNOFF (AC-FT)	55840	75590	58010
ANNUAL RUNOFF (CFSM)	3.37	4.56	3.50
ANNUAL RUNOFF (INCHES)	45.73	61.91	47.51
10 PERCENT EXCEEDS	118	197	146
50 PERCENT EXCEEDS	65	81	62
90 PERCENT EXCEEDS	35	37	28

e Estimated

14093000 SHITIKE CREEK NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'41", long 121°14'25", in NE 1/4 NE 1/4, sec.25, T.9 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation on left bank 1.5 mi east of Warm Springs, and at mile 0.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--July 1911 to October 1916, April 1923 to September 1928, October 1972 to September 1974. October 1996 to current year. Records for October 1974 to September 1996 (see station 14092885) at site upstream not equivalent owing to difference in drainage area.

REVISED RECORDS.--WSP 1318: 1911-12, 1916, 1927.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,380 ft above sea level, from topographic map. Prior to September 1928 non-recording gage 1.3 mi upstream, October 1972 to September 1974 water-stage recorder 0.4 mi downstream.

REMARKS.--Records poor. No regulation. Some diversions for irrigation and municipal use.

AVERAGE DISCHARGE.--15 years (water years 1912-16, 1924-28, 1973-74, 1999), 117 ft³/s, 15.34 in/yr, 85,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft³/s Jan. 15, 1974, gage height, 4.36 ft; minimum daily discharge, 20 ft³/s Dec. 8-15, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 7, 1996 reached a stage of 12.4 ft, information supplied by local resident, discharge about 4,400 ft³/s, from rating curve extended above 900 ft³/s on basis of runoff comparisons with nearby stations.

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. 28	1030	*565	*5.47	May 26	0830	533	5.36

Minimum discharge, 48 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	52	e98	e270	e115	255	126	204	337	247	144	107
2	51	53	e200	e220	e115	236	123	219	338	226	152	100
3	53	53	e180	e200	e120	220	119	222	287	196	150	96
4	57	54	e140	e170	e115	198	115	213	263	178	156	92
5	56	e55	e115	e160	e110	181	114	197	294	171	167	90
6	54	e57	e105	e145	e150	168	111	186	322	179	162	90
7	53	e60	e100	e135	e190	158	109	189	280	210	154	89
8	54	e57	e95	e125	e160	150	109	189	240	209	144	88
9	59	e56	e90	e120	e145	143	106	184	215	190	134	86
10	62	e55	e85	e115	132	135	105	177	204	194	135	85
11	59	e54	e92	e112	124	129	104	172	207	215	143	83
12	57	e53	127	e110	120	125	103	172	224	211	135	82
13	56	54	e175	e107	117	125	106	171	261	212	127	81
14	61	55	e165	e130	124	124	116	171	300	216	125	80
15	61	57	e145	e290	115	121	126	168	307	184	123	80
16	e58	e90	e135	e245	115	119	129	166	332	166	118	79
17	e57	e84	e125	e220	136	118	139	167	332	166	118	78
18	56	e75	e115	e250	133	117	170	230	292	156	120	77
19	e55	e68	e95	e250	166	118	192	280	276	148	119	77
20	e54	68	e75	e240	139	121	206	272	266	156	113	76
21	e53	e250	e65	e225	133	136	210	267	252	163	115	74
22	e52	e200	e60	e210	131	147	194	260	266	154	112	72
23	51	e150	e60	e195	146	144	182	271	284	157	106	71
24	52	e130	e63	e185	185	144	198	314	286	158	107	72
25	52	129	e70	e170	205	147	211	444	320	158	108	71
26	51	e175	e95	e160	190	148	230	405	249	143	107	72
27	51	e165	e150	e150	192	146	228	298	220	146	103	71
28	51	e135	e550	e140	235	139	213	299	208	153	102	71
29	e51	e115	e450	e135	---	138	201	300	217	159	101	70
30	e51	e105	e400	e130	---	132	198	282	244	151	108	69
31	e51	---	e320	e125	---	134	---	268	---	144	114	---
TOTAL	1689	2764	4740	5439	4058	4616	4593	7357	8123	5516	3922	2429
MEAN	54.5	92.1	153	175	145	149	153	237	271	178	127	81.0
MAX	62	250	550	290	235	255	230	444	338	247	167	107
MIN	50	52	60	107	110	117	103	166	204	143	101	69
AC-FT	3350	5480	9400	10790	8050	9160	9110	14590	16110	10940	7780	4820
CFSM	.52	.89	1.47	1.69	1.39	1.43	1.47	2.28	2.60	1.71	1.22	.78
IN.	.60	.99	1.70	1.95	1.45	1.65	1.64	2.63	2.91	1.97	1.40	.87

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1999, BY WATER YEAR (WY)

MEAN	66.2	98.5	121	152	141	128	136	166	158	110	72.1	62.6
MAX	109	167	283	432	261	222	200	238	315	213	127	87.7
(WY)	1998	1928	1997	1974	1916	1997	1916	1974	1974	1916	1999	1997
MIN	41.5	50.1	63.6	54.4	60.4	64.7	66.4	86.2	68.9	46.7	36.2	36.1
(WY)	1916	1926	1912	1926	1915	1973	1973	1973	1924	1924	1924	1924

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1912 - 1999

ANNUAL TOTAL	39215	55246	117
ANNUAL MEAN	107	151	187
HIGHEST ANNUAL MEAN			71.0
LOWEST ANNUAL MEAN			1926
HIGHEST DAILY MEAN	550	550	2300
LOWEST DAILY MEAN	49	50	20
ANNUAL SEVEN-DAY MINIMUM	51	51	20
ANNUAL RUNOFF (AC-FT)	77780	109600	85090
ANNUAL RUNOFF (CFSM)	1.03	1.46	1.13
ANNUAL RUNOFF (INCHES)	14.03	19.76	15.34
10 PERCENT EXCEEDS	178	262	204
50 PERCENT EXCEEDS	100	135	95
90 PERCENT EXCEEDS	52	57	51

e Estimated

LOCATION.--Lat 44°58'10", long 121°28'35", in SE 1/4 SW 1/4 sec.7, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank abutment of log bridge at Hehe Butte rodeo grounds, 3.3 mi upstream from Badger Creek, and 6.2 mi west of Simnasho, and at mile 30.5.

PERIOD OF RECORD.--June to September 1915, August 1949 to September 1954, October 1983 to current year. Prior to October 1983, published as "at Hehe Mill near Warm Springs."

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,670 ft³/s Feb. 7, 1996, gage height, 6.98 ft, from rating curve extended above 1,300 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 89 ft³/s Aug. 14, 1994, due to temporary diversion.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	unknown	*1,260	*a5.25	Feb. 19	unknown	unknown	unknown
Jan. 18	unknown	unknown	unknown	May 26	0330	431	3.75
Feb. 7	unknown	unknown	unknown				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1999, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1950 - 1999
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ANNUAL TOTAL	62153		77732			
ANNUAL MEAN	170		213		167	
HIGHEST ANNUAL MEAN					242	1997
LOWEST ANNUAL MEAN					107	1994
HIGHEST DAILY MEAN	700	Dec 28	700	Dec 28	3000	Feb 8 1996
LOWEST DAILY MEAN	130	Sep 13	130	Oct 1	93	Dec 14 1992
ANNUAL SEVEN-DAY MINIMUM	130	Oct 16	130	Oct 16	95	Jul 25 1994
ANNUAL RUNOFF (AC-FT)	123300		154200		121100	
ANNUAL RUNOFF (CFSM)	1.59		1.99		1.56	
ANNUAL RUNOFF (INCHES)	21.61		27.02		21.23	
10 PERCENT EXCEEDS	213		323		260	
50 PERCENT EXCEEDS	155		190		135	
90 PERCENT EXCEEDS	130		131		107	

e Estimated

DESCHUTES RIVER BASIN

111

14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°51'42", long 121°37'35", in SW 1/4 sec.23, T.8 S., R.9 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 200 ft upstream from bridge on road B241, 3.4 mi upstream from headworks of Mill Creek Canal, and 19.3 mi northwest of Warm Springs, and at mile 14.6.

DRAINAGE AREA.--26.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,380 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--16 years (water years 1984-99), 69.6 ft³/s, 35.27 in/yr, 50,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft³/s Feb. 7, 1996, from rating curve extended above 800 ft³/s on basis of slope-area measurement of peak flow, gage height, 8.42; maximum gage height, 9.49 ft, Feb. 7, 1996, from high-water mark on crest-stage gage; minimum discharge recorded, 23 ft³/s Feb. 15, 25, 1993, but may have been lower during period of estimated record.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1630	258	5.82	Jan. 15	0200	219	5.76
Nov. 26	1230	185	5.61	Feb. 28	1100	161	5.57
Dec. 2	1100	263	5.84	May 26	0400	220	5.76
Dec. 13	2330	137	5.43	June 17	0930	203	5.71
Dec. 28	0600	*537	*6.52				

Minimum discharge, 45 ft³/s several days in October.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	50	97	185	68	140	75	109	190	134	60	59
2	49	49	196	157	73	127	73	116	177	132	60	57
3	49	49	144	134	70	119	72	118	154	122	59	56
4	59	51	115	117	68	108	69	111	145	112	61	56
5	50	51	98	105	69	97	67	101	152	105	67	56
6	49	52	91	96	86	90	65	98	164	101	70	55
7	48	53	85	90	93	85	65	100	150	101	75	55
8	49	53	84	82	83	81	66	96	134	101	67	55
9	52	52	77	77	79	77	64	91	123	97	64	55
10	50	51	74	75	74	73	63	86	116	93	62	54
11	48	51	95	75	70	69	63	83	118	94	60	54
12	48	50	118	73	67	69	65	86	126	95	60	55
13	50	54	129	70	64	72	69	89	140	93	59	55
14	51	53	127	110	64	71	69	97	154	91	59	55
15	52	63	116	181	61	70	68	96	167	88	59	54
16	51	63	105	158	62	70	71	83	178	85	58	54
17	50	60	98	142	66	68	78	89	188	82	58	54
18	49	58	91	168	68	69	92	116	173	79	57	54
19	48	54	e80	152	69	70	101	137	165	76	57	54
20	48	83	e75	143	65	74	109	140	161	85	56	54
21	49	220	e72	135	65	85	104	140	150	85	56	54
22	49	156	e69	126	67	85	99	141	146	77	56	53
23	48	116	e67	117	85	82	97	149	151	74	56	53
24	48	116	e70	106	101	82	103	166	153	72	55	52
25	49	137	e80	95	97	84	114	196	169	70	55	54
26	50	164	91	89	87	84	118	200	154	68	55	55
27	48	145	165	82	104	82	113	183	140	66	56	55
28	51	121	468	80	149	79	104	186	132	64	55	57
29	50	106	329	75	---	81	98	184	128	63	55	56
30	49	103	271	73	---	79	99	172	131	61	59	56
31	49	---	224	72	---	79	---	167	---	60	62	---
TOTAL	1536	2484	4001	3440	2174	2601	2513	3926	4529	2726	1848	1646
MEAN	49.5	82.8	129	111	77.6	83.9	83.8	127	151	87.9	59.6	54.9
MAX	59	220	468	185	149	140	118	200	190	134	75	59
MIN	46	49	67	70	61	68	63	83	116	60	55	52
AC-FT	3050	4930	7940	6820	4310	5160	4980	7790	8980	5410	3670	3260
CFSM	1.85	3.09	4.82	4.14	2.90	3.13	3.13	4.73	5.63	3.28	2.22	2.05
IN.	2.13	3.45	5.55	4.77	3.02	3.61	3.49	5.45	6.29	3.78	2.57	2.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

MEAN	44.6	69.5	79.7	82.8	92.2	79.7	87.1	92.8	75.2	49.5	42.2	41.2
MAX	84.6	136	203	162	275	123	124	141	151	87.9	63.3	64.9
(WY)	1998	1996	1996	1996	1996	1997	1997	1997	1999	1999	1997	1997
MIN	30.0	38.2	44.1	43.8	40.0	58.1	62.4	43.7	33.3	34.2	31.1	28.2
(WY)	1993	1988	1994	1992	1993	1994	1991	1992	1992	1994	1992	1995

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1984 - 1999
ANNUAL TOTAL	28324	33424	
ANNUAL MEAN	77.6	91.6	69.6
HIGHEST ANNUAL MEAN			114
LOWEST ANNUAL MEAN			46.5
HIGHEST DAILY MEAN	468	Dec 28	1060
LOWEST DAILY MEAN	44	Sep 1	25
ANNUAL SEVEN-DAY MINIMUM	44	Sep 1	25
ANNUAL RUNOFF (AC-FT)	56180	66300	50400
ANNUAL RUNOFF (CFSM)	2.90	3.42	2.60
ANNUAL RUNOFF (INCHES)	39.32	46.39	35.27
10 PERCENT EXCEEDS	116	152	110
50 PERCENT EXCEEDS	70	77	59
90 PERCENT EXCEEDS	46	52	36

e Estimated

14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR

LOCATION.--Lat 44°57'32", long 121°23'35", in NE 1/4 SW 1/4 sec.14, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 600 ft downstream from culvert on Warm Springs Reservation Highway 9, 200 ft downstream from Quartz Creek, and 2.4 mi west of Simnasho, and at mile 7.92.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--October 1983 to current year.

REVISED RECORDS.--WDR OR-96-1: 1986.

GAGE.--Water-stage recorder. Elevation of gage is 2,260 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation or diversions upstream from station.

AVERAGE DISCHARGE.--16 years (water years 1984-99), 88.2 ft³/s, 8.27 in/yr, 63,910 acre-ft/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,760 ft³/s, Feb. 7, 1996, gage height, 10.57 ft; minimum discharge, 4.5 ft³/s Jan. 7, 1991.EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	1200	*1,270	*5.49	Feb. 17	0230	605	4.22
Jan. 18	1830	687	4.40	Feb. 19	1730	605	4.22
Feb. 7	0830	797	4.63				

Minimum discharge, 40 ft³/s Oct. 1, 29.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	42	55	332	147	312	141	139	141	63	48	46
2	41	42	217	262	150	282	135	148	134	61	48	46
3	41	42	169	212	173	279	129	149	124	61	47	46
4	43	42	107	188	160	259	123	147	118	61	49	46
5	43	42	84	167	145	223	119	138	116	61	56	46
6	42	42	73	155	267	204	115	129	119	60	50	45
7	42	43	68	145	644	192	112	128	112	58	49	44
8	41	43	66	132	351	182	111	125	106	57	49	44
9	41	43	62	122	266	176	109	120	103	56	48	44
10	42	43	60	118	213	161	107	115	98	56	48	44
11	42	42	66	116	182	149	107	112	95	55	47	44
12	42	42	93	112	172	146	104	112	93	54	47	44
13	41	42	98	106	170	146	104	112	92	53	47	44
14	41	42	92	108	197	142	104	110	91	53	47	44
15	41	43	82	197	176	137	104	107	91	53	47	44
16	41	43	75	220	201	134	105	104	91	53	47	44
17	41	44	72	202	418	129	110	107	89	53	47	44
18	41	44	71	402	277	128	125	122	86	53	47	44
19	41	43	63	479	461	128	139	127	83	51	47	44
20	41	44	e50	429	320	128	148	129	81	51	47	44
21	41	84	e45	406	269	138	149	131	79	54	46	44
22	41	84	e42	328	261	150	146	133	76	53	46	44
23	41	68	e42	297	282	153	138	136	73	51	46	44
24	41	71	e43	266	336	152	139	146	72	51	46	44
25	41	69	e47	216	351	152	147	163	73	51	46	44
26	41	69	65	202	310	153	161	170	71	51	46	44
27	41	67	80	173	316	152	160	159	69	49	46	44
28	41	59	900	181	345	148	149	153	67	49	46	44
29	41	56	748	224	---	148	140	149	65	49	46	44
30	42	55	514	188	---	143	136	144	64	48	46	44
31	42	---	419	165	---	143	---	137	---	48	46	---
TOTAL	1282	1535	4668	6850	7560	5269	3816	4101	2772	1677	1468	1331
MEAN	41.4	51.2	151	221	270	170	127	132	92.4	54.1	47.4	44.4
MAX	43	84	900	479	644	312	161	170	141	63	56	46
MIN	41	42	42	106	145	128	104	104	64	48	46	44
AC-FT	2540	3040	9260	13590	15000	10450	7570	8130	5500	3330	2910	2640
CFSM	.29	.35	1.04	1.52	1.86	1.17	.88	.91	.64	.37	.33	.31
IN.	.33	.39	1.20	1.76	1.94	1.35	.98	1.05	.71	.43	.38	.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	38.4	50.7	82.5	134	216	161	120	87.4	58.9	42.4	38.3	37.3				
MAX	47.7	104	315	479	646	305	182	132	95.5	54.1	47.4	44.4				
(WY)	1998	1985	1997	1997	1996	1986	1997	1999	1993	1999	1999	1999				
MIN	33.1	35.6	40.0	47.6	42.7	58.9	60.8	44.6	36.6	32.3	30.5	30.4				
(WY)	1995	1988	1986	1987	1994	1994	1994	1994	1994	1994	1994	1994				

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1984 - 1999
ANNUAL TOTAL	33165	42329	
ANNUAL MEAN	90.9	116	88.2
HIGHEST ANNUAL MEAN			166
LOWEST ANNUAL MEAN			41.6
HIGHEST DAILY MEAN	900	900	3600
LOWEST DAILY MEAN	39	41	5.8
ANNUAL SEVEN-DAY MINIMUM	40	41	8.3
ANNUAL RUNOFF (AC-FT)	65780	83960	63910
ANNUAL RUNOFF (CFSM)	.63	.80	.61
ANNUAL RUNOFF (INCHES)	8.51	10.86	8.27
10 PERCENT EXCEEDS	177	218	167
50 PERCENT EXCEEDS	63	83	49
90 PERCENT EXCEEDS	41	42	36

e Estimated

DESCHUTES RIVER BASIN

113

14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

LOCATION.--Lat 44°51'24", long 121°08'55", in SE 1/4 SW 1/4 sec.23, T.8 S., R.13 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 25 ft upstream from bridge, 2.5 mi east of Kahneeta Hot Springs, and at mile 4.6.

DRAINAGE AREA.--526 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--27 years(water years 1973-99), 451 ft³/s, 11.65 in/yr, 326,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s Feb. 7, 1996, gage height, 14.32 ft, from inside highwater mark and slope-area computation; minimum discharge, 149 ft³/s Dec. 20, 1990, but may have been less during period of ice effect Dec. 20, 1990 to Jan. 10, 1991.

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)
Dec. 2	1530	1,940	4.74	Jan. 18	2300	2,120	4.97
Dec. 28	1800	*4,460	*6.97	Feb. 7	1230	2,060	4.88

Minimum discharge, 264 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	268	282	397	1390	636	1120	663	750	964	505	350	338
2	272	280	1170	1140	613	1040	638	794	956	498	349	333
3	275	279	946	968	668	1030	618	803	878	494	346	329
4	285	282	622	863	637	967	602	789	813	478	346	328
5	286	285	510	789	606	874	588	749	798	462	416	326
6	279	284	461	737	717	817	574	720	818	448	374	322
7	276	298	430	694	1830	776	563	718	789	439	373	322
8	276	297	420	648	1120	743	562	707	739	435	377	322
9	278	291	391	609	904	726	551	687	698	428	362	322
10	282	287	381	587	778	683	547	667	667	420	355	320
11	278	284	388	576	693	651	545	651	645	413	349	319
12	276	282	480	564	666	632	536	648	640	408	342	318
13	276	282	532	542	653	632	535	649	649	401	341	318
14	276	288	526	533	748	624	538	643	667	396	344	319
15	278	291	494	911	693	611	543	632	692	395	342	318
16	281	310	466	1000	676	606	557	625	715	392	339	318
17	278	317	445	954	1080	596	580	632	726	388	337	315
18	277	312	433	1280	914	595	632	691	703	384	336	316
19	274	296	386	1570	1190	594	696	755	678	380	334	317
20	274	291	325	1390	1060	602	745	787	657	380	332	316
21	274	547	e280	1370	863	636	763	800	643	414	330	315
22	275	666	e290	1190	842	689	747	813	611	397	328	315
23	275	532	e300	1070	917	705	721	836	600	379	329	313
24	278	496	e350	995	1030	703	730	898	595	372	330	313
25	279	469	e400	859	1110	705	765	1000	620	370	327	311
26	278	522	e425	811	1020	710	821	1100	610	365	327	313
27	277	531	443	737	1000	706	828	1050	565	362	327	315
28	279	458	3160	721	1140	688	794	1030	537	358	324	316
29	279	418	3110	843	---	687	746	1020	519	354	323	316
30	277	423	2130	754	---	680	734	976	508	352	334	315
31	280	---	1720	687	---	671	---	934	---	351	340	---
TOTAL	8596	10880	22811	27782	24804	22499	19462	24554	20700	12618	10663	9578
MEAN	277	363	736	896	886	726	649	792	690	407	344	319
MAX	286	666	3160	1570	1830	1120	828	1100	964	505	416	338
MIN	268	279	280	533	606	594	535	625	508	351	323	311
AC-FT	17050	21580	45250	55110	49200	44630	38600	48700	41060	25030	21150	19000
CFSM	.53	.69	1.40	1.70	1.68	1.38	1.23	1.51	1.31	.77	.65	.61
IN.	.61	.77	1.61	1.96	1.75	1.59	1.38	1.74	1.46	.89	.75	.68

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1973	259	358	1998	211	1993
1974	322	570	1985	229	1994
1975	503	1216	1997	242	1994
1976	608	1773	1997	201	1979
1977	790	2894	1996	239	1994
1978	657	1285	1986	274	1977
1979	578	956	1997	278	1977
1980	525	848	1997	278	1977
1981	392	803	1974	235	1994
1982	285	407	1999	198	1994
1983	259	344	1999	196	1994
1984	254	334	1997	197	1994

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1973 - 1999
ANNUAL TOTAL	171723	214947	
ANNUAL MEAN	470	589	451
HIGHEST ANNUAL MEAN			786
LOWEST ANNUAL MEAN			246
HIGHEST DAILY MEAN	3160	3160	15800
LOWEST DAILY MEAN	267	268	160
ANNUAL SEVEN-DAY MINIMUM	269	275	174
ANNUAL RUNOFF (AC-FT)	340600	426300	326700
ANNUAL RUNOFF (CFSM)	.89	1.12	.86
ANNUAL RUNOFF (INCHES)	12.14	15.20	11.65
10 PERCENT EXCEEDS	696	965	755
50 PERCENT EXCEEDS	398	542	323
90 PERCENT EXCEEDS	275	283	228

e Estimated

DESCHUTES RIVER BASIN

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR

LOCATION.--Lat 45°37'20", long 120°54'05", in SW 1/4 SE 1/4 sec.26, T.2 N., R.15 E., Sherman County, Hydrologic Unit 17070306, on right bank at Moody, 4.0 mi southwest of Biggs, and at mile 1.4.

DRAINAGE AREA.--10,500 mi², approximately.

PERIOD OF RECORD.--October 1897 to December 1899 (published as "near Moro"), July 1906 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 754: Drainage area. WDR OR-96-1: 1965(M).

GAGE.--Water-stage recorder. Datum of gage is 167.54 ft above sea level. Oct. 19, 1897, to Dec. 31, 1899, nonrecording gage at site 10 mi upstream at different datum. July 22, 1906, to July 18, 1930, nonrecording gage at site 300 ft downstream at datum 0.50 ft lower.

REMARKS.--No estimated daily discharges. Records good. Some fluctuation caused by regulation at Lake Simtustus since 1957. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 46,420 acre-ft, in Crescent Lake, Crane Prairie, and Wickiup Reservoirs, combined capacity, 323,390 acre-ft, and since 1960, in Prineville Reservoir, and since 1964 in Lake Billy Chinook (station 14092100). Large diversions in upper river basin for irrigation. Water-quality records for periods 1911-12, 1953-58, 1962-90, have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--95 years (water years 1898, 1899, 1907-99), 5,845 ft³/s, 4,235,000 acre-ft/yr.
43 years (water years 1957-99), 5,839 ft³/s, 4,230,000 acre-ft/yr (regulated).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,300 ft³/s Feb. 8, 1996, gage height, 12.08 ft, from rating curve extended above 47,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 2,400 ft³/s Dec. 5, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,500 ft³/s Dec. 29, gage height, 5.37 ft; minimum discharge, 4,780 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4840	5540	6390	10700	7820	10100	10600	7680	6840	6560	5360	5120
2	4940	5510	6780	9770	7700	10900	10100	7640	6950	6500	5370	5180
3	4970	5450	8530	9160	7710	11400	9730	7770	6920	6360	5380	5180
4	4990	5370	7450	8770	7670	11800	9160	7930	6930	6210	5410	5280
5	5010	5390	7190	8510	7580	11500	8790	7860	6870	5860	5460	5280
6	5000	5370	6990	8330	7580	11300	8660	7850	6950	5650	5510	5250
7	4980	5410	6880	8110	9250	11200	8540	7830	6920	5610	5570	5240
8	4980	5460	6840	7970	9590	11100	8120	7870	6840	5620	5600	5240
9	5130	5390	6700	7810	8790	10800	7260	7880	6700	5560	5560	5230
10	5140	5380	6420	7600	8340	9690	7110	7810	6600	5550	5510	5190
11	5140	5350	6410	7320	7990	8390	7130	7640	6500	5540	5540	5050
12	5130	5250	6530	7240	7860	8090	7200	7200	6340	5580	5660	4950
13	5140	5250	6800	7050	7770	7930	7290	6980	6280	5710	5690	4940
14	5120	5250	6890	6910	7760	7840	7130	6830	6390	5780	5870	4930
15	5120	5260	6770	7490	7850	7810	7060	6720	6600	5800	5660	4860
16	5140	5330	6590	7990	7790	7810	7100	6650	6960	5730	5610	4850
17	5100	5540	6270	8410	7820	7820	6870	6580	6980	5540	5580	4840
18	5060	5550	6100	8870	8360	7810	6800	6630	6930	5350	5460	4840
19	5290	5270	6430	10300	9690	7690	7050	6580	6920	5340	5440	4840
20	5470	5040	6420	9910	9700	7490	7240	6590	6820	5350	5400	4850
21	5470	5390	6520	9960	8850	7670	7420	6360	6860	5570	5270	4850
22	5520	6670	6900	9530	8510	8070	7410	6210	6900	5660	5150	4860
23	5770	7020	6830	9390	8420	8400	7370	6270	6840	5680	5050	4850
24	5870	7020	6610	9080	8730	8760	7180	6490	6820	5830	5030	4860
25	5860	6870	6610	8880	9330	9190	7110	6840	6850	5930	4940	4860
26	5680	6940	6530	8580	9390	9690	7280	7120	6880	6000	4930	4860
27	5520	7170	6220	8320	9290	10100	7290	6990	6680	5720	4910	4910
28	5600	6990	11200	8120	9620	10300	7270	6870	6590	5470	4900	5130
29	5600	6800	14800	8110	---	10300	7520	6950	6550	5370	4910	5130
30	5600	6630	13100	8120	---	10300	7790	6870	6530	5380	5050	5170
31	5580	---	11600	7930	---	10300	---	6750	---	5370	5090	---
TOTAL	163760	174860	232300	264240	237350	291550	232580	220240	202740	177180	165870	150620
MEAN	5283	5829	7494	8524	8477	9405	7753	7105	6758	5715	5351	5021
MAX	5870	7170	14800	10700	9700	11800	10600	7930	6980	6560	5870	5280
MIN	4840	5040	6100	6910	7580	7490	6800	6210	6280	5340	4900	4840
AC-FT	324800	346800	460800	524100	470800	578300	461300	436800	402100	351400	329000	298800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1999, BY WATER YEAR (WY)

	MEAN	5283	5829	7494	8524	8477	9405	7753	7105	6758	5715	5351	5021
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998
MIN	3385	3910	4446	4378	4021	4192	4467	4141	3988	3597	3411	3394	3394
(WY)	1965	1965	1994	1964	1964	1964	1977	1977	1994	1964	1964	1964	1964

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1957 - 1999

ANNUAL TOTAL	2335510	2513290		
ANNUAL MEAN	6399	6886		
HIGHEST ANNUAL MEAN			5839	
LOWEST ANNUAL MEAN			7969	1997
HIGHEST DAILY MEAN	16500	May 30	14800	Dec 29
LOWEST DAILY MEAN	4210	Sep 5	4840	Oct 1
ANNUAL SEVEN-DAY MINIMUM	4380	Sep 1	4850	Sep 15
ANNUAL RUNOFF (AC-FT)	4632000		4985000	
10 PERCENT EXCEEDS	8090		9310	
50 PERCENT EXCEEDS	6390		6750	
90 PERCENT EXCEEDS	4590		5100	

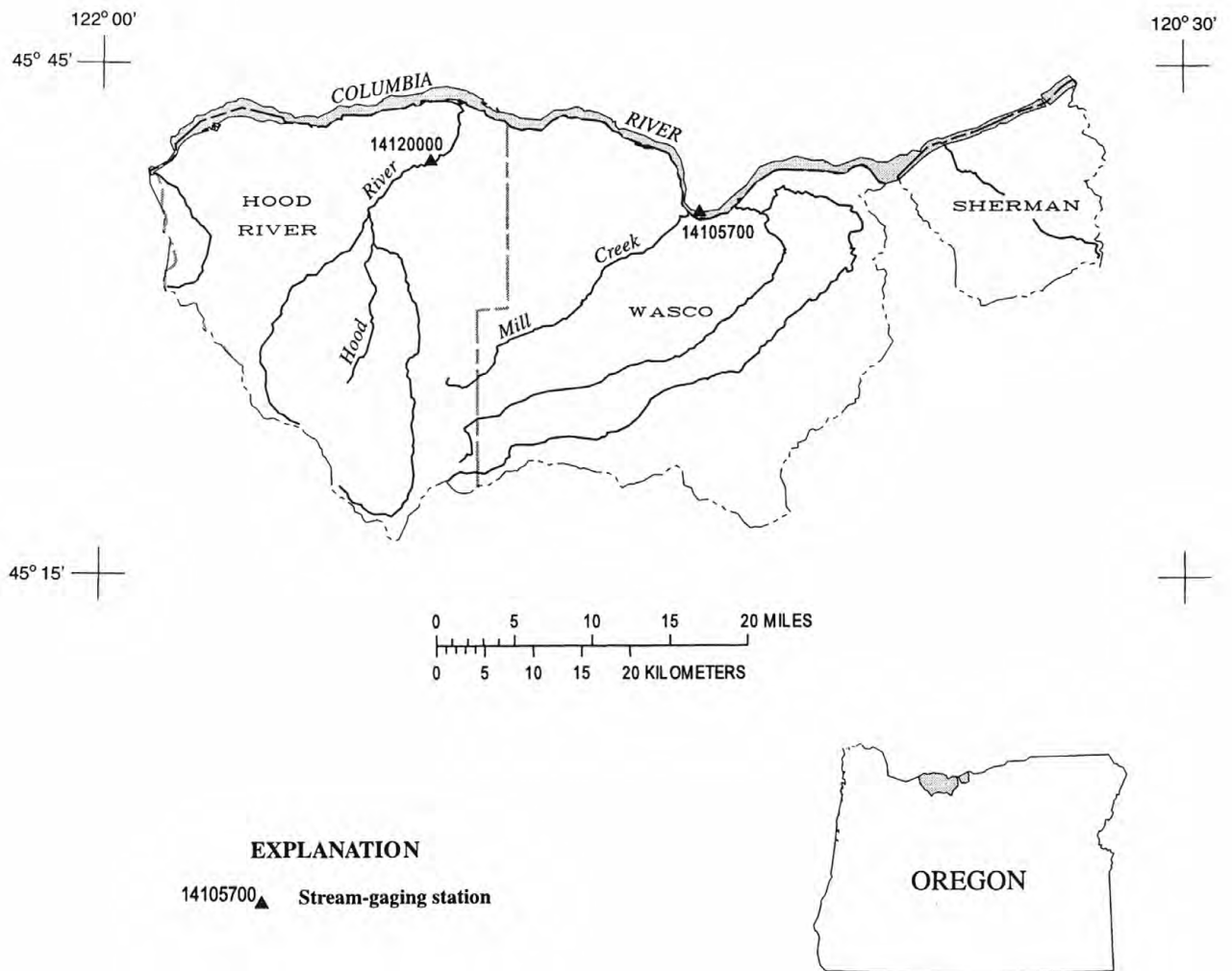
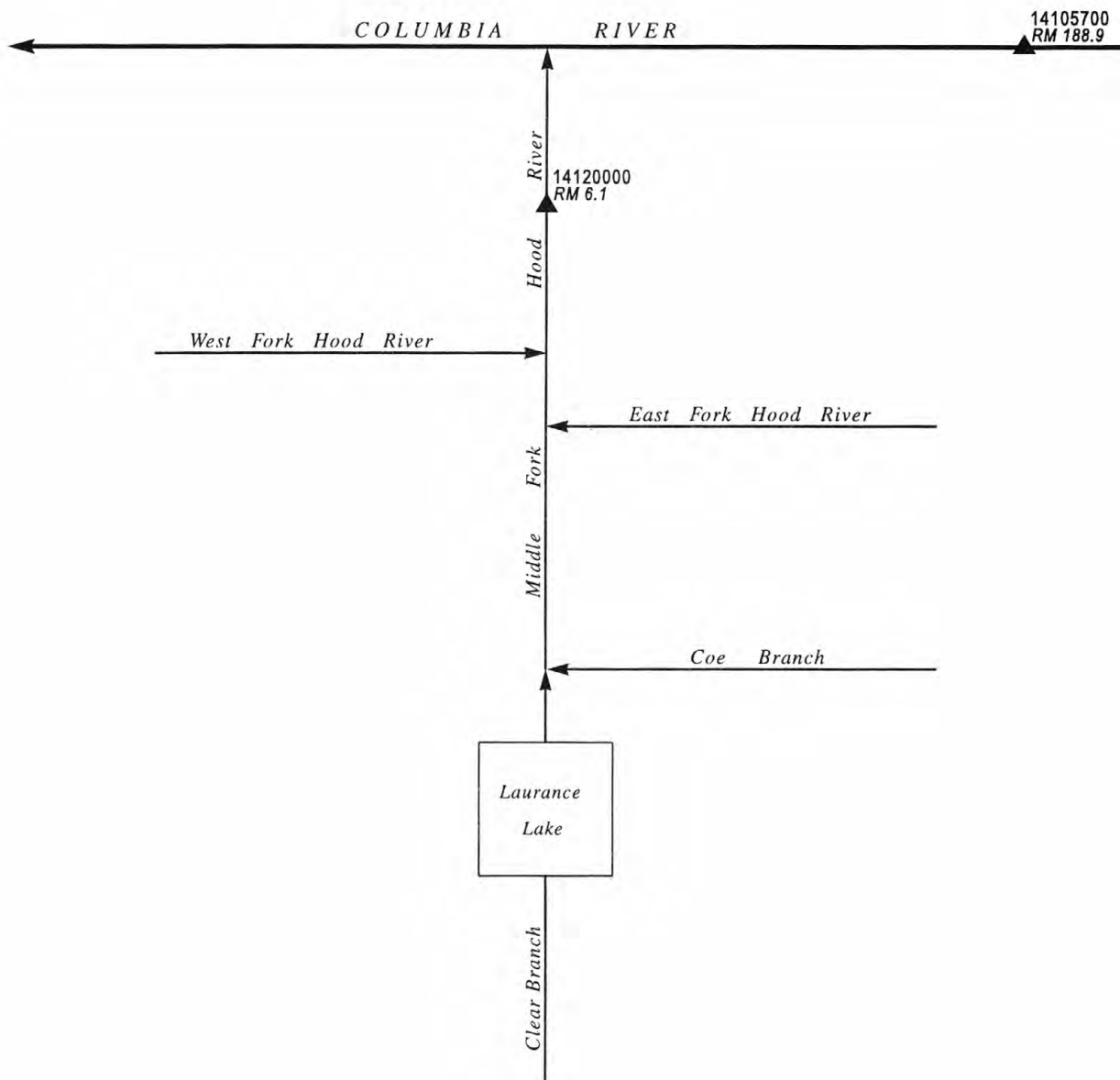


Figure 17. Location of surface-water stations in the Columbia River between the Deschutes River and Bonneville Dam and in the Hood River Basin.



EXPLANATION

- ▲14128600 Stream-gaging station
 RM 6.1 River mile
 → Stream—Arrow shows direction of flow

Figure 18. Schematic diagram showing gaging stations in the Columbia River between the Deschutes River and Bonneville Dam and in the Hood River Basin.

COLUMBIA RIVER MAIN STEM

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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 sea level. 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.--No estimated daily discharges. 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.--121 years (water years 1879-99), 192,100 ft³/s, 139,200,000 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, 389,000 ft³/s June 4; maximum elevation, 82.31 ft June 3; minimum daily discharge, 86,700 ft³/s Oct. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99100	99400	115000	188000	237000	204000	276000	309000	356000	293000	191000	192000
2	114000	105000	119000	176000	210000	250000	278000	315000	368000	306000	198000	167000
3	101000	115000	144000	210000	232000	269000	262000	307000	374000	282000	203000	151000
4	89300	115000	152000	198000	242000	269000	269000	321000	389000	260000	252000	183000
5	109000	116000	128000	199000	241000	297000	254000	318000	367000	271000	213000	116000
6	122000	123000	122000	202000	219000	263000	256000	293000	383000	253000	233000	99100
7	119000	114000	146000	201000	224000	250000	258000	289000	354000	236000	201000	138000
8	96400	115000	140000	219000	247000	238000	259000	273000	346000	271000	202000	171000
9	105000	126000	157000	231000	235000	230000	227000	261000	368000	276000	183000	126000
10	115000	122000	170000	217000	233000	268000	198000	321000	346000	225000	215000	145000
11	92200	121000	143000	184000	229000	269000	203000	267000	319000	281000	191000	154000
12	99200	131000	146000	201000	226000	250000	202000	239000	337000	264000	219000	103000
13	127000	133000	133000	230000	235000	244000	219000	240000	301000	242000	241000	132000
14	115000	123000	150000	232000	219000	226000	250000	279000	329000	290000	227000	128000
15	130000	112000	145000	232000	220000	246000	230000	253000	287000	304000	206000	119000
16	110000	111000	156000	234000	205000	242000	204000	262000	346000	261000	210000	146000
17	116000	124000	165000	242000	204000	257000	183000	266000	375000	243000	231000	150000
18	100000	120000	177000	232000	218000	254000	214000	270000	348000	265000	225000	147000
19	86700	128000	188000	216000	222000	254000	229000	275000	361000	252000	220000	107000
20	91300	104000	158000	219000	228000	230000	259000	283000	350000	232000	218000	130000
21	116000	113000	212000	228000	214000	233000	280000	284000	331000	231000	203000	149000
22	102000	105000	209000	236000	202000	241000	292000	271000	326000	240000	174000	170000
23	104000	132000	207000	237000	226000	261000	331000	267000	355000	230000	200000	153000
24	93200	123000	197000	227000	217000	281000	306000	250000	359000	228000	185000	162000
25	91800	131000	145000	220000	244000	265000	315000	300000	319000	252000	185000	124000
26	102000	111000	111000	214000	242000	284000	294000	345000	346000	229000	193000	127000
27	92200	112000	122000	228000	245000	304000	310000	371000	323000	231000	220000	130000
28	92900	105000	147000	232000	227000	341000	337000	381000	293000	217000	208000	154000
29	102000	121000	229000	229000	---	304000	332000	369000	306000	226000	162000	129000
30	115000	109000	169000	231000	---	298000	320000	369000	319000	194000	175000	143000
31	110000	---	182000	211000	---	309000	---	342000	---	195000	191000	---
TOTAL	3258300	3519400	4884000	6756000	6343000	8131000	7847000	9190000	10281000	7780000	6375000	4245100
MEAN	105100	117300	157500	217900	226500	262300	261600	296500	342700	251000	205600	141500
MAX	130000	133000	229000	242000	247000	341000	337000	381000	389000	306000	252000	192000
MIN	86700	99400	111000	176000	202000	204000	183000	239000	287000	194000	162000	99100
AC-FT	6463000	6981000	9687000	13400000	12580000	16130000	15560000	18230000	20390000	15430000	12640000	8420000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 1999, BY WATER YEAR (WY)

	MEAN	104400	107700	115100	118200	128400	147100	204400	341400	441200	301200	173200	120300
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	88600	91970	75760	
(WY)	1930	1937	1937	1937	1937	1937	1944	1977	1977	1977	1994	1994	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1879 - 1999
ANNUAL TOTAL	67488000	78609800	
ANNUAL MEAN	184900	215400	192100
HIGHEST ANNUAL MEAN			313600
LOWEST ANNUAL MEAN			118100
HIGHEST DAILY MEAN	446000	May 30	389000
LOWEST DAILY MEAN	86700	Oct 19	86700
ANNUAL SEVEN-DAY MINIMUM	96900	Oct 22	96900
ANNUAL RUNOFF (AC-FT)	133,900,000	155,900,000	139,200,000
10 PERCENT EXCEEDS	308000		319000
50 PERCENT EXCEEDS	171000		220000
90 PERCENT EXCEEDS	109000		114000

14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR

LOCATION.--Lat 45°39'20", long 121°32'50", in SE 1/4 sec.15, T.2 N., R.10 E., Hood River County, Hydrologic Unit 17070105, on right bank 25 ft downstream from Tucker Bridge, 0.5 mi upstream from Odell Creek, 4.0 mi, southwest of town of Hood River, and at mile 6.1.

DRAINAGE AREA.--279 mi².

PERIOD OF RECORD.--October 1897 to December 1899, September 1913 to September 1914, August 1915 to September 1917, January 1965 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1318: 1899. WSP 1935: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 383.2 ft above sea level (Oregon State Highway Department bench mark). Prior to July 23, 1915, nonrecording gage at bridge at various datums. July 23 to Dec. 21, 1915, water-stage recorder at site 0.8 mi upstream at different datum. January 1916 to September 1917, nonrecording gage at bridge at different datum. Jan. 16 to July 23, 1965, nonrecording gage at bridge.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some daily fluctuation possibly caused by diversion dam upstream from station and sawmill at Dee. Diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1898-99, 1914, 1916-17, 1966-99), 1,030 ft³/s, 745,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,300 ft³/s Feb. 7, 1996, gage height, 17.11 ft, from rating curve extended above 8,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge recorded, 136 ft³/s Sept. 16, 1915, caused by temporary storage behind dam at Dee.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 20.6 ft, present datum, discharge, 33,200 ft³/s, from rating curve extended above 1,500 ft³/s on basis of slope-area measurement of peak flow.

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. 21	0030	5,390	*8.69	Dec. 28	unknown	*14,100	*13.45
Dec. 2	0830	6,900	9.74	Feb. 28	0500	5,710	8.92

Minimum discharge, 308 ft³/s Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339	402	1200	2980	1070	3360	923	1240	1780	1070	599	385
2	405	418	5020	2300	1490	2520	885	1410	1440	1010	612	354
3	450	403	2630	1890	1470	2190	877	1520	1230	903	628	339
4	496	477	1670	e1700	1400	1850	845	1400	1190	824	654	337
5	422	625	1300	e1400	1280	1610	823	1190	1360	776	756	340
6	436	582	1100	e1300	1560	1460	797	1150	1390	765	692	373
7	429	529	1020	e1500	2000	1350	797	1170	1210	815	706	347
8	431	510	1000	e1300	1630	1280	806	1100	1110	778	620	343
9	471	475	860	e1200	1410	1210	776	1040	1030	753	563	355
10	494	464	810	e1050	1260	1130	764	994	971	784	555	362
11	456	448	1510	e950	1140	1070	744	972	979	818	566	341
12	428	438	2510	e1000	1070	1050	763	1080	1030	805	533	327
13	398	449	2580	e1100	1020	1100	797	1040	1130	799	488	325
14	480	442	2020	e2000	976	1070	797	1000	1270	791	457	328
15	529	539	1530	e2900	932	1040	808	993	1440	736	440	326
16	445	630	1280	2320	980	1010	853	945	1410	706	433	330
17	404	570	1180	2040	1130	968	940	1130	1320	671	460	321
18	387	670	1090	2480	1120	949	1130	1380	1230	632	485	316
19	364	674	964	2460	1450	948	1200	1320	1170	616	497	321
20	352	1800	e820	2250	1260	1020	1300	1260	1150	658	473	325
21	339	3960	e870	2450	1160	1160	1180	1230	1120	702	479	318
22	350	2370	e790	2210	1290	1160	1070	1260	1130	675	448	327
23	345	1580	e750	1850	2750	1130	1050	1460	1120	663	436	339
24	342	1540	e730	1570	3210	1110	1150	1790	1180	653	464	339
25	349	3060	e1500	1420	2590	1100	1360	1990	1380	642	496	340
26	347	2890	e2200	1300	2000	1120	1390	1730	1170	607	497	323
27	350	1910	e3000	1200	2950	1070	1230	1550	1010	617	467	320
28	403	1350	e12000	1290	4990	1010	1100	1530	935	646	463	317
29	394	1140	e7200	1280	---	1080	1040	1490	954	664	470	321
30	369	1050	e4200	1200	---	1010	1050	1410	1030	666	482	333
31	370	---	e3500	1130	---	962	---	1410	---	624	476	---
TOTAL	12574	32395	68834	53020	46588	40097	29245	40184	35869	22869	16395	10072
MEAN	406	1080	2220	1710	1664	1293	975	1296	1196	738	529	336
MAX	529	3960	12000	2980	4990	3360	1390	1990	1780	1070	756	385
MIN	339	402	730	950	932	948	744	945	935	607	433	316
AC-FT	24940	64260	136500	105200	92410	79530	58010	79700	71150	45360	32520	19980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 1999, BY WATER YEAR (WY)

MEAN	486	1053	1467	1604	1620	1366	1319	1217	940	594	403	376
MAX	996	2546	4109	3313	4217	2915	2358	2418	2439	1687	1088	804
(WY)	1998	1996	1978	1974	1996	1972	1916	1969	1899	1899	1899	1899
MIN	218	282	438	363	430	681	704	532	278	229	209	188
(WY)	1988	1988	1977	1979	1977	1977	1973	1992	1992	1992	1992	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1898 - 1999

ANNUAL TOTAL	370119	408142	
ANNUAL MEAN	1014	1118	1030
HIGHEST ANNUAL MEAN			1664
LOWEST ANNUAL MEAN			465
HIGHEST DAILY MEAN	12000	Dec 28	19200
LOWEST DAILY MEAN	256	Sep 11	144
ANNUAL SEVEN-DAY MINIMUM	274	Sep 8	155
ANNUAL RUNOFF (AC-FT)	734100	809500	745900
10 PERCENT EXCEEDS	1720	1990	1920
50 PERCENT EXCEEDS	869	1000	791
90 PERCENT EXCEEDS	333	359	314

e Estimated

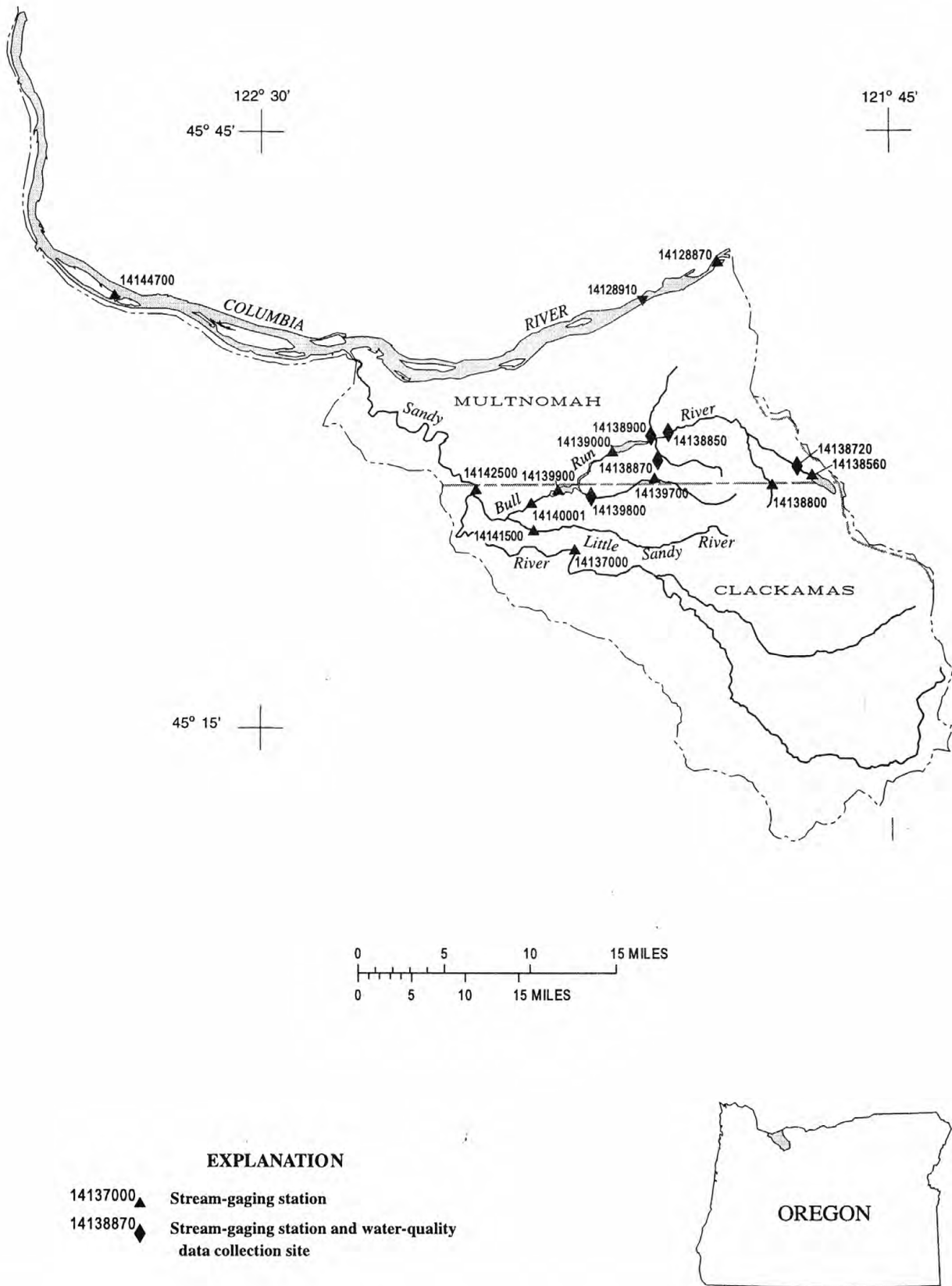


Figure 19. Location of surface-water and water-quality stations in the Columbia River between Bonneville Dam and confluence with the Willamette river and the Sandy River Basin.

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 sea level. 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, 6.22 ft Sept. 26, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 27.44 ft May 28; minimum, 7.76 ft Oct. 20.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.45	8.65	9.88	10.58	9.38	9.94	14.18	13.19	13.72	20.92	19.24	20.28
2	12.18	8.46	10.75	10.80	9.40	10.05	16.01	14.08	14.86	20.54	18.36	19.11
3	11.24	8.57	9.90	11.09	9.56	10.37	17.23	15.46	16.39	20.04	18.60	19.16
4	10.60	8.02	9.46	12.40	10.31	11.43	17.21	16.35	16.78	19.88	18.81	19.23
5	12.15	8.72	10.50	12.57	11.61	12.01	17.10	15.13	15.90	18.96	17.21	18.27
6	12.54	9.45	10.79	12.57	11.49	11.96	15.49	13.91	14.45	18.63	17.91	18.28
7	12.57	11.17	11.61	12.77	11.59	11.95	16.26	13.74	14.92	18.42	17.84	18.13
8	11.58	9.66	10.43	12.69	11.51	11.99	16.04	14.21	15.01	19.18	17.64	18.30
9	11.52	9.11	10.13	12.27	11.45	11.74	16.19	15.36	15.88	19.60	19.06	19.29
10	11.61	9.94	10.61	12.02	11.28	11.54	16.09	15.19	15.61	19.45	18.07	18.55
11	11.66	8.12	9.45	11.89	11.35	11.56	15.86	13.33	14.75	18.50	15.89	17.45
12	11.89	8.89	10.00	11.94	11.27	11.54	15.92	14.75	15.29	18.89	15.73	17.44
13	13.69	10.17	11.60	11.92	11.39	11.63	16.47	15.11	15.63	20.33	16.49	18.93
14	12.82	9.73	10.86	12.06	11.42	11.68	16.53	15.30	15.80	20.43	19.68	19.95
15	13.24	9.87	11.22	12.61	11.43	11.95	16.47	14.41	15.59	19.82	17.65	19.18
16	11.06	9.89	10.53	12.13	11.51	11.85	16.55	13.52	15.28	20.85	19.46	20.27
17	11.33	9.96	10.63	12.39	11.50	11.86	16.65	14.68	15.83	20.99	20.53	20.73
18	11.13	9.85	10.54	12.23	11.54	11.81	16.05	15.05	15.60	21.85	20.97	21.47
19	10.70	7.84	8.84	12.09	11.41	11.71	17.26	15.34	16.43	21.88	20.53	21.55
20	10.56	7.76	9.29	13.01	11.50	12.07	17.07	14.08	15.83	22.05	18.74	21.07
21	10.52	9.37	9.91	13.78	12.41	12.98	17.75	13.37	16.54	22.22	20.43	21.49
22	10.46	9.22	9.96	13.62	12.98	13.18	17.59	14.91	16.67	22.36	20.44	21.50
23	10.19	8.95	9.44	14.61	12.71	13.18	18.20	16.40	17.40	22.61	22.09	22.37
24	10.03	9.11	9.48	14.61	13.26	13.81	17.66	15.13	16.67	22.34	20.85	22.10
25	10.11	9.12	9.49	15.65	13.46	14.13	16.88	13.37	14.36	20.91	19.65	20.32
26	9.91	8.91	9.24	16.18	14.71	15.14	13.66	12.81	13.20	21.57	19.09	19.82
27	9.68	8.73	9.21	14.95	14.24	14.56	15.96	12.51	13.52	20.37	19.22	19.86
28	9.71	8.88	9.25	14.40	13.59	13.99	22.00	15.86	18.87	21.18	19.67	20.76
29	9.28	8.65	8.98	14.08	13.34	13.63	22.92	21.39	22.26	21.48	19.62	20.66
30	9.71	8.70	9.23	14.45	12.88	13.41	22.27	20.48	21.55	21.36	20.07	20.59
31	10.53	8.96	9.60	---	---	---	21.60	19.55	20.84	20.07	18.38	18.94
MONTH	13.69	7.76	10.03	16.18	9.38	12.29	22.92	12.51	16.18	22.61	15.73	19.84

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	21.70	18.35	19.80	22.79	21.19	21.82	24.16	21.85	22.91	24.86	22.60	23.39
2	21.14	18.87	19.91	23.55	20.21	22.10	22.34	20.68	22.01	24.18	21.97	23.09
3	23.12	17.93	19.69	24.05	22.08	23.33	22.13	19.42	20.80	24.68	23.27	23.92
4	24.07	19.83	21.38	24.25	22.39	23.52	22.18	21.12	21.50	25.14	22.82	24.00
5	19.83	18.85	19.44	24.73	22.96	23.90	21.37	20.76	21.17	25.47	22.67	23.68
6	20.37	19.55	19.94	24.73	22.45	23.00	21.51	19.49	20.98	24.99	22.58	23.40
7	21.00	20.09	20.59	22.95	21.15	22.30	21.33	18.72	19.85	24.00	21.14	22.93
8	22.15	20.41	20.92	21.21	19.53	20.19	21.35	19.13	19.94	22.64	20.93	21.57
9	22.29	20.76	21.28	20.34	18.51	19.29	19.62	18.98	19.35	22.36	20.10	21.06
10	21.08	20.52	20.85	22.56	20.25	21.36	19.21	18.38	18.82	23.73	21.03	22.49
11	20.79	19.41	20.22	22.92	20.80	22.10	18.62	14.81	17.52	23.79	21.11	21.94
12	21.09	18.49	19.90	20.80	18.57	19.77	18.11	14.67	16.86	21.27	19.56	20.28
13	19.63	18.12	18.93	20.86	19.15	20.16	19.79	15.75	17.26	21.23	17.87	19.96
14	20.14	18.53	19.42	20.65	18.83	19.64	21.02	18.75	19.88	22.21	20.37	21.12
15	18.96	17.81	18.63	21.24	19.11	19.72	20.23	17.52	18.73	21.75	19.80	20.53
16	18.90	17.34	18.12	21.37	19.83	20.73	20.31	16.86	17.69	21.71	19.53	21.06
17	19.72	16.00	18.47	21.02	19.25	20.29	19.15	15.65	16.35	21.77	20.30	21.18
18	20.09	15.17	18.27	21.03	18.88	20.09	19.23	17.70	18.67	22.38	21.10	21.78
19	20.87	19.19	20.09	20.53	19.33	19.99	20.44	16.44	18.50	22.13	20.43	21.28
20	20.87	19.12	19.90	20.45	19.77	20.09	21.63	19.13	20.00	22.73	21.20	22.14
21	20.18	18.41	19.03	20.46	19.75	19.98	22.43	20.75	21.63	23.05	21.56	22.23
22	20.05	18.37	19.00	20.59	19.68	20.12	23.40	21.32	22.08	22.47	20.31	21.38
23	21.19	17.12	19.69	20.71	19.51	20.06	24.94	22.44	23.61	22.35	20.59	21.56
24	22.96	19.60	21.43	21.83	20.71	21.38	24.94	22.64	23.48	21.99	20.25	20.85
25	22.03	18.95	21.11	21.83	21.38	21.58	24.44	22.57	23.32	24.38	20.29	22.27
26	22.92	21.10	22.26	23.88	21.50	22.27	24.49	22.20	22.94	26.15	23.21	24.26
27	22.86	21.81	22.44	24.08	21.90	22.67	24.52	21.53	22.91	27.13	25.56	26.09
28	23.44	22.12	22.96	24.83	22.67	24.10	25.23	22.21	24.34	27.44	26.11	27.01
29	---	---	---	24.77	22.99	23.58	25.92	22.92	24.69	27.16	25.95	26.49
30	---	---	---	24.07	22.36	23.04	25.48	23.16	24.16	26.02	25.62	25.90
31	---	---	---	24.16	22.89	23.40	---	---	---	26.00	25.02	25.49
MONTH	24.07	15.17	20.13	24.83	18.51	21.47	25.92	14.67	20.73	27.44	17.87	22.72

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	26.50	24.09	25.45	24.29	22.20	23.08	17.86	15.02	16.55	16.84	15.89	16.37
2	27.04	25.11	25.99	23.63	21.98	22.58	18.90	15.11	16.94	16.75	14.10	15.27
3	27.37	26.03	26.64	23.77	21.37	21.97	18.30	14.93	16.30	15.75	11.37	13.16
4	27.04	25.76	26.73	22.31	20.30	21.50	20.67	17.32	18.49	16.69	13.96	15.24
5	26.86	24.95	26.14	21.84	19.56	20.57	21.01	17.79	18.58	16.53	12.46	13.43
6	27.16	26.40	26.74	22.06	19.28	20.33	19.78	16.63	18.30	12.71	8.49	10.24
7	26.61	23.70	25.49	21.05	17.65	19.46	19.54	16.98	17.99	12.25	8.03	11.06
8	26.24	25.26	25.72	21.56	19.80	20.41	17.81	16.08	16.87	15.45	11.87	14.28
9	25.39	24.77	25.16	21.62	19.90	20.72	17.49	15.38	16.20	15.28	11.55	12.72
10	25.89	24.72	25.33	20.61	18.95	19.58	19.34	16.58	17.27	14.09	9.77	12.45
11	25.42	23.17	24.37	23.05	19.72	20.72	19.58	16.05	17.59	15.65	11.71	13.92
12	25.07	22.53	23.72	23.12	21.22	21.83	18.73	16.93	17.60	12.19	11.21	11.76
13	24.99	21.96	23.28	22.83	19.12	20.03	20.86	18.17	18.81	12.24	9.44	10.84
14	25.55	22.20	23.95	22.31	19.43	20.83	20.75	17.72	19.26	12.08	11.25	11.56
15	25.55	22.79	23.50	23.84	21.23	22.66	19.39	18.06	18.56	12.06	10.21	11.26
16	25.97	22.49	24.05	23.65	19.75	21.09	18.94	15.78	16.84	14.09	11.51	12.63
17	27.26	24.30	26.10	22.27	18.79	20.48	19.40	16.86	17.83	14.26	12.03	13.21
18	27.31	24.98	25.93	22.46	19.09	20.55	19.23	17.47	18.13	14.51	12.89	13.40
19	26.31	24.68	25.23	22.66	18.62	20.16	20.05	17.32	18.44	13.06	9.35	11.09
20	25.37	24.63	25.15	19.88	17.53	18.87	19.92	15.84	17.37	13.12	9.20	10.91
21	25.64	24.55	25.17	19.99	17.51	18.83	19.52	17.23	18.14	14.45	12.28	13.22
22	25.06	23.74	24.35	19.97	19.31	19.77	17.63	14.36	15.65	15.49	12.59	13.91
23	26.72	23.72	24.79	19.33	17.25	18.14	18.47	13.92	15.62	16.01	12.34	14.58
24	26.75	24.68	25.51	19.61	17.27	18.45	18.04	14.59	16.20	15.79	11.69	13.61
25	26.44	23.94	24.77	20.61	18.78	19.50	17.54	14.03	15.97	13.40	10.97	12.32
26	24.68	23.89	24.31	21.26	17.81	19.52	17.41	14.74	16.13	13.33	10.14	12.09
27	24.78	24.23	24.56	19.19	16.83	17.53	20.12	16.82	18.19	13.68	10.17	11.91
28	24.50	22.12	23.12	19.00	16.21	17.75	18.04	16.10	17.16	14.31	12.18	13.27
29	24.03	22.03	22.73	20.94	18.91	19.85	17.76	14.20	16.16	13.99	10.11	11.73
30	24.39	23.32	23.95	19.91	16.50	17.79	16.38	13.59	14.28	14.36	10.22	12.54
31	---	---	---	17.82	15.25	16.72	18.16	13.64	15.19	---	---	---
MONTH	27.37	21.96	24.93	24.29	15.25	20.04	21.01	13.59	17.18	16.84	8.03	12.80

YEAR	27.44	7.76	18.18
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COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National stream quality accounting network station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NE 1/4 SE 1/4 sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.1 mi downstream from Tumult Creek, 1.0 mi west of Warrendale, 5.1 mi downstream from Bonneville Dam, and at mile 141.0.

DRAINAGE AREA.--240,000 mi², approximately.

PERIOD OF RECORD.--October 1973 to September 1993, October 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to September 1992 (discontinued).

WATER TEMPERATURE: October 1975 to September 1992 (discontinued).

REMARKS.--Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 244 microsiemens Jan. 7, 1988; minimum, 95 microsiemens June 26, 27, 1982.

WATER TEMPERATURE: Maximum, 22.5°C Aug. 17, 18, 1977, Aug. 11, 1980, July 31, 1992; minimum recorded, 0.0°C many days in January and February, 1979.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	
NOV 1998													
25...	0950	91800	162	7.9	10.6	1.8	10.4	755	95	65	17	5.1	
JAN 1999													
27...	0950	228000	175	8.0	5.1	5.6	12.1	773	94	77	20	6.3	
MAR													
10...	1030	268000	190	8.0	5.7	16	12.8	767	101	80	21	6.5	
APR													
21...	1010	280000	154	8.2	9.4	6.0	13.6	765	118	67	18	5.2	
MAY													
10...	1010	321000	145	8.2	10.7	12	12.2	769	109	58	16	4.5	
26...	1010	345000	138	8.0	13.9	4.5	11.7	769	112	57	15	4.3	
JUN													
07...	1000	354000	109	7.9	13.7	4.5	11.9	765	114	44	12	3.3	
23...	0930	355000	118	7.9	16.6	4.5	11.0	764	112	48	13	3.6	
AUG													
04...	1030	252000	119	7.8	20.4	2.1	9.4	764	104	49	14	3.6	
SEP													
15...	0930	119000	127	7.8	18.8	1.5	8.7	762	93	52	15	3.8	
DATE		SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
NOV 1998													
25...	6.8	18	.4	1.3	64	77	0	11	3.0	.1	9.2	101	
JAN 1999													
27...	7.8	18	.4	1.5	67	82	0	12	4.0	.1	14	110	
MAR													
10...	9.1	19	.4	1.6	74	90	0	14	5.0	.2	16	125	
APR													
21...	5.8	15	.3	1.3	60	72	0	9.9	3.5	.1	14	100	
MAY													
10...	5.1	16	.3	1.2	60	73	0	8.0	3.3	.2	12	96	
26...	4.6	15	.3	1.0	56	68	0	8.5	2.5	.1	12	86	
JUN													
07...	3.8	16	.3	1.0	43	52	0	6.5	1.9	.1	10	79	
23...	4.2	16	.3	1.0	47	57	0	6.9	2.5	.1	9.0	81	
AUG													
04...	3.5	13	.2	1.0	46	56	0	5.4	2.0	<.1	8.2	77	
SEP													
15...	3.7	13	.2	1.0	46	56	0	7.4	1.8	<.1	7.3	73	
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
NOV 1998													
25...	93	.14	.006	.003	<.1	.1	.219	.030	.028	.015	1.4	.3	
JAN 1999													
27...	109	.15	.010	.006	E.1	.2	.474	.049	.027	.030	1.8	.2	
MAR													
10...	121	.17	.014	.003	E.1	.2	.648	.079	.030	.030	1.9	.2	
APR													
21...	94	.14	.003	.002	<.1	.2	.284	.037	.014	.012	2.0	.4	
MAY													
10...	86	.13	.003	.002	<.1	.2	.108	.036	.007	.005	2.2	.3	
26...	83	.12	.003	.002	.1	.2	.103	.038	.008	.007	2.2	.6	
JUN													
07...	65	.11	.005	.002	E.1	.2	.104	.044	.010	.007	2.7	1.4	
23...	69	.11	<.002	.001	.1	.2	.037	.031	.005	.005	2.2	.8	
AUG													
04...	66	.10	.019	.002	.1	E.1	.069	.021	.007	.008	1.7	.2	
SEP													
15...	68	.10	<.002	.002	E.1	.1	.118	.016	.009	.008	1.4	.2	

E Estimated.

COLUMBIA RIVER MAIN STEM

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14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	ALUM- INUM, 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)	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)
NOV 1998												
25...	2	<1	<1	24	<1	E15	<1	<1	<1	<1	<10	<1
JAN 1999												
27...	--	--	1	--	--	E16	--	--	--	--	<10	--
MAR												
10...	1	<1	2	28	<1	17	<1	1	<1	<1	<10	<1
APR												
21...	--	--	<1	--	--	E12	--	--	--	--	E5	--
MAY												
10...	--	--	<1	--	--	E15	--	--	--	--	<10	--
26...	2	<1	<1	22	<1	<16	<1	<1	<1	1	<10	<1
JUN												
07...	--	--	<1	--	--	<16	--	--	--	--	E9	--
23...	--	--	1	--	--	E8	--	--	--	--	<10	--
AUG												
04...	2	<1	1	22	<1	E10	<1	<1	<1	1	<10	<1
SEP												
15...	--	--	<1	--	--	<16	--	--	--	--	<10	--

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
NOV 1998												
25...	E4	<1	1	<1	<1	<1	100	<1	<10	2	<.007	<.002
JAN 1999												
27...	<6	--	--	--	<1	--	110	--	<10	--	<.007	<.002
MAR												
10...	6	<1	<1	<1	<1	<1	110	1	<10	<1	<.007	<.002
APR												
21...	<6	--	--	--	<1	--	93	--	<10	--	<.007	<.002
MAY												
10...	E3	--	--	--	<1	--	85	--	<10	--	<.007	<.002
26...	E4	<1	<1	<1	<1	<1	81	<1	<10	<1	<.007	<.002
JUN												
07...	E5	--	--	--	<1	--	64	--	<10	--	<.007	<.002
23...	<6	--	--	--	<1	--	74	--	<10	--	<.007	<.002
AUG												
04...	<6	<1	<1	<1	<1	<1	71	<1	<10	<1	<.007	<.002
SEP												
15...	E2	--	--	--	<1	--	86	--	<10	--	<.007	<.002

DATE	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)
NOV 1998												
25...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	E.003	<.005
JAN 1999												
27...	<.005	<.018	E.002	<.004	<.003	<.002	E.001	<.004	<.004	<.001	<.002	<.005
MAR												
10...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
APR												
21...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
MAY												
10...	E.005	<.018	E.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
26...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
JUN												
07...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.004	.005
23...	<.005	<.018	E.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.005	<.005
AUG												
04...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
SEP												
15...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005

E Estimated

COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
NOV 1998												
25...	<.004	<.002	.004	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
JAN 1999												
27...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
MAR												
10...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
APR												
21...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
MAY												
10...	<.004	<.002	.004	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
26...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
JUN												
07...	<.004	<.002	<.005	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
23...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
AUG												
04...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
SEP												
15...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
DATE	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)
NOV 1998												
25...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
JAN 1999												
27...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	E.003
MAR												
10...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	E.004
APR												
21...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
MAY												
10...	<.006	E.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
26...	<.006	.011	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
JUN												
07...	<.006	.005	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
23...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
AUG												
04...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
SEP												
15...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 1998												
25...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	5	1240	90
JAN 1999												
27...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	7	4310	93
MAR												
10...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	23	16600	97
APR												
21...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	11	8320	86
MAY												
10...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	14	12100	85
26...	<.004	<.003	<.002	<.002	<.004	<.003	--	<.001	<.005	14	13000	86
JUN												
07...	<.004	E.002	<.002	E.001	<.004	<.003	<.013	<.010	<.005	21	20100	90
23...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.008	<.005	14	13400	88
AUG												
04...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	8	5440	93
SEP												
15...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	4	1290	90

E Estimate.

14133400 BEAR CREEK NEAR RHODODENDRON, OR

WATER-QUALITY RECORDS

LOCATION.--Lat 45°20'25", long 121°55'48", in SW 1/4 NE 1/4 sec.3, T.3 S., R.7 E., Clackamas County, Hydrologic Unit 17080001, on right bank upstream from bridge, 1.0 mi upstream from Salmon River, and 1.3 mi west of Rhododendron.

DRAINAGE AREA.--0.36 mi².

PERIOD OF RECORD.--November 1998 to April 1999.

GAGE.--Water-stage recorder and water-quality monitor. Elevation of gage is 1,460 ft above sea level, from topographic map.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1998 to April 1999 (discontinued).

Ph: November 1998 to April 1999 (discontinued).

WATER TEMPERATURE: November 1998 to April 1999 (discontinued).

DISSOLVED OXYGEN: November 1998 to April 1999 (discontinued).

INSTRUMENTATION: Water-quality monitor.

EXTREMES FOR PERIOD NOVEMBER 25, 1998 TO APRIL 15, 1999.--

SPECIFIC CONDUCTANCE: Maximum, 49 microsiemens Nov. 25; minimum recorded, 22 microsiemens Dec. 27, but may have been less during period of missing record Dec. 27-29.

Ph: Maximum, 6.8 units Dec. 23, 25; minimum, 6.3 units Dec. 1, 2, but may have been less during period of missing record.

WATER TEMPERATURE: Maximum, 8.0°C Nov. 25-27; minimum, 3.0°C Dec. 23, Mar. 29.

DISSOLVED OXYGEN: Maximum, 11.9 mg/L Dec. 22, but may have been higher during period of missing record; minimum, 10.1 mg/L Apr. 14.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), NOVEMBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	43	34	39	30	29	29
2	---	---	---	---	---	---	35	30	32	30	30	30
3	---	---	---	---	---	---	38	32	34	30	30	30
4	---	---	---	---	---	---	38	33	35	31	30	31
5	---	---	---	---	---	---	38	32	35	32	31	31
6	---	---	---	---	---	---	38	33	36	33	32	32
7	---	---	---	---	---	---	38	33	35	33	32	33
8	---	---	---	---	---	---	37	33	35	34	33	33
9	---	---	---	---	---	---	41	33	36	34	33	34
10	---	---	---	---	---	---	39	33	37	35	34	34
11	---	---	---	---	---	---	38	33	35	35	34	34
12	---	---	---	---	---	---	36	32	34	---	---	---
13	---	---	---	---	---	---	35	32	34	34	34	34
14	---	---	---	---	---	---	36	32	33	34	28	31
15	---	---	---	---	---	---	36	32	33	31	28	30
16	---	---	---	---	---	---	33	33	33	30	30	30
17	---	---	---	---	---	---	34	33	33	31	28	29
18	---	---	---	---	---	---	34	33	34	30	28	29
19	---	---	---	---	---	---	34	33	33	30	29	29
20	---	---	---	---	---	---	34	33	33	30	29	30
21	---	---	---	---	---	---	34	33	34	29	28	29
22	---	---	---	---	---	---	34	34	34	29	28	28
23	---	---	---	---	---	---	34	34	34	29	28	29
24	---	---	---	---	---	---	34	33	34	30	29	30
25	---	---	---	49	44	47	34	30	32	30	30	30
26	---	---	---	47	40	44	34	32	33	30	30	30
27	---	---	---	47	39	43	34	---	---	31	29	30
28	---	---	---	44	38	41	---	---	---	31	30	30
29	---	---	---	43	35	40	---	---	---	31	31	31
30	---	---	---	41	35	39	29	27	28	32	31	32
31	---	---	---	---	---	---	29	28	29	32	31	32
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	32	32	32	28	27	27	36	34	34	---	---	---
2	32	30	31	28	28	28	35	34	34	---	---	---
3	32	31	31	28	28	28	35	34	34	---	---	---
4	32	31	32	29	28	28	34	33	34	---	---	---
5	32	31	32	29	29	29	34	33	33	---	---	---
6	32	30	31	30	29	29	34	33	34	---	---	---
7	31	29	30	30	30	30	34	34	34	---	---	---
8	31	31	31	31	30	30	34	34	34	---	---	---
9	33	31	32	31	30	31	34	34	34	---	---	---
10	32	32	32	31	31	31	35	34	34	---	---	---
11	32	32	32	32	31	31	35	34	35	---	---	---
12	32	32	32	33	31	32	34	34	34	---	---	---
13	33	32	33	33	32	32	35	34	34	---	---	---
14	33	32	33	33	32	32	35	34	34	---	---	---
15	33	33	33	33	33	33	---	---	---	---	---	---
16	34	32	33	33	33	33	---	---	---	---	---	---
17	33	33	33	33	32	33	---	---	---	---	---	---
18	33	31	32	33	33	33	---	---	---	---	---	---
19	33	32	33	34	33	33	---	---	---	---	---	---
20	33	33	33	34	33	34	---	---	---	---	---	---
21	33	33	33	35	34	34	---	---	---	---	---	---
22	33	30	32	35	34	34	---	---	---	---	---	---
23	31	29	30	35	34	35	---	---	---	---	---	---
24	31	30	31	36	34	35	---	---	---	---	---	---
25	31	29	30	36	35	35	---	---	---	---	---	---
26	30	29	30	35	35	35	---	---	---	---	---	---
27	29	26	27	35	33	34	---	---	---	---	---	---
28	27	25	26	34	34	34	---	---	---	---	---	---
29	---	---	---	34	32	33	---	---	---	---	---	---
30	---	---	---	34	33	34	---	---	---	---	---	---
31	---	---	---	35	34	34	---	---	---	---	---	---
MONTH	34	25	31	36	27	32	---	---	---	---	---	---

SANDY RIVER BASIN

14133400 BEAR CREEK NEAR RHODODENDRON, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, NOVEMBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	6.4	6.3	6.3	6.5	6.4	6.5
2	---	---	---	---	---	---	6.4	6.3	6.3	6.5	6.5	6.5
3	---	---	---	---	---	---	6.6	6.4	6.5	6.5	6.5	6.5
4	---	---	---	---	---	---	6.5	6.5	6.5	6.5	6.5	6.5
5	---	---	---	---	---	---	6.5	6.5	6.5	6.5	6.5	6.5
6	---	---	---	---	---	---	6.5	6.5	6.5	6.5	6.5	6.5
7	---	---	---	---	---	---	6.5	6.5	6.5	6.5	6.5	6.5
8	---	---	---	---	---	---	6.5	6.4	6.5	6.5	6.5	6.5
9	---	---	---	---	---	---	6.5	6.4	6.5	6.5	6.5	6.5
10	---	---	---	---	---	---	6.5	6.4	6.4	6.5	6.5	6.5
11	---	---	---	---	---	---	6.7	6.4	6.6	6.5	---	---
12	---	---	---	---	---	---	6.7	6.7	6.7	---	---	---
13	---	---	---	---	---	---	6.8	6.7	6.7	6.6	6.5	6.5
14	---	---	---	---	---	---	6.7	6.7	6.7	6.5	6.4	6.5
15	---	---	---	---	---	---	6.8	6.6	6.7	6.5	6.4	6.5
16	---	---	---	---	---	---	6.6	6.6	6.6	6.6	6.5	6.5
17	---	---	---	---	---	---	6.6	6.6	6.6	6.5	6.5	6.5
18	---	---	---	---	---	---	6.6	6.6	6.6	6.5	6.5	6.5
19	---	---	---	---	---	---	6.6	6.6	6.6	6.5	6.5	6.5
20	---	---	---	---	---	---	6.6	6.6	6.6	6.5	6.5	6.5
21	---	---	---	---	---	---	6.6	6.6	6.6	6.5	6.5	6.5
22	---	---	---	---	---	---	6.6	6.6	6.6	6.6	6.5	6.5
23	---	---	---	---	---	---	6.6	6.6	6.6	6.6	6.5	6.5
24	---	---	---	---	---	---	6.6	6.5	6.6	6.6	6.5	6.5
25	---	---	---	6.3	6.3	6.3	6.6	6.5	6.5	6.6	6.5	6.5
26	---	---	---	6.4	6.3	6.4	6.6	6.5	6.5	6.6	6.5	6.5
27	---	---	---	6.4	6.3	6.4	6.6	---	---	6.6	6.5	6.6
28	---	---	---	6.4	6.3	6.3	---	---	---	6.6	6.5	6.5
29	---	---	---	6.4	6.3	6.3	---	---	---	6.6	6.5	6.5
30	---	---	---	6.3	6.3	6.3	6.5	6.4	6.5	6.6	6.5	6.5
31	---	---	---	---	---	---	6.4	6.4	6.4	6.6	6.5	6.5
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.6	6.5	6.5	6.6	6.5	6.5	6.5	6.4	6.4	---	---	---
2	6.6	6.5	6.5	6.6	6.5	6.6	6.5	6.4	6.4	---	---	---
3	6.6	6.5	6.5	6.6	6.6	6.6	6.5	6.4	6.4	---	---	---
4	6.6	6.5	6.6	6.6	6.6	6.6	6.5	6.4	6.4	---	---	---
5	6.6	6.5	6.6	6.6	6.6	6.6	6.5	6.4	6.4	---	---	---
6	6.6	6.5	6.5	6.6	6.6	6.6	6.4	6.4	6.4	---	---	---
7	6.6	6.5	6.5	6.6	6.6	6.6	6.5	6.4	6.4	---	---	---
8	6.6	6.5	6.6	6.6	6.6	6.6	6.6	6.4	6.5	---	---	---
9	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	---	---	---
10	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	---	---	---
11	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.5	---	---	---
12	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.5	---	---	---
13	6.6	6.6	6.6	6.6	6.5	6.6	6.5	6.5	6.5	---	---	---
14	6.6	6.6	6.6	6.6	6.5	6.6	6.5	6.5	6.5	---	---	---
15	6.6	6.6	6.6	6.6	6.6	6.6	---	---	---	---	---	---
16	6.6	6.6	6.6	6.6	6.6	6.6	---	---	---	---	---	---
17	6.6	6.6	6.6	6.6	6.5	6.6	---	---	---	---	---	---
18	6.6	6.5	6.6	6.6	6.5	6.5	---	---	---	---	---	---
19	6.6	6.5	6.6	6.5	6.5	6.5	---	---	---	---	---	---
20	6.6	6.6	6.6	6.5	6.5	6.5	---	---	---	---	---	---
21	6.6	6.5	6.6	6.5	6.5	6.5	---	---	---	---	---	---
22	6.6	6.5	6.5	6.5	6.4	6.5	---	---	---	---	---	---
23	6.5	6.5	6.5	6.5	6.4	6.4	---	---	---	---	---	---
24	6.6	6.5	6.6	6.5	6.4	6.4	---	---	---	---	---	---
25	6.6	6.6	6.6	6.5	6.4	6.4	---	---	---	---	---	---
26	6.6	6.6	6.6	6.5	6.4	6.4	---	---	---	---	---	---
27	6.6	6.5	6.5	6.5	6.4	6.4	---	---	---	---	---	---
28	6.6	6.5	6.5	6.5	6.4	6.5	---	---	---	---	---	---
29	---	---	---	6.5	6.4	6.5	---	---	---	---	---	---
30	---	---	---	6.5	6.4	6.5	---	---	---	---	---	---
31	---	---	---	6.5	6.4	6.5	---	---	---	---	---	---
MONTH	6.6	6.5	6.6	6.6	6.4	6.5	---	---	---	---	---	---

SANDY RIVER BASIN

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14133400 BEAR CREEK NEAR RHODODENDRON, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	7.5	7.0	7.5	6.5	6.0	6.0
2	---	---	---	---	---	---	7.5	7.0	7.0	6.0	5.5	5.5
3	---	---	---	---	---	---	7.0	7.0	7.0	5.5	5.5	5.5
4	---	---	---	---	---	---	7.0	7.0	7.0	5.5	5.0	5.5
5	---	---	---	---	---	---	7.0	6.5	6.5	5.5	5.5	5.5
6	---	---	---	---	---	---	6.5	6.5	6.5	6.0	5.5	5.5
7	---	---	---	---	---	---	6.5	6.0	6.5	6.0	6.0	6.0
8	---	---	---	---	---	---	6.5	6.0	6.0	6.0	5.5	6.0
9	---	---	---	---	---	---	6.0	6.0	6.0	6.0	5.5	5.5
10	---	---	---	---	---	---	6.5	6.0	6.5	6.5	6.0	6.0
11	---	---	---	---	---	---	6.5	6.5	6.5	6.0	5.5	6.0
12	---	---	---	---	---	---	7.0	6.5	7.0	6.5	6.0	6.0
13	---	---	---	---	---	---	7.0	7.0	7.0	6.5	5.5	6.0
14	---	---	---	---	---	---	7.0	6.5	6.5	6.5	6.0	6.5
15	---	---	---	---	---	---	6.5	6.5	6.5	6.5	6.0	6.0
16	---	---	---	---	---	---	6.5	6.0	6.5	6.0	6.0	6.0
17	---	---	---	---	---	---	6.5	6.0	6.5	6.0	6.0	6.0
18	---	---	---	---	---	---	6.5	5.5	6.0	6.5	6.0	6.5
19	---	---	---	---	---	---	5.5	4.5	5.0	6.5	6.5	6.5
20	---	---	---	---	---	---	4.5	3.5	4.0	6.5	6.5	6.5
21	---	---	---	---	---	---	4.0	3.5	3.5	6.5	6.0	6.5
22	---	---	---	---	---	---	4.0	3.5	3.5	6.0	5.0	5.5
23	---	---	---	---	---	---	4.0	3.0	3.5	6.0	5.0	5.5
24	---	---	---	---	---	---	4.0	3.5	4.0	5.5	5.5	5.5
25	---	---	---	8.0	7.5	8.0	4.5	3.5	4.0	5.5	5.5	5.5
26	---	---	---	8.0	8.0	8.0	5.0	4.5	5.0	5.5	5.5	5.5
27	---	---	---	8.0	7.5	8.0	5.0	4.0	4.5	5.5	5.5	5.5
28	---	---	---	7.5	7.5	7.5	6.0	5.0	5.5	6.0	5.5	5.5
29	---	---	---	7.5	7.5	7.5	6.5	6.0	6.5	6.5	6.0	6.0
30	---	---	---	7.5	7.0	7.5	7.0	6.5	6.5	6.5	6.0	6.0
31	---	---	---	---	---	---	6.5	6.5	6.5	6.0	5.5	5.5
MONTH	---	---	---	---	---	---	7.5	3.0	5.8	6.5	5.0	5.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.0	5.5	5.5	6.0	5.0	5.5	6.5	5.0	5.5	---	---	---
2	6.0	5.5	5.5	6.0	5.5	5.5	6.5	5.0	5.5	---	---	---
3	6.0	5.5	5.5	6.0	5.0	5.5	5.5	4.0	5.0	---	---	---
4	6.0	5.5	5.5	5.5	5.0	5.5	5.5	5.0	5.0	---	---	---
5	5.5	5.0	5.5	5.5	5.0	5.5	6.0	5.0	5.5	---	---	---
6	6.0	5.5	5.5	5.5	5.0	5.0	6.5	5.0	5.5	---	---	---
7	6.0	4.5	5.5	6.0	5.0	5.5	6.5	5.0	5.5	---	---	---
8	5.5	4.0	5.0	6.0	5.0	5.5	6.0	5.0	5.5	---	---	---
9	5.0	4.5	5.0	6.0	5.0	5.5	6.0	5.0	5.5	---	---	---
10	5.0	4.5	5.0	6.0	5.0	5.5	6.5	5.0	5.5	---	---	---
11	5.0	4.5	5.0	5.5	4.5	5.0	7.0	5.0	6.0	---	---	---
12	5.0	5.0	5.0	6.0	5.0	5.5	---	5.5	---	---	---	---
13	5.5	5.0	5.0	6.5	5.5	6.0	7.0	5.5	6.5	---	---	---
14	6.0	5.0	5.5	6.5	6.0	6.0	7.0	5.0	6.0	---	---	---
15	6.0	5.0	5.5	6.5	5.5	6.0	---	---	---	---	---	---
16	6.0	5.5	5.5	6.0	5.0	5.5	---	---	---	---	---	---
17	6.0	5.0	5.5	6.5	5.0	5.5	---	---	---	---	---	---
18	6.0	5.0	5.5	7.0	5.5	6.0	---	---	---	---	---	---
19	6.0	5.0	5.5	7.0	5.5	6.0	---	---	---	---	---	---
20	5.5	5.0	5.0	7.0	5.5	6.5	---	---	---	---	---	---
21	6.0	5.5	5.5	7.0	6.0	6.5	---	---	---	---	---	---
22	6.0	5.0	5.5	7.0	5.5	6.5	---	---	---	---	---	---
23	6.0	5.5	6.0	7.0	6.0	6.5	---	---	---	---	---	---
24	6.5	6.0	6.0	7.5	6.0	6.5	---	---	---	---	---	---
25	---	5.5	6.0	7.0	6.0	6.5	---	---	---	---	---	---
26	5.5	5.0	5.5	6.5	5.0	5.5	---	---	---	---	---	---
27	6.0	5.5	5.5	5.5	3.5	5.0	---	---	---	---	---	---
28	6.5	5.5	6.0	6.0	5.0	5.5	---	---	---	---	---	---
29	---	---	---	5.5	3.0	4.5	---	---	---	---	---	---
30	---	---	---	6.0	4.5	5.0	---	---	---	---	---	---
31	---	---	---	6.0	5.0	5.5	---	---	---	---	---	---
MONTH	---	4.0	5.4	7.5	3.0	5.7	---	---	---	---	---	---

SANDY RIVER BASIN

14133400 BEAR CREEK NEAR RHODODENDRON, OR--Continued

OXYGEN DISSOLVED (MG/L), NOVEMBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	---	---	---	11.2	11.1	11.2
2	---	---	---	---	---	---	---	---	---	11.4	11.2	11.3
3	---	---	---	---	---	---	---	---	---	11.4	11.3	11.4
4	---	---	---	---	---	---	---	---	---	11.4	11.3	11.4
5	---	---	---	---	---	---	---	---	---	11.4	11.3	11.4
6	---	---	---	---	---	---	---	---	---	11.3	11.0	11.2
7	---	---	---	---	---	---	---	---	---	11.2	11.1	11.2
8	---	---	---	---	---	---	---	---	---	11.3	11.2	11.2
9	---	---	---	---	---	---	---	---	---	11.4	11.2	11.2
10	---	---	---	---	---	---	---	---	---	11.2	11.0	11.0
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	11.3	11.0	11.1
14	---	---	---	---	---	---	---	---	---	11.2	11.0	11.1
15	---	---	---	---	---	---	---	---	---	11.4	10.9	11.1
16	---	---	---	---	---	---	11.1	10.9	11.1	11.1	10.9	11.0
17	---	---	---	---	---	---	11.1	10.9	11.0	11.1	10.8	10.9
18	---	---	---	---	---	---	11.0	10.9	11.0	10.9	10.8	10.8
19	---	---	---	---	---	---	11.4	11.0	11.2	10.8	10.6	10.7
20	---	---	---	---	---	---	11.8	11.4	11.6	10.8	10.6	10.7
21	---	---	---	---	---	---	11.8	11.7	11.8	10.9	10.6	10.8
22	---	---	---	---	---	---	11.9	11.7	11.8	11.1	10.9	10.9
23	---	---	---	---	---	---	11.8	11.6	11.7	11.1	11.0	11.1
24	---	---	---	---	---	---	11.7	11.5	11.6	11.2	11.0	11.1
25	---	---	---	10.8	10.7	10.7	11.7	11.4	11.5	11.2	10.9	11.0
26	---	---	---	11.1	10.8	11.0	11.5	11.2	11.3	11.1	11.0	11.1
27	---	---	---	11.2	11.1	11.1	---	11.2	---	11.1	10.9	11.1
28	---	---	---	11.2	11.0	11.1	---	---	---	11.0	10.8	10.9
29	---	---	---	11.3	11.1	11.2	---	---	---	10.9	10.7	10.8
30	---	---	---	11.3	11.1	11.2	11.2	11.0	11.1	10.8	10.7	10.7
31	---	---	---	---	---	---	11.1	10.9	11.0	11.0	10.8	10.9
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.1	10.9	11.0	11.8	11.5	11.6	11.8	11.1	11.4	---	---	---
2	11.1	10.9	11.0	11.6	11.2	11.4	11.6	11.0	11.3	---	---	---
3	11.0	10.7	10.9	11.5	11.2	11.3	11.7	11.2	11.4	---	---	---
4	10.8	10.7	10.8	11.6	11.4	11.5	11.6	11.1	11.3	---	---	---
5	11.0	10.8	10.9	11.5	11.3	11.4	11.4	10.9	11.1	---	---	---
6	10.8	10.6	10.7	11.5	11.2	11.4	11.3	10.9	11.1	---	---	---
7	11.0	10.7	10.8	11.4	11.2	11.3	11.2	10.6	10.9	---	---	---
8	11.1	10.9	11.0	11.2	10.9	11.1	11.3	10.6	10.9	---	---	---
9	11.0	10.8	10.9	11.3	11.0	11.2	11.3	10.8	11.1	---	---	---
10	11.1	10.9	11.0	11.3	11.0	11.2	11.1	10.6	10.8	---	---	---
11	11.1	10.9	11.0	11.5	11.1	11.3	10.9	10.4	10.6	---	---	---
12	11.0	10.9	10.9	11.2	10.7	11.0	10.8	10.2	10.5	---	---	---
13	11.1	10.8	11.0	10.9	10.5	10.7	10.7	10.3	10.4	---	---	---
14	11.1	10.9	11.0	10.9	10.5	10.7	10.7	10.1	10.4	---	---	---
15	11.2	10.8	11.0	11.0	10.7	10.8	---	---	---	---	---	---
16	11.0	10.8	10.9	11.2	10.8	11.0	---	---	---	---	---	---
17	11.2	11.0	11.1	11.2	10.8	11.0	---	---	---	---	---	---
18	11.2	11.0	11.1	11.1	10.8	10.9	---	---	---	---	---	---
19	11.4	11.2	11.3	11.2	10.7	10.9	---	---	---	---	---	---
20	11.5	11.1	11.3	11.0	10.7	10.8	---	---	---	---	---	---
21	11.5	11.1	11.3	11.1	10.7	10.8	---	---	---	---	---	---
22	11.5	11.3	11.4	11.3	10.7	10.9	---	---	---	---	---	---
23	11.5	11.2	11.4	11.2	10.6	10.9	---	---	---	---	---	---
24	11.3	11.2	11.2	11.2	10.6	10.8	---	---	---	---	---	---
25	11.6	11.2	11.4	11.1	10.6	10.8	---	---	---	---	---	---
26	11.7	11.4	11.6	11.5	10.7	11.2	---	---	---	---	---	---
27	11.5	11.4	11.4	11.8	11.2	11.5	---	---	---	---	---	---
28	11.7	11.4	11.5	11.7	11.2	11.4	---	---	---	---	---	---
29	---	---	---	11.7	11.2	11.5	---	---	---	---	---	---
30	---	---	---	11.8	11.3	11.5	---	---	---	---	---	---
31	---	---	---	11.7	11.3	11.5	---	---	---	---	---	---
MONTH	11.7	10.6	11.1	11.8	10.5	11.1	---	---	---	---	---	---

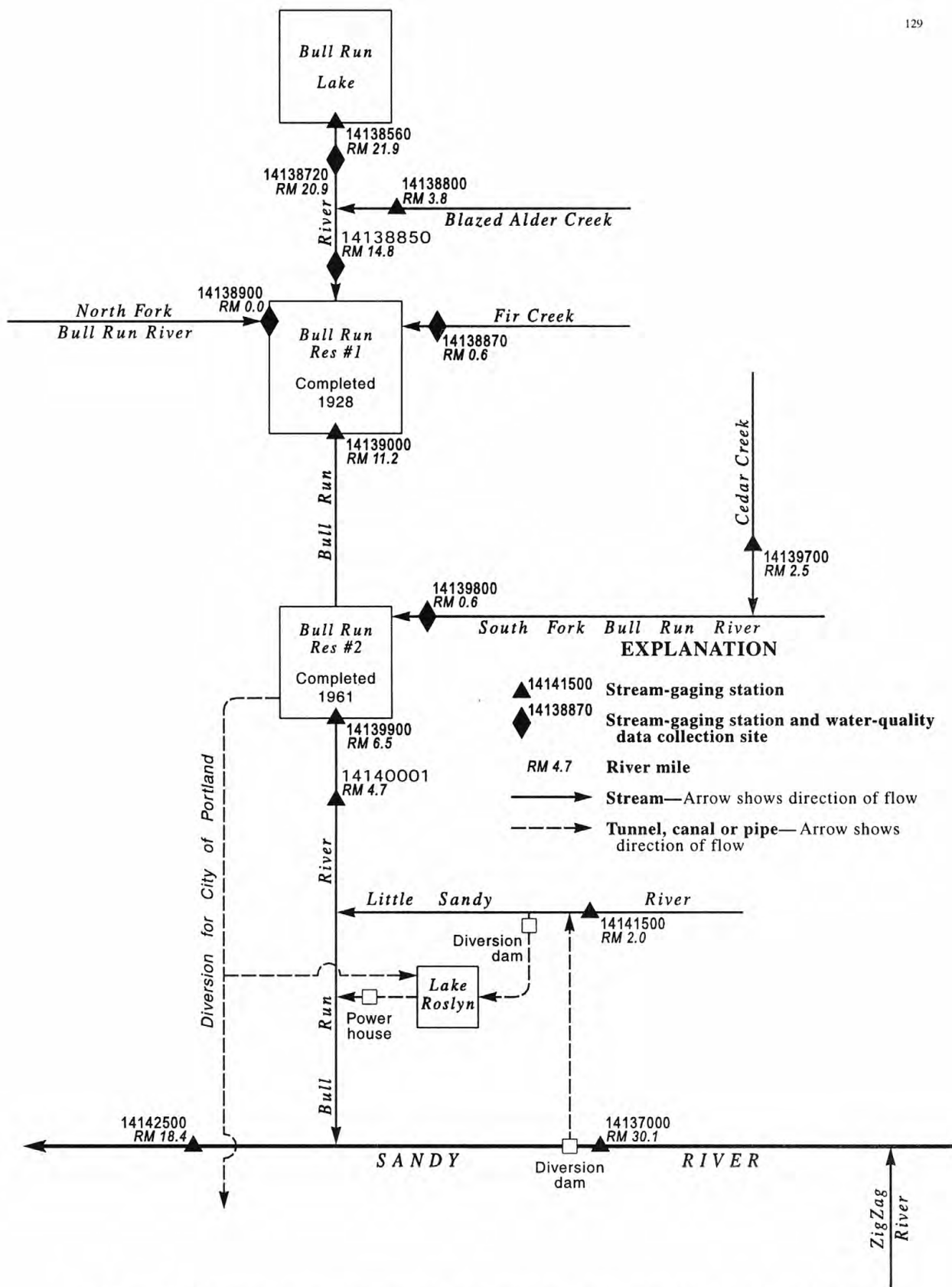


Figure 20. Schematic diagram showing gaging stations and diversions in the Sandy River Basin.

LOCATION.--Lat 45°23'55", long 122°07'33", in NW 1/4 sec.18, T.2 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, on right bank 0.6 mi west/northwest of Marmot, 0.3 mi upstream from Marmot Dam of Portland General Electric Co., 7.2 mi downstream from Salmon River, and at mile 30.3.

PERIOD OF RECORD.--August 1911 to current year. Monthly discharges only, January to September 1916, October 1918 to June 1919, published in WSP 1318. Published as "at Marmot" October 1912 to September 1913. Records for January 1916 to June 1919, published as "below dam, near Marmot," obtained by combining records for Sandy River below dam, near Marmot, with records for Sandy River Canal near Marmot.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by ENRON). Aug. 15, 1911, to Dec. 20, 1915, and July 2, 1919, to Oct. 19, 1933, nonrecording gage at site 1.5 mi upstream at different datum. Oct. 20, 1933, to Sept. 30, 1958, water-stage recorder at site 1.1 mi upstream at different datum. Sept. 30, 1958 to Mar. 11, 1997, water-stage recorder at site 0.6 mi upstream, at different datum.

AVERAGE DISCHARGE.--88 years (water years 1912-99), 1,361 ft³/s, 70.28 in/yr, 986,000 acre-ft/yr, includes monthly discharges published in WSP 1318.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,400 ft³/s Dec. 22, 1964, gage height, 17.05 ft, site and datum then in use, from rating curve extended above 7,000 ft³/s; maximum gage height, 20.40 ft, Feb. 7, 1996, site and datum then in use; minimum, 190 ft³/s Oct. 13, 1994.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0130	7,810	735.30	Dec. 28	0300	*19,800	*738.37
Dec. 2	1430	7,780	735.29	Jan. 14	2400	8,050	735.34

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1999, BY WATER YEAR (WY)

MEAN	658	1611	2094	2032	1886	1657	1876	1807	1224	647	430	415
MAX	2168	4777	6278	4752	4971	3983	3134	3443	3457	1385	663	1056
(WY)	1960	1996	1965	1953	1996	1972	1962	1949	1917	1917	1974	1959
MIN	239	236	445	498	464	631	658	743	420	354	268	244
(WY)	1988	1937	1977	1937	1977	1941	1941	1992	1992	1992	1940	1994

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1912 - 1999	
ANNUAL TOTAL	501856		559267			
ANNUAL MEAN	1375		1532		1357	
HIGHEST ANNUAL MEAN					2018	1996
LOWEST ANNUAL MEAN					766	1977
HIGHEST DAILY MEAN	16600	Dec 28	16600	Dec 28	41400	Dec 22 1964
LOWEST DAILY MEAN	286	Sep 23	288	Oct 1	193	Oct 13 1994
ANNUAL SEVEN-DAY MINIMUM	310	Sep 10	329	Oct 21	196	Oct 7 1994
ANNUAL RUNOFF (AC-FT)	995400		1109000		983000	
ANNUAL RUNOFF (CFSM)	5.23		5.83		5.16	
ANNUAL RUNOFF (INCHES)	70.98		79.11		70.10	
10 PERCENT EXCEEDS	2450		2940		2630	
50 PERCENT EXCEEDS	1120		1270		998	
90 PERCENT EXCEEDS	340		388		352	

SANDY RIVER BASIN

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14138560 BULL RUN LAKE NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°27'39", long 121°50'34", in SE 1/4 SE 1/4 sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in main cabin on northwest side of Bull Run Lake, near outlet structure, 10.7 mi northeast of Brightwood, and at mile 21.9.

DRAINAGE AREA.--3.5 mi².

PERIOD OF RECORD.--October 1992 to current year.

REVISED RECORDS.--WDR OR-95-1: 1993, 1994.

GAGE.--Water-stage recorder. Datum of gage is sea level, Portland Water Bureau datum.

REMARKS.--Bull Run Lake was formed by natural processes, including a large landslide. A temporary log crib dam was constructed in 1917 to increase the capacity of the lake. In 1920 the log crib dam was reconstructed. A concrete dam and improved outlet valve were constructed in 1958. A lower outlet and tunnel was constructed in 1961. Portland Water Bureau releases water from the lake to augment streamflows during periods of low flow. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Capacity table provided by Portland Water Bureau, extended above 3,180 ft by U.S. Geological Survey, Oct. 1, 1996.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 48,340 acre-ft Feb. 9, 1996, elevation, 3,185.02 ft; minimum contents observed, 31,080 acre-ft Oct. 29, 1992, elevation, 3,143.97 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 46,570 acre-ft Feb. 28, elevation, 3,181.09 ft; minimum contents, 39,850 acre-ft Nov. 15, elevation, 3,165.88 ft.

Capacity Table (elevation, in feet and contents, in acre-feet)

2,905	0	3,140	29,510
2,940	229	3,150	33,410
2,980	1,270	3,160	37,380
3,020	3,740	3,180	46,080
3,060	8,880	3,186	48,780
3,100	17,280		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3167.39	3166.15	3170.67	3178.92	3179.74	3180.96	3179.09	3178.14	3180.48	3180.30	3177.58	3174.44
2	3167.44	3166.11	3171.41	3178.93	3179.86	3180.81	3179.04	3178.34	3180.48	3180.30	3177.46	3174.34
3	3167.54	3166.08	3171.61	3178.91	3179.88	3180.68	3179.00	3178.48	3180.43	3180.26	3177.34	3174.23
4	3167.48	3166.12	3171.65	3178.87	3179.83	3180.59	3178.95	3178.59	3180.41	3180.23	3177.23	3174.12
5	3167.41	3166.19	3171.74	3178.83	3179.77	3180.46	3178.85	3178.55	3180.53	3180.19	3177.13	3174.01
6	3167.31	3166.19	3171.77	3178.80	3179.84	3180.35	3178.76	3178.58	3180.53	3180.13	3177.13	3173.89
7	3167.23	3166.17	3171.81	3178.78	3179.88	3180.26	3178.67	3178.62	3180.51	3180.10	3177.07	3173.79
8	3167.18	3166.14	3171.87	3178.72	3179.86	3180.21	3178.61	3178.66	3180.50	3180.05	3176.96	3173.65
9	3167.20	3166.11	3171.81	3178.65	3179.80	3180.13	3178.54	3178.63	3180.45	3179.96	3176.85	3173.54
10	3167.17	3166.07	3171.82	3178.59	3179.76	3180.04	3178.44	3178.57	3180.41	3179.90	3176.74	3173.42
11	3167.10	3166.03	3172.19	3178.56	3179.67	3179.94	3178.36	3178.57	3180.40	3179.83	3176.62	3173.22
12	3167.03	3165.97	3172.57	3178.57	3179.55	3179.92	3178.26	3178.62	3180.43	3179.74	3176.50	3173.19
13	3167.05	3165.94	3172.84	3178.53	3179.48	3179.85	3178.17	3178.65	3180.46	3179.65	3176.40	3173.04
14	3167.11	3165.93	3172.97	3179.04	3179.38	3179.78	3178.03	3178.65	3180.53	3179.56	3176.32	3172.95
15	3167.13	3166.01	3172.98	3179.28	3179.28	3179.71	3177.98	3178.65	3180.56	3179.45	3176.20	3172.72
16	3167.09	3166.03	3172.97	3179.45	3179.30	3179.66	3177.91	3178.62	3180.54	3179.35	3176.09	3172.44
17	3167.04	3166.10	3173.01	3179.66	3179.26	3179.57	3177.87	3178.76	3180.54	3179.29	3175.98	3172.23
18	3166.98	3166.26	3173.02	3179.90	3179.34	3179.48	3177.87	3178.88	3180.48	3179.19	3175.86	3171.97
19	3166.92	3166.37	3172.92	3180.02	3179.30	3179.42	3177.89	3178.95	3180.44	3179.09	3175.75	3171.73
20	3166.82	3167.35	3172.83	3180.11	3179.20	3179.36	3177.95	3178.98	3180.42	3178.98	3175.64	3171.55
21	3166.75	3168.17	3172.83	3180.25	3179.13	3179.35	3177.95	3179.01	3180.40	3178.88	3175.52	3171.32
22	3166.63	3168.44	3172.78	3180.32	3179.28	3179.32	3177.92	3179.05	3180.38	3178.76	3175.41	3171.12
23	3166.57	3168.67	3172.70	3180.28	3179.53	3179.27	3177.89	3179.25	3180.36	3178.64	3175.28	3170.88
24	3166.50	3168.82	3172.79	3180.22	3179.76	3179.24	3177.91	3179.55	3180.48	3178.53	3175.17	3170.67
25	3166.44	3169.43	3173.26	3180.15	3179.89	3179.20	3178.01	3179.75	3180.58	3178.41	3175.05	3170.43
26	3166.34	3169.92	3173.44	3180.06	3179.92	3179.28	3178.07	3179.86	3180.52	3178.30	3174.94	3170.25
27	3166.33	3170.07	3174.89	3179.98	3180.64	3179.27	3178.09	3179.97	3180.45	3178.18	3174.83	3170.00
28	3166.35	3170.14	3176.82	3180.01	3181.06	3179.26	3178.07	3180.06	3180.39	3178.07	3174.71	3169.82
29	3166.29	3170.23	3177.95	3179.91	---	3179.31	3178.03	3180.13	3180.34	3177.94	3174.60	3169.61
30	3166.21	3170.32	3178.42	3179.84	---	3179.24	3178.01	3180.20	3180.32	3177.82	3174.61	3169.39
31	3166.16	---	3178.79	3179.79	---	3179.18	---	3180.36	---	3177.70	3174.56	---
MEAN	3166.91	3167.25	3173.20	3179.42	3179.69	3179.78	3178.27	3179.02	3180.46	3179.25	3176.05	3172.27
MAX	3167.54	3170.32	3178.79	3180.32	3181.06	3180.96	3179.09	3180.36	3180.58	3180.30	3177.58	3174.44
MIN	3166.16	3165.93	3170.67	3178.53	3179.13	3179.18	3177.87	3178.14	3180.32	3177.70	3174.56	3169.39
(†)	39970	41780	45540	45990	46560	45710	45190	46240	46230	45050	43640	41370
(‡)	-560	+1810	+3760	+450	+570	-850	-520	+1050	-10	-1180	-1410	-2270

CAL YR 1998 MEAN 3173.21 MAX 3178.79 MIN 3165.93 AC-FT† +2730
WTR YR 1999 MEAN 3175.95 MAX 3181.06 MIN 3165.93 AC-FT† +840

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

‡ Change in contents, in acre-feet.

SANDY RIVER BASIN

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'08", long 121°51'55", in SE 1/4 NE 1/4 sec.19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 1.0 mi downstream from outlet structure at Bull Run Lake, 10.4 mi northeast of Brightwood, and at mile 20.9.

DRAINAGE AREA.--5.08 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,840 ft above sea level, from topographic map.

REMARKS.--Records fair. Regulation at times by Bull Run Lake. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--7 years (water years 1993-99), 27.2 ft³/s, 19,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 148 ft³/s Feb. 7, 1996, gage height, 3.05 ft, from rating curve extended above 63 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 8.2 ft³/s Oct. 28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 117 ft³/s Dec. 27, gage height, 3.21 ft; minimum discharge, 16 ft³/s many days in October and November.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	16	31	64	32	45	28	29	38	39	24	22
2	16	16	45	62	33	e50	28	31	39	38	24	22
3	16	16	40	59	33	e45	27	32	39	36	24	22
4	16	16	37	56	33	e38	27	32	40	35	23	22
5	16	16	35	53	32	e33	27	31	42	34	23	22
6	16	17	33	50	32	e32	27	31	43	33	23	22
7	16	17	32	46	33	e31	26	31	44	31	23	22
8	16	16	31	43	32	e31	26	31	45	30	23	22
9	16	16	30	40	31	e30	26	31	46	29	23	22
10	16	16	29	38	31	e30	26	30	47	29	23	22
11	16	16	31	36	30	e30	25	30	46	28	22	22
12	16	16	35	35	30	e30	25	30	46	27	23	22
13	16	16	35	34	29	e32	25	30	44	27	22	21
14	16	16	34	38	29	e31	25	30	43	27	22	21
15	16	17	33	42	28	e31	25	30	43	26	22	22
16	16	17	32	41	28	e30	26	30	43	26	22	36
17	16	18	31	41	28	e30	27	31	44	26	22	43
18	16	18	31	44	28	e30	27	33	45	26	22	42
19	16	19	30	44	28	e30	27	33	46	25	22	41
20	16	25	30	43	28	e31	28	33	46	25	22	41
21	16	34	29	43	27	e31	27	33	46	25	22	40
22	16	31	28	42	28	e31	27	33	44	25	22	40
23	16	29	28	41	34	e31	27	33	43	25	22	40
24	16	29	27	40	36	31	27	35	41	25	22	40
25	16	34	30	38	35	30	28	36	40	25	22	39
26	16	36	33	37	34	30	29	37	39	25	22	39
27	16	34	55	36	41	29	28	37	39	24	22	39
28	16	33	83	36	49	29	28	37	40	24	22	39
29	16	32	76	35	---	29	28	37	40	24	22	39
30	16	31	69	34	---	28	28	38	40	24	22	39
31	16	---	66	33	---	28	---	38	---	24	22	---
TOTAL	496	663	1189	1324	892	997	805	1013	1281	867	696	925
MEAN	16.0	22.1	38.4	42.7	31.9	32.2	26.8	32.7	42.7	28.0	22.5	30.8
MAX	16	36	83	64	49	50	29	38	47	39	24	43
MIN	16	16	27	33	27	28	25	29	38	24	22	21
AC-FT	984	1320	2360	2630	1770	1980	1600	2010	2540	1720	1380	1830

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999
MEAN	15.5	22.4	29.8	35.8	33.6	34.7	32.9
MAX	21.8	37.0	49.1	67.3	55.8	62.7	57.6
(WY)	1998	1996	1996	1996	1996	1997	1999
MIN	10.5	11.9	16.4	15.3	15.6	21.5	25.2
(WY)	1993	1994	1993	1993	1993	1994	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1993 - 1999

ANNUAL TOTAL	9399	11148	
ANNUAL MEAN	25.8	30.5	27.2
HIGHEST ANNUAL MEAN			37.5
LOWEST ANNUAL MEAN			17.6
HIGHEST DAILY MEAN	83	83	130
LOWEST DAILY MEAN	16	16	8.4
ANNUAL SEVEN-DAY MINIMUM	16	16	8.6
ANNUAL RUNOFF (AC-FT)	18640	22110	19700
10 PERCENT EXCEEDS	32	43	42
50 PERCENT EXCEEDS	27	30	24
90 PERCENT EXCEEDS	16	16	15

e Estimated

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1996 to current year.

TEMPERATURE: October 1995 to current year.

INSTRUMENTATION.--Water-quality monitor and data logger.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 32 microsiemens Oct. 10-16, 1996, but may have been higher during period of missing record; minimum, 18 microsiemens Dec. 27, 1998.

TEMPERATURE: Maximum 7.0°C Oct. 30, 1997, Jan. 10, 13, 14, 1999; minimum, 3.0°C Feb. 6, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 29 microsiemens on many days during year; minimum, 18 microsiemens Dec. 27.

TEMPERATURE: Maximum, 7.0°C Jan. 10, 13, 14; minimum, 4.0°C Dec. 27.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	29	28	29	28	27	28	28	27	28	28	27	27
2	29	29	29	28	28	28	28	27	28	27	26	27
3	29	29	29	28	28	28	28	27	28	27	26	27
4	29	29	29	28	28	28	28	27	28	27	27	27
5	29	29	29	28	28	28	28	27	27	28	27	27
6	29	29	29	28	28	28	28	27	27	28	27	27
7	29	29	29	29	28	28	28	27	27	27	27	27
8	29	29	29	29	28	28	28	27	27	27	27	27
9	29	29	29	29	28	28	28	27	27	27	27	27
10	29	29	29	29	28	29	28	27	27	28	27	27
11	29	29	29	29	28	29	28	27	27	27	27	27
12	29	29	29	29	28	29	28	27	27	27	27	27
13	29	29	29	29	28	29	28	27	27	27	27	27
14	29	29	29	29	28	29	28	27	27	27	27	27
15	29	29	29	29	28	29	28	27	27	27	27	27
16	29	29	29	29	28	28	27	27	27	28	27	27
17	29	29	29	29	28	28	28	27	27	28	26	27
18	29	28	29	29	28	28	28	27	27	27	27	27
19	29	28	29	28	28	28	28	27	27	27	27	27
20	29	28	29	28	28	28	28	27	27	27	27	27
21	29	28	29	28	28	28	27	27	27	27	27	27
22	29	28	28	28	28	28	28	27	27	27	27	27
23	28	28	28	28	28	28	28	27	27	27	27	27
24	28	28	28	29	28	28	27	27	27	27	27	27
25	28	28	28	28	28	28	27	27	27	27	27	27
26	28	28	28	28	28	28	27	27	27	27	27	27
27	28	26	27	28	28	28	27	27	27	27	27	27
28	28	26	27	28	27	28	27	27	27	27	27	27
29	---	---	---	28	27	28	28	27	27	27	27	27
30	---	---	---	28	27	28	28	27	27	27	27	27
31	---	---	---	28	27	28	---	---	---	27	27	27
MONTH	29	26	29	29	27	28	28	27	27	28	26	27

SANDY RIVER BASIN

14138720 BULL RUN RIGER AT LOWER FLUME, NEAR BRIGHTWOOD, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27	27	27	28	27	27	29	29	29	29	29	29
2	27	27	27	28	27	27	29	29	29	29	29	29
3	27	27	27	28	27	27	29	29	29	29	29	29
4	27	27	27	28	27	27	29	29	29	29	29	29
5	27	27	27	28	27	27	29	29	29	29	29	29
6	27	27	27	28	27	27	29	29	29	29	29	29
7	27	27	27	28	27	28	29	29	29	29	29	29
8	27	27	27	28	27	28	29	29	29	29	29	29
9	27	27	27	28	27	28	29	29	29	29	29	29
10	27	27	27	28	27	28	29	29	29	29	29	29
11	27	27	27	28	28	28	29	29	29	29	29	29
12	28	27	27	28	28	28	29	29	29	29	29	29
13	28	27	27	28	28	28	29	29	29	29	29	29
14	28	27	27	28	28	28	29	29	29	29	29	29
15	28	27	27	29	28	29	29	29	29	29	29	29
16	28	27	27	29	28	29	29	29	29	29	29	29
17	28	27	27	29	28	29	29	29	29	29	29	29
18	28	27	27	29	29	29	29	29	29	29	29	29
19	28	27	27	29	28	29	29	29	29	29	28	29
20	28	27	27	29	28	29	29	29	29	29	28	28
21	28	27	27	29	29	29	29	29	29	28	28	28
22	28	27	27	29	29	29	29	29	29	28	28	28
23	28	27	27	29	29	29	29	29	29	28	28	28
24	28	27	27	29	29	29	29	29	29	28	27	28
25	28	27	27	29	29	29	29	29	29	28	27	27
26	28	27	27	29	29	29	29	29	29	27	27	27
27	28	27	27	29	29	29	29	29	29	27	26	27
28	28	27	27	29	29	29	29	29	29	27	26	27
29	28	27	27	29	29	29	29	29	29	27	26	27
30	28	27	27	29	29	29	29	29	29	27	26	26
31	---	---	---	29	29	29	29	29	29	---	---	---
MONTH	28	27	27	29	27	28	29	29	29	29	26	28
YEAR	29	18	28									

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
2	6.5	6.5	6.5	6.5	6.5	6.5	6.0	5.5	6.0	6.5	6.5	6.5
3	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.5	6.5	6.5
4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.5	6.5
5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.5	6.5
6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.5	6.5
7	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
8	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
9	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
10	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	7.0	6.5	6.5
11	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.5	6.5
12	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.5	6.5	6.5
13	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.5	6.5
14	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.0	6.5
15	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.0	6.5
16	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
17	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.0	6.5
18	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5
19	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
21	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.0	6.5	6.5	6.5	6.5
22	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
23	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
24	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5
25	6.5	6.5	6.5	6.5	6.0	6.0	6.5	5.5	6.0	6.5	6.5	6.5
26	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.0	6.0	6.5	6.5	6.5
27	6.5	6.5	6.5	6.5	6.0	6.5	6.5	4.0	5.5	6.5	6.5	6.5
28	6.5	6.5	6.5	6.5	6.0	6.5	5.5	4.5	5.5	6.5	6.5	6.5
29	6.5	6.5	6.5	6.5	6.5	6.5	6.0	5.5	6.0	6.5	6.5	6.5
30	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.5	6.5	6.5
31	6.5	6.5	6.5	--	--	--	6.5	6.5	6.5	6.5	6.5	6.5
MONTH	6.5	6.5	6.5	6.5	6.0	6.5	6.5	4.0	6.2	7.0	6.0	6.5

SANDY RIVER BASIN

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14138720 BULL RUN RIGER AT LOWER FLUME, NEAR BRIGHTWOOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	6.5	6.5	6.5	6.0	5.5	6.0	5.5	5.5	5.5	5.5	5.0	5.5
2	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
3	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
4	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
5	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.5	5.0	5.0
6	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
7	6.5	6.0	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
8	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
9	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
10	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.5	5.0	5.0
11	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
12	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
13	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
14	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
15	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
16	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
17	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
18	6.5	6.0	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
19	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.5	5.0	5.0
20	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.0	5.0	5.0
21	6.5	6.5	6.5	---	---	---	5.5	5.5	5.5	5.5	5.0	5.5
22	6.5	6.0	6.5	---	---	---	5.5	5.5	5.5	5.5	5.0	5.5
23	6.0	6.0	6.0	---	---	---	5.5	5.5	5.5	5.5	5.0	5.5
24	5.0	6.0	6.0	6.0	5.5	6.0	5.5	5.0	5.5	5.5	5.0	5.5
25	6.0	6.0	6.0	6.0	5.5	6.0	5.5	5.0	5.5	5.5	5.0	5.5
26	6.0	6.0	6.0	5.5	5.5	5.5	5.5	5.0	5.5	5.5	5.0	5.5
27	6.0	5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.5	5.5	5.0	5.5
28	6.0	5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.5	5.5	5.0	5.5
29	---	---	---	5.5	5.5	5.5	5.5	5.0	5.5	5.5	5.0	5.5
30	---	---	---	5.5	5.5	5.5	5.5	5.0	5.5	5.5	5.0	5.5
31	---	---	---	5.5	5.5	5.5	---	---	---	5.5	5.0	5.0
MONTH	6.5	5.5	6.4	---	---	---	5.5	5.0	5.5	5.5	5.0	5.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.0	5.5	6.0	5.5	6.0
2	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.0	5.5	6.0	6.0	6.0
3	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.5	5.5	6.0	5.5	6.0
4	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
5	5.0	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
6	5.0	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
7	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
8	5.0	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
9	5.0	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
10	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
11	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
12	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
13	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
14	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
15	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
16	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
17	5.5	5.0	5.0	5.0	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
18	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
19	5.5	5.0	5.0	5.5	5.5	5.5	6.0	5.5	5.5	6.0	6.0	6.0
20	5.5	5.0	5.0	5.5	5.0	5.5	6.0	5.5	5.5	6.0	6.0	6.0
21	5.0	5.0	5.0	5.5	5.0	5.5	6.0	5.5	5.5	6.0	6.0	6.0
22	5.0	5.0	5.0	5.5	5.0	5.5	6.0	5.5	5.5	6.0	6.0	6.0
23	5.5	5.0	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
24	5.0	5.0	5.0	5.5	5.0	5.0	6.0	5.5	6.0	6.0	6.0	6.0
25	5.0	5.0	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
26	5.0	5.0	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
27	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
28	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
29	5.5	5.0	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.5	6.0	6.0
30	5.0	5.0	5.0	5.5	5.5	5.5	6.0	5.5	6.0	6.5	6.0	6.0
31	---	---	---	5.5	5.0	5.5	6.0	5.5	6.0	---	---	---
MONTH	5.5	5.0	5.0	5.5	5.0	5.2	6.0	5.0	5.6	6.5	5.5	6.0

SANDY RIVER BASIN

14138800 BLAZED ALDER CREEK NEAR RHODODENDRON, OR

LOCATION.--Lat 45°27'10", long 121°53'25", in NW 1/4 SE 1/4 sec.25, T.1 S., R.7 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 600 ft downstream from the confluence of Bedrock and Hickman Creeks and 8.6 mi north of Rhododendron, and at mile 3.78.

DRAINAGE AREA.--8.17 mi².

PERIOD OF RECORD.--October 1963 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,540 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--36 years (water years 1964-99), 58.3 ft³/s, 97.03 in/yr, 42,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,610 ft³/s Dec. 22, 1964, gage height, 8.25 ft, from rating curve extended above 330 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 1.2 ft³/s Oct. 16, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2330	765	4.26	Jan. 14	2130	559	3.67
Dec. 2	0600	776	4.29	Feb. 28	0300	553	3.65
Dec. 28	0400	*1,420	*5.85				

Minimum discharge, 1.6 ft³/s Sept. 24, 25, 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	20	129	180	18	194	15	98	121	35	5.7	6.3
2	15	27	573	88	110	98	15	e160	84	37	5.5	4.7
3	43	22	205	50	77	62	13	e185	56	38	5.3	3.9
4	39	36	88	35	48	41	12	128	49	36	5.3	3.5
5	18	91	49	27	33	30	11	78	92	31	5.4	3.3
6	13	70	34	24	73	24	11	73	84	28	7.3	3.2
7	10	44	29	35	78	21	11	83	66	29	11	3.0
8	12	34	25	29	42	18	11	63	73	26	8.2	2.9
9	21	31	19	24	30	16	9.8	50	64	23	6.2	2.7
10	24	30	21	23	24	14	9.2	42	56	21	5.6	2.7
11	18	27	255	24	19	12	10	43	58	20	5.2	2.6
12	15	24	364	45	16	12	12	88	65	18	5.0	2.4
13	25	22	269	54	15	26	15	82	66	17	5.1	2.3
14	56	21	164	246	14	25	19	69	70	15	6.7	2.3
15	54	46	84	307	12	24	23	66	67	15	5.7	2.2
16	37	55	55	173	21	22	33	56	55	14	5.0	2.2
17	29	55	48	197	37	19	59	e115	47	14	4.7	2.2
18	25	123	45	291	36	19	98	e160	43	12	4.5	2.2
19	20	116	32	197	62	22	93	133	39	11	4.1	2.0
20	17	375	e30	148	35	38	128	100	36	10	3.9	1.9
21	14	556	e30	167	25	62	86	76	35	9.9	3.6	1.8
22	13	275	e28	105	69	54	55	84	36	9.2	3.5	1.8
23	12	170	e28	57	369	51	45	134	33	8.7	3.2	1.8
24	11	152	e50	35	272	44	64	e170	44	8.4	3.0	1.8
25	12	306	e270	27	166	43	e120	e160	97	7.9	3.0	2.0
26	11	342	312	22	88	39	e115	110	71	7.3	2.7	2.0
27	12	174	564	18	310	31	73	100	52	7.0	2.7	1.8
28	26	88	1120	27	459	25	49	95	41	6.8	2.7	1.7
29	21	60	694	26	---	23	39	82	36	6.4	2.6	1.6
30	16	49	427	25	---	20	38	69	33	6.1	7.4	1.6
31	15	---	268	21	---	17	---	82	---	6.0	15	---
TOTAL	657.1	3441	6309	2727	2558	1146	1292.0	3034	1769	533.7	164.8	76.4
MEAN	21.2	115	204	88.0	91.4	37.0	43.1	97.9	59.0	17.2	5.32	2.55
MAX	56	556	1120	307	459	194	128	185	121	38	15	6.3
MIN	3.1	20	19	18	12	12	9.2	42	33	6.0	2.6	1.6
AC-FT	1300	6830	12510	5410	5070	2270	2560	6020	3510	1060	327	152
CFSM	2.59	14.0	24.9	10.8	11.2	4.52	5.27	12.0	7.22	2.11	.65	.31
IN.	2.99	15.67	28.73	12.42	11.65	5.22	5.88	13.81	8.05	2.43	.75	.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

	MEAN	31.7	90.2	107	105	84.9	68.0	77.6	72.1	38.5	11.2	5.56	10.7
MAX	82.5	218	288	207	221	167	150	165	115	35.4	27.6	35.5	
(WY)	1968	1996	1965	1974	1996	1972	1990	1969	1964	1983	1968	1977	
MIN	1.57	12.5	22.6	19.2	17.5	17.7	33.1	18.1	4.74	3.95	2.37	1.67	
(WY)	1988	1994	1977	1985	1969	1992	1983	1992	1992	1992	1967	1991	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1964 - 1999

ANNUAL TOTAL	22801.2	23708.0	
ANNUAL MEAN	62.5	65.0	58.3
HIGHEST ANNUAL MEAN			88.1
LOWEST ANNUAL MEAN			33.5
HIGHEST DAILY MEAN	1120	1120	1780
LOWEST DAILY MEAN	1.4	1.6	1.3
ANNUAL SEVEN-DAY MINIMUM	1.5	1.8	1.3
ANNUAL RUNOFF (AC-FT)	45230	47020	42270
ANNUAL RUNOFF (CFSM)	7.65	7.95	7.14
ANNUAL RUNOFF (INCHES)	103.82	107.95	97.03
10 PERCENT EXCEEDS	130	162	132
50 PERCENT EXCEEDS	34	30	31
90 PERCENT EXCEEDS	3.0	3.6	3.5

e Estimated

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'50", long 122°00'50", near center of sec.12, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 1.2 mi upstream from North Fork, 7.0 mi southeast of Multnomah Falls, and at mile 14.8.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1966 to current year.

REVISED RECORDS.--WDR OR-91-1: 1990.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,080 ft above sea level, from topographic map.

REMARKS.--Records good. Regulation at times since 1915 by Bull Run Lake, usable capacity, 12,270 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--33 years (water years 1967-99), 414 ft³/s, 117.29 in/yr, 299,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,140 ft³/s Feb. 6, 1996, gage height, 13.60 ft; minimum discharge, 30 ft³/s Oct. 28-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2200	4,200	9.55	Dec. 27	2300	*8,360	*13.05
Dec. 2	0500	4,380	9.71	Feb. 28	0230	4,310	9.66

Minimum discharge, 48 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	172	917	1120	317	1260	283	571	562	312	77	79
2	114	209	3260	734	818	811	280	891	461	325	75	68
3	284	174	1250	543	736	635	274	1210	372	331	73	64
4	306	333	707	436	585	505	258	871	340	326	73	62
5	157	683	519	369	473	422	249	645	541	294	76	60
6	112	545	417	342	797	373	249	582	543	262	78	60
7	92	386	411	463	953	340	250	611	500	266	112	59
8	98	315	411	403	583	318	260	546	510	241	98	57
9	216	294	331	350	428	299	242	487	451	217	80	56
10	274	274	339	342	352	274	230	424	397	200	75	56
11	199	252	1780	330	303	253	238	422	375	184	72	55
12	151	225	2210	482	272	257	274	591	380	171	72	53
13	217	216	1680	563	270	377	297	556	381	159	73	52
14	367	204	1040	1650	259	380	303	534	390	148	82	52
15	441	337	657	1810	239	351	329	499	386	139	78	52
16	327	412	506	1120	306	325	409	444	346	131	72	61
17	249	368	477	1320	467	295	524	743	316	140	69	73
18	212	625	429	1780	515	293	600	882	298	128	67	73
19	169	620	358	1190	820	335	560	730	276	117	67	73
20	138	1950	e280	965	501	507	667	585	260	110	65	72
21	118	2810	e260	1150	382	576	519	502	267	107	64	72
22	107	1640	e240	872	602	505	408	489	270	102	63	72
23	99	1120	e220	622	2360	493	379	624	255	98	61	71
24	93	1030	252	472	1770	440	465	757	330	96	61	71
25	102	2430	1590	388	1180	425	588	700	679	94	60	72
26	95	2060	1630	336	755	403	578	555	527	90	59	72
27	101	1090	3370	300	2510	358	457	505	394	87	59	71
28	219	703	5980	372	2970	323	375	472	328	84	58	70
29	187	586	4160	380	---	348	332	436	289	82	58	69
30	143	560	2600	409	---	331	331	401	281	80	75	69
31	129	---	1710	356	---	302	---	447	---	78	137	---
TOTAL	5565	22623	39991	21969	22523	13114	11208	18712	11705	5199	2289	1946
MEAN	180	754	1290	709	804	423	374	604	390	168	73.8	64.9
MAX	441	2810	5980	1810	2970	1260	667	1210	679	331	137	79
MIN	49	172	220	300	239	253	230	401	255	78	58	52
AC-FT	11040	44870	79320	43580	44670	26010	22230	37120	23220	10310	4540	3860
CFSM	3.75	15.7	26.9	14.8	16.8	8.83	7.80	12.6	8.15	3.50	1.54	1.35
IN.	4.32	17.57	31.06	17.06	17.49	10.18	8.70	14.53	9.09	4.04	1.78	1.51

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

	MEAN	249	615	723	704	621	508	512	440	282	118	83.0	123
MAX	535	1325	1434	1238	1216	1120	834	885	699	292	231	294	
(WY)	1968	1996	1978	1975	1996	1972	1993	1969	1974	1983	1968	1977	
MIN	36.5	72.4	193	177	167	148	242	150	54.8	54.0	43.7	40.9	
(WY)	1988	1994	1977	1985	1993	1992	1967	1992	1992	1977	1967	1994	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1967 - 1999

ANNUAL TOTAL	157940	176844	
ANNUAL MEAN	433	485	414
HIGHEST ANNUAL MEAN			643
LOWEST ANNUAL MEAN			249
HIGHEST DAILY MEAN	5980	Dec 28	7480
LOWEST DAILY MEAN	40	Sep 17	30
ANNUAL SEVEN-DAY MINIMUM	41	Sep 11	31
ANNUAL RUNOFF (AC-FT)	313300	350800	299600
ANNUAL RUNOFF (CFSM)	9.03	10.1	8.63
ANNUAL RUNOFF (INCHES)	122.66	137.34	117.29
10 PERCENT EXCEEDS	826	991	875
50 PERCENT EXCEEDS	291	331	261
90 PERCENT EXCEEDS	51	72	60

e Estimated

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

pH: August 1990 to September 1992.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to July 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 44 microsiemens Sept. 17, 1988; minimum recorded, 9 microsiemens Jan. 23, 1982, Feb. 23, 1986, Dec. 4, 1989.

pH: Maximum recorded, 8.1 units Aug. 30, Sept. 1, 1990; minimum recorded, 5.7 units Jan. 18, 1991.

WATER TEMPERATURE: Maximum, 18.0°C June 22-25, 1992, July 23, 1994; minimum, 0.0°C on many days during winter periods.

TURBIDITY: Maximum recorded, 44 NTU Jan. 15, 1991; minimum recorded, 0.08 NTU Aug. 30, 31, 1992.

SEDIMENT CONCENTRATION: Maximum daily, 290 mg/L Dec. 2, 1977; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum daily, 5,930 tons Dec. 2, 1977; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 29 microsiemens Oct. 1, but may have been greater during periods of missing record; minimum recorded, 13 microsiemens Dec. 27, 28, Jan. 14.

WATER TEMPERATURE: Maximum, 15.0°C Aug. 4; minimum, 0.0°C Dec. 19-24.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	29	27	28	23	22	22	18	16	18	17	16	16
2	28	24	26	22	22	22	16	14	15	18	17	17
3	26	22	24	22	22	22	17	16	17	19	18	18
4	---	---	---	22	21	21	19	17	18	19	19	19
5	---	---	---	21	19	19	19	18	19	20	19	19
6	---	---	---	20	19	19	20	19	19	20	18	20
7	---	---	---	20	20	20	20	19	19	18	17	18
8	---	---	---	20	20	20	20	19	19	18	18	18
9	---	---	---	21	20	20	20	20	20	18	18	18
10	---	---	---	21	20	21	20	19	20	18	18	18
11	---	---	---	21	21	21	19	16	17	18	18	18
12	---	---	---	21	21	21	16	16	16	18	16	18
13	---	---	---	21	21	21	16	16	16	17	16	16
14	---	---	---	22	21	21	18	16	17	17	13	15
15	---	---	---	22	20	21	18	18	18	15	14	14
16	---	---	---	20	20	20	19	18	19	16	15	15
17	---	---	---	20	20	20	19	19	19	16	14	15
18	---	---	---	20	19	19	19	19	19	15	14	15
19	22	21	22	19	18	19	20	19	20	15	15	15
20	22	22	22	18	15	17	20	20	20	16	15	16
21	23	22	23	16	15	16	20	20	20	15	15	15
22	23	23	23	18	16	17	20	20	20	16	15	16
23	23	23	23	18	17	17	21	20	21	17	16	16
24	24	23	24	18	17	18	22	20	21	17	17	17
25	24	23	24	17	16	16	20	15	17	18	17	18
26	24	23	24	17	16	16	16	15	16	19	18	18
27	24	23	24	18	17	17	17	13	15	19	18	19
28	23	22	22	19	18	18	14	13	14	19	17	18
29	22	22	22	19	19	19	15	14	14	18	18	18
30	22	22	22	19	18	19	16	14	15	18	17	17
31	23	22	23	---	---	---	16	15	16	18	17	18
MONTH	---	---	---	23	15	19	22	13	18	20	13	17
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18	18	18	16	15	15	18	17	17	18	16	17
2	18	15	17	17	16	16	18	17	18	16	15	16
3	16	15	16	17	16	17	18	17	18	16	15	15
4	17	16	16	18	16	17	18	18	18	16	16	16
5	17	17	17	17	17	17	18	18	18	17	16	17
6	17	15	16	18	17	18	18	18	18	18	17	18
7	16	15	16	18	18	18	18	18	18	18	17	18
8	17	16	16	18	18	18	18	17	18	18	18	18
9	18	17	17	18	18	18	18	18	18	18	18	18
10	18	17	18	19	18	18	18	18	18	19	18	18
11	18	18	18	19	18	19	19	18	18	19	18	19
12	19	18	19	19	18	18	18	18	18	18	18	18
13	19	18	19	18	17	17	19	18	19	18	18	18
14	19	19	19	17	17	17	19	18	19	18	18	18
15	19	19	19	17	17	17	19	18	18	19	18	18
16	19	18	19	17	17	17	18	17	18	19	18	19
17	18	18	18	18	17	17	18	17	18	19	17	18
18	18	16	17	18	17	17	17	17	17	17	17	17
19	17	16	16	18	17	17	17	17	17	18	17	17
20	17	17	17	17	16	16	17	16	17	18	18	18
21	18	17	18	16	16	16	17	17	17	19	18	18
22	18	15	17	16	16	16	18	17	18	19	18	18
23	15	15	15	16	16	16	19	17	18	18	17	18
24	15	15	15	16	16	16	18	17	18	18	17	17
25	16	15	16	17	16	16	17	17	17	17	17	17
26	17	16	16	17	16	17	17	17	17	18	17	18
27	17	14	15	17	17	17	18	17	17	19	18	18
28	15	14	14	17	17	17	18	17	18	18	18	18
29	---	---	---	17	17	17	19	18	18	19	18	18
30	---	---	---	17	17	17	19	18	18	19	18	18
31	---	---	---	17	17	17	---	---	---	19	17	18
MONTH	19	14	17	19	15	17	19	16	18	19	15	18

SANDY RIVER BASIN

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14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--CONTINUED

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	18	17	17	21	20	20	26	25	25	26	25	25
2	19	18	18	20	19	20	26	25	26	26	25	26
3	19	19	19	21	19	20	26	25	26	26	25	26
4	20	19	19	20	19	20	26	25	26	26	26	26
5	20	17	18	21	20	21	26	25	26	26	26	26
6	18	18	18	21	20	21	26	25	26	26	25	26
7	18	18	18	21	20	20	26	24	25	27	25	26
8	18	18	18	21	20	21	25	24	25	27	26	26
9	19	18	19	21	21	21	26	25	25	27	26	26
10	20	19	19	22	21	21	26	25	26	27	26	26
11	20	19	19	22	21	22	26	25	26	27	26	26
12	19	19	19	23	22	22	26	25	26	28	26	27
13	19	19	19	23	22	22	27	25	26	28	26	27
14	20	19	19	22	22	22	26	25	25	28	27	27
15	19	19	19	23	22	22	26	25	25	28	27	27
16	19	19	19	23	22	23	27	25	26	28	26	27
17	20	19	20	23	22	23	28	26	27	28	26	27
18	20	20	20	23	22	23	28	26	26	28	27	27
19	20	20	20	24	23	23	26	26	26	28	27	28
20	21	20	20	24	23	24	27	26	26	28	27	28
21	21	20	20	24	23	24	27	26	26	28	27	27
22	21	20	20	25	24	24	27	26	26	28	27	28
23	21	20	21	25	24	24	27	26	26	28	26	27
24	23	19	20	25	24	24	28	26	27	27	26	26
25	19	17	18	25	24	24	28	26	27	27	26	26
26	19	18	18	25	24	25	28	26	27	26	26	26
27	19	19	19	25	24	25	28	26	27	26	26	26
28	20	19	20	26	25	25	28	26	27	26	26	26
29	21	20	20	26	25	25	28	26	27	26	26	26
30	21	20	20	26	25	25	27	25	26	26	26	26
31	---	---	---	26	25	25	25	24	24	---	---	---
MONTH	23	17	19	26	19	23	28	24	26	28	25	26

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	10.5	10.5	8.0	6.5	7.5	6.0	5.5	5.5	4.5	4.0	4.5
2	10.5	9.5	10.0	8.0	7.5	7.5	6.0	5.0	5.5	4.0	3.5	3.5
3	9.5	9.0	9.0	7.5	7.0	7.5	5.0	4.5	5.0	4.0	3.5	3.5
4	9.5	8.5	9.0	8.5	7.5	8.0	4.5	4.5	4.5	4.0	3.5	3.5
5	9.0	8.0	8.5	8.0	7.0	7.5	4.5	2.5	3.5	4.0	3.5	4.0
6	9.5	8.5	9.0	7.0	6.5	7.0	3.0	2.5	3.0	4.5	4.0	4.0
7	10.0	9.0	9.5	6.5	6.0	6.0	4.0	3.0	3.5	5.0	4.5	4.5
8	10.0	9.5	10.0	6.0	5.5	5.5	4.0	3.0	3.5	4.5	3.0	4.0
9	9.5	8.5	9.0	6.0	5.5	6.0	4.0	3.5	4.0	4.5	3.5	4.0
10	9.0	8.5	8.5	6.0	5.5	6.0	4.5	4.0	4.0	5.5	4.5	5.0
11	8.5	8.0	8.0	6.5	6.0	6.5	4.5	4.0	4.0	5.0	4.5	4.5
12	9.0	8.5	8.5	6.5	6.0	6.0	5.0	4.5	5.0	5.0	4.5	5.0
13	9.5	9.0	9.5	7.0	6.5	7.0	5.0	5.0	5.0	5.0	4.5	5.0
14	9.5	8.5	9.0	7.0	6.5	7.0	5.0	4.0	4.5	6.0	4.5	5.0
15	8.5	8.0	8.5	8.0	7.0	7.5	5.0	4.0	4.5	5.0	4.0	4.5
16	8.0	7.5	7.5	7.5	6.5	6.5	5.0	4.0	4.5	4.5	4.0	4.0
17	8.0	7.0	7.5	6.5	6.5	6.5	5.0	4.0	4.5	4.5	4.0	4.0
18	8.0	7.0	7.5	7.0	6.5	6.5	4.5	2.5	3.5	4.5	4.5	4.5
19	7.0	6.0	6.5	7.0	6.5	6.5	2.5	.0	1.5	5.0	4.5	5.0
20	8.0	7.0	7.5	8.0	6.5	7.0	.0	.0	.0	5.0	4.5	5.0
21	8.0	7.5	7.5	7.5	6.5	7.0	.0	.0	.0	4.5	4.0	4.5
22	8.0	7.0	7.5	6.5	5.5	6.0	.0	.0	.0	4.0	3.0	4.0
23	8.0	7.0	7.5	6.5	5.5	6.0	.5	.0	.0	4.0	3.0	3.5
24	8.5	8.0	8.0	6.5	5.5	6.0	.5	.0	.5	4.0	3.5	4.0
25	9.0	8.5	8.5	7.0	6.0	6.5	3.0	.5	1.5	3.5	3.0	3.5
26	9.0	8.0	8.5	7.0	6.0	6.5	4.0	3.0	3.5	3.5	3.0	3.0
27	8.5	8.5	8.5	6.5	6.0	6.0	4.0	3.5	3.5	3.5	3.0	3.5
28	8.5	7.0	8.0	6.0	5.0	5.5	4.5	3.5	4.0	4.0	3.5	4.0
29	7.0	6.0	6.5	5.0	5.0	5.0	5.0	4.5	5.0	4.5	4.0	4.5
30	6.0	5.0	5.5	5.5	5.0	5.0	5.0	4.5	5.0	4.5	4.0	4.5
31	6.5	5.5	6.0	---	---	---	5.0	4.5	5.0	4.5	3.0	3.5
MONTH	10.5	5.0	8.2	8.5	5.0	6.5	6.0	.0	3.5	6.0	3.0	4.2

SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	3.5	3.5	3.5	4.0	3.0	3.5	5.5	3.5	4.5	7.0	5.0	6.0
2	4.0	3.0	3.5	4.0	3.5	4.0	5.0	3.0	4.0	5.0	3.5	4.5
3	4.5	3.5	4.0	4.0	3.0	3.5	3.5	2.0	3.0	4.5	4.0	4.0
4	4.0	3.5	3.5	3.0	2.5	3.0	4.5	3.0	3.0	4.5	3.5	4.0
5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.0	3.5	7.0	4.0	5.0
6	4.5	3.5	4.0	4.0	3.0	3.5	5.5	3.0	4.0	6.5	5.0	6.0
7	4.0	3.0	3.5	4.5	3.5	4.0	5.0	3.5	4.0	5.5	3.5	4.5
8	3.0	2.5	3.0	4.5	3.5	4.0	4.5	3.5	4.0	4.5	3.0	4.0
9	3.0	2.0	2.5	4.5	3.5	4.0	4.0	3.0	3.5	5.5	4.0	4.5
10	2.5	2.0	2.0	4.5	3.5	4.0	5.0	3.5	4.0	7.0	3.5	5.5
11	3.0	2.0	2.5	4.5	3.0	3.5	6.5	3.5	4.5	6.0	4.5	5.5
12	3.5	2.5	3.0	5.0	3.5	4.0	5.5	4.0	5.0	6.0	5.0	5.5
13	4.0	3.0	3.5	5.0	4.0	4.5	6.0	4.5	5.0	5.5	4.0	5.0
14	4.0	3.5	3.5	5.0	4.5	4.5	6.0	3.5	4.5	6.0	4.0	5.0
15	4.5	3.5	4.0	5.0	4.0	4.5	6.5	4.5	5.0	5.5	5.0	5.5
16	4.5	4.0	4.0	4.0	3.0	3.5	7.0	5.0	5.5	7.0	5.0	6.0
17	4.0	3.0	3.5	5.0	3.5	4.0	7.5	4.5	5.5	6.5	5.5	6.0
18	4.0	3.0	3.5	6.0	4.5	5.0	6.0	5.0	5.5	6.5	5.5	6.0
19	4.0	3.0	3.5	6.5	4.0	5.0	5.5	4.5	5.0	7.5	5.0	6.0
20	3.5	3.0	3.5	6.5	5.0	5.5	5.5	4.5	5.0	6.5	5.0	5.5
21	4.0	3.5	4.0	5.5	5.0	5.0	5.0	3.5	4.5	8.5	5.5	7.0
22	4.0	3.5	3.5	6.0	4.0	5.0	6.0	4.5	5.0	9.5	5.5	7.0
23	4.0	3.5	4.0	6.0	4.0	5.0	8.0	4.0	6.0	10.5	6.5	8.0
24	4.5	4.0	4.0	5.5	4.5	5.0	8.5	5.0	6.5	10.0	6.0	8.0
25	4.0	3.0	3.5	5.5	4.5	5.0	6.5	5.0	5.5	8.0	6.5	7.0
26	4.0	3.0	3.5	4.5	2.5	3.5	5.5	4.0	5.0	9.0	5.0	7.0
27	4.0	4.0	4.0	3.5	1.5	2.5	5.0	4.0	4.5	9.5	6.0	7.5
28	4.5	3.5	4.0	4.0	3.0	3.5	5.0	4.0	4.5	9.5	6.0	7.5
29	---	---	---	3.0	2.0	2.5	7.0	4.0	5.5	9.5	6.5	8.0
30	---	---	---	4.0	2.5	3.0	7.5	4.5	6.0	9.5	5.5	7.5
31	---	---	---	4.5	3.5	4.0	---	---	---	8.5	6.5	7.5
MONTH	4.5	2.0	3.5	6.5	1.5	4.0	8.5	2.0	4.7	10.5	3.0	6.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.0	6.0	6.5	10.0	9.0	9.5	14.5	12.5	13.5	10.5	9.0	10.0
2	6.5	5.0	6.0	9.0	8.0	8.5	14.5	12.5	13.5	10.5	9.0	10.0
3	7.0	5.5	6.0	8.5	7.5	8.0	14.5	12.5	13.5	11.0	9.5	10.0
4	7.0	6.5	7.0	9.0	8.0	8.5	15.0	12.5	14.0	11.5	10.0	10

SANDY RIVER BASIN

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14138870 FIR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'49", long 122°01'28", in NE 1/4 SE 1/4 sec.14, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, on right bank, 6.4 mi north of Brightwood and 0.6 mi above Bull Run Reservoir Number One.

DRAINAGE AREA.--5.46 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

REVISED RECORDS.--WDR OR-78-1: 1976. WDR OR-82-2: 1976(P), 1978-79(P), 1981, WDR OR-91-1: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 1,440 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--24 years (water years 1976-99), 35.5 ft³/s, 88.41 in/yr, 25,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,290 ft³/s Dec. 2, 1977, gage height, 5.64 ft; minimum discharge, 1.5 ft³/s Oct. 19-21, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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. 28	0030	*579	*4.73	No other peak greater than base discharge.			
Minimum discharge, 2.0 ft ³ /s Sept. 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	16	80	109	38	107	23	43	40	33	5.5	7.4
2	6.5	20	198	78	76	75	23	63	33	32	5.4	5.7
3	19	16	99	60	76	59	23	92	27	32	5.2	4.9
4	23	27	66	50	62	47	21	73	24	32	5.1	4.6
5	12	52	51	42	54	38	21	56	38	30	5.3	4.2
6	9.0	42	41	39	80	33	21	53	36	27	5.3	4.1
7	6.8	30	41	49	98	29	21	51	34	27	11	3.9
8	7.2	25	42	43	69	28	23	45	38	24	9.7	3.7
9	15	23	34	38	53	27	22	40	34	22	6.4	3.5
10	17	22	36	37	43	24	21	37	29	20	5.6	3.4
11	13	20	138	35	38	22	22	37	27	18	5.3	3.3
12	9.8	18	157	45	34	23	26	51	26	17	5.2	3.1
13	14	16	126	52	34	35	28	45	25	16	5.5	3.0
14	18	15	87	124	32	37	28	44	25	15	7.3	2.9
15	26	23	61	140	30	33	30	43	25	14	6.2	2.9
16	21	25	49	107	37	30	35	39	22	13	5.3	2.8
17	17	24	44	128	51	27	42	63	20	13	4.9	2.7
18	15	44	39	145	61	27	43	71	19	12	4.7	2.7
19	12	50	32	112	89	29	39	57	17	11	4.7	2.6
20	9.6	112	27	97	62	37	47	45	16	10	4.4	2.5
21	8.3	144	25	106	49	40	36	39	17	9.7	4.3	2.4
22	7.1	107	23	92	60	35	30	38	18	8.9	4.2	2.4
23	6.2	90	21	71	177	34	29	44	15	8.3	3.9	2.4
24	5.8	82	23	57	145	30	34	49	30	8.0	3.9	2.4
25	6.8	152	89	48	113	30	40	45	62	7.8	3.8	2.4
26	6.1	141	97	42	80	29	39	37	51	7.3	3.7	2.4
27	7.3	87	224	37	199	26	31	33	39	6.9	3.6	2.3
28	18	60	383	41	221	24	27	31	33	6.5	3.4	2.2
29	16	51	284	42	---	26	25	29	29	6.2	3.4	2.1
30	12	50	189	47	---	27	25	27	28	5.9	9.5	2.1
31	11	---	139	42	---	25	---	31	---	5.7	16	---
TOTAL	378.4	1584	2945	2155	2161	1093	875	1451	877	499.2	177.7	97.0
MEAN	12.2	52.8	95.0	69.5	77.2	35.3	29.2	46.8	29.2	16.1	5.73	3.23
MAX	26	152	383	145	221	107	47	92	62	33	16	7.4
MIN	2.9	15	21	35	30	22	21	27	15	5.7	3.4	2.1
AC-FT	751	3140	5840	4270	4290	2170	1740	2880	1740	990	352	192
CFSM	2.24	9.67	17.4	12.7	14.1	6.46	5.34	8.57	5.35	2.95	1.05	.59
IN.	2.58	10.79	20.06	14.68	14.72	7.45	5.96	9.89	5.98	3.40	1.21	.66

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1999, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
MEAN	19.9	56.1	65.4	55.9	57.7	45.2	47.0	34.2	23.0	9.72	5.24	8.60													
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7													
(WY)	1996	1996	1978	1976	1982	1997	1993	1977	1981	1983	1978	1977													
MIN	1.97	6.09	15.3	16.6	16.9	14.0	24.9	14.6	3.80	3.50	2.95	2.57													
(WY)	1988	1994	1977	1979	1977	1992	1998	1992	1992	1992	1996	1991													

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1976 - 1999

ANNUAL TOTAL	12373.4	14293.3	
ANNUAL MEAN	33.9	39.2	
HIGHEST ANNUAL MEAN			35.5
LOWEST ANNUAL MEAN			23.4
HIGHEST DAILY MEAN	383	383	616
LOWEST DAILY MEAN	1.9	2.1	1.5
ANNUAL SEVEN-DAY MINIMUM	2.0	2.3	1.6
ANNUAL RUNOFF (AC-FT)	24540	28350	25740
ANNUAL RUNOFF (CFSM)	6.21	7.17	6.51
ANNUAL RUNOFF (INCHES)	84.30	97.38	88.41
10 PERCENT EXCEEDS	73	89	76
50 PERCENT EXCEEDS	23	28	22
90 PERCENT EXCEEDS	3.5	4.4	3.7

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

pH: August 1990 to September 1992.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 49 microsiemens May 6, 1988, Aug. 13, 1990; minimum, 7 microsiemens Nov. 30, 1994.

pH: Maximum recorded, 7.7 units Sept. 13, 1990, but may have been higher during periods of missing record; minimum recorded, 6.0 units Sept. 5, 6, 8, 1991, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum recorded, 16.0°C Sept. 1, 1987, June 23, 24, July 18, 19, 1992; minimum recorded, 0.0°C on several days during winter periods most years.

TURBIDITY: Maximum recorded, 11 NTU Nov. 25, 1991; minimum recorded, 0.04 NTU Feb. 15, 16, 1993.

SEDIMENT CONCENTRATION: Maximum, 200 mg/L Jan. 23, Feb. 20, 1982; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum, 345 tons Dec. 2, 1977; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 28 microsiemens Aug. 24, 25, 28; minimum, 13 microsiemens Dec. 27, 28.

WATER TEMPERATURE: Maximum, 13.5°C Aug. 27, 28; minimum, 0.0°C Dec. 21.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	26	26	26	23	21	23	19	16	18	18	16	17
2	26	24	25	23	21	22	17	15	16	19	18	19
3	25	24	25	22	21	21	18	17	17	21	19	20
4	24	22	23	21	20	21	19	18	19	21	19	20
5	24	23	23	21	20	20	20	19	19	23	20	22
6	24	23	24	20	19	19	20	20	20	24	20	22
7	24	24	24	20	19	19	20	20	20	24	21	22
8	24	23	24	20	19	20	20	20	20	---	---	---
9	24	22	23	20	20	20	20	20	20	---	---	---
10	23	22	23	20	20	20	21	19	20	24	23	24
11	23	21	22	21	20	20	19	16	17	25	24	24
12	24	22	23	21	20	21	16	16	16	26	21	24
13	23	21	22	21	21	21	17	16	16	24	20	21
14	23	21	22	21	21	21	18	17	17	22	14	18
15	21	20	21	21	20	21	19	18	19	16	15	16
16	21	20	21	20	20	20	20	19	20	17	16	17
17	21	20	21	20	20	20	20	19	20	17	15	17
18	21	21	21	20	19	19	20	19	20	16	15	16
19	21	21	21	19	18	19	20	20	20	17	16	17
20	22	21	21	19	16	17	21	20	21	17	17	17
21	23	21	22	17	16	16	21	21	21	17	17	17
22	23	22	23	18	17	17	21	21	21	18	17	17
23	23	23	23	18	17	18	22	21	21	19	18	18
24	24	23	23	18	18	18	22	20	21	21	19	19
25	24	23	24	18	16	16	20	16	18	20	19	19
26	24	24	24	17	16	17	17	16	17	20	19	20
27	24	23	24	18	17	18	17	13	16	20	20	20
28	24	23	24	19	18	19	14	13	14	20	19	20
29	24	23	23	19	19	19	15	14	15	20	19	19
30	23	22	22	20	19	19	17	15	15	19	19	19
31	23	22	23	---	---	---	17	16	16	19	19	19
MONTH	26	20	23	23	16	19	22	13	18	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	20	19	19	18	16	17	21	19	20	19	17	18
2	20	17	18	18	17	18	---	20	---	18	17	17
3	18	17	17	19	18	18	---	19	---	17	16	17
4	18	18	18	19	19	19	22	20	21	18	17	17
5	19	17	18	20	19	19	22	20	20	18	18	18
6	19	17	18	20	20	20	22	20	20	18	17	18
7	18	17	17	20	20	20	20	20	20	18	17	18
8	18	18	18	20	20	20	20	20	20	18	18	18
9	22	18	19	20	20	20	20	20	20	19	18	18
10	---	---	---	20	20	20	20	20	20	19	18	19
11	---	---	---	23	20	22	20	20	20	19	18	19
12	---	---	---	21	20	20	20	20	20	19	18	18
13	---	---	---	20	19	19	20	19	20	18	18	18
14	---	---	---	19	19	19	20	19	20	18	18	18
15	---	---	---	19	19	19	20	19	20	19	18	18
16	---	---	---	19	19	19	19	19	19	19	18	19
17	20	19	19	20	19	20	19	18	19	19	17	18
18	20	18	19	21	19	20	19	18	18	17	17	17
19	18	18	18	20	19	19	19	18	18	18	17	17
20	19	18	19	19	18	19	19	18	18	18	17	18
21	19	19	19	19	18	18	19	18	18	18	18	18
22	19	17	19	19	18	18	19	18	19	19	18	18
23	17	16	16	19	18	19	19	19	19	18	17	17
24	17	16	16	19	19	19	19	18	19	17	16	17
25	17	17	17	19	18	19	18	17	18	17	17	17
26	18	17	18	19	19	19	18	18	18	18	17	17
27	18	15	16	19	19	19	19	18	18	18	17	18
28	16	15	15	19	19	19	19	19	19	18	17	18
29	---	---	---	19	19	19	19	19	19	18	18	18
30	---	---	---	20	19	19	19	19	19	19	18	18
31	---	---	---	20	19	19	---	---	---	19	17	18
MONTH	---	---	---	23	16	19	---	17	---	19	16	18

SANDY RIVER BASIN

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14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	17	17	17	21	20	20	25	25	25	26	25	26
2	18	17	17	20	20	20	26	25	25	26	25	26
3	18	18	18	20	20	20	26	25	26	26	25	26
4	19	18	18	20	20	20	26	25	26	26	25	26
5	19	17	18	21	20	20	26	25	26	26	25	26
6	18	17	17	21	20	21	27	26	26	26	25	26
7	18	17	18	21	20	21	27	25	25	26	26	26
8	18	17	18	21	21	21	26	25	25	26	26	26
9	18	18	18	22	21	21	26	25	26	27	26	26
10	19	18	18	22	21	22	26	25	26	26	26	26
11	19	18	19	23	22	22	26	25	26	26	26	26
12	19	18	19	23	22	22	26	25	25	27	26	26
13	19	18	19	23	22	23	26	25	25	27	26	26
14	19	18	19	23	22	22	25	25	25	27	26	27
15	19	18	18	23	22	23	26	25	25	27	26	27
16	19	18	19	23	22	23	26	25	26	27	26	26
17	19	19	19	24	23	23	26	26	26	27	26	26
18	19	19	19	24	23	23	27	25	26	27	26	27
19	20	19	19	24	23	24	27	25	26	27	27	27
20	20	19	19	24	23	24	27	26	26	27	27	27
21	20	19	20	24	23	24	27	26	26	27	27	27
22	20	19	19	24	24	24	27	26	26	27	27	27
23	20	20	20	25	24	24	27	26	27	27	26	27
24	21	17	19	25	23	24	28	26	27	27	26	26
25	18	17	17	24	24	24	28	26	27	27	26	26
26	18	17	17	25	24	24	27	26	27	27	26	26
27	19	18	18	25	24	25	27	26	27	26	26	26
28	19	18	19	25	24	25	28	26	27	26	25	25
29	21	19	20	25	24	25	27	26	27	26	25	25
30	21	20	20	25	24	25	27	25	26	26	25	25
31	---	---	---	25	25	25	26	25	26	---	---	---
MONTH	21	17	19	25	20	23	28	25	26	27	25	26

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.0	10.0	10.0	7.0	6.5	6.5	6.0	5.5	5.5	5.0	4.5	4.5
2	10.0	9.0	9.5	7.0	7.0	7.0	5.5	5.5	5.5	4.5	4.0	4.5
3	9.0	8.5	8.5	7.0	6.5	7.0	5.5	5.0	5.0	4.5	4.0	4.5
4	9.0	8.5	8.5	7.5	7.0	7.5	5.0	5.0	5.0	4.5	4.0	4.5
5	8.5	7.5	8.0	7.5	6.5	7.0	5.0	3.5	4.5	4.5	4.0	4.5
6	9.0	8.0	8.5	6.5	6.5	6.5	4.0	3.5	4.0	5.0	4.0	4.5
7	9.0	8.5	9.0	6.5	6.0	6.0	4.5	4.0	4.0	5.0	4.5	4.5
8	9.0	9.0	9.0	6.0	5.5	5.5	4.5	4.0	4.5	4.5	4.0	4.5
9	9.0	8.0	8.5	6.0	5.5	6.0	4.5	4.5	4.5	4.5	4.0	4.5
10	8.5	7.5	8.0	6.0	5.5	6.0	4.5	4.5	4.5	5.0	4.5	5.0
11	8.0	7.5	8.0	6.5	6.0	6.0	4.5	4.0	4.5	5.0	4.5	5.0
12	8.5	8.0	8.0	6.5	6.0	6.0	5.0	4.5	5.0	5.0	4.5	5.0
13	8.5	8.5	8.5	6.5	6.5	6.5	5.0	5.0	5.0	5.0	4.5	5.0
14	8.5	8.0	8.5	6.5	6.5	6.5	5.0	4.5	5.0	5.5	4.5	5.0
15	8.0	7.5	7.5	7.5	6.5	7.0	5.0	4.5	5.0	5.0	4.0	4.5
16	7.5	7.0	7.0	7.0	6.0	6.5	5.0	5.0	5.0	5.0	4.0	4.5
17	7.5	6.5	7.0	6.5	6.0	6.5	5.5	4.5	5.0	4.5	4.0	4.5
18	7.5	6.5	7.0	6.5	6.0	6.5	4.5	3.0	4.0	5.0	4.0	4.5
19	6.5	6.0	6.5	6.5	6.0	6.5	3.0	1.5	2.5	5.0	4.5	5.0
20	7.0	6.5	7.0	7.5	6.5	7.0	1.5	.5	.5	5.0	4.5	5.0
21	7.5	7.0	7.0	7.5	6.5	7.0	1.0	.0	.5	4.5	4.0	4.5
22	7.5	7.0	7.5	6.5	6.0	6.0	1.0	.5	.5	4.5	4.0	4.5
23	7.5	7.0	7.5	6.5	6.0	6.5	1.5	1.0	1.0	4.5	4.0	4.0
24	8.0	7.5	7.5	6.0	5.5	6.0	2.0	1.0	1.5	4.5	4.0	4.5
25	8.0	7.5	8.0	6.5	6.0	6.5	3.0	2.0	2.5	4.0	4.0	4.0
26	8.0	7.5	7.5	6.5	6.5	6.5	4.0	3.0	3.5	4.0	3.5	3.5
27	8.0	7.5	8.0	6.5	6.0	6.0	4.0	3.5	4.0	4.0	4.0	4.0
28	7.5	6.5	7.0	6.0	5.5	6.0	4.5	3.5	4.5	4.5	4.0	4.0
29	6.5	5.5	6.0	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.0	4.5
30	6.0	5.0	5.5	5.5	5.5	5.5	5.0	5.0	5.0	4.5	4.0	4.5
31	6.5	5.5	6.0	---	---	---	5.5	4.5	5.0	4.5	3.5	4.0
MONTH	10.0	5.0	7.7	7.5	5.5	6.4	6.0	.0	3.9	5.5	3.5	4.5

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	5.5	4.0	4.5
2	4.0	3.5	4.0	4.5	4.0	4.0	4.0	3.0	3.5	4.0	3.0	3.5
3	4.5	4.0	4.0	4.0	3.0	3.5	3.0	2.0	2.5	4.0	3.5	3.5
4	4.0	4.0	4.0	3.5	3.0	3.5	3.5	3.0	3.0	4.0	3.5	3.5
5	4.0	3.5	4.0	4.0	3.0	3.5	4.0	3.0	3.5	5.5	3.5	4.5
6	4.5	4.0	4.0	3.5	3.0	3.5	4.0	3.0	3.5	5.5	4.5	5.0
7	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.5	3.0	3.5
8	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.0	3.5
9	3.5	3.0	3.5	4.0	3.5	4.0	3.5	3.0	3.5	4.0	3.5	4.0
10	3.5	2.5	3.0	4.0	3.5	4.0	4.0	3.0	3.5	5.0	3.5	4.0
11	3.5	3.0	3.5	4.0	3.5	3.5	4.5	3.5	4.0	5.0	4.0	4.5
12	3.5	3.5	3.5	4.0	3.5	4.0	4.5	3.5	4.0	5.0	4.0	4.5
13	4.0	3.5	3.5	4.0	4.0	4.0	5.0	4.0	4.0	4.5	3.5	4.0
14	4.0	3.5	4.0	4.5	4.0	4.0	4.5	3.5	4.0	4.5	3.5	4.0
15	4.0	4.0	4.0	4.5	3.5	4.0	5.0	4.0	4.5	4.5	4.0	4.5
16	4.0	4.0	4.0	4.0	3.5	3.5	5.5	4.0	4.5	5.5	4.0	5.0
17	4.0	3.5	4.0	4.5	3.5	4.0	5.5	4.0	4.5	5.0	4.5	5.0
18	4.0	3.5	4.0	5.0	4.0	4.5	5.0	4.0	4.5	5.0	4.5	4.5
19	4.5	3.5	4.0	5.0	4.0	4.5	4.5	4.0	4.5	5.5	4.0	5.0
20	4.0	4.0	4.0	5.0	4.0	4.5	4.5	3.5	4.0	5.5	4.5	5.0
21	4.5	4.0	4.0	4.5	4.0	4.5	4.0	3.5	4.0	6.0	5.0	5.5
22	4.5	3.5	4.0	5.0	4.0	4.5	5.0	4.0	4.0	7.0	5.0	6.0
23	4.0	3.5	4.0	5.0	4.0	4.5	6.0	4.0	5.0	8.0	5.5	6.5
24	4.0	4.0	4.0	4.5	4.0	4.5	6.0	4.5	5.0	7.5	5.5	6.5
25	4.0	3.5	4.0	4.5	4.0	4.5	5.0	4.5	4.5	6.5	5.5	6.0
26	4.0	3.5	4.0	4.0	2.5	3.5	4.5	3.5	4.0	7.0	4.5	6.0
27	4.0	3.5	4.0	3.0	2.0	2.5	4.0	3.5	3.5	7.5	5.5	6.5
28	4.0	3.5	4.0	3.5	3.0	3.0	4.5	3.5	4.0	7.5	5.5	6.5
29	---	---	---	3.0	1.5	2.5	5.5	3.5	4.5	7.5	6.0	6.5
30	---	---	---	3.5	2.5	3.0	6.0	4.0	5.0	7.5	5.5	6.5
31	---	---	---	4.0	3.5	3.5	---	---	---	7.0	6.0	6.5
MONTH	4.5	2.5	3.9	5.0	1.5	3.8	6.0	2.0	4.0	8.0	3.0	5.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	6.5	5.0	5.5	8.5	8.0	8.5	12.5	11.5	12.0	10.0	9.0	9.5
2	5.5	4.5	5.0	8.0	7.5	7.5	12.5	11.0	12.0	10.0	9.0	9.5
3	6.0	5.0	5.5	8.0	7.0	7.5	13.0	11.5	12.0	10.0	9.0	9.5
4	6.0	6.0	6.0	8.0	7.5	7.5	13.0	11.5	12.5	10.5	9.5	10.0
5	6.5	5.5	6.0	9.5	7.0	8.0	12.5	11.5	12.0	10.5	10.0	10.5
6	6.0	5.0	5.5	10.5	8.0	9.0	11.5	11.5	11.5	10.5	10.0	10.5
7	5.5	5.0	5.0	9.5	8.0	8.5	11.5	11.0	11.0	10.0	9.0	9.5
8	5.5	5.0	5.0	10.0	7.5	8.5	12.0	11.0	11.5	10.5	9.5	10.0
9	6.5	5.5	6.0	11.0	9.0	10.0	12.5	11.0	12.0	10.5	10.0	10.0
10	7.5	5.5	6.5	11.5	9.5	10.5	13.0	11.5	12.5	10.0	10.0	10.0
11	8.5	6.5	7.5	12.0	9.5	11.0	12.5	11.5	11.5	10.0	9.0	10.0
12	9.5	7.5	8.5	12.0	10.0	11.0	11.5	11.0	11.0	10.5	9.5	10.0
13	9.5	7.5	8.5	12.0	10.0	11.0	11.0	10.5	11.0	11.0	10.0	10.5
14	10.5	8.0	9.0	11.0	9.5	10.0	10.5	10.0	10.5	11.0	10.0	10.5
15	9.5	8.5	8.5	11.0	9.0	10.0	11.0	10.0	10.5	11.0	10.0	10.5
16	8.5	8.0	8.0	10.0	9.5	10.0	11.5	10.5	11.0	10.5	10.0	10.0
17	9.5	7.5	8.5	9.5	9.0	9.0	12.5	11.0	12.0	10.0	9.5	10.0
18	9.0	8.5	8.5	10.5	8.5	9.5	12.5	11.5	12.0	10.5	9.5	10.0
19	9.0	8.0	8.5	11.5	9.5	10.5	12.5	11.5	12.0	11.0	10.0	10.5
20	8.5	7.5	8.0	12.0	10.0	11.0	12.5	11.5	12.0	11.0	10.5	11.0
21	8.5	8.0	8.0	11.5	10.5	11.0	12.5	11.5	12.0	11.0	10.5	11.0
22	8.5	7.5	8.0	12.0	10.0	11.0	12.5	11.0	11.5	11.5	10.5	11.0
23	10.0	8.0	8.5	12.5	10.5	11.5	13.0	11.5	12.0	11.0	10.5	11.0
24	9.0	8.0	9.0	11.5	10.5	10.5	13.0	12.0	12.5	10.5	9.5	10.0
25	8.0	7.0	7.5	11.5	9.5	10.5	12.5	12.0	12.5	10.0	9.5	9.5
26	7.0	7.0	7.0	11.5	9.5	10.5	13.0	11.5	12.5	9.5	8.5	9.0
27	7.5	7.0	7.0	12.5	10.5	11.5	13.5	12.0	12.5	8.5	7.5	8.0
28	7.5	6.5	7.0	13.0	11.0	12.0	13.5	12.5	13.0	8.0	7.5	8.0
29	9.0	7.5	8.0	12.5	11.0	12.0	13.0	11.5	12.5	8.5	7.5	8.0
30	9.0	8.5	8.5	12.5	11.5	12.0	11.5	9.0	10.5	8.5	7.5	8.0
31	---	---	---	12.5	11.0	12.0	10.0	9.0	9.5	---	---	---
MONTH	10.5	4.5	7.3	13.0	7.0	10.1	13.5	9.0	11.7	11.5	7.5	9.9
YEAR	13.5	.0	6.5									

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'40", long 122°02'05", near line between SE 1/4 and SW 1/4 sec.11, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, Mount Hood National Forest, on left bank 7.0 mi southeast of Multnomah Falls and at mouth.

DRAINAGE AREA.--8.32 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR OR-91-1: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 1,060 ft above sea level, from topographic map. Prior to Oct. 1, 1978, and from June 13, 1989 to July 1990 (during bridge construction), at site 700 ft upstream at datum 18.7 ft higher. From Oct. 1, 1978 to June 13, 1989, and July 1990 to present, site located 5 ft upstream from bridge, on left bank wing wall.

REMARKS.--Records fair except those above 300 ft³/s, which are poor. Regulation at times since 1958 by North Fork Reservoir, capacity, about 1,030 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--34 years (water years 1966-99), 74.0 ft³/s, 120.79 in/yr, 53,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,700 ft³/s, probably affected by surge from release of water temporarily impounded by landslide upstream from station, Jan. 20, 1972, gage height, 9.89 ft, from floodmark, from rating curve extended above 850 ft³/s on basis of estimate of peak flow from slope-area survey; minimum discharge, 8.6 ft³/s Oct. 19-29, 1987.

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. 2	0500	748	4.98	Feb. 27	2330	859	5.14
Dec. 28	0200	*1,780	*5.91				

Minimum daily discharge, 12 ft³/s several days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	28	180	195	52	224	49	92	83	46	18	18
2	31	29	516	124	118	140	49	144	70	53	17	16
3	63	26	216	92	108	109	47	235	59	51	17	15
4	51	62	122	72	93	87	44	152	54	52	17	14
5	29	117	91	61	79	70	42	112	85	44	18	14
6	23	80	73	61	132	61	43	105	83	39	18	14
7	20	57	75	89	158	55	43	100	77	44	21	14
8	22	49	74	69	102	52	45	87	74	38	19	14
9	56	43	60	58	79	49	40	80	65	34	17	14
10	52	41	66	58	64	45	39	72	58	32	17	13
11	35	38	351	54	55	42	41	73	54	30	17	13
12	29	33	402	87	51	45	47	88	53	29	17	13
13	46	35	315	87	53	72	50	77	52	27	17	13
14	63	32	197	260	50	69	50	77	52	27	19	13
15	60	59	114	274	46	60	53	72	52	26	17	13
16	45	54	89	194	58	53	67	67	49	25	16	13
17	37	44	80	241	77	48	77	147	45	31	16	13
18	33	78	69	314	91	49	76	145	42	26	16	13
19	28	78	59	220	132	56	70	116	39	24	16	13
20	25	269	e45	187	88	74	86	96	37	23	15	12
21	23	433	e40	221	68	75	68	e85	41	22	15	12
22	21	294	40	163	101	67	61	81	39	22	15	12
23	20	206	38	115	272	75	65	93	35	21	15	12
24	19	196	45	91	272	64	74	102	54	21	15	12
25	23	396	279	74	198	66	82	101	111	21	14	13
26	20	362	268	61	124	62	77	90	79	20	14	13
27	24	197	619	53	431	55	67	82	59	19	14	12
28	36	127	1160	63	505	52	58	76	50	19	14	12
29	27	104	723	67	---	57	57	70	45	18	14	12
30	24	101	433	74	---	56	60	65	46	18	19	12
31	23	---	315	59	---	51	---	74	---	18	25	---
TOTAL	1021	3668	7154	3838	3657	2140	1727	3056	1742	920	519	397
MEAN	32.9	122	231	124	131	69.0	57.6	98.6	58.1	29.7	16.7	13.2
MAX	63	433	1160	314	505	224	86	235	111	53	25	18
MIN	13	26	38	53	46	42	39	65	35	18	14	12
AC-FT	2030	7280	14190	7610	7250	4240	3430	6060	3460	1820	1030	787
CFSM	3.96	14.7	27.7	14.9	15.7	8.30	6.92	11.8	6.98	3.57	2.01	1.59
IN.	4.57	16.40	31.99	17.16	16.35	9.57	7.72	13.66	7.79	4.11	2.32	1.78

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1999, BY WATER YEAR (WY)

	MEAN	44.4	108	131	132	110	88.9	87.3	73.2	48.2	25.3	17.5	24.0
MAX	95.9	222	285	309	231	200	147	137	111	62.7	35.2	54.4	
(WY)	1998	1996	1976	1975	1996	1972	1993	1972	1974	1983	1968	1977	
MIN	9.08	16.9	33.4	32.1	35.2	28.8	49.5	28.3	14.6	12.6	10.6	10.9	
(WY)	1988	1994	1977	1979	1993	1992	1967	1992	1992	1992	1994	1987	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1966 - 1999

ANNUAL TOTAL	27956				29839							
ANNUAL MEAN	76.6				81.8							
HIGHEST ANNUAL MEAN												
LOWEST ANNUAL MEAN												
HIGHEST DAILY MEAN	1160	Dec 28			1160	Dec 28			1910	Dec 2	1977	
LOWEST DAILY MEAN	13	Sep 1			12	Sep 20			8.6	Oct 24	1987	
ANNUAL SEVEN-DAY MINIMUM	13	Sep 1			12	Sep 18			8.7	Oct 23	1987	
ANNUAL RUNOFF (AC-FT)	55450				59190				53580			
ANNUAL RUNOFF (CFSM)	9.21				9.83				8.89			
ANNUAL RUNOFF (INCHES)	125.00				133.41				120.79			
10 PERCENT EXCEEDS	143				190				152			
50 PERCENT EXCEEDS	50				54				48			
90 PERCENT EXCEEDS	15				15				15			

e Estimated

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.
 pH: October 1980 to September 1981, August 1990 to September 1992.
 WATER TEMPERATURE: October 1978 to current year.
 TURBIDITY: August 1990 to September 1994.
 SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity values herein are recorded values and may not reflect actual extremes for the day. Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 103 microsiemens Jan. 13, 1981 (cement spill); minimum, 7 microsiemens Jan. 31, 1995, Feb. 19, 1995.
 pH: Maximum recorded, 9.8 units Jan. 13, 1981 (cement spill); minimum recorded, 6.3 units June 19, 1981.
 WATER TEMPERATURE: Maximum, 15.0°C July 28, 1998; minimum, 0.0°C on several days during winter periods.
 TURBIDITY: Maximum recorded, 25 NTU Nov. 24, 1990; minimum recorded, 0.06 NTU Sept. 7, 13, 14, 1992.
 SEDIMENT CONCENTRATION: Maximum daily, 205 mg/L Dec. 25, 1980; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 765 tons Feb. 23, 1986; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 42 microsiemens Oct. 1, several days in September; minimum, 11 microsiemens Dec. 27-29.
 WATER TEMPERATURE: Maximum recorded, 13.0°C June 14, July 11, 12, 28; minimum, 0.0°C Dec. 20-22.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	42	40	41	30	29	30	16	14	16	15	13	14
2	40	32	36	30	29	29	14	12	13	16	15	16
3	34	24	29	30	29	29	15	14	15	17	16	17
4	29	24	26	29	22	25	17	15	16	18	17	18
5	32	29	30	22	19	20	18	17	17	19	18	19
6	34	32	32	21	20	20	19	18	18	20	18	19
7	34	33	34	22	21	22	19	18	19	18	17	18
8	35	32	34	23	22	23	19	18	19	19	18	19
9	33	23	28	24	23	23	20	19	20	20	19	19
10	26	24	25	24	23	24	20	18	20	20	19	20
11	29	26	27	25	23	24	18	13	15	21	20	20
12	30	28	29	26	25	25	14	13	14	20	17	19
13	30	24	27	26	25	25	14	14	14	18	17	18
14	25	22	24	26	25	25	16	14	15	18	12	15
15	24	22	23	26	20	22	17	16	16	14	13	14
16	25	23	24	22	20	21	18	17	17	16	14	15
17	25	25	25	22	22	22	18	18	18	16	13	15
18	27	25	26	22	19	20	19	18	19	14	13	14
19	29	27	28	20	17	19	21	19	20	15	14	14
20	30	29	29	18	13	16	22	21	22	15	14	15
21	31	30	30	14	13	14	23	22	22	15	14	14
22	32	31	31	15	14	15	23	23	23	16	15	15
23	32	31	32	16	15	15	24	23	24	17	16	16
24	33	32	32	16	15	15	24	19	23	18	17	17
25	33	31	32	15	13	14	19	13	15	19	18	19
26	33	32	32	14	13	14	15	13	14	20	19	19
27	33	29	32	15	14	15	16	11	14	21	20	20
28	30	28	29	17	15	16	12	11	12	21	19	20
29	30	29	30	17	17	17	12	11	12	20	19	19
30	31	30	30	17	16	17	14	12	13	20	18	19
31	31	30	31	---	---	---	14	13	13	20	20	20
MONTH	42	22	30	30	13	21	24	11	17	21	12	17
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	21	20	21	15	14	15	24	23	23	21	19	19
2	21	16	18	16	15	16	24	23	24	19	16	18
3	18	16	17	18	16	17	25	24	24	16	16	16
4	18	18	18	19	17	18	25	24	25	18	16	17
5	19	18	19	20	18	19	25	24	25	18	18	18
6	19	16	17	20	19	20	25	24	25	19	18	18
7	17	15	16	21	20	21	25	25	25	19	18	19
8	18	17	18	21	21	21	25	24	25	20	19	19
9	19	18	19	23	21	22	26	25	25	20	19	20
10	20	19	20	24	23	23	26	25	25	20	20	20
11	21	20	21	24	24	24	26	25	25	21	19	20
12	---	21	---	25	21	24	25	24	25	20	19	19
13	---	21	---	21	20	20	24	24	24	20	20	20
14	---	22	---	20	20	20	24	24	24	20	20	20
15	---	23	---	21	20	21	24	22	24	21	20	20
16	25	22	24	23	21	22	23	20	21	21	20	21
17	23	21	22	24	23	23	21	19	20	20	16	18
18	21	18	21	24	23	23	20	19	20	17	16	16
19	19	18	19	23	20	22	20	20	20	18	17	17
20	20	19	20	21	19	20	20	19	19	19	17	18
21	22	20	21	20	19	19	21	20	21	19	19	19
22	23	17	20	20	19	20	22	21	21	20	19	19
23	17	15	16	20	19	19	22	20	21	19	17	19
24	16	15	15	20	20	20	21	19	20	18	17	18
25	16	15	15	20	20	20	20	19	20	18	17	18
26	17	16	17	21	20	20	20	19	20	19	18	18
27	17	12	14	22	21	21	21	20	21	19	18	19
28	14	12	13	23	21	22	22	21	21	20	19	19
29	---	---	---	23	21	21	22	21	22	20	19	20
30	---	---	---	23	21	21	22	21	21	21	20	20
31	---	---	---	23	22	23	---	---	---	21	19	20
MONTH	---	12	---	25	14	21	26	19	23	21	16	19

SANDY RIVER BASIN

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14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	20	19	19	25	23	24	37	36	37	39	37	38
2	21	19	20	24	22	23	38	36	37	39	38	39
3	21	20	21	24	22	23	38	36	37	40	39	39
4	22	21	22	24	22	23	38	37	37	40	39	40
5	22	18	20	25	24	24	38	36	37	40	39	40
6	20	19	19	26	25	25	38	37	37	40	39	40
7	20	19	20	26	24	25	37	35	36	40	39	40
8	20	20	20	27	25	26	37	35	36	41	40	40
9	21	20	21	29	26	27	38	37	37	41	40	40
10	22	21	21	29	28	29	39	37	38	41	40	40
11	22	22	22	30	29	29	39	37	38	41	40	40
12	23	22	22	31	30	30	38	37	38	41	40	41
13	23	22	22	31	30	31	39	37	38	41	40	41
14	23	22	23	31	30	31	39	36	37	42	41	41
15	23	22	23	32	31	31	38	37	37	42	41	41
16	23	23	23	32	31	32	39	38	38	41	40	41
17	24	23	24	32	29	30	40	38	39	41	40	41
18	25	24	24	33	31	31	40	38	39	42	41	41
19	25	24	25	33	32	33	40	38	39	42	41	41
20	25	25	25	34	33	33	40	38	39	42	41	42
21	25	25	25	34	33	33	40	38	39	42	41	42
22	26	25	25	34	33	34	40	39	39	42	41	42
23	28	26	26	35	34	34	40	39	40	42	41	41
24	28	21	24	35	34	34	40	39	40	42	41	41
25	21	18	19	35	34	34	40	39	40	41	41	41
26	21	19	20	36	34	35	40	39	40	41	41	41
27	22	21	21	36	35	35	41	39	40	42	41	41
28	23	22	23	37	35	36	41	40	40	42	41	41
29	25	23	24	36	35	36	41	39	40	42	41	42
30	25	23	24	37	36	36	40	36	39	42	41	42
31	---	---	---	38	36	37	37	35	35	---	---	---
MONTH	28	18	22	38	22	30	41	35	38	42	37	41

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.5	8.5	9.0	7.0	7.0	7.0	5.5	5.0	5.0	4.5	4.0	4.0
2	9.0	8.5	9.0	7.5	7.0	7.0	5.5	4.5	5.0	4.0	3.5	3.5
3	9.0	8.5	9.0	7.0	7.0	7.0	4.5	4.0	4.5	4.0	3.5	3.5
4	9.5	8.5	9.0	8.0	7.0	7.5	4.5	4.0	4.0	4.5	3.5	4.0
5	9.0	7.5	8.5	7.5	7.0	7.5	4.0	2.5	3.5	4.5	3.5	4.0
6	9.5	8.5	9.0	7.0	6.5	7.0	3.0	2.5	3.0	4.5	3.5	4.0
7	9.5	8.5	9.0	6.5	6.0	6.0	3.5	3.0	3.5	4.5	4.5	4.5
8	9.0	8.5	9.0	6.0	5.5	5.5	4.0	3.0	3.5	4.5	4.0	4.5
9	8.5	8.5	8.5	6.5	6.0	6.0	4.0	3.5	4.0	4.5	3.5	4.0
10	8.5	8.0	8.5	6.0	5.5	6.0	4.0	4.0	4.0	5.5	4.5	5.0
11	8.5	7.5	8.0	6.5	6.0	6.0	4.0	4.0	4.0	5.0	4.5	5.0
12	8.5	8.0	8.5	6.5	6.0	6.0	4.5	4.0	4.5	5.0	4.5	4.5
13	9.0	8.5	8.5	6.5	6.5	6.5	5.0	4.5	4.5	5.0	4.5	5.0
14	9.0	8.5	8.5	7.0	6.5	6.5	4.5	4.0	4.5	5.5	5.0	5.0
15	8.5	7.5	8.0	7.5	7.0	7.0	5.0	4.0	4.5	5.0	4.5	4.5
16	8.5	7.0	8.0	7.5	6.5	7.0	5.0	4.5	4.5	4.5	3.5	4.0
17	8.0	7.0	7.5	6.5	6.5	6.5	5.0	4.0	4.5	4.0	3.5	4.0
18	7.5	6.5	7.0	6.5	6.5	6.5	4.0	2.5	3.5	4.0	3.5	4.0
19	7.5	6.5	7.0	6.5	6.5	6.5	2.5	.5	1.5	4.5	4.0	4.5
20	7.5	7.0	7.0	8.0	6.5	7.5	.5	.0	.0	4.5	4.0	4.5
21	8.0	7.0	7.5	8.0	6.0	7.0	.5	.0	.5	4.0	3.5	4.0
22	8.0	7.0	7.5	6.5	5.5	5.5	1.0	.0	.5	3.5	3.0	3.5
23	8.0	7.0	7.5	6.5	5.5	6.0	1.0	.5	1.0	3.5	3.0	3.5
24	8.0	7.5	8.0	6.0	5.0	5.5	2.0	1.0	1.5	4.0	3.5	3.5
25	8.0	7.5	8.0	7.0	6.0	6.5	2.5	1.0	2.0	3.5	3.0	3.0
26	8.5	7.5	8.0	7.0	6.0	6.5	3.0	2.5	3.0	3.0	3.0	3.0
27	8.0	7.5	8.0	6.5	6.0	6.0	3.5	3.0	3.5	3.5	3.0	3.5
28	7.5	7.0	7.5	6.0	5.5	5.5	4.5	3.5	4.0	4.0	3.5	4.0
29	7.0	6.0	6.5	5.5	5.0	5.0	5.0	4.5	4.5	4.0	3.5	4.0
30	6.5	5.5	6.0	5.5	5.0	5.0	5.5	5.0	5.0	4.0	3.5	4.0
31	7.0	6.0	6.0	---	---	---	5.0	4.5	5.0	3.5	3.0	3.5
MONTH	9.5	5.5	8.0	8.0	5.0	6.4	5.5	.0	3.4	5.5	3.0	4.0

SANDY RIVER BASIN

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	3.5	3.0	3.5	3.0	2.5	2.5	5.0	3.5	4.0	6.5	5.0	5.5
2	4.0	3.5	3.5	3.5	2.5	3.0	5.0	3.0	3.5	5.0	3.5	4.0
3	4.0	3.5	3.5	3.5	2.5	2.5	3.0	2.0	2.5	4.0	3.0	3.5
4	3.5	3.5	3.5	2.5	1.5	2.0	3.0	2.5	3.0	4.0	3.0	3.5
5	3.5	3.0	3.0	3.0	2.5	2.5	4.5	2.5	3.5	6.0	3.5	4.5
6	4.0	3.5	3.5	3.5	2.5	3.0	5.0	3.0	3.5	6.0	4.5	5.0
7	3.5	3.0	3.5	3.5	3.0	3.0	4.5	3.5	4.0	4.5	3.0	3.5
8	3.0	2.0	2.5	4.0	3.0	3.5	4.0	3.5	3.5	4.5	3.0	3.5
9	3.0	2.0	2.5	3.5	3.0	3.5	3.5	3.0	3.0	5.0	3.5	4.0
10	2.5	2.0	2.0	4.0	3.0	3.5	4.5	3.5	3.5	6.0	3.5	4.0
11	2.5	2.0	2.5	4.0	2.5	3.5	5.5	3.5	4.5	5.5	4.5	5.0
12	3.5	2.5	3.0	4.0	3.5	3.5	5.0	4.0	4.5	5.5	5.0	5.0
13	3.5	3.0	3.0	4.0	3.5	4.0	5.5	4.0	4.5	5.0	4.5	4.5
14	3.5	3.0	3.5	4.0	3.5	4.0	5.5	3.5	4.5	5.5	4.5	5.0
15	4.0	3.0	3.5	4.5	3.0	4.0	6.0	4.0	5.0	5.5	5.0	5.0
16	4.0	3.5	3.5	4.0	3.0	3.5	6.0	4.0	5.0	6.5	5.0	5.5
17	3.5	2.5	3.0	4.5	3.5	4.0	6.0	4.0	5.0	6.5	5.5	6.0
18	4.0	3.0	3.5	5.0	4.0	4.5	5.5	4.5	5.0	6.0	5.5	5.5
19	4.0	3.0	3.5	5.5	4.0	4.5	5.0	4.5	4.5	7.0	5.0	6.0
20	3.5	3.0	3.5	5.5	4.0	5.0	5.0	4.0	4.5	6.5	5.5	6.0
21	3.5	3.5	3.5	5.0	4.0	4.5	4.5	3.5	4.0	7.5	5.5	6.5
22	4.0	3.0	3.5	5.0	4.0	4.5	5.5	4.0	4.5	8.5	6.0	7.5
23	4.0	3.0	3.5	5.0	4.0	4.5	7.0	4.0	5.5	10.5	7.5	9.0
24	3.5	3.0	3.5	5.0	4.0	4.5	7.5	4.5	6.0	11.0	7.5	9.0
25	3.5	2.5	3.0	4.5	4.0	4.5	6.0	5.0	5.5	10.0	8.0	9.0
26	3.5	2.5	3.0	4.0	2.0	3.5	5.0	4.0	4.5	9.5	6.0	8.0
27	3.5	3.0	3.5	3.0	2.0	2.5	4.5	4.0	4.0	9.5	7.0	8.5
28	3.0	2.5	3.0	3.5	2.5	3.0	4.5	3.5	4.0	9.5	7.5	8.5
29	---	---	---	3.0	1.5	2.5	6.0	3.5	5.0	9.5	8.0	9.0
30	---	---	---	3.5	2.0	3.0	7.0	4.5	6.0	9.5	7.5	8.5
31	---	---	---	4.0	3.0	3.5	---	---	---	9.0	8.0	8.5
MONTH	4.0	2.0	3.2	5.5	1.5	3.5	7.5	2.0	4.3	11.0	3.0	6.0

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	8.5	7.0	7.5	9.5	8.5	9.5	12.5	10.0	11.0	10.0	8.5	9.0
2	7.0	6.0	6.5	8.5	8.0	8.5	12.0	10.0	11.0	10.0	8.0	9.0
3	7.5	6.5	7.0	9.0	7.5	8.0	12.0	10.0	11.0	10.0	8.0	9.0
4	7.5	7.0	7.5	9.0	8.0	8.5	12.5	10.0	11.0	10.0	8.5	9.0
5	8.0	7.0	7.5	11.0	7.5	9.0	11.5	10.5	11.0	10.0	8.5	9.0
6	7.0	6.0	6.5	11.5	8.5	10.0	10.5	10.5	10.5	9.5	8.5	9.0
7	7.0	6.0	6.5	10.0	9.0	9.5	11.0	10.5	10.5	9.5	7.5	8.5
8	7.0	6.0	6.5	11.0	8.0	9.5	12.0	10.0	11.0	10.5	8.5	9.0
9	7.5	6.5	7.0	12.0	9.5	10.5	12.0	10.0	11.0	10.0	8.5	9.0
10	9.0	6.5	7.5	12.5	10.0	11.0	12.5	10.5	11.5	10.0	8.5	9.0
11	10.0	8.0	9.0	13.0	10.0	11.0	11.0	10.0	10.5	10.0	8.0	9.0
12	11.5	9.0	10.0	13.0	10.5	11.5	11.0	9.5	10.0	10.5	8.5	9.0
13	12.0	9.5	10.5	12.5	10.5	11.0	10.0	9.5	9.5	10.5	8.5	9.5
14	13.0	10.0	11.5	11.0	9.5	10.0	10.0	9.0	9.5	10.5	8.5	9.5
15	11.5	10.0	11.0	11.5	9.5	10.0	10.5	9.0	10.0	10.5	9.0	9.5
16	10.5	9.5	10.0	10.5	9.5	10.0	11.5	9.0	10.0	10.0	8.5	9.0
17	11.5	9.0	10.0	10.0	9.5	9.5	12.0	9.5	11.0	10.0	8.5	9.0
18	10.0	9.5	10.0	11.0	8.5	10.0	11.5	10.0	10.5	11.0	8.5	9.5
19	10.5	9.0	9.5	12.0	9.5	10.5	12.0	10.0	10.5	11.0	9.0	10.0
20	9.5	9.0	9.0	12.5	10.0	11.0	12.0	10.0	10.5	11.0	9.0	10.0
21	9.5	9.0	9.5	12.0	10.0	11.0	12.0	10.0	10.5	10.5	9.0	9.5
22	9.5	9.0	9.0	12.5	9.5	11.0	11.5	9.5	10.0	11.0	9.0	9.5
23	11.5	9.0	10.0	12.5	10.0	11.0	12.0	10.0	10.5	9.5	9.0	9.5
24	10.0	9.5	10.0	11.0	10.0	10.0	12.0	10.0	11.0	9.5	8.5	8.5
25	9.5	8.5	9.0	11.5	9.5	10.0	12.0	10.0	11.0	9.0	8.0	8.5
26	8.5	8.0	8.0	12.0	9.0	10.5	12.0	10.0	10.5	8.5	7.5	8.0
27	9.0	8.0	8.0	12.5	10.0	11.0	12.0	10.5	11.0	8.0	7.0	7.5
28	9.0	7.5	8.5	13.0	10.0	11.0	12.0	10.5	11.5	8.5	7.0	7.5
29	10.5	8.5	9.5	12.5	10.0	11.0	11.0	9.5	10.5	8.5	7.0	7.5
30	10.0	9.5	9.5	12.5	10.5	11.0	9.5	9.0	9.5	8.5	7.0	7.5
31	---	---	---	12.5	9.5	11.0	10.5	9.0	9.5	---	---	---
MONTH	13.0	6.0	8.7	13.0	7.5	10.2	12.5	9.0	10.5	11.0	7.0	8.9
YEAR	13.0	.0	6.5									

SANDY RIVER BASIN

149

14139000 BULL RUN RESERVOIR NUMBER ONE NEAR BULL RUN, OR

LOCATION.--Lat 45°28'50", long 122°04'50", in NW 1/4 SW 1/4 sec.16, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in control house of Bear Creek Dam on Bull Run River, 8.2 mi northeast of Bull Run, and at mile 11.2.

DRAINAGE AREA.--74.6 mi².

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1937, published as Bull Run Reservoir. October 1937 to September 1967, published as Lake Ben Morrow. Prior to October 1975, monthend contents only.

REVISED RECORDS.--WSP 814: 1935(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Portland Water Bureau). Prior to Oct. 9, 1930, Oct. 1, 1962 to Dec. 31, 1975, nonrecording gage. Oct. 9, 1930 to Sept. 30, 1962, water-stage recorder at present site and datum.

REMARKS.--Midnight readings Oct. 1-21, Aug. 10-17, Sept. 12-15, furnished by Portland General Electric. Lake is formed by concrete dam completed in March 1929 for water supply of city of Portland. Storage began about Apr. 29, 1929; first filling occurred May 15, 1929. Capacity, 26,930 acre-ft at crest of spillway, elevation, 1,036.0 ft; capacity increased in October 1954 to 30,140 acre-ft at elevation 1,044.0 ft by installation of three gates 40 ft wide and 8 ft high. No dead storage. Water is used for power generation by Portland General Electric Co. and municipal supply for city of Portland.

COOPERATION.--Capacity table furnished by Portland Water Bureau.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 31,600 acre-ft Mar. 31, 1931, elevation, 1,047.40 ft; minimum contents observed, 169 acre-ft Jan. 10, 1960, elevation, 887.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 30,570 acre-ft Dec. 28, elevation, 1,045.01 ft; minimum contents, 6,970 acre-ft Oct. 1, elevation, 963.85 ft.

Capacity table (elevation, in feet, and capacity, in acre-feet)

870	0	970	8,050
890	213	990	12,370
910	1,130	1,010	17,950
930	2,680	1,030	24,680
950	4,900	1,048	31,860

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	963.85	1009.17	1035.96	1035.83	1034.88	1035.68	1034.71	1035.22	1044.00	1044.61	1036.95	1023.82
2	964.20	1010.94	1038.61	1035.34	1035.59	1035.44	1035.16	1035.33	1044.00	1044.13	1036.44	1023.30
3	967.45	1011.69	1035.94	1034.49	1035.44	1034.62	1034.86	1035.87	1043.84	1043.86	1035.41	1023.12
4	971.31	1014.02	1035.18	1034.71	1035.16	1035.34	1034.98	1035.69	1043.86	1043.95	1034.65	1022.55
5	973.66	1019.90	1034.68	1034.61	1034.64	1035.10	1034.91	1034.70	1044.38	1044.13	1033.94	1020.67
6	975.40	1024.34	1034.47	1034.67	1035.54	1034.85	1035.08	1034.43	1043.44	1044.39	1032.76	1019.88
7	976.78	1027.41	1034.66	1035.02	1035.72	1034.99	1035.03	1034.49	1043.83	1044.45	1032.66	1019.11
8	978.27	1029.87	1034.28	1035.20	1034.62	1035.07	1035.09	1035.15	1044.14	1044.34	1032.33	1017.74
9	981.43	1031.34	1034.26	1034.82	1034.71	1034.78	1035.10	1035.38	1044.71	1044.40	1031.59	1016.42
10	984.90	1032.60	1034.46	1034.27	1034.75	1034.86	1034.95	1034.36	1044.14	1044.26	1031.13	1015.10
11	987.22	1034.46	1038.38	1034.70	1034.49	1035.35	1035.25	1034.89	1043.36	1044.25	1030.30	1013.78
12	988.94	1034.72	1037.85	1035.36	1035.19	1034.96	1035.03	1035.10	1043.64	1044.34	1029.42	1012.28
13	991.58	1034.72	1036.93	1034.98	1035.24	1034.95	1035.14	1035.15	1043.42	1044.26	1028.65	1010.51
14	995.51	1034.22	1035.74	1038.66	1034.89	1034.63	1035.09	1034.65	1043.23	1044.42	1028.23	1008.86
15	999.86	1035.05	1034.88	1036.61	1034.67	1035.09	1035.22	1034.85	1043.90	1044.59	1027.64	1007.89
16	1001.10	1033.99	1034.84	1034.74	1034.99	1034.88	1035.08	1034.78	1044.14	1044.63	1027.07	1007.15
17	1001.88	1034.75	1034.85	1036.16	1034.91	1034.83	1034.89	1035.25	1044.63	1044.73	1026.38	1006.93
18	1001.77	1035.00	1034.36	1036.99	1035.71	1034.60	1034.38	1034.88	1043.91	1044.42	1025.06	1005.87
19	1001.52	1035.02	1034.69	1035.98	1035.37	1035.00	1034.85	1035.75	1044.10	1043.59	1025.59	1005.37
20	1002.20	1039.05	1034.64	1035.98	1035.03	1034.73	1034.76	1037.33	1044.43	1043.38	1026.11	1003.26
21	1002.40	1038.54	1034.46	1035.38	1035.42	1034.86	1034.91	1037.93	1044.13	1043.02	1026.61	1001.71
22	1003.62	1036.59	1034.57	1035.35	1037.21	1034.47	1034.68	1038.66	1044.56	1042.20	1027.11	1000.48
23	1003.05	1035.13	1034.71	1034.61	1038.34	1034.90	1034.84	1038.95	1044.23	1041.93	1027.59	1000.48
24	1003.02	1034.16	1034.74	1034.52	1037.14	1034.91	1035.38	1040.61	1044.42	1041.72	1028.07	1001.06
25	1003.25	1037.84	1037.10	1034.86	1035.68	1034.91	1034.62	1041.11	1044.24	1041.37	1028.54	1001.71
26	1003.21	1037.45	1035.89	1034.84	1034.76	1034.89	1034.69	1041.68	1044.14	1041.13	1029.02	1002.42
27	1004.30	1035.58	1044.40	1034.45	1040.58	1034.98	1034.79	1041.87	1043.86	1040.65	1028.92	1003.19
28	1005.71	1035.04	1042.23	1034.44	1038.36	1034.73	1034.74	1042.59	1044.24	1039.79	1027.56	1002.51
29	1006.60	1035.35	1040.25	1034.73	---	1034.83	1035.04	1043.23	1044.17	1038.74	1025.27	1001.56
30	1007.20	1035.63	1037.88	1034.89	---	1034.66	1034.93	1043.34	1044.15	1038.18	1024.35	1000.50
31	1008.46	---	1037.32	1034.65	---	1034.91	---	1044.14	---	1037.62	1024.19	---
MAX	1008.46	1039.05	1044.40	1038.66	1040.58	1035.68	1035.38	1044.14	1044.71	1044.73	1036.95	1023.82
MIN	963.85	1009.17	1034.26	1034.27	1034.49	1034.47	1034.38	1034.36	1043.23	1037.62	1024.19	1000.48
(†)	17480	26790	27440	26420	27850	26520	26520	30200	30200	27560	22620	15140
(‡)	+10370	+9310	+650	-1020	+1430	-1330	0	+3680	0	-2640	-4940	-7480

CAL YR 1998 MAX 1045.30 MIN 963.85 AC-FT+ +930
WTR YR 1999 MAX 1044.73 MIN 963.85 AC-FT+ +8030

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

‡ Change in contents, in acre-feet.

SANDY RIVER BASIN

14139700 CEDAR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°27'30", long 122°01'50", in NE 1/4 sec.26, T.1 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 5.8 mi north of Brightwood and at mile 2.5.

DRAINAGE AREA.--7.93 mi².

PERIOD OF RECORD.--July to November 1964, June 1965 to current year.

REVISED RECORDS.--WDR OR 96-1: 1989(M), 1991 (M).

GAGE.--Water-stage recorder. Elevation of gage is 1,960 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--34 years (water years 1966-99), 66.6 ft³/s, 114.17 in/yr, 48,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,990 ft³/s Dec. 22, 1964, gage height, 7.20 ft, from rating curve extended above 940 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 4.7 ft³/s Oct. 28, 29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 2	1130	573	3.75	Feb. 28	0330	615	3.82
Dec. 28	0330	*1,090	*4.54				

Minimum discharge, 8.8 ft³/s Oct. 1, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	28	153	188	47	218	46	84	61	45	16	18
2	20	37	424	107	141	138	45	151	56	44	16	15
3	56	27	214	73	115	111	43	229	43	46	15	14
4	55	48	115	56	102	82	40	171	39	43	15	14
5	27	96	76	47	78	66	39	117	67	40	16	13
6	20	72	59	43	123	56	40	101	62	35	16	13
7	17	54	64	66	158	50	40	109	59	38	22	13
8	19	48	61	53	95	48	44	97	72	34	21	12
9	38	41	48	45	70	46	40	85	61	31	17	12
10	35	38	51	45	56	41	40	72	51	28	16	12
11	26	34	292	44	47	38	45	69	46	27	16	12
12	21	29	354	70	43	44	51	92	42	25	16	12
13	34	28	268	73	44	80	56	83	39	24	16	11
14	53	26	178	205	41	74	57	82	37	23	19	11
15	50	45	102	278	38	67	63	81	36	22	18	11
16	42	51	74	196	57	61	76	70	33	22	16	11
17	34	46	68	233	94	53	88	119	31	22	15	11
18	32	95	60	272	124	53	92	120	29	21	15	11
19	25	96	e50	193	165	59	84	103	27	20	15	10
20	22	238	e45	156	93	74	106	82	26	20	14	10
21	19	369	e40	206	69	81	77	69	28	20	14	10
22	17	265	e36	157	109	72	64	64	30	19	14	9.9
23	16	195	e34	107	361	73	58	69	27	18	13	9.9
24	15	161	e36	77	255	64	74	74	48	18	13	9.7
25	17	251	e80	60	193	63	75	70	110	18	13	10
26	16	304	191	50	120	62	76	58	80	17	13	9.9
27	19	179	399	44	350	55	63	53	58	17	13	9.6
28	36	110	955	54	440	49	55	48	47	17	13	9.4
29	28	95	617	51	---	55	48	44	41	17	13	9.2
30	22	96	380	60	---	52	47	40	39	16	20	9.1
31	20	---	284	51	---	48	---	48	---	16	29	---
TOTAL	860.2	3202	5808	3360	3628	2133	1762	2754	1425	803	498	342.7
MEAN	27.7	107	187	108	130	68.8	58.7	88.8	47.5	25.9	16.1	11.4
MAX	56	369	955	278	440	218	106	229	110	46	29	18
MIN	9.2	26	34	43	38	38	39	40	26	16	13	9.1
AC-FT	1710	6350	11520	6660	7200	4230	3490	5460	2830	1590	988	680
CFSM	3.50	13.5	23.6	13.7	16.3	8.68	7.41	11.2	5.99	3.27	2.03	1.44
IN.	4.04	15.02	27.25	15.76	17.02	10.01	8.27	12.92	6.68	3.77	2.34	1.61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1999, BY WATER YEAR (WY)

MEAN	40.6	96.6	114	115	100	84.8	84.4	64.6	42.9	22.1	15.5	21.3
MAX	86.5	211	232	218	202	181	130	136	115	53.9	38.1	51.4
(WY)	1968	1996	1978	1975	1996	1972	1974	1969	1981	1983	1968	1977
MIN	5.43	15.5	29.4	31.9	29.8	22.6	46.0	30.6	12.8	10.9	8.68	7.86
(WY)	1988	1994	1977	1981	1993	1992	1998	1992	1992	1992	1970	1987

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1966 - 1999
ANNUAL TOTAL	24336.5	26575.9	
ANNUAL MEAN	66.7	72.8	66.6
HIGHEST ANNUAL MEAN			105
LOWEST ANNUAL MEAN			41.8
HIGHEST DAILY MEAN	955	Dec 28	1440
LOWEST DAILY MEAN	6.9	Sep 17	4.8
ANNUAL SEVEN-DAY MINIMUM	7.1	Sep 11	4.9
ANNUAL RUNOFF (AC-FT)	48270		48280
ANNUAL RUNOFF (CFSM)	8.41		8.40
ANNUAL RUNOFF (INCHES)	114.16		114.17
10 PERCENT EXCEEDS	141		142
50 PERCENT EXCEEDS	41		41
90 PERCENT EXCEEDS	10		12

e Estimated

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'38", long 122°06'20", in NE 1/4 NE 1/4 sec.31, T.1 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 6.2 mi northeast of Bull Run, and at mile 0.6.

DRAINAGE AREA.--15.4 mi²

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

REVISED RECORDS.--WDR OR-91-1: 1989.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 990 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--25 years (water years 1975-99), 113 ft³/s, 99.40 in/yr, 81,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,630 ft³/s Feb. 7, 1996, gage height, 9.54 ft, from rating curve extended above 1,800 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 5.4 ft³/s Oct. 13, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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)
Dec. 28	0430	*2,180	*7.77	No other peak greater than base discharge.			
Minimum discharge, 14 ft ³ /s Sept. 22-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	49	260	345	98	373	93	143	109	71	21	22
2	25	63	723	237	191	266	90	242	99	71	21	20
3	65	53	371	176	198	223	88	360	79	75	21	19
4	90	83	238	136	186	173	81	303	71	73	20	18
5	50	179	174	110	158	138	79	238	110	67	21	18
6	39	156	136	97	206	117	80	200	109	60	21	18
7	32	121	136	138	266	102	78	203	105	61	25	17
8	32	99	143	124	206	96	85	185	125	55	27	17
9	55	82	114	108	159	92	78	169	116	49	22	17
10	57	74	110	103	126	82	77	144	100	45	21	17
11	46	67	445	97	103	76	82	133	88	41	20	16
12	39	57	628	131	91	79	91	165	81	39	20	16
13	54	53	441	162	89	136	99	159	74	37	21	16
14	77	50	323	322	84	136	100	157	69	35	24	16
15	80	68	224	475	77	129	107	155	65	33	22	16
16	73	84	167	325	98	118	128	138	60	32	21	16
17	61	74	144	375	174	104	150	196	55	31	20	15
18	57	139	127	439	215	100	162	226	52	30	20	15
19	47	158	106	315	275	103	154	201	49	29	19	15
20	40	323	83	276	205	121	185	163	46	27	19	15
21	35	549	76	325	161	136	153	135	49	27	19	15
22	32	400	67	290	187	129	126	121	51	26	19	14
23	29	321	61	233	556	135	110	125	46	25	18	14
24	27	272	69	e185	413	119	115	137	64	25	18	14
25	29	359	236	e145	325	116	134	131	164	25	18	15
26	28	484	314	e120	244	114	146	109	140	24	18	15
27	30	307	722	e105	618	104	122	97	103	23	18	14
28	54	217	1990	109	944	95	105	89	81	23	17	14
29	48	185	1380	104	---	106	92	81	68	22	17	14
30	40	185	790	121	---	107	88	74	65	22	22	14
31	37	---	493	110	---	99	---	81	---	22	36	---
TOTAL	1425	5311	11291	6338	6653	4024	3278	5060	2493	1225	646	482
MEAN	46.0	177	364	204	238	130	109	163	83.1	39.5	20.8	16.1
MAX	90	549	1990	475	944	373	185	360	164	75	36	22
MIN	17	49	61	97	77	76	77	74	46	22	17	14
AC-FT	2830	10530	22400	12570	13200	7980	6500	10040	4940	2430	1280	956
CFSM	2.98	11.5	23.7	13.3	15.4	8.43	7.10	10.6	5.40	2.57	1.35	1.04
IN.	3.44	12.83	27.27	15.31	16.07	9.72	7.92	12.22	6.02	2.96	1.56	1.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1999, 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
MEAN	65.4	168	201	188	182	147	144	104	71.3	33.5	22.0	31.6													
MAX	146	313	413	321	353	275	215	163	180	91.2	53.2	93.4													
(WY)	1997	1996	1997	1997	1996	1997	1976	1999	1981	1983	1978	1977													
MIN	8.31	23.3	50.4	58.3	54.7	53.8	89.6	47.1	15.4	14.8	11.7	9.03													
(WY)	1988	1994	1977	1979	1977	1992	1983	1992	1992	1992	1994	1994													

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1975 - 1999	
ANNUAL TOTAL	47723		48226			
ANNUAL MEAN	131		132			
HIGHEST ANNUAL MEAN					113	
LOWEST ANNUAL MEAN					171	
HIGHEST DAILY MEAN	1990		1990		75.4	
LOWEST DAILY MEAN	11		14		2830	
ANNUAL SEVEN-DAY MINIMUM	11		14		5.6	
ANNUAL RUNOFF (AC-FT)	94660		95660		5.7	
ANNUAL RUNOFF (CFSM)	8.49		8.58		81620	
ANNUAL RUNOFF (INCHES)	115.28		116.49		7.32	
10 PERCENT EXCEEDS	289		282		99.40	
50 PERCENT EXCEEDS	81		91		239	
90 PERCENT EXCEEDS	15		19		74	
					16	

e Estimated

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.
 pH: November 1980 to September 1981, June 1990 to September 1992.
 WATER TEMPERATURE: October 1978 to current year.
 TURBIDITY: June 1990 to September 1994.
 SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 56 microsiemens Oct. 31, 1988; minimum, 9 microsiemens Jan. 4, 1983.
 pH: Maximum recorded, 8.0 units Aug. 17, Oct. 2, 1990, but may have been higher in water year 1990, 1992 during period of missing record; minimum recorded, 6.4 units Dec. 6, 1991, but may have been lower during period of missing record.
 WATER TEMPERATURE: Maximum, 18.0°C June 23, 24, July 18, 19, 1992; minimum, 0.0°C on many days during winter periods.
 TURBIDITY: Maximum recorded, 16 NTU Oct. 16, 1993; minimum recorded, 0.08 NTU Sept. 2, 1994.
 SEDIMENT CONCENTRATION: Maximum daily, 212 mg/L Nov. 7, 1985; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 794 tons Nov. 7, 1985; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 45 microsiemens Sept. 22; minimum, 14 microsiemens Dec. 27-29.
 WATER TEMPERATURE: Maximum, 15.0°C Aug. 4; minimum, 0.0°C Dec. 20-23.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	37	36	36	28	27	27	20	19	19	18	16	17
2	37	35	36	27	26	26	19	15	17	19	18	18
3	35	27	31	27	26	26	19	17	18	20	19	19
4	27	26	27	26	24	26	20	19	19	21	20	20
5	28	26	27	25	23	23	20	20	20	22	21	21
6	28	27	28	23	21	22	21	20	21	22	21	22
7	29	28	28	23	23	23	22	21	21	21	20	21
8	29	29	29	24	23	24	22	21	21	21	20	21
9	29	27	29	24	24	24	22	22	22	22	21	21
10	28	26	27	25	23	24	23	22	22	22	21	22
11	27	26	27	24	24	24	22	16	19	22	22	22
12	28	27	27	25	24	24	17	16	17	22	19	21
13	28	26	27	25	24	25	18	17	17	20	19	20
14	26	25	26	25	25	25	19	17	18	20	15	19
15	25	24	25	25	24	25	20	19	19	17	15	16
16	25	24	25	24	23	24	20	20	20	18	17	17
17	25	24	25	24	24	24	21	20	21	18	16	18
18	26	25	25	24	22	23	21	21	21	17	16	17
19	26	26	26	23	21	22	22	21	21	18	17	18
20	27	26	26	21	17	20	23	22	22	18	18	18
21	27	27	27	17	17	17	23	23	23	18	17	17
22	28	27	28	19	17	18	23	23	23	18	18	18
23	29	28	28	19	18	18	24	23	24	20	18	19
24	29	29	29	20	19	19	24	22	23	---	---	---
25	30	29	29	20	18	18	22	18	19	---	---	---
26	30	29	30	18	17	18	18	17	17	---	---	---
27	30	29	30	19	18	18	18	14	17	---	---	---
28	29	27	28	20	19	20	15	14	14	23	22	22
29	28	27	27	20	20	20	15	14	15	23	22	22
30	28	27	27	20	20	20	16	15	15	22	21	22
31	28	27	27	---	---	---	17	16	16	22	22	22
MONTH	37	24	28	28	17	22	24	14	19	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	23	22	23	18	17	18	25	24	24	21	18	20
2	23	18	21	19	18	19	25	24	24	18	17	18
3	20	19	19	20	19	19	25	24	25	17	16	16
4	20	19	20	21	20	20	25	25	25	17	16	17
5	21	20	20	23	21	22	26	25	25	18	17	18
6	21	19	20	24	23	23	26	25	25	18	18	18
7	19	18	19	24	24	24	26	25	25	18	18	18
8	20	19	20	24	24	24	26	25	25	18	17	18
9	21	20	21	25	24	24	25	25	25	18	18	18
10	23	21	22	26	25	25	26	25	25	19	18	18
11	24	23	23	26	25	26	25	25	25	19	19	19
12	24	24	24	26	25	26	25	24	25	19	17	18
13	25	24	24	25	21	23	25	24	24	18	18	18
14	25	24	25	23	21	22	24	23	24	18	18	18
15	25	25	25	23	21	22	24	23	23	19	18	18
16	26	24	25	23	22	22	24	21	22	19	18	18
17	24	21	22	24	23	23	21	19	20	19	16	18
18	22	19	21	24	23	24	20	19	19	18	17	18
19	20	19	19	24	23	24	20	19	20	19	18	18
20	21	20	20	23	21	22	20	18	19	20	19	19
21	21	20	21	22	21	21	20	19	20	20	19	20
22	21	19	21	21	21	21	21	20	20	20	20	20
23	19	17	17	23	21	21	21	20	21	20	19	20
24	18	17	17	23	21	22	21	20	21	20	19	19
25	19	17	18	23	21	22	21	20	20	19	19	19
26	20	18	19	23	21	22	20	19	19	20	19	20
27	20	15	17	23	21	22	20	19	20	21	20	20
28	17	15	16	24	23	23	20	19	20	21	20	21
29	---	---	---	24	23	23	21	20	20	22	21	21
30	---	---	---	24	23	24	21	20	21	23	21	22
31	---	---	---	24	24	24	---	---	---	23	21	23
MONTH	26	15	21	26	17	22	26	18	22	23	16	19

SANDY RIVER BASIN

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14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	21	20	20	25	24	24	38	37	37	38	36	37
2	21	20	21	24	24	24	38	37	38	39	38	38
3	23	21	22	24	24	24	38	38	38	39	39	39
4	24	23	24	25	24	24	39	38	38	40	39	39
5	24	20	22	---	---	---	39	38	38	40	39	40
6	21	20	20	25	25	25	39	39	39	40	39	40
7	21	20	21	26	25	25	40	37	38	40	40	40
8	21	19	20	26	25	26	37	35	36	40	40	40
9	21	20	20	27	26	26	38	37	38	41	40	41
10	21	21	21	28	27	27	39	38	38	41	40	41
11	22	21	22	29	28	28	39	38	38	41	41	41
12	22	22	22	29	28	29	39	38	38	41	41	41
13	23	22	23	31	29	30	39	38	38	42	41	41
14	24	23	23	32	29	30	38	37	37	42	41	42
15	24	23	24	32	30	30	38	37	37	42	41	42
16	25	24	24	31	30	31	39	38	38	42	41	42
17	25	24	25	31	30	31	40	39	39	42	42	42
18	26	25	25	32	31	31	40	39	39	42	42	42
19	26	25	26	33	31	32	40	39	39	42	40	41
20	27	26	26	34	32	33	40	39	40	42	41	42
21	27	26	26	34	33	34	40	39	40	44	42	43
22	27	26	26	35	34	34	40	40	40	45	43	44
23	28	---	---	35	34	35	40	40	40	44	41	42
24	---	---	---	35	34	35	41	40	40	42	39	41
25	23	20	21	35	35	35	41	40	41	42	40	41
26	21	20	20	36	35	35	41	40	41	42	41	42
27	22	21	21	37	36	36	41	40	41	41	40	40
28	23	22	22	37	36	36	42	41	41	40	39	40
29	---	---	---	37	36	37	42	41	41	40	40	40
30	25	24	25	37	36	37	41	38	40	40	40	40
31	---	---	---	38	37	37	38	34	35	---	---	---
MONTH	---	---	---	---	---	---	42	34	39	45	36	41

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	10.0	10.0	7.5	6.5	7.0	6.5	6.0	6.5	5.5	5.0	5.0
2	10.0	9.5	10.0	8.0	7.5	7.5	7.0	6.0	6.5	5.0	4.0	4.5
3	9.5	9.0	9.0	7.5	7.0	7.5	6.0	5.5	5.5	4.0	4.0	4.0
4	9.5	9.0	9.0	8.0	7.5	8.0	5.5	5.0	5.5	4.5	4.0	4.0
5	9.0	8.0	8.5	8.0	7.0	7.5	5.0	3.5	4.5	4.0	4.0	4.0
6	9.0	8.5	8.5	7.0	7.0	7.0	4.0	3.5	4.0	5.0	4.0	4.5
7	9.5	9.0	9.0	7.0	6.5	6.5	4.5	4.0	4.5	5.0	5.0	5.0
8	9.5	9.5	9.5	6.5	6.0	6.0	4.5	4.0	4.5	5.0	4.0	4.5
9	9.5	8.5	9.0	6.5	6.5	6.5	4.5	4.5	4.5	4.5	4.0	4.5
10	9.0	8.5	8.5	6.5	6.0	6.5	5.0	4.5	4.5	5.0	4.5	5.0
11	8.5	8.0	8.5	7.0	6.5	7.0	4.5	4.5	4.5	5.0	4.5	4.5
12	9.0	8.5	9.0	7.0	6.5	6.5	5.5	4.5	5.5	5.5	5.0	5.0
13	9.5	9.0	9.0	7.0	7.0	7.0	6.0	5.5	5.5	5.5	5.0	5.0
14	9.5	8.5	9.0	7.5	7.0	7.0	5.5	5.0	5.5	6.0	5.0	5.5
15	8.5	8.0	8.5	8.0	7.5	7.5	5.5	5.0	5.5	5.5	5.0	5.5
16	8.0	7.5	7.5	7.5	7.0	7.0	5.0	5.0	5.0	5.5	4.5	5.0
17	7.5	7.0	7.5	7.0	7.0	7.0	5.5	4.5	5.0	5.0	5.0	5.0
18	8.0	7.0	7.5	7.0	7.0	7.0	5.0	3.5	4.5	5.5	5.0	5.0
19	7.0	6.0	6.5	7.0	7.0	7.0	3.5	1.5	2.5	5.5	5.5	5.5
20	7.5	7.0	7.0	8.0	7.0	7.5	1.5	.0	.5	5.5	5.5	5.5
21	7.5	7.0	7.5	8.0	7.0	7.5	.5	.0	.0	5.5	5.0	5.0
22	7.5	7.0	7.5	7.0	6.5	6.5	.5	.0	.0	5.0	3.5	4.5
23	7.5	7.0	7.5	7.0	6.5	7.0	.5	.0	.5	4.5	3.5	4.0
24	8.0	7.5	8.0	7.0	6.5	7.0	1.0	.5	.5	---	---	---
25	8.5	8.0	8.5	7.5	7.0	7.0	3.0	.5	1.5	---	---	---
26	8.5	8.0	8.0	7.5	7.0	7.5	4.0	3.0	3.5	---	---	---
27	8.5	8.0	8.0	7.0	7.0	7.0	4.0	3.5	4.0	---	---	---
28	8.0	7.5	8.0	7.0	6.5	6.5	4.5	4.0	4.5	5.0	4.0	4.5
29	7.5	6.0	6.5	6.5	6.0	6.0	5.5	4.5	5.5	5.0	4.5	5.0
30	6.0	5.5	6.0	6.5	6.0	6.0	5.5	5.5	5.5	5.0	4.5	5.0
31	6.5	5.5	6.0	---	---	---	5.5	5.0	5.5	4.5	4.0	4.0
MONTH	10.5	5.5	8.1	8.0	6.0	6.9	7.0	.0	4.0	---	---	---

SANDY RIVER BASIN

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.5	4.0	4.5	4.0	4.5	5.0	4.0	4.5	7.0	5.5	6.0
2	4.0	4.0	4.0	5.0	4.0	4.5	5.0	4.0	4.5	5.5	4.5	5.0
3	4.5	4.0	4.5	4.5	3.0	4.0	4.0	2.5	3.0	5.0	4.5	4.5
4	4.5	4.0	4.0	3.5	3.0	3.5	4.0	3.0	3.5	4.5	4.0	4.5
5	4.0	3.5	4.0	4.0	3.0	3.5	4.5	3.0	4.0	7.0	4.5	5.5
6	5.0	4.0	4.5	4.0	3.0	3.5	5.0	3.5	4.0	6.5	5.5	6.0
7	4.5	3.5	4.0	4.5	4.0	4.0	5.0	4.0	4.5	5.5	4.0	5.0
8	4.0	3.0	3.5	4.5	4.0	4.0	4.5	4.0	4.0	4.5	3.5	4.0
9	3.5	3.0	3.5	4.5	3.5	4.0	4.0	3.5	3.5	5.5	4.0	4.5
10	3.0	3.0	3.0	4.5	4.0	4.0	4.5	3.5	4.0	6.0	4.0	5.0
11	3.5	3.0	3.0	4.0	3.5	4.0	6.0	4.0	4.5	6.0	5.0	5.5
12	4.0	3.5	3.5	4.5	4.0	4.5	5.5	4.5	5.0	6.0	5.0	5.5
13	4.0	4.0	4.0	5.0	4.0	4.5	6.0	4.5	5.0	5.5	4.5	5.0
14	4.5	4.0	4.0	5.0	4.5	4.5	6.0	4.0	5.0	6.0	4.5	5.5
15	4.5	4.0	4.5	5.0	4.0	4.5	7.0	4.5	5.5	5.5	5.0	5.5
16	5.0	4.5	4.5	4.5	3.5	4.0	7.5	5.0	6.0	6.5	5.0	6.0
17	4.5	3.5	4.0	5.0	4.0	4.5	7.0	5.0	6.0	6.5	6.0	6.0
18	4.5	4.0	4.0	5.5	4.5	5.0	6.0	5.5	5.5	6.5	5.5	6.0
19	4.5	4.0	4.0	6.0	4.5	5.0	5.5	5.0	5.5	7.5	5.5	6.5
20	4.5	4.0	4.0	6.0	5.0	5.5	5.5	5.0	5.0	6.5	5.5	6.0
21	5.0	4.5	4.5	6.0	5.5	5.5	5.0	4.0	4.5	8.5	6.0	7.0
22	5.0	4.0	4.5	6.0	4.5	5.5	6.0	4.5	5.0	9.5	6.0	7.5
23	5.0	4.0	4.5	6.0	4.5	5.5	7.5	4.5	6.0	10.5	7.0	8.5
24	5.0	5.0	5.0	5.5	5.0	5.5	8.0	5.5	6.5	10.5	7.5	9.0
25	5.0	4.0	4.5	5.5	5.0	5.5	7.0	5.5	6.0	9.5	7.5	8.5
26	4.5	4.0	4.5	5.0	3.0	4.0	5.5	5.0	5.0	9.5	6.5	8.0
27	4.5	4.5	4.5	3.5	2.5	3.0	5.0	4.5	4.5	10.0	7.5	8.5
28	5.0	4.0	4.5	4.0	3.5	3.5	5.5	4.0	4.5	9.5	7.5	8.5
29	---	---	---	3.5	2.5	3.0	7.0	4.0	5.5	10.0	7.5	9.0
30	---	---	---	4.0	2.5	3.5	7.5	5.0	6.5	10.0	7.5	9.0
31	---	---	---	4.5	4.0	4.0	---	---	---	9.5	8.5	8.5
MONTH	5.0	3.0	4.1	6.0	2.5	4.3	8.0	2.5	4.9	10.5	3.5	6.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	8.5	7.0	7.5	9.5	9.5	9.5	14.0	13.0	13.5	10.5	10.0	10.5
2	7.0	6.0	6.5	9.5	8.5	8.5	14.5	13.0	13.5	10.5	9.5	10.0
3	7.5	6.0	7.0	9.0	8.0	8.5	14.5	13.0	14.0	10.5	9.5	10.5
4	7.5	7.0	7.5	9.0	8.5	8.5	15.0	13.5	14.0	11.0	10.0	10.5
5	8.0	7.5	7.5	11.0	7.5	9.0	14.0	13.0	14.0	11.5	10.5	11.0
6	7.5	6.5	7.0	11.0	9.5	10.5	13.0	12.5	13.0	11.5	11.0	11.0
7	7.0	6.0	6.5	11.0	9.5	10.0	12.5	12.0	12.5	11.0	10.0	10.5
8	7.0	6.0	6.5	11.5	8.5	10.0	13.5	12.0	12.5	11.0	10.0	10.5
9	8.0	6.5	7.0	12.5	10.0	11.0	14.0	12.5	13.0	11.0	10.5	11.0
10	9.0	6.0	7.5	13.0	11.0	12.0	14.5	13.0	13.5	11.0	10.0	10.5
11	10.5	7.5	9.0	13.5	11.5	12.5	14.0	12.5	13.0	11.0	10.0	10.5
12	11.0	9.0	10.0	13.5	12.0	13.0	13.0	12.0	12.5	11.0	10.0	10.5
13	12.0	10.0	11.0	13.5	12.0	13.0	12.5	12.0	12.0	11.5	10.5	11.0
14	12.5	10.5	11.5	13.0	11.0	11.5	12.0	11.5	11.5	11.5	10.5	11.0
15	12.5	10.5	11.0	12.5	10.5	11.5	12.0	11.5	11.5	11.5	10.5	11.0
16	11.0	10.0	10.5	12.0	11.0	11.5	13.0	11.5	12.0	11.0	10.5	11.0
17	11.5	10.0	11.0	11.0	10.5	10.5	13.5	12.0	13.0	11.0	10.5	10.5
18	11.5	10.5	11.0	12.0	9.5	11.0	13.0	13.0	13.0	11.0	10.0	10.5
19	11.0	10.0	10.5	13.5	11.0	12.0	14.0	12.5	13.0	11.5	10.5	11.0
20	10.5	10.0	10.0	13.5	12.0	13.0	14.0	12.5	13.5	11.5	10.5	11.0
21	10.0	10.0	10.0	13.0	12.0	12.5	14.0	13.0	13.5	11.5	10.5	11.0
22	10.0	9.5	9.5	13.5	12.0	13.0	13.5	12.0	13.0	11.5	10.5	11.0
23	12.0	9.5	10.5	14.0	12.5	13.0	14.0	12.5	13.0	11.0	10.5	11.0
24	11.5	10.0	11.0	13.0	12.0	12.5	14.0	13.0	13.5	11.0	10.0	10.5
25	10.0	8.5	9.0	13.0	11.5	12.0	14.0	13.0	13.5	10.5	10.0	10.5
26	9.0	8.0	8.5	13.5	11.5	12.5	14.0	12.5	13.5	10.0	9.5	9.5
27	9.0	8.0	8.5	14.0	12.5	13.0	14.0	13.0	13.5	9.5	8.5	9.0
28	9.0	8.0	8.5	14.5	12.5	13.5	14.5	13.5	14.0	8.5	7.5	8.0
29	10.5	8.5	9.5	14.5	13.0	13.5	14.0	12.5	13.5	8.5	7.5	8.0
30	10.5	9.5	10.0	14.5	13.0	14.0	12.5	11.0	12.0	8.5	8.0	8.0
31	---	---	---	14.5	13.0	13.5	11.0	10.0	10.5	---	---	---
MONTH	12.5	6.0	9.0	14.5	7.5	11.6	15.0	10.0	13.0	11.5	7.5	10.4

SANDY RIVER BASIN

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14139900 BULL RUN RESERVOIR NUMBER TWO NEAR BULL RUN, OR

LOCATION.--Lat 45°26'55", long 122°08'45", on line between secs.25 and 26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.4 mi northeast of Bull Run, and at mile 6.5.

DRAINAGE AREA.--102 mi².

PERIOD OF RECORD.--December 1961 to current year. Prior to October 1975, monthend contents only.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Portland Water Bureau). Prior to Dec. 31, 1975, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth and rockfill dam with concrete spillway built by Portland Water Bureau. Storage began about Dec. 20, 1961; first filling occurred Dec. 24, 1961. Capacity, 20,990 acre-ft at crest of spillway, elevation, 860.0 ft. Dead storage negligible. Water is used as municipal supply for city of Portland and for power generation by Portland General Electric Co. Midnight readings for Dec. 20, Sept. 15, 16, furnished by Portland General Electric.

COOPERATION.--Capacity table furnished by Portland Water Bureau.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 23,660 acre-ft Dec. 22, 1964, elevation, 866.00 ft; no contents at times during low-flow periods.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,870 acre-ft Dec. 28, elevation, 864.25 ft; minimum contents, 14,620 acre-ft Sept. 30, elevation, 843.88 ft.

Capacity table (elevation, in feet, and capacity in acre-feet)

752	0	830	10,000
770	234	850	16,800
790	1,860	870	25,500
810	5,070		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	857.35	856.81	860.00	860.11	859.23	860.80	859.59	859.67	859.74	859.35	859.67	849.85
2	857.46	856.50	861.64	859.35	859.81	859.71	859.22	859.71	859.53	859.58	859.52	849.63
3	857.89	856.72	860.62	858.96	859.39	859.05	859.19	860.51	859.36	859.34	859.72	849.02
4	857.97	857.09	859.48	859.58	859.60	859.48	859.18	859.82	859.58	859.32	859.64	849.31
5	857.51	857.04	859.06	859.68	858.93	859.62	859.34	859.69	859.11	859.80	859.41	849.61
6	856.91	856.89	859.23	859.09	859.74	859.77	859.28	859.35	859.68	860.33	859.80	849.45
7	856.33	856.69	859.69	859.59	859.89	859.73	859.23	859.54	859.82	860.59	859.69	849.13
8	855.81	856.40	859.56	859.58	859.66	859.62	859.13	859.38	859.59	860.45	859.74	849.24
9	855.50	856.68	859.24	859.52	859.26	859.59	859.25	859.04	859.70	860.35	859.92	849.29
10	855.10	856.91	859.44	859.41	858.83	859.83	859.51	859.62	859.73	860.11	859.78	849.35
11	854.62	856.45	861.46	858.67	859.55	859.57	859.33	859.11	859.52	860.06	859.74	849.36
12	854.10	857.39	861.31	859.22	859.63	859.76	859.42	859.61	858.87	860.14	859.75	849.56
13	853.67	857.87	861.01	859.35	859.81	859.55	859.32	859.45	859.25	859.57	859.84	848.85
14	853.39	859.00	860.17	860.73	859.57	859.38	859.40	859.72	859.53	858.90	859.78	850.08
15	853.11	859.89	859.92	860.92	859.35	859.75	859.42	859.20	859.09	858.86	859.80	850.00
16	853.97	859.90	859.53	860.48	859.30	859.74	859.64	859.26	859.63	858.89	859.74	849.80
17	854.81	859.33	859.53	860.88	859.18	859.27	859.63	859.64	859.82	858.79	859.64	849.08
18	855.83	859.69	859.49	861.00	859.22	859.41	859.19	859.49	859.80	858.89	859.85	849.18
19	856.43	859.05	859.46	860.45	859.62	859.59	858.77	859.70	859.55	859.62	858.78	848.78
20	856.72	861.24	859.41	860.12	859.45	859.40	858.63	859.56	859.06	859.41	857.75	849.57
21	856.89	861.50	859.75	860.51	859.17	859.06	858.42	859.70	859.75	859.41	856.71	849.92
22	856.41	860.97	859.77	860.08	859.28	859.17	858.69	859.36	859.81	859.67	855.62	849.88
23	856.91	860.47	859.39	859.79	861.29	859.60	859.42	859.68	859.71	859.57	854.40	848.99
24	856.92	860.51	859.32	859.60	860.88	859.02	859.38	859.14	859.67	859.51	852.90	847.79
25	856.98	861.26	860.85	859.52	860.24	859.12	859.50	859.28	859.70	859.54	851.23	846.74
26	857.17	861.18	860.68	859.41	859.60	859.69	858.80	858.64	859.77	859.50	849.63	845.66
27	856.69	860.36	863.66	859.58	862.23	859.76	858.82	859.02	859.81	859.46	848.38	844.49
28	856.72	859.33	863.23	859.37	861.54	859.58	859.17	859.00	859.70	859.53	848.36	844.30
29	856.87	858.89	862.16	859.17	---	859.66	858.84	858.77	859.61	859.79	849.42	844.28
30	856.92	859.21	861.30	859.02	---	859.37	859.03	859.33	859.78	859.68	849.77	844.30
31	856.53	---	861.11	859.76	---	859.49	---	859.91	---	859.65	849.89	---
MAX	857.97	861.50	863.66	861.00	862.23	860.80	859.64	860.51	859.82	860.59	859.92	850.08
MIN	853.11	856.40	859.06	858.67	858.83	859.02	858.42	858.64	858.87	858.79	848.36	844.28
(+)	19470	20650	21490	20890	21680	20780	20570	20960	20900	20850	16760	14760
(+)	-390	+1180	+840	-600	+790	-900	-210	+390	-60	-50	-4090	-2000

CAL YR 1998 MAX 863.66 MIN 849.39 AC-FT# +780

WTR YR 1999 MAX 863.66 MIN 844.28 AC-FT# -5100

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

‡ Change in contents, in acre-feet.

14140001 BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'15", long 122°10'40", in NE 1/4 SW 1/4 sec.34, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 1.8 mi downstream from Bull Run Reservoir Number Two, 2.7 mi northeast of Bull Run, and at mile 4.7.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--September 1907 to current year. Records for January 1895 to August 1907, published in WSP 370, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1288: 1910-11, 1913, 1920-23, 1926, 1929. WSP 1318: 1919(M). WSP 1568: 1952. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 567.90 ft above sea level (levels by Portland Water Bureau). Prior to July 27, 1909, nonrecording gage at site 1.5 mi upstream at different datum. July 27, 1909, to Sept. 30, 1959, water-stage recorder at site 2.5 mi upstream at different datums.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1915 by Bull Run Lake capacity, 12,270 acre-ft, since 1929 by Bull Run Reservoir Number One (station 14139000), since 1958 by North Fork Reservoir, capacity, 1,030 acre-ft, and since 1961 by Bull Run Reservoir Number Two (station 14139900). All records given herein include flow diverted from Bull Run Reservoir Number Two for city of Portland, and that used by Portland General Electric Co. for power generation, which returns to Bull Run River downstream from station. Total diversion, 181,500 acre-ft of which 54,150 acre-ft were used for power generation and returned to Bull Run River.

COOPERATION.--Records of daily diversion furnished by Portland Water Bureau.

AVERAGE DISCHARGE.--92 years (water years 1908-99), 779 ft³/s, 98.87 in/yr, 564,400 acre-ft/yr, adjusted for storage in Bull Run Reservoir Number One since 1929 and Bull Run Reservoir Number Two since 1961.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 24,800 ft³/s Dec. 22, 1964, gage height, 17.21 ft, from rating curve extended above 8,800 ft³/s on basis of computation of peak flow over dam; minimum discharge, 1.1 ft³/s Oct. 4, 1974.

Combined flow, maximum discharge, 25,100 ft³/s Dec. 22, 1964; minimum daily, 11 ft³/s Nov. 16, 1987.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 15,900 ft³/s Dec. 28, gage height, 14.69 ft; minimum discharge, 3.1 ft³/s Oct. 1, 2.

Combined flow, maximum discharge, 16,200 ft³/s (of which approximately 172 ft³/s were diverted for Portland water supply) Dec. 28; minimum daily, 142 ft³/s Oct. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	150	1580	2920	697	e3300	621	702	903	525	264	214
2	158	162	4890	1860	1110	e2300	600	1490	789	608	267	248
3	161	160	3440	1420	1440	1800	677	1990	651	657	276	245
4	159	162	1990	782	1130	984	541	1930	481	499	293	253
5	165	235	1410	770	1200	1010	514	1540	828	378	323	256
6	182	267	1000	863	1120	870	516	1300	902	279	272	257
7	165	221	872	780	1810	739	536	1140	708	389	236	282
8	159	214	1160	780	1560	717	579	985	806	448	223	295
9	159	210	929	812	1050	726	496	1000	578	368	237	295
10	158	209	769	811	889	514	473	906	761	380	267	295
11	159	210	2110	749	567	505	484	836	764	313	286	293
12	158	209	4590	688	440	585	570	890	683	284	277	288
13	164	207	3660	e988	528	833	592	1010	543	350	249	295
14	165	206	2680	e2190	671	909	592	994	519	381	237	298
15	156	214	1690	e3790	598	568	579	990	536	241	238	275
16	156	851	1210	2700	591	715	705	813	334	232	241	250
17	154	594	995	2280	998	729	903	1170	343	249	249	241
18	152	872	976	3160	986	615	1170	1630	586	246	267	246
19	152	1230	662	2690	1640	510	907	1080	432	243	272	251
20	154	1740	601	2010	1250	917	1120	753	389	269	248	263
21	152	4760	492	2320	887	991	883	744	337	275	250	265
22	152	3690	431	2030	878	901	695	776	321	257	258	279
23	159	2740	466	1680	e2610	650	481	856	437	260	275	269
24	181	2240	530	1210	e3260	869	633	934	488	246	311	238
25	164	3200	1520	911	2840	716	1030	899	1150	238	337	209
26	151	4050	3030	818	1970	608	1050	859	876	247	326	209
27	159	2870	3780	710	e2780	604	740	689	708	272	341	222
28	164	1860	13300	807	e5290	718	560	602	459	306	349	231
29	151	1340	9080	762	---	693	572	553	507	293	301	236
30	142	1160	5880	806	---	811	544	490	462	279	259	238
31	146	---	3710	592	---	584	---	445	---	262	241	---
TOTAL	4938	36233	79433	45689	40790	27991	20363	30996	18281	10274	8470	7736
MEAN	159	1208	2562	1474	1457	903	679	1000	609	331	273	258
MAX	182	4760	13300	3790	5290	3300	1170	1990	1150	657	349	298
MIN	142	150	431	592	440	505	473	445	321	232	223	209
AC-FT	9790	71870	157600	90620	80910	55520	40390	61480	36260	20380	16800	15340
MEAN†	322	1384	2586	1448	1496	867	675	1066	609	288	126	98.5
CFSM†	3.01	12.9	24.2	13.5	14.0	8.01	6.31	9.97	5.69	2.69	1.18	0.92
IN.†	3.47	14.43	27.89	15.61	14.57	9.34	7.04	11.49	6.35	3.10	1.36	1.03
AC-FT†	19775	82340	159100	89040	83100	53280	40170	65560	36210	17690	7770	5860

CAL YR 1998 TOTAL 308022 MEAN 844 MAX 13300 MIN 142 AC-FT 611000 MEAN† 846 CFSM† 7.91 IN.† 107.38 AC-FT† 612610
WTR YR 1999 TOTAL 331194 MEAN 907 MAX 13300 MIN 142 AC-FT 656900 MEAN† 911 CFSM† 8.52 IN.† 115.65 AC-FT† 659830

e Estimated

† Adjusted for change in contents in Bull Run Reservoir Number One and Bull Run Reservoir Number Two.

14141500 LITTLE SANDY RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°24'55", long 122°10'20", in NE 1/4 NE 1/4 sec.10, T.2 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 0.25 mi upstream from Portland General Electric Co. dam and tunnel from Sandy River, 3.0 mi east of Bull Run, and at mile 1.95.

DRAINAGE AREA.--22.3 mi².

PERIOD OF RECORD.--May to July 1911, October 1911 to March 1912, June 1912 to April 1913, July 1919 to current year. Monthly discharge only for some periods in water years 1911-13, published in WSP 1318.

REVISED RECORDS.--WSP 1154: 1949. WSP 1248: Drainage area. WSP 1288: 1912, 1920-21(M), 1922-23, 1931, 1945. WSP 1318: 1920. WDR OR-82-2: 1972(P), 1974-76(P), 1978-81(P).

GAGE.--Water-stage recorder. Elevation of gage is 720 ft above sea level, from topographic map. May 23, 1911, to Apr. 29, 1913, nonrecording gage at site 0.85 mi downstream at different datum, 0.5 mi downstream from Sandy River diversion tunnel. July 1, 1919, to Sept. 30, 1931, water-stage recorder at site 0.1 mi downstream at different datum. Oct 1, 1931, to Nov. 3, 1967, at site 0.1 mi downstream at datum 712 ft above sea level. Nov. 4, 1967, to Aug. 8, 1971, water-stage recorder at site 0.1 mi downstream at datum 697.44 ft above sea level (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--80 years (water years 1920-99), 145 ft³/s, 88.22 in/yr, 104,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,320 ft³/s Nov. 20, 1921, gage height, 9.18 ft, site and datum then in use, from rating curve extended above 2,200 ft³/s; minimum discharge, 8.0 ft³/s Aug. 20, Sept. 16, 17, 1940.

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)
Dec. 27	2130	*1,920	*5.39	No other peak greater than base discharge.			
Minimum discharge, 14 ft ³ /s several days in September.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	58	263	671	108	566	112	241	197	104	25	25
2	22	73	674	405	162	379	110	368	143	108	25	21
3	72	57	423	274	164	305	111	515	109	129	24	20
4	97	105	272	203	147	239	104	415	99	117	24	20
5	42	257	210	158	128	193	99	292	177	105	24	20
6	31	186	179	137	183	162	98	260	161	89	25	20
7	26	133	174	236	240	141	95	262	142	92	29	19
8	26	110	181	180	190	129	102	207	187	82	33	18
9	48	97	152	141	152	120	96	177	156	71	26	17
10	62	92	146	135	127	108	94	158	124	63	24	16
11	45	85	507	127	111	101	95	153	111	59	23	16
12	34	71	638	199	101	102	104	229	104	55	23	16
13	45	64	517	250	98	158	111	210	98	51	23	16
14	106	59	412	452	94	152	114	204	92	48	30	16
15	103	78	276	685	86	139	119	200	88	46	28	16
16	82	110	215	472	96	129	145	172	81	43	23	16
17	60	98	198	483	167	115	190	307	73	42	22	16
18	60	175	172	604	183	111	212	341	68	41	22	16
19	47	155	140	446	253	114	192	289	63	38	21	15
20	39	362	e105	359	193	132	266	219	60	36	21	15
21	33	563	e90	406	150	150	182	178	69	35	21	15
22	30	404	e85	352	166	138	135	174	74	34	21	14
23	28	342	e80	295	735	143	124	213	64	32	20	14
24	26	262	89	232	565	126	153	242	95	32	20	14
25	30	383	325	189	416	124	202	217	254	31	20	14
26	32	489	426	155	273	122	217	158	192	30	20	16
27	32	344	802	131	750	114	147	145	130	29	20	15
28	79	242	1620	126	1020	103	121	135	104	28	20	14
29	64	197	1240	127	---	118	111	124	89	27	20	14
30	46	194	1070	133	---	125	112	113	90	27	24	14
31	40	---	905	120	---	121	---	137	---	26	36	---
TOTAL	1503	5845	12586	8883	7058	4979	4073	7055	3494	1750	737	498
MEAN	48.5	195	406	287	252	161	136	228	116	56.5	23.8	16.6
MAX	106	563	1620	685	1020	566	266	515	254	129	36	25
MIN	16	57	80	120	86	101	94	113	60	26	20	14
AC-FT	2980	11590	24960	17620	14000	9880	8080	13990	6930	3470	1460	988
CFSM	2.17	8.74	18.2	12.8	11.3	7.20	6.09	10.2	5.22	2.53	1.07	.74
IN.	2.51	9.75	21.00	14.82	11.77	8.31	6.79	11.77	5.83	2.92	1.23	.83

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1999, BY WATER YEAR (WY)

	MEAN	87.5	210	247	239	211	186	194	163	102	40.0	23.3	38.2
MAX	271	588	585	589	452	407	325	328	268	121	96.1	184	184
(WY)	1960	1956	1965	1953	1961	1932	1920	1945	1933	1983	1968	1927	1927
MIN	10.6	14.3	57.5	45.9	59.2	49.9	54.0	55.8	19.2	13.8	10.1	12.4	12.4
(WY)	1988	1930	1977	1937	1977	1941	1941	1947	1992	1940	1940	1938	1938

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1920 - 1999

ANNUAL TOTAL	51383	58461	145
ANNUAL MEAN	141	160	123
HIGHEST ANNUAL MEAN			87.6
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	1620	Dec 28	3500
LOWEST DAILY MEAN	12	Sep 9	8.0
ANNUAL SEVEN-DAY MINIMUM	12	Sep 9	9.0
ANNUAL RUNOFF (AC-FT)	101900	116000	104900
ANNUAL RUNOFF (CFSM)	6.31	7.18	6.49
ANNUAL RUNOFF (INCHES)	85.72	97.52	88.22
10 PERCENT EXCEEDS	307	360	304
50 PERCENT EXCEEDS	97	111	97
90 PERCENT EXCEEDS	16	21	18

e Estimated

SANDY RIVER BASIN

14142500 SANDY RIVER BELOW BULL RUN RIVER. NEAR BULL RUN. OR

LOCATION.--Lat 45°26'57", long 122°14'38", in SW 1/4 sec.30, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, on left bank 0.1 mi downstream from Bull Run River, 0.2 mi downstream from Dodge Park, 400 ft below city of Portland water conduit crossing Sandy River, and at mile 18.4.

DRAINAGE AREA. -- 436 mi².

PERIOD OF RECORD.--April 1910 to September 1914, October 1929 to September 1966, May 1984 to current year.
Monthly discharge only for some periods during the 1911, 1912, and 1930 water years, published in WSP 1318.

REVISED RECORDS.--WDB OR-96-1: 1986 (P).

GAGE.--Water-stage recorder. Elevation of gage is 240 ft above sea level, from topographic map. April 1910 to September 1914, staff gage at present site at different datum. October 1929 to September 1966, water-stage recorder at site 0.8 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1915 by Bull Run Lake, since 1929 by Bull Run Reservoir Number One (station 14139000), and since 1961 by Bull Run Reservoir Number Two (station 14139900). Some fluctuation caused by Bull Run powerplant of Portland General Electric Company. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--56 years (water years 1911-14, 1930-66, 1985-99) 2,309 ft³/s, 1,673,000 acre-ft/yr.
15 years (water years 1985-99), 2,183 ft³/s, 1,581,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,400 ft³/s Dec. 22, 1964, gage height, 22.3 ft, site and datum then in use; minimum discharge, 45 ft³/s Sept. 26, 1962, minimum daily, 63 ft³/s Oct. 12, Nov. 9, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,500 ft³/s Dec. 28, gage height, 19.38 ft; minimum discharge, 228 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	323	605	3670	9560	2100	9310	1890	2380	3640	1780	662	521
2	355	566	11900	6320	2850	6160	1830	4000	3080	1860	659	477
3	469	489	8620	4810	3810	5350	1970	5430	2490	2060	620	452
4	912	548	5230	3410	3140	3810	1750	5290	2130	1880	686	438
5	529	1080	3820	2980	2960	3360	1650	4160	2680	1610	770	435
6	427	1270	3040	2790	3070	2890	1620	3740	2960	1410	698	441
7	380	1010	2690	2860	4640	2520	1620	3590	2560	1430	740	448
8	379	896	3080	2600	3860	2340	1750	3150	2700	1430	746	455
9	467	847	2510	2410	3030	2240	1610	2950	2350	1310	652	458
10	604	825	2240	2370	2540	1880	1550	2670	2370	1230	634	461
11	488	729	5750	2270	1990	1750	1550	2540	2290	1180	649	452
12	429	693	10400	2260	1710	1770	1720	2810	2220	1110	617	439
13	465	681	8850	2970	1730	2320	1810	3190	2170	1100	592	433
14	599	678	6810	4970	1890	2470	1840	3080	2250	1150	617	421
15	863	722	4670	10900	1720	1990	1800	3170	2450	965	593	381
16	741	1610	3560	7640	1740	2120	2090	2880	2080	914	582	384
17	618	1400	3060	6680	2680	2030	2680	3600	1910	891	565	391
18	581	1900	2860	9010	2770	1820	3320	4660	2060	836	578	390
19	526	2370	2270	7440	3930	1730	2970	3890	1770	820	558	394
20	477	3870	1930	5920	3160	2360	3360	3220	1650	836	533	409
21	422	12200	1610	6450	2520	2820	2890	2930	1630	853	533	392
22	390	8710	1490	6060	2500	2630	2250	2940	1660	755	510	357
23	376	6260	1460	5210	8030	2290	1950	3300	1690	798	502	378
24	377	5670	1510	4030	8380	2380	2200	4000	1860	784	526	388
25	380	6940	3590	3280	6710	2190	3090	4190	3280	733	568	391
26	384	9110	6720	2830	4980	2140	3210	3600	2840	712	572	373
27	439	6710	9920	2520	8310	2050	2570	3100	2290	720	579	389
28	541	4540	34500	2540	15900	2070	2140	2930	1780	733	580	345
29	556	3490	25500	2490	---	2200	1960	2760	1730	726	568	341
30	433	3220	16800	2500	---	2370	1900	2540	1700	702	619	345
31	384	---	12000	2150	---	1980	---	2400	---	672	679	---
TOTAL	15314	89639	212060	140230	112650	85340	64540	105090	68270	33990	18987	12379
MEAN	494	2988	6841	4524	4023	2753	2151	3390	2276	1096	612	413
MAX	912	12200	34500	10900	15900	9310	3360	5430	3640	2060	770	521
MIN	323	489	1460	2150	1710	1730	1550	2380	1630	672	502	341
AC-FT	30380	177800	420600	278100	223400	169300	128000	208400	135400	67420	37660	24550

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1999, BY WATER YEAR (WY)

MEAN	949	3352	3524	3457	3700	2928	3027	2290	1497	719	452	421
MAX	2077	7882	7523	5612	8793	5221	4010	3390	2465	1212	620	812
(WY)	1996	1996	1997	1997	1996	1997	1988	1999	1985	1993	1993	1985
MIN	242	354	1568	1204	1196	1183	1782	998	479	390	308	310
(WY)	1988	1994	1987	1985	1993	1992	1988	1992	1992	1992	1992	1994

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1985 - 1999
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ANNUAL TOTAL	843104			958489					
ANNUAL MEAN	2310			2626			2183		
HIGHEST ANNUAL MEAN							3456		1996
LOWEST ANNUAL MEAN							1463		1994
HIGHEST DAILY MEAN	34500	Dec 28		34500	Dec 28		57500	Feb 7	1996
LOWEST DAILY MEAN	310	Sep 11		323	Oct 1		190	Oct 9	1990
ANNUAL SEVEN-DAY MINIMUM	323	Sep 9		367	Sep 24		232	Oct 15	1987
ANNUAL RUNOFF (AC-FT)	1672000			1901000			1581000		
10 PERCENT EXCEEDS	4620			5530			4520		
50 PERCENT EXCEEDS	1610			1970			1550		
90 PERCENT EXCEEDS	391			440			358		

COLUMBIA RIVER MAIN STEM

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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 sea level. Prior to February 1998, datum of gage was sea level.

REMARKS.--Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant operations at Bonneville Dam and tides.

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 gage height, 15.00 ft Dec. 30, minimum, 0.06 ft Oct. 29.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	3.76	.95	2.16	4.39	.97	2.58	8.48	7.00	7.70	14.13	13.00	13.44
2	3.94	.81	2.48	4.87	1.35	2.94	10.35	7.51	9.14	13.00	11.34	12.11
3	4.51	1.39	2.85	5.20	1.71	3.24	10.85	9.69	10.17	11.34	10.66	10.96
4	4.34	1.03	2.65	5.87	1.83	3.59	10.55	9.78	10.16	10.84	10.00	10.42
5	4.81	1.20	2.85	6.24	2.65	4.15	10.00	9.08	9.62	10.00	8.91	9.33
6	5.26	1.63	3.23	6.36	2.90	4.30	9.28	8.00	8.57	9.11	8.39	8.70
7	5.89	2.19	3.73	6.22	3.08	4.32	8.56	7.16	7.76	8.54	7.83	8.12
8	5.62	2.24	3.68	5.40	3.02	4.01	8.30	7.40	7.84	7.91	7.17	7.46
9	5.28	1.86	3.27	---	2.48	---	7.95	7.34	7.62	7.90	7.12	7.49
10	4.91	1.84	3.11	---	1.99	---	7.59	6.82	7.11	7.73	7.03	7.34
11	4.26	1.45	2.73	4.07	1.74	2.88	7.12	6.28	6.70	7.48	6.15	6.88
12	4.15	1.06	2.47	4.04	1.45	2.67	7.67	6.55	7.08	6.87	5.50	6.16
13	4.15	1.71	2.73	4.66	1.79	3.05	8.61	7.55	8.08	7.12	5.70	6.39
14	3.79	1.42	2.60	4.96	2.04	3.32	8.27	7.65	8.01	8.54	6.61	7.61
15	4.04	1.72	2.88	5.73	2.57	3.88	7.82	6.92	7.49	8.93	7.80	8.30
16	3.69	1.23	2.49	5.35	2.75	3.87	7.23	6.43	6.91	10.53	8.35	9.48
17	4.19	1.18	2.56	5.53	2.78	3.91	7.22	6.21	6.63	11.20	10.07	10.61
18	3.96	1.29	2.54	5.20	2.60	3.66	6.87	5.79	6.25	12.87	11.01	12.01
19	3.61	.68	2.09	5.25	2.40	3.50	6.91	5.47	6.06	13.31	12.70	12.99
20	3.60	.56	1.90	6.25	2.39	4.11	6.27	5.27	5.90	13.19	12.45	12.88
21	4.25	.86	2.34	7.48	4.16	5.84	6.19	4.36	5.19	13.39	12.80	13.17
22	4.50	1.20	2.62	7.24	5.93	6.58	6.16	4.86	5.46	13.44	12.92	---
23	4.46	1.26	2.56	7.05	6.00	6.47	6.34	5.07	5.68	13.75	13.41	13.60
24	3.94	1.16	2.44	7.51	6.41	6.98	6.23	4.97	5.57	13.74	13.25	13.51
25	3.94	---	---	8.58	6.44	7.38	6.11	4.56	5.28	13.25	11.75	12.34
26	3.66	.71	2.00	9.57	8.56	9.19	6.04	4.62	5.21	11.75	10.31	11.13
27	3.37	.74	2.06	9.53	8.65	9.04	7.10	4.00	5.22	10.31	9.63	9.99
28	2.68	.55	1.68	8.72	7.70	8.17	12.05	7.10	9.62	10.80	9.63	10.18
29	2.77	.06	1.37	8.20	7.16	7.66	14.40	12.05	13.57	11.23	10.28	10.68
30	3.20	.16	1.65	8.23	7.07	7.58	15.00	14.40	14.74	11.36	10.67	10.97
31	3.95	.51	2.13	---	---	---	14.83	14.13	14.46	10.80	9.68	10.25
MONTH	5.89	---	---	---	.97	---	15.00	4.00	7.90	14.13	5.50	---

COLUMBIA RIVER MAIN STEM

14144700 COLUMBIA RIVER AT VANCOUVER, WA--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.08	9.03	9.48	14.56	13.70	14.10	11.28	10.24	10.83	10.08	9.04	9.53
2	10.19	9.07	9.52	13.79	13.48	13.62	10.31	9.51	9.91	9.54	8.84	9.21
3	10.09	8.84	---	14.37	13.46	14.04	9.58	8.22	8.88	10.12	9.22	9.76
4	10.94	9.30	10.16	14.38	13.72	14.02	9.10	8.37	8.69	10.49	9.74	10.10
5	10.62	9.14	9.68	13.79	13.36	13.57	8.84	8.07	8.42	10.56	9.68	10.15
6	10.21	9.04	9.56	13.63	12.54	13.08	8.46	7.80	8.10	10.20	9.47	9.86
7	11.19	10.07	10.67	12.54	11.23	11.85	7.83	6.52	7.09	9.77	9.21	9.56
8	11.56	11.03	11.25	11.23	9.35	10.18	7.52	6.52	7.08	9.31	8.15	8.60
9	11.70	11.32	11.56	9.35	7.83	8.51	6.84	5.95	6.46	8.48	7.34	7.92
10	11.32	10.44	10.98	8.63	7.89	8.28	6.67	5.78	6.25	8.31	7.69	8.01
11	10.44	9.24	9.92	9.22	8.60	8.85	6.52	5.00	6.01	8.89	7.84	8.39
12	9.50	8.47	9.24	8.64	7.32	7.87	5.83	4.54	5.26	8.39	7.03	7.69
13	8.58	7.72	8.26	8.35	7.40	7.88	5.95	4.88	5.39	7.94	6.72	7.30
14	8.56	7.58	7.98	8.51	7.47	8.12	7.06	4.92	6.31	8.38	7.08	7.91
15	8.24	7.20	7.70	8.28	7.40	7.82	7.40	5.99	6.58	8.97	7.64	8.14
16	8.59	7.06	7.72	8.76	7.68	8.34	7.42	5.83	6.50	8.87	7.52	8.18
17	8.81	7.23	7.89	8.79	7.84	8.36	7.25	5.18	6.09	9.27	7.94	8.54
18	9.18	7.55	8.17	9.00	7.97	8.44	7.71	5.54	6.72	9.63	8.36	9.06
19	10.12	8.69	9.45	8.65	7.64	8.16	7.44	6.15	6.79	9.51	8.76	9.12
20	10.41	9.51	9.93	8.88	7.75	8.25	8.04	6.76	7.32	9.61	9.08	9.35
21	9.91	9.11	9.46	8.88	7.67	8.18	---	7.54	---	9.68	8.96	9.34
22	9.35	8.43	8.88	8.94	7.70	8.20	---	---	---	9.32	8.16	8.75
23	10.03	8.28	9.16	8.60	7.51	8.00	---	---	---	8.65	7.97	8.40
24	12.02	10.03	11.12	8.94	7.87	8.37	---	---	---	8.44	7.77	8.11
25	12.31	11.54	12.01	9.04	8.33	8.64	---	---	---	8.80	7.96	8.42
26	12.62	12.24	12.43	9.10	8.51	8.81	---	---	---	10.18	8.80	9.65
27	13.23	12.50	12.83	9.47	8.89	9.19	---	---	---	11.73	10.18	11.14
28	14.60	13.23	14.04	10.20	8.95	9.85	9.89	---	---	12.57	11.73	12.34
29	---	---	---	11.00	10.13	10.68	10.55	9.77	10.26	12.72	12.14	12.47
30	---	---	---	11.18	10.51	10.80	9.97	9.43	9.74	12.16	11.73	11.94
31	---	---	---	11.07	10.46	10.79	---	---	---	11.88	11.25	11.58
MONTH	14.60	7.06	---	14.56	7.32	9.83	---	---	---	12.72	6.72	9.31

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.41	11.06	11.21	9.96	8.93	---	5.71	3.71	4.77	5.91	3.65	4.52
2	11.85	11.28	11.55	9.17	8.36	8.78	5.64	3.96	4.96	5.51	3.09	4.22
3	12.19	11.69	11.97	8.73	7.89	8.38	5.80	3.20	4.29	5.20	1.83	3.13
4	12.20	11.94	12.06	8.30	7.52	7.96	6.55	4.32	4.96	5.12	2.68	3.49
5	11.98	11.49	11.63	7.87	6.50	7.19	6.56	4.71	5.59	5.40	2.36	3.57
6	11.98	11.77	11.87	7.37	6.26	6.88	6.41	4.58	5.21	4.92	1.27	2.80
7	11.89	---	---	7.11	5.50	---	6.76	4.65	5.45	4.16	1.03	2.55
8	---	10.80	---	7.05	6.09	6.46	6.48	4.17	5.08	4.81	1.74	3.52
9	11.08	10.43	10.74	7.57	6.47	6.86	6.59	4.17	5.14	5.83	2.73	4.04
10	10.92	10.51	10.70	7.86	5.96	6.81	6.76	4.18	5.50	4.90	---	---
11	11.11	9.88	10.54	7.65	6.06	6.96	7.37	4.99	5.94	5.02	2.72	3.84
12	10.42	9.49	9.91	8.61	6.80	7.88	6.78	4.76	5.65	4.39	1.81	3.16
13	10.80	9.23	10.04	8.72	6.87	7.68	6.98	5.13	6.06	4.61	1.42	2.90
14	10.39	9.09	9.78	8.05	6.62	7.34	7.16	5.80	6.43	4.57	1.64	2.86
15	11.17	9.87	---	8.81	7.31	8.12	6.59	5.30	6.03	4.06	1.32	2.57
16	10.45	9.73	10.10	9.00	7.25	8.18	6.09	3.96	5.09	3.91	1.41	2.36
17	11.93	10.45	11.07	7.89	6.74	7.36	5.82	4.04	4.84	3.65	1.57	2.36
18	12.16	11.49	11.87	7.33	6.15	6.70	5.74	4.33	4.95	3.51	1.80	2.43
19	11.55	10.80	11.20	7.33	6.00	6.82	5.77	4.27	4.81	3.44	1.24	2.04
20	11.02	10.58	10.75	6.73	5.01	5.68	5.81	3.83	4.62	3.11	.36	1.73
21	10.91	10.53	10.74	6.39	4.80	---	5.33	4.19	4.68	3.59	1.28	2.55
22	10.71	9.79	10.20	6.20	5.37	5.68	5.27	3.20	4.00	4.48	2.17	3.28
23	10.29	9.72	9.98	6.43	4.60	5.33	4.76	2.55	3.67	5.00	2.62	3.89
24	10.98	10.16	10.66	6.06	4.60	5.19	5.36	3.32	4.20	4.74	2.10	3.51
25	11.21	10.09	10.70	6.08	4.91	5.52	5.48	3.21	4.29	5.31	2.48	3.76
26	10.30	9.80	10.06	6.97	5.50	6.15	5.92	3.53	4.64	4.93	1.77	3.19
27	10.40	9.95	10.16	6.59	4.64	5.51	6.16	4.03	5.26	4.77	1.55	3.03
28	10.30	8.96	9.61	6.46	4.41	5.38	6.67	4.63	5.60	3.99	1.98	2.72
29	9.45	8.50	8.93	6.73	5.01	6.07	6.28	4.37	5.21	---	1.49	---
30	9.65	8.68	9.31	7.12	5.04	6.02	5.34	2.92	4.21	4.93	1.68	2.92
31	---	---	---	5.89	4.11	5.08	5.58	2.76	4.01	---	---	---
MONTH	---	---	---	9.96	4.11	---	7.37	2.55	5.00	---	---	---

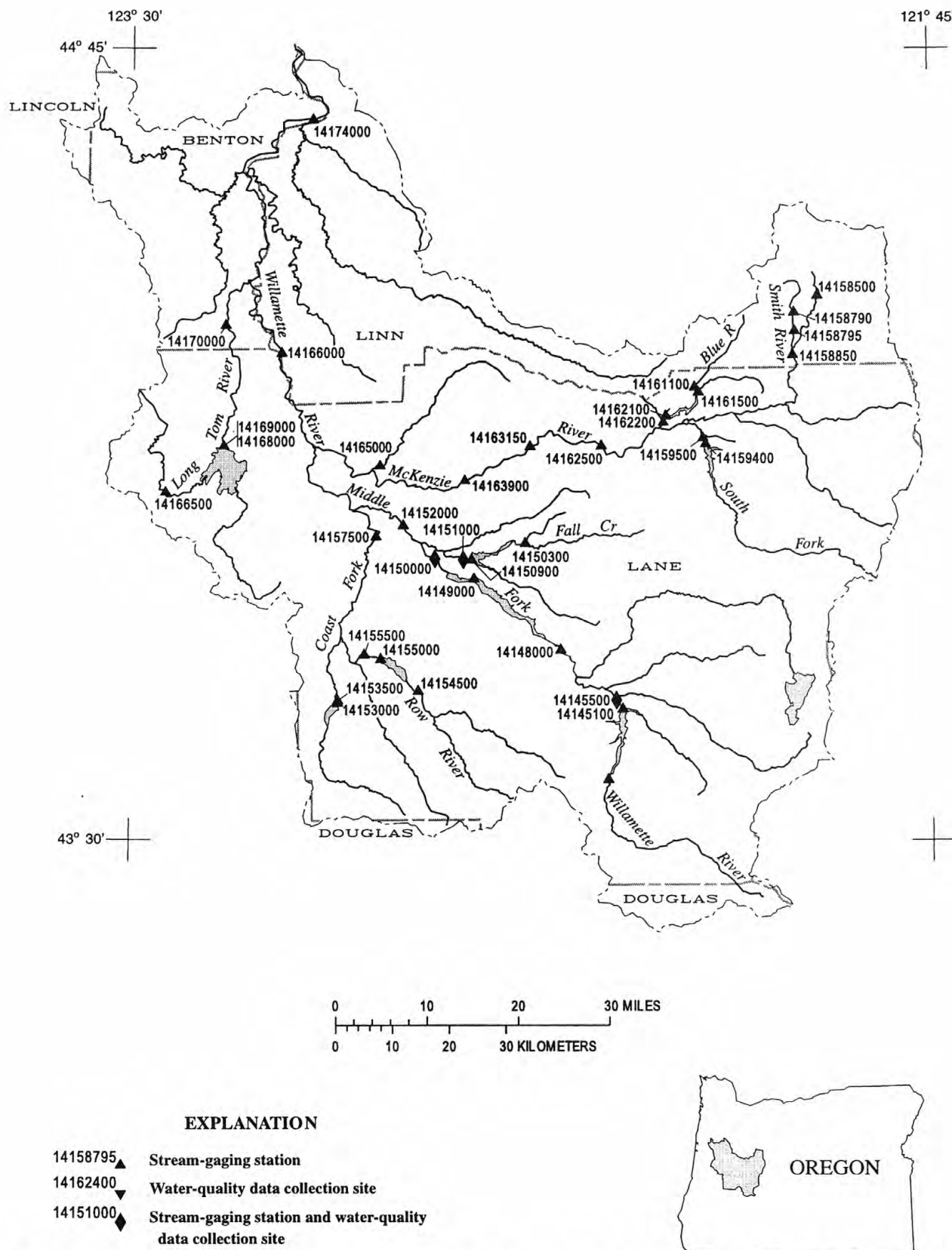


Figure 21. Location of surface-water and water-quality stations in the Willamette River Basin upstream from the Luckiamute River..

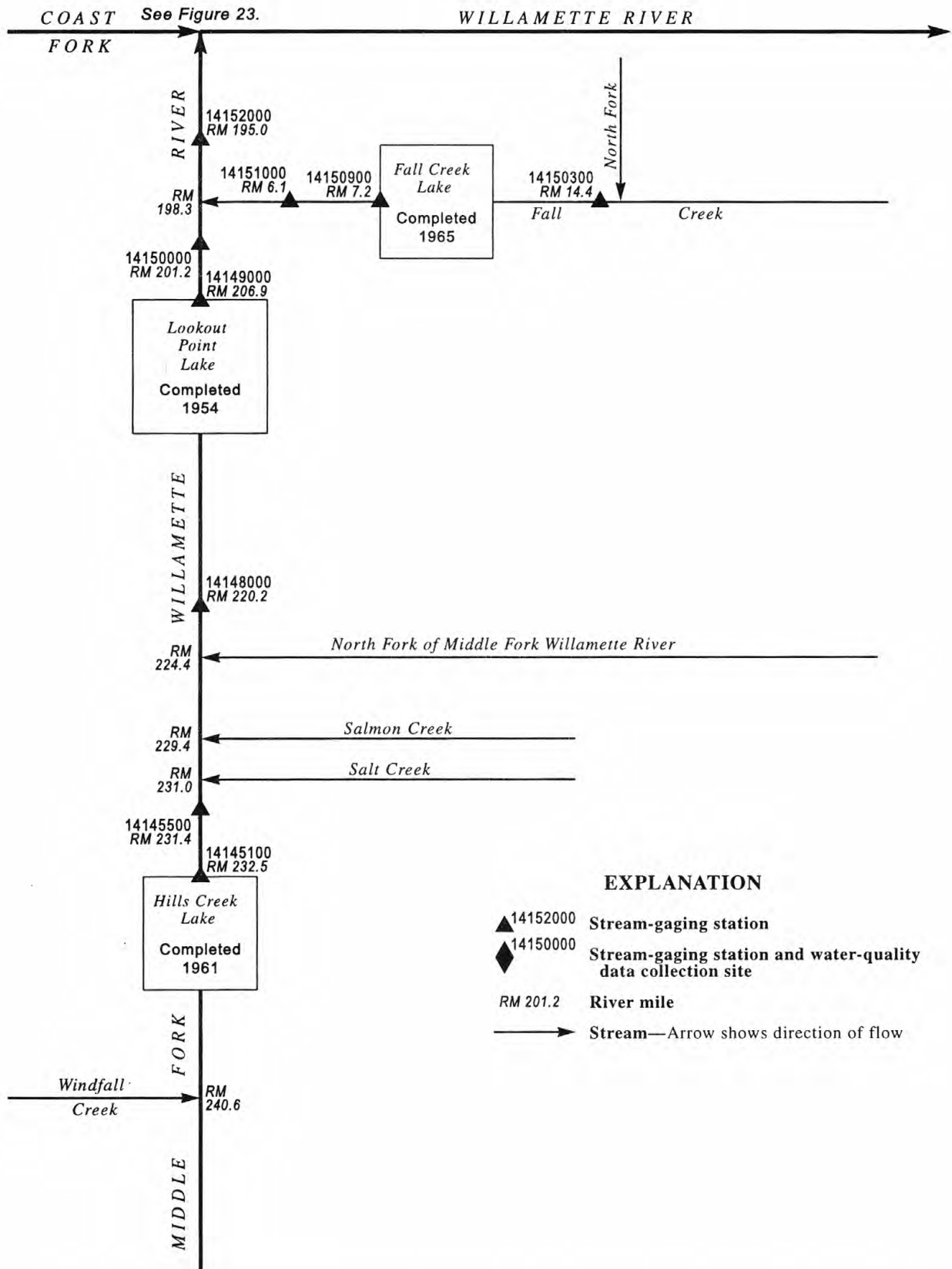


Figure 22. Schematic diagram showing gaging stations in the Middle Fork Willamette River Basin..

WILLAMETTE RIVER BASIN

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14145100 HILLS CREEK LAKE NEAR OAKRIDGE, OR

LOCATION.--Lat 43°42'30", long 122°25'25", in NW 1/4 sec.35, T.21 S., R.3 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, near right end of Hills Creek Dam on Middle Fork Willamette River, 600 ft downstream from Hills Creek, 3.5 mi southeast of Oakridge, and at mile 232.5.

DRAINAGE AREA.--389 mi².

PERIOD OF RECORD.--August 1961 to current year. Prior to October 1971, published as Hills Creek Reservoir near Oakridge.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway completed in 1961 by the Corps of Engineers; storage began August 1961. Total capacity is 355,600 acre-ft at elevation 1,543.0 ft, top of spillway gates, and usable capacity is 248,900 acre-ft between elevations 1,414.0 ft, minimum power pool, and 1,543.0 ft. Reservoir used for flood control and power generation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 354,200 acre-ft June 25, 1971, elevation, 1,542.52 ft; minimum contents, 104,800 acre-ft Jan. 2, 1969, elevation, 1,412.52 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 350,600 acre-ft Aug. 7, elevation, 1,541.20 ft; minimum contents, 157,800 acre-ft Dec. 25, elevation, 1,449.53 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,410	101,500	1,460	174,900	1,520	297,200
1,420	114,600	1,480	211,000	1,540	347,300
1,440	143,000	1,500	251,900	1,544	358,500

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1519.06	1489.04	1483.27	1469.78	1456.65	1505.16	1514.71	1531.43	1540.87	1541.04	1540.95	1540.14
2	1518.16	1488.01	1489.17	1467.95	1457.26	1505.30	1515.34	1532.54	1540.86	1540.94	1540.98	1540.11
3	1517.24	1486.96	1491.44	1465.65	1457.95	1504.56	1515.99	1533.53	1540.83	1540.91	1540.98	1540.10
4	1516.32	1485.99	1489.77	1463.24	1458.64	1503.35	1516.52	1533.83	1540.79	1540.98	1540.97	1540.10
5	1515.42	1485.12	1487.22	1460.38	1459.33	1502.23	1517.08	1533.99	1540.86	1540.99	1541.03	1540.12
6	1514.45	1484.19	1483.83	1458.51	1461.65	1502.29	1517.57	1534.29	1540.83	1540.99	1541.16	1540.13
7	1513.54	1483.29	1480.23	1457.76	1466.01	1502.97	1518.11	1534.76	1540.82	1541.04	1541.18	1539.79
8	1512.66	1482.39	1476.36	1456.99	1468.41	1503.63	1518.82	1535.22	1540.78	1541.04	1541.06	1539.04
9	1511.77	1481.40	1471.15	1455.87	1469.88	1504.18	1519.49	1535.69	1540.76	1541.04	1541.04	1538.30
10	1510.87	1480.50	1465.55	1454.72	1470.87	1504.60	1520.18	1536.01	1540.82	1541.04	1541.05	1537.57
11	1509.92	1479.59	1460.77	1453.55	1471.58	1504.94	1520.87	1536.42	1540.94	1541.06	1541.05	1536.84
12	1508.97	1478.57	1457.99	1452.25	1472.17	1505.35	1521.63	1537.08	1541.06	1541.03	1541.04	1536.10
13	1508.07	1477.54	1455.46	1451.12	1472.93	1506.00	1522.37	1537.83	1541.09	1541.02	1541.04	1535.36
14	1507.19	1476.48	1453.42	1450.49	1473.94	1506.74	1523.03	1538.58	1541.13	1541.02	1541.05	1534.62
15	1506.27	1475.58	1452.54	1454.28	1474.96	1507.38	1523.50	1539.28	1541.03	1541.00	1541.05	1533.87
16	1505.36	1474.99	1452.17	1457.44	1476.46	1507.90	1523.93	1539.67	1540.89	1541.02	1541.01	1533.12
17	1504.37	1474.39	1452.14	1460.42	1479.24	1508.26	1524.47	1539.95	1540.83	1541.03	1541.00	1532.37
18	1503.39	1473.47	1451.97	1463.40	1482.79	1508.58	1525.38	1540.01	1540.86	1541.03	1541.00	1531.63
19	1502.39	1472.25	1451.64	1461.89	1485.58	1508.97	1526.27	1540.03	1540.92	1541.00	1541.00	1530.87
20	1501.37	1471.91	1451.13	1459.63	1487.34	1509.60	1526.75	1540.17	1540.98	1541.02	1541.02	1530.05
21	1500.36	1484.00	1450.46	1458.11	1488.79	1510.31	1527.07	1540.19	1540.92	1541.01	1541.02	1529.15
22	1499.34	1487.36	1449.85	1456.25	1490.16	1510.75	1527.43	1540.20	1541.02	1540.96	1541.02	1528.26
23	1498.30	1488.62	1449.77	1454.39	1492.38	1510.85	1527.87	1540.45	1541.16	1540.97	1541.02	1527.36
24	1497.29	1489.80	1449.60	1451.81	1494.71	1510.97	1528.57	1540.85	1541.10	1541.00	1541.01	1526.43
25	1496.24	1491.76	1449.59	1450.66	1496.39	1511.19	1529.41	1540.66	1541.05	1541.03	1540.99	1525.52
26	1495.22	1493.59	1449.63	1451.80	1497.07	1511.52	1529.83	1540.55	1541.02	1541.05	1540.97	1524.59
27	1494.19	1492.94	1451.25	1452.94	1498.25	1511.85	1530.12	1540.68	1541.00	1541.06	1540.97	1523.67
28	1493.21	1490.39	1464.31	1453.91	1503.09	1512.31	1530.23	1540.75	1541.03	1541.02	1540.67	1522.73
29	1492.18	1487.56	1468.86	1454.77	---	1512.97	1530.32	1540.76	1541.06	1540.97	1540.36	1521.75
30	1491.13	1485.19	1469.99	1455.49	---	1513.61	1530.65	1540.88	1541.09	1540.94	1540.15	1520.80
31	1490.07	---	1470.51	1456.14	---	1514.18	---	1540.94	---	1540.94	1540.16	---
MAX	1519.06	1493.59	1491.44	1469.78	1503.09	1514.18	1530.65	1540.94	1541.16	1541.06	1541.18	1540.14
MIN	1490.07	1471.91	1449.59	1450.49	1456.65	1502.23	1514.71	1531.43	1540.76	1540.91	1540.15	1520.80
(†)	231000	221100	193300	168500	258600	283600	323200	349900	350300	349900	347800	299100
(‡)	-66200	-9900	-27800	-24800	+90100	+25000	+39600	+26700	+400	-400	-2100	-48700

CAL YR 1998 MAX 1541.93 MIN 1449.59 AC-FT† +27200
WTR YR 1999 MAX 1541.18 MIN 1449.59 AC-FT‡ +1900

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

WILLAMETTE RIVER BASIN

14145500 MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OR

LOCATION.--Lat 43°43'20", long 122°26'15", in NW 1/4 NE 1/4 sec.27, T.21 S., R.3 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, on right bank 90 ft upstream from highway bridge, 0.4 mi upstream from Salt Creek, 1.1 mi downstream from Hills Creek Dam, 2.3 mi southeast of Oakridge, and at mile 231.4.

DRAINAGE AREA.--392 mi².

PERIOD OF RECORD.--October 1913 to September 1914, September 1935 to current year. Monthly discharge only September 1935, published in WSP 1318.

REVISED RECORDS.--WSP 1248: 1914.

GAGE.--Water-stage recorder. Datum of gage is 1,208.01 ft above sea level (levels by Corps of Engineers). Oct. 3, 1913, to Sept. 30, 1914, nonrecording gage and Sept. 1, 1935, to Aug. 18, 1960, water-stage recorder at sites 400 ft and 1,000 ft downstream, respectively, at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1961 by Hills Creek Lake (station 14145100). No diversions upstream from station.

AVERAGE DISCHARGE.--65 years (water years 1914, 1936-99), 1,158 ft³/s, 40.12 in/yr, 839,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s Dec. 28, 1945, gage height, 12.06 ft, site and datum then in use, from rating curve extended above 13,000 ft³/s; minimum observed discharge, 0.70 ft³/s Sept. 8-11, 13, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,050 ft³/s Dec. 10, gage height, 7.74 ft; minimum discharge, 108 ft³/s Jan. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1520	1490	4890	3500	591	2850	644	541	2650	1430	495	436
2	1520	1470	4120	3910	584	3290	468	283	2380	1390	477	438
3	1510	1480	3790	3950	587	3990	425	619	1940	1160	506	365
4	1510	1470	5200	3780	586	3980	429	1450	1640	905	492	355
5	1430	1470	5140	3890	582	3420	434	1470	1480	964	440	354
6	1530	1470	5420	2940	601	1760	425	1500	1750	951	495	355
7	1430	1470	5470	1850	623	848	427	1480	1510	953	704	915
8	1440	1470	5770	1750	618	758	329	1190	1450	982	746	1430
9	1440	1480	6780	1960	600	752	262	953	1290	964	566	1460
10	1480	1490	6790	1900	574	758	265	954	1170	957	489	1440
11	1480	1480	6340	1920	581	762	272	847	1200	957	484	1430
12	1480	1480	4920	2000	588	764	351	703	1440	1010	487	1430
13	1480	1470	4850	1820	419	777	544	636	1910	967	483	1420
14	1440	1470	4080	1980	284	786	660	594	2250	913	487	1420
15	1480	1470	2600	2030	286	785	925	566	2690	830	490	1420
16	1460	1470	1910	1870	293	844	1240	894	2520	726	492	1410
17	1460	1470	1570	1920	567	934	1570	1380	2270	711	442	1410
18	1490	1690	1570	3520	742	933	1560	2570	2000	720	432	1410
19	1480	1880	1550	5670	909	931	1550	2620	1850	732	434	1420
20	1480	1920	1530	5770	613	933	1750	2390	1800	719	438	1520
21	1480	1950	1540	5880	373	938	1750	2320	1870	721	434	1600
22	1470	3100	1430	5810	344	1170	1380	2350	1470	695	437	1590
23	1480	3700	936	5940	354	1430	1060	2410	1480	608	437	1590
24	1470	3730	1020	5070	335	1420	838	2890	1840	569	440	1590
25	1470	1560	1120	3230	825	1350	890	3920	1740	570	438	1590
26	1470	2330	1430	936	1480	1240	1400	3420	1490	570	415	1590
27	1460	3910	1610	592	1700	1100	1390	2890	1300	591	391	1590
28	1460	4960	1990	583	2260	847	1340	3020	1200	631	867	1600
29	1470	4950	2240	579	---	724	1210	2860	1210	623	876	1600
30	1470	4920	2840	589	---	734	851	2460	1300	579	898	1600
31	1480	---	2890	588	---	734	---	2280	---	494	449	---
TOTAL	45750	65670	103336	87727	18899	42542	26639	54460	52090	25592	16161	37778
MEAN	1476	2189	3333	2830	675	1372	888	1757	1736	826	521	1259
MAX	1530	4960	6790	5940	2260	3990	1750	3920	2690	1430	898	1600
MIN	1430	1470	936	579	284	724	262	283	1170	494	391	354
AC-FT	90750	130300	205000	174000	37490	84380	52840	108000	103300	50760	32060	74930
MEAN†	399	2024	2881	2426	2298	1779	1554	2190	1743	819	487	441
CFSM†	1.02	5.16	7.35	6.19	5.86	4.54	3.96	5.59	4.45	2.09	1.24	1.12
IN.†	1.17	5.76	8.48	7.14	6.10	5.23	4.42	6.44	4.96	2.41	1.43	1.25
AC-FT†	24550	120400	177200	149200	127600	109400	92440	134700	103700	50360	29960	16230

CAL YR 1998 TOTAL 486932 MEAN 1334 MAX 6790 MIN 240 AC-FT 965800 MEAN† 1371 CFSM† 3.50 IN.† 47.50 AC-FT† 993000
WTR YR 1999 TOTAL 576644 MEAN 1580 MAX 6790 MIN 262 AC-FT 1144000 MEAN† 1583 CFSM† 4.04 IN.† 54.82 AC-FT† 1146000

† Adjusted for change in contents, in Hill Creek Lake.

14148000 MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK, NEAR OAKRIDGE, OR

LOCATION.--Lat 43°48'05", long 122°33'35", in SW 1/4 sec.27, T.20 S., R.2 E., Lane County, Hydrologic Unit 17090001, on left bank 0.5 mi downstream from Whitehead Creek, 4.2 mi downstream from North Fork of Middle Fork Willamette River, 7.0 mi northwest of Oakridge, and at mile 220.2.

DRAINAGE AREA.--924 mi².

PERIOD OF RECORD.--March 1911 to September 1912, July 1923 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as "near Hazeldell" 1911-12 and as "at Eula" 1923-50.

REVISED RECORDS.--WSP 694: 1925-28. WSP 814: Drainage area at Eula. WSP 1248: 1924, 1925(M), 1926-28, 1929(M), 1930, 1933, 1946(M). WSP 1398: 1927(M). WSP 1638: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 934.76 ft above sea level. Mar. 22, 1911, to Sept. 30, 1912, nonrecording gage at site 4.0 mi upstream, just downstream from North Fork at different datum. July 1, 1923, to Aug. 11, 1935, nonrecording gage and Aug. 12, 1935, to Sept. 30, 1950, water-stage recorder at site 4.0 mi downstream at different datum.

REMARKS.--Records good. Flow regulated since 1961 by Hills Creek Lake (station 14145100); slight regulation at times by logponds upstream from station. No diversion upstream from station. Continuous water-quality records for the period September 1950 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--77 years (water years 1912, 1924-99), 2,805 ft³/s, 2,032,000 acre-ft/yr.
38 years (water years 1962-99), 2,887 ft³/s, 2,091,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,800 ft³/s Dec. 28, 1945, gage height, 18.8 ft, from floodmark, site and datum then in use, from rating curve extended above 39,000 ft³/s; minimum discharge, 322 ft³/s Aug. 30, 1961, caused by closing outlet gates at Hills Creek Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1861 and prior to March 1911, 17.0 ft in February 1890 at site used 1923-50, from information by local resident, discharge, about 55,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,100 ft³/s Dec. 28, gage height, 8.04 ft; minimum discharge, 904 ft³/s Sept. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1850	1970	7910	9090	2430	9110	2870	2730	6080	3190	1270	1080
2	1930	1970	12700	8300	2450	7960	2620	2950	5690	3110	1230	1050
3	1960	1960	11600	7550	2600	8210	2530	3750	4670	2760	1250	964
4	2010	2070	10000	6820	2600	7540	2410	4580	4010	2450	1220	934
5	1860	2270	8650	6490	2520	6500	2350	4330	3770	2390	1180	923
6	1920	2130	8210	5370	3510	4540	2300	4520	4140	2340	1330	915
7	1800	2050	7970	4120	5460	3350	2280	4830	3790	2370	1750	1420
8	1810	2200	8410	3720	4550	3000	2280	4240	3580	2350	1680	1900
9	1870	2150	9120	3790	3670	2850	2150	3630	3240	2290	1400	1990
10	1980	2140	8800	3610	3160	2680	2110	3350	3060	2280	1280	1970
11	1920	2200	9050	3570	2850	2570	2100	3160	3120	2280	1240	1960
12	1870	2060	8390	3670	2690	2690	2320	3380	3470	2300	1220	1950
13	1930	1990	8620	3430	2490	3070	2650	3400	4210	2270	1210	1940
14	1980	1980	7610	4270	2330	3120	2800	3250	4900	2140	1250	1930
15	2060	2040	5440	9440	2280	3020	3070	3150	5690	2010	1230	1940
16	2060	2530	4330	8390	2540	2990	3620	3260	5420	1850	1200	1930
17	1990	2560	3800	7810	4260	2980	4390	3900	5010	1790	1130	1920
18	1940	2770	3670	11100	e5000	2920	4850	6420	4580	1750	1090	1920
19	1900	2920	3430	11700	e4500	2960	4900	6730	4290	1730	1080	1920
20	1880	3130	3170	10900	e4100	3200	4960	6230	4130	1720	1070	1990
21	1860	16000	2970	12300	3550	3390	4770	5800	4170	1710	1060	2070
22	1850	12800	2780	11900	3150	3550	4080	5690	3710	1650	1050	2060
23	1840	9940	2230	12300	3470	3810	3510	6020	3640	1540	1040	2060
24	1830	10300	2200	9730	3730	3720	3260	7250	4010	1490	1040	2060
25	1860	6200	2690	7000	4170	3680	3480	8840	4330	1470	1020	2070
26	1840	7400	3590	4130	4560	3650	3970	7830	3680	1440	1010	2070
27	1840	8390	4720	3270	5450	3480	3790	6910	3260	1430	942	2080
28	1930	8390	21100	3020	8610	3120	3510	7110	3010	1470	1410	2080
29	1920	7700	15200	2830	---	3070	3190	6700	2950	1450	1450	2070
30	1890	7590	10900	2690	---	3150	2790	5990	3060	1390	1580	2070
31	1900	---	9520	2560	---	3060	---	5440	---	1280	1220	---
TOTAL	59080	139800	228780	204870	102680	122940	95910	155370	122670	61690	38132	53236
MEAN	1906	4660	7380	6609	3667	3966	3197	5012	4089	1990	1230	1775
MAX	2060	16000	21100	12300	8610	9110	4960	8840	6080	3190	1750	2080
MIN	1800	1960	2200	2560	2280	2570	2100	2730	2950	1280	942	915
AC-FT	117200	277300	453800	406400	203700	243900	190200	308200	243300	122400	75630	105600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1999, BY WATER YEAR (WY)

	1906	3511	4999	4667	3428	3035	3170	3340	2434	1292	1189	1691
MEAN	1906	3511	4999	4667	3428	3035	3170	3340	2434	1292	1189	1691
MAX	3035	7641	13540	10350	8460	7802	5606	5550	4969	1990	1753	2639
(WY)	1998	1997	1965	1997	1996	1972	1993	1996	1974	1999	1982	1966
MIN	625	1414	1073	874	710	1167	1464	1113	811	703	629	1117
(WY)	1962	1994	1977	1977	1977	1992	1968	1992	1992	1994	1994	1992

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1962 - 1999
ANNUAL TOTAL	1173184	1385158	
ANNUAL MEAN	3214	3795	2887
HIGHEST ANNUAL MEAN			4710
LOWEST ANNUAL MEAN			1416
HIGHEST DAILY MEAN	21100	Dec 28	43500
LOWEST DAILY MEAN	813	Sep 1	334
ANNUAL SEVEN-DAY MINIMUM	825	Aug 28	349
ANNUAL RUNOFF (AC-FT)	2327000	2747000	2091000
10 PERCENT EXCEEDS		7930	5520
50 PERCENT EXCEEDS		2260	2110
90 PERCENT EXCEEDS		976	1030

e Estimated

WILLAMETTE RIVER BASIN

14149000 LOOKOUT POINT LAKE NEAR LOWELL, OR

LOCATION.--Lat 43°54'50", long 122°45'00", in SE 1/4 sec.13, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, in elevator house at right end of spillway section of dam on Middle Fork Willamette River, 1.5 mi east of Lowell, and at mile 206.9.

DRAINAGE AREA.--991 mi².

PERIOD OF RECORD.--November 1953 to current year. Prior to October 1971, published as Lookout Point Reservoir near Lowell.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Nov. 7, 1953, to Dec. 4, 1954, approximate elevations obtained from reference marks and Dec. 5, 1954, to Feb. 4, 1955, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1954 by Corps of Engineers. Planned storage began in November 1953. Total capacity is 455,800 acre-ft at elevation 929 ft, and usable capacity is 349,200 acre-ft between elevations 819 ft and 929 ft, top of spillway gates. Reservoir used for flood control, improvement of navigation, power generation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 464,900 acre-ft Dec. 26, 1964, elevation, 931.09 ft; minimum contents observed since first filling, 91,450 acre-ft Dec. 1, 1954, elevation, 811.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 446,400 acre-ft May 17, elevation, 926.79 ft; minimum contents, 119,400 acre-ft Dec. 22, 23, elevation, 825.30 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

810	89,600	860	205,500	900	338,900
820	108,600	870	235,500	910	377,400
830	129,500	880	267,800	920	417,800
840	152,500	890	302,300	930	460,200
850	177,700				

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	870.82	869.31	863.49	855.09	827.91	880.89	900.39	918.37	926.10	926.13	910.50	884.92
2	870.87	868.81	868.95	853.11	827.32	882.85	901.09	919.14	926.02	926.23	909.63	884.11
3	870.94	868.35	873.50	850.45	827.70	883.74	901.73	920.40	925.56	926.18	908.76	883.19
4	871.03	867.99	871.33	847.13	828.38	882.86	902.29	921.76	925.25	925.99	907.91	882.20
5	871.00	867.56	867.69	843.34	829.02	881.72	902.85	922.51	925.12	925.76	907.04	881.27
6	871.00	866.46	863.65	841.39	831.02	881.55	903.39	922.86	925.57	925.50	906.26	880.31
7	870.97	864.75	859.22	838.50	835.48	881.85	903.86	923.16	925.91	925.27	905.71	879.63
8	871.03	863.17	855.06	834.83	838.88	883.08	904.21	923.46	926.03	925.00	905.07	879.22
9	871.12	861.73	851.01	833.47	841.36	884.18	904.37	923.80	925.95	924.65	904.30	878.87
10	871.29	860.72	846.34	832.47	843.17	885.09	904.49	924.31	925.54	924.32	903.41	878.51
11	871.43	859.85	842.30	831.34	844.62	885.93	904.87	924.49	925.22	923.96	902.53	878.14
12	871.56	859.00	839.45	830.17	845.88	886.84	905.52	924.93	925.08	923.64	901.63	877.75
13	871.76	858.08	836.67	828.62	847.00	887.96	906.32	925.50	925.34	923.27	900.72	877.38
14	871.86	857.15	832.96	828.09	847.97	889.00	906.78	925.99	925.63	922.81	899.82	877.02
15	871.92	856.29	829.94	832.77	848.91	890.08	906.83	926.30	925.90	922.35	898.91	876.60
16	871.96	855.69	828.59	836.32	850.10	890.61	906.75	926.50	926.03	921.75	897.86	876.19
17	872.02	855.21	828.44	839.28	852.75	891.10	907.02	926.44	925.83	921.22	896.99	875.77
18	872.01	854.47	828.05	844.82	856.50	891.64	908.16	926.55	925.39	920.65	895.95	875.37
19	871.98	853.53	827.52	849.05	860.30	892.09	909.21	926.18	925.10	920.02	894.93	874.94
20	871.93	853.00	826.73	851.44	862.88	892.77	910.38	925.90	925.15	919.46	893.85	874.57
21	871.82	863.17	825.50	856.84	864.62	893.51	911.62	925.70	925.20	918.81	892.83	874.25
22	871.71	869.00	825.31	863.13	866.02	894.32	912.50	925.16	925.34	918.18	891.75	873.92
23	871.53	870.40	825.45	868.35	867.77	894.79	913.03	924.88	925.48	917.47	890.71	873.57
24	871.43	871.01	825.61	869.67	869.61	895.18	913.46	925.11	925.95	916.73	889.90	873.25
25	871.38	872.76	826.35	865.81	871.68	895.54	914.03	925.80	926.37	915.99	889.00	872.94
26	871.32	872.83	828.02	859.02	872.85	895.99	914.84	925.69	926.31	915.23	888.18	872.61
27	871.04	870.72	830.80	850.98	873.89	896.61	915.55	925.58	925.94	914.49	887.33	872.28
28	870.86	868.52	848.25	842.25	877.29	897.21	916.35	925.87	925.52	913.76	886.89	871.92
29	870.51	865.84	857.87	835.90	---	897.93	917.16	925.75	925.48	912.91	886.80	871.59
30	870.23	863.49	858.88	831.68	---	898.93	917.78	925.39	925.76	912.21	886.52	871.22
31	869.72	---	856.93	829.43	---	899.65	---	925.45	---	911.35	885.69	---
MAX	872.02	872.83	873.50	869.67	877.29	899.65	917.78	926.55	926.37	926.23	910.50	884.92
MIN	869.72	853.00	825.31	828.09	827.32	880.89	900.39	918.37	925.08	911.35	885.69	871.22
(+)	234700	215700	196700	128200	258900	337600	408700	440700	442000	382800	287200	239400
(+)	-3400	-19000	-19000	-68500	+130700	+78700	+71100	+32000	+1300	-59200	-95600	-47800

CAL YR 1998 MAX 927.40 MIN 825.31 AC-FT† +63900

WTR YR 1999 MAX 926.55 MIN 825.31 AC-FT† +1300

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

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14150000 MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OR

LOCATION.--Lat 43°56'45", long 122°50'10", in SE 1/4 NW 1/4 sec.5, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, on right bank 0.6 mi upstream from Lost Creek, 2.0 mi northwest of Dexter, 2.6 mi downstream from Dexter Dam, and at mile 201.2.

DRAINAGE AREA.--1,001 mi².

PERIOD OF RECORD.--October 1946 to current year. Prior to October 1954, published as "at Lowell".

REVISED RECORDS.--WSP 1638: 1948(P).

GAGE.--Water-stage recorder. Datum of gage is 592.30 ft above sea level (levels by Corps of Engineers). Prior to Aug. 23, 1950, nonrecording gage and Aug. 23, 1950, to Sept. 30, 1954, at site 4.0 mi upstream at different datum, and June 9, 1955, to Feb. 18, 1977, at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Lookout Point Lake (station 14149000), since 1955 by Dexter Lake (re-regulating), and since 1961 by Hills Creek Lake (station 14145100).

AVERAGE DISCHARGE.--53 years (water years 1947-99), 3,140 ft³/s, 2,275,000 acre-ft/yr, unadjusted.
46 years (water years 1954-99), 3,077 ft³/s, 2,229,000 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,600 ft³/s Jan. 18, 1953, gage height, 12.46 ft, site and datum then in use, from rating curve extended above 33,000 ft³/s; minimum daily discharge, 100 ft³/s Nov. 25, 1960.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 13.9 ft Dec. 28, 1945, former site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,700 ft³/s Dec. 7, gage height, 10.30 ft; minimum discharge, 1,300 ft³/s Mar. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2130	2930	8590	11500	4160	4390	2050	1810	5010	2700	3130	2700
2	2130	2930	6580	11000	3320	5340	1690	1810	5960	3130	3130	2710
3	2130	2920	5130	10900	2750	7480	1640	1830	5860	3120	3130	2720
4	2150	2900	13400	10900	2220	9510	1650	2430	4850	3090	3130	2700
5	2120	3450	14100	10900	2180	9000	1650	3310	4350	3100	3120	2690
6	2120	4190	14100	8020	2190	5670	1650	4130	3610	3090	3120	2680
7	2120	4920	14300	7990	2210	3120	1660	4580	3400	3090	3140	2670
8	2010	4960	14100	7990	1540	1640	2200	4070	3620	3180	3130	2670
9	1950	4610	14400	5310	1490	1490	2220	3360	3650	3240	3130	2710
10	1950	4140	14400	5090	1430	1490	2230	2650	4060	3230	3120	2730
11	1950	3950	13900	5070	1390	1500	1760	3130	4070	3230	3120	2680
12	1940	3730	11900	5110	1410	1420	1410	2740	4050	3220	3130	2650
13	1950	3720	11900	5190	1400	1410	1420	2780	4020	3220	3120	2700
14	2160	3720	11900	5190	1410	1410	2290	2700	4510	3240	3120	2730
15	2170	3720	9310	5180	1410	1420	3010	2970	5250	3250	3120	2730
16	2170	3760	6350	5180	1420	2270	3490	3270	5330	3190	3120	2730
17	2160	3730	4660	5190	1420	2260	4080	4330	5610	3130	3130	2730
18	2170	4290	4600	5180	1430	2270	3780	6720	5630	3130	3140	2720
19	2170	4500	4540	6690	1430	2280	3140	7910	4970	3120	3150	2720
20	2250	4520	4540	8400	1430	2280	3170	7170	4390	3150	3150	2720
21	2260	3690	4550	6100	1430	2280	2730	6510	4270	3160	3140	2720
22	2270	5160	3600	4070	1440	2280	2720	7040	3710	3160	3140	2720
23	2250	8440	2780	5570	1440	3200	2730	7010	3760	3150	3110	2730
24	2250	9650	2710	8150	1430	3230	2710	6830	3340	3150	2740	2730
25	2250	4620	2700	12500	1430	3150	2710	7590	3700	3150	2730	2720
26	2250	7860	2730	13500	3100	3210	2720	8290	4100	3140	2690	2730
27	2440	12000	3000	13400	4410	2780	2730	7350	4290	3150	2730	2730
28	2460	11900	2830	13400	4430	2280	2290	6590	4150	3150	2220	2720
29	2600	11900	2790	10100	---	2240	1850	7200	3300	3150	2190	2720
30	2590	11600	9420	7690	---	1950	1800	7070	2720	3150	2190	2710
31	2930	---	12000	5150	---	2180	---	5500	---	3130	2600	---
TOTAL	68450	164410	251810	245610	56750	96430	71180	150680	129540	97490	92060	81320
MEAN	2208	5480	8123	7923	2027	3111	2373	4861	4318	3145	2970	2711
MAX	2930	12000	14400	13500	4430	9510	4080	8290	5960	3250	3150	2730
MIN	1940	2900	2700	4070	1390	1410	1410	1810	2720	2700	2190	2650
AC-FT	135800	326100	499500	487200	112600	191300	141200	298900	256900	193400	182600	161300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1999, BY WATER YEAR (WY)

	MEAN	2935	4627	5466	4959	2866	2352	2234	2819	2456	1691	1963	2527
	MAX	5266	8779	12310	13510	7634	8084	4854	5464	5072	3145	2981	3932
	(WY)	1963	1985	1997	1965	1972	1957	1993	1996	1984	1999	1993	1972
	MIN	1051	1627	981	1050	668	525	437	526	816	1053	1083	1366
	(WY)	1993	1955	1955	1977	1977	1977	1977	1977	1977	1957	1966	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1954 - 1999

ANNUAL TOTAL	1249480		1505730										
ANNUAL MEAN	3423		4125										
HIGHEST ANNUAL MEAN										3077			
LOWEST ANNUAL MEAN										4660			1997
HIGHEST DAILY MEAN	14400	Jan 23		14400	Dec 9					1392			1977
LOWEST DAILY MEAN	1200	May 6		1390	Feb 11					28900	Dec 27	1964	
ANNUAL SEVEN-DAY MINIMUM	1210	May 5		1410	Feb 11					100	Nov 25	1960	
ANNUAL RUNOFF (AC-FT)	2478000			2987000						344	May 4	1977	
10 PERCENT EXCEEDS	6770			8070						2229000			
50 PERCENT EXCEEDS	2650			3130						6160			
90 PERCENT EXCEEDS	1340			1810						2240			
										1170			

WILLAMETTE RIVER BASIN

14150300 FALL CREEK NEAR LOWELL, OR

LOCATION.--Lat 43°58'15", long 122°38'15", in SW 1/4 sec.25, T.18 S., R.1 E., Lane County, Hydrologic Unit 17090001, on right bank 0.1 mi downstream from North Fork, 8.0 mi northeast of Lowell, and at mile 14.4.

DRAINAGE AREA.--118 mi².

PERIOD OF RECORD.--August 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 844.42 ft above sea level.

REMARKS.--Records good except for the period July to September, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period August 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--36 years (water years 1964-99), 415 ft³/s, 47.81 in/yr, 300,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s Nov. 19, 1996, gage height, 12.48 ft, from floodmark; minimum discharge, 15 ft³/s Aug. 30, 31, Sept. 1, 1992.

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. 21	1200	6,780	8.79	Dec. 28	1000	*8,400	*9.90
Dec. 2	1630	5,660	8.01				

Minimum discharge, 18 ft³/s Sept. 23-25, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	118	968	1500	372	2050	623	328	262	89	37	41
2	50	108	3580	1070	612	1420	597	626	229	86	36	34
3	59	82	2660	804	839	1240	575	1530	204	85	35	30
4	115	132	1370	636	724	1090	526	1590	189	109	34	28
5	67	420	914	524	641	874	532	1240	202	87	36	26
6	42	394	699	449	1180	729	566	989	200	80	52	26
7	35	284	719	404	2330	617	556	827	188	81	159	25
8	47	512	1080	354	1500	555	609	705	222	76	112	25
9	70	329	828	319	973	508	559	661	181	71	68	24
10	127	269	710	292	725	452	528	586	165	67	53	23
11	69	278	1470	284	587	411	539	556	156	64	46	23
12	49	202	1610	285	539	456	659	713	154	62	44	22
13	84	163	1270	263	576	774	664	710	152	60	43	21
14	96	143	965	780	652	695	592	706	149	58	54	21
15	125	149	734	2370	639	588	567	782	146	56	48	21
16	128	289	598	1670	954	512	605	696	138	55	41	21
17	75	282	526	1650	1670	450	617	789	129	55	38	21
18	59	366	459	2150	2220	418	569	1410	121	53	36	21
19	50	345	395	1360	2100	431	502	1140	114	51	35	21
20	44	538	340	1270	1340	475	481	834	110	50	34	20
21	40	5410	295	2380	951	446	424	e600	124	53	33	19
22	37	3030	276	2780	793	414	395	e520	110	50	32	19
23	35	1630	271	2630	1070	413	349	500	101	46	31	19
24	36	1870	260	1500	1060	392	345	482	120	45	31	18
25	52	1320	953	1030	996	420	358	436	227	45	29	19
26	48	1630	1290	782	886	476	332	371	147	43	28	20
27	45	1210	1520	614	1560	542	309	338	121	42	28	19
28	126	786	7110	547	2610	550	288	315	107	40	27	19
29	98	649	3910	498	---	706	263	287	98	39	26	18
30	66	757	1960	454	---	797	250	260	92	38	48	18
31	58	---	1700	420	---	692	---	240	---	37	62	---
TOTAL	2060	23695	41440	32069	31099	20593	14779	21767	4658	1873	1416	682
MEAN	66.5	790	1337	1034	1111	664	493	702	155	60.4	45.7	22.7
MAX	128	5410	7110	2780	2610	2050	664	1590	262	109	159	41
MIN	28	82	260	263	372	392	250	240	92	37	26	18
AC-FT	4090	47000	82200	63610	61680	40850	29310	43170	9240	3720	2810	1350
CFSM	.56	6.69	11.3	8.77	9.41	5.63	4.17	5.95	1.32	.51	.39	.19
IN.	.65	7.47	13.06	10.11	9.80	6.49	4.66	6.86	1.47	.59	.45	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

	MEAN	123	569	842	886	685	616	542	362	200	72.6	45.3	54.0
MAX	312	1389	2570	1849	1691	1326	1002	707	662	662	163	99.8	188
(WY)	1983	1974	1997	1972	1986	1972	1993	1991	1984	1983	1968	1986	
MIN	18.8	44.4	60.6	102	91.8	108	220	98.6	53.8	45.7	21.1	22.7	
(WY)	1988	1994	1977	1977	1977	1992	1987	1966	1966	1979	1992	1999	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1964 - 1999

ANNUAL TOTAL	183474	196131	
ANNUAL MEAN	503	537	415
HIGHEST ANNUAL MEAN			675
LOWEST ANNUAL MEAN			183
HIGHEST DAILY MEAN	7110	Dec 28	9900
LOWEST DAILY MEAN	23	Sep 17	15
ANNUAL SEVEN-DAY MINIMUM	24	Sep 12	16
ANNUAL RUNOFF (AC-FT)	363900	389000	300800
ANNUAL RUNOFF (CFSM)	4.26	4.55	3.52
ANNUAL RUNOFF (INCHES)	57.84	61.83	47.81
10 PERCENT EXCEEDS	1150	1360	984
50 PERCENT EXCEEDS	302	319	213
90 PERCENT EXCEEDS	34	32	33

e Estimated

WILLAMETTE RIVER BASIN

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14150900 FALL CREEK LAKE NEAR LOWELL, OR

LOCATION.--Lat 43°56'40", long 122°45'20", in SW 1/4 sec.1, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, in regulating tower near the center of Fall Creek Dam on Fall Creek, 2.2 mi northeast of Lowell, and at mile 7.2.

DRAINAGE AREA.--184 mi².

PERIOD OF RECORD.--January 1966 to current year. Prior to October 1971, published as Fall Creek Reservoir near Lowell.

GAGE.--Water-stage recorder. Datum of gage is sea level. Levels by U.S. Army Corps of Engineers (USACE).

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1965 by Corps of Engineers; storage began January 1966. Total capacity is 125,100 acre-ft at elevation 834 ft and usable capacity is 115,500 acre-ft between elevation 728 ft and 834 ft. Reservoir used for flood control, conservation, and recreation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by USACE.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 123,200 acre-ft May 30, 31, 1972, May 19, 1991; maximum elevation, 832.98 ft May 31, 1972; minimum contents, no contents Nov. 7 to Dec. 6, 1969, Nov. 14-16, 1970, Nov. 18-25, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 119,900 acre-ft May 13, elevation, 831.19 ft; minimum contents, 2,040 acre-ft Jan. 13, elevation, 699.98.

Capacity table (elevation, in feet, and total contents, in acre-feet)

670.4	0	725	8,340	785	53,120
679	59	735	13,270	795	64,590
685	366	745	19,480	805	77,880
695	1,400	755	26,130	815	92,750
705	2,850	765	33,770	825	109,200
715	5,200	775	42,580	833	123,200

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	798.71	---	749.02	757.79	730.01	791.37	810.63	824.54	830.37	829.79	827.11	824.13
2	798.54	---	755.49	751.45	732.41	792.24	810.65	825.52	830.17	829.78	826.87	823.93
3	798.30	---	758.94	743.90	735.09	792.14	810.96	827.44	829.94	829.70	826.75	823.91
4	798.23	---	757.26	736.60	737.41	793.14	811.49	828.28	829.77	829.73	826.61	823.65
5	798.04	---	755.82	731.69	739.72	792.87	811.50	828.81	829.72	829.72	826.49	823.53
6	797.41	---	753.50	727.39	743.15	792.81	812.56	828.47	829.67	829.53	826.49	823.43
7	796.44	---	751.38	723.29	748.44	794.20	812.84	828.78	829.59	829.48	826.69	822.61
8	795.43	---	751.88	718.23	750.07	794.90	814.62	829.00	829.54	829.46	826.65	821.75
9	794.43	---	750.92	711.48	751.57	795.74	814.68	829.57	829.59	829.43	826.61	820.67
10	793.45	745.26	747.83	702.98	754.04	796.53	815.86	830.10	829.60	829.32	826.51	819.69
11	792.33	743.30	747.99	700.18	756.30	796.97	816.79	830.58	829.59	829.23	826.39	818.73
12	791.20	740.88	745.26	700.93	757.70	797.56	816.63	830.90	829.59	829.22	826.29	817.81
13	790.13	738.58	740.78	700.16	759.89	798.16	817.42	831.09	829.62	829.12	826.17	816.79
14	789.12	736.62	736.54	705.94	762.27	798.48	817.73	830.86	829.61	828.93	826.21	815.81
15	788.14	734.88	735.14	715.22	764.99	799.07	818.00	830.61	830.10	828.82	826.09	814.87
16	786.78	733.84	734.63	716.06	767.81	798.88	818.90	830.48	829.99	828.73	825.93	813.99
17	785.40	732.74	733.63	717.53	770.36	799.42	818.80	830.46	829.99	828.76	825.95	813.13
18	783.95	732.02	732.19	721.98	774.00	---	819.57	830.61	829.90	828.72	825.77	812.25
19	782.34	731.60	731.02	---	775.95	---	819.87	830.36	829.81	828.51	825.55	811.29
20	780.90	730.97	730.18	725.29	777.27	---	821.08	830.21	829.82	828.38	825.37	810.41
21	779.09	751.77	729.43	733.12	779.10	---	821.22	829.86	829.73	828.39	825.33	809.47
22	777.80	761.28	728.90	741.61	781.04	803.50	821.76	829.82	829.71	828.20	825.15	808.63
23	775.83	762.73	728.72	748.58	782.38	803.98	821.86	829.91	829.64	828.04	825.03	807.67
24	774.07	---	728.75	748.62	783.61	804.62	822.12	829.96	829.71	828.03	824.93	806.65
25	772.40	---	730.36	746.62	785.11	805.61	822.92	829.81	829.86	827.82	824.91	805.61
26	---	---	730.39	743.41	785.60	806.34	823.82	829.76	830.01	827.75	824.69	804.65
27	---	---	731.12	739.46	786.82	807.35	823.73	829.89	829.96	827.62	824.57	803.99
28	---	---	758.12	735.81	790.28	808.35	823.75	830.19	829.94	827.55	824.39	802.81
29	---	---	767.79	733.58	---	809.27	824.15	830.32	829.85	827.41	824.35	801.85
30	---	753.57	766.50	731.79	---	810.09	824.27	830.47	829.88	827.25	824.29	800.83
31	---	---	762.98	729.95	---	810.53	---	830.34	---	827.11	824.23	---
MAX	---	---	767.79	---	790.28	---	824.27	831.09	830.37	829.79	827.11	824.13
MIN	---	---	728.72	---	730.01	---	810.63	824.54	829.54	827.11	824.23	800.83
(†)	a31370	25130	32140	10560	59010	85910	107900	118400	117600	112800	107900	72120
(‡)	-38180	-6240	+7010	-21580	+48450	+26900	+21990	+10500	-800	-4800	-4900	-35780

CAL YR 1998 AC-FT† +21390

WTR YR 1999 AC-FT† +2570

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

‡ Change in contents, on last day of month.

a Based on interpolated data from adjacent elevation record.

WILLAMETTE RIVER BASIN

14151000 FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OR

LOCATION.--Lat 43°56'40", long 122°46'25", in NW 1/4 SE 1/4 sec.2, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, on right bank 10 ft upstream from highway bridge, 1.1 mi downstream from Fall Creek Dam, 2.3 mi southeast of town of Fall Creek, and at mile 6.1.

DRAINAGE AREA.--186 mi².

PERIOD OF RECORD.--October to December 1911 (published as Big Fall Creek near Fall Creek; gage heights and discharge measurements only), September 1935 to current year.

REVISED RECORDS.--WSP 1094: 1946(M). WSP 1248: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 637.81 ft above sea level (Corps of Engineers bench mark). Oct. 1 to Dec. 31, 1911, nonrecording gage at site 0.25 mi downstream at different datum. Sept. 9, 1935, to Aug. 3, 1950, nonrecording gage on left bank at present site and datum. Aug. 4, 1950 to Aug. 27, 1982 water-stage recorder. Aug. 27, 1982 gage moved to right bank at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1966 by Fall Creek Lake (station 14150900). No diversion upstream from station. Water temperatures August 1950 to September 1997.

AVERAGE DISCHARGE.--64 years (water years 1936-99), 581 ft³/s, 42.42 in/yr, 420,900 acre-ft/yr, adjusted for storage in Fall Creek Lake since January 1965.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft³/s Dec. 11, 1956, gage height, 18.80 ft, from rating curve extended above 9,700 ft³/s; minimum discharge, 1.5 ft³/s Oct. 7, 8, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,860 ft³/s Dec. 30, 31, gage height, 7.33 ft; minimum discharge, 42 ft³/s Feb. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	208	779	2880	3720	485	1950	836	159	457	152	139	136
2	206	773	2570	3610	151	1530	832	160	411	152	139	136
3	205	766	2520	3430	349	1480	636	244	483	151	139	136
4	205	761	2600	2900	295	1460	456	909	471	149	139	136
5	205	871	1830	1930	194	1220	411	1540	277	149	139	136
6	423	985	1820	1560	478	708	412	1550	362	153	139	136
7	712	973	1740	1340	1510	373	298	887	367	146	141	742
8	710	964	1380	1360	1550	198	181	659	356	145	140	810
9	733	953	1550	1420	908	199	219	485	226	145	139	823
10	754	942	2040	1290	233	199	322	391	226	145	139	814
11	751	972	1740	598	57	198	321	389	223	144	139	812
12	748	1000	2890	333	49	212	457	423	226	144	139	809
13	746	897	2980	409	52	547	684	817	226	143	139	805
14	743	758	2500	378	51	582	683	1220	222	141	139	803
15	774	720	1350	1970	51	440	558	1360	224	141	138	763
16	840	714	953	2160	52	300	368	1060	223	141	137	728
17	867	698	946	2000	1030	202	370	1160	223	141	137	726
18	862	728	938	2140	1400	180	372	1710	222	141	140	725
19	855	725	812	1820	1850	122	290	1820	222	141	139	723
20	851	723	647	1230	1090	84	223	1350	223	141	139	720
21	847	909	577	1670	487	84	223	1120	221	141	139	719
22	843	859	489	1760	341	85	192	776	181	141	139	716
23	837	1410	383	1610	519	86	152	618	154	140	138	715
24	832	1950	351	2070	692	86	152	696	153	138	137	714
25	827	1950	629	2060	597	87	154	697	153	138	136	756
26	820	1950	1460	2020	601	88	155	587	152	138	136	753
27	815	1950	1570	1970	1260	90	155	331	152	138	136	471
28	837	2380	1190	1700	1780	90	155	228	152	138	136	754
29	807	2890	1290	1190	---	343	155	228	152	139	136	751
30	793	2800	3350	968	---	603	155	228	152	139	138	748
31	785	---	3760	934	---	779	---	433	---	139	136	---
TOTAL	21441	35750	51735	53550	18112	14605	10577	24235	7492	4434	4286	18716
MEAN	692	1192	1669	1727	647	471	353	782	250	143	138	624
MAX	867	2890	3760	3720	1850	1950	836	1820	483	153	141	823
MIN	205	698	351	333	49	84	152	159	152	138	136	136
AC-FT	42530	70910	102600	106200	35930	28970	20980	48070	14860	8790	8500	37120
MEAN†	71	1087	1782	1376	1520	908	722	952	236	65	59	23
CFSM†	0.38	5.84	9.58	7.40	8.17	4.88	3.88	5.12	1.27	0.35	0.31	0.12
IN.†	0.44	6.52	11.05	8.53	8.51	5.63	4.33	5.90	1.42	0.40	0.36	0.14
AC-FT†	4350	64670	109600	84620	84380	55870	42970	58570	14060	3990	3600	1340

CAL YR 1998 TOTAL 238389 MEAN 653 MAX 3760 MIN 27 AC-FT 472800 MEAN† 682 CFSM† 3.67 IN.† 49.82 AC-FT† 494200
WTR YR 1999 TOTAL 264933 MEAN 726 MAX 3760 MIN 49 AC-FT 525500 MEAN† 729 CFSM† 3.92 IN.† 53.24 AC-FT† 528100

† Adjusted for change in contents, in Fall Creek Lake.

14152000 MIDDLE FORK WILLAMETTE RIVER AT JASPER, OR

LOCATION.--Lat 43°59'54", long 122°54'17", in SW 1/4 SW 1/4 sec.14, T.18 S., R.2 W., Lane County, Hydrologic Unit 17090001, on right bank 25 ft downstream from highway bridge at Jasper, 0.1 mi downstream from Hills Creek, and at mile 195.0.

DRAINAGE AREA.--1,340 mi².

PERIOD OF RECORD.--September 1905 to February 1912, July 1913 to March 1917, October 1952 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1288: 1907-8, 1910-12, 1914-16, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 513.45 ft above sea level. September 1905 to February 1912 and July 1913 to March 1917, nonrecording gage at approximately same site at datum about 1.5 ft higher. Oct. 22, 1952, to Sept. 30, 1953, nonrecording gage at site 25 ft upstream at same datum.

REMARKS.--Records good. Flow regulated since 1953 by Lookout Point Lake (station 14149000), since 1961 by Hills Creek Lake (station 14145100), and since 1966 by Fall Creek Lake (station 14150900). Continuous water-quality records for the period October 1953 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--56 years (water years 1906-11, 1914-16, 1953-99), 4,119 ft³/s, 2,984,000 acre-ft/yr. 33 years (water years 1967-99), 4,155 ft³/s, 3,010,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft³/s Nov. 23, 1909, gage height, 17.4 ft, datum then in use, from graph based on gage readings, from rating curve extended above 42,000 ft³/s; minimum discharge, 366 ft³/s Dec. 5, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,400 ft³/s Dec. 31, gage height, 9.68 ft; minimum discharge, 1,970 ft³/s Apr. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2200	3600	13300	18500	5370	8610	3560	2010	5750	2690	3130	2720
2	2190	3600	13200	17000	4070	8650	3100	2160	6510	3110	3130	2730
3	2200	3590	10100	16500	3820	10900	2810	2760	6550	3130	3120	2740
4	2250	3590	19500	15900	3250	13200	2610	4050	5520	3100	3120	2720
5	2200	4340	19200	14500	3060	12300	2540	5470	4790	3100	3120	2700
6	2330	5340	18900	10700	3780	7890	2530	6200	4000	3090	3130	2690
7	2660	6080	19300	10100	6670	4470	2390	6120	3760	3090	3200	3190
8	2590	6250	19200	9990	5180	2610	2780	5230	3950	3170	3220	3340
9	2560	5840	19300	7490	3830	2290	2820	4280	3840	3230	3160	3390
10	2620	5220	19600	6920	2760	2190	2950	3370	4220	3230	3130	3410
11	2580	5030	19500	6180	2330	2130	2530	3750	4240	3220	3140	3370
12	2560	4770	18200	5860	2210	2050	2290	3440	4220	3210	3150	3330
13	2590	4640	17900	5990	2170	2430	2500	3830	4180	3210	3140	3360
14	2780	4460	17200	6220	2170	2580	3190	4300	4710	3230	3150	3390
15	2820	4410	12500	9270	2100	2390	3900	4850	5520	3240	3150	3360
16	2920	4500	8480	9330	2240	2950	4110	4790	5670	3190	3140	3320
17	2930	4460	6410	9440	3720	2810	4800	6040	5920	3140	3150	3310
18	2910	5130	6120	10200	5280	2760	4440	9270	5950	3130	3160	3310
19	2900	5430	5850	10400	5820	2670	3710	10800	5320	3100	3180	3300
20	2970	5540	5600	12400	4210	2610	3580	9450	4660	3130	3180	3300
21	2980	8800	5450	12300	3080	2580	3110	8350	4500	3170	3170	3290
22	2980	8910	4350	10200	2710	2570	3040	8450	3850	3160	3160	3290
23	2960	11600	3320	10300	2890	3450	2960	8130	3820	3150	3130	3290
24	2950	14800	3150	12700	3130	3530	2920	8020	3400	3150	2780	3300
25	2950	7900	3650	17300	3010	3450	2910	8680	3760	3160	2740	3330
26	2940	11500	4760	18800	4550	3510	2910	9380	4200	3140	2700	3350
27	3110	16300	5330	18400	7180	3180	2910	8120	4420	3140	2750	3060
28	3190	16400	10700	18000	9090	2690	2510	7140	4250	3140	2250	3340
29	3290	17000	7240	13400	---	3090	2080	7740	3390	3140	2190	3330
30	3260	17200	15300	9770	---	3290	1990	7640	2770	3150	2230	3320
31	3560	---	19400	7120	---	3650	---	6180	---	3130	2610	---
TOTAL	85930	226230	372010	361180	109680	133480	90480	190000	137640	97370	92710	95880
MEAN	2772	7541	12000	11650	3917	4306	3016	6129	4588	3141	2991	3196
MAX	3560	17200	19600	18800	9090	13200	4800	10800	6550	3240	3220	3410
MIN	2190	3590	3150	5860	2100	2050	1990	2010	2770	2690	2190	2690
AC-FT	170400	448700	737900	716400	217600	264800	179500	376900	273000	193100	183900	190200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

	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
MEAN	3848	6375	7832	6998	3951	3354	2999	3459	2941	2058	2498	3509																					
MAX	5392	12730	19100	16940	9742	10550	6834	7156	6746	3141	3395	4823																					
(WY)	1985	1985	1997	1997	1996	1972	1993	1996	1984	1999	1993	1984																					
MIN	1586	2618	1517	1327	787	1111	729	844	1187	1248	1766	1830																					
(WY)	1993	1988	1977	1977	1977	1977	1977	1973	1977	1978	1984	1968																					

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1967 - 1999

	1998	1999	1967-1999
ANNUAL TOTAL	1684070	1992590	
ANNUAL MEAN	4614	5459	4155
HIGHEST ANNUAL MEAN			6722
LOWEST ANNUAL MEAN			1877
HIGHEST DAILY MEAN	19600	Dec 10	22700
LOWEST DAILY MEAN	1480	May 7	536
ANNUAL SEVEN-DAY MINIMUM	1490	May 5	555
ANNUAL RUNOFF (AC-FT)	3340000	3952000	3010000
10 PERCENT EXCEEDS	10600	11900	8430
50 PERCENT EXCEEDS	2740	3390	3070
90 PERCENT EXCEEDS	1850	2580	1540

e Estimated

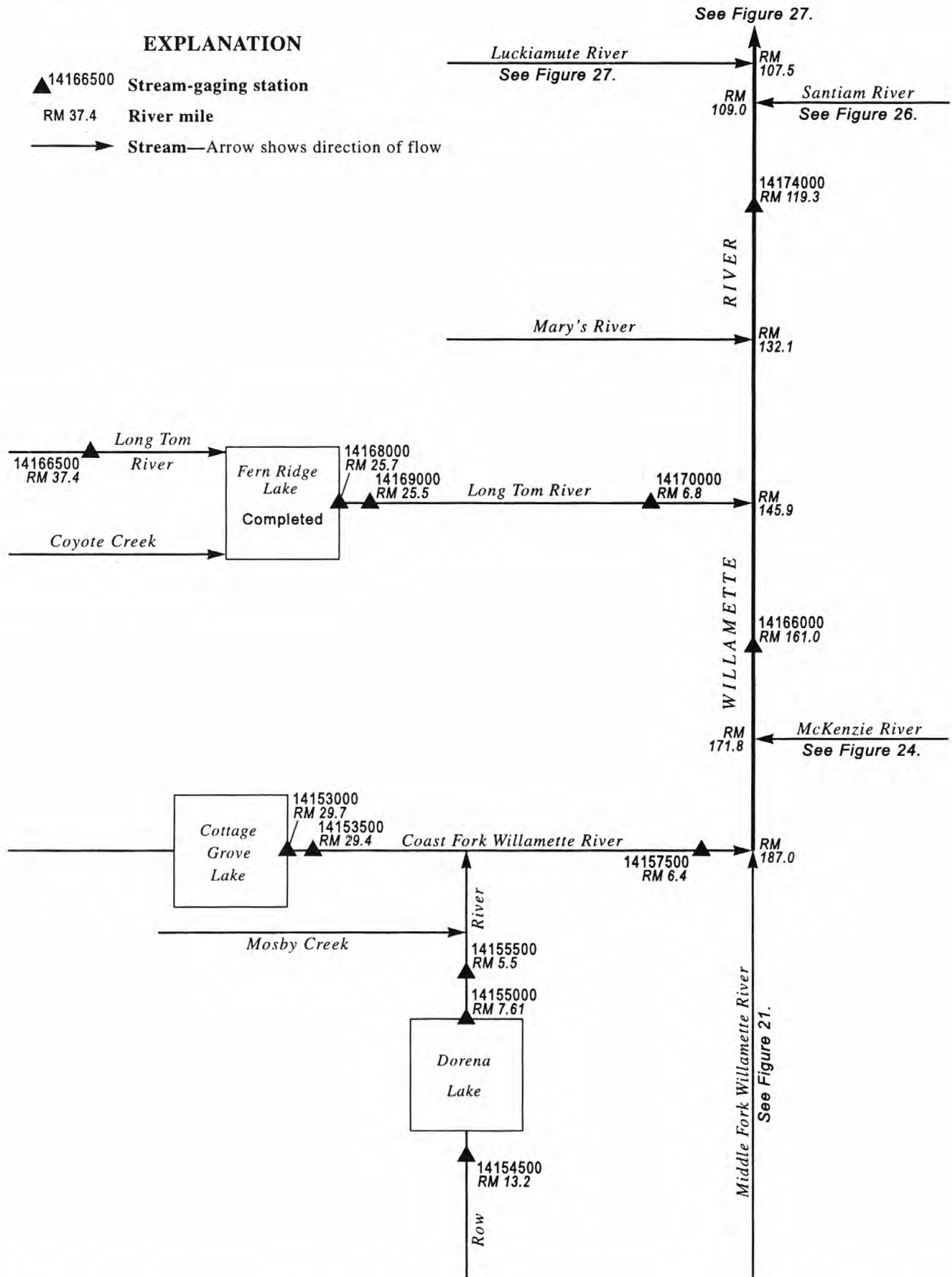


Figure 23. Schematic diagram showing gaging stations in the Long Tom, Coast Fork Willamette and upper Willamette River Basins.

WILLAMETTE RIVER BASIN

173

14153000 COTTAGE GROVE LAKE NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°43'00", long 123°02'55", in NE 1/4 sec.28, T.21 S., R.3 W., Lane County, Hydrologic Unit 17090002, in east abutment of dam on Coast Fork Willamette River 5.8 mi south of Cottage Grove, and at mile 29.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--October 1942 to current year. Prior to October 1971, published as Cottage Grove Reservoir near Cottage Grove.

REVISED RECORDS.--WSP 1218: 1950.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam with concrete spillway completed by Corps of Engineers in 1942; storage began Oct. 31, 1942. Capacity, 32,930 acre-ft between elevation 719.0 ft, outlet conduit, and 791.0 ft, crest of spillway. Dead storage negligible. Reservoir used for flood control and improvement of navigation. Figures given herein represent total contents. Monthly elevation for month of July provided by Corps of Engineers.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 36,750 acre-ft Dec. 24, 1964, elevation, 794.23 ft; minimum contents since first filling, no contents Sept. 26 to Oct. 19, 1966, and Nov. 14, 15, Nov. 20 to Dec. 8, 1969.

EXTREMES FOR CURRENT YEAR.-- Maximum contents, 31,800 acre-ft June 1, 2, elevation, 790.01 ft; minimum contents, 3,020 acre-ft Dec. 13, elevation, 749.57 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

710.9	0	755	4,860	780	21,460
730	151	760	7,150	785	26,370
740	926	765	9,970	790	31,780
745	1,840	770	13,260	793	35,270
750	3,140	775	17,070		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	775.40	750.61	751.25	758.02	750.71	765.93	777.90	785.36	790.00	789.53	788.32	786.85
2	---	750.01	761.63	756.49	752.15	766.00	778.08	785.74	789.99	789.51	788.26	786.79
3	---	749.83	763.13	754.31	753.03	767.32	778.39	786.51	789.96	789.50	788.20	786.72
4	---	749.85	757.33	751.87	754.22	767.96	778.95	786.57	789.97	789.49	788.14	786.64
5	---	750.52	751.04	750.72	754.59	768.12	779.15	786.62	789.99	789.48	788.09	786.57
6	---	750.42	750.18	750.45	757.12	768.54	779.33	786.80	789.92	789.46	788.09	786.50
7	---	750.61	751.38	750.13	761.52	768.92	779.59	786.98	789.85	789.51	788.13	786.43
8	771.75	750.80	751.42	750.10	761.59	769.32	779.99	787.18	789.85	789.42	788.13	786.36
9	771.16	750.69	751.08	750.19	760.68	769.72	780.32	787.49	789.86	789.41	788.09	786.28
10	770.45	750.71	750.60	750.28	759.41	770.19	780.65	787.76	789.87	789.38	788.04	786.20
11	769.69	750.37	751.43	750.54	759.48	770.55	780.92	788.03	789.87	789.35	787.99	786.13
12	768.93	750.28	750.64	750.76	759.73	770.84	780.97	788.34	789.87	789.31	787.95	786.06
13	768.21	750.24	749.96	750.65	759.99	771.15	780.91	788.64	789.87	789.27	787.89	785.98
14	767.48	750.29	750.22	750.84	760.56	771.63	781.21	789.02	789.86	789.23	787.85	785.73
15	766.74	750.34	750.12	751.05	760.92	772.03	781.47	789.43	789.85	789.18	787.76	785.27
16	765.86	750.42	749.96	750.29	761.43	772.32	781.81	789.65	789.84	789.14	787.68	784.74
17	764.79	750.55	750.02	751.06	762.45	772.52	782.19	789.80	789.84	789.09	787.62	784.22
18	763.70	750.75	750.44	757.36	765.49	772.81	782.49	789.87	789.82	789.05	787.57	783.69
19	762.55	750.46	750.43	757.32	766.01	773.22	782.66	789.85	789.81	789.00	787.52	783.17
20	761.51	751.08	750.17	755.18	763.40	773.60	782.87	789.82	789.80	788.95	787.46	782.63
21	760.59	763.55	750.56	760.64	763.44	773.90	783.17	789.82	789.80	788.91	787.41	781.97
22	759.61	763.01	750.57	763.48	764.10	774.18	783.49	789.80	789.78	788.87	787.34	781.31
23	758.61	760.03	750.43	764.56	764.79	774.47	783.75	789.83	789.74	788.81	787.29	780.65
24	757.61	760.58	750.49	761.01	764.90	774.81	783.98	789.85	789.74	788.76	787.24	779.98
25	756.52	758.37	750.60	756.46	765.27	775.08	784.24	789.82	789.74	788.71	787.17	779.30
26	755.51	758.20	750.73	753.50	765.44	775.38	784.46	789.76	789.71	788.65	787.11	778.62
27	754.55	755.65	751.01	751.78	765.60	775.84	784.68	789.74	789.67	788.60	787.04	777.93
28	753.76	753.80	765.17	750.94	767.72	776.36	784.87	789.70	789.64	788.55	786.97	777.24
29	753.04	751.71	770.47	750.52	---	777.54	785.03	789.73	789.60	788.49	786.90	776.54
30	752.25	752.95	766.50	750.39	---	778.17	785.18	789.84	789.55	788.43	786.95	775.83
31	751.43	---	761.43	750.69	---	778.03	---	789.96	---	788.38	786.91	---
MAX	---	763.55	770.47	764.56	767.72	778.17	785.18	789.96	790.00	789.53	788.32	786.85
MIN	---	749.83	749.96	750.10	750.71	765.93	777.90	785.36	789.55	788.38	786.90	775.83
(†)	3580	4100	7910	3350	11700	19670	26560	31740	31280	29970	28380	17760
(‡)	-14180	+520	+3810	-4560	+8350	+7970	+6890	+5180	-460	-1310	-1590	-10620

CAL YR 1998 MAX --- MIN --- AC-FT† +3870
WTR YR 1999 MAX --- MIN --- AC-FT‡ 0

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

WILLAMETTE RIVER BASIN

14153500 COAST FORK WILLAMETTE RIVER BELOW COTTAGE GROVE DAM, OR

LOCATION.--Lat 43°43'15", long 123°02'55", in NE 1/4 sec.28, T.21 S., R.3 W., Lane County, Hydrologic Unit 17090002, on right bank at bridge 0.3 mi downstream from Cottage Grove Dam, 5.5 mi south of Cottage Grove, and at mile 29.4.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--January 1939 to current year. Prior to October 1944, published as "near Cottage Grove."

REVISED RECORDS.--WSP 1448: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 711.00 ft above sea level (Corps of Engineers bench mark). Jan. 1 to Oct. 12, 1939, nonrecording gage and Oct. 13, 1939, to Sept. 30, 1944, water-stage recorder at several sites and datums 0.8 mi downstream.

REMARKS.--Records good. Flow regulated since 1942 by Cottage Grove Lake (station 14153000). Small diversions for irrigation upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--60 years (water years 1940-99), 268 ft³/s, 34.99 in/yr, 194,200 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,910 ft³/s Dec. 24, 1964, gage height, 11.83 ft; no flow July 5-7, 1945, and for part of Aug. 24, 1947.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,630 ft³/s Dec. 30, gage height, 8.13 ft; minimum discharge, 33 ft³/s July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	243	172	1450	1510	338	1870	722	72	90	55	48	52
2	245	134	820	1010	185	882	500	72	121	48	48	52
3	245	70	1370	984	311	652	395	222	125	48	48	52
4	243	65	2450	859	318	802	241	621	95	48	48	52
5	242	63	1950	516	454	731	371	463	95	48	48	52
6	240	165	784	383	617	522	374	324	143	48	48	52
7	240	107	600	345	1350	421	293	294	135	48	48	52
8	240	147	1080	279	1430	366	295	226	93	45	48	52
9	286	135	863	248	1280	340	296	125	83	42	48	52
10	335	104	706	223	1090	239	296	117	72	42	48	52
11	330	150	691	198	662	237	296	117	72	42	48	52
12	327	97	932	213	495	237	391	117	72	44	48	52
13	327	74	793	234	495	237	424	117	72	47	48	52
14	322	55	604	252	410	239	221	118	72	47	48	145
15	321	57	539	1120	409	240	209	119	72	47	70	270
16	357	83	462	1320	445	240	176	174	72	47	68	298
17	393	97	373	1100	602	240	148	263	59	47	45	296
18	387	136	284	1030	872	176	148	393	71	47	45	296
19	380	175	305	1280	1570	125	176	420	71	47	45	294
20	328	179	305	1690	1980	125	145	347	71	47	45	293
21	287	801	172	1600	e1000	140	89	266	71	47	45	349
22	283	1970	222	1330	e570	143	72	245	71	47	45	340
23	280	2030	223	1660	e690	143	72	204	71	47	45	337
24	277	1840	193	2240	827	143	72	201	71	47	45	336
25	271	1540	236	1980	742	192	72	201	71	47	45	333
26	247	1520	378	1300	768	196	72	201	71	47	45	332
27	233	1490	480	901	959	196	72	165	71	47	47	330
28	207	1020	453	651	1130	197	72	162	71	47	50	328
29	178	965	791	521	---	200	72	115	71	48	51	327
30	176	978	2460	424	---	519	72	59	72	48	52	324
31	175	---	2230	337	---	799	---	48	---	48	52	---
TOTAL	8645	16419	25199	27738	21999	11789	6854	6588	2467	1454	1512	5904
MEAN	279	547	813	895	786	380	228	213	82.2	46.9	48.8	197
MAX	393	2030	2460	2240	1980	1870	722	621	143	55	70	349
MIN	175	55	172	198	185	125	72	48	59	42	45	52
AC-FT	17150	32570	49980	55020	43640	23380	13590	13070	4890	2880	3000	11710
MEAN†	48	556	875	820	936	510	344	297	74	26	23	18
CFSM†	0.46	5.35	8.41	7.89	9.00	4.90	3.31	2.85	0.72	0.25	0.22	0.18
IN.†	0.54	5.97	9.70	9.10	9.37	5.65	3.69	3.29	0.80	0.28	0.25	0.20
AC-FT†	2970	33090	53790	50460	51990	31350	20480	18250	4430	1570	1410	1090

CAL YR 1998 TOTAL 125357 MEAN 343 MAX 2460 MIN 50 AC-FT 248600 MEAN† 349 CFSM† 3.35 IN.† 45.52 AC-FT† 252470
WTR YR 1999 TOTAL 136568 MEAN 374 MAX 2460 MIN 42 AC-FT 270900 MEAN† 374 CFSM† 3.60 IN.† 48.84 AC-FT† 270900

e Estimated

† Adjusted for change in contents, in Cottage Grove Lake.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

ANNUAL TOTAL	281216			303551					
ANNUAL MEAN	770			832			601		
HIGHEST ANNUAL MEAN							1008		1974
LOWEST ANNUAL MEAN							233		1977
HIGHEST DAILY MEAN	11000	Nov 21		11000	Nov 21		23800	Dec 22	1964
LOWEST DAILY MEAN	27	Sep 17		18	Sep 23		11	Sep 24	1951
ANNUAL SEVEN-DAY MINIMUM	28	Sep 12		19	Sep 20		11	Oct 21	1987
ANNUAL RUNOFF (AC-FT)	557800			602100			435100		
ANNUAL RUNOFF (CFSM)	3.65			3.94			2.85		
ANNUAL RUNOFF (INCHES)	45.58			51.52			38.68		
10 PERCENT EXCEEDS	1760			2100			1440		
50 PERCENT EXCEEDS	439			464			281		
90 PERCENT EXCEEDS	34			31			28		

WILLAMETTE RIVER BASIN

14155000 DORENA LAKE NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°47'10", long 122°57'15", in SE 1/4 sec.32, T.20 S., R.2 W., Lane County, Hydrologic Unit 17090002, on left end of Dorena Dam on Row River, 5.0 mi east of Cottage Grove, and at mile 7.61.

DRAINAGE AREA.--265 mi².

PERIOD OF RECORD.--October 1949 to current year. Prior to October 1971, published as Dorena Reservoir near Cottage Grove.

REVISED RECORDS.--WRD OR-78-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete outlet and spillway, completed in 1949 by Corps of Engineers; controlled storage began Oct. 11, 1949. Capacity, 77,580 acre-ft between elevations 739.0 ft, sill of outlet gates, and 835.0 ft, crest of spillway. Dead storage, 18 acre-ft below elevation 739.0 ft. Reservoir used for flood control and improvement of navigation. Figures given herein represent total contents. Monthend elevation for months of May, August, and September provided by Corps of Engineers.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 95,550 acre-ft Dec. 23, 1964, elevation, 844.03 ft; minimum contents observed since first filling, 159 acre-ft Dec. 14, 1970, elevation, 743.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 72,710 acre-ft June 1, elevation, 832.36 ft; minimum contents, 6,240 acre-ft Jan. 28, elevation, 768.79 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

760	2,810	785	15,850	810	39,380	835	77,600
765	4,560	790	19,580	815	45,620	840	87,320
770	6,840	795	23,780	820	52,480		
775	9,540	800	28,490	825	60,060		
780	12,530	805	33,700	830	68,470		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	772.30	771.55	796.48	771.45	801.34	812.85	825.94	832.36	832.16	830.35	828.08
2	---	771.28	792.38	791.19	773.07	799.17	813.45	826.81	832.25	832.14	830.24	827.99
3	---	770.89	797.37	785.86	774.43	797.04	814.03	827.80	832.05	832.17	830.15	827.88
4	---	771.05	792.29	780.60	775.91	796.90	814.42	828.48	832.04	832.14	830.06	827.78
5	---	771.41	784.52	776.77	776.77	797.56	814.80	828.24	832.08	832.09	829.95	827.67
6	---	770.60	773.13	774.47	781.09	798.16	815.31	828.46	832.08	832.05	829.95	827.56
7	---	770.60	771.31	773.36	786.59	798.78	815.73	828.35	832.04	832.00	830.00	827.10
8	---	770.66	772.09	772.18	784.98	799.53	---	828.48	832.05	831.99	830.00	826.63
9	---	770.55	771.55	771.56	781.94	800.16	---	828.77	832.08	831.98	829.95	826.13
10	---	770.59	771.30	771.39	782.48	800.62	817.44	829.08	832.10	831.95	829.89	825.64
11	---	770.76	773.06	771.30	783.35	801.34	817.93	829.35	832.14	831.92	829.80	825.14
12	---	770.40	771.55	771.23	784.14	801.95	818.63	830.13	832.26	831.89	829.72	824.65
13	---	770.49	770.29	770.80	785.22	802.64	818.88	830.42	832.14	831.84	829.64	824.14
14	---	770.53	770.65	772.30	786.50	803.04	818.86	830.63	832.08	831.79	829.58	823.63
15	---	770.56	770.69	779.86	787.53	803.34	819.23	831.08	832.11	831.73	829.50	823.12
16	---	770.66	770.64	780.20	788.18	803.80	819.75	831.16	832.08	831.67	829.42	822.60
17	---	770.71	771.03	781.87	788.89	804.45	820.41	831.52	832.14	831.61	829.33	821.98
18	---	771.15	771.34	789.23	793.01	805.27	820.88	831.61	832.10	831.55	829.24	821.57
19	---	770.30	770.98	788.17	794.47	805.87	820.98	831.60	832.00	831.42	829.15	821.05
20	---	771.16	770.31	785.23	792.26	806.10	821.25	831.71	832.03	831.42	829.05	820.36
21	---	800.31	770.57	792.06	791.14	806.26	821.55	831.70	832.08	831.36	828.96	819.53
22	---	804.34	770.61	797.28	791.62	806.51	821.84	831.60	832.10	831.15	828.86	818.71
23	---	803.50	770.66	799.97	792.08	806.87	822.33	831.76	832.10	831.20	828.80	817.87
24	---	802.82	770.64	796.76	791.78	807.31	822.88	831.82	832.16	831.10	828.66	817.03
25	---	797.19	771.17	791.81	792.30	807.81	823.52	831.63	832.13	831.01	828.59	816.18
26	---	794.77	771.06	785.38	792.29	808.35	823.90	831.58	832.25	830.93	828.49	815.34
27	---	787.09	773.16	776.73	794.06	808.63	824.24	831.71	832.31	830.85	828.38	814.48
28	777.48	778.46	802.76	768.89	801.30	808.63	824.64	831.86	832.27	830.75	828.27	813.62
29	776.24	770.52	809.33	769.88	---	811.50	825.02	832.00	832.22	830.65	828.15	812.76
30	774.91	772.07	805.94	770.80	---	812.37	825.38	832.21	832.17	830.55	828.17	811.88
31	773.60	---	801.72	771.24	---	812.40	---	832.31	---	830.45	828.15	---
MAX	---	804.34	809.33	799.97	801.30	812.40	---	832.31	832.36	832.17	830.35	828.08
MIN	---	770.30	770.29	768.89	771.45	796.90	---	825.94	832.00	830.45	828.15	811.88
(†)	8760	7920	30270	7540	29930	42340	60670	72620	72360	65260	65260	41650
(‡)	-33500	-840	+22350	-22730	+22390	+12410	+18330	+11950	-260	-3090	-4010	-23610

CAL YR 1998 MAX --- MIN --- AC-FT† +21860
WTR YR 1999 MAX --- MIN --- AC-FT† -610

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

177

14155500 ROW RIVER NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°47'35", long 122°59'25", in NE 1/4 sec.36, T.20 S., R.3 W., Lane County, Hydrologic Unit 17090002, on right bank 1.7 mi upstream from Mosby Creek, 2.1 mi downstream from Dorena Dam, 3.5 mi east of Cottage Grove, and at mile 5.5.

DRAINAGE AREA.--270 mi².

PERIOD OF RECORD.--January 1939 to current year. Prior to October 1947, published as "near Dorena."

GAGE.--Water-stage recorder. Datum of gage is 685.24 ft above sea level (levels by Corps of Engineers). Jan. 5 to Oct. 12, 1939, nonrecording gage at site 180 ft upstream at datum 1.00 ft higher.

REMARKS.--Records good. Flow regulated since October 1949 by Dorena Lake (station 14155000). No diversion upstream from station.

AVERAGE DISCHARGE.--60 years (water years 1940-99), 751 ft³/s, 37.77 in/yr, 544,100 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,400 ft³/s Dec. 28, 1945, gage height, 18.20 ft; minimum discharge, 0.20 ft³/s Sept. 25 to Oct. 7, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,370 ft³/s Nov. 25, gage height, 9.26 ft; minimum recorded discharge, 77 ft³/s July 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e620	419	2860	4930	552	3960	959	225	564	175	129	120
2	e640	369	1590	3980	315	3650	801	226	601	126	129	119
3	e620	206	3090	3390	563	3480	806	1100	595	143	111	119
4	e600	140	4910	2780	577	2120	806	1580	366	166	112	119
5	e590	474	4810	1950	714	1290	809	1880	366	166	119	119
6	e580	698	4760	1280	1410	1010	811	1470	426	165	120	119
7	e570	375	1710	877	3260	802	825	1580	411	163	122	407
8	e590	574	1900	787	3600	611	843	1080	332	132	119	447
9	e600	469	1670	615	2930	612	843	756	272	115	119	445
10	e680	367	1330	480	1170	581	844	609	271	119	119	445
11	e680	421	1990	453	748	378	844	601	247	119	119	442
12	e670	379	3000	481	662	392	1090	602	213	118	119	440
13	e670	221	2590	517	659	766	1440	1120	457	119	119	440
14	e670	221	1740	569	663	1030	1440	1320	425	119	119	440
15	e680	235	1340	2390	671	910	1140	1410	363	119	119	440
16	e790	525	1090	3500	1110	705	1280	1440	356	119	119	437
17	e890	477	905	3370	2460	504	1250	1170	247	119	119	435
18	e860	570	773	3110	2740	324	1250	2140	308	119	119	433
19	e830	748	788	3680	3580	479	1250	1950	341	118	119	431
20	e800	655	718	3970	3440	855	938	1420	222	119	119	531
21	e740	1970	445	2720	2180	832	721	1200	217	120	119	628
22	e710	3880	445	2190	1220	698	643	1120	217	123	119	621
23	e690	4780	406	3230	2100	618	384	940	217	123	119	617
24	e660	5300	410	4150	2390	533	361	1110	218	135	119	612
25	e640	6180	509	3970	2180	604	400	1200	217	135	119	610
26	e610	5560	1200	3890	1890	617	513	872	217	121	119	606
27	e580	6100	1690	3850	2050	622	445	660	217	118	119	603
28	566	4730	775	2680	2770	390	283	596	217	129	119	601
29	481	3420	1880	644	---	517	224	522	217	129	119	596
30	456	1840	5000	554	---	1040	225	380	217	129	124	591
31	429	---	4870	582	---	1400	---	418	---	129	121	---
TOTAL	20192	52303	61194	71569	48604	32330	24468	32697	9554	4049	3705	13013
MEAN	651	1743	1974	2309	1736	1043	816	1055	318	131	120	434
MAX	890	6180	5000	4930	3600	3960	1440	2140	601	175	129	628
MIN	429	140	406	453	315	324	224	225	213	115	111	119
AC-FT	40050	103700	121400	142000	96410	64130	48530	64850	18950	8030	7350	25810
MEAN†	107	1729	2338	1940	2139	1245	1124	1249	314	80	54	37
CFSM†	0.40	6.40	8.66	7.19	7.92	4.61	4.16	4.63	1.16	0.30	0.20	0.14
IN.†	0.45	7.14	9.98	8.28	8.25	5.32	4.64	5.33	1.30	0.34	0.23	0.15
AC-FT†	6550	102860	143750	119270	118800	76540	66860	76800	18690	4940	3340	2200

CAL YR 1998 TOTAL 335339 MEAN 919 MAX 6180 MIN 90 AC-FT 665100 MEAN† 949 CFSM† 3.51 IN.† 47.71 AC-FT† 686960
WTR YR 1999 TOTAL 373678 MEAN 1024 MAX 6180 MIN 111 AC-FT 741200 MEAN† 1023 CFSM† 3.79 IN.† 51.43 AC-FT† 740590

e Estimated

† Adjusted for change in contents, in Dorena Lake.

WILLAMETTE RIVER BASIN

14157500 COAST FORK WILLAMETTE RIVER NEAR GOSHEN, OR

LOCATION.--Lat 43°58'50", long 122°57'55", in NW 1/4 sec.29, T.18 S., R.2 W., Lane County, Hydrologic Unit 17090002, on right bank at downstream side of bridge on State Highway 58, 2.5 mi southeast of Goshen, and at mile 6.4.

DRAINAGE AREA.--642 mi².

PERIOD OF RECORD.--August 1905 to February 1912, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1248: 1905-12. WSP 1935: 1956.

GAGE.--Water-stage recorder. Datum of gage is 473.80 ft above sea level. Aug. 23, 1905 to Feb. 7, 1912, nonrecording gage at site 600 ft upstream at different datum.

REMARKS.--Records good. Flow regulated since 1942 by Cottage Grove Lake (station 14153000) and since 1949 by Dorena Lake (station 14155000). Several small diversions for logponds and irrigation upstream from station. Several observations of water temperature were made during the year. Continuous water-quality records for the period October 1961 to September 1975 have been collected at this location.

AVERAGE DISCHARGE.--55 years (water years 1906-11, 1951-99), 1,608 ft³/s, 1,165,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,500 ft³/s Nov. 22, 1909, gage height, 19.5 ft, site and datum then in use, from rating curve extended above 15,000 ft³/s; minimum discharge, 36 ft³/s Sept. 29, 30, Oct. 11, 12, 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,000 ft³/s Dec. 28, gage height, 13.02 ft; minimum discharge, 132 ft³/s Aug. 28-30, Sept. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	815	548	7300	7640	1500	8270	3230	485	744	e240	148	142
2	844	529	8940	6230	1160	6550	2420	718	775	e185	148	140
3	816	351	7820	5110	1630	6690	2190	2580	706	e200	148	138
4	792	204	9200	4640	2120	5250	1980	3010	489	e220	146	137
5	783	410	8160	3190	2270	3990	1950	2770	491	e220	145	135
6	772	904	6950	2490	3840	2950	2010	2290	610	e220	145	134
7	765	696	4570	1840	9750	2400	e1860	2230	540	e220	142	235
8	781	758	5170	1530	8220	1940	1960	1690	432	e185	146	389
9	798	736	4640	1340	6600	1850	1930	1250	367	e165	148	398
10	883	550	3380	1090	4390	1590	2040	1080	347	e170	147	404
11	883	595	3760	967	2910	1310	1930	1100	319	e170	145	405
12	866	569	5510	1000	2360	1210	2410	1130	292	e170	144	409
13	872	361	5010	1060	2270	1520	2430	1910	531	e170	142	409
14	868	301	3970	1190	2170	2170	2160	2070	453	169	142	418
15	880	283	3150	5060	2000	1980	1790	2310	411	167	142	579
16	957	517	2530	7030	2420	1680	1990	2040	402	165	142	630
17	1100	637	2120	7070	4730	1380	1850	2400	296	164	142	631
18	1080	731	1780	9210	7280	1110	1800	3460	372	162	140	632
19	1050	960	1630	7340	9310	997	1780	2770	367	161	140	630
20	1020	1060	1550	9010	7600	1300	1250	2200	283	160	140	690
21	939	6890	1100	11400	4940	1400	1110	1820	283	158	137	851
22	918	9110	945	8580	3510	1260	961	1680	279	158	137	878
23	900	8600	945	8650	4220	1170	682	1440	277	157	137	874
24	889	10300	945	8620	5010	1070	661	1670	277	156	137	870
25	871	9240	982	7430	4480	1190	730	1610	280	155	135	867
26	846	9690	1940	6230	4350	1250	788	1200	e300	153	135	858
27	807	9480	2610	5500	4930	1430	692	946	e300	153	135	855
28	785	7090	11500	4820	7870	1330	537	893	e300	151	132	847
29	617	5610	6290	2210	---	1820	471	701	e300	150	132	840
30	589	5220	8920	1700	---	2720	459	503	e300	150	132	836
31	546	---	8570	1520	---	3650	---	557	---	148	137	---
TOTAL	26332	92930	141887	150697	123840	74427	48051	52513	12123	5372	4368	16261
MEAN	849	3098	4577	4861	4423	2401	1602	1694	404	173	141	542
MAX	1100	10300	11500	11400	9750	8270	3230	3460	775	240	148	878
MIN	546	204	945	967	1160	997	459	485	277	148	132	134
AC-FT	52230	184300	281400	298900	245600	147600	95310	104200	24050	10660	8660	32250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1999, BY WATER YEAR (WY)

	MEAN	784	2021	3385	3610	2843	2259	1581	1079	593	257	369	543
MAX	3119	6305	9820	7814	6891	5716	4020	3285	2424	588	1115	1057	
(WY)	1951	1974	1965	1909	1961	1957	1963	1963	1993	1957	1955	1978	
MIN	147	121	196	200	203	385	460	247	129	90.3	49.7	63.5	
(WY)	1911	1953	1977	1977	1977	1992	1987	1987	1987	1910	1910	1910	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1906 - 1999

ANNUAL TOTAL	683591	748801											
ANNUAL MEAN	1873	2052											
HIGHEST ANNUAL MEAN										1608			
LOWEST ANNUAL MEAN										2701			1956
HIGHEST DAILY MEAN	11500	Dec 28	11500	Dec 28						512			1977
LOWEST DAILY MEAN	122	Sep 7	132	Aug 28						36500			Jan 4 1907
ANNUAL SEVEN-DAY MINIMUM	125	Sep 1	134	Aug 24						36			Sep 29 1908
ANNUAL RUNOFF (AC-FT)	1356000		1485000							42			Aug 28 1911
10 PERCENT EXCEEDS	5020		6640							1165000			
50 PERCENT EXCEEDS	911		945							751			
90 PERCENT EXCEEDS	151		148							175			

e Estimated

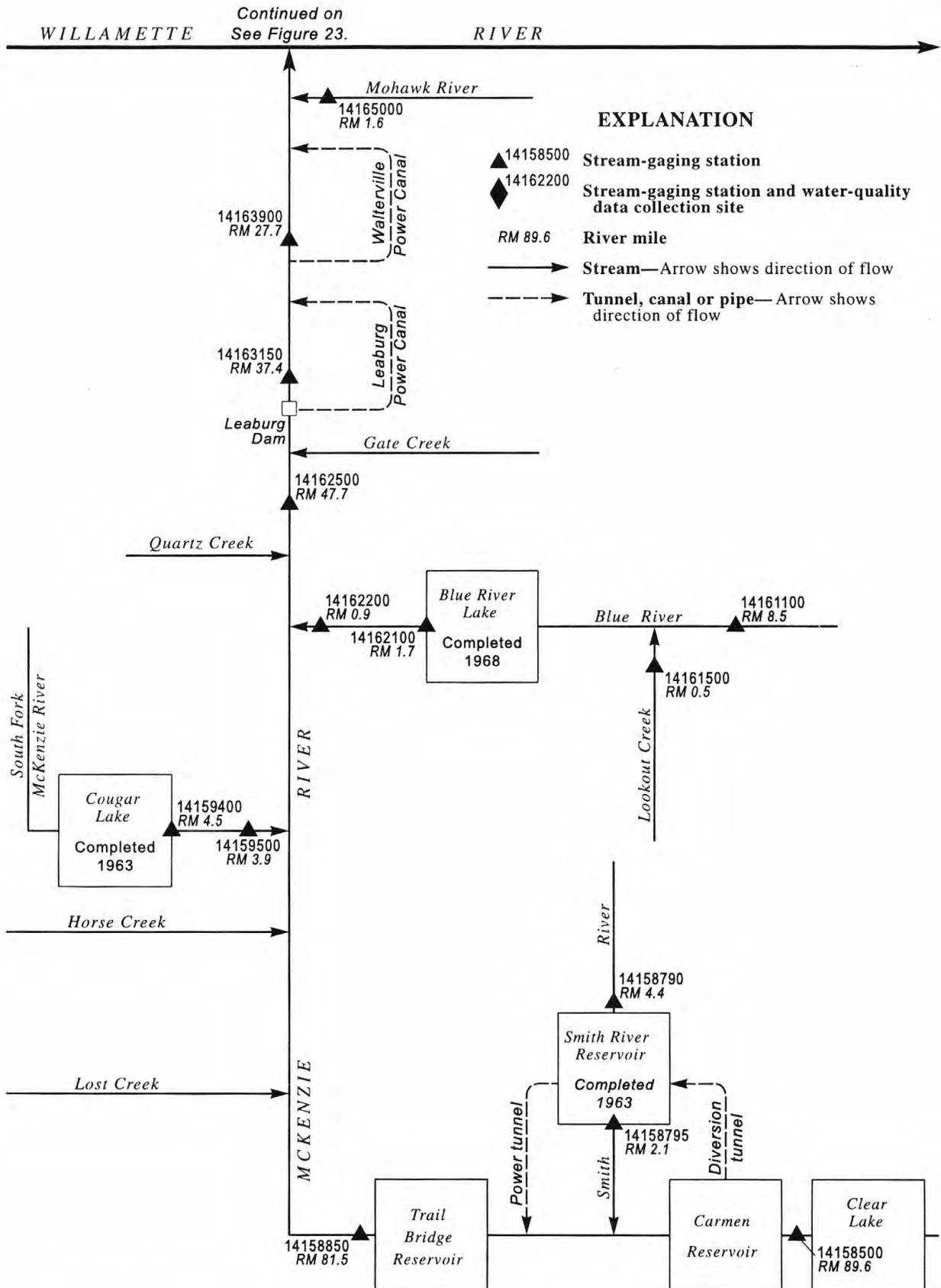


Figure 24. Schematic diagram showing gaging stations and diversions in the McKenzie River Basin.

WILLAMETTE RIVER BASIN

14158500 MCKENZIE RIVER AT OUTLET OF CLEAR LAKE, OR

LOCATION.--Lat 44°21'40", long 121°59'40", in SE 1/4 sec.8, T.14 S., R.7 E., Linn County, Hydrologic Unit 17090004, Willamette National Forest, on west bank of Clear Lake in narrow channel, 150 ft upstream from outlet and at mile 89.6.

DRAINAGE AREA.--92.4 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--June 1912 to September 1915, October 1947 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1288: 1949. WSP 1318: 1915(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,015.32 ft above sea level (levels by Eugene Water and Electric Board). June 20, 1912, to July 31, 1915, nonrecording gage at site 1.0 mi north at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by natural storage in lake. At high stages an undetermined flow enters numerous sinkholes in lava rock along south edge of lake upstream from station.

AVERAGE DISCHARGE.--55 years (water years 1913-15, 1948-99), 460 ft³/s, 67.71 in/yr, 333,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,300 ft³/s Dec. 23, 1964, gage height, 8.15 ft; minimum discharge, 116 ft³/s Oct. 27, 28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,280 ft³/s May 25, gage height, 4.69 ft; minimum discharge, 224 ft³/s Nov. 2, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	242	227	678	e840	e470	e770	497	746	1210	772	499	420
2	244	225	884	e800	e470	e710	490	806	1200	750	493	417
3	243	225	921	e760	e500	e660	483	825	1120	724	488	413
4	243	227	792	e670	e480	e660	472	805	1070	699	487	411
5	240	230	722	e620	e450	e620	460	769	1060	680	488	407
6	240	231	684	e640	e450	e600	448	766	1080	666	486	404
7	240	233	653	e660	e550	e580	441	796	1050	661	487	400
8	242	235	629	e620	e500	e560	437	785	1020	648	483	396
9	243	235	e620	e600	e470	e540	430	759	980	634	481	392
10	241	238	e620	e580	e440	e540	427	733	955	627	479	389
11	238	237	e610	e560	e440	e500	423	714	947	626	476	385
12	238	235	e680	e560	e450	e480	421	712	959	620	475	382
13	241	235	e710	e530	e440	e500	419	717	993	613	474	380
14	240	235	e650	e600	e420	e510	418	709	1030	604	473	377
15	240	242	e630	e800	e410	e510	420	699	1060	592	469	375
16	239	245	e610	e750	e450	e480	424	689	1030	580	468	371
17	240	252	e560	e740	e480	e460	430	719	994	570	466	368
18	240	266	e570	e800	e450	e450	441	861	968	561	463	365
19	240	273	e530	e770	e450	e460	485	925	949	553	462	363
20	238	293	e520	e770	e450	e480	595	930	932	551	458	360
21	238	356	e540	e780	e440	e510	635	927	916	550	456	357
22	237	368	e540	e730	e450	e510	630	947	902	541	453	355
23	235	403	e510	e700	e550	e480	629	1010	890	535	451	353
24	235	456	e470	e670	e620	497	659	1160	891	530	447	350
25	233	582	e470	e630	e600	512	718	1270	916	525	444	347
26	231	770	e520	e610	e590	530	757	1220	883	520	441	345
27	230	815	e600	e600	e570	534	756	1170	836	516	438	342
28	230	725	e1000	e570	e800	530	729	1190	808	513	434	340
29	228	678	e900	e570	---	532	709	1200	793	511	430	338
30	226	653	e850	e520	---	521	712	1180	786	507	430	336
31	226	---	e870	e480	---	508	---	1160	---	504	424	---
TOTAL	7361	10625	20543	20530	13890	16734	15995	27899	29228	18483	14403	11238
MEAN	237	354	663	662	496	540	533	900	974	596	465	375
MAX	244	815	1000	840	800	770	757	1270	1210	772	499	420
MIN	226	225	470	480	410	450	418	689	786	504	424	336
AC-FT	14600	21070	40750	40720	27550	33190	31730	55340	57970	36660	28570	22290
CFSM	2.57	3.83	7.17	7.17	5.37	5.84	5.77	9.74	10.5	6.45	5.03	4.05
IN.	2.96	4.28	8.27	8.27	5.59	6.74	6.44	11.23	11.77	7.44	5.80	4.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1999, BY WATER YEAR (WY)

	MEAN	249	375	542	526	537	512	590	683	568	391	303	254
MAX	428	828	1209	1123	1313	1205	873	1178	1202	737	499	392	
(WY)	1951	1951	1965	1997	1996	1972	1997	1949	1974	1950	1974	1974	
MIN	122	141	209	191	180	224	341	319	203	173	149	132	
(WY)	1993	1988	1977	1977	1977	1977	1955	1992	1992	1977	1992	1992	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1913 - 1999
ANNUAL TOTAL	169395	206929	
ANNUAL MEAN	464	567	460
HIGHEST ANNUAL MEAN			688
LOWEST ANNUAL MEAN			241
HIGHEST DAILY MEAN	1070	Jan 17	3100
LOWEST DAILY MEAN	225	Nov 2	116
ANNUAL SEVEN-DAY MINIMUM	226	Oct 29	117
ANNUAL RUNOFF (AC-FT)	336000	410400	333600
ANNUAL RUNOFF (CFSM)	5.02	6.14	4.98
ANNUAL RUNOFF (INCHES)	68.20	83.31	67.71
10 PERCENT EXCEEDS	723	916	801
50 PERCENT EXCEEDS	471	520	397
90 PERCENT EXCEEDS	240	240	211

e Estimated

14158790 SMITH RIVER ABOVE SMITH RIVER RESERVOIR, NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°20'05", long 122°02'45", in SW 1/4 SW 1/4 sec.24, T.14 S., R.6 E., Linn County, Hydrologic Unit 17090004, in Willamette National Forest, on right bank 200 ft upstream from Smith River Reservoir, 0.7 mi downstream from Browder Creek, 10 mi north of town of Belknap Springs, and at mile 4.4.

DRAINAGE AREA.--16.2 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR OR 80-2: 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 2,610.00 ft above sea level (levels by Eugene Water and Electric Board). Prior to Sept. 10, 1964, at datum 1.56 ft higher.

REMARKS.--Records fair. Eugene Water and Electric Board telemetry at station. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--39 years (water years 1961-99), 90.9 ft³/s, 76.25 in/yr, 65,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,160 ft³/s Dec. 22, 1964, gage height, 11.9 ft, from floodmark, from rating curve extended above 560 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 1.2 ft³/s Oct. 13, 1991, result of log jam.

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. 21	0030	*1,090	*7.87	Dec. 28	0030	1,070	7.85
Dec. 2	0930	887	7.62				

Minimum discharge, 4.4 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	9.6	183	293	49	346	69	214	352	111	17	8.3
2	7.7	9.4	588	205	49	225	66	231	265	98	16	7.9
3	9.8	10	302	156	48	175	63	221	204	84	15	7.6
4	13	16	194	127	47	140	58	185	182	75	17	7.5
5	7.2	40	147	109	44	117	55	163	198	70	20	7.2
6	5.9	33	117	97	57	102	52	186	200	73	17	7.1
7	5.4	28	99	88	69	89	53	206	177	75	26	6.9
8	7.5	25	83	78	58	80	54	173	159	67	19	6.7
9	16	22	70	71	51	71	50	147	147	65	16	6.7
10	14	22	68	67	46	65	49	128	150	69	15	6.4
11	9.4	22	183	68	42	60	50	122	171	70	14	6.4
12	7.9	22	273	69	40	60	59	140	217	67	13	6.2
13	14	22	277	72	39	71	71	141	275	63	13	6.2
14	16	24	215	229	38	77	82	136	317	56	14	6.0
15	20	106	161	473	37	78	98	134	311	48	13	6.0
16	18	136	e130	310	46	77	128	134	273	43	12	6.0
17	14	88	e110	290	60	75	187	233	243	40	11	5.8
18	12	73	e95	410	59	75	252	377	219	36	11	5.8
19	10	67	e85	307	65	88	261	347	196	34	11	5.7
20	9.3	331	e75	247	56	127	252	307	176	34	10	5.6
21	8.6	781	e70	199	50	156	207	277	167	32	10	5.6
22	8.1	344	e65	155	51	152	169	297	160	30	9.7	5.4
23	7.7	312	e60	126	152	140	167	402	158	28	9.4	5.4
24	7.8	291	e55	103	238	135	203	521	177	27	9.1	5.4
25	9.2	442	71	89	199	138	257	509	194	25	8.8	5.4
26	8.0	578	109	78	143	137	249	394	150	23	8.6	5.4
27	8.1	319	310	69	217	121	199	367	124	22	8.5	5.4
28	10	206	782	67	574	106	160	380	113	21	8.0	5.4
29	9.0	157	632	62	---	97	142	353	115	20	8.0	5.2
30	8.4	144	443	58	---	85	151	306	119	19	9.7	5.2
31	8.4	---	398	54	---	75	---	289	---	18	9.8	---
TOTAL	314.9	4680.0	6450	4826	2624	3540	3913	8020	5909	1543	399.6	185.8
MEAN	10.2	156	208	156	93.7	114	130	259	197	49.8	12.9	6.19
MAX	20	781	782	473	574	346	261	521	352	111	26	8.3
MIN	4.5	9.4	55	54	37	60	49	122	113	18	8.0	5.2
AC-FT	625	9280	12790	9570	5200	7020	7760	15910	11720	3060	793	369
CFSM	.63	9.63	12.8	9.61	5.78	7.05	8.05	16.0	12.2	3.07	.80	.38
IN.	.72	10.75	14.81	11.08	6.03	8.13	8.99	18.42	13.57	3.54	.92	.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

MEAN	24.1	117	152	140	137	120	145	152	75.1	17.5	6.86	7.37
MAX	95.4	239	404	293	371	321	270	318	260	51.5	12.9	23.5
(WY)	1998	1996	1965	1970	1996	1993	1993	1971	1974	1971	1999	1978
MIN	3.33	4.47	9.88	13.5	12.8	41.2	50.3	28.1	8.63	5.23	3.22	3.74
(WY)	1988	1994	1977	1977	1977	1992	1967	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1961 - 1999

ANNUAL TOTAL	35098.7	42405.3	
ANNUAL MEAN	96.2	116	90.9
HIGHEST ANNUAL MEAN			136
LOWEST ANNUAL MEAN			38.5
HIGHEST DAILY MEAN	851	782	2590
LOWEST DAILY MEAN	4.2	4.5	2.5
ANNUAL SEVEN-DAY MINIMUM	4.4	5.3	2.6
ANNUAL RUNOFF (AC-FT)	69620	84110	65860
ANNUAL RUNOFF (CFSM)	5.94	7.17	5.61
ANNUAL RUNOFF (INCHES)	80.60	97.38	76.25
10 PERCENT EXCEEDS	214	292	214
50 PERCENT EXCEEDS	71	70	53
90 PERCENT EXCEEDS	5.6	7.9	5.0

e Estimated

WILLAMETTE RIVER BASIN

182

14158795 SMITH RIVER RESERVOIR NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°18'20", long 122°02'40", in SW 1/4 SW 1/4 sec.36, T.14 S., R.6 E., Linn County, Hydrologic Unit 17090004, Willamette National Forest, in intake tower near left end of Smith River Dam on Smith River, 800 ft upstream from Bunchgrass Creek, 8 mi north of town of Belknap Springs, and at mile 2.1.

DRAINAGE AREA.--18.2 mi².

PERIOD OF RECORD.--March 1963 to current year.

REVISED RECORDS.--WDR OR-86-2: 1985.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Eugene Water and Electric Board).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway completed in 1963 by Eugene Water and Electric Board; storage began Mar. 18, 1963. Total capacity is 15,000 acre-ft at elevation 2,605.0 ft, top of spillway gates, and usable capacity is 9,900 acre-ft between elevations 2,525.0 ft, minimum power pool, and 2,605.0 ft. Storage of 5,100 acre-ft, below elevation 2,525.0 ft, not normally available for release. Water used for power generation. Figures herein represent total contents and are furnished by Eugene Water and Electric Board.

COOPERATION.--Elevations and area-volume curves furnished by Eugene Water and Electric Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 15,200 acre-ft Dec. 22, 1964, elevation, 2,606.5 ft; minimum contents, 5,700 acre-ft Apr. 11, 14, 1964, elevation, 2,532.90 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,570 acre-ft Oct. 2, elevation, 2,602.74 ft; minimum contents, 11,630 acre-ft Jan. 3, elevation, 2,584.38 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	2,601.21	14,310	--
Oct. 31.....	2,599.20	13,970	-340
Nov. 30.....	2,596.71	13,570	-400
Dec. 31.....	2,590.77	12,620	-950
CAL YR 1998.....			-1,050
Jan. 31.....	2,587.63	12,120	-500
Feb. 28.....	2,591.31	12,710	+590
Mar. 31.....	2,587.90	12,160	-550
Apr. 30.....	2,597.89	13,760	+1,600
May 31.....	2,598.37	13,840	+80
June 30.....	2,597.69	13,730	-110
July 31.....	2,597.65	13,720	-10
Aug. 31.....	2,597.60	13,720	0
Sept. 30.....	2,597.90	13,760	+40
WTR YR 1999.....			-550

WILLAMETTE RIVER BASIN

183

14158850 MCKENZIE RIVER BELOW TRAIL BRIDGE DAM, NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°16'05", long 122°02'55", in T.15 S., R.6 E., (unsurveyed), Linn County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 0.4 mi downstream from Trail Bridge Dam, 0.5 mi upstream from Anderson Creek, 5 mi north of town of Belknap Springs, and at mile 81.5.

DRAINAGE AREA.--184 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,980.00 ft above sea level (levels by Eugene Water and Electric Board). Prior to Oct. 11, 1963, at datum 5.60 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795). Diurnal fluctuations by powerplants and by Trail Bridge re-regulating reservoir upstream. Water is diverted from McKenzie River in SW 1/4 sec.20, T.14 S., R.7 E., to Smith River Reservoir and returned to river upstream from station. Continuous water-quality records for the period November 1976 to September 1985, July 1992 September 1993 have been collected at this location. Discharges for the period October 9 to December 19 computed from data obtained through Eugene Water and Electric Board (EWEB).

AVERAGE DISCHARGE.--40 years (water years 1960-99), 1,020 ft³/s, 75.28 in/yr, 739,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s Dec. 22, 1964, gage height, 12.45 ft, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 185 ft³/s Feb. 3, 1963; minimum daily, 423 ft³/s Nov. 22, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,840 ft³/s Dec. 27, gage height, 8.59 ft; minimum discharge, 666 ft³/s Oct. 25, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	684	682	1430	1960	1090	1730	1100	1450	1970	1390	1020	928
2	701	679	2110	1840	1090	1580	1080	1480	1940	1380	1010	928
3	708	681	1720	1740	1130	1460	1070	1520	1750	1350	1010	926
4	719	686	1650	1550	1100	1460	1070	1520	1750	1320	1000	894
5	706	718	1570	1430	1050	1350	1060	1460	1710	1300	1010	891
6	690	723	1470	1460	1050	1330	1030	1520	1770	1280	1010	912
7	695	709	1400	1480	1230	1300	996	1510	1740	1270	1030	922
8	697	709	1400	1430	1120	1250	978	1510	1630	1240	1030	914
9	700	709	1380	1390	1070	1190	962	1440	1600	1240	1030	873
10	707	709	1370	1330	1010	1190	942	1410	1570	1240	972	843
11	707	711	1370	1280	1010	1130	938	1410	1570	1240	949	836
12	697	715	1510	1290	1030	1080	948	1410	1630	1220	962	865
13	698	714	1570	1220	1020	1120	1000	1410	1680	1190	987	904
14	703	713	1470	1380	976	1130	1010	1390	1790	1170	989	928
15	706	781	1430	1820	964	1130	1010	1380	1810	1160	991	919
16	709	855	1380	1670	1010	1060	1020	1370	1740	1150	988	876
17	709	786	1250	1650	1080	1030	1110	1490	1710	1150	964	815
18	705	791	1260	1820	1040	1080	1220	1640	1700	1130	963	835
19	701	791	1180	1720	1130	1090	1240	1640	1630	1090	958	850
20	701	1100	1160	1710	1040	1110	1330	1680	1590	1100	958	851
21	698	1980	1180	1760	1010	1200	1320	1650	1560	1080	958	844
22	691	1370	1180	1630	1020	1200	1290	1660	1560	1080	962	826
23	684	1330	1110	1550	1230	1200	1280	1810	1540	1090	959	838
24	675	1380	1040	1500	1340	1180	1320	1970	1520	1090	956	837
25	673	1620	1040	1410	1300	1250	1430	2190	1570	1070	926	840
26	673	1810	1160	1380	1290	1260	1430	2050	1530	1040	939	844
27	672	1520	1400	1370	1240	1230	1440	1960	1460	1040	951	846
28	680	1430	2470	1290	1760	1160	1420	1970	1430	1040	953	813
29	678	1430	2190	1280	---	1200	1340	1990	1410	1040	940	807
30	679	1360	2040	1190	---	1180	1360	1910	1390	1040	928	815
31	684	---	2060	1110	---	1140	---	1900	---	1040	928	---
TOTAL	21530	30192	45950	46640	31430	38000	34744	50700	49250	36260	30231	26020
MEAN	695	1006	1482	1505	1122	1226	1158	1635	1642	1170	975	867
MAX	719	1980	2470	1960	1760	1730	1440	2190	1970	1390	1030	928
MIN	672	679	1040	1110	964	1030	938	1370	1390	1040	926	807
AC-FT	42700	59890	91140	92510	62340	75370	68910	100600	97690	71920	59960	51610
MEAN†	689	1000	1466	1496	1133	1217	1185	1637	1640	1169	975	868
CFSM†	3.74	5.43	7.97	8.13	6.16	6.61	6.44	8.90	8.91	6.35	5.30	4.72
IN.†	4.32	6.06	9.19	9.38	6.41	7.62	7.19	10.26	9.94	7.33	6.11	5.26
AC-FT†	42360	59490	90190	92010	62930	74820	70510	100700	97580	71910	59960	51650

CAL YR 1998 TOTAL 385276 MEAN 1056 MAX 2470 MIN 672 AC-FT 764200 MEAN† 1054 CFSM† 5.73 IN.† 77.77 AC-FT† 763200
WTR YR 1999 TOTAL 440947 MEAN 1208 MAX 2470 MIN 672 AC-FT 874600 MEAN† 1207 CFSM† 6.56 IN.† 89.06 AC-FT† 874000

† Adjusted for change in contents in Smith River Reservoir.

WILLAMETTE RIVER BASIN

14159400 COUGAR LAKE NEAR RAINBOW, OR

LOCATION.--Lat 44°07'40", long 122°14'25", in SE 1/4 SE 1/4 sec.31, T.16 S., R.5 E., Lane County, Hydrologic Unit 17090004, Willamette National Forest, in intake tower near left end of Cougar Dam on South Fork McKenzie River, 2.7 mi south of Rainbow, and at mile 4.5.

DRAINAGE AREA.--207 mi².

PERIOD OF RECORD.--October 1963 to current year. Prior to October 1971, published as Cougar Reservoir near Rainbow.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam with concrete spillway completed in 1963 by the Corps of Engineers; storage began September 1963. Total capacity is 219,100 acre-ft at elevation 1,699 ft, maximum pool, and usable capacity is 164,800 acre-ft between elevations 1,516 ft, minimum power pool, and 1,699 ft. Lake used for flood control and power generation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 215,900 acre-ft Apr. 28, 1990, elevation, 1,696.51 ft; minimum contents, 33,690 acre-ft Oct. 31 to Nov. 2, 1965, elevation, 1,475.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 208,500 acre-ft May 18, elevation, 1,690.63 ft; minimum contents, 65,600 acre-ft Jan. 14, elevation, 1,534.65 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,510	50,920	1,650	162,300
1,550	75,940	1,696	215,300
1,600	114,800		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620.70	1587.28	1550.77	1569.01	1538.61	1617.46	1644.98	1678.25	1689.97	1689.76	1688.32	1660.52
2	1619.68	1586.20	1560.06	1563.31	1540.14	1620.37	1645.85	1680.18	1689.53	1689.67	1687.70	1659.75
3	1618.72	1585.11	1565.42	1556.48	1541.76	1622.27	1646.70	1682.06	1689.17	1689.72	1686.77	1658.94
4	1617.87	1584.20	1563.61	1551.79	1543.34	1623.41	1647.41	1683.00	1689.06	1689.87	1685.84	1658.14
5	1616.81	1583.76	1557.48	1548.95	1544.79	1624.01	1648.12	1683.24	1689.36	1689.94	1685.05	1657.32
6	1615.70	1582.81	1550.90	1546.53	1547.67	1624.29	1648.76	1684.00	1689.54	1689.99	1684.20	1656.49
7	1614.58	1581.43	1546.03	1544.67	1552.71	1624.34	1649.41	1685.01	1689.47	1690.05	1683.64	1655.64
8	1613.54	1580.07	1541.19	1542.52	1556.07	1624.59	1650.23	1685.54	1689.44	1689.93	1682.82	1654.80
9	1612.59	1578.60	1537.73	1540.16	1558.47	1625.47	1650.96	1685.68	1689.39	1689.69	1681.94	1653.95
10	1611.64	1577.21	1536.69	1538.53	1560.36	1626.53	1651.68	1685.98	1689.44	1689.44	1681.01	1653.10
11	1610.56	1575.78	1538.24	1537.48	1561.86	1627.49	1652.36	1686.47	1689.71	1689.21	1680.41	1652.24
12	1609.44	1574.22	1541.77	1536.39	1563.19	1628.53	1653.26	1687.26	1690.00	1689.21	1679.43	1651.37
13	1608.40	1572.69	1545.40	1535.21	1564.39	1629.88	1654.39	1688.05	1690.20	1689.39	1678.48	1650.53
14	1607.45	1571.23	1547.71	1536.26	1565.56	1631.35	1655.54	1688.73	1690.36	1689.52	1677.52	1649.69
15	1606.57	1570.26	1548.76	1544.62	1566.68	1632.45	1656.84	1689.33	1690.27	1689.60	1676.53	1648.80
16	1605.60	1570.00	1549.19	1550.17	1568.70	1632.67	1658.55	1689.53	1689.90	1689.64	1675.53	1647.91
17	1604.54	1569.03	1549.61	1554.88	1572.27	1632.51	1661.02	1689.90	1689.66	1689.64	1674.53	1647.01
18	1603.45	1567.64	1549.77	1561.42	1576.03	1632.24	1664.04	1690.29	1689.44	1689.63	1673.49	1646.10
19	1602.33	1566.13	1549.49	1562.16	1579.84	1632.72	1666.97	1689.48	1689.29	1689.59	1672.46	1645.20
20	1601.17	1566.61	1548.79	1558.96	1582.55	1634.51	1669.40	1689.16	1689.17	1689.57	1671.39	1644.29
21	1599.99	1585.32	1547.78	1560.08	1584.68	1636.60	1670.80	1688.76	1689.29	1689.53	1670.34	1643.36
22	1598.81	1591.14	1545.97	1563.18	1586.78	1637.86	1671.57	1688.59	1689.53	1689.44	1669.27	1642.43
23	1597.60	1590.22	1543.17	1564.94	1590.26	1638.34	1672.11	1688.99	1689.74	1689.40	1668.18	1641.49
24	1596.43	1589.07	1540.32	1562.25	1594.11	1638.73	1672.75	1689.47	1690.12	1689.45	1667.07	1640.56
25	1595.20	1588.81	1539.18	1558.79	1597.60	1639.20	1673.77	1689.21	1690.02	1689.44	1665.96	1639.61
26	1593.98	1590.20	1539.65	1554.80	1600.36	1639.80	1674.75	1689.11	1689.78	1689.30	1665.06	1638.65
27	1592.83	1585.46	1544.38	1549.40	1604.10	1640.11	1675.44	1689.32	1689.78	1689.15	1664.30	1637.68
28	1591.74	1576.54	1570.88	1544.18	1611.78	1640.67	1675.81	1689.54	1689.75	1689.01	1663.51	1636.71
29	1590.54	1566.61	1579.91	1540.71	---	1641.87	1676.18	1689.56	1689.74	1688.84	1662.72	1635.72
30	1589.40	1556.61	1576.61	1539.13	---	1642.99	1676.83	1689.54	1689.76	1688.68	1662.01	1634.70
31	1588.31	---	1572.91	1538.18	---	1644.06	---	1689.68	---	1688.50	1661.28	---
MAX	1620.70	1591.14	1579.91	1569.01	1611.78	1644.06	1676.83	1690.29	1690.36	1690.05	1688.32	1660.52
MIN	1588.31	1556.61	1536.69	1535.21	1538.61	1617.46	1644.98	1678.25	1689.06	1688.50	1661.28	1634.70
(†)	104900	80610	92700	67900	125100	156200	192000	207400	207500	205900	174400	146800
(‡)	-29500	-24290	+12090	-24800	+57200	+31100	+35800	+15400	+100	-1600	-31500	-27600

CAL YR 1998 MAX 1692.05 MIN 1536.69 AC-FT† +25010
WTR YR 1999 MAX 1690.36 MIN 1535.21 AC-FT† +12400

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

WILLAMETTE RIVER BASIN

185

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR

LOCATION.--Lat 44°08'10", long 122°14'50", in NE 1/4 sec.31, T.16 S., R.5 E., Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on right bank 0.2 mi upstream from Cougar Creek, 0.6 mi downstream from Cougar Dam, 2.1 mi south of Rainbow, and at mile 3.9.

DRAINAGE AREA.--208 mi².

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,236.42 ft above sea level (Federal Highway Administration bench mark). Oct. 1 to Nov. 4, 1947, nonrecording gage at site 40 ft upstream at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Cougar Lake (station 14159400), usable capacity, 164,800 acre-ft. No diversion upstream from station. Water temperatures July 1955 to September 1997.

AVERAGE DISCHARGE.--52 years (water years 1948-99), 857 ft³/s, 55.95 in/yr, 620,900 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s Dec. 11, 1956, gage height, 8.66 ft, from rating curve extended above 8,100 ft³/s; maximum gage height, 8.90 ft Dec. 22, 1955 (backwater from debris); minimum discharge, 17 ft³/s Nov. 18, 1965; minimum daily, 85 ft³/s Apr. 26-28, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s Dec. 28, 1945, gage height, 8.8 ft, from floodmarks, at Corps of Engineers gage at site 40 ft upstream at datum 0.80 ft higher; gage height at present site and datum, about 9.3 ft, computed by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,170 ft³/s Nov. 27, gage height, 4.84 ft; minimum discharge, 271 ft³/s Nov. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	743	701	3250	4000	603	531	393	413	1870	898	470	738
2	734	707	1020	3990	354	899	387	343	2030	897	726	736
3	729	710	1290	3930	358	1020	388	667	1650	750	906	741
4	730	709	2580	2840	361	1020	390	1070	1330	647	906	747
5	733	711	3610	2050	344	1020	387	1290	1130	640	908	745
6	729	817	3370	1790	337	1010	387	1280	1230	653	915	750
7	726	954	2670	1560	349	1010	388	1290	1290	655	926	752
8	728	963	2590	1540	341	852	348	1290	1140	730	920	750
9	733	954	1920	1530	335	492	333	1290	1070	771	913	747
10	736	953	1140	1260	336	338	333	1030	966	773	916	748
11	735	947	1030	1100	340	338	334	906	898	772	922	749
12	737	945	1040	1100	340	339	332	908	1060	580	928	750
13	740	934	1050	1090	340	338	332	911	1340	470	926	729
14	730	908	1050	1100	342	336	329	915	1580	469	925	731
15	726	894	1070	1120	338	486	332	910	1850	473	927	752
16	729	897	1060	1130	339	840	334	1060	1900	473	921	749
17	736	1060	1060	1120	347	958	331	1310	1710	476	922	750
18	729	1180	1060	1100	359	992	331	2190	1600	470	927	753
19	730	1170	1070	2270	346	748	333	2740	1470	470	926	746
20	730	1170	1070	3280	339	436	515	2240	1380	466	926	746
21	731	432	1060	2070	343	391	821	2070	1210	475	924	752
22	729	1330	1250	1260	347	710	932	1910	1070	477	929	751
23	730	2980	1470	1620	349	987	915	1850	1070	432	928	751
24	729	2970	1470	2550	340	987	932	2410	1070	374	935	747
25	730	2450	1190	2510	338	973	932	2970	1420	413	935	751
26	730	2310	1040	2460	343	968	928	2460	1250	476	815	755
27	731	4050	1000	2740	342	985	928	2150	983	477	744	754
28	737	4960	329	2580	344	778	929	2150	932	472	749	754
29	734	4860	2310	1930	---	499	813	2110	908	477	748	760
30	714	4630	5000	1300	---	445	638	1940	893	471	752	766
31	700	---	4600	1080	---	394	---	1710	---	470	750	---
TOTAL	22638	49256	54719	61000	9894	22120	16005	47783	39300	17547	26765	22450
MEAN	730	1642	1765	1968	353	714	534	1541	1310	566	863	748
MAX	743	4960	5000	4000	603	1020	932	2970	2030	898	935	766
MIN	700	432	329	1080	335	336	329	343	893	374	470	729
AC-FT	44900	97700	108500	121000	19620	43880	31750	94780	77950	34800	53090	44530
MEAN†	250	1234	1961	1564	1384	1219	1136	1792	1312	540	351	285
CFSM†	1.20	5.93	9.43	7.52	6.65	5.86	5.46	8.61	6.31	2.60	1.69	1.37
IN.†	1.39	6.62	10.87	8.67	6.92	6.76	6.09	9.93	7.04	2.99	1.95	1.53
AC-FT†	15400	73410	120600	96200	76820	74980	67550	110200	78050	33200	21590	16930

CAL YR 1998 TOTAL 318100 MEAN 872 MAX 5000 MIN 251 AC-FT 631000 MEAN† 906 CFSM† 4.36 IN.† 59.13 AC-FT† 656000
WTR YR 1999 TOTAL 389477 MEAN 1067 MAX 5000 MIN 329 AC-FT 772500 MEAN† 1084 CFSM† 5.21 IN.† 70.75 AC-FT† 784900

† Adjusted for change in contents, in Cougar Lake.

14161100 BLUE RIVER BELOW TIDBITS CREEK, NEAR BLUE RIVER, OR

LOCATION.--Lat 44°13'05", long 122°15'50", in SE 1/4 NE 1/4 sec.36, T.15 S., R.4 E., Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 0.2 mi downstream from Tidbits Creek, 5.5 mi northeast of town of Blue River, and at mile 8.5.

DRAINAGE AREA.--45.8 mi².

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,386.90 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records fair. No regulation or diversion upstream from station. Continuous water-quality records for the period September 1963 to September 1987 have been collected at this location. U.S. Geological Survey satellite telemetry at station.

AVERAGE DISCHARGE.--36 years (water years 1964-99), 254 ft³/s, 75.46 in/yr, 184,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s Dec. 22, 1964, gage height, 15.32 ft, from floodmarks, from rating curve extended above 2,800 ft³/s on basis of slope-area measurement of peak flow; minimum daily discharge, 6.0 ft³/s Oct. 27-29, 1987.

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)
Nov. 21	0100	3,590	8.23	Jan. 15	0030	2,060	6.79
Dec. 2	0900	3,760	8.36	Feb. 28	0800	2,530	7.29
Dec. 28	0100	*5,510	*9.55				

Minimum discharge, 10.0 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	32	773	981	206	1230	233	412	445	107	25	20
2	26	33	2820	636	221	777	226	467	352	e106	24	18
3	45	33	1310	455	257	613	221	577	282	e98	24	17
4	89	64	718	358	298	472	201	550	252	e94	23	16
5	41	176	478	302	276	370	193	465	266	e85	31	16
6	27	141	360	266	580	309	189	534	275	e82	32	15
7	22	119	311	245	877	265	196	548	245	e82	74	15
8	25	108	297	221	543	241	220	433	227	e76	53	14
9	51	90	244	201	368	216	205	355	204	72	36	14
10	76	97	234	186	287	195	200	300	199	71	31	14
11	44	111	1040	196	238	182	211	301	212	69	28	14
12	32	90	1290	220	211	208	302	394	251	66	26	13
13	49	80	1080	239	198	370	355	376	292	61	25	13
14	83	77	776	753	199	397	365	352	319	56	28	13
15	72	262	534	1570	204	361	399	335	315	52	26	13
16	66	347	422	1070	388	324	537	311	273	48	24	12
17	49	196	421	1120	e650	290	728	563	246	46	23	12
18	40	192	369	1470	e750	286	773	892	224	43	22	12
19	34	187	309	1070	e850	385	670	715	201	41	21	12
20	30	1050	e245	1070	e550	562	580	600	184	40	21	11
21	27	2990	e205	1050	e450	556	466	507	180	40	20	11
22	25	1590	e180	748	e500	497	369	509	170	37	19	11
23	23	1180	162	608	e1600	467	351	629	164	35	19	11
24	23	1160	155	452	e1600	440	459	771	178	34	18	11
25	29	1450	355	357	1020	443	561	722	203	33	18	11
26	e25	1480	845	296	687	429	480	564	164	32	17	11
27	e25	911	1750	250	1100	373	377	526	138	30	17	11
28	e36	553	4210	255	2150	318	297	519	126	29	17	11
29	e35	440	2170	258	---	348	256	470	121	28	16	11
30	28	498	1400	246	---	313	283	414	120	27	20	11
31	27	---	1280	229	---	264	---	387	---	26	27	---
TOTAL	1216	15737	26743	17378	17258	12501	10903	15498	6828	1746	805	394
MEAN	39.2	525	863	561	616	403	363	500	228	56.3	26.0	13.1
MAX	89	2990	4210	1570	2150	1230	773	892	445	107	74	20
MIN	12	32	155	186	198	182	189	300	120	26	16	11
AC-FT	2410	31210	53040	34470	34230	24800	21630	30740	13540	3460	1600	781
CFSM	.86	11.5	18.8	12.2	13.5	8.80	7.94	10.9	4.97	1.23	.57	.29
IN.	.99	12.78	21.72	14.11	14.02	10.15	8.86	12.59	5.55	1.42	.65	.32

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1964	71.7	343	1964	512	501
1965	234	731	1965	1033	441
1966	1998	1974	1966	1965	1066
1967	6.42	21.0	1967	33.0	1970
1968	1988	1994	1968	48.3	1996
1969			1969	65.0	1972
1970			1970	84.6	1977
1971			1971	1977	1992
1972			1972	1992	1968
1973			1973	1992	1992
1974			1974	1992	1992
1975			1975	1992	1992
1976			1976	1992	1992
1977			1977	1992	1992
1978			1978	1992	1992
1979			1979	1992	1992
1980			1980	1992	1992
1981			1981	1992	1992
1982			1982	1992	1992
1983			1983	1992	1992
1984			1984	1992	1992
1985			1985	1992	1992
1986			1986	1992	1992
1987			1987	1992	1992
1988			1988	1992	1992
1989			1989	1992	1992
1990			1990	1992	1992
1991			1991	1992	1992
1992			1992	1992	1992
1993			1993	1992	1992
1994			1994	1992	1992
1995			1995	1992	1992
1996			1996	1992	1992
1997			1997	1992	1992
1998			1998	1992	1992
1999			1999	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1964 - 1999

ANNUAL TOTAL	103639.8	127007	254
ANNUAL MEAN	284	348	404
HIGHEST ANNUAL MEAN			106
LOWEST ANNUAL MEAN			10000
HIGHEST DAILY MEAN	4210	4210	6.0
LOWEST DAILY MEAN	8.9	11	6.1
ANNUAL SEVEN-DAY MINIMUM	9.4	11	6.1
ANNUAL RUNOFF (AC-FT)	205600	251900	184300
ANNUAL RUNOFF (CFSM)	6.20	7.60	5.55
ANNUAL RUNOFF (INCHES)	84.18	103.16	75.46
10 PERCENT EXCEEDS	705	804	580
50 PERCENT EXCEEDS	169	221	142
90 PERCENT EXCEEDS	17	19	16

e Estimated

14161500 LOOKOUT CREEK NEAR BLUE RIVER, OR

LOCATION.--Lat 44°12'35", long 122°15'20", in T.15, R.5 E. (unsurveyed), Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 6.0 mi northeast of town of Blue River, and at mile 0.5.

DRAINAGE AREA.--24.1 mi².

PERIOD OF RECORD.--August 1949 to September 1955, September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,377.76 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period August 1950 to September 1955 and September 1963 to September 1981 have been collected at this location. On Feb. 6, 7, 1996, a series of debris flows from contributing tributaries caused extreme scour and fill throughout the channel.

AVERAGE DISCHARGE.--42 years (water years 1950-55, 1964-99), 125 ft³/s, 70.47 in/yr, 90,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s Feb. 7, 1996, gage height, 10.03 ft, on basis of slope-area measurement of peak flow; minimum discharge, 4.8 ft³/s Sept. 16, 17, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1430	1,830	6.04	Dec. 28	0330	*3,380	*7.26
Dec. 2	1230	1,330	5.53				

Minimum discharge, 7.8 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	20	276	463	101	612	119	140	202	60	20	17
2	16	19	980	330	112	410	110	167	166	56	19	16
3	24	19	680	248	129	316	104	217	132	53	19	15
4	44	31	392	198	147	246	96	219	118	51	19	15
5	20	64	254	166	144	200	93	192	124	47	23	14
6	13	59	174	144	262	169	88	209	125	46	26	14
7	12	54	142	129	415	146	86	218	111	46	46	14
8	15	52	138	114	278	130	89	189	101	43	31	14
9	26	46	108	104	193	116	86	164	93	41	25	13
10	33	50	96	96	151	105	86	142	92	40	23	13
11	20	53	380	97	124	96	88	137	100	39	22	13
12	16	47	516	103	109	104	96	152	119	38	21	13
13	24	43	469	103	102	146	104	146	141	36	20	13
14	38	42	367	262	100	148	108	139	160	33	21	12
15	33	101	262	628	99	141	115	130	162	32	20	12
16	27	167	195	471	166	132	143	123	142	30	19	12
17	22	104	175	494	292	121	206	191	126	29	19	12
18	19	107	150	630	328	117	253	342	116	28	18	12
19	16	106	120	472	370	130	247	303	106	27	18	12
20	14	351	e89	475	257	169	231	256	98	26	17	12
21	13	1590	e73	562	198	187	197	217	96	26	17	11
22	12	852	e63	442	210	184	165	213	91	25	17	11
23	12	565	56	362	498	182	147	259	88	24	16	11
24	12	518	53	265	498	174	161	321	92	23	16	11
25	15	483	140	205	405	171	e202	312	100	23	16	11
26	13	589	329	168	321	170	e178	248	83	23	16	11
27	13	443	1020	140	443	159	157	232	72	22	16	11
28	19	287	2430	134	828	145	132	231	66	21	15	11
29	18	217	1300	129	---	158	115	211	64	21	15	11
30	15	219	790	119	---	150	111	186	63	20	18	11
31	14	---	615	110	---	133	---	172	---	20	20	---
TOTAL	596.0	7298	12832	8363	7280	5567	4113	6378	3349	1049	628	378
MEAN	19.2	243	414	270	260	180	137	206	112	33.8	20.3	12.6
MAX	44	1590	2430	630	828	612	253	342	202	60	46	17
MIN	8.0	19	53	96	99	96	86	123	63	20	15	11
AC-FT	1180	14480	25450	16590	14440	11040	8160	12650	6640	2080	1250	750
CFSM	.80	10.1	17.2	11.2	10.8	7.45	5.69	8.54	4.63	1.40	.84	.52
IN.	.92	11.26	19.81	12.91	11.24	8.59	6.35	9.84	5.17	1.62	.97	.58

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1999, BY WATER YEAR (WY)

	MEAN	38.0	154	237	245	221	176	169	136	73.8	26.0	15.0	15.2
MAX	179	350	794	591	640	420	300	255	212	46.6	22.2	40.5	
(WY)	1951	1997	1965	1953	1996	1972	1993	1950	1983	1976	1978	1978	
MIN	5.46	9.36	19.9	25.1	27.0	48.2	69.8	39.2	17.3	12.2	8.26	6.81	
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1992	1992	1987	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1950 - 1999
ANNUAL TOTAL	55311.3	57831.0	
ANNUAL MEAN	152	158	125
HIGHEST ANNUAL MEAN			207
LOWEST ANNUAL MEAN			49.2
HIGHEST DAILY MEAN	2430	Dec 28	4890
LOWEST DAILY MEAN	7.5	Sep 17	5.1
ANNUAL SEVEN-DAY MINIMUM	7.9	Sep 11	5.2
ANNUAL RUNOFF (AC-FT)	109700	114700	90560
ANNUAL RUNOFF (CFSM)	6.29	6.57	5.19
ANNUAL RUNOFF (INCHES)	85.38	89.27	70.47
10 PERCENT EXCEEDS	376	368	280
50 PERCENT EXCEEDS	82	105	75
90 PERCENT EXCEEDS	11	14	12

e Estimated

WILLAMETTE RIVER BASIN

14162100 BLUE RIVER LAKE NEAR BLUE RIVER, OR

LOCATION.--Lat 44°10'20", long 122°19'40", in SE 1/4 SE 1/4 sec.16, T.16 S., R.4 E., Lane County, Hydrologic Unit 17090004, in intake tower near left end of Blue River Dam on Blue River, 1.4 mi north of town of Blue River, and at mile 1.7.

DRAINAGE AREA.--87.3 mi².

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1971, published as Blue River Reservoir near Blue River.

REVISED RECORDS.--WDR OR-92-1: 1975-77.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake elevation data for the period Dec. 5 through Mar. 24 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1968 by Corps of Engineers; storage began October 1968. Total capacity is 89,520 acre-ft at elevation 1,357 ft, maximum pool, and usable capacity is 85,550 acre-ft between elevations 1,180 ft, minimum flood control pool, and 1,357 ft, maximum pool. Reservoir used for flood control. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 86,260 acre-ft Apr. 28, 1990, elevation, 1,353.63 ft; minimum contents observed since first filling in 1968, 305 acre-ft Dec. 7, 1973, elevation, 1,125.47 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents recorded, 83,190 acre-ft May 18, elevation, 1,350.39 ft; minimum contents recorded, 4,120 acre-ft Nov. 18, elevation, 1,180.10 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,120	156	1,160	1,870	1,250	19,260
1,130	437	1,180	3,970	1,290	36,960
1,140	764	1,200	7,030	1,340	73,710
1,150	1,210	1,220	11,040	1,354	86,620

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1312.79	1245.03	1206.61	1278.04	1194.12	1301.51	1319.58	1342.79	1349.93	1350.13	1349.52	1348.82
2	1311.03	1241.72	1245.85	1266.74	1200.43	1299.53	1320.52	1344.41	1349.33	1350.14	1349.48	1348.76
3	1309.55	1238.23	1250.84	1252.28	1207.36	1296.52	1321.54	1345.75	1349.11	1350.13	1349.44	1348.69
4	1308.34	1234.89	1241.37	1240.89	1212.49	1294.18	1322.43	1346.01	1349.10	1350.10	1349.40	1348.61
5	1306.74	1233.03	1225.98	1230.05	1214.26	1293.20	1323.29	1345.53	1349.30	1350.04	1349.44	1348.53
6	1305.03	1229.39	1212.94	1218.61	1220.96	1293.70	1324.11	1346.01	1349.45	1349.96	1349.48	1348.46
7	1303.28	1223.46	1208.37	1210.40	1229.49	1294.97	1324.95	1346.95	1349.44	1349.90	1349.75	1348.06
8	1301.57	1217.02	1204.41	1202.70	1229.89	1296.41	1325.90	1347.47	1349.36	1349.89	1349.83	1347.16
9	1300.03	1210.12	1198.40	1195.32	1231.88	1297.63	1326.74	1347.70	1349.18	1349.93	1349.84	1345.74
10	1298.57	1204.43	1195.77	1190.65	1235.86	1298.69	1327.60	1347.73	1349.18	1349.97	1349.83	1344.14
11	1296.87	1199.45	1205.93	1188.24	1238.65	1299.65	1328.46	1347.94	1349.38	1350.00	1349.80	1342.54
12	1295.12	1193.46	1213.87	1186.91	1240.88	1300.84	1329.52	1348.53	1349.73	1350.02	1349.77	1340.91
13	1293.48	1188.75	1215.69	1186.01	1242.85	1302.85	1330.52	1349.06	1349.88	1350.02	1349.74	1339.29
14	1292.01	1186.02	1211.68	1200.22	1244.87	1304.86	1331.17	1349.50	1349.95	1350.01	1349.71	1337.64
15	1290.44	1188.80	1202.81	1225.21	1246.88	1306.63	1331.62	1349.72	1349.93	1349.98	1349.68	1336.00
16	1288.56	1189.99	1195.09	1232.89	1250.81	1308.16	1332.53	1349.76	1349.69	1349.93	1349.64	1334.30
17	1286.43	1184.08	1190.93	1240.02	1257.65	1309.50	1333.60	1350.14	1349.59	1349.89	1349.60	1332.59
18	1284.19	1183.19	1189.62	1249.44	1263.36	1310.70	1334.54	1349.99	1349.53	1349.83	1349.55	1330.86
19	1281.85	1182.83	1189.23	1248.91	1268.67	1311.82	1335.13	1349.35	1349.46	1349.79	1349.50	1329.11
20	1279.39	1201.22	---	1249.57	1271.73	1313.09	1335.41	1348.80	1349.43	1349.80	1349.45	1327.49
21	1276.86	1254.32	1185.11	1255.42	1274.01	1314.20	1335.29	1348.59	1349.54	1349.80	1349.40	1325.96
22	1274.24	1266.13	1183.93	1256.10	1276.81	1314.78	1335.53	1348.72	1349.82	1349.79	1349.35	1324.43
23	1271.57	1265.62	1184.13	1251.92	1284.74	1314.98	1336.20	1349.24	1350.07	1349.77	1349.29	1322.88
24	1268.87	1263.05	1184.46	1242.80	1289.27	1315.05	1337.23	1349.81	1350.26	1349.73	1349.23	1321.32
25	1265.97	1263.07	1188.56	1229.87	1289.92	1315.12	1338.61	1349.56	1350.31	1349.70	1349.18	1319.77
26	1263.00	1264.92	1191.76	1214.88	1289.52	1315.19	1339.65	1349.41	1350.12	1349.68	1349.11	1318.19
27	1260.00	1258.91	1217.68	1199.84	1293.03	1315.32	1340.20	1349.69	1349.91	1349.66	1349.05	1316.61
28	1257.05	1248.19	1276.53	1193.73	1300.67	1315.48	1340.41	1349.96	1349.92	1349.64	1348.99	1315.00
29	1254.07	1234.52	1289.74	1193.31	---	1316.41	1340.74	1349.89	1350.01	1349.62	1348.92	1313.39
30	1251.08	1217.99	1289.20	1192.48	---	1317.55	1341.45	1349.77	1350.08	1349.60	1348.91	1311.78
31	1248.05	---	1285.72	1191.09	---	1318.58	---	1349.92	---	1349.56	1348.89	---
MAX	1312.79	1266.13	---	1278.04	1300.67	1318.58	1341.45	1350.14	1350.31	1350.14	1349.84	1348.82
MIN	1248.05	1182.83	---	1186.01	1194.12	1293.20	1319.58	1342.79	1349.10	1349.56	1348.89	1311.78
(†)	18620	10590	34560	5570	43530	56160	74990	82740	82900	82410	81780	51150
(‡)	-34700	-8030	+23970	-28990	+37960	+12630	+18830	+7750	+160	-490	-630	-30630
CAL YR 1998	MAX	---	MIN	---	AC-FT†	+29570						
WTR YR 1999	MAX	---	MIN	---	AC-FT†	-2170						

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

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14162200 BLUE RIVER AT BLUE RIVER, OR

LOCATION.--Lat 44°09'45", long 122°19'55", in NW 1/4 SE 1/4 sec.21, T.16 S., R.4 E., Lane County, Hydrologic Unit 17090004, on right bank 0.3 mi upstream from Simmonds Creek, 0.7 mi north of town of Blue River, 0.8 mi downstream from Blue River Dam, and at mile 0.9.

DRAINAGE AREA.--87.7 mi².

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,056.53 ft above sea level (Corps of Engineers bench mark). Prior to Aug. 25, 1966, nonrecording gage at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1968 by Blue River Lake (station 14162100). No diversion upstream from station. Discharge not adjusted for storage or release from Blue River Lake as losses from reservoir at times exceed natural flow.

AVERAGE DISCHARGE.--33 years (water years 1967-99), 463 ft³/s, 335,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,270 ft³/s Feb. 23, 1968, gage height, 8.93 ft; minimum discharge, 0.80 ft³/s Oct. 8, 10, 11, 1968; minimum daily, 3.7 ft³/s Oct. 8, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964 reached a stage of 16.5 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,760 ft³/s Dec. 31, Jan. 1, gage height, 8.15 ft; minimum discharge, 31 ft³/s Oct. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	703	575	2200	3660	203	2030	91	96	694	158	53	53
2	656	590	884	3640	58	2020	65	98	801	158	53	53
3	602	591	1580	3610	64	2010	49	502	534	158	53	53
4	599	582	2900	2570	216	1550	51	884	407	158	53	53
5	597	576	2900	1950	428	967	51	991	337	158	53	53
6	594	720	1950	1670	506	453	51	684	373	158	53	53
7	590	874	974	1140	850	150	51	513	402	158	53	183
8	588	846	953	951	1020	53	51	515	402	118	53	396
9	585	764	916	835	484	53	51	515	402	94	53	613
10	584	640	640	607	47	51	51	514	308	94	53	685
11	580	586	1140	486	46	50	51	440	253	94	53	685
12	576	561	1640	478	53	51	90	402	253	94	53	684
13	575	422	1690	474	58	53	184	402	405	94	53	680
14	571	286	1680	487	59	53	316	402	493	94	52	680
15	584	313	1600	798	60	53	443	466	532	94	52	677
16	627	664	1250	1030	60	53	445	500	553	94	52	688
17	647	712	955	1060	61	53	649	777	446	94	51	693
18	641	490	713	1120	240	81	792	1500	398	94	52	689
19	636	450	558	1910	398	243	794	1420	363	76	51	688
20	642	694	588	1800	298	432	795	1170	320	65	51	638
21	644	232	443	1140	203	500	795	885	245	65	51	598
22	637	890	397	1520	204	606	507	749	158	65	52	598
23	632	2220	301	2080	487	685	295	749	158	65	53	594
24	627	2570	283	2460	1060	688	296	930	217	65	53	593
25	636	2320	509	2430	1500	689	298	1210	313	65	53	590
26	643	2150	1370	2080	1340	689	334	929	348	57	53	593
27	636	2780	1590	1590	997	587	398	704	310	53	53	589
28	629	2950	90	863	1660	505	398	705	189	53	53	586
29	610	2910	1260	507	---	350	291	767	158	53	53	585
30	590	2740	2980	505	---	203	153	695	158	53	53	584
31	583	---	3280	500	---	143	---	552	---	53	53	---
TOTAL	19044	33698	40214	45951	12660	16104	8886	21666	10930	2952	1630	14907
MEAN	614	1123	1297	1482	452	519	296	699	364	95.2	52.6	497
MAX	703	2950	3280	3660	1660	2030	795	1500	801	158	53	693
MIN	571	232	90	474	46	50	49	96	158	53	51	53
AC-FT	37770	66840	79760	91140	25110	31940	17630	42970	21680	5860	3230	29570

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

	MEAN	303	670	958	886	475	393	329	348	241	292	387	267
MAX	811	1459	2189	1720	1594	1766	853	699	549	626	765	566	
(WY)	1998	1974	1978	1996	1972	1993	1999	1984	1979	1971	1997	1997	
MIN	45.7	39.4	63.1	68.1	32.6	12.0	12.0	35.0	63.9	46.6	26.6	27.1	
(WY)	1993	1988	1977	1977	1977	1977	1973	1973	1967	1967	1967	1967	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1967 - 1999

ANNUAL TOTAL	186167	228642	463	
ANNUAL MEAN	510	626	727	
HIGHEST ANNUAL MEAN			192	1972
LOWEST ANNUAL MEAN			192	1977
HIGHEST DAILY MEAN	3280	Dec 31	3660	Jan 1
LOWEST DAILY MEAN	47	Aug 4	46	Feb 11
ANNUAL SEVEN-DAY MINIMUM	48	Jul 29	51	Apr 3
ANNUAL RUNOFF (AC-FT)	369300	453500	335500	
10 PERCENT EXCEEDS	1330	1580	1010	
50 PERCENT EXCEEDS	279	502	293	
90 PERCENT EXCEEDS	51	53	51	

WILLAMETTE RIVER BASIN

14162500 MCKENZIE RIVER NEAR VIDA, OR

LOCATION.--Lat 44°07'30", long 122°28'10", in NE 1/4 NE 1/4 sec.5, T.17 S., R.3 E., Lane County, Hydrologic Unit 17090004, on right bank 0.4 mi downstream from Mason Creek, 5.4 mi east of Vida, and at mile 47.7.

DRAINAGE AREA.--930 mi² at cableway 0.4 mi downstream, where all discharge measurement are made.

PERIOD OF RECORD.--July 1910 to March 1911 (published as "at Martins Rapids, near Vida"), September 1924 to current year. Monthly discharge only for some periods (water years 1910-11, 1924-25), published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 855.71 ft above sea level (levels by Eugene Water and Electric Board). July 1, 1910, to Mar. 31, 1911, nonrecording gage at site 3 mi downstream at different datum. Sept. 1, 1924, to Nov. 16, 1928, nonrecording gage at site 20 ft upstream at datum 0.15 ft lower. Nov. 17, 1928, to Sept. 23, 1968, water-stage recorder at present site on left bank at datum 0.15 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). No diversion upstream from station. All records given herein are for measuring site. Continuous water-quality records for the period June 1961 to September 1985 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--75 years (water years 1925-99), 4,062 ft³/s, 2,943,000 acre-ft/yr, unadjusted.
31 years (water years 1969-99), 4,180 ft³/s, 3,028,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,400 ft³/s Dec. 28, 1945, gage height, 17.70 ft, site and datum then in use, from rating curve extended above 32,000 ft³/s; minimum discharge, 1,260 ft³/s Nov. 7, 1930, Sept. 17, Oct. 4, 8, 9, 1931.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in January 1923 reached a stage of 17.2 ft, from floodmarks, discharge, 62,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,500 ft³/s Dec. 28, gage height, 7.94 ft; minimum daily discharge, 2,570 ft³/s Aug. 11, Sept. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3000	2800	10100	14200	3990	9940	3510	3870	7340	4270	2700	2690
2	e3200	2800	12300	13000	3620	8910	3410	4210	7460	4220	2860	2670
3	e3100	2800	10500	12300	3810	8500	3340	5630	6360	4000	3110	2650
4	e3400	2860	10900	10100	3970	7650	3260	6580	5670	3790	3100	2630
5	e3100	3200	10900	8110	4030	6490	3240	6450	5360	3680	3220	2600
6	e3100	3400	9720	7500	4890	5570	3190	6230	5560	3690	3260	2610
7	e2900	3660	7790	6570	7210	5020	3110	6170	5510	3710	3500	2750
8	2820	3750	7980	6110	6240	4570	3140	5880	5270	3660	3330	2940
9	2890	3540	6930	5810	4950	4030	3020	5630	4920	3650	3220	3130
10	2980	3420	5610	5210	3960	3650	2970	5170	4770	3670	3120	3200
11	2870	3360	7110	4750	3660	3480	2940	4910	4570	3680	2880	3160
12	2820	3230	8610	4770	3530	3450	3070	5120	4940	3510	3060	3180
13	2860	3060	8480	4650	3480	3840	3300	5090	5600	3310	3090	3200
14	2920	2860	7840	5540	3440	3830	3410	5020	6290	3240	3110	3200
15	2960	3030	7140	9770	3380	3780	3570	5030	6810	3160	3100	3230
16	2990	4050	6440	8660	3880	3970	3780	5050	6740	3120	3060	3200
17	2950	3920	5850	8460	5250	3990	4300	5950	6330	3090	3020	3160
18	2910	3910	5430	9830	5780	4040	4830	9030	6060	3040	3010	3120
19	2870	3750	5000	10100	6220	4100	4810	9380	5730	2960	3000	3140
20	2860	4980	4800	11300	5100	4150	5010	8320	5480	2940	2990	3090
21	2860	13200	4550	11000	4420	4340	5170	7510	5210	2940	2970	3030
22	2830	9740	4570	10100	4390	4640	4810	7120	4870	2910	2980	3010
23	2820	10500	4630	10200	5830	5030	4390	7320	4840	2880	2970	3000
24	2810	11000	4520	10400	6830	4950	4490	8490	4930	2810	2960	3000
25	2840	10400	5060	9620	6920	5010	4860	9740	5600	2790	2920	3010
26	2830	10800	6540	8870	6310	5110	4820	8710	5260	2820	2820	3010
27	2820	11600	8420	8300	6730	4970	4780	7840	4680	2800	2730	3000
28	2910	11900	19300	7410	10400	4530	4600	7880	4380	2790	2720	2990
29	2850	11500	15500	6170	---	4250	4210	7820	4270	2770	2710	2940
30	2770	11100	16600	5310	---	4050	3870	7380	4270	2750	2750	2990
31	2750	---	15500	4800	---	3750	---	6860	---	2730	2760	---
TOTAL	90590	180120	264620	258920	142220	153590	117210	205390	165080	101380	93030	89530
MEAN	2922	6004	8536	8352	5079	4955	3907	6625	5503	3270	3001	2984
MAX	3400	13200	19300	14200	10400	9940	5170	9740	7460	4270	3500	3230
MIN	2750	2800	4520	4650	3380	3450	2940	3870	4270	2730	2700	2600
AC-FT	179700	357300	524900	513600	282100	304600	232500	407400	327400	201100	184500	177600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	MEAN	2838	4753	6365	6179	4918	4514	4289	4532	2716	2792	2651
MAX	4116	8718	12370	10430	11510	11210	7097	6625	6604	3529	3510	3358
(WY)	1998	1985	1978	1997	1996	1972	1993	1999	1974	1974	1971	1972
MIN	1640	1925	1865	1752	1542	2351	2671	2268	2180	2138	1907	2019
(WY)	1993	1988	1977	1977	1977	1992	1977	1992	1973	1991	1992	1992

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1969 - 1999
ANNUAL TOTAL	1604790	1861680	
ANNUAL MEAN	4397	5100	4180
HIGHEST ANNUAL MEAN			6014
LOWEST ANNUAL MEAN			2447
HIGHEST DAILY MEAN	19300	Dec 28	27200
LOWEST DAILY MEAN	2200	Jul 28	1330
ANNUAL SEVEN-DAY MINIMUM	2260	Jul 27	1350
ANNUAL RUNOFF (AC-FT)	3183000	3693000	3028000
10 PERCENT EXCEEDS	9230	9480	7220
50 PERCENT EXCEEDS	3350	4100	3260
90 PERCENT EXCEEDS	2600	2860	2300

e Estimated

WILLAMETTE RIVER BASIN

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14163150 MCKENZIE RIVER BELOW LEABURG DAM, NEAR LEABURG, OR

LOCATION.--Lat 44°07'26", long 122°37'35", in NE 1/4 NE 1/4 sec.1, T.17 S., R.1 E., Lane County, Hydrologic Unit 17090004, on right bank 1.4 mi downstream from Leaburg Dam, 3.0 mi northeast of Leaburg, and at mile 37.4.

DRAINAGE AREA.--1,030 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 710 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). Diversion upstream from station through the Leaburg Power canal. Continuous water temperature records for the period June 1992 to September 1993 have been collected at this location.

AVERAGE DISCHARGE.--10 years (water years 1990-99), 2,745 ft³/s, 1,988,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,900 ft³/s Feb. 7, 1996, gage height, 17.95 ft; minimum discharge, 457 ft³/s Aug. 29, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30,500 ft³/s Dec. 28, gage height, 14.16 ft; minimum discharge, 856 ft³/s July 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	1040	9310	13700	2610	10100	2040	2130	5480	2340	1030	1020
2	1040	1040	13800	12200	2300	8430	1930	2680	5660	2280	1070	1030
3	1020	1030	11100	11200	2640	7800	1860	4580	4610	2100	1130	1030
4	1170	1050	10400	8950	2810	6750	1750	5550	3850	1880	1100	1030
5	1050	1480	10000	6600	2850	5450	1750	5230	3540	1750	1150	1020
6	1090	1650	8730	5970	4230	4430	1710	4860	3710	1740	1260	1030
7	1100	1890	6520	5010	7310	3780	1610	4730	3680	1770	1540	1040
8	1070	2050	6970	4520	5930	3280	1680	4400	3450	1710	1410	1070
9	1070	1790	5800	4170	4250	2710	1530	4140	3050	1700	1250	1160
10	1170	1640	4380	3590	2940	2240	1510	3640	2930	1710	1150	1210
11	1050	1620	6470	3100	2460	2010	1480	3340	2680	1730	1090	1160
12	1020	1420	8310	3130	2240	1980	1630	3570	3050	1580	1090	1170
13	1050	1250	7790	2990	2180	2530	1840	3520	3680	1370	1160	1210
14	1100	1060	6890	4060	2170	2480	1890	3460	4370	1280	1130	1210
15	1100	1200	5990	9350	2100	2330	2050	3480	4920	1210	1120	1230
16	1170	2370	5200	7890	2760	2480	2240	3440	4870	1160	1080	1210
17	1080	2160	4490	7850	4600	2470	2730	4340	4470	1130	1060	1170
18	1050	2310	4030	9810	5460	2480	3260	7680	4160	1090	1050	1140
19	1050	2080	3520	9350	6030	2550	3240	8110	3850	1060	1050	1140
20	1030	3560	3260	11000	4480	2580	3380	6870	3610	1060	1040	1100
21	1030	16700	2970	12000	3510	2760	3550	5970	3350	1070	1040	1040
22	1020	11000	2940	10800	3460	3010	3220	5500	2970	1050	1030	1030
23	1020	10200	3020	10400	5520	3440	2730	5610	3030	1040	1030	1030
24	1020	10600	2920	10000	6370	3320	2810	6710	3010	1040	1030	1030
25	1020	9660	3920	8820	6260	3370	3180	8100	3680	1040	1030	1030
26	1020	10100	5690	7790	5570	3510	3140	7120	3400	1030	1030	1030
27	1040	10700	7840	7000	6330	3420	3120	6110	2780	1040	1040	1030
28	1080	10800	26800	6180	11100	3000	2950	6140	2460	1030	1040	1030
29	1050	10300	18600	4880	---	2890	2510	6040	2330	1040	1030	1030
30	1030	10100	17400	3990	---	2740	2140	5600	2320	1030	1040	1030
31	1030	---	15200	3390	---	2360	---	5080	---	1030	1040	---
TOTAL	32870	143850	250260	229690	120470	112680	70460	157730	108950	43090	34340	32690
MEAN	1060	4795	8073	7409	4302	3635	2349	5088	3632	1390	1108	1090
MAX	1170	16700	26800	13700	11100	10100	3550	8110	5660	2340	1540	1230
MIN	1020	1030	2920	2990	2100	1980	1480	2130	2320	1030	1030	1020
AC-FT	65200	285300	496400	455600	239000	223500	139800	312900	216100	85470	68110	64840

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MEAN	1195	3293	4981	5132	3899	3004	3067	3231	2047	1100	1065	977
MAX	2361	7467	12250	9241	11880	6149	6042	5410	3632	1390	1285	1266
(WY)	1998	1997	1997	1997	1996	1993	1993	1993	1999	1999	1995	1997
MIN	610	741	1269	1380	1330	897	1595	1099	1161	946	907	525
(WY)	1990	1990	1990	1992	1993	1992	1998	1994	1992	1993	1991	1990

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1990 - 1999

ANNUAL TOTAL	1082013	1337080	
ANNUAL MEAN	2964	3663	2745
HIGHEST ANNUAL MEAN			4550
LOWEST ANNUAL MEAN			1415
HIGHEST DAILY MEAN	26800	Dec 28	26800
LOWEST DAILY MEAN	980	Jul 4	1020
ANNUAL SEVEN-DAY MINIMUM	987	Jun 29	1020
ANNUAL RUNOFF (AC-FT)	2146000	2652000	1988000
10 PERCENT EXCEEDS	8600	8360	6060
50 PERCENT EXCEEDS	1650	2610	1480
90 PERCENT EXCEEDS	1010	1030	846

WILLAMETTE RIVER BASIN

14163900 MCKENZIE RIVER NEAR WALTERVILLE, OR

LOCATION.--Lat 44°04'13", long 122°46'12", in NW 1/4 NE 1/4 sec.26, T.17 S., R.1 W., Lane County, Hydrologic Unit 17090004, on right bank 0.8 mi downstream from Walterville Power Canal Diversion, 1.7 mi east of Walterville, and at mile 27.7.

DRAINAGE AREA.--1,081 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 600 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). Diversion upstream from station through the Walterville Power Canal. Continuous water-quality records for period June 1992 to September 1993 have been collected at this location.

AVERAGE DISCHARGE.--10 years (water years 1990-99), 3,037 ft³/s, 2,200,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,100 ft³/s Feb. 7, 1996, gage height, 16.18 ft; minimum discharge, 420 ft³/s Nov. 8, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,200 ft³/s Dec. 28, gage height, 12.91 ft; minimum recorded discharge, 980 ft³/s Aug. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	1250	10400	15200	3240	11500	2440	2030	5250	2060	1220	1010
2	1480	1260	14500	13300	e2900	9710	2240	2380	5540	2020	1250	1010
3	1440	1390	12900	12200	e3200	8990	2160	4290	4560	1910	1240	1020
4	1580	2500	11600	10200	e3300	8000	2050	5540	3700	1740	1220	1020
5	1400	3570	10900	7400	3310	6600	2240	5210	3370	1630	1260	1010
6	1310	3750	9810	6630	4620	5480	3230	4790	3470	1620	1340	1020
7	1240	4030	7360	5540	8110	4730	3750	4630	3460	1640	1510	1040
8	1310	3110	7980	4950	7080	4130	3850	4290	3270	1600	1430	1070
9	1410	2240	6820	4570	5580	3750	3700	4020	2800	1590	1300	1150
10	1570	2080	5230	4040	5130	4070	3710	3540	2700	1590	1220	1200
11	1360	2080	6990	3480	5060	4350	3680	3180	2360	1590	1150	1190
12	1290	1870	9310	3470	4770	4250	2650	3390	2690	1510	1150	1190
13	1360	1720	8770	3330	4650	4780	2090	3340	3320	1320	1160	1200
14	1480	1430	7830	3960	3650	3810	2110	3330	3990	1260	1190	1260
15	1490	1530	6810	9520	2750	2910	2240	3370	4570	1220	1170	1460
16	1560	2650	5950	8610	3330	3040	2390	3310	4590	1180	1140	1210
17	1470	2540	5140	8450	5330	3010	2790	4040	4220	1170	1120	1190
18	1400	2720	4650	10900	6360	2980	3320	7490	3890	1190	1110	1170
19	1370	2430	4060	10100	7300	3050	3310	8290	3590	1180	1100	1170
20	1330	3460	3770	12100	5660	3030	3400	6990	3340	1190	1090	1140
21	1330	13900	3460	13800	4520	3200	3590	6030	3120	1190	1080	1100
22	1310	12400	3360	12900	4240	3380	3340	5470	2700	1200	1070	1100
23	1270	11800	3450	12100	6090	3850	2800	5500	2610	1190	1070	1090
24	1250	12200	3300	11400	7200	3740	2820	6470	2700	1200	1070	1090
25	1270	11000	4250	9960	7190	3780	3150	8050	3330	1190	1040	1090
26	1270	11000	6080	8760	6530	3890	3140	7220	3210	1210	1040	1090
27	1280	11500	7520	7800	7180	3860	3140	6020	2570	1200	1020	1080
28	1430	11600	25300	7000	12100	3470	2970	6000	2250	1210	1010	1080
29	1340	11100	19500	5600	---	3340	2630	5930	2090	1210	1020	1060
30	1220	10900	18700	4650	---	3270	2270	5540	2060	1210	1030	1280
31	1200	---	16800	3930	---	2930	---	4980	---	1220	1020	---
TOTAL	42420	165010	272500	255850	150380	140920	87200	154660	101320	43440	35840	33790
MEAN	1368	5500	8790	8253	5371	4546	2907	4989	3377	1401	1156	1126
MAX	1580	13900	25300	15200	12100	11500	3850	8290	5540	2060	1510	1460
MIN	1200	1250	3300	3330	2750	2930	2050	2030	2060	1170	1010	1010
AC-FT	84140	327300	540500	507500	298300	279500	173000	306800	201000	86160	71090	67020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1443	3745	5295	5435	4346	3615	3912	3286	1850	1224
MAX	2756	7816	13640	10030	12560	7079	7133	4989	3377	1692
(WY)	1998	1997	1997	1997	1996	1997	1993	1999	1999	1995
MIN	683	1363	1249	1181	1216	1408	2359	1420	1117	1076
(WY)	1990	1990	1990	1992	1993	1992	1998	1994	1994	1993

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1990 - 1999

ANNUAL TOTAL	1241920	1483330	3037
ANNUAL MEAN	3403	4064	5034
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1994
HIGHEST DAILY MEAN	25300	Dec 28	44600
LOWEST DAILY MEAN	1140	Jun 20	499
ANNUAL SEVEN-DAY MINIMUM	1150	Aug 24	516
ANNUAL RUNOFF (AC-FT)	2463000	2942000	2200000
10 PERCENT EXCEEDS	9250	9390	6790
50 PERCENT EXCEEDS	1970	3200	1630
90 PERCENT EXCEEDS	1150	1150	1010

e Estimated

LOCATION.--Lat 44°05'34", long 122°57'20", in SE 1/4 NW 1/4 sec.17, T.17 S., R.2 W., Lane County, Hydrologic Unit 17090004, on left bank 50 ft downstream from bridge, 1.3 mi northeast of Springfield, and at mile 1.59.

PERIOD OF RECORD.--September 1935 to September 1952, October 1963 to September 1997. October 1998 to September 1999.
Prior to October 1935 monthly discharge only, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 442.47 ft above sea level. Oct. 1, 1935, to Sept. 30, 1952, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the period Nov. 20 to Mar. 15, and estimated daily discharges, which are fair. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1963 to September 1969 and April 1983 to September 1984 have been collected at this location.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft³/s Feb. 7, 1996, gage height, 23.11 ft; minimum discharge, 8.2 ft³/s Sept. 9, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1955, reached at stage of 22.9 ft, from floodmark, probably affected by backwater from McKenzie River, discharge, 9,200 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	2400	4,460	12.20	Jan. 21	1430	6,190	14.77
Dec. 2	2100	5,460	13.72	Feb. 7	1500	3,930	11.31
Dec. 28	1600	*8,220	*17.40	Feb. 28	1030	3,980	11.40
Jan. 18	0500	4,670	12.52				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	93	2370	e1800	799	3020	931	306	289	109	47	48
2	43	89	3760	e1500	941	2310	834	431	286	108	48	39
3	74	84	4150	e1300	997	2320	793	734	251	109	44	35
4	77	118	2560	e1100	1170	2220	761	807	225	118	42	33
5	66	163	e1900	e950	1190	1860	776	689	228	108	41	30
6	47	227	e1600	e850	1700	1560	749	605	222	100	50	29
7	42	210	e1500	e800	3480	1310	699	599	218	104	77	29
8	57	255	2110	725	2920	1170	702	588	222	97	106	29
9	87	198	1680	655	2180	1070	658	544	202	90	69	27
10	112	179	1340	601	1760	919	745	501	190	85	56	25
11	70	197	2010	579	1460	817	772	490	180	80	50	26
12	56	162	2760	593	1270	783	717	489	171	76	52	25
13	80	142	2240	539	e1300	806	666	462	164	73	49	22
14	111	128	1870	745	e1300	817	623	497	159	71	53	20
15	105	174	1510	2260	e1200	759	592	507	159	71	51	21
16	96	282	1250	2190	e1500	707	574	470	163	69	47	22
17	76	239	1060	2740	e2200	661	555	596	153	73	42	23
18	66	298	923	4260	e2400	619	527	852	146	69	41	24
19	61	286	809	3150	e2500	579	495	825	138	64	43	23
20	55	434	716	3350	e1900	545	483	679	137	62	42	22
21	51	3250	626	5560	1610	513	450	586	154	65	41	21
22	48	3350	576	5300	1490	495	447	516	143	63	37	20
23	47	2340	534	4830	2120	496	400	476	130	59	36	20
24	48	2310	514	3390	2140	466	377	469	127	56	38	20
25	54	1850	753	2530	1990	461	363	539	155	57	35	21
26	56	2440	979	1970	1870	463	348	492	140	54	32	21
27	53	e1900	1150	1560	2190	518	347	390	126	52	32	21
28	112	e1600	6480	1380	3610	521	343	366	118	50	29	22
29	88	e1600	e4000	1190	---	786	309	346	114	48	29	21
30	71	2110	e2800	1020	---	1070	290	316	108	49	46	20
31	68	---	e2300	905	---	995	---	278	---	48	61	---
TOTAL	2109	26708	58830	60322	51187	31636	17326	16445	5218	2337	1466	759
MEAN	68.0	890	1898	1946	1828	1021	578	530	174	75.4	47.3	25.3
MAX	112	3350	6480	5560	3610	3020	931	852	289	118	106	48
MIN	32	84	514	539	799	461	290	278	108	48	29	20
AC-FT	4180	52980	116700	119600	101500	62750	34370	32620	10350	4640	2910	1510
CFSM	.38	5.03	10.7	11.0	10.3	5.77	3.26	3.00	.98	.43	.27	.14
IN.	.44	5.61	12.36	12.68	10.76	6.65	3.64	3.46	1.10	.49	.31	.14

MEAN	112	622	1154	1240	1135	879	597	365	204	77.3	39.0	40.8
MAX	719	1653	3235	2464	2480	1975	1545	762	752	190	91.4	112
(WY)	1951	1951	1997	1965	1996	1972	1937	1996	1984	1983	1968	1968
MIN	19.2	26.5	52.6	84.0	126	281	242	118	54.3	34.3	14.7	18.9
(WY)	1988	1937	1977	1977	1977	1965	1942	1966	1966	1940	1966	1967

WATER YEARS 1936 - 1999

ANNUAL TOTAL	274343				
ANNUAL MEAN	752			536	
HIGHEST ANNUAL MEAN				883	1997
LOWEST ANNUAL MEAN				164	1977
HIGHEST DAILY MEAN	6480	Dec 28	11500		Dec 22 1964
LOWEST DAILY MEAN	20	Sep 14		9.6	Aug 18 1966
ANNUAL SEVEN-DAY MINIMUM	21	Sep 21		11	Aug 15 1966
ANNUAL RUNOFF (AC-FT)	544200		388400		
ANNUAL RUNOFF (CFSM)	4.25			3.03	
ANNUAL RUNOFF (INCHES)	57.66			41.16	
10 PERCENT EXCEEDS	2190		1380		
50 PERCENT EXCEEDS	366		258		
90 PERCENT EXCEEDS	38		30		

e Estimated

WILLAMETTE RIVER BASIN

14166000 WILLAMETTE RIVER AT HARRISBURG, OR

LOCATION.--Lat 44°16'14", long 123°10'21", in NW 1/4 NE 1/4 sec.16, T.15 S., R.4 W., Linn County, Hydrologic Unit 17090003, on right bank 75 ft north of intersection of First Street and Kesling Street in Harrisburg and at mile 161.0.

DRAINAGE AREA.--3,420 mi², approximately.

PERIOD OF RECORD.--October 1944 to current year. Gage-height records collected at same site in 1927-28, 1931, 1934, are contained in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 288.39 ft above sea level. Oct 1 to Nov. 14, 1944, nonrecording gage at bridge 1,110 ft upstream at different datum. Nov. 15, 1944, to Aug. 15, 1973, at site 1,100 ft upstream at datum 2.00 ft higher.

REMARKS.--Records good. Flow regulated by 8 reservoirs upstream from station. Many small diversions upstream from station for irrigation. Continuous water-quality records for the period June 1961 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--24 years (water years 1945-68), 12,320 ft³/s, 8,927,000 acre-ft/yr.
31 years (water years 1969-99), 11,590 ft³/s, 8,394,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 210,000 ft³/s Dec. 29, 1945, gage height, 19.69 ft, from rating curve extended above 115,000 ft³/s; minimum discharge, 1,990 ft³/s Oct. 30, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood stage of 20.5 ft was reached in December 1861, and 20.1 ft in February 1890 (information from Corps of Engineers). Flood of Jan. 1, 1943, reached a stage of 19.1 ft from National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 67,100 ft³/s Dec. 29, gage height, 13.93 ft; minimum discharge, 4,650 ft³/s Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5600	6790	39800	50100	14200	37300	12700	6750	13700	7020	5610	5310
2	5740	6800	40500	44300	11300	32200	11200	7270	14600	7120	5530	5160
3	5820	6650	44500	40200	12100	32300	10200	9370	14500	7210	5820	5170
4	5920	6450	45600	37800	12100	32400	9840	14500	12500	6990	5820	5130
5	5890	7210	45200	30100	12400	29400	9420	15900	11300	6830	5920	5090
6	5530	9070	43300	25700	14200	22300	9440	15900	10300	6670	6060	5020
7	5910	10200	37400	21400	29300	16600	9010	15700	10200	6710	6400	5310
8	6010	10600	37300	19900	30200	13000	9180	14600	10000	6650	6690	6030
9	6080	10600	436700	17700	23600	11300	9300	13000	9360	6720	6350	6310
10	6460	9380	32800	15500	17200	10000	9440	11300	9340	6590	6140	6490
11	6270	9260	32800	13900	13400	9200	9370	10500	9080	6650	6030	6460
12	6060	8740	39400	13300	11500	8600	8830	10600	9030	6580	5830	6440
13	6210	8320	38100	13300	10900	9280	9560	10600	9470	6320	5990	6400
14	6470	7750	35500	13300	10700	10500	9770	12100	10600	6170	6050	6490
15	6570	7580	29400	26200	10200	10100	10400	12700	11700	6190	6030	6580
16	6720	8610	22700	31400	10500	10100	10300	12800	12500	6100	5950	6680
17	6820	9150	18300	31400	15600	9830	11500	13500	12400	6020	5940	6620
18	6720	9710	16200	40200	21400	9350	11800	19400	12000	6000	5900	6600
19	6630	10300	14900	35600	30400	9080	11400	25000	11500	5890	5860	6580
20	6610	10900	14000	41900	24400	9080	10900	22500	10600	5770	5890	6600
21	6540	26000	13000	47400	18400	9370	10300	19700	10100	5870	5850	6620
22	6510	40300	11700	46500	14800	9250	9980	18100	9290	5840	5870	6700
23	6430	34600	10700	41600	16100	10200	9060	17500	8800	5830	5790	6670
24	6410	43200	9930	42300	20400	10500	8640	17500	8480	5720	5670	6650
25	6420	35700	10800	39800	19100	10500	8800	19600	8850	5750	5430	6720
26	6390	35000	14400	40000	19800	10600	9000	20700	9830	5690	5340	6740
27	6420	43000	16800	36800	22300	10800	9010	18000	9270	5680	5230	6510
28	6610	40900	45900	35100	33000	10200	8630	16400	8850	5620	4890	6640
29	6640	38500	52600	27700	---	10300	7790	16400	8100	5660	4700	6600
30	6500	38500	48900	21000	---	12200	7000	16200	7310	5630	4830	6620
31	6600	---	52000	16800	---	13100	---	14300	---	5620	5080	---
TOTAL	195510	549770	951130	958200	499500	448940	291770	468390	313560	193110	178490	186940
MEAN	6307	18330	30680	30910	17840	14480	9726	15110	10450	6229	5758	6231
MAX	6820	43200	52600	50100	33000	37300	12700	25000	14600	7210	6690	6740
MIN	5530	6450	9930	13300	10200	8600	7000	6750	7310	5620	4700	5020
AC-FT	387800	1090000	1887000	1901000	990800	890500	578700	929100	621900	383000	354000	370800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	MEAN	7779	14810	21780	21110	14920	12950	10870	10200	7702	4932	5318	6778
MAX	10970	30850	48480	36750	33520	36070	21680	17120	16150	6283	7117	8986	
(WY)	1985	1985	1997	1971	1996	1972	1993	1996	1984	1969	1971	1972	
MIN	4203	4924	3848	3695	2859	5168	4823	4009	3658	3883	4249	4305	
(WY)	1993	1988	1977	1977	1977	1992	1987	1987	1987	1978	1987	1992	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1969 - 1999

ANNUAL TOTAL	4495270	5235310										
ANNUAL MEAN	12320	14340								11590		
HIGHEST ANNUAL MEAN										17800		1972
LOWEST ANNUAL MEAN										5233		1977
HIGHEST DAILY MEAN	52600	Dec 29	52600	Dec 29	72400	Nov 20	1996					
LOWEST DAILY MEAN	4690	Aug 30	4700	Aug 29	2340	Feb 19	1977					
ANNUAL SEVEN-DAY MINIMUM	4730	Aug 29	5020	Aug 28	2410	Feb 15	1977					
ANNUAL RUNOFF (AC-FT)	8916000		10380000		8394000							
10 PERCENT EXCEEDS	33600		35600		25200							
50 PERCENT EXCEEDS	7440		9840		7940							
90 PERCENT EXCEEDS	5080		5850		4610							

e Estimated

WILLAMETTE RIVER BASIN

195

14166500 LONG TOM RIVER NEAR NOTI, OR

LOCATION.--Lat 44°03'00", long 123°25'30", in SE 1/4 NW 1/4 sec.33, T.17 S., R.6 W., Lane County, Hydrologic Unit 17090003, on left bank 0.2 mi upstream from Southern Pacific Railroad bridge, 0.8 mi downstream from Noti Creek, 1.3 mi southeast of Noti, and at mile 37.4.

DRAINAGE AREA.--89.3 mi².

PERIOD OF RECORD.--October 1935 to current year.

REVISED RECORDS.--WSP 1318: 1936(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 389.05 ft above sea level (levels by National Weather Service). Prior to Nov. 6, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges for the period Dec. 11-14, 25, 27-30, Jan. 14, 15, which are fair and estimated daily discharges for the period Dec. 22, 23, Mar. 8 to Apr. 6, which are poor. Discharges from once daily stage readings for the period Mar. 19-25 computed from data obtained through the U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS). Slight regulation caused by logpond upstream from Noti. No diversion upstream from station.

AVERAGE DISCHARGE.--64 years (water years 1936-99), 232 ft³/s, 35.29 in/yr, 168,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,990 ft³/s Dec. 22, 1955, gage height, 20.17 ft; minimum discharge, 0.04 ft³/s Aug. 13, 1977.

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. 26	2030	2,390	14.28	Feb. 7	1230	2,850	15.17
Dec. 2	2030	3,690	16.46	Feb. 19	0600	1,890	12.91
Dec. 28	1830	*5,450	*18.62	Feb. 24	0530	2,610	14.72
Jan. 18	1330	2,990	15.41	Feb. 28	1330	3,130	15.63
Jan. 21	1530	3,280	15.87				

Minimum discharge, 10 ft³/s Aug. 27, 28, Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	30	1430	946	711	1980	e700	122	81	46	26	22
2	23	25	2600	731	810	1300	e550	152	79	46	26	20
3	27	34	2480	596	975	1260	e500	202	77	47	23	18
4	30	35	1100	517	943	1260	e420	204	75	49	23	18
5	27	44	760	451	864	1100	e360	191	74	47	21	16
6	22	80	730	404	1260	924	e300	163	73	45	24	16
7	20	103	685	369	2670	772	279	167	74	47	34	16
8	20	75	1010	333	1910	e650	275	161	73	47	48	14
9	27	54	879	306	1320	e600	253	150	70	43	72	14
10	36	51	654	288	1050	e500	255	142	67	40	37	14
11	27	57	e600	280	865	e460	258	143	64	38	28	14
12	24	47	e700	282	743	e440	235	142	62	36	27	13
13	41	41	e750	255	662	e460	218	132	62	33	26	13
14	49	38	e600	e320	599	e440	205	136	59	33	25	12
15	33	63	491	e640	532	e420	198	138	57	33	24	13
16	29	85	422	720	572	e380	192	129	59	33	24	14
17	25	62	375	1030	665	e340	185	146	57	34	22	13
18	23	54	333	2590	1070	e320	177	180	56	33	21	14
19	22	51	290	1950	1730	e300	170	158	56	33	16	15
20	20	152	282	1910	1150	e280	165	142	55	31	15	13
21	19	992	254	3060	935	e260	161	132	59	32	15	12
22	18	878	e230	2720	1080	e260	157	122	58	32	16	12
23	18	660	e220	2800	2020	e260	151	116	54	43	14	12
24	19	838	218	1830	2500	e260	147	109	52	45	13	12
25	23	972	e300	1210	2060	e280	142	104	57	25	13	12
26	34	1910	479	950	1660	e260	137	100	57	22	13	13
27	23	1390	e600	744	1520	e300	123	95	53	21	11	13
28	21	641	e3800	792	2740	e360	132	91	51	19	11	13
29	22	518	e3800	1000	---	e950	131	87	49	20	13	13
30	21	995	e2000	964	---	e1000	126	85	45	21	17	13
31	21	---	1270	883	---	e850	83	83	---	23	23	---
TOTAL	780	10975	30342	31871	35616	19226	7302	4224	1865	1097	721	427
MEAN	25.2	366	979	1028	1272	620	243	136	62.2	35.4	23.3	14.2
MAX	49	1910	3800	3060	2740	1980	700	204	81	49	72	22
MIN	16	25	218	255	532	260	123	83	45	19	11	12
AC-FT	1550	21770	60180	63220	70640	38130	14480	8380	3700	2180	1430	847
CFSM	.28	4.10	11.0	11.5	14.2	6.95	2.73	1.53	.70	.40	.26	.16
IN.	.32	4.57	12.64	13.28	14.84	8.01	3.04	1.76	.78	.46	.30	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1999, BY WATER YEAR (WY)

MEAN	40.3	207	473	586	565	415	254	129	66.7	30.9	17.1	17.6
MAX	300	708	1425	1260	1283	923	684	340	164	65.2	35.5	34.5
(WY)	1948	1974	1956	1956	1996	1938	1937	1963	1937	1937	1993	1997
MIN	8.00	16.6	23.8	25.2	62.5	131	57.2	54.6	24.7	6.20	3.61	7.42
(WY)	1988	1937	1977	1977	1977	1992	1977	1977	1977	1977	1977	1967

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1936 - 1999

ANNUAL TOTAL	111962		144446									
ANNUAL MEAN	307		396									
HIGHEST ANNUAL MEAN												
LOWEST ANNUAL MEAN												
HIGHEST DAILY MEAN	3800	Dec 28	3800	Dec 28					5850	Dec 22	1964	
LOWEST DAILY MEAN	13	Sep 3	11	Aug 27					.04	Aug 13	1977	
ANNUAL SEVEN-DAY MINIMUM	14	Sep 9	12	Sep 20					.06	Aug 8	1977	
ANNUAL RUNOFF (AC-FT)	222100		286500						168000			
ANNUAL RUNOFF (CFSM)	3.43		4.43						2.60			
ANNUAL RUNOFF (INCHES)	46.64		60.17						35.29			
10 PERCENT EXCEEDS	821		1070						585			
50 PERCENT EXCEEDS	131		122						94			
90 PERCENT EXCEEDS	19		16						15			

e Estimated

WILLAMETTE RIVER BASIN

14168000 FERN RIDGE LAKE NEAR ELMIRA, OR

LOCATION.--Lat 44°07'15", long 123°18'00", near center of sec.4, T.17 S., R.5 W., Lane County, Hydrologic Unit 17090003, in control house at spillway section of dam across Long Tom River and Coyote Creek, 4.5 mi northeast of Elmira, and at mile 25.7.

DRAINAGE AREA.--252 mi², not including Amazon Creek basin (see REMARKS).

PERIOD OF RECORD.--October 1941 to current year. Prior to October 1971, published as Fern Ridge Reservoir near Elmira.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earth-fill dam with concrete outlet and spillway, completed in 1941 by Corps of Engineers; storage began Nov. 13, 1941. Total capacity (new capacity table put into use Oct. 1, 1992 based on Dec. 1992 resurvey), 107,400 acre-ft at elevation 375.1 ft, maximum pool elevation. Usable capacity, 93,350 acre-ft between elevations 340.0 ft, sill of outlet gate, and 373.5 ft, normal maximum operating pool level. Reservoir used for flood control and improvement of navigation. Since November 1951, most of flow of Amazon Creek has been diverted in SE 1/4 sec.29, T.17 S., R.4 W., and discharged into Fern Ridge Lake; drainage area at point of diversion, 21.3 mi².

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,500 acre-ft Dec. 27, 1955, elevation, 375.83 ft; minimum contents since first filling in 1942, 163 acre-ft Nov. 11, 1950, elevation, 344.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 93,520 acre-ft May 2, elevation, 373.52 ft; minimum contents, 2,970 acre-ft Dec. 19, elevation, 353.00 ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

349	439	356	6,810	364	30,560	372	81,180
350	835	358	10,680	366	40,480	374	97,590
352	2,090	360	15,830	368	52,350	375	106,400
354	4,030	362	22,410	370	65,980		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	370.81	362.10	362.47	366.33	363.82	369.58	371.43	373.50	373.46	373.28	372.69	372.19
2	370.60	361.70	364.66	365.58	363.10	369.73	371.48	373.46	373.46	373.27	372.67	372.17
3	370.40	361.28	366.15	364.63	362.57	369.77	371.62	373.44	373.46	373.29	372.64	372.14
4	370.19	360.86	366.34	363.52	362.20	369.89	371.75	373.43	373.46	373.28	372.62	372.13
5	369.98	360.39	366.05	362.15	361.65	369.69	371.88	373.42	373.45	373.28	372.59	372.10
6	369.77	359.99	365.69	360.64	362.38	369.27	372.02	373.42	373.44	373.27	372.58	372.06
7	369.58	359.50	365.12	358.72	364.63	368.68	372.16	373.40	373.44	373.25	372.61	371.96
8	369.37	358.92	364.88	356.70	365.65	368.11	372.28	373.44	373.44	373.25	372.60	371.87
9	369.18	358.28	364.28	354.85	365.84	367.81	372.42	373.47	373.44	373.24	372.60	371.75
10	368.96	357.66	363.43	353.41	365.58	367.61	372.52	373.47	373.44	373.23	372.59	371.64
11	368.75	356.98	362.60	353.11	365.08	367.69	372.64	373.46	373.45	373.20	372.57	371.51
12	368.55	356.26	361.89	353.08	364.39	367.90	372.72	373.43	373.43	373.17	372.55	371.42
13	368.35	355.55	360.96	353.01	363.73	368.11	372.80	373.42	373.43	373.15	372.53	371.33
14	368.14	355.07	359.55	353.74	362.99	368.34	372.85	373.44	373.42	373.12	372.51	371.22
15	367.92	354.86	357.74	353.72	362.20	368.51	372.93	373.43	373.41	373.11	372.49	371.10
16	367.64	354.48	355.70	353.68	362.00	368.63	372.99	373.43	373.40	373.08	372.48	371.00
17	367.31	354.04	353.63	355.82	362.48	368.76	373.04	373.43	373.40	373.04	372.46	370.89
18	367.02	353.64	353.05	359.75	363.58	368.92	373.09	373.33	373.39	373.03	372.44	370.79
19	366.70	353.33	353.01	361.59	364.39	369.09	373.13	373.33	373.38	373.02	372.42	370.69
20	366.36	354.35	353.17	363.03	364.54	369.22	373.17	373.36	373.39	373.00	372.40	370.58
21	366.04	356.35	353.17	365.54	364.50	369.35	373.22	373.39	373.39	372.97	372.37	370.47
22	365.70	357.85	353.13	367.48	364.88	369.47	373.27	373.40	373.38	372.96	372.35	370.36
23	365.35	358.44	353.21	368.59	365.50	369.59	373.30	373.46	373.38	372.94	372.34	370.23
24	365.02	358.89	353.27	368.80	366.39	369.75	373.34	373.45	373.36	372.90	372.32	370.15
25	364.64	359.36	353.74	368.54	366.96	369.91	373.36	373.45	373.35	372.87	372.29	370.02
26	364.30	361.03	353.43	368.01	367.25	370.06	373.40	373.47	373.34	372.86	372.27	369.90
27	363.95	361.65	354.72	367.30	367.81	370.23	373.42	373.47	373.33	372.84	372.25	369.79
28	363.58	361.24	362.29	366.79	369.01	370.42	373.46	373.48	373.32	372.80	372.22	369.68
29	363.21	360.41	365.98	366.31	---	370.91	373.48	373.47	373.32	372.77	372.20	369.57
30	362.83	361.41	366.68	365.63	---	371.30	373.50	373.47	373.30	372.74	372.23	369.45
31	362.47	---	366.78	364.79	---	371.46	---	373.47	---	372.72	372.21	---
MAX	370.81	362.10	366.78	368.80	369.01	371.46	373.50	373.50	373.46	373.29	372.69	372.19
MIN	362.47	353.33	353.01	353.01	361.65	367.61	371.43	373.33	373.30	372.72	372.20	369.45
(+)	24180	20310	44880	34250	59010	76970	93350	93100	91680	86910	82830	62050
(+)	-49480	-3870	+24570	-10630	+24760	+17960	+16380	-250	-1420	-4770	-4080	-20780

CAL YR 1998 MAX 373.73 MIN 353.01 AC-FT+ +39540

WTR YR 1999 MAX 373.50 MIN 353.01 AC-FT+ -11610

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

‡ Change in contents, in acre-feet.

14169000 LONG TOM RIVER NEAR ALVADORE, OR

LOCATION.--Lat 44°07'25", long 123°17'55", in SW 1/4 NE 1/4 sec.4, T.17 S., R.5 W., Lane County, Hydrologic Unit 17090003, on left bank 0.2 mi downstream from Fern Ridge Dam, 1.7 mi west of Alvadore, and at mile 25.5.

DRAINAGE AREA.--252 mi², not including Amazon Creek basin.

PERIOD OF RECORD.--August 1939 to current year. Prior to October 1943, published as "at Smithfield," and October 1943 to September 1959, as "below Fern Ridge Dam, near Smithfield." Prior to October 1985, published figures included diversion from Fern Ridge Reservoir into Coyote Creek channel (station 14169001).

REVISED RECORDS.--WSP 1248: 1940-41, 1948.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 332.00 ft above sea level (levels by Corps of Engineers). Prior to Sept. 21, 1939, nonrecording gage and Sept. 21, 1939, to Sept. 30, 1943, water-stage recorder at site 2.5 mi downstream at datum 11.09 ft lower.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated since 1941 by Fern Ridge Lake (station 14168000). Discharges for period Dec. 20-26 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Several small diversions for irrigation upstream from station. Approximately 7 ft³/s diverted from Fern Ridge Reservoir into Coyote Creek channel. Discharge not adjusted for storage or release from Fern Ridge Lake as evaporation from reservoir at times exceeds natural flow and diversions, and beginning in November 1951, most of flow of Amazon Creek has been diverted into Fern Ridge Lake.

AVERAGE DISCHARGE.--56 years (water years 1944-99), 526 ft³/s, 381,100 acre-ft/yr (river only), unadjusted. 14 years (water years 1986-99), 499 ft³/s, 361,200 acre-ft/yr, regulated period without diversions.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s Jan. 1, 1943, gage height, 15.12 ft, site and datum then in use; minimum daily discharge, 2 ft³/s Aug. 7, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,320 ft³/s Jan. 1, gage height, 9.49 ft; minimum discharge, 30 ft³/s July 2-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	756	741	1980	3700	3780	2700	1380	175	61	41	48	51
2	749	735	1250	3900	3440	2990	792	524	61	30	51	51
3	725	760	2330	3880	3080	3210	454	343	61	30	62	51
4	719	768	3040	3830	3040	3100	286	319	61	30	72	51
5	716	782	3340	3910	3190	3720	251	319	61	30	75	51
6	711	861	3200	3500	2350	3950	91	319	61	30	75	51
7	707	882	3800	3820	1060	3990	46	255	61	30	58	340
8	700	867	3310	3160	2750	3500	46	94	56	31	50	362
9	717	852	3830	2150	3300	2160	46	89	53	42	48	362
10	721	842	4010	1270	3610	1490	46	169	53	50	41	362
11	716	807	3840	688	3560	574	46	346	53	47	40	362
12	712	781	3370	541	3490	235	46	316	53	43	40	362
13	708	690	3530	526	3050	257	46	232	53	54	40	361
14	700	447	3930	471	2800	284	46	231	53	66	40	357
15	737	385	3810	1470	2720	281	46	230	52	56	40	356
16	860	367	3230	1910	1720	282	46	227	51	54	40	356
17	849	359	2150	2010	800	230	46	468	51	55	40	356
18	844	295	935	684	1300	126	46	697	51	47	40	356
19	846	228	645	2390	2210	54	46	256	51	42	40	356
20	845	257	492	2480	2920	48	46	50	51	43	39	356
21	836	472	e501	838	2320	48	46	50	51	46	39	356
22	827	534	e440	1340	1740	48	46	50	51	53	39	352
23	820	1290	e340	2280	2020	46	46	50	51	65	39	351
24	813	1620	e351	3690	1710	45	46	73	51	65	39	351
25	806	1640	e467	4100	2550	45	46	62	51	64	40	351
26	790	1200	e1000	4110	2910	45	46	50	51	61	45	347
27	776	2070	e1300	4080	2260	46	46	56	51	61	50	343
28	770	2770	e120	3540	1160	46	46	60	51	65	50	345
29	761	2980	719	3220	---	46	46	60	51	65	50	345
30	753	1990	2640	3800	---	445	83	60	51	65	51	345
31	745	---	2910	3900	---	1160	---	61	---	60	51	---
TOTAL	23735	29272	66810	81188	70840	35201	4395	6291	1618	1521	1472	8796
MEAN	766	976	2155	2619	2530	1136	146	203	53.9	49.1	47.5	293
MAX	860	2980	4010	4110	3780	3990	1380	697	61	66	75	362
MIN	700	228	120	471	800	45	46	50	51	30	39	51
AC-FT	47080	58060	132500	161000	140500	69820	8720	12480	3210	3020	2920	17450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1999, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	808	745	962	1397	952	430	184	213	99.0	60.0	55.7	90.8		
MAX	1007	1475	2851	2973	3148	1136	895	497	469	150	73.6	293		
(WY)	1998	1997	1997	1997	1996	1999	1993	1996	1993	1993	1993	1999		
MIN	469	218	103	308	57.6	21.3	24.5	20.8	34.7	39.1	40.5	38.3		
(WY)	1988	1994	1990	1992	1989	1988	1988	1987	1990	1986	1986	1990		

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1986 - 1999
ANNUAL TOTAL	245645	331139	
ANNUAL MEAN	673	907	499
HIGHEST ANNUAL MEAN			907
LOWEST ANNUAL MEAN			213
HIGHEST DAILY MEAN	4010	Dec 10	5570
LOWEST DAILY MEAN	28	Jul 7	16
ANNUAL SEVEN-DAY MINIMUM	35	Jul 6	17
ANNUAL RUNOFF (AC-FT)	487200	656800	361200
10 PERCENT EXCEEDS	1980	3210	1280
50 PERCENT EXCEEDS	367	351	73
90 PERCENT EXCEEDS	46	46	38

e Estimated

WILLAMETTE RIVER BASIN

14170000 LONG TOM RIVER AT MONROE, OR

LOCATION.--Lat 44°18'47", long 123°17'43", in NE 1/4 sec.33, T.14 S., R.5 W., Benton County, Hydrologic Unit 17090003, on left bank in canalized river channel at Monroe, 110 ft upstream from bridge on State Highway 99W, 0.1 mi downstream from Shafer Creek, and at mile 6.8.

DRAINAGE AREA.--391 mi².

PERIOD OF RECORD.--November 1920 to July 1921, October 1921 to April 1926, November 1926 to May 1927, October 1927 to current year. Prior to October 1930, published as "near Monroe."

REVISED RECORDS.--WSP 654: Drainage area. WSP 1248: 1923, 1927, 1928(M). WSP 1288: 1952.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 270.57 ft above sea level. Prior to Nov. 24, 1944, nonrecording gage at various sites ranging from present site to 1.5 mi downstream at different datums.

REMARKS.--Records good except for estimated daily discharges and flows below 100 ft³/s, which are fair. Flow regulated since 1941 by Fern Ridge Lake (station 14168000). Several small diversions upstream from station.

AVERAGE DISCHARGE.--76 years (water years 1922-25, 1928-99), 762 ft³/s, 551,900 acre-ft/yr, unadjusted.
58 years (water years 1942-99), 784 ft³/s, 568,300 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Jan. 2, 1943, gage height, 17.14 ft, site and datum then in use, from graph based on gage readings, includes some overflow from Willamette River near Junction City; no flow Oct. 20-22, 1944 (water filling pool at gage); minimum discharge observed prior to regulation, 7 ft³/s Sept. 29, Oct. 1, 1939.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,610 ft³/s Dec. 28, gage height, 9.33 ft; minimum discharge, 25 ft³/s several days in July and August.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	807	803	3650	3970	4190	4060	2430	215	90	51	45	51
2	797	798	4660	4300	4480	4160	1460	525	88	37	33	43
3	780	810	3960	4100	4140	4600	933	573	87	36	28	43
4	764	836	3770	4050	4110	4530	719	456	86	46	41	43
5	757	838	3960	3990	3980	4370	606	440	90	41	56	46
6	755	961	3840	3730	4540	4440	452	429	90	39	64	44
7	746	1050	4130	3840	4260	4330	288	398	85	35	68	185
8	739	1030	4520	3640	4010	4180	270	250	86	30	57	334
9	752	992	4230	2850	4400	3150	253	183	74	27	55	335
10	774	970	4210	1970	4420	2420	261	215	69	31	48	340
11	769	935	4320	1110	4240	1290	267	384	67	47	44	341
12	758	876	4250	867	4030	664	238	494	70	40	41	344
13	756	811	4090	761	3780	663	216	330	72	29	39	339
14	755	543	4180	808	3390	812	199	338	61	35	39	339
15	769	428	4030	2260	3260	717	190	366	57	45	37	337
16	913	440	3770	3130	2980	632	184	340	61	43	37	339
17	963	423	2940	4040	1790	580	178	464	59	42	37	337
18	945	388	1780	4460	3300	417	173	918	60	45	37	340
19	938	282	939	3610	3920	331	168	579	64	39	34	341
20	945	333	752	5310	3970	268	163	168	76	30	34	336
21	934	1200	662	4630	3610	252	159	142	76	28	41	333
22	917	1470	e650	4200	3410	241	155	136	73	27	35	331
23	906	2030	e550	4410	4490	234	154	127	66	33	33	328
24	904	2940	e550	4600	4250	265	128	117	58	48	33	329
25	888	3000	703	4670	4330	333	134	127	63	55	30	329
26	869	4010	1350	4520	4330	272	138	101	68	45	30	330
27	844	3320	1970	4350	4380	309	129	96	65	36	48	326
28	833	3270	7010	4480	4360	416	131	99	61	47	40	324
29	827	3510	4450	4260	---	996	128	94	54	42	44	320
30	816	4350	3860	4370	---	1060	141	103	55	42	48	317
31	809	---	4090	4440	---	1960	---	105	---	46	50	---
TOTAL	25729	43647	97826	111726	110350	52952	11045	9312	2131	1217	1306	8124
MEAN	830	1455	3156	3604	3941	1708	368	300	71.0	39.3	42.1	271
MAX	963	4350	7010	5310	4540	4600	2430	918	90	55	68	344
MIN	739	282	550	761	1790	234	128	94	54	27	28	43
AC-FT	51030	86570	194000	221600	218900	105000	21910	18470	4230	2410	2590	16110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1999, BY WATER YEAR (WY)

	MEAN	771	960	1794	2181	1668	926	472	258	98.2	44.2	73.3	199
MAX	1895	3437	5355	6222	4683	2761	2277	1193	697	148	524	960	
(WY)	1948	1951	1956	1956	1996	1957	1963	1963	1993	1993	1951	1955	
MIN	27.1	91.5	55.5	43.5	44.1	136	54.5	50.3	28.6	23.0	20.0	12.4	
(WY)	1942	1953	1977	1977	1977	1978	1977	1987	1987	1965	1944	1943	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1942 - 1999
ANNUAL TOTAL	371888	475365	
ANNUAL MEAN	1019	1302	784
HIGHEST ANNUAL MEAN			1517
LOWEST ANNUAL MEAN			177
HIGHEST DAILY MEAN	7010	Dec 28	16400
LOWEST DAILY MEAN	27	Jul 29	.00
ANNUAL SEVEN-DAY MINIMUM	34	Jul 24	8.4
ANNUAL RUNOFF (AC-FT)	737600	942900	568300
10 PERCENT EXCEEDS	3250	4240	2450
50 PERCENT EXCEEDS	543	423	240
90 PERCENT EXCEEDS	48	42	37

e Estimated

WILLAMETTE RIVER BASIN

199

14174000 WILLAMETTE RIVER AT ALBANY, OR

LOCATION.--Lat 44°38'20", long 123°06'20", in SW 1/4 sec.6, T.11 S., R.3 W., Linn County, Hydrologic Unit 17090003, on right bank 5 ft upstream from bridge on U.S. Highway 20 (Ellsworth Street) in Albany, 0.2 mi downstream from Calapooia River, and at mile 119.31.

DRAINAGE AREA.--4,840 mi², approximately.

PERIOD OF RECORD.--November 1878 to April 1888 (fragmentary), January to June 1892, November 1892 to September 1894, December 1894 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 694: Drainage area. WSP 904: 1939. WSP 964: 1881, 1890, 1894, 1897, 1901, 1903, 1908, 1910, 1916, 1923, 1927, 1932(M). WSP 984: 1916. WSP 1248: 1895, 1902, 1907, 1915(M), 1917(M), 1918-19, 1934(M). WSP 1318 (monthly and annual figures only): 1894, 1897, 1901-3, 1907-8, 1910, 1916, 1918-19, 1923, 1927.

GAGE.--Water-stage recorder. Datum of gage is 167.18 ft above sea level. Prior to Sept. 27, 1906, nonrecording gage at site 0.2 mi upstream at datum 5.00 ft higher. Sept. 27, 1906, to Nov. 12, 1934, nonrecording gage at site 300 ft upstream at datum 5.00 ft higher. Nov. 14, 1934, to Sept. 30, 1962, at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by nine reservoirs upstream from station. Albany power canal diverts water from South Santiam River at Lebanon and discharges into Calapooia River near mouth; small diversions for irrigation and municipal water supply.

AVERAGE DISCHARGE.--105 years (water years 1894, 1896-1999), 14,410 ft³/s, 40.43 in/yr, 10,440,000 acre-ft/yr. 31 years (water years 1969-99), 14,480 ft³/s, 40.64 in/yr, 10,490,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 266,000 ft³/s Jan. 14, 1881, gage height, 37.8 ft, present datum; minimum discharge, 1,840 ft³/s Sept. 1, 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 4, 1861, reached a stage of 41.0 ft, discharge, 340,000 ft³/s, from rating curve extended above 220,000 ft³/s. Flood of Feb. 4, 1890, reached a stage of 38.9 ft, discharge, 291,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 85,700 ft³/s Dec. 30, gage height, 25.32 ft; minimum discharge, 5,450 ft³/s Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6880	8130	55200	64100	25600	55000	21500	8500	15100	7960	6350	5950
2	6910	8210	57700	60200	23000	54100	19100	8690	15000	7820	6280	5930
3	7020	8140	60800	53500	23700	47800	16200	10200	15700	8080	6310	5870
4	7120	8040	61600	47700	23300	48700	15000	14300	14700	7940	6500	5830
5	7250	8090	56200	42900	24100	46300	13900	17300	13000	7800	6510	5800
6	7080	9600	54600	36000	25500	39400	13500	18000	12000	7550	6610	5750
7	7070	11300	51900	30000	40100	30700	12700	17900	11500	7500	6850	5700
8	7310	12000	48100	27300	51100	24600	12100	17500	11300	7480	7270	6490
9	7380	12300	48000	25000	46300	20900	12500	15800	10900	7450	7230	6970
10	7570	11600	44300	21100	35600	18000	12300	14200	10400	7370	6940	7190
11	7770	10900	40400	18600	27600	15600	12700	12700	10400	7360	6740	7260
12	7560	10600	44200	16900	22700	13500	12000	12800	10100	7370	6580	7260
13	7580	10100	48700	16300	20400	13500	11900	12600	10200	7240	6580	7230
14	7660	9510	47200	16100	19200	14900	12200	13200	10800	6970	6670	7260
15	7970	8960	42900	24400	18200	15500	12400	14200	11900	6910	6700	7290
16	8090	9110	35000	39700	17700	14200	12600	14700	13000	6900	6640	7440
17	8340	10500	28000	43800	20700	13900	13000	14800	13100	6810	6610	7440
18	8340	10500	23100	52700	28200	13100	13800	17900	12900	6790	6540	7430
19	8180	11300	20000	61100	41300	12500	13800	24400	12600	6730	6510	7420
20	8100	12000	18100	57600	42700	12000	13100	25500	11900	6590	6500	7400
21	8080	18300	16600	62800	34100	12100	12700	22600	11100	6510	6510	7410
22	8000	37700	15300	68400	28200	12100	12000	20300	10700	6590	6490	7480
23	7950	43500	13800	71200	31300	12100	11500	19300	9830	6550	6480	7490
24	7900	44300	12700	64600	39000	13200	10600	18800	9550	6490	6420	7460
25	7880	50500	12800	57200	40400	13200	10400	19500	9360	6490	6170	7460
26	7860	52800	16600	51400	37700	13200	10600	21300	10200	6480	6040	7550
27	7780	54800	21800	48400	37000	13600	10700	20700	10300	6430	5960	7510
28	7920	54900	44300	45400	47100	13700	10600	18400	9950	6380	5840	7300
29	8050	50200	76200	44000	---	15600	9860	17500	9400	6340	5510	7460
30	8010	50100	80900	36200	---	19600	8970	17500	8520	6360	5520	7430
31	7900	---	68000	30400	---	20700	---	16600	---	6310	5630	---
TOTAL	238510	657990	1265000	1335000	871800	683300	384230	517690	345410	217550	199490	209460
MEAN	7694	21930	40810	43060	31140	22040	12810	16700	11510	7018	6435	6982
MAX	8340	54900	80900	71200	51100	55000	21500	25500	15700	8080	7270	7550
MIN	6880	8040	12700	16100	17700	12000	8970	8500	8520	6310	5510	5700
AC-FT	473100	1305000	2509000	2648000	1729000	1355000	762100	1027000	685100	431500	395700	415500
CFSM	1.59	4.53	8.43	8.90	6.43	4.55	2.65	3.45	2.38	1.45	1.33	1.44
IN.	1.83	5.06	9.72	10.26	6.70	5.25	2.95	3.98	2.65	1.67	1.53	1.61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	MEAN	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
MAX	8832	17440	28630	28250	21420	17410	13710	11620	8627	5396	5610	7052																				
MIN	11780	40850	64060	47270	50470	43270	26860	19950	18460	7333	7313	8985																				
(WY)	1985	1985	1997	1997	1996	1972	1993	1996	1993	1969	1971	1972																				
MIN	4915	5425	4150	3901	3208	6808	5630	4733	4091	4084	4375	4347																				
(WY)	1993	1988	1977	1977	1977	1978	1977	1973	1987	1978	1992	1992																				

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1969 - 1999

	ANNUAL TOTAL	5865720	6925430	14480
ANNUAL MEAN	16070		18970	22550
HIGHEST ANNUAL MEAN				5831
LOWEST ANNUAL MEAN				1977
HIGHEST DAILY MEAN	80900	Dec 30	80900	Dec 30
LOWEST DAILY MEAN	5250	Sep 4	5510	Aug 29
ANNUAL SEVEN-DAY MINIMUM	5350	Aug 30	5750	Aug 29
ANNUAL RUNOFF (AC-FT)	11630000		13740000	10490000
ANNUAL RUNOFF (CFSM)	3.32		3.92	2.99
ANNUAL RUNOFF (INCHES)	45.08		53.23	40.64
10 PERCENT EXCEEDS	44200		47900	33500
50 PERCENT EXCEEDS	9840		12200	9210
90 PERCENT EXCEEDS	5700		6550	5050

123° 45'
46° 00'

121° 45'

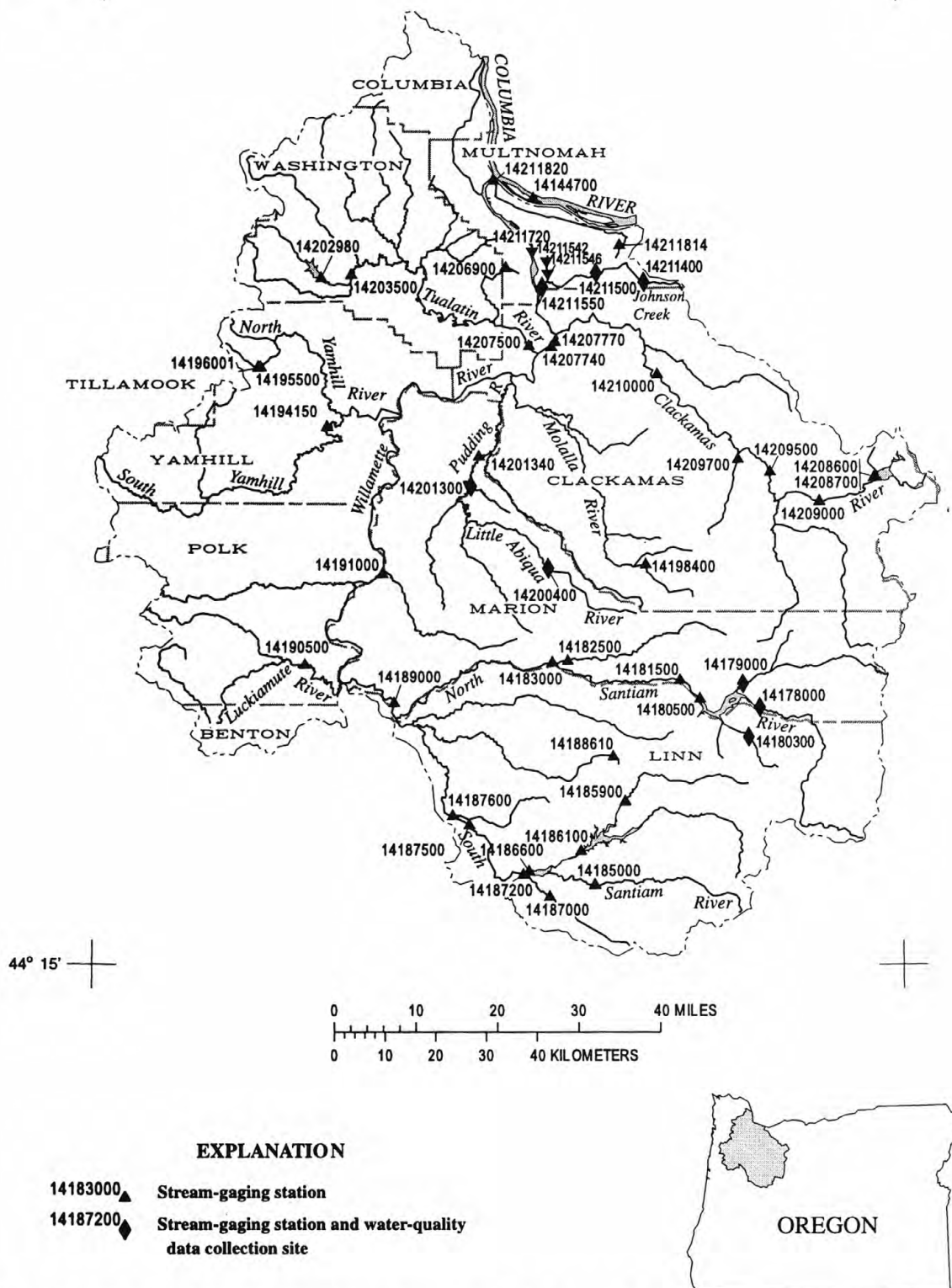


Figure 25. Location of surface-water and water-quality stations in the Willamette River Basin, downstream from the Luckiamute River.

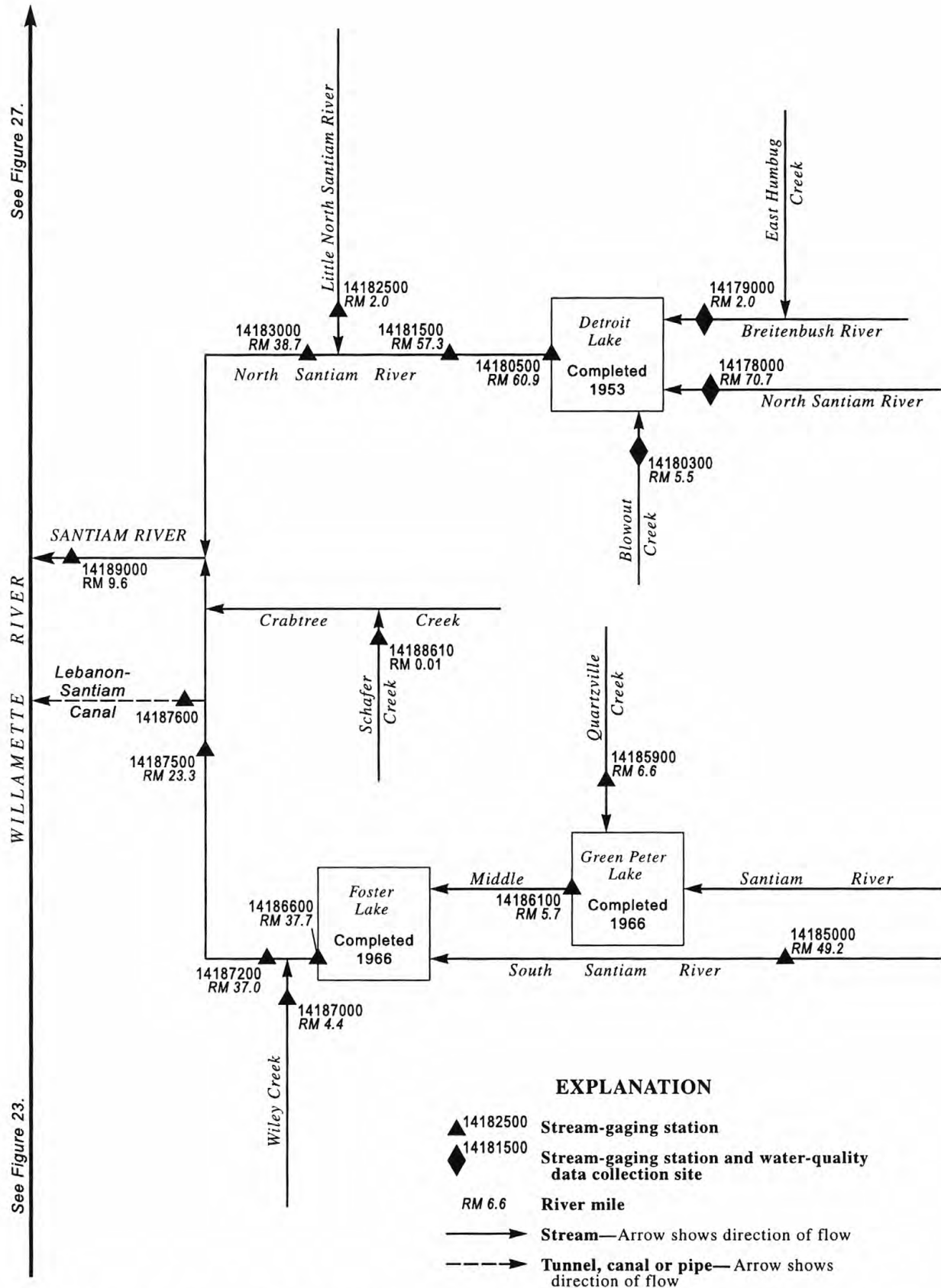


Figure 26. Schematic diagram showing gaging stations and diversions in the Santiam River Basin.

14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR

LOCATION.--Lat 44°42'25", long 122°06'00", in SE 1/4 NW 1/4 sec.17, T.10 S., R.6 E., Marion County, Hydrologic Unit 17090005, on right bank 0.5 mi downstream from Boulder Creek, 3.0 mi southeast of Detroit, and at mile 70.7.

DRAINAGE AREA.--216 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1907 to October 1910, October 1928 to current year. Monthly discharge only January 1907, published in WSP 1318. Prior to October 1952, published as "at Detroit."

REVISED RECORDS.--WSP 814: Drainage area at former site. WSP 1248: 1931. WDR OR-85-2: 1982-82(P).

GAGE.--Water-stage recorder. Datum of gage is 1,590.07 ft above sea level. See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period April 1951 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--73 years (water years 1908, 1909, 1929-99), 1,010 ft³/s, 63.54 in/yr, 731,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft³/s Dec. 22, 1964, slope-area measurement of peak flow, gage height, 13.76 ft, temporary backwater from debris; minimum discharge, 250 ft³/s Sept. 13, 1909.

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)
Nov. 21	0300	4,690	6.33	Dec. 28	0330	*8,210	*7.78
Nov. 26	1030	4,410	6.19	Feb. 28	1130	4,100	6.03
Dec. 2	1100	6,180	7.00				

Minimum discharge, 385 ft³/s Oct. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	411	412	1830	3100	1010	3120	1050	1610	2600	1490	805	649
2	458	406	4630	2440	1040	2390	1020	1770	2310	1430	791	626
3	483	404	3250	2010	1040	2070	985	1790	1980	1320	788	614
4	566	454	2250	1720	1040	1750	937	1680	1850	1230	792	606
5	467	531	1780	1530	999	1530	911	1530	1890	1170	814	602
6	439	512	1490	1390	1350	1380	880	1590	2010	1190	851	602
7	421	480	1350	1300	1710	1280	873	1750	1830	1240	873	596
8	433	465	1230	1200	1420	1200	886	1600	1680	1170	821	591
9	500	446	1090	1130	1240	1130	859	1450	1560	1160	776	590
10	507	452	1030	1080	1120	1060	839	1340	1520	1210	761	588
11	458	452	1720	1080	1030	1010	828	1290	1580	1240	751	583
12	435	436	2510	1070	973	996	865	1390	1780	1220	733	578
13	457	432	2610	1060	932	1060	905	1420	2080	1190	720	577
14	480	433	2240	1540	908	1060	956	1370	2370	1150	727	576
15	489	638	1850	3160	880	1050	1020	1350	2610	1070	711	575
16	468	842	1590	2680	966	1050	1170	1330	2440	1030	691	572
17	444	683	1440	2590	1100	1020	1410	1680	2290	996	688	569
18	435	641	1330	3420	1200	1010	1730	2470	2130	937	689	564
19	421	613	1210	2950	1320	1030	1830	2510	1990	945	684	560
20	410	1390	1070	2820	1190	1180	1860	2380	1880	1080	678	559
21	404	4140	1000	2720	1110	1420	1710	2210	1780	1020	673	556
22	398	2630	960	2370	1180	1440	1530	2260	1720	957	667	555
23	390	2250	908	2020	1760	1390	1500	2580	1720	936	662	554
24	393	2310	890	1700	2220	1350	1690	3070	1850	926	663	550
25	398	2940	1040	1510	2080	1350	1900	e3200	2080	897	664	551
26	392	3700	1370	1360	1750	1380	1860	e3000	1720	872	659	547
27	394	2710	2380	1250	2200	1310	1670	2860	1500	878	651	542
28	425	1980	7580	1220	3830	1230	1480	2920	1410	880	644	536
29	412	1660	6000	1180	---	1250	1350	2780	1390	876	643	531
30	394	1570	4580	1110	---	1170	1360	2580	1480	850	676	532
31	390	---	3860	1060	---	1110	---	2410	---	823	682	---
TOTAL	13572	37012	68068	56770	38598	41776	37864	63170	57030	33383	22428	17231
MEAN	438	1234	2196	1831	1378	1348	1262	2038	1901	1077	723	574
MAX	566	4140	7580	3420	3830	3120	1900	3200	2610	1490	873	649
MIN	390	404	890	1060	880	996	828	1290	1390	823	643	531
AC-FT	26920	73410	135000	112600	76560	82860	75100	125300	113100	66220	44490	34180
CFSM	2.03	5.71	10.2	8.48	6.38	6.24	5.84	9.43	8.80	4.99	3.35	2.66
IN.	2.34	6.37	11.72	9.78	6.65	7.19	6.52	10.88	9.82	5.75	3.86	2.97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1999, BY WATER YEAR (WY)

MEAN	510	992	1386	1330	1308	1197	1354	1423	1096	631	475	438
MAX	1215	2167	3840	2991	3552	2865	2137	2762	2759	1101	723	595
(WY)	1951	1951	1965	1953	1996	1972	1943	1949	1933	1950	1999	1971
MIN	312	335	432	383	404	616	610	600	412	363	319	309
(WY)	1981	1994	1977	1937	1977	1941	1941	1992	1992	1992	1992	1909

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1908 - 1999

ANNUAL TOTAL	400736	486902	
ANNUAL MEAN	1098	1334	1010
HIGHEST ANNUAL MEAN			1506
LOWEST ANNUAL MEAN			569
HIGHEST DAILY MEAN	7580	Dec 28	19400
LOWEST DAILY MEAN	390	Oct 23	250
ANNUAL SEVEN-DAY MINIMUM	396	Oct 21	273
ANNUAL RUNOFF (AC-FT)	794900	965800	731800
ANNUAL RUNOFF (CFSM)	5.08	6.18	4.68
ANNUAL RUNOFF (INCHES)	69.02	83.86	63.54
10 PERCENT EXCEEDS	2010	2440	1820
50 PERCENT EXCEEDS	924	1130	789
90 PERCENT EXCEEDS	440	475	402

e Estimated

WILLAMETTE RIVER BASIN

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14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR--Continued
WATER-QUALITY RECORDS

INSTRUMENTATION.--Water-quality monitor since October 1998.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1998 to September 1999.

pH: October 1998 to September 1999.

WATER TEMPERATURE: October 1998 to September 1999.

TURBIDITY: October 1998 to September 1999.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 52 microsiemens Oct. 7, 24-27; minimum recorded, 20 microsiemens Dec. 28.

pH: Maximum recorded, 8.4 units Oct 3, Sept. 16; minimum recorded, 7.1 units Apr. 9, 14.

WATER TEMPERATURE: Maximum recorded, 15.0°C Aug. 3, 4; minimum recorded, 0.0°C Dec. 20-22.

TURBIDITY: Maximum recorded, 198 NTU Dec. 28, minimum recorded, 0 NTU many days throughout the year.

WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1998					
16...	1205	468	2	2.5	16
NOV					
16...	1430	791	3	6.4	100
21...	1300	4210	47	534	39
25...	1400	3210	18	156	100
DEC					
02...	1610	5360	97	1410	100
28...	1510	7620	207	4260	45
29...	1330	5900	176	2800	18
JAN 1999					
13...	1430	1050	4	11	77
21...	1330	2690	13	94	71
26...	1313	1350	2	7.3	42
FEB					
04...	0930	1050	1	2.8	54
11...	1720	1020	2	5.5	0
18...	1300	1220	7	23	60
24...	0840	2240	14	84	45
MAR					
03...	1205	2040	7	39	54
11...	1205	1010	5	14	40
17...	0915	1020	2	5.5	58
22...	1655	1420	2	7.7	53
APR					
14...	1545	943	1	2.5	65
23...	1630	1510	1	4.1	35
30...	1107	1340	1	3.6	53
MAY					
03...	1705	1770	1	4.8	56
13...	1605	1400	1	3.8	57
18...	1055	2420	9	59	31
18...	1825	2560	10	69	28
JUN					
17...	1655	2160	3	18	63
JUL					
01...	1533	1460	2	7.9	57
AUG					
10...	1020	766	3	6.2	46
SEP					
01...	1645	644	1	1.7	74
15...	1520	577	1	1.6	49

WILLAMETTE RIVER BASIN

14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	50	49	49	50	50	50	37	36	36	32	27	30
2	50	48	49	50	49	50	36	27	30	35	32	34
3	49	48	49	50	49	50	34	31	33	35	34	35
4	49	48	48	50	49	50	36	34	35	37	35	36
5	51	49	49	49	46	47	37	36	36	38	36	37
6	51	51	51	46	46	46	38	37	37	38	36	37
7	52	48	50	46	46	46	39	38	38	38	36	37
8	49	48	48	47	46	46	40	37	38	39	36	38
9	49	48	48	47	46	47	41	40	40	39	37	38
10	49	48	48	47	46	46	41	40	41	40	38	39
11	49	48	49	47	47	47	40	34	38	40	37	39
12	49	49	49	47	47	47	34	33	34	40	38	39
13	49	49	49	48	47	47	34	33	34	41	38	39
14	49	49	49	48	47	47	36	34	35	40	35	38
15	49	49	49	47	42	46	36	33	35	39	34	37
16	49	49	49	42	41	41	35	34	34	39	35	37
17	49	49	49	43	42	42	35	34	35	39	32	34
18	50	49	49	43	42	43	35	34	35	33	28	31
19	50	49	50	43	43	43	36	35	35	36	28	32
20	50	50	50	43	32	40	37	32	36	36	31	32
21	50	50	50	38	30	35	37	33	35	33	32	32
22	51	50	50	44	37	41	37	37	37	34	33	33
23	51	50	50	44	34	36	38	36	37	35	34	34
24	52	50	51	36	34	35	37	36	37	37	35	36
25	52	51	52	36	33	34	36	34	35	37	36	37
26	52	52	52	37	31	33	34	32	33	38	37	38
27	52	51	51	35	32	33	34	21	31	39	38	38
28	51	50	51	36	34	35	23	20	21	39	38	39
29	51	50	50	37	36	36	25	23	23	40	39	39
30	51	50	50	38	37	37	28	24	26	40	40	40
31	50	50	50	---	---	---	28	26	27	41	40	41
MONTH	52	48	50	50	30	43	41	20	34	41	27	36
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	42	41	42	32	29	31	39	38	39	36	33	34
2	42	40	41	33	32	32	39	39	39	33	33	33
3	41	41	41	34	33	33	40	39	39	34	32	33
4	42	39	40	35	34	34	40	40	40	34	33	33
5	40	39	40	36	35	36	40	40	40	35	34	34
6	39	36	38	37	36	36	41	40	41	35	33	34
7	37	35	36	38	37	37	42	41	41	34	33	33
8	38	37	37	38	37	38	41	40	41	34	34	34
9	39	38	38	39	38	38	41	41	41	35	34	35
10	39	38	39	39	39	39	42	41	41	36	35	36
11	40	39	40	40	39	39	42	41	42	36	36	36
12	40	40	40	40	39	39	42	41	41	36	35	35
13	41	40	40	39	39	39	41	41	41	35	35	35
14	41	40	41	39	39	39	41	40	40	36	35	36
15	41	41	41	39	39	39	40	38	39	36	36	36
16	41	39	41	39	38	39	38	37	37	36	36	36
17	40	39	40	40	39	40	37	35	36	36	32	35
18	40	38	39	40	40	40	35	33	34	32	30	31
19	39	38	38	40	40	40	33	33	33	31	30	31
20	39	39	39	40	38	39	33	33	33	31	30	31
21	40	39	39	38	37	37	34	33	33	31	30	31
22	40	38	39	37	36	37	35	34	34	31	30	30
23	38	34	36	37	37	37	35	35	35	30	28	29
24	34	33	34	37	37	37	35	34	35	28	27	28
25	34	33	34	37	37	37	34	33	33	27	27	27
26	35	34	35	37	36	37	34	33	33	28	27	27
27	35	31	34	37	37	37	35	34	34	28	28	28
28	31	29	29	38	37	38	36	35	35	28	28	28
29	---	---	---	38	37	38	36	36	36	28	28	28
30	---	---	---	39	37	38	36	36	36	29	28	28
31	---	---	---	39	38	38	---	---	---	29	28	29
MONTH	42	29	38	40	29	37	42	33	37	36	27	32

WILLAMETTE RIVER BASIN

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14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29	28	28	31	30	31	34	34	34	44	42	44
2	30	28	29	31	31	31	35	34	34	43	43	43
3	31	30	31	33	31	32	34	33	34	44	43	43
4	32	31	31	34	33	33	34	33	34	44	43	44
5	32	30	31	34	34	34	34	32	33	44	44	44
6	31	30	30	34	34	34	36	33	35	44	44	44
7	31	30	30	34	32	33	36	36	36	44	44	44
8	32	31	31	34	33	34	38	36	37	44	43	44
9	33	32	32	35	34	34	38	38	38	44	43	43
10	33	32	33	34	33	34	39	38	38	44	43	43
11	32	32	32	34	32	33	39	38	38	44	43	43
12	32	30	31	33	32	32	39	38	38	44	43	43
13	30	29	30	33	32	33	40	39	40	44	43	44
14	29	28	28	34	32	33	40	40	40	44	43	44
15	28	27	28	34	33	33	41	40	41	45	43	44
16	28	28	28	34	34	34	42	41	41	46	44	45
17	28	28	28	35	34	34	42	41	41	46	45	45
18	29	28	29	36	34	35	41	41	41	46	45	46
19	30	29	29	35	34	35	42	41	41	46	44	45
20	30	29	30	34	32	33	42	41	42	45	45	45
21	31	30	30	34	33	33	42	41	41	45	45	45
22	31	30	31	35	34	34	41	41	41	46	45	45
23	31	30	30	35	34	34	42	41	41	46	45	45
24	31	29	30	35	34	34	42	41	42	46	45	45
25	29	28	28	35	35	35	42	41	41	46	45	45
26	31	29	30	35	34	34	43	42	42	46	45	46
27	32	31	31	35	34	34	43	43	43	46	44	45
28	32	31	31	34	34	34	43	43	43	45	44	44
29	32	32	32	34	33	34	43	43	43	45	44	45
30	32	31	31	34	33	33	43	42	43	45	45	45
31	---	---	---	34	33	34	44	43	43	---	---	---
MONTH	33	27	30	36	30	33	44	32	39	46	42	44
YEAR	52	20	38									

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	7.7	8.0	8.0	7.7	7.8	7.6	7.6	7.6	7.7	7.7	7.7
2	8.3	7.9	8.0	8.0	7.7	7.8	7.6	7.5	7.5	7.7	7.7	7.7
3	8.4	7.9	8.1	7.9	7.7	7.8	7.6	7.5	7.5	7.7	7.7	7.7
4	8.2	7.9	8.0	7.9	7.6	7.7	7.5	7.5	7.5	7.8	7.7	7.7
5	8.2	7.9	8.0	7.9	7.7	7.8	7.6	7.5	7.5	7.7	7.7	7.7
6	8.1	7.7	7.9	7.9	7.7	7.8	7.6	7.5	7.5	7.7	7.7	7.7
7	8.2	7.7	7.9	7.9	7.7	7.8	7.6	7.5	7.5	7.8	7.7	7.7
8	8.2	7.8	7.9	7.9	7.6	7.7	7.6	7.5	7.5	7.8	7.7	7.8
9	8.0	7.7	7.9	7.9	7.6	7.7	7.6	7.5	7.6	7.8	7.7	7.8
10	8.2	7.7	7.9	7.9	7.6	7.7	7.6	7.4	7.5	7.8	7.7	7.7
11	8.2	7.7	7.9	7.9	7.6	7.7	7.6	7.6	7.6	7.7	7.7	7.7
12	8.1	7.7	7.9	7.9	7.7	7.8	7.6	7.6	7.6	7.8	7.7	7.7
13	8.0	7.7	7.8	7.9	7.6	7.7	7.6	7.6	7.6	7.7	7.7	7.7
14	8.0	7.7	7.8	7.9	7.5	7.7	7.6	7.6	7.6	7.7	7.7	7.7
15	8.1	7.8	7.9	7.8	7.6	7.7	7.7	7.6	7.6	7.7	7.3	7.6
16	8.1	7.7	7.8	7.8	7.5	7.6	7.7	7.7	7.7	7.4	7.2	7.3
17	8.1	7.7	7.8	7.8	7.5	7.7	7.7	7.7	7.7	7.4	7.2	7.3
18	8.0	7.7	7.8	7.9	7.6	7.7	7.8	7.7	7.7	7.3	7.2	7.3
19	8.0	7.7	7.8	7.9	7.7	7.8	7.8	7.7	7.8	7.4	7.2	7.3
20	8.0	7.7	7.8	7.8	7.6	7.7	7.8	7.5	7.7	7.4	7.3	7.3
21	8.0	7.7	7.8	7.6	7.5	7.5	7.7	7.6	7.6	7.4	7.3	7.3
22	8.0	7.6	7.8	7.6	7.6	7.6	7.7	7.7	7.7	7.3	7.3	7.3
23	7.9	7.6	7.7	7.6	7.6	7.6	7.7	7.7	7.7	7.4	7.2	7.3
24	7.9	7.6	7.7	7.7	7.6	7.6	7.7	7.7	7.7	7.4	7.3	7.3
25	8.0	7.6	7.7	7.6	7.5	7.6	7.7	7.7	7.7	7.4	7.3	7.3
26	7.9	7.6	7.7	7.6	7.5	7.5	7.8	7.7	7.7	7.4	7.3	7.3
27	7.9	7.6	7.7	7.6	7.5	7.6	7.7	7.6	7.7	7.4	7.3	7.3
28	7.9	7.6	7.7	7.6	7.6	7.6	7.6	7.5	7.6	7.4	7.3	7.3
29	7.9	7.7	7.8	7.6	7.6	7.6	7.7	7.6	7.6	7.5	7.3	7.4
30	8.0	7.8	7.8	7.6	7.6	7.6	7.7	7.6	7.7	7.4	7.3	7.4
31	7.9	7.7	7.8	---	---	---	---	---	---	7.4	7.3	7.4
MONTH	8.4	7.6	7.8	8.0	7.5	7.7	---	---	---	7.8	7.2	7.5

WILLAMETTE RIVER BASIN

14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.4	7.3	7.4	7.5	7.3	7.4	7.4	7.2	7.3	7.4	7.3	7.4
2	7.4	7.3	7.4	7.5	7.4	7.4	7.4	7.2	7.3	7.4	7.3	7.3
3	7.5	7.3	7.4	7.4	7.3	7.4	7.4	7.3	7.3	7.4	7.3	7.3
4	7.5	7.3	7.4	7.4	7.3	7.4	7.4	7.2	7.3	7.3	7.3	7.3
5	7.4	7.4	7.4	7.4	7.3	7.4	7.3	7.2	7.3	7.5	7.3	7.3
6	7.5	7.4	7.4	7.4	7.3	7.4	7.4	7.2	7.3	7.5	7.3	7.4
7	7.4	7.3	7.4	7.5	7.4	7.4	7.4	7.2	7.3	7.4	7.3	7.4
8	7.4	7.3	7.4	7.5	7.4	7.5	7.3	7.2	7.2	7.5	7.3	7.4
9	7.5	7.4	7.4	7.5	7.3	7.5	7.3	7.1	7.2	7.5	7.4	7.4
10	7.5	7.4	7.4	7.5	7.3	7.4	7.3	7.2	7.2	7.5	7.4	7.4
11	7.6	7.4	7.5	7.5	7.3	7.4	7.4	7.2	7.3	7.5	7.4	7.4
12	7.7	7.6	7.6	7.5	7.4	7.5	7.3	7.2	7.2	7.4	7.3	7.4
13	7.7	7.6	7.6	7.5	7.3	7.4	7.4	7.2	7.3	7.5	7.3	7.4
14	7.7	7.6	7.6	7.5	7.3	7.4	7.4	7.1	7.3	7.5	7.4	7.5
15	7.7	7.5	7.6	7.5	7.3	7.4	7.5	7.2	7.4	7.6	7.4	7.5
16	7.6	7.5	7.5	7.6	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
17	7.6	7.5	7.5	7.6	7.4	7.5	7.5	7.2	7.4	7.5	7.4	7.5
18	7.5	7.5	7.5	7.5	7.4	7.4	7.4	7.3	7.3	7.5	7.4	7.5
19	7.6	7.5	7.5	7.6	7.4	7.5	7.4	7.3	7.3	7.6	7.4	7.5
20	7.6	7.4	7.5	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.5
21	7.6	7.5	7.6	7.5	7.3	7.4	7.4	7.3	7.4	7.6	7.4	7.5
22	7.6	7.4	7.5	7.5	7.2	7.3	7.6	7.4	7.5	7.6	7.4	7.5
23	7.5	7.4	7.4	7.4	7.2	7.3	7.6	7.4	7.4	7.7	7.4	7.5
24	7.5	7.4	7.4	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.4	7.5
25	7.5	7.4	7.4	7.3	7.2	7.3	7.5	7.3	7.4	7.5	7.4	7.4
26	7.5	7.4	7.4	7.3	7.2	7.2	7.5	7.4	7.4	7.5	7.4	7.4
27	7.5	7.4	7.4	7.3	7.2	7.2	7.5	7.4	7.4	7.6	7.4	7.5
28	7.4	7.3	7.4	7.3	7.2	7.2	7.5	7.4	7.4	7.6	7.4	7.5
29	---	---	---	7.3	7.2	7.2	7.6	7.4	7.5	7.6	7.4	7.5
30	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.7	7.5	7.5
31	---	---	---	7.3	7.2	7.3	---	---	---	7.6	7.5	7.5
MONTH	7.7	7.3	7.5	7.6	7.2	7.4	7.6	7.1	7.3	7.7	7.3	7.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.6	7.5	7.6	7.8	7.6	7.7	7.7	7.4	7.5	7.9	7.6	7.7
2	7.6	7.5	7.6	7.7	7.6	7.7	7.6	7.4	7.5	7.9	7.6	7.8
3	7.7	7.5	7.6	7.8	7.6	7.7	7.5	7.3	7.4	8.0	7.7	7.8
4	7.7	7.5	7.6	7.8	7.6	7.7	7.6	7.3	7.4	8.0	7.7	7.9
5	7.6	7.5	7.6	7.8	7.6	7.7	7.6	7.3	7.4	8.1	7.7	7.8
6	7.6	7.5	7.6	7.8	7.6	7.7	7.6	7.3	7.5	8.1	7.7	7.9
7	7.6	7.5	7.6	7.8	7.6	7.7	7.7	7.5	7.6	8.0	7.7	7.8
8	7.7	7.5	7.6	7.8	7.6	7.7	7.8	7.5	7.6	8.1	7.7	7.9
9	7.7	7.5	7.6	7.8	7.6	7.7	7.8	7.5	7.6	8.1	7.7	7.8
10	7.7	7.4	7.5	7.8	7.6	7.7	7.8	7.4	7.6	8.0	7.7	7.8
11	7.6	7.4	7.5	7.8	7.6	7.7	7.8	7.5	7.6	8.0	7.7	7.8
12	7.6	7.4	7.5	7.8	7.6	7.7	7.8	7.5	7.6	8.1	7.6	7.8
13	7.6	7.4	7.5	7.8	7.6	7.7	7.7	7.5	7.6	8.1	7.7	7.8
14	7.5	7.3	7.4	7.8	7.6	7.7	7.7	7.5	7.6	8.1	7.6	7.8
15	7.4	7.2	7.3	7.8	7.6	7.7	7.8	7.5	7.6	8.1	7.7	7.9
16	7.5	7.3	7.4	7.8	7.6	7.7	7.7	7.5	7.6	8.4	7.8	8.0
17	7.6	7.3	7.4	7.7	7.6	7.6	7.8	7.5	7.6	8.2	7.8	8.0
18	7.7	7.4	7.6	7.7	7.5	7.6	7.8	7.5	7.6	8.2	7.7	7.9
19	7.7	7.5	7.6	7.7	7.5	7.6	7.8	7.6	7.6	8.2	7.7	7.8
20	7.7	7.5	7.6	7.6	7.4	7.5	7.8	7.5	7.6	8.1	7.6	7.8
21	7.7	7.5	7.6	7.6	7.4	7.5	7.9	7.5	7.7	8.1	7.6	7.8
22	7.7	7.5	7.6	7.6	7.4	7.5	7.8	7.6	7.7	8.1	7.6	7.8
23	7.7	7.5	7.6	7.6	7.4	7.5	7.8	7.6	7.7	8.1	7.6	7.8
24	7.7	7.5	7.6	7.6	7.4	7.5	7.9	7.5	7.7	8.0	7.6	7.8
25	7.7	7.5	7.6	7.6	7.4	7.5	7.9	7.5	7.7	8.0	7.6	7.7
26	7.7	7.5	7.6	7.7	7.4	7.5	7.8	7.5	7.7	7.9	7.6	7.7
27	7.7	7.5	7.6	7.7	7.4	7.5	7.9	7.5	7.7	7.8	7.5	7.6
28	7.7	7.5	7.6	7.7	7.4	7.5	7.9	7.5	7.7	7.8	7.5	7.6
29	7.8	7.5	7.6	7.7	7.4	7.5	7.8	7.6	7.7	7.8	7.5	7.6
30	7.8	7.5	7.6	7.6	7.4	7.5	7.8	7.6	7.7	7.8	7.5	7.6
31	---	---	---	7.6	7.4	7.5	7.8	7.6	7.7	---	---	---
MONTH	7.8	7.2	7.6	7.8	7.4	7.6	7.9	7.3	7.6	8.4	7.5	7.8

WILLAMETTE RIVER BASIN

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14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR__Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	10.5	9.0	10.0	7.5	6.5	7.0	5.5	5.0	5.5	4.5	4.0	4.5
2	10.5	9.0	9.5	7.5	6.5	7.0	5.5	4.5	5.0	4.5	3.5	4.0
3	9.5	8.0	9.0	7.0	6.0	6.5	5.5	5.0	5.0	4.0	3.0	3.5
4	9.5	8.0	8.5	8.0	7.0	7.5	5.0	4.5	5.0	4.0	3.0	3.5
5	8.5	7.0	8.0	7.5	6.5	7.0	4.5	4.0	4.0	4.0	3.5	3.5
6	9.5	7.5	8.5	6.5	5.5	6.0	4.5	3.5	4.0	4.0	3.5	4.0
7	9.5	8.0	9.0	6.0	5.5	5.5	4.5	3.5	4.0	4.5	4.0	4.5
8	10.0	9.0	9.5	6.0	5.0	5.5	4.0	3.0	3.5	4.5	3.5	4.0
9	9.0	8.5	8.5	6.0	5.0	5.5	4.0	3.0	3.5	4.0	3.5	3.5
10	8.5	7.5	8.0	5.5	5.0	5.0	4.5	3.5	4.0	4.5	4.0	4.5
11	9.0	7.5	8.0	6.0	5.5	5.5	4.5	4.0	4.5	4.0	3.5	4.0
12	9.0	8.0	8.5	6.0	4.5	5.5	5.0	4.5	4.5	4.5	3.5	4.0
13	9.0	8.5	8.5	7.0	6.0	6.5	5.0	5.0	5.0	4.5	4.0	4.5
14	8.5	8.0	8.5	6.5	6.0	6.5	5.0	4.5	4.5	5.0	4.0	4.5
15	8.0	7.5	7.5	7.0	6.5	7.0	4.5	4.0	4.0	4.5	4.0	4.5
16	8.0	7.0	7.5	7.0	6.0	6.0	4.5	4.0	4.0	4.5	3.5	4.0
17	8.0	6.0	7.0	6.5	6.0	6.5	4.5	4.0	4.0	4.0	3.5	4.0
18	8.5	7.5	8.0	6.5	6.0	6.0	4.5	3.0	4.0	4.5	4.0	4.5
19	7.5	6.0	6.5	6.0	5.5	6.0	3.0	1.5	2.0	5.0	4.5	4.5
20	7.5	5.5	6.5	7.0	6.0	6.0	1.5	.0	.5	4.5	4.0	4.5
21	7.5	6.0	7.0	7.0	5.5	6.0	1.0	.0	.5	4.0	4.0	4.0
22	7.5	6.0	7.0	5.5	4.5	5.0	1.0	.0	.5	4.0	3.5	3.5
23	7.5	6.0	7.0	6.0	5.0	5.5	1.5	.5	1.0	4.0	3.0	3.5
24	8.0	7.0	7.5	5.5	5.0	5.5	2.0	1.5	2.0	4.0	3.5	3.5
25	9.0	7.5	8.0	6.5	5.5	6.0	3.0	2.0	3.0	3.5	2.5	3.0
26	8.5	8.0	8.0	6.0	6.0	6.0	4.0	3.0	3.5	4.0	3.5	3.5
27	8.0	7.0	8.0	6.0	5.5	6.0	3.5	3.0	3.5	4.0	3.0	3.5
28	8.0	7.0	7.5	5.5	5.0	5.5	4.0	3.0	3.5	4.0	3.5	4.0
29	7.0	5.5	6.5	5.0	4.5	5.0	4.5	4.0	4.5	4.5	4.0	4.0
30	6.0	4.5	5.5	5.5	4.5	5.0	5.0	4.5	4.5	4.5	4.0	4.0
31	6.5	5.0	5.5	---	---	---	5.0	4.5	4.5	4.0	3.5	4.0
MONTH	10.5	4.5	7.8	8.0	4.5	6.0	5.5	.0	3.6	5.0	2.5	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.5	3.5	5.0	3.5	4.0	6.0	3.5	4.5	6.5	5.0	5.5
2	4.5	3.0	3.5	5.0	3.5	4.0	5.5	3.5	4.5	5.0	4.0	4.5
3	4.5	3.5	4.0	4.5	3.0	3.5	4.5	3.0	4.0	5.0	3.5	4.5
4	4.0	3.5	3.5	4.0	3.0	3.5	4.5	3.5	4.0	5.0	3.5	4.0
5	3.5	3.0	3.5	4.0	3.0	3.5	6.0	3.5	4.5	8.0	4.0	5.5
6	4.0	3.5	3.5	4.0	3.0	3.5	6.5	3.0	4.5	7.0	4.5	5.5
7	3.5	3.0	3.0	4.5	3.5	4.0	5.5	3.5	4.5	5.0	4.0	4.5
8	3.0	3.0	3.0	5.0	3.5	4.0	5.0	4.0	4.5	5.5	4.0	4.5
9	3.5	2.5	3.0	4.5	3.5	4.0	4.5	3.0	4.0	6.0	4.0	5.0
10	3.5	2.5	3.0	5.0	3.5	4.0	5.5	3.5	4.5	6.5	3.5	5.0
11	3.5	2.5	3.0	4.5	3.0	3.5	7.0	3.5	5.0	6.0	4.5	5.0
12	4.0	3.0	3.5	4.5	3.5	4.0	6.0	4.0	5.0	6.5	5.0	5.5
13	4.5	3.5	4.0	5.5	4.0	4.5	7.5	4.5	5.5	6.0	4.5	5.0
14	4.5	4.0	4.0	5.5	4.0	5.0	7.0	3.5	5.0	6.5	4.5	5.5
15	4.5	3.5	4.0	6.0	4.5	5.0	7.5	3.5	5.5	7.0	4.5	5.5
16	4.5	4.0	4.0	5.5	4.0	4.5	7.5	4.0	5.5	7.5	4.5	6.0
17	4.0	3.5	4.0	5.5	3.5	4.5	7.5	4.5	6.0	6.5	5.5	6.0
18	4.0	3.0	3.5	6.0	4.0	5.0	6.0	4.5	5.5	7.0	5.0	5.5
19	4.5	3.5	4.0	6.5	4.0	5.0	5.5	4.5	5.0	8.0	4.5	6.0
20	4.0	3.0	3.5	6.5	4.0	5.0	5.5	4.5	5.0	6.5	5.0	5.5
21	4.5	4.0	4.0	6.0	4.5	5.0	5.5	4.0	4.5	8.5	5.0	6.0
22	4.0	3.5	4.0	5.5	4.0	4.5	7.0	4.0	5.5	9.0	4.5	6.5
23	4.5	4.0	4.0	6.0	4.5	5.0	8.0	4.0	5.5	9.0	5.0	6.5
24	4.5	4.0	4.5	6.0	4.0	5.0	8.0	4.0	6.0	8.5	5.0	6.5
25	4.5	3.5	4.0	5.5	4.5	5.0	6.0	4.5	5.0	7.5	5.0	6.0
26	4.5	3.5	4.0	5.0	3.0	4.0	5.5	4.5	5.0	8.0	4.0	6.0
27	4.5	4.0	4.0	4.5	3.0	3.5	5.5	4.0	4.5	9.0	4.5	6.5
28	4.0	4.0	4.0	4.5	3.0	3.5	5.5	4.0	4.5	8.5	5.0	6.5
29	---	---	---	4.0	2.5	3.0	8.0	4.0	5.5	8.5	5.0	6.5
30	---	---	---	4.5	3.0	3.5	8.0	4.0	6.0	8.5	4.5	6.5
31	---	---	---	4.0	3.0	3.5	---	---	---	7.0	5.0	6.0
MONTH	4.5	2.5	3.7	6.5	2.5	4.2	8.0	3.0	4.9	9.0	3.5	5.6

WILLAMETTE RIVER BASIN

14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR__Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	6.5	5.5	6.0	11.0	8.0	9.5	14.5	10.0	12.0	11.5	8.0	9.5
2	6.5	5.0	5.5	9.0	7.5	8.0	14.5	10.5	12.5	11.0	8.0	9.5
3	8.0	5.0	6.0	9.5	7.0	8.0	15.0	10.5	12.5	11.0	8.0	9.5
4	7.0	5.5	6.5	9.0	7.5	8.0	15.0	11.0	12.5	11.5	8.5	10.0
5	7.0	6.0	6.5	12.0	6.5	9.0	13.5	11.5	12.5	12.0	9.0	10.5
6	6.5	5.0	6.0	12.5	8.0	10.0	12.5	11.0	11.5	12.0	9.5	10.5
7	6.5	5.0	5.5	10.5	8.5	9.5	11.0	10.5	11.0	11.0	8.0	9.5
8	7.0	5.0	6.0	11.5	7.5	9.0	13.0	10.0	11.5	11.5	8.0	10.0
9	8.5	5.5	6.5	12.5	8.0	10.0	14.5	10.5	12.0	12.0	9.0	10.5
10	9.5	5.0	7.0	13.0	9.0	11.0	14.5	11.0	12.5	11.0	8.5	10.0
11	9.5	6.0	7.5	13.5	9.0	11.0	14.0	11.0	12.5	11.0	8.0	9.5
12	9.5	6.5	8.0	13.5	9.0	11.0	14.0	10.5	12.0	11.0	8.0	9.5
13	10.5	6.5	8.5	13.5	9.0	11.0	11.5	10.0	10.5	11.5	8.0	10.0
14	11.0	6.5	8.5	12.5	9.0	10.5	11.0	9.5	10.0	11.5	8.5	10.0
15	9.0	7.0	8.0	12.5	8.0	10.0	12.5	9.0	11.0	11.5	9.0	10.0
16	10.0	7.0	8.5	12.5	9.0	11.0	13.5	9.5	11.0	11.0	9.0	10.0
17	10.0	6.5	8.0	11.0	9.0	10.0	14.0	10.0	12.0	11.0	8.5	10.0
18	10.0	7.0	8.5	12.5	8.0	10.0	14.5	10.5	12.5	11.0	8.5	10.0
19	10.5	7.0	8.5	13.5	9.0	11.0	14.0	11.0	12.5	11.5	8.5	10.0
20	8.5	7.0	8.0	11.5	9.0	10.5	14.0	10.5	12.0	11.0	9.0	10.0
21	9.5	7.5	8.0	13.0	9.5	11.0	14.0	11.0	12.5	11.5	8.5	10.0
22	11.0	7.5	9.0	13.5	9.5	11.0	13.5	10.0	11.5	11.5	9.0	10.5
23	11.0	7.0	9.0	13.5	9.5	11.0	13.0	10.5	11.5	11.0	9.0	10.5
24	9.5	7.5	8.5	13.0	10.0	11.0	14.5	11.0	12.5	10.5	9.0	10.0
25	8.0	6.5	7.5	13.0	9.5	11.0	14.5	11.0	12.5	10.0	9.0	9.5
26	8.5	7.0	7.5	14.0	9.5	11.5	14.0	11.0	12.5	9.0	7.5	8.5
27	10.5	7.0	8.5	14.5	10.0	12.0	14.0	11.0	12.5	8.0	6.0	7.0
28	10.0	7.0	8.5	14.5	10.5	12.5	14.0	11.0	12.5	8.5	6.0	7.5
29	12.0	8.0	9.5	14.5	10.5	12.5	13.0	11.0	11.5	9.0	6.5	8.0
30	11.0	8.5	9.5	14.0	10.0	12.0	11.5	9.5	10.5	9.5	7.5	8.5
31	---	---	---	14.0	10.0	12.0	10.5	8.5	9.5	---	---	---
MONTH	12.0	5.0	7.6	14.5	6.5	10.5	15.0	8.5	11.8	12.0	6.0	9.6
YEAR	15.0	.0	6.6									

TURBIDITY (NTU), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	2	1	1	2	0	1	5	2	3	11	3	6
2	2	1	1	2	0	1	99	4	32	9	3	4
3	3	1	1	2	0	1	17	3	7	6	2	2
4	5	1	2	3	0	1	5	2	3	2	1	2
5	3	1	1	4	1	2	3	2	2	6	1	2
6	2	0	1	2	0	1	4	1	2	4	1	1
7	3	0	1	2	0	1	5	1	2	2	1	1
8	3	1	1	2	0	1	4	1	1	3	1	1
9	3	1	1	2	0	1	2	1	1	3	1	1
10	2	1	1	2	1	1	4	1	1	6	1	1
11	2	0	1	1	0	1	8	2	4	7	1	2
12	2	0	1	2	0	1	6	3	4	9	1	2
13	3	0	1	2	0	1	5	2	3	9	1	2
14	4	0	1	4	0	1	5	1	2	68	1	17
15	3	0	1	19	1	5	4	1	1	34	6	13
16	3	0	1	7	1	3	3	1	1	10	2	5
17	3	0	1	2	1	1	3	0	1	30	2	11
18	3	0	1	4	0	1	1	0	1	22	6	12
19	2	0	1	2	1	1	3	0	1	10	6	7
20	2	0	1	65	1	16	2	0	1	---	---	---
21	3	0	1	69	10	28	2	0	1	---	---	---
22	1	0	1	19	4	7	1	0	1	26	3	6
23	3	0	1	17	3	5	1	0	0	5	2	3
24	2	0	1	6	2	4	2	0	1	4	1	2
25	3	0	1	14	3	7	73	0	9	9	1	1
26	4	0	1	59	5	14	192	7	36	9	0	1
27	5	0	1	8	2	4	163	19	54	2	0	1
28	3	1	1	5	2	2	198	45	100	2	1	1
29	4	0	1	5	2	3	48	16	29	3	0	1
30	3	0	1	6	1	2	22	8	14	2	0	1
31	2	0	1	---	---	---	33	6	10	2	0	0
MONTH	5	0	1	69	0	4	198	0	11	---	---	---

WILLAMETTE RIVER BASIN

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14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, K OR--Continued

TURBIDITY (NTU), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1	0	0	11	3	6	2	0	1	4	1	1
2	7	0	2	6	2	3	2	1	1	4	1	2
3	5	0	1	4	2	2	3	1	1	3	1	2
4	5	1	1	3	1	1	1	0	1	3	1	1
5	3	0	1	2	1	1	2	1	1	4	1	1
6	21	2	7	2	1	1	2	0	1	5	1	1
7	12	3	6	2	0	1	2	1	1	28	1	3
8	5	2	3	4	0	1	---	---	---	3	1	1
9	3	1	2	6	0	1	2	1	1	3	0	1
10	3	1	2	3	0	1	2	1	1	3	0	1
11	3	0	1	1	0	1	2	1	1	4	0	1
12	4	1	1	2	0	1	1	1	1	3	1	1
13	2	1	1	3	1	1	2	1	1	1	1	1
14	3	1	1	2	1	1	2	1	1	2	1	1
15	6	1	1	1	1	1	2	1	1	2	1	1
16	14	1	3	2	0	1	4	1	2	3	1	1
17	6	1	2	2	0	1	5	1	2	8	1	2
18	5	1	3	3	0	1	4	2	3	11	3	5
19	4	1	2	1	0	1	4	2	3	7	2	4
20	3	1	1	4	0	1	4	1	2	4	1	2
21	3	1	1	3	1	2	6	1	2	6	1	2
22	4	1	2	2	1	1	4	1	1	6	1	2
23	14	3	7	2	1	1	3	0	1	12	2	4
24	14	4	6	2	1	1	4	1	1	15	4	7
25	6	2	4	3	1	1	3	1	2	16	5	8
26	7	1	2	2	0	1	6	1	1	10	3	5
27	38	3	10	2	1	1	3	1	1	7	3	4
28	35	9	20	2	1	1	2	1	1	7	2	4
29	---	---	---	3	1	1	2	0	1	5	2	3
30	---	---	---	3	1	1	4	0	1	6	2	3
31	---	---	---	6	1	1	---	---	---	7	2	2
MONTH	38	0	3	11	0	1	---	---	---	28	0	2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	4	2	3	3	0	1	3	1	1	3	1	1
2	4	1	2	5	1	1	3	1	1	2	1	1
3	6	1	2	2	0	1	3	1	1	2	1	1
4	3	1	1	3	0	1	3	1	1	2	1	1
5	2	1	1	2	0	1	3	1	2	3	1	1
6	5	1	2	2	0	1	7	1	2	5	1	1
7	6	1	1	2	0	1	9	1	2	2	1	1
8	3	1	1	3	1	1	2	1	1	2	1	1
9	2	1	1	3	1	1	4	1	1	2	1	1
10	2	1	1	2	1	1	5	1	1	2	1	1
11	2	1	1	4	1	2	3	1	1	3	1	1
12	4	1	1	6	1	1	4	1	1	---	---	---
13	5	1	2	4	1	1	2	1	1	---	---	---
14	10	2	3	2	1	1	2	1	1	---	---	---
15	46	4	9	2	1	1	2	1	1	---	---	---
16	11	2	4	4	1	1	2	1	1	2	1	1
17	5	2	3	2	1	1	4	1	1	2	1	1
18	5	1	2	3	1	1	3	1	1	2	1	1
19	---	---	---	3	1	1	4	1	1	3	1	1
20	---	---	---	5	1	2	3	1	1	2	1	1
21	---	---	---	3	1	1	2	1	1	1	1	1
22	2	1	1	4	1	2	3	1	1	3	0	1
23	2	1	1	8	1	3	3	1	1	3	1	1
24	5	1	2	8	2	3	3	1	1	4	1	1
25	5	1	2	6	1	3	4	1	2	2	1	1
26	2	1	1	6	1	3	3	1	2	2	1	1
27	2	0	1	4	1	1	3	1	1	3	0	1
28	3	1	1	2	1	1	4	1	1	2	1	1
29	2	1	1	5	1	2	3	1	1	2	1	1
30	2	0	1	4	1	1	4	1	2	2	0	1
31	---	---	---	3	1	1	6	1	1	---	---	---
MONTH	---	---	---	8	0	1	9	1	1	---	---	---

WILLAMETTE RIVER BASIN

14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK. NEAR DETROIT. OR

LOCATION.--Lat 44°45'10", long 122°07'40", in SE 1/4 NE 1/4 sec.36, T.9 S., R.5 E., Marion County, Hydrologic Unit 17090005, in Willamette National Forest, on left bank 600 ft upstream from Canyon Creek, 1.5 mi northeast of Detroit, and at mile 2.0.

DRAINAGE AREA.--108 mi², at measuring cable 0.2 mi downstream from gage.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1932 to September 1987, October 1998 to September 1999. Monthly discharge only June 1932, published in WSP 1318. Published as "above Canyon Creek, near Detroit" from October 1952 to September 1984.

GAGE.--Water-stage recorder. Datum of gage is 1,573.95 ft above sea level. Prior to Oct. 1, 1952, at site 0.2 mi downstream at datum 13.46 ft lower.

REMARKS.--Records fair except for the period Oct. 1 to May 5, which are poor. No regulation or diversion upstream from station. All records given herein are for measuring site 0.2 mi downstream from gage.

AVERAGE DISCHARGE.--56 YEARS, (water years 1933-87, 1999), 578 ft³/s, 72.75 in/yr, 419,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s Dec. 22, 1964, gage height, 14.55 ft; minimum discharge, 87 ft³/s Sept. 2, 1940.

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)
Dec. 28	0700	*6,940	*9.61	No other peak greater than base discharge.			
Minimum discharge, 137 ft ³ /s Oct. 1.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	e170	1100	1820	522	1990	542	606	1260	794	353	227
2	155	e160	2850	1360	561	1400	502	705	1040	690	356	215
3	183	e160	1750	1100	654	1200	462	842	845	555	347	207
4	248	187	1140	907	717	1020	411	912	789	495	358	203
5	182	294	876	758	679	831	379	778	863	475	377	200
6	165	291	721	650	1160	703	348	839	932	546	414	201
7	159	250	658	584	1480	614	346	890	791	626	371	197
8	163	235	648	513	1100	550	372	779	687	547	342	194
9	232	219	573	454	851	498	348	684	618	533	316	192
10	236	218	533	412	687	430	337	609	598	602	320	190
11	196	226	1130	421	556	379	343	572	652	622	317	186
12	178	214	1640	461	470	372	418	631	809	576	304	184
13	200	208	1630	492	412	503	475	627	1020	562	291	182
14	231	204	1280	1040	393	560	494	600	1200	542	287	182
15	226	319	986	2110	382	545	504	585	1330	477	275	181
16	213	443	845	1570	580	512	594	573	1180	452	263	180
17	195	361	823	1640	865	458	766	807	1100	447	265	178
18	185	355	734	2380	932	427	957	1250	1010	397	268	176
19	175	345	640	1880	1100	481	984	1220	932	413	262	175
20	168	1080	536	1760	810	653	941	1130	869	474	250	174
21	162	2780	462	1830	648	794	792	1020	800	463	251	172
22	159	1640	405	1560	776	764	649	1040	810	425	242	171
23	156	1350	354	1310	1510	697	604	1320	841	422	236	170
24	154	1530	320	1090	1770	660	708	1740	932	423	235	169
25	155	1910	525	900	1530	648	866	1790	1050	404	235	172
26	153	2280	1040	755	1240	635	802	1480	761	378	230	170
27	152	1510	1950	633	1720	587	684	1300	638	394	224	169
28	e170	1020	6540	633	3030	542	565	1330	616	407	219	167
29	e160	841	4720	709	---	698	471	1200	665	410	216	166
30	e150	876	2950	661	---	673	460	1080	797	382	233	165
31	e150	---	2300	600	---	596	---	1030	---	361	259	---
TOTAL	5548	21676	42659	32993	27135	21420	17124	29969	26435	15294	8916	5515
MEAN	179	723	1376	1064	969	691	571	967	881	493	288	184
MAX	248	2780	6540	2380	3030	1990	984	1790	1330	794	414	227
MIN	137	160	320	412	382	372	337	572	598	361	216	165
AC-FT	11000	42990	84610	65440	53820	42490	33970	59440	52430	30340	17680	10940
CFSM	1.66	6.69	12.7	9.85	8.97	6.40	5.29	8.95	8.16	4.57	2.66	1.70
IN.	1.91	7.47	14.69	11.36	9.35	7.38	5.90	10.32	9.11	5.27	3.07	1.90

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1999, BY WATER YEAR (WY)

MEAN	260	668	929	850	810	679	775	788	578	289	173	158
MAX	827	1504	2385	2135	1867	1874	1280	1627	1564	532	288	267
(WY)	1948	1943	1965	1953	1982	1972	1949	1949	1933	1933	1999	1971
MIN	104	106	163	142	176	289	295	344	202	129	98.4	104
(WY)	1946	1937	1977	1937	1977	1941	1941	1934	1934	1940	1940	1934

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1933 - 1999

ANNUAL TOTAL	254684				
ANNUAL MEAN	698			578	
HIGHEST ANNUAL MEAN				892	1974
LOWEST ANNUAL MEAN				276	1977
HIGHEST DAILY MEAN	6540	Dec 28		12800	Dec 22 1964
LOWEST DAILY MEAN	137	Oct 1		89	Aug 31 1940
ANNUAL SEVEN-DAY MINIMUM	156	Oct 25		91	Oct 23 1944
ANNUAL RUNOFF (AC-FT)	505200			419000	
ANNUAL RUNOFF (CFSM)	6.46			5.35	
ANNUAL RUNOFF (INCHES)	87.72			72.75	
10 PERCENT EXCEEDS	1350			1140	
50 PERCENT EXCEEDS	556			410	
90 PERCENT EXCEEDS	179			138	

e Estimated

WILLAMETTE RIVER BASIN

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14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK, NEAR DETROIT, OR--Continued

WATER-QUALITY RECORDS

INSTRUMENTATION.--Water-quality monitor since October 1998.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1998 to September 1999.

pH: October 1998 to September 1999.

WATER TEMPERATURE: December 1950 to July 1961, January 1962 to September 1987, October 1998 to September 1999.

TURBIDITY: October 1998 to September 1999.

EXTREMES FOR PERIOD OF DAILY RECORD.--

TEMPERATURE: Maximum, 18.0°C July 27, 1973; minimum, 0.0°C several days in 1972-73, 1977-79, 1985, 1999.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 69 microsiemens Oct. 1; minimum, 22 microsiemens Dec. 28,

pH: Maximum, 7.9 units Oct. 1; minimum, 7.1 units June 15.

WATER TEMPERATURE: Maximum, 14.5°C Aug. 3, 4; minimum, 0.0°C Dec. 20-23.

TURBIDITY: Maximum, 1,050 NTU Dec. 28; minimum, 0 NTU many days during year.

WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1998					
16...	1020	215	<1	---	37
NOV					
16...	1540	424	2	2.3	100
21...	1459	2610	47	331	100
25...	1324	2130	26	150	100
DEC					
02...	1245	3640	109	1070	26
02...	1645	3120	86	724	100
28...	1635	6530	306	5400	53
29...	1710	4140	129	1440	63
JAN 1999					
13...	1700	487	20	26	1
22...	1300	1530	2	8.3	65
25...	1757	866	1	2.3	62
FEB					
04...	1310	721	<1	---	92
12...	1110	470	1	1.3	70
18...	1530	955	3	7.7	45
24...	1545	1690	6	27	58
MAR					
03...	1635	1180	12	38	25
11...	1505	370	1	1.0	50
16...	1155	512	1	1.4	73
23...	1130	691	1	1.9	100
APR					
14...	1040	492	1	1.3	35
22...	1655	628	1	1.7	50
30...	1247	447	1	1.2	52
MAY					
04...	0945	931	1	2.5	48
13...	1130	622	2	3.4	51
17...	1805	990	8	21	35
18...	1700	1270	4	14	47
JUN					
16...	1105	1170	3	9.5	79
JUL					
01...	1320	770	2	4.2	56
AUG					
09...	1710	303	2	1.6	40
SEP					
02...	0847	218	<1	---	92
15...	1630	183	1	.49	70

WILLAMETTE RIVER BASIN

14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK, NEAR DETROIT, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	69	63	66	61	57	59	40	37	39	36	33	34
2	64	60	62	60	57	58	37	28	31	38	35	37
3	61	57	59	59	57	58	36	32	34	40	37	39
4	58	55	56	59	55	57	38	36	37	41	38	40
5	59	57	58	55	52	53	39	38	38	42	40	41
6	60	58	59	54	52	53	41	39	40	43	42	42
7	60	58	59	54	53	54	41	40	41	43	42	43
8	60	57	59	55	54	55	43	40	42	44	43	43
9	58	53	55	56	55	55	43	42	43	45	43	44
10	55	52	53	56	53	55	---	---	---	45	44	45
11	56	54	55	56	54	55	44	33	38	45	43	44
12	57	56	57	55	54	55	34	32	33	45	44	44
13	58	53	55	55	54	55	34	32	33	45	43	44
14	54	52	53	55	54	55	36	33	35	45	31	40
15	53	52	52	55	46	51	38	36	37	34	31	33
16	54	53	53	46	44	45	40	37	39	35	33	34
17	56	54	55	47	45	46	41	40	40	36	31	35
18	56	55	55	47	45	46	42	40	41	33	31	32
19	57	56	56	48	46	47	43	41	42	35	33	34
20	58	56	57	47	29	42	45	42	43	36	34	35
21	59	57	57	34	28	30	45	43	44	37	34	35
22	60	58	59	38	33	36	45	43	45	38	36	37
23	60	59	59	38	36	38	45	44	44	40	38	38
24	60	59	59	38	35	37	45	43	44	41	39	40
25	60	59	60	37	33	34	44	38	42	42	40	41
26	61	59	60	34	30	32	39	37	38	43	41	42
27	61	59	60	37	33	35	39	23	35	44	42	43
28	61	58	59	38	36	37	26	22	25	43	42	43
29	60	58	59	40	38	39	29	26	28	44	42	43
30	60	58	59	40	39	40	32	29	31	45	43	44
31	60	58	59	---	---	---	33	32	32	45	44	44
MONTH	69	52	58	61	28	47	---	---	---	45	31	40

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	45	43	44	36	32	34	45	44	44	39	36	37
2	43	40	42	37	35	37	45	44	44	36	35	36
3	42	41	42	39	37	38	45	44	44	37	36	36
4	42	40	41	40	38	39	45	44	45	39	36	38
5	43	41	42	41	40	40	46	44	45	40	38	39
6	41	34	38	42	41	41	46	45	46	40	38	39
7	37	34	35	43	41	42	47	45	46	38	37	37
8	38	37	38	43	42	42	46	44	45	39	37	38
9	40	38	39	44	42	43	46	45	46	39	38	38
10	42	39	40	44	43	44	46	45	46	40	39	40
11	42	41	42	45	44	45	47	45	46	41	40	40
12	44	42	43	45	43	45	46	45	46	41	39	40
13	45	43	44	44	43	44	46	44	45	40	38	39
14	46	44	45	44	42	43	45	43	44	41	39	40
15	46	44	45	43	42	43	44	43	43	41	40	40
16	45	42	44	44	42	43	43	41	42	41	40	40
17	43	41	42	44	43	44	41	38	39	41	34	38
18	45	40	42	45	43	44	38	36	37	35	33	34
19	42	40	41	44	42	44	37	36	36	34	33	33
20	43	41	42	43	40	41	37	36	36	35	33	34
21	44	42	43	40	39	39	38	36	37	35	34	35
22	44	40	42	40	39	39	39	38	39	35	33	34
23	40	35	38	41	39	40	40	39	39	33	29	32
24	36	35	36	41	40	41	39	36	38	29	28	28
25	37	35	36	41	40	41	37	35	36	28	28	28
26	39	37	38	41	40	40	37	36	36	30	28	29
27	39	32	36	42	40	41	38	37	37	30	29	30
28	33	30	31	42	41	42	39	37	38	30	29	29
29	---	---	---	42	41	41	41	38	39	30	29	30
30	---	---	---	43	42	42	40	39	39	31	29	30
31	---	---	---	44	42	43	---	---	---	31	29	30
MONTH	46	30	40	45	32	41	47	35	41	41	28	35

WILLAMETTE RIVER BASIN

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14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK, NEAR DETROIT, OR--ContinuedWY

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	30	28	28	27	26	27	47	36	41	---	---	---
2	30	28	29	29	27	27	47	36	40	48	47	47
3	32	30	31	32	28	30	46	36	41	48	47	48
4	33	31	32	33	32	32	47	36	42	49	48	48
5	33	29	31	34	32	33	46	35	41	50	48	49
6	31	29	29	33	30	32	44	34	38	51	49	50
7	32	30	31	30	28	29	48	35	41	51	50	50
8	34	32	33	33	29	31	49	37	43	51	49	50
9	36	34	35	33	32	32	48	38	42	51	49	50
10	36	34	35	32	30	30	42	40	41	51	50	50
11	35	33	34	30	28	29	42	40	41	52	50	51
12	33	29	32	31	29	30	43	40	42	53	51	52
13	29	27	28	32	29	30	44	42	43	54	52	53
14	28	25	27	32	29	30	45	43	44	55	53	54
15	26	24	25	34	31	32	45	44	44	54	53	54
16	27	25	26	34	32	33	45	44	45	55	53	54
17	27	26	27	34	32	33	46	44	45	54	53	54
18	28	27	27	36	33	35	45	43	44	55	53	54
19	28	27	28	36	34	35	45	43	44	55	53	54
20	29	28	28	39	32	34	48	44	46	56	54	55
21	29	28	29	40	34	37	---	44	---	56	54	55
22	29	28	29	42	34	38	48	44	---	56	54	56
23	29	28	28	41	35	38	50	45	47	56	55	56
24	28	26	28	42	36	38	50	46	47	56	55	55
25	28	25	26	43	35	39	50	45	47	55	54	55
26	30	28	29	45	37	41	51	45	48	55	54	55
27	31	29	30	44	36	40	51	46	48	55	54	55
28	30	29	30	42	35	39	47	46	47	56	53	54
29	31	28	29	43	34	38	53	47	49	56	54	55
30	28	27	27	45	36	41	53	47	50	56	55	56
31	---	---	---	47	37	42	52	47	49	---	---	---
MONTH	36	24	29	47	26	34	---	34	---	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	7.9	7.5	7.6	7.6	7.4	7.5	7.4	7.4	7.4	7.5	7.3	7.4
2	7.8	7.5	7.6	7.6	7.4	7.5	7.4	7.3	7.3	7.5	7.4	7.4
3	7.8	7.6	7.6	7.6	7.4	7.5	7.4	7.3	7.4	7.4	7.4	7.4
4	7.8	7.6	7.6	7.6	7.4	7.5	7.4	7.4	7.4	7.5	7.4	7.4
5	7.7	7.5	7.6	7.6	7.5	7.5	7.4	7.4	7.4	7.5	7.4	7.4
6	7.7	7.5	7.5	7.6	7.5	7.5	7.5	7.4	7.4	7.5	7.4	7.4
7	7.8	7.4	7.5	7.6	7.5	7.5	7.5	7.4	7.4	7.5	7.3	7.4
8	7.8	7.5	7.6	7.6	7.4	7.5	7.5	7.4	7.4	7.5	7.4	7.4
9	7.7	7.5	7.6	7.6	7.5	7.5	7.5	7.4	7.4	7.5	7.4	7.4
10	7.7	7.5	7.6	7.6	7.5	7.5	7.4	7.4	7.4	7.5	7.4	7.4
11	7.8	7.5	7.6	7.6	7.5	7.5	7.4	7.3	7.4	7.5	7.4	7.4
12	7.7	7.4	7.6	7.6	7.4	7.5	7.4	7.3	7.4	7.5	7.4	7.4
13	7.6	7.5	7.5	7.7	7.4	7.5	7.4	7.3	7.4	7.5	7.4	7.5
14	7.7	7.5	7.6	7.7	7.5	7.5	7.4	7.4	7.4	7.5	7.3	7.4
15	7.7	7.5	7.6	7.6	7.4	7.5	7.4	7.4	7.4	7.4	7.3	7.4
16	7.7	7.4	7.5	7.6	7.4	7.5	---	---	---	7.5	7.4	7.4
17	7.7	7.4	7.5	7.6	7.5	7.5	---	---	---	7.5	7.3	7.4
18	7.7	7.4	7.5	7.6	7.5	7.5	7.5	7.5	7.5	7.5	7.3	7.4
19	7.6	7.4	7.5	7.6	7.5	7.5	7.5	7.5	7.5	7.5	7.4	7.4
20	7.6	7.5	7.5	7.5	7.3	7.4	7.5	7.5	7.5	7.5	7.4	7.4
21	7.6	7.4	7.5	7.4	7.3	7.3	7.5	7.5	7.5	7.5	7.4	7.4
22	7.6	7.5	7.5	7.4	7.3	7.4	7.5	7.5	7.5	7.5	7.4	7.5
23	7.6	7.4	7.5	7.4	7.4	7.4	7.5	7.5	7.5	7.5	7.4	7.5
24	7.6	7.5	7.5	7.4	7.3	7.4	7.5	7.5	7.5	7.6	7.4	7.5
25	7.7	7.4	7.5	7.4	7.3	7.3	7.5	7.5	7.5	7.5	7.4	7.5
26	7.6	7.4	7.5	7.4	7.3	7.3	7.5	7.4	7.5	7.5	7.4	7.5
27	7.6	7.4	7.5	7.4	7.3	7.4	7.5	7.2	7.4	7.5	7.4	7.5
28	7.6	7.5	7.5	7.4	7.4	7.4	7.3	7.2	7.2	7.5	7.4	7.5
29	7.6	7.4	7.5	7.4	7.4	7.4	7.3	7.2	7.2	7.6	7.4	7.5
30	7.6	7.4	7.5	7.4	7.4	7.4	7.4	7.2	7.3	7.6	7.4	7.5
31	7.5	7.4	7.5	---	---	---	---	---	---	7.5	7.4	7.5
MONTH	7.9	7.4	7.5	7.7	7.3	7.5	---	---	---	7.6	7.3	7.4

WILLAMETTE RIVER BASIN

14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK, NEAR DETROIT, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.6	7.5	7.5	7.4	7.3	7.4	7.5	7.3	7.4	7.5	7.4	7.5
2	7.5	7.4	7.5	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.5
3	7.6	7.4	7.5	7.5	7.4	7.4	7.5	7.3	7.4	7.5	7.4	7.5
4	7.6	7.4	7.5	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.5
5	7.6	7.4	7.5	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.5
6	7.6	7.4	7.5	7.5	7.4	7.4	7.4	7.3	7.3	7.5	7.4	7.5
7	7.5	7.4	7.5	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
8	7.6	7.5	7.5	7.4	7.3	7.4	7.5	7.5	7.5	7.6	7.5	7.6
9	7.6	7.5	7.5	7.4	7.3	7.4	7.5	7.4	7.5	7.6	7.5	7.6
10	7.5	7.4	7.5	7.4	7.3	7.4	7.5	7.4	7.4	7.7	7.5	7.6
11	7.5	7.4	7.5	7.6	7.3	7.4	7.5	7.4	7.5	7.6	7.5	7.6
12	7.6	7.4	7.5	7.6	7.5	7.5	7.5	7.4	7.5	7.7	7.5	7.6
13	7.6	7.5	7.5	7.6	7.5	7.5	7.5	7.4	7.5	7.6	7.5	7.6
14	7.6	7.5	7.5	7.6	7.5	7.5	7.5	7.4	---	7.5	7.5	7.5
15	7.6	7.5	7.5	7.6	7.5	7.5	7.6	7.4	7.5	7.6	7.5	7.5
16	7.6	7.5	7.5	7.6	7.5	7.5	7.6	7.4	7.5	7.6	7.5	7.5
17	7.6	7.5	7.5	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.4	7.5
18	7.6	7.5	7.5	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.4	7.4
19	7.6	7.5	7.5	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.4	7.5
20	7.6	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.4	7.4
21	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.4	7.5
22	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.4	7.5
23	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.3	7.4
24	7.6	7.4	7.4	7.6	7.5	7.6	7.5	7.4	7.5	7.4	7.3	7.4
25	7.6	7.5	7.5	7.6	7.5	7.6	7.5	7.4	7.5	7.4	7.3	7.4
26	7.5	7.4	7.4	7.6	7.5	7.6	7.5	7.4	7.5	7.4	7.3	7.4
27	7.5	7.3	7.4	7.6	7.4	7.5	7.5	7.4	7.5	7.5	7.3	7.4
28	7.4	7.3	7.3	7.5	7.4	7.5	7.5	7.4	7.5	7.5	7.3	7.4
29	---	---	---	7.5	7.4	7.5	7.6	7.4	7.5	7.5	7.3	7.4
30	---	---	---	7.5	7.4	7.4	7.6	7.4	7.5	7.5	7.3	7.4
31	---	---	---	7.4	7.3	7.3	---	---	---	7.5	7.3	7.4
MONTH	7.6	7.3	7.5	7.6	7.3	7.5	7.6	7.3	---	7.7	7.3	7.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.4	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5	7.6	7.4	7.5
2	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.3	7.5	7.7	7.4	7.6
3	7.5	7.3	7.4	7.6	7.3	7.5	7.6	7.3	7.4	7.7	7.6	7.6
4	7.4	7.2	7.3	7.6	7.4	7.5	7.6	7.3	7.4	7.7	7.6	7.6
5	7.4	7.2	7.3	7.6	7.4	7.5	7.6	7.3	7.4	7.8	7.6	7.6
6	7.4	7.2	7.3	7.6	7.4	7.5	7.4	7.2	7.3	7.8	7.6	7.7
7	7.4	7.3	7.3	7.6	7.4	7.5	7.6	7.3	7.4	7.7	7.6	7.6
8	7.4	7.3	7.3	7.5	7.4	7.4	7.6	7.3	7.4	7.8	7.6	7.6
9	7.4	7.3	7.4	7.6	7.4	7.5	7.6	7.3	7.4	7.8	7.5	7.6
10	7.5	7.2	7.3	7.6	7.3	7.4	7.6	7.3	7.4	7.7	7.6	7.6
11	7.4	7.3	7.3	7.6	7.3	7.4	7.6	7.3	7.5	7.8	7.6	7.6
12	7.4	7.2	7.3	7.6	7.4	7.4	7.6	7.4	7.5	7.8	7.6	7.6
13	7.4	7.2	7.3	7.6	7.4	7.5	7.5	7.3	7.4	7.7	7.5	7.6
14	7.4	7.2	7.3	7.6	7.4	7.5	7.6	7.4	7.5	7.6	7.5	7.5
15	7.3	7.1	7.2	7.6	7.4	7.5	7.6	7.3	7.4	7.7	7.5	7.6
16	7.4	7.2	7.3	7.7	7.4	7.5	7.6	7.3	7.4	7.8	7.6	7.7
17	7.4	7.2	7.3	7.5	7.3	7.4	7.7	7.4	7.5	7.8	7.6	7.7
18	7.5	7.2	7.3	7.5	7.3	7.4	7.7	7.4	7.5	7.8	7.6	7.7
19	7.4	7.2	7.3	7.6	7.3	7.4	7.7	7.5	7.6	7.8	7.6	7.7
20	7.4	7.2	7.3	7.5	7.3	7.4	7.7	7.4	7.6	7.8	7.6	7.6
21	7.5	7.2	7.3	7.5	7.3	7.4	7.7	7.5	7.6	7.8	7.6	7.6
22	7.5	7.2	7.3	7.6	7.3	7.4	7.7	7.5	7.6	7.8	7.6	7.6
23	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.5	7.5	7.7	7.5	7.6
24	7.4	7.2	7.3	7.5	7.3	7.4	7.7	7.4	7.5	7.7	7.5	7.6
25	7.4	7.2	7.3	7.5	7.3	7.4	7.7	7.5	7.6	7.7	7.5	7.6
26	7.4	7.2	7.3	7.6	7.3	7.4	7.6	7.4	7.5	7.7	7.5	7.6
27	7.5	7.2	7.3	7.6	7.3	7.4	7.7	7.4	7.5	7.6	7.5	7.5
28	7.5	7.2	7.4	7.6	7.3	7.4	7.7	7.4	7.5	7.6	7.4	7.5
29	7.6	7.3	7.4	7.6	7.3	7.4	7.7	7.4	7.5	7.6	7.5	7.5
30	7.5	7.2	7.4	7.6	7.3	7.4	7.7	7.5	7.5	7.7	7.5	7.5
31	---	---	---	7.6	7.3	7.5	7.7	7.4	7.5	---	---	---
MONTH	7.6	7.1	7.3	7.7	7.3	7.4	7.7	7.2	7.5	7.8	7.4	7.6

WILLAMETTE RIVER BASIN

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14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK, NEAR DETROIT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.5	11.0	8.0	7.5	8.0	6.0	6.0	6.0	5.0	4.5	5.0
2	11.5	10.5	11.0	8.5	8.0	8.0	6.5	5.5	6.0	4.5	4.0	4.5
3	10.5	9.5	10.0	8.0	7.0	7.5	6.0	5.5	5.5	4.0	3.5	4.0
4	10.5	9.0	10.0	8.5	8.0	8.5	5.5	5.0	5.5	4.0	3.5	4.0
5	10.0	8.5	9.5	8.5	7.5	8.0	5.0	4.0	4.5	4.0	3.5	4.0
6	10.5	8.5	9.5	7.5	7.0	7.0	4.5	4.0	4.5	4.5	3.5	4.0
7	10.5	9.0	10.0	7.0	6.5	6.5	4.5	4.0	4.5	5.0	4.5	4.5
8	10.5	10.5	10.5	6.5	6.5	6.5	4.5	3.5	4.0	4.5	4.0	4.5
9	10.5	9.5	10.0	7.0	6.5	6.5	4.5	3.5	4.0	4.0	3.5	3.5
10	10.0	9.0	9.5	7.0	6.0	6.0	4.5	4.0	---	4.5	4.0	4.5
11	10.0	9.0	9.5	7.0	6.5	6.5	5.0	4.5	4.5	4.0	3.5	4.0
12	10.5	9.5	10.0	7.0	6.5	7.0	5.5	5.0	5.5	4.5	3.5	4.0
13	10.5	10.0	10.0	7.5	7.0	7.5	5.5	5.5	5.5	5.0	4.0	4.5
14	10.0	9.5	10.0	7.5	6.5	7.0	5.5	5.0	5.0	5.0	4.5	4.5
15	9.5	9.0	9.0	8.0	7.5	7.5	5.0	4.5	4.5	5.0	4.5	5.0
16	9.0	8.5	8.5	7.5	6.5	7.0	4.5	4.0	4.5	5.0	4.0	4.5
17	9.0	7.5	8.0	7.0	6.5	6.5	5.0	4.5	4.5	4.5	4.0	4.5
18	9.5	8.5	9.0	6.5	6.5	6.5	4.5	3.5	4.0	5.0	4.5	5.0
19	9.0	7.0	8.0	6.5	6.0	6.5	3.5	1.5	2.5	5.5	5.0	5.0
20	8.5	7.5	8.0	7.5	6.5	7.0	1.5	.0	.5	5.0	4.5	4.5
21	8.5	7.0	8.0	7.5	6.0	6.5	1.0	.0	.5	4.5	4.0	4.5
22	8.0	7.0	7.5	6.5	5.5	6.0	1.0	.0	.5	4.5	3.5	4.0
23	8.0	7.0	7.5	6.5	6.0	6.0	1.5	.0	1.0	4.5	3.5	4.0
24	9.0	8.0	8.5	6.5	5.5	6.0	2.0	1.0	1.5	4.5	4.0	4.0
25	10.0	9.0	9.5	7.0	6.0	6.5	3.0	2.0	2.5	4.0	3.0	3.5
26	9.5	9.0	9.0	7.0	6.5	6.5	4.0	3.0	3.5	4.0	3.5	4.0
27	9.0	8.0	8.5	6.5	6.0	6.5	4.0	3.5	3.5	4.0	3.5	4.0
28	9.0	8.5	8.5	6.0	5.5	6.0	5.0	4.0	4.5	4.0	3.5	4.0
29	8.5	7.0	7.5	5.5	5.0	5.0	5.5	5.0	5.0	4.5	4.0	4.5
30	7.0	5.5	6.5	6.0	5.0	5.5	5.5	5.0	5.0	4.5	4.0	4.5
31	7.5	6.0	6.5	---	---	---	5.5	5.0	5.0	4.5	3.5	4.0
MONTH	11.5	5.5	9.0	8.5	5.0	6.7	6.5	.0	---	5.5	3.0	4.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.5	3.5	4.0	5.0	4.0	4.5	5.5	3.5	4.5	6.5	5.0	6.0
2	4.0	2.5	3.5	5.0	4.0	4.5	5.5	3.5	4.5	5.5	4.0	5.0
3	4.5	3.5	4.0	4.5	3.5	4.0	4.5	3.0	4.0	5.0	3.5	4.5
4	4.0	3.5	4.0	4.0	3.5	3.5	4.5	3.5	4.0	5.5	3.5	4.5
5	4.0	3.5	3.5	4.0	3.0	3.5	5.5	3.5	4.5	7.5	4.0	5.5
6	4.5	3.5	4.0	4.5	3.0	3.5	6.0	3.0	4.5	7.0	4.5	5.5
7	4.0	3.5	4.0	4.5	3.5	4.0	5.5	3.5	4.5	5.5	4.0	4.5
8	3.5	3.5	3.5	4.5	3.5	4.0	5.0	4.0	4.5	6.0	4.0	4.5
9	4.0	2.5	3.5	4.5	3.5	4.0	4.5	3.0	4.0	6.0	4.0	5.0
10	3.5	2.5	3.0	5.0	3.5	4.0	5.0	3.5	4.0	6.5	4.0	5.0
11	4.0	2.5	3.0	4.5	3.0	3.5	6.5	3.5	5.0	6.5	4.5	5.5
12	4.0	3.5	3.5	4.5	3.5	4.0	6.0	4.0	5.0	6.5	5.5	6.0
13	4.5	3.5	4.0	5.0	4.0	4.5	7.0	4.5	5.5	6.5	4.5	5.5
14	4.5	4.0	4.0	5.5	4.5	5.0	6.5	3.5	5.0	7.0	4.5	5.5
15	4.5	3.5	4.0	5.5	4.0	5.0	7.5	4.0	5.5	7.0	5.0	6.0
16	4.5	3.5	4.0	5.0	4.0	4.5	7.0	4.0	5.5	7.5	4.5	6.0
17	4.5	3.5	4.0	5.5	4.0	4.5	7.5	4.5	6.0	6.5	5.5	6.0
18	4.0	3.0	3.5	5.5	4.5	5.0	6.0	5.0	5.5	7.0	5.5	6.0
19	5.0	4.0	4.5	6.0	4.0	5.0	6.0	5.0	5.0	8.0	5.0	6.0
20	4.5	3.5	4.0	6.5	4.0	5.0	6.0	4.5	5.0	6.5	5.5	6.0
21	4.5	4.0	4.5	6.0	4.5	5.0	5.5	4.0	5.0	8.5	5.0	6.5
22	4.5	3.5	4.0	5.5	4.0	5.0	7.0	4.5	5.5	9.0	5.0	6.5
23	5.0	4.5	4.5	6.0	4.5	5.0	8.0	4.0	5.5	9.5	5.5	7.0
24	5.0	4.5	4.5	6.0	4.0	5.0	8.0	4.5	6.0	9.0	5.0	6.5
25	4.5	3.5	4.5	5.5	4.5	5.0	6.0	4.5	5.5	8.0	5.5	6.5
26	4.5	3.5	4.0	4.5	3.5	4.0	5.5	4.5	5.0	8.5	4.5	6.0
27	4.5	4.0	4.5	4.5	2.5	3.5	6.0	4.0	5.0	9.0	5.0	6.5
28	4.5	4.5	4.5	4.0	3.0	3.5	5.5	4.0	4.5	8.5	5.0	6.5
29	---	---	---	3.5	2.5	3.0	8.0	4.0	5.5	9.0	5.0	6.5
30	---	---	---	4.0	2.5	3.5	8.0	4.0	6.0	9.0	5.0	6.5
31	---	---	---	4.5	3.0	3.5	---	---	---	7.0	5.5	6.5
MONTH	5.0	2.5	3.9	6.5	2.5	4.2	8.0	3.0	5.0	9.5	3.5	5.8

WILLAMETTE RIVER BASIN

14179000 BREITENBUSH RIVER ABOVE FRENCH CREEK, NEAR DETROIT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	6.5	5.5	6.0	10.0	7.5	8.5	14.0	9.5	11.5	10.5	---	---
2	6.0	5.0	5.5	8.5	6.5	7.5	14.0	9.5	12.0	10.5	---	---
3	8.5	5.0	6.5	8.5	6.5	7.5	14.5	9.5	12.0	10.5	8.0	9.5
4	7.0	6.0	6.5	8.5	7.0	7.5	14.5	10.0	12.5	11.0	8.5	10.0
5	7.5	6.0	6.5	11.0	6.0	8.5	13.5	10.0	12.0	11.5	9.0	10.5
6	6.5	5.0	6.0	12.0	7.5	9.5	12.5	10.0	10.5	11.5	9.5	10.5
7	6.5	5.0	5.5	10.0	8.0	8.5	10.5	10.0	10.0	10.5	8.0	9.5
8	7.0	5.0	6.0	11.0	6.5	8.5	13.5	9.5	11.0	11.0	8.0	9.5
9	8.5	5.5	6.5	12.0	7.5	9.5	13.0	10.0	11.5	11.0	9.0	10.0
10	9.5	5.0	7.0	12.5	8.0	10.0	13.5	10.0	12.0	11.0	8.5	9.5
11	9.5	6.0	7.5	12.0	8.0	10.0	13.0	10.0	11.5	10.5	7.5	9.0
12	9.5	6.5	8.0	12.5	8.0	10.0	12.5	9.5	11.0	11.0	8.0	9.5
13	10.0	6.5	8.0	12.5	8.0	10.0	12.0	9.5	10.0	11.0	8.5	9.5
14	10.5	6.0	8.0	11.5	8.0	10.0	11.0	9.0	10.0	11.0	8.5	10.0
15	8.5	6.5	7.0	12.0	7.5	9.5	12.0	9.0	10.5	11.0	9.0	10.0
16	10.0	6.5	8.0	12.5	8.5	10.5	12.5	9.0	11.0	11.0	8.5	10.0
17	9.5	6.0	7.5	10.5	8.5	9.5	13.5	9.5	11.5	10.5	8.0	9.5
18	9.5	6.5	7.5	12.0	7.5	9.5	13.5	10.0	12.0	11.0	8.0	9.5
19	10.0	6.5	8.0	13.0	8.5	10.5	13.5	10.0	12.0	11.0	8.5	10.0
20	8.0	6.5	7.0	11.5	9.0	10.0	13.0	7.5	10.5	11.0	8.5	10.0
21	8.5	6.5	7.5	12.5	9.0	10.5	13.0	---	---	10.5	8.5	10.0
22	10.5	7.0	8.0	13.0	8.5	10.5	12.5	---	---	11.0	9.0	10.0
23	10.5	6.5	8.5	13.0	8.5	11.0	12.5	7.0	10.5	11.0	9.0	10.0
24	8.5	7.0	7.5	11.5	9.0	10.0	13.5	---	---	10.5	8.5	9.5
25	7.5	5.5	6.5	12.5	8.5	10.5	13.5	---	---	10.0	9.5	9.5
26	8.0	6.0	7.0	13.5	8.5	11.0	13.5	8.0	11.0	9.5	8.0	8.5
27	10.0	6.5	8.0	14.0	9.0	11.5	13.5	8.5	11.5	8.5	6.0	7.0
28	9.0	6.5	8.0	14.0	9.5	11.5	13.5	11.0	12.5	8.0	6.0	7.0
29	11.0	7.5	9.0	14.0	9.5	11.5	13.0	---	---	8.5	6.5	7.5
30	10.0	7.5	8.5	13.5	9.5	11.5	---	---	---	9.0	7.5	8.5
31	---	---	---	13.5	9.0	11.5	10.0	---	---	---	---	---
MONTH	11.0	5.0	7.2	14.0	6.0	9.9	---	---	---	11.5	---	---

TURBIDITY (NTU), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	2	0	0	0	0	0	4	1	2	29	6	10
2	2	0	1	0	0	0	92	4	40	16	3	6
3	2	0	1	3	0	0	25	4	8	10	2	4
4	5	0	1	4	0	1	7	2	3	9	2	3
5	1	0	1	4	1	1	5	1	2	6	1	2
6	1	0	0	4	0	1	24	0	2	3	1	2
7	3	0	0	2	0	1	6	1	1	4	1	2
8	1	0	0	2	0	1	4	1	1	2	1	1
9	5	0	1	2	0	1	3	0	1	2	1	1
10	5	0	1	2	0	1	3	0	2	3	1	1
11	1	0	0	5	0	1	12	1	5	2	1	1
12	1	0	0	5	0	1	9	4	6	3	1	1
13	4	0	0	5	0	1	10	4	5	2	1	1
14	3	0	1	4	0	1	9	2	3	59	1	14
15	2	0	0	24	0	2	6	1	2	34	5	13
16	3	0	0	8	1	2	8	1	2	11	3	5
17	4	0	0	4	0	1	2	1	1	31	2	7
18	1	0	0	2	0	0	5	1	1	27	6	13
19	1	0	0	1	0	0	2	1	1	18	4	6
20	2	0	0	148	0	29	2	0	1	8	3	4
21	2	0	0	177	15	55	2	1	1	7	3	4
22	1	0	0	23	4	9	2	1	1	6	2	3
23	1	0	0	19	3	5	7	0	1	5	1	2
24	1	0	0	17	3	5	3	0	1	4	1	2
25	1	0	0	32	3	11	13	0	2	4	1	1
26	2	0	0	53	6	20	13	2	4	4	1	1
27	1	0	0	13	2	6	296	2	47	5	1	1
28	1	0	0	8	1	3	1050	124	240	2	0	1
29	1	0	0	18	1	2	187	55	104	3	0	1
30	2	0	0	4	1	2	73	19	39	3	0	1
31	0	0	0	---	---	---	28	10	17	2	0	1
MONTH	5	0	0	177	0	5	1050	0	18	59	0	4

WILLAMETTE RIVER BASIN

14180300 BLOWOUT CREEK NEAR DETROIT, OR

LOCATION.--44°39'11", long 122°07'47", in NW 1/4 sec.6, T.11 S., R.6 E., Marion County, Hydrologic Unit 17090005, on left bank, 6.0 mi south of Detroit, and at mile 5.5.

DRAINAGE AREA.--26.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1998 to September 1999.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,840 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--1 year (water year 1999), 162 ft³/s, 117,400 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,400 ft³/s Dec. 28, gage height, 7.38 ft; minimum discharge, 4.3 ft³/s Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	12	331	406	102	656	104	183	215	69	16	8.3
2	8.6	12	1500	299	115	391	101	211	186	65	15	7.4
3	13	12	660	232	126	297	96	222	154	58	15	6.9
4	22	18	343	188	132	227	89	207	143	54	15	6.6
5	12	33	238	157	123	183	83	182	149	49	17	6.4
6	9.5	31	181	135	302	154	79	194	155	48	16	6.3
7	8.4	28	159	119	457	133	80	213	140	48	19	6.1
8	e10	26	142	105	288	120	86	185	125	45	17	6.0
9	e15	23	116	95	202	107	82	157	114	42	15	5.9
10	e16	23	110	88	155	96	79	136	113	42	14	5.8
11	e12	24	337	88	126	88	81	128	122	41	13	5.6
12	e10	22	576	91	108	89	99	147	143	38	12	5.4
13	e12	21	562	91	98	118	117	150	169	36	12	5.3
14	e13	21	388	237	92	131	129	141	188	34	13	5.3
15	e14	72	279	558	88	130	141	136	197	31	12	5.2
16	e13	100	216	436	132	125	184	134	177	29	11	5.2
17	e12	65	180	562	204	116	247	224	160	28	11	5.2
18	e11	56	157	834	234	111	291	340	146	26	9.9	5.1
19	e11	54	134	563	290	120	283	315	133	25	9.5	4.9
20	e10	481	110	524	218	158	273	277	120	26	9.0	4.8
21	e10	1100	121	524	176	201	227	240	112	25	8.7	4.8
22	e9.0	585	92	408	220	200	185	240	e110	23	8.3	4.8
23	e9.0	478	82	298	621	186	172	282	e110	22	7.9	4.7
24	9.1	486	78	225	791	172	202	360	e130	21	7.6	4.7
25	9.3	866	150	183	545	171	243	373	e150	20	7.2	4.8
26	9.2	901	249	151	368	169	226	302	e110	19	7.0	4.8
27	9.3	481	925	128	728	150	189	269	e75	19	6.9	4.6
28	12	295	2440	130	1210	133	154	268	e65	18	6.7	4.5
29	12	227	1170	131	---	137	133	245	e60	17	6.8	4.5
30	11	226	636	122	---	124	136	219	e70	17	8.9	4.5
31	11	---	510	113	---	112	---	203	---	16	9.8	---
TOTAL	348.8	6779	13172	8221	8251	5305	4591	6883	4041	1051	357.2	164.4
MEAN	11.3	226	425	265	295	171	153	222	135	33.9	11.5	5.48
MAX	22	1100	2440	834	1210	656	291	373	215	69	19	8.3
MIN	5.4	12	78	88	88	88	79	128	60	16	6.7	4.5
AC-FT	692	13450	26130	16310	16370	10520	9110	13650	8020	2080	709	326
CFSM	.43	8.69	16.3	10.2	11.3	6.58	5.89	8.54	5.18	1.30	.44	.21
IN.	.50	9.70	18.85	11.76	11.81	7.59	6.57	9.85	5.78	1.50	.51	.24

WTR YR 1999 TOTAL 59164.4 MEAN 162 MAX 2440 MIN 4.5 AC-FT 117400 CFSM 6.23 IN. 84.65

e Estimated

14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1998 to September 1999.

pH: October 1998 to September 1999.

TEMPERATURE: October 1998 to September 1999.

TURBIDITY: October 1998 to September 1999.

INSTRUMENTATION: Water-quality monitor and data logger.

EXTREMES FOR CURRENT YEAR:

SPECIFIC CONDUCTANCE: Maximum recorded, 47 microsiemens Sept. 29; minimum recorded, 20 microsiemens, Dec. 28.

pH: Maximum recorded, 7.8 units Sept. 14, 15, 23; minimum recorded, 6.8 units Dec. 2.

TEMPERATURE: Maximum recorded, 20.0°C Aug. 28; minimum recorded, 0.0°C Dec. 20-23.

TURBIDITY: Maximum recorded, 891 NTU Dec. 28; minimum recorded, 0 NTU on many days during year.

WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1998					
15...	1600	E14	<1	---	89
NOV					
16...	1210	98	2	.53	100
21...	1043	1140	149	461	100
25...	1133	1070	110	318	100
DEC					
02...	1430	1550	372	1560	23
28...	1450	2220	862	5160	35
29...	1605	952	288	740	32
JAN 1999					
13...	1115	92	2	.50	83
20...	1630	534	32	46	39
25...	1257	180	3	1.5	70
FEB					
03...	1510	121	1	.33	89
11...	1310	125	1	.34	87
18...	1005	204	6	3.3	76
23...	1630	651	99	174	42
24...	1215	745	45	91	40
MAR					
03...	0900	304	15	12	76
11...	0845	88	5	1.2	43
16...	1420	123	4	1.3	60
23...	0815	188	2	1.0	77
APR					
14...	1444	125	2	.68	89
22...	1420	178	2	.96	78
30...	0838	132	2	.71	58
MAY					
03...	1520	220	3	1.8	73
13...	0929	152	1	.41	56
17...	1620	273	30	22	47
18...	1500	333	12	11	0
JUN					
15...	1630	191	3	1.5	82
JUL					
02...	0858	66	4	.71	50
AUG					
06...	0955	16	1	.04	62
SEP					
01...	1437	8.0	<1	---	93
16...	0935	5.4	<1	---	91

E Estimated.

WILLAMETTE RIVER BASIN

14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	46	44	45	34	30	33	31	29	29
2	---	---	---	46	44	45	31	25	28	31	29	30
3	---	---	---	46	43	44	32	31	32	33	31	32
4	---	---	---	45	42	44	33	32	33	35	33	34
5	---	---	---	44	40	42	34	33	33	35	35	35
6	---	---	---	42	40	41	34	33	34	36	35	36
7	---	---	---	42	41	41	34	33	33	36	35	36
8	---	---	---	43	41	42	35	33	34	37	36	36
9	46	42	44	43	41	42	35	35	35	38	37	37
10	45	42	44	42	41	42	36	34	35	38	37	38
11	46	44	45	43	41	42	34	30	32	39	37	38
12	46	44	45	44	41	42	31	30	30	39	38	38
13	46	44	45	43	41	43	32	30	31	39	37	38
14	45	44	45	43	41	42	32	32	32	38	29	36
15	46	44	45	42	38	39	33	32	32	30	28	29
16	46	44	45	40	37	39	33	31	32	31	29	31
17	46	44	45	39	38	39	33	31	32	33	28	30
18	46	45	45	39	36	38	33	31	32	30	28	29
19	46	45	46	38	36	37	33	31	32	30	29	30
20	46	45	46	36	26	33	34	32	34	31	28	30
21	46	45	46	30	26	29	34	31	33	32	30	31
22	46	43	45	33	30	32	34	30	32	34	32	32
23	46	43	45	34	31	32	34	30	33	35	32	33
24	46	44	44	33	32	32	33	32	33	37	34	35
25	46	44	45	32	28	30	32	28	30	38	35	36
26	46	44	45	32	28	30	30	28	29	38	36	37
27	46	44	46	33	31	32	30	22	28	38	36	37
28	46	44	45	34	32	34	29	20	24	37	34	35
29	46	44	45	34	33	33	28	26	27	36	35	35
30	46	44	45	34	34	34	28	27	28	37	34	36
31	45	44	44	---	---	---	29	28	28	37	34	36
MONTH	---	---	---	46	26	38	36	20	31	39	28	34

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	37	34	35	28	26	27	35	34	35	29	28	29
2	35	31	33	30	28	29	36	34	35	29	28	28
3	35	31	33	31	28	30	36	34	35	29	28	28
4	34	31	32	32	30	30	37	34	35	30	29	29
5	34	32	34	32	30	32	36	34	35	31	30	31
6	32	27	30	33	31	32	36	34	35	31	29	31
7	28	27	27	34	31	32	37	33	35	30	29	29
8	30	28	28	33	31	33	34	34	34	30	30	30
9	31	30	30	34	32	33	34	33	34	31	30	31
10	31	30	30	35	33	33	34	33	33	32	31	31
11	32	31	31	34	32	33	34	34	34	32	31	31
12	33	32	32	33	31	32	34	33	33	31	30	30
13	33	33	33	32	30	32	34	33	33	31	30	30
14	35	33	33	32	30	31	34	32	33	31	31	31
15	34	33	34	32	30	31	33	32	33	32	31	31
16	34	31	33	32	30	31	33	32	32	31	30	31
17	35	33	34	32	30	31	32	31	32	30	28	29
18	35	32	33	31	30	31	31	30	31	28	28	28
19	34	33	33	31	29	30	30	29	29	28	28	28
20	35	33	34	30	28	30	30	29	29	29	28	28
21	36	35	35	31	29	30	33	29	31	29	29	29
22	36	32	35	31	29	30	33	30	32	29	28	29
23	32	28	30	31	29	30	31	29	30	28	27	28
24	30	28	29	32	30	31	29	28	29	27	26	27
25	32	29	30	32	30	32	29	28	28	27	26	26
26	33	31	32	32	30	31	29	28	29	28	27	27
27	32	25	29	33	30	31	30	29	29	28	27	28
28	26	24	25	33	31	32	30	29	29	28	27	28
29	---	---	---	34	32	33	30	29	30	28	28	28
30	---	---	---	35	33	34	30	29	30	28	27	28
31	---	---	---	35	33	34	---	---	---	28	28	28
MONTH	37	24	32	35	26	31	37	28	32	32	26	29

WILLAMETTE RIVER BASIN

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14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	28	27	28	32	31	32	37	37	37	44	42	43
2	28	28	28	32	31	31	38	37	37	42	42	42
3	29	28	29	32	31	32	38	37	37	43	42	43
4	29	29	29	33	32	32	39	37	38	43	42	43
5	30	28	29	33	32	33	40	37	38	43	42	43
6	28	28	28	33	33	33	41	40	41	44	43	43
7	29	28	28	33	33	33	42	40	41	43	43	43
8	29	29	29	33	33	33	42	41	41	44	43	43
9	30	29	30	33	33	33	42	41	41	44	43	43
10	30	29	30	34	33	34	43	42	42	44	43	43
11	29	29	29	34	33	34	43	42	42	44	43	43
12	29	28	28	34	34	34	43	41	42	45	43	44
13	28	27	28	35	34	35	42	41	41	45	43	43
14	27	26	27	35	34	35	42	41	41	44	43	44
15	27	26	27	34	34	34	42	41	41	44	43	44
16	27	27	27	35	34	35	42	41	42	44	42	43
17	28	27	28	35	34	34	43	42	42	43	42	43
18	28	28	28	35	34	35	43	42	43	43	42	43
19	29	28	28	37	35	35	45	42	44	43	42	43
20	29	28	29	36	35	35	44	43	44	43	42	43
21	29	28	28	36	35	36	44	43	44	44	43	43
22	29	29	29	36	36	36	44	43	44	45	43	43
23	29	29	29	37	36	36	45	44	44	45	43	43
24	29	28	29	37	36	36	46	44	45	45	44	44
25	29	28	29	37	36	36	46	44	45	44	44	44
26	30	29	30	38	36	37	45	44	45	46	44	44
27	31	30	31	38	37	37	45	45	45	44	43	44
28	31	31	31	38	37	37	45	44	45	44	43	44
29	32	31	32	38	37	37	45	44	45	47	43	45
30	32	31	32	38	37	37	45	44	44	44	43	44
31	---	---	---	37	37	37	44	43	43	---	---	---
MONTH	32	26	29	38	31	35	46	37	42	47	42	43

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	7.4	7.1	7.2	7.1	7.0	7.1	7.3	7.2	7.2
2	---	---	---	7.4	7.1	7.2	7.1	6.8	6.9	7.3	7.2	7.3
3	---	---	---	7.3	7.1	7.2	7.1	7.0	7.1	7.3	7.3	7.3
4	---	---	---	7.3	7.1	7.2	7.1	7.1	7.1	7.4	7.3	7.3
5	---	---	---	7.3	7.2	7.2	7.2	7.1	7.2	7.4	7.3	7.3
6	---	---	---	7.3	7.1	7.2	7.2	7.1	7.2	7.4	7.3	7.3
7	---	---	---	7.3	7.2	7.2	7.2	7.1	7.2	7.4	7.3	7.3
8	---	---	---	7.3	7.2	7.2	7.2	7.1	7.2	7.4	7.3	7.3
9	7.3	7.0	7.1	7.4	7.2	7.2	7.2	7.2	7.2	7.4	7.3	7.4
10	7.3	7.0	7.1	7.3	7.2	7.2	7.2	7.2	7.2	7.4	7.3	7.4
11	7.4	7.0	7.1	7.4	7.2	7.3	7.2	7.0	7.1	7.4	7.4	7.4
12	7.5	7.0	7.2	7.4	7.2	7.3	7.1	7.0	7.0	7.4	7.3	7.4
13	7.4	7.0	7.1	7.5	7.2	7.3	7.1	7.0	7.0	7.4	7.3	7.4
14	7.4	7.0	7.1	7.5	7.2	7.3	7.1	7.1	7.1	7.4	7.2	7.3
15	7.4	7.0	7.1	7.3	7.2	7.2	7.1	7.1	7.1	7.2	7.1	7.2
16	7.4	7.0	7.1	7.3	7.1	7.2	7.4	7.1	7.2	7.2	7.2	7.2
17	7.5	7.0	7.2	7.3	7.1	7.2	7.4	7.3	7.3	7.2	7.1	7.2
18	7.5	7.0	7.2	7.3	7.1	7.2	7.4	7.3	7.4	7.1	7.1	7.1
19	7.4	7.1	7.2	7.4	7.2	7.3	7.4	7.4	7.4	7.2	7.1	7.1
20	7.4	7.1	7.2	7.3	7.0	7.2	7.4	7.4	7.4	7.3	7.2	7.2
21	7.4	7.1	7.2	7.1	7.0	7.0	7.4	7.4	7.4	7.3	7.3	7.3
22	7.4	7.1	7.2	7.1	7.0	7.1	7.4	7.4	7.4	7.4	7.3	7.4
23	7.4	7.1	7.2	7.2	7.1	7.1	7.4	7.4	7.4	7.4	7.4	7.4
24	7.4	7.1	7.2	7.2	7.1	7.1	7.4	7.4	7.4	7.4	7.4	7.4
25	7.5	7.1	7.2	7.1	6.9	7.1	7.4	7.3	7.4	7.4	7.4	7.4
26	7.4	7.1	7.2	7.1	7.0	7.1	7.3	7.3	7.3	7.4	7.4	7.4
27	7.4	7.1	7.2	7.2	7.1	7.1	7.3	7.0	7.2	7.5	7.4	7.4
28	7.4	7.1	7.2	7.2	7.1	7.1	7.2	6.9	7.1	7.4	7.4	7.4
29	7.4	7.1	7.2	7.1	7.1	7.1	7.3	7.2	7.2	7.4	7.4	7.4
30	7.4	7.1	7.2	7.2	7.1	7.1	7.2	7.2	7.2	7.4	7.4	7.4
31	7.3	7.1	7.2	---	---	---	7.2	7.2	7.2	7.4	7.4	7.4
MONTH	---	---	---	7.5	6.9	7.2	7.4	6.8	7.2	7.5	7.1	7.3

WILLAMETTE RIVER BASIN

14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.4	7.4	7.4	7.1	7.0	7.0	7.4	7.4	7.4	7.4	7.4	7.4
2	7.4	7.4	7.4	7.1	7.0	7.1	7.4	7.4	7.4	7.4	7.4	7.4
3	7.4	7.4	7.4	7.1	7.1	7.1	7.4	7.4	7.4	7.4	7.4	7.4
4	7.4	7.4	7.4	7.1	7.1	7.1	7.4	7.4	7.4	7.4	7.4	7.4
5	7.4	7.3	7.4	7.1	7.1	7.1	7.5	7.4	7.4	7.4	7.4	7.4
6	7.3	7.2	7.3	7.1	7.1	7.1	7.5	7.4	7.4	7.5	7.3	7.4
7	7.3	7.2	7.2	7.2	7.1	7.1	7.6	7.4	7.5	7.4	7.4	7.4
8	7.3	7.2	7.3	7.2	7.1	7.1	7.5	7.4	7.5	7.4	7.4	7.4
9	7.3	7.3	7.3	7.2	7.1	7.1	7.5	7.4	7.5	7.5	7.4	7.4
10	7.3	7.3	7.3	7.2	7.1	7.1	7.6	7.4	7.5	7.5	7.4	7.4
11	7.4	7.2	7.3	7.3	7.1	7.2	7.5	7.4	7.5	7.5	7.4	7.4
12	7.2	7.1	7.2	7.3	7.3	7.3	7.6	7.5	7.5	7.5	7.4	7.4
13	7.2	7.2	7.2	7.3	7.2	7.3	7.6	7.5	7.5	7.5	7.4	7.4
14	7.3	7.1	7.2	7.4	7.3	7.3	7.6	7.5	7.5	7.5	7.4	7.4
15	7.3	7.2	7.2	7.4	7.3	7.3	7.6	7.5	7.5	7.5	7.4	7.4
16	7.2	7.1	7.2	7.3	7.2	7.2	7.6	7.5	7.5	7.5	7.4	7.4
17	7.2	7.1	7.1	7.3	7.2	7.3	7.5	7.4	7.5	7.4	7.3	7.4
18	7.1	7.1	7.1	7.3	7.2	7.3	7.4	7.4	7.4	7.4	7.3	7.4
19	7.1	7.1	7.1	7.3	7.2	7.3	7.5	7.4	7.4	7.4	7.4	7.4
20	7.2	7.1	7.1	7.3	7.2	7.2	7.5	7.4	7.4	7.4	7.4	7.4
21	7.2	7.1	7.1	7.3	7.2	7.2	7.5	7.4	7.4	7.5	7.4	7.4
22	7.2	7.0	7.1	7.3	7.2	7.2	7.5	7.4	7.4	7.5	7.4	7.4
23	7.1	7.0	7.0	7.3	7.2	7.3	7.4	7.4	7.4	7.4	7.3	7.4
24	7.1	7.0	7.0	7.4	7.3	7.3	7.4	7.4	7.4	7.4	7.3	7.4
25	7.1	7.0	7.1	7.4	7.3	7.4	7.4	7.3	7.4	7.4	7.3	7.4
26	7.1	7.1	7.1	7.4	7.3	7.4	7.4	7.4	7.4	7.4	7.3	7.4
27	7.1	6.9	7.0	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.3	7.4
28	7.0	6.9	7.0	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.3	7.4
29	---	---	---	7.4	7.4	7.4	7.4	7.4	7.4	7.5	7.3	7.4
30	---	---	---	7.4	7.4	7.4	7.4	7.4	7.4	7.5	7.4	7.4
31	---	---	---	7.4	7.4	7.4	---	---	---	7.5	7.3	7.4
MONTH	7.4	6.9	7.2	7.4	7.0	7.2	7.6	7.3	7.4	7.5	7.3	7.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.3	7.3	7.3	7.6	7.4	7.5	7.6	7.3	7.4	7.6	7.3	7.4
2	7.3	7.3	7.3	7.5	7.4	7.5	7.6	7.3	7.4	7.6	7.3	7.4
3	7.4	7.3	7.3	7.5	7.4	7.5	7.6	7.3	7.4	7.6	7.2	7.4
4	7.4	7.2	7.3	7.5	7.4	7.5	7.6	7.3	7.4	7.6	7.2	7.4
5	7.4	7.2	7.3	7.5	7.4	7.5	7.6	7.3	7.4	7.6	7.2	7.4
6	7.3	7.3	7.3	7.6	7.4	7.5	7.6	7.4	7.5	7.6	7.3	7.4
7	7.4	7.3	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.6	7.2	7.4
8	7.4	7.3	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.7	7.3	7.4
9	7.4	7.3	7.3	7.6	7.4	7.5	7.7	7.3	7.5	7.6	7.2	7.4
10	7.4	7.3	7.3	7.6	7.4	7.5	7.7	7.3	7.5	7.6	7.2	7.4
11	7.4	7.3	7.3	7.6	7.4	7.5	7.7	7.3	7.5	7.6	7.3	7.4
12	7.4	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.7	7.3	7.5
13	7.4	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.7	7.3	7.5
14	7.4	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.8	7.3	7.5
15	7.5	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.8	7.3	7.5
16	7.5	7.4	7.5	7.6	7.4	7.5	7.7	7.3	7.5	7.7	7.3	7.5
17	7.5	7.4	7.4	7.6	7.5	7.5	7.7	7.3	7.5	7.7	7.3	7.5
18	7.5	7.4	7.4	7.6	7.4	7.5	7.7	7.3	7.5	7.7	7.3	7.5
19	7.5	7.4	7.5	7.7	7.4	7.5	7.7	7.3	7.5	7.7	7.3	7.5
20	7.5	7.4	7.4	7.6	7.4	7.5	7.7	7.3	7.5	7.7	7.3	7.5
21	7.5	7.4	7.5	7.7	7.4	7.5	7.7	7.3	7.5	7.7	7.3	7.5
22	7.5	7.4	7.5	7.7	7.4	7.5	7.7	7.3	7.4	7.7	7.2	7.4
23	7.5	7.4	7.4	7.7	7.4	7.5	7.7	7.3	7.5	7.8	7.2	7.4
24	7.5	7.4	7.5	7.7	7.4	7.5	7.7	7.2	7.4	7.7	7.2	7.4
25	7.5	7.4	7.5	7.7	7.3	7.5	7.6	7.2	7.3	7.7	7.2	7.4
26	7.5	7.4	7.5	7.6	7.3	7.4	7.6	7.2	7.4	7.6	7.2	7.4
27	7.5	7.4	7.5	7.6	7.3	7.4	7.7	7.2	7.4	7.5	7.2	7.3
28	7.5	7.4	7.5	7.6	7.3	7.4	7.7	7.2	7.4	7.5	7.2	7.3
29	7.6	7.4	7.5	7.6	7.3	7.4	7.5	7.2	7.3	7.5	7.2	7.3
30	7.5	7.3	7.5	7.6	7.3	7.4	7.6	7.3	7.4	7.5	7.2	7.3
31	---	---	---	7.6	7.3	7.4	7.6	7.3	7.4	---	---	---
MONTH	7.6	7.2	7.4	7.7	7.3	7.5	7.7	7.2	7.4	7.8	7.2	7.4

WILLAMETTE RIVER BASIN

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14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	8.0	6.5	7.5	6.0	5.5	6.0	5.0	4.5	4.5
2	---	---	---	8.5	6.5	7.5	6.0	5.5	6.0	4.5	4.0	4.0
3	---	---	---	7.5	6.0	7.0	6.0	5.5	5.5	4.0	3.5	3.5
4	---	---	---	8.5	7.5	8.0	5.5	5.0	5.5	4.0	3.0	3.5
5	---	---	---	8.0	6.5	7.5	5.0	4.0	4.5	4.0	3.5	3.5
6	---	---	---	7.5	6.0	6.5	4.5	4.0	4.5	4.0	3.5	4.0
7	---	---	---	6.5	5.5	6.0	4.5	3.5	4.5	4.5	4.0	4.0
8	---	---	---	6.5	5.5	6.0	4.0	3.5	4.0	4.0	3.5	4.0
9	10.0	9.0	9.5	6.5	5.5	6.0	4.0	3.0	3.5	3.5	3.0	3.5
10	10.0	8.5	9.0	6.0	5.0	5.5	4.5	4.0	4.0	4.0	3.5	4.0
11	10.0	8.0	9.0	6.5	5.5	6.0	5.0	4.0	4.5	3.5	3.0	3.5
12	10.5	8.5	9.5	6.5	5.5	6.0	5.5	5.0	5.5	4.0	3.5	4.0
13	10.0	9.5	10.0	7.5	6.0	6.5	5.5	5.5	5.5	4.5	3.5	4.0
14	10.0	9.0	9.5	7.0	6.0	6.5	5.5	4.5	5.0	5.0	4.0	4.5
15	9.5	8.5	9.0	7.5	6.5	7.0	4.5	4.0	4.5	5.0	4.5	5.0
16	9.5	7.5	8.5	7.0	6.0	6.5	4.5	4.0	4.5	5.0	4.0	4.5
17	9.0	7.0	8.0	7.0	6.5	6.5	4.5	4.5	4.5	5.0	4.0	4.5
18	10.5	8.0	9.0	7.0	6.0	6.5	4.5	3.0	4.0	5.0	4.5	5.0
19	8.5	6.5	7.5	6.5	6.0	6.0	3.0	1.0	2.0	5.5	5.0	5.0
20	8.5	5.5	7.0	7.5	6.0	7.0	1.0	.0	.5	5.0	4.5	5.0
21	8.5	6.0	7.0	7.5	6.5	7.0	.5	.0	.0	5.0	4.5	4.5
22	8.5	6.0	7.0	6.5	6.0	6.0	.5	.0	.5	4.5	3.5	4.0
23	8.5	6.0	7.0	6.5	6.0	6.5	1.0	.0	.5	4.5	3.5	4.0
24	8.5	7.5	8.0	6.5	5.5	6.0	2.0	1.0	1.5	4.0	3.5	4.0
25	10.0	8.0	9.0	7.0	6.5	7.0	2.5	1.5	2.0	3.5	3.0	3.5
26	10.0	8.0	9.0	7.0	6.5	7.0	4.0	2.5	3.5	4.0	3.5	3.5
27	9.5	7.5	8.5	7.0	6.0	6.5	4.0	3.5	4.0	3.5	3.0	3.5
28	9.0	7.5	8.0	6.0	5.0	5.5	5.5	4.0	5.0	4.0	3.5	3.5
29	8.0	5.5	7.0	5.5	4.5	5.0	6.5	5.5	5.5	4.5	3.5	4.0
30	7.0	4.5	6.0	6.0	5.0	5.5	5.5	5.5	5.5	4.5	3.5	4.0
31	6.5	5.0	6.0	---	---	---	5.5	5.0	5.5	4.0	3.5	3.5
MONTH	---	---	---	8.5	4.5	6.5	6.5	.0	3.9	5.5	3.0	4.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	3.0	3.5	5.0	4.0	4.5	6.0	3.0	4.0	6.0	4.5	5.5
2	4.0	2.5	3.5	5.0	3.5	4.0	5.5	3.0	4.0	5.5	4.0	4.5
3	4.5	3.5	4.0	4.0	3.0	3.5	4.5	3.0	3.5	6.0	3.5	4.5
4	4.0	3.5	3.5	4.0	3.0	3.5	4.5	3.0	3.5	5.0	3.5	4.0
5	3.5	3.0	3.5	4.0	3.0	3.5	5.0	3.0	4.0	8.0	3.5	5.5
6	4.0	3.0	3.5	4.0	2.5	3.0	6.0	2.5	4.0	7.5	4.5	5.5
7	4.0	3.5	4.0	4.5	3.5	3.5	5.5	3.0	4.0	6.0	3.5	4.5
8	3.5	3.0	3.5	4.5	3.0	3.5	5.0	3.0	4.0	5.5	3.5	4.0
9	4.0	3.0	3.5	4.5	3.0	3.5	5.0	2.0	3.5	5.5	3.5	4.5
10	3.5	2.5	3.0	4.5	3.0	3.5	5.0	2.5	3.5	6.5	3.5	5.0
11	3.5	2.5	3.0	4.5	2.5	3.0	7.0	3.0	4.5	6.0	4.5	5.5
12	4.0	3.0	3.5	4.0	3.0	3.5	6.0	3.5	4.5	6.5	5.0	5.5
13	4.0	3.0	3.5	5.0	3.5	4.0	7.0	4.0	5.0	6.0	4.0	5.0
14	4.5	3.5	4.0	5.0	4.0	4.5	6.5	3.0	4.5	6.5	4.0	5.0
15	4.5	3.0	3.5	5.5	4.0	4.5	7.0	3.0	5.0	7.0	4.5	5.5
16	4.5	3.5	4.0	5.0	3.5	4.0	7.0	3.5	5.0	7.5	4.0	5.5
17	4.0	3.5	3.5	5.5	3.5	4.0	7.0	4.0	5.5	6.5	5.5	6.0
18	4.0	2.5	3.5	6.0	4.0	4.5	6.0	4.5	5.0	7.5	5.0	6.0
19	4.5	3.5	4.0	6.0	3.5	4.5	6.0	4.5	5.0	8.0	5.0	6.0
20	4.0	3.0	3.5	6.5	4.0	5.0	5.5	4.5	5.0	6.5	5.0	6.0
21	4.5	3.5	4.0	5.5	4.5	5.0	5.0	4.0	4.5	8.5	5.0	6.5
22	4.0	3.5	4.0	5.5	4.0	4.5	6.5	4.0	5.0	9.5	4.5	6.5
23	4.5	4.0	4.0	6.0	4.0	5.0	8.0	3.5	5.5	10.0	5.0	7.0
24	5.0	4.5	4.5	6.0	4.0	5.0	8.5	4.0	5.5	9.5	5.5	7.0
25	4.5	3.5	4.0	5.5	4.5	5.0	6.0	4.5	5.0	8.0	5.5	6.5
26	4.5	3.5	4.0	4.5	2.5	3.5	6.0	4.0	5.0	9.0	4.5	6.5
27	4.5	4.0	4.0	4.5	2.0	3.0	5.5	3.5	4.0	9.5	5.0	7.0
28	4.5	4.0	4.5	4.0	2.5	3.0	5.5	3.5	4.5	9.5	5.0	7.0
29	---	---	---	3.5	1.5	2.5	8.0	3.5	5.5	9.0	5.5	7.0
30	---	---	---	4.0	2.5	3.0	8.5	3.5	5.5	9.0	4.5	6.5
31	---	---	---	4.0	2.5	3.0	---	---	---	7.5	5.5	6.5
MONTH	5.0	2.5	3.7	6.5	1.5	3.9	8.5	2.0	4.6	10.0	3.5	5.7

WILLAMETTE RIVER BASIN

14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.0	5.5	6.5	11.5	9.0	10.0	18.5	12.5	15.0	16.0	11.0	13.0
2	7.0	5.0	6.0	9.5	8.0	8.5	18.5	13.0	15.5	15.5	10.0	12.5
3	9.0	5.0	6.5	10.5	7.5	8.5	19.0	13.0	16.0	15.5	9.5	12.0
4	7.5	6.0	6.5	9.5	8.0	8.5	19.5	13.5	16.0	15.5	10.5	12.5
5	8.0	6.0	7.0	13.0	6.5	9.5	18.5	14.5	16.0	16.0	10.5	13.0
6	7.0	5.0	6.0	13.5	8.5	10.5	15.5	14.0	14.5	16.0	12.0	13.5
7	7.0	5.0	6.0	11.0	9.0	10.0	14.5	13.5	14.0	15.5	9.5	12.0
8	7.0	5.0	6.0	13.0	7.5	10.0	17.0	13.0	14.5	15.5	10.0	12.5
9	8.5	5.5	7.0	14.5	8.5	11.0	18.5	13.0	15.0	15.5	10.5	13.0
10	10.0	5.0	7.0	15.5	10.0	12.0	19.5	14.0	16.0	15.0	10.0	12.5
11	10.0	6.0	7.5	16.0	10.0	12.5	18.5	14.0	15.5	15.0	9.5	12.0
12	10.0	7.0	8.5	16.0	10.0	12.5	18.5	13.5	15.5	15.0	9.0	12.0
13	11.0	7.0	8.5	16.0	10.5	13.0	14.0	12.5	13.5	15.5	9.5	12.0
14	11.5	6.5	8.5	14.5	10.0	12.0	14.5	12.5	13.5	15.5	10.5	12.5
15	9.0	7.5	8.0	15.0	9.0	11.5	17.0	11.5	14.0	15.5	10.5	12.5
16	11.0	7.0	8.5	15.0	10.0	12.0	17.5	11.5	14.5	15.5	10.5	12.5
17	11.0	6.5	8.5	13.0	10.5	11.5	19.0	12.5	15.5	15.0	10.0	12.0
18	10.0	7.0	8.5	15.0	9.0	11.5	19.0	13.5	16.0	15.0	10.0	12.0
19	11.0	7.0	8.5	16.0	10.0	13.0	19.5	14.5	16.0	15.5	10.0	12.5
20	9.0	7.0	8.0	16.0	11.0	12.5	19.0	14.0	16.0	15.5	10.0	12.5
21	9.5	7.5	8.5	16.5	11.5	13.5	19.0	14.5	16.0	15.5	10.0	12.5
22	12.0	7.5	9.0	16.5	11.0	13.5	18.5	12.5	15.5	15.5	10.5	13.0
23	12.0	7.5	9.5	17.0	11.0	13.5	18.0	13.5	15.5	15.0	11.0	12.5
24	9.5	7.5	9.0	14.5	12.0	13.0	19.5	13.5	16.0	15.0	11.5	12.5
25	9.0	7.0	7.5	17.0	12.0	14.0	19.5	13.5	16.0	13.0	10.5	12.0
26	8.5	7.0	7.5	17.5	11.0	14.0	19.5	14.0	16.5	13.0	9.0	10.5
27	11.0	7.0	8.5	18.5	12.0	15.0	19.5	14.5	16.5	11.5	7.0	9.0
28	10.5	7.0	8.5	18.5	12.5	15.0	20.0	14.5	17.0	11.5	6.5	9.0
29	12.5	8.0	10.0	18.5	13.0	15.5	16.0	14.5	15.0	12.0	7.0	9.5
30	12.5	9.0	10.5	18.5	13.0	15.0	14.5	12.5	13.5	12.5	8.0	10.0
31	---	---	---	18.5	12.5	15.0	15.0	11.5	12.5	---	---	---
MONTH	12.5	5.0	7.9	18.5	6.5	12.2	20.0	11.5	15.2	16.0	6.5	12.0

TURBIDITY (NTU), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	0	0	0	586	3	23	20	9	13
2	---	---	---	0	0	0	233	33	113	12	7	9
3	---	---	---	0	0	0	33	8	16	7	4	6
4	---	---	---	2	0	1	8	4	6	6	4	5
5	---	---	---	8	0	2	4	2	3	6	4	5
6	---	---	---	2	0	1	3	2	2	7	4	5
7	---	---	---	1	0	0	8	2	3	7	4	5
8	---	---	---	0	0	0	2	1	2	4	3	3
9	6	0	1	0	0	0	2	1	1	3	2	3
10	2	0	0	2	0	0	2	1	1	4	2	2
11	0	0	0	0	0	0	412	2	27	11	2	4
12	0	0	0	0	0	0	13	9	10	5	3	4
13	1	0	0	0	0	0	10	5	7	4	2	2
14	0	0	0	0	0	0	16	3	4	106	2	37
15	0	0	0	28	0	7	3	2	2	89	16	32
16	0	0	0	9	1	2	2	1	2	19	7	11
17	0	0	0	1	0	1	2	1	1	151	5	44
18	0	0	0	2	0	1	2	1	1	93	19	40
19	0	0	0	3	0	1	4	1	1	21	10	14
20	0	0	0	174	1	57	2	1	1	15	8	11
21	0	0	0	148	27	55	2	0	1	26	7	10
22	0	0	0	52	9	16	1	1	1	26	5	7
23	0	0	0	13	8	10	1	1	1	6	4	5
24	0	0	0	11	6	8	1	0	1	5	2	3
25	0	0	0	71	9	31	12	1	4	3	2	2
26	0	0	0	40	12	23	12	3	5	3	1	2
27	0	0	0	12	5	8	577	3	125	2	1	1
28	2	0	0	6	3	4	891	149	352	13	2	3
29	1	0	0	6	2	3	149	45	89	4	2	2
30	0	0	0	15	2	5	66	22	34	2	1	1
31	0	0	0	---	---	---	39	16	24	1	1	1
MONTH	---	---	---	174	0	8	891	0	28	151	1	9

WILLAMETTE RIVER BASIN
14180300 BLOWOUT CREEK NEAR DETROIT, OR--Continued

TURBIDITY (NTU), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	1	1	1	28	8	15	4	1	2	5	1	2
2	5	1	2	26	4	7	2	1	1	39	2	5
3	16	1	3	15	4	5	2	1	1	10	2	4
4	7	1	2	4	3	3	3	1	1	5	2	2
5	3	1	1	4	2	3	6	1	2	4	1	2
6	33	3	17	2	2	2	3	1	1	5	1	2
7	25	6	13	2	2	2	16	1	2	4	1	1
8	8	3	4	10	1	3	8	2	3	2	1	1
9	3	2	2	4	2	2	4	2	2	3	1	1
10	2	1	1	5	1	2	13	2	3	4	1	1
11	3	1	1	2	1	1	7	2	3	3	1	1
12	2	1	1	9	1	2	10	2	3	2	1	1
13	3	1	1	7	1	2	10	2	3	2	1	1
14	2	1	1	7	1	2	4	2	3	1	1	1
15	6	1	1	2	1	1	6	2	3	1	1	1
16	17	2	6	6	1	1	12	3	6	2	1	1
17	9	2	4	2	1	1	27	5	9	21	1	8
18	9	2	5	1	1	1	18	4	7	19	6	8
19	9	2	4	4	1	1	8	3	4	8	3	5
20	6	2	2	2	2	2	7	2	3	6	2	3
21	2	1	2	6	3	4	8	1	2	4	1	2
22	39	1	7	6	2	3	4	1	2	5	1	2
23	45	14	29	4	1	2	4	1	2	16	2	5
24	24	12	20	2	1	2	4	1	2	20	5	10
25	12	6	8	2	1	2	7	2	3	16	4	8
26	6	3	5	4	1	2	4	1	2	7	3	5
27	195	6	44	7	2	3	5	1	2	4	2	3
28	161	28	72	4	1	2	3	1	1	5	2	3
29	---	---	---	5	2	3	4	1	1	4	2	2
30	---	---	---	8	1	3	3	1	1	6	2	2
31	---	---	---	3	2	2	---	---	---	3	1	2
MONTH	195	1	9	28	1	3	27	1	3	39	1	3

DAY	JUNE			JULY			AUGUST			SEPTEMBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	6	2	2	4	1	1	2	1	1	1	0	0
2	3	1	2	2	1	1	2	1	1	1	0	0
3	3	1	2	4	1	1	2	1	1	2	0	0
4	3	1	2	2	1	1	1	1	1	1	0	0
5	5	1	2	2	1	1	5	0	1	1	0	0
6	4	1	2	2	1	1	2	1	1	1	0	0
7	4	1	2	2	1	1	3	1	1	1	0	0
8	3	1	2	3	1	1	1	0	1	1	0	0
9	3	1	2	1	1	1	2	0	1	1	0	0
10	3	1	2	2	1	1	2	0	1	1	0	0
11	3	2	2	2	1	1	1	0	1	1	0	0
12	5	2	3	2	1	1	1	0	1	1	0	0
13	5	2	3	2	1	1	1	0	1	1	0	0
14	6	2	4	3	1	1	2	1	1	1	0	0
15	5	2	4	2	1	1	2	0	1	1	0	0
16	5	2	3	2	1	1	2	0	1	0	0	0
17	7	1	2	2	1	1	2	2	1	0	0	0
18	3	2	2	3	1	1	2	1	1	1	0	0
19	3	1	2	2	1	1	6	0	1	1	0	0
20	2	1	2	2	1	1	1	0	1	1	0	0
21	4	1	2	3	1	1	1	0	1	1	0	0
22	8	1	2	1	1	1	1	0	1	1	0	0
23	2	1	1	1	1	1	2	0	1	1	0	0
24	6	1	2	1	1	1	2	1	1	1	0	0
25	4	1	2	2	1	1	1	1	1	1	0	0
26	2	1	2	3	1	1	2	0	1	1	0	0
27	6	1	2	2	1	1	1	0	1	1	0	0
28	2	1	1	1	1	1	1	0	1	16	0	3
29	2	1	1	1	1	1	1	0	1	5	1	1
30	3	1	1	2	1	1	1	0	1	1	0	1
31	---	---	---	2	1	1	1	0	1	41	1	3
MONTH	8	1	2	4	1	1	6	0	1	41	0	0

WILLAMETTE RIVER BASIN

14180500 DETROIT LAKE NEAR DETROIT, OR

LOCATION.--Lat 44°43'20", long 122°14'55", in SW 1/4 NW 1/4 sec.7, T.10 S., R.5 E., Marion County, Hydrologic Unit 17090005, in control house near right abutment of Detroit Dam on North Santiam River, 4.9 mi west of Detroit, and at mile 60.9.

DRAINAGE AREA.--437 mi².

PERIOD OF RECORD.--January 1953 to current year. Prior to October 1971, published as Detroit Reservoir near Detroit.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by concrete, gravity-type dam with six 42-ft by 28-ft control gates. Length of dam is 1,580 ft, built by Corps of Engineers. Storage began in January 1953. Total capacity is 455,100 acre-ft and usable capacity is 340,100 acre-ft between elevations 1,425.0 ft, proposed lower limit of operation, and 1,569.0 ft, top of spillway gates. Reservoir used for flood control, power development, irrigation, improvement of navigation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 457,900 acre-ft July 13, 1972, elevation, 1,569.79 ft; minimum contents, 115,500 acre-ft Jan. 30, 1969, elevation, 1,425.37 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 439,800 acre-ft June 15, elevation, 1,564.60 ft; minimum contents, 155,200 acre-ft Feb. 1, elevation, 1,450.50 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,425	115,000	1,480	210,900	1,530	331,500
1,430	122,200	1,490	232,000	1,540	360,200
1,440	137,700	1,500	254,600	1,550	390,900
1,450	154,400	1,510	278,700	1,560	424,000
1,460	172,200	1,520	304,400	1,570	458,600

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1536.50	1495.29	1482.62	1512.34	1450.57	1520.32	1536.23	1554.90	1563.27	1563.46	1563.79	1561.25
2	1535.42	1493.99	1494.93	1508.96	1450.75	1519.83	1536.93	1556.10	1563.20	1563.51	1563.80	1561.07
3	1534.41	1492.77	1499.78	1504.50	1451.83	1518.39	1537.64	1557.49	1562.99	1563.47	1563.83	1560.89
4	1533.49	1491.71	1496.02	1499.29	1453.54	1516.14	1538.26	1558.34	1562.87	1563.39	1563.85	1560.70
5	1532.36	1491.04	1490.98	1493.47	1455.19	1514.87	1538.80	1558.75	1563.20	1563.45	1563.92	1560.49
6	1531.15	1490.06	1485.10	1487.13	1458.87	1514.75	1539.31	1559.26	1563.68	1563.55	1564.03	1560.30
7	1529.91	1488.97	1478.69	1480.36	1463.83	1515.91	1539.22	1559.93	1563.93	1563.77	1564.11	1559.85
8	1528.73	1487.81	1471.73	1472.99	1466.84	1517.06	1539.20	1560.35	1563.61	1563.80	1564.11	1558.88
9	1527.79	1486.52	1465.93	1464.98	1469.03	1518.02	1539.46	1560.53	1563.09	1563.82	1564.06	1558.31
10	1526.84	1485.26	1462.85	1459.59	1470.74	1518.81	1539.97	1560.91	1562.96	1563.93	1563.95	1557.36
11	1525.68	1483.88	1462.67	1456.72	1471.99	1518.84	1540.49	1561.25	1562.93	1564.04	1563.83	1556.40
12	1524.43	1482.41	1467.60	1455.88	1473.02	1518.86	1541.11	1561.80	1562.89	1564.13	1563.70	1555.40
13	1523.30	1480.82	1472.30	1455.19	1473.98	1519.89	1541.85	1562.35	1563.23	1563.94	1563.55	1554.38
14	1522.10	1479.10	1473.80	1457.35	1474.89	1521.03	1542.69	1562.82	1563.90	1563.72	1563.43	1553.36
15	1520.90	1478.18	1471.30	1464.08	1475.76	1522.09	1543.56	1563.24	1564.57	1563.43	1563.28	1552.32
16	1519.53	1477.68	1468.90	1465.77	1477.14	1523.06	1544.79	1563.53	1564.19	1563.08	1563.08	1551.27
17	1518.02	1476.69	1467.41	1467.49	1479.08	1523.97	1546.55	1564.19	1563.81	1562.90	1563.00	1550.22
18	1516.45	1475.56	1466.72	1474.95	1481.38	1524.78	1548.69	1564.30	1563.57	1562.93	1562.90	1549.15
19	1514.80	1474.34	1466.01	1476.55	1484.01	1525.71	1550.61	1563.49	1563.33	1562.95	1562.82	1548.10
20	1513.09	1477.07	1464.97	1476.22	1485.91	1527.07	1551.98	1562.86	1562.95	1563.09	1562.69	1547.00
21	1511.45	1488.28	1463.74	1476.59	1487.43	1528.91	1552.76	1562.00	1562.46	1563.20	1562.58	1545.93
22	1509.88	1491.96	1462.39	1476.35	1489.42	1530.44	1553.10	1561.22	1562.45	1563.24	1562.47	1544.79
23	1508.26	1492.36	1458.73	1476.25	1494.22	1531.46	1553.17	1560.90	1562.78	1563.23	1562.33	1543.66
24	1506.73	1492.40	1454.96	1475.22	1500.04	1532.00	1553.45	1561.35	1563.30	1563.34	1562.20	1542.55
25	1504.97	1494.34	1453.94	1472.32	1504.00	1532.32	1554.13	1561.95	1563.84	1563.42	1562.07	1541.44
26	1503.44	1497.90	1454.64	1468.06	1505.48	1532.75	1554.67	1562.22	1563.52	1563.50	1561.89	1540.31
27	1501.96	1496.37	1462.13	1463.36	1509.07	1532.89	1554.41	1562.46	1562.97	1563.57	1561.70	1539.21
28	1500.62	1492.73	1488.14	1458.72	1517.67	1533.35	1554.02	1562.72	1562.63	1563.61	1561.53	1538.02
29	1499.22	1488.31	1503.15	1455.66	---	1533.98	1553.82	1562.78	1562.58	1563.71	1561.35	1536.84
30	1497.86	1484.32	1509.85	1452.32	---	1534.71	1554.03	1562.81	1562.98	1563.75	1561.27	1535.64
31	1496.56	---	1513.75	1451.52	---	1535.44	---	1562.88	---	1563.77	1561.38	---
MAX	1536.50	1497.90	1513.75	1512.34	1517.67	1535.44	1554.67	1564.30	1564.57	1564.13	1564.11	1561.25
MIN	1496.56	1474.34	1453.94	1451.52	1450.57	1514.75	1536.23	1554.90	1562.45	1562.90	1561.27	1535.64
(†)	246600	219900	288200	157000	298200	347000	403900	433900	434200	436900	428700	347500
(‡)	-107000	-26700	+68300	-131200	+141200	+48800	+56900	+30000	+300	+2700	-8200	-81200

CAL YR 1998 MAX 1564.21 MIN 1451.72 AC-FT† +124000

WTR YR 1999 MAX 1564.57 MIN 1450.57 AC-FT‡ -6100

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

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14181500 NORTH SANTIAM RIVER AT NIAGARA, OR

LOCATION.--Lat 44°45'10", long 122°17'50", in NE 1/4 NE 1/4 sec.34, T.9 S., R.4 E., Linn County, Hydrologic Unit 17090005, on left bank 0.1 mi downstream from Little Sardine Creek, 0.8 mi downstream from Big Cliff Dam, 2.1 mi east of Niagara, and at mile 57.3.

DRAINAGE AREA.--453 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1908 to January 1920, October 1921 to March 1922, October 1938 to current year.

Monthly discharge only for some periods, published in WSP 1318. Published as "North Fork of Santiam River near Niagara" prior to October 1913, and as "above Mayflower Creek, near Detroit" October 1938 to September 1952.

REVISED RECORDS.--WSP 1288: 1914-18, 1920. WSP 1718: 1953-54.

GAGE.--Water-stage recorder. Datum of gage is 1,093.78 ft above sea level (Federal Highway Administration bench mark). See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Detroit Lake (station 14180500) and Big Cliff Reservoir, usable capacity for reregulating purposes, 2,930 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--71 years (water years 1910-19, 1939-99), 2,333 ft³/s, 69.94 in/yr, 1,690,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,200 ft³/s Nov. 22, 1909, gage height, 16.4 ft, from floodmark, site and datum then in use, from rating curve extended above 35,000 ft³/s; minimum discharge, 19 ft³/s Aug. 21, 1963; minimum daily, 395 ft³/s Mar. 25, 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft³/s Jan. 9, gage height, 7.64 ft; minimum discharge, 636 ft³/s Feb. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2550	2120	7180	9580	2930	5110	981	2020	4470	1760	1140	1120
2	2520	2160	2030	10000	2220	6730	988	2030	4490	2260	1160	1180
3	2530	2120	2900	10100	1520	7120	1000	2040	3950	2270	1150	1150
4	2650	2100	10100	10100	1110	7130	995	2570	3590	2160	1130	1140
5	2580	2220	10100	10100	967	5160	958	2800	3020	1760	1150	1130
6	2490	2440	10100	10100	959	3170	973	2850	2910	1730	1160	1140
7	2490	2320	10100	10100	1060	1150	1940	2810	3010	1730	1210	1660
8	2540	2300	10100	10100	967	1010	1940	2810	3700	1850	1220	2530
9	2610	2380	8040	10100	971	1010	1440	2780	3690	1860	1250	1700
10	2580	2340	5300	7120	962	1000	984	1980	2990	1790	1320	2500
11	2490	2440	5450	4720	937	1950	975	1920	2980	1760	1310	2510
12	2510	2450	3040	2950	957	1970	1000	2040	3330	1820	1320	2510
13	2530	2550	2930	2780	930	1030	1030	2100	3310	2250	1320	2550
14	2830	2680	4320	2780	942	990	1030	2030	3380	2240	1340	2510
15	2860	2630	6970	3110	943	992	1000	2020	3650	2260	1290	2550
16	2840	2660	6040	5410	967	1000	1010	2210	5220	2140	1320	2630
17	2990	2620	4690	5670	1000	978	1000	2830	4800	1850	1170	2520
18	2950	2650	3780	3270	1040	996	1020	5660	4270	1380	1140	2550
19	2950	2760	3240	6650	1010	1000	1330	7030	3980	1400	1150	2430
20	2920	2740	3240	7980	1010	1070	2260	6140	3990	1370	1150	2520
21	2790	1600	3210	7130	1010	994	2570	6030	3990	1370	1150	2540
22	2700	3680	3240	6540	997	1240	2740	6000	3060	1370	1150	2580
23	2690	6080	5130	5080	1010	1780	3020	6050	2430	1390	1160	2610
24	2700	7040	5270	5020	1010	2300	3210	6090	2410	1200	1130	2480
25	2690	7100	3520	6240	1570	2570	3180	6090	2870	1190	1190	2530
26	2680	7160	3460	7100	3110	2550	3180	5560	3600	1190	1260	2630
27	2380	9110	2750	7070	3130	2590	3990	5050	3570	1190	1180	2460
28	2390	9110	1330	6970	2720	2010	3690	5080	3120	1220	1130	2580
29	2360	9130	1030	5360	---	2040	3000	5060	2450	1190	1200	2570
30	2230	8500	3940	5370	---	1480	2380	4690	1770	1150	1110	2560
31	2130	---	5080	3000	---	1220	---	4350	---	1150	1180	---
TOTAL	81150	117190	157610	207600	37959	71340	54814	118720	104000	51250	37240	66070
MEAN	2618	3906	5084	6697	1356	2301	1827	3830	3467	1653	1201	2202
MAX	2990	9130	10100	10100	3130	7130	3990	7030	5220	2270	1340	2630
MIN	2130	1600	1030	2780	930	978	958	1920	1770	1150	1110	1120
AC-FT	161000	232400	312600	411800	75290	141500	108700	235500	206300	101700	73870	131000
MEAN†	878	3458	6193	4563	3899	3094	2784	4317	3473	1698	1068	837
CFSM†	1.94	7.63	13.67	10.07	8.61	6.83	6.15	9.53	7.67	3.75	2.36	1.85
IN.†	2.24	8.51	15.77	11.61	8.96	7.88	6.85	10.99	8.55	4.32	2.72	2.06
AC-FT†	54000	205700	380900	280600	216500	190300	165600	265500	206600	104400	65670	49800

CAL YR 1998 TOTAL 862322 MEAN 2363 MAX 10100 MIN 897 AC-FT 1710000 MEAN† 2533 CFSM† 5.59 IN.† 75.91 AC-FT† 1834000
WTR YR 1999 TOTAL 1104943 MEAN 3027 MAX 10100 MIN 930 AC-FT 2192000 MEAN† 3019 CFSM† 6.66 IN.† 90.48 AC-FT† 2186000

† Adjusted for change in contents, in Detroit Lake.

WILLAMETTE RIVER BASIN

14181500 NORTH SANTIAM RIVER AT NIAGARA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1998 to September 1999.

WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1998					
16...	1450	2820	1	7.6	85
NOV					
25...	1605	7090	3	57	100
DEC					
02...	1530	1200	6	19	100
29...	1330	900	14	34	91
JAN 1999					
14...	0930	2720	6	44	93
21...	0905	7140	6	116	96
26...	1615	7070	4	76	93
FEB					
03...	1120	1580	4	17	99
10...	1650	969	2	5.2	97
17...	1710	1010	4	11	83
MAR					
02...	1655	7140	10	193	38
10...	1645	999	4	11	65
11...	1705	2020	3	16	86
22...	1500	1480	4	16	84
31...	1605	1250	<1	---	70
APR					
14...	1845	1000	2	5.4	81
29...	1643	3000	2	16	66
MAY					
04...	1240	2840	1	7.7	73
13...	1312	2100	2	11	79
18...	1300	6020	2	33	66
JUN					
10...	1415	3050	1	8.2	84
JUL					
02...	1117	2160	1	5.8	78
AUG					
10...	1315	1320	4	14	42
SEP					
02...	1045	1220	1	3.3	77
16...	1353	2800	1	7.6	74

LOCATION.--Lat 44°47'30", long 122°34'40", in NW 1/4 sec.16, T.9 S., R.2 E., Marion County, Hydrologic Unit 17090005, on left bank 2.0 mi east of Mehama, and at mile 2.0.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 655.41 ft above sea level. Prior to June 12, 1948, nonrecording gage at about same site and datum.

AVERAGE DISCHARGE.--68 years (water years 1932-99), 754 ft³/s, 91.42 in/yr, 546,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 8,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0130	11,000	10.55	Dec. 28	1000	*18,700	*12.52
Minimum discharge, 29 ft ³ /s Sept. 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	212	1490	2130	610	2490	616	713	1040	378	72	79
2	99	235	4370	1450	837	1640	585	1180	806	348	69	55
3	375	220	2380	1080	1090	1430	574	1800	610	313	66	47
4	993	299	1460	877	1010	1180	534	1560	560	297	63	44
5	459	890	1090	736	886	970	509	1160	632	266	63	42
6	270	923	898	636	1130	832	493	1150	723	264	67	40
7	192	680	842	600	1830	732	484	1250	614	291	83	40
8	170	584	937	534	1230	664	538	1030	577	263	84	39
9	379	483	787	480	938	614	511	895	528	238	69	37
10	663	444	726	442	774	548	494	773	474	247	61	37
11	407	461	2790	450	651	499	491	724	494	251	58	36
12	286	407	3570	531	580	519	631	952	608	229	57	35
13	370	363	2550	644	560	921	704	932	728	211	56	34
14	749	332	1790	1540	550	974	691	875	783	190	59	34
15	710	464	1260	3170	526	862	694	880	833	167	62	33
16	565	899	984	1850	627	765	860	836	687	154	56	33
17	416	638	903	1880	1160	673	1130	1310	612	148	52	33
18	331	658	797	2960	1240	617	1230	1910	581	135	49	33
19	265	705	681	1900	1520	678	1110	1450	503	127	48	32
20	218	2330	568	1760	1100	886	1170	1210	464	124	47	31
21	187	6440	503	2380	875	960	947	1010	443	123	46	31
22	161	2990	444	2140	895	876	742	946	434	116	44	30
23	142	2000	398	1680	2860	830	640	1160	418	109	43	30
24	131	2090	409	1230	2630	757	780	1480	517	104	42	30
25	139	2080	1220	984	1960	734	1030	1440	833	98	41	30
26	131	3060	2390	819	1440	731	904	1080	644	92	40	31
27	124	1910	4940	695	3010	678	738	959	469	88	40	31
28	224	1290	15800	704	5250	612	600	986	396	85	39	31
29	245	1060	7300	786	---	744	502	877	369	81	39	30
30	197	1150	3680	775	---	769	484	777	393	78	42	29
31	177	---	2800	698	---	686	---	735	---	74	87	---
TOTAL	9824	36297	70757	38541	37769	26871	21416	34040	17773	5689	1744	1098
MEAN	317	1210	2282	1243	1349	867	714	1098	592	184	56.3	36.6
MAX	993	6440	15800	3170	5250	2490	1230	1910	1040	378	87	79
MIN	49	212	398	442	526	499	484	713	369	74	39	29
AC-FT	19490	72000	140300	76450	74910	53300	42480	67520	35250	11280	3460	2180
CFSM	2.83	10.8	20.4	11.1	12.0	7.74	6.37	9.80	5.29	1.64	.50	.33
IN.	3.26	12.06	23.50	12.80	12.54	8.93	7.11	11.31	5.90	1.89	.58	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1999, BY WATER YEAR (WY)

MEAN	401	1144	1446	1331	1207	1025	974	788	454	133	63.4	106
MAX	1594	3121	3680	3615	3533	2645	1712	1439	1684	547	432	490
(WY)	1948	1943	1965	1953	1996	1932	1937	1949	1933	1983	1968	1959
MIN	17.3	25.7	193	218	260	226	268	211	53.5	32.3	19.2	24.3
(WY)	1988	1937	1977	1937	1977	1992	1941	1992	1992	1992	1961	1987

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1932 - 1999

ANNUAL TOTAL	266472		301819			
ANNUAL MEAN	730		827		754	
HIGHEST ANNUAL MEAN					1146	1974
LOWEST ANNUAL MEAN					400	1977
HIGHEST DAILY MEAN	15800	Dec 28	15800	Dec 28	31400	Feb 7 1996
LOWEST DAILY MEAN	23	Sep 17	29	Sep 30	13	Aug 30 1961
ANNUAL SEVEN-DAY MINIMUM	24	Sep 11	30	Sep 24	15	Aug 24 1961
ANNUAL RUNOFF (AC-FT)	528500		598700		546000	
ANNUAL RUNOFF (CFSM)	6.52		7.38		6.73	
ANNUAL RUNOFF (INCHES)	88.51		100.25		91.42	
10 PERCENT EXCEEDS	1540		1790		1690	
50 PERCENT EXCEEDS	488		612		466	
90 PERCENT EXCEEDS	42		45		42	

WILLAMETTE RIVER BASIN

14182500 LITTLE NORTH SANTIAM RIVER NEAR MEHAMA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1998 to September 1999.

WATER-QUALITY DATA					
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1998					
29...	1530	237	2	1.3	100
NOV					
21...	1645	6080	88	1440	100
DEC					
02...	1215	6130	111	1840	31
29...	0925	8440	241	5490	56
JAN 1999					
14...	1320	794	4	8.6	81
20...	1330	1700	6	28	70
27...	1445	683	3	5.5	52
FEB					
02...	1215	772	4	8.3	51
10...	1300	773	<1	---	76
17...	1315	1170	4	13	62
23...	1400	3540	124	1190	33
MAR					
02...	1040	1640	8	35	54
10...	1030	549	3	4.4	61
17...	1200	677	3	5.5	38
22...	1300	863	7	16	78
31...	1400	677	1	1.8	70
APR					
13...	1436	694	4	7.5	35
21...	1430	909	2	4.9	64
29...	1207	500	2	2.7	53
MAY					
03...	1240	1820	11	54	45
12...	1155	984	4	11	38
17...	1330	1160	6	19	65
18...	1352	1810	8	39	45
JUN					
10...	1225	478	1	1.3	74
JUL					
01...	1016	384	3	3.1	53
AUG					
10...	1655	60	1	.16	47
SEP					
02...	1345	55	1	.15	54
16...	1630	34	1	.09	74

WILLAMETTE RIVER BASIN

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14183000 NORTH SANTIAM RIVER AT MEHAMA, OR

LOCATION.--Lat 44°47'20", long 122°37'00", in NW 1/4 sec.18, T.9 S., R.2 E., Marion County, Hydrologic Unit 17090005, on right bank 300 ft downstream from highway bridge at Mehama, 0.5 mi downstream from Little North Santiam River, and at mile 38.71.

DRAINAGE AREA.--655 mi², at cableway 0.8 mi downstream.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1905 to March 1907, October 1910 to September 1914, September 1921 to current year. Monthly discharge only September 1921, published in WSP 1318. Prior to October 1913, published as North Fork of Santiam River at Mehama.

REVISED RECORDS.--WSP 739: 1922-23(M). WSP 1044: 1943. WSP 1248: 1906, 1911-14, 1924(M), 1926, 1934-36(M), 1937, 1938(M), 1942(M). WSP 2135: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 602.49 ft above sea level. Prior to June 15, 1933, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Detroit Lake (station 14180500) and Big Cliff Reservoir, usable capacity for reregulating purposes, 2,930 acre-ft. No diversion upstream from station. All records given herein are for measuring site. Continuous water-quality records for the period April 1985 to September 1986 have been collected at this location.

AVERAGE DISCHARGE.--83 years (water years 1906, 1911-14, 1922-99), 3,381 ft³/s, 2,449,000 acre-ft/yr.
46 years (water years 1954-99), 3,484 ft³/s, 2,524,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,600 ft³/s Dec. 28, 1945, gage height, 15.37 ft, from rating curve extended above 36,000 ft³/s, on basis of slope-area measurement of peak flow; maximum gage height, 17.5 ft Nov. 20, 1921, from graph based on gage readings, and Jan. 6, 1923, from floodmark, at site then in use; minimum discharge, 254 ft³/s Aug. 3, 1970; minimum daily, 420 ft³/s Sept. 18, 1924.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,300 ft³/s Dec. 28, gage height, 10.04 ft; minimum discharge, 1,120 ft³/s Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2590	2540	10400	12900	4200	9790	2360	3190	5990	2400	1350	1330
2	2630	2560	10600	12600	3910	9880	2260	3920	5700	2740	1360	1340
3	2910	2540	6820	12000	3610	10200	2250	4980	5030	2910	1330	1300
4	3770	2590	12800	11500	3140	9590	2180	5150	4510	2720	1320	1290
5	3130	3520	12100	11200	2740	7410	2090	4840	4120	2350	1320	1270
6	2840	3770	11700	11100	3420	5260	2030	4830	4100	2270	1370	1260
7	2770	3370	11700	11000	5080	3100	2800	4940	4010	2270	1450	1730
8	2790	3190	11900	10900	3750	2500	3080	4610	4610	2320	1460	2530
9	3060	3150	9760	10800	3080	2400	2580	4410	4580	2370	1450	1970
10	3410	3100	6940	8200	2700	2260	2130	3490	3910	2310	1500	2520
11	3020	3180	10100	5920	2400	2910	2030	3230	3780	2260	1510	2640
12	2900	3150	9300	4200	2320	3140	2210	3680	4280	2270	1510	2620
13	3010	3180	7350	3960	2220	2940	2330	3730	4410	2630	1520	2640
14	3760	3270	7160	5310	2210	2830	2300	3620	4480	2640	1550	2650
15	3780	3430	8910	9020	2160	2650	2260	3610	4690	2630	1500	2670
16	3560	3960	7810	8710	2360	2510	2500	3670	6090	2510	1500	2720
17	3530	3630	6370	9390	3280	2320	2910	4940	5730	2280	1350	2660
18	3430	3650	5200	9520	3650	2240	3070	8250	5200	1810	1290	2700
19	3340	3820	4430	10300	4060	2290	3050	9290	4770	1740	1300	2540
20	3270	6160	4250	11300	3270	2630	4140	8120	4710	1720	1300	2630
21	3130	11600	4080	11800	2820	2660	4070	7590	4690	1700	1290	2660
22	2990	8290	4070	11200	2910	2690	4010	7440	3890	1690	1290	2650
23	2970	9380	5460	8720	5860	3140	4040	7750	3200	1690	1290	2680
24	2970	10600	5870	7670	5900	3580	4500	8230	3230	1530	1260	2590
25	2970	11000	5660	8010	5310	3870	4800	8180	3950	1480	1320	2600
26	2960	12900	7180	8680	5920	3870	4640	7240	4520	1460	1400	2720
27	2750	12600	9970	8390	8560	3840	5080	6480	4310	1440	1330	2570
28	2810	11400	22500	8300	11600	3300	4830	6520	3880	1460	1250	2650
29	2820	10900	12700	7020	---	3660	3900	6350	3110	1440	1330	2650
30	2680	10700	9670	6810	---	3280	3390	5940	2560	1380	1260	2650
31	2540	---	10000	4690	---	2790	---	5460	---	1370	1400	---
TOTAL	95090	177130	272760	281120	112440	125530	93820	173680	132040	63790	42660	69430
MEAN	3067	5904	8799	9068	4016	4049	3127	5603	4401	2058	1376	2314
MAX	3780	12900	22500	12900	11600	10200	5080	9290	6090	2910	1550	2720
MIN	2540	2540	4070	3960	2160	2240	2030	3190	2560	1370	1250	1260
AC-FT	188600	351300	541000	557600	223000	249000	186100	344500	261900	126500	84620	137700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1999, BY WATER YEAR (WY)

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
MEAN	2992	5350	6337	5666	4195	3334	3292	3534	2539	1390	1243	1970					
MAX	5109	9857	14300	11430	12360	10890	6128	5897	5521	2528	1833	2800					
(WY)	1960	1974	1978	1956	1996	1972	1993	1960	1955	1983	1968	1959					
MIN	1796	1545	1183	1212	1048	1467	1624	1136	956	757	699	996					
(WY)	1988	1994	1977	1977	1977	1992	1973	1973	1992	1992	1992	1992					

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1954 - 1999
ANNUAL TOTAL	1316426	1639490	
ANNUAL MEAN	3607	4492	3484
HIGHEST ANNUAL MEAN			5255
LOWEST ANNUAL MEAN			1743
HIGHEST DAILY MEAN	22500	Dec 28	46700
LOWEST DAILY MEAN	975	Aug 29	682
ANNUAL SEVEN-DAY MINIMUM	999	Aug 28	693
ANNUAL RUNOFF (AC-FT)	2611000	3252000	2524000
10 PERCENT EXCEEDS	9470	9830	7000
50 PERCENT EXCEEDS	2600	3280	2460
90 PERCENT EXCEEDS	1080	1470	1180

WILLAMETTE RIVER BASIN
14183000 NORTH SANTIAM RIVER AT MEHAMA, OR--Continued
WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1998 to September 1999.

WATER-QUALITY DATA					
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1998					
29...	1215	2840	1	7.7	100
NOV					
25...	1620	11200	11	331	100
DEC					
02...	1410	12400	74	2480	100
29...	1110	13100	187	6610	72
JAN 1999					
14...	1553	4600	9	112	73
22...	1610	11700	34	1070	65
27...	1711	8350	7	158	80
FEB					
02...	1505	3920	7	74	70
10...	1450	2660	3	22	74
17...	1520	3300	4	36	79
MAR					
02...	1340	10200	18	496	45
10...	1315	2240	4	24	62
17...	1510	2310	6	37	41
22...	1150	2550	5	34	74
31...	1725	2710	3	22	64
APR					
13...	1215	2320	3	19	59
21...	1215	4100	3	33	64
29...	1402	3890	5	53	47
MAY					
04...	1450	5380	4	58	43
12...	1410	3750	5	51	39
18...	1549	8780	16	379	36
JUN					
10...	1630	3850	2	21	72
JUL					
02...	1257	2780	2	15	59
AUG					
10...	1525	1490	2	8.0	50
SEP					
02...	1315	1390	1	3.8	80
16...	1620	2900	2	16	55

LOCATION.--Lat 44°23'31", long 122°29'47", in NW 1/4 SW 1/4 sec.31, T.13 S., R.3 E., Linn County, Hydrologic Unit 17090006, on left bank, 0.2 mi upstream from Mouse Creek, 0.8 mi southwest of Cascadia, and at mile 49.2.

PERIOD OF RECORD.--September 1935 to current year. Monthly discharge only September 1935, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 775 ft above sea level, from topographic map. Prior to Sept. 26, 1989, at site 0.7 mi downstream at datum 759.88 above sea level. Prior to Nov. 1, 1935, nonrecording gage at site 0.7 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1962 to September 1967 and February 1969 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--64 years (water years 1936-99), 822 ft³/s, 64.22 in/yr, 595,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,700 ft³/s Feb. 7, 1996, gage height, 18.11 ft, from rating curve extended above 10,000 ft³/s; minimum discharge, 23 ft³/s Dec. 1, 2, 1936, site then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1715	9,120	9.61	Jan. 15	0115	6,690	8.38
Nov. 26	1015	6,070	8.04	Jan. 17	2330	6,070	8.04
Dec. 2	1345	10,000	10.04	Feb. 28	0945	6,210	8.12
Dec. 28	0945	*17,400	*13.20				

Minimum discharge, 41 ft³/s Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	144	2240	3060	612	3760	863	1020	1330	408	98	83
2	61	150	7150	2100	833	2410	811	1370	1100	380	97	72
3	105	142	4320	1550	1020	2030	798	2030	885	365	93	66
4	246	260	2350	1220	1020	1660	733	1980	801	358	90	62
5	142	775	1640	1010	934	1340	712	1570	858	320	103	60
6	96	680	1280	869	2200	1130	702	1580	946	305	113	58
7	80	485	1250	803	3190	970	705	1660	881	312	242	56
8	83	450	1460	703	1990	882	820	1430	875	282	177	55
9	146	374	1140	626	1350	810	760	1250	766	263	130	53
10	268	362	1030	570	1040	722	723	1080	711	259	110	52
11	158	415	2840	571	852	655	728	1060	717	251	99	52
12	119	339	3310	640	766	709	892	1350	796	237	95	49
13	158	298	2840	655	761	1130	954	1340	889	224	93	48
14	279	277	2240	1800	797	1130	937	1250	958	208	106	47
15	285	574	1660	4910	762	999	950	1270	964	190	97	46
16	274	1130	1330	2950	1040	896	1170	1170	843	180	88	47
17	195	729	1200	3290	1800	801	1470	1820	774	173	83	48
18	160	659	1050	4720	2200	749	1580	3110	717	159	79	48
19	137	612	901	3120	2370	814	1470	2480	650	154	77	47
20	120	1670	748	3040	1580	1030	1400	1960	600	152	74	45
21	108	7800	676	3780	1210	1100	1200	1600	594	155	72	44
22	100	4820	603	3160	1210	1070	1010	1490	557	145	70	44
23	94	3440	544	2620	2650	1060	894	1690	529	136	68	43
24	90	3260	538	1800	3080	991	988	1990	599	131	67	43
25	99	3440	1490	1360	2540	986	1190	1950	791	127	65	43
26	95	4680	2380	1100	1910	1010	1160	1580	603	121	64	44
27	96	2920	3570	904	2650	991	1010	1430	501	116	62	43
28	161	1860	15300	837	5580	921	857	1430	450	112	61	43
29	143	1500	7880	802	---	1160	750	1320	427	108	59	42
30	118	1660	4390	737	---	1180	745	1180	426	104	81	41
31	113	---	3870	686	---	995	---	1090	---	100	108	---
TOTAL	4379	45905	83220	55993	47947	36091	28982	48530	22538	6535	2921	1524
MEAN	141	1530	2685	1806	1712	1164	966	1565	751	211	94.2	50.8
MAX	285	7800	15300	4910	5580	3760	1580	3110	1330	408	242	83
MIN	50	142	538	570	612	655	702	1020	426	100	59	41
AC-FT	8690	91050	165100	111100	95100	71590	57490	96260	44700	12960	5790	3020
CFSM	.81	8.79	15.4	10.4	9.84	6.69	5.55	9.00	4.32	1.21	.54	.29
IN.	.94	9.81	17.79	11.97	10.25	7.72	6.20	10.38	4.82	1.40	.62	.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1999, BY WATER YEAR (WY)

MEAN	300	1115	1536	1457	1388	1172	1137	934	521	170	81.0	95.5
MAX	1296	2442	4319	3278	3326	2913	2052	1639	1261	466	222	318
(WY)	1951	1943	1965	1953	1996	1972	1937	1960	1937	1983	1968	1959
MIN	31.6	27.6	82.3	107	130	324	356	282	101	54.2	35.9	40.9
(WY)	1988	1937	1977	1977	1977	1941	1941	1987	1992	1940	1992	1987

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1936 - 1999
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ANNUAL TOTAL	339651		384565					
ANNUAL MEAN	931		1054			822		
HIGHEST ANNUAL MEAN						1280		1972
LOWEST ANNUAL MEAN						359		1977
HIGHEST DAILY MEAN	15300	Dec 28	15300	Dec 28	23200		Feb 7	1996
LOWEST DAILY MEAN	40	Sep 16	41	Sep 30	23		Dec 1	1936
ANNUAL SEVEN-DAY MINIMUM	42	Sep 12	43	Sep 24	24		Nov 25	1936
ANNUAL RUNOFF (AC-FT)	673700		762800		595800			
ANNUAL RUNOFF (CFSM)	5.35		6.06		4.73			
ANNUAL RUNOFF (INCHES)	72.62		82.22		64.22			
10 PERCENT EXCEEDS	2190		2440		1830			
50 PERCENT EXCEEDS	586		762		508			
90 PERCENT EXCEEDS	61		68		62			

14185900 QUARTZVILLE CREEK NEAR CASCADIA, OR

LOCATION.--Lat 44°32'25", long 122°26'05", in NW 1/4 sec.10, T.12 S., R.3 E., Linn County, Hydrologic Unit 17090006, on Bureau of Land Management land, on right bank 80 ft downstream from Panther Creek, 10 mi north of Cascadia, and at mile 6.6.

DRAINAGE AREA.--99.2 mi².

PERIOD OF RECORD.--August 1963 to November 1964 (destroyed by flood of December 1964); October 1965 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,050 ft above sea level, from topographic map. Aug. 13, 1963, to Dec. 22, 1964, water-stage recorder on left bank at present datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period August 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--35 years (water years 1964, 1966-99), 662 ft³/s, 90.65 in/yr, 479,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s Feb. 7, 1996, gage height, 20.54 ft, from rating curve extended above 8,000 ft³/s on the basis of slope-area measurement of peak flow; minimum discharge, 14 ft³/s Aug. 19-23, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 36,500 ft³/s Dec. 22, 1964, from slope-area measurement of peak flow.

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. 20	2330	8,450	12.45	Dec. 27	2300	*12,800	*14.95
Nov. 25	0930	5,140	10.29	Jan. 14	2330	5,010	10.20
Nov. 26	0930	5,500	10.55	Jan. 17	2230	5,810	10.77
Dec. 2	0800	9,220	12.90	Feb. 23	1230	4,840	10.07
Dec. 11	2000	5,290	10.40	Feb. 28	0500	7,170	11.66

Minimum discharge, 26 ft³/s Sept. 24, 25, 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	147	2310	2010	576	2820	546	960	822	230	53	60
2	89	152	7150	1340	710	1720	541	1250	659	211	52	47
3	184	147	e3500	987	947	1500	529	1780	532	196	51	43
4	421	316	e1800	778	1040	1150	477	1510	517	185	50	40
5	163	745	e1300	649	854	896	454	1160	589	169	57	39
6	102	596	e1000	565	2110	751	452	1270	619	166	68	38
7	76	470	e1000	530	2820	655	475	1300	539	171	130	37
8	103	403	e1200	477	1490	604	567	1030	512	154	111	36
9	429	333	e950	430	977	555	512	867	456	142	79	35
10	514	359	e850	396	739	497	495	740	442	139	65	34
11	251	449	3360	416	604	458	532	708	476	135	59	33
12	166	349	3950	503	533	540	772	918	562	127	55	32
13	314	301	3020	557	528	1080	852	858	636	118	54	32
14	401	276	1960	1870	555	1090	841	783	654	109	58	31
15	341	770	1270	3620	553	893	879	763	644	102	57	31
16	309	1010	957	2360	1020	766	1190	733	535	96	52	31
17	222	602	896	2950	1590	662	1570	1610	487	92	50	31
18	179	548	773	4100	1710	627	1600	2320	446	88	48	31
19	146	556	651	2780	2010	800	1370	1650	400	83	47	30
20	127	3260	543	2780	1200	1150	1300	1310	366	80	45	29
21	114	6220	478	3100	885	1160	1010	1060	350	82	44	29
22	104	3470	430	2360	1430	1030	792	1060	326	76	43	28
23	95	2670	389	1650	4360	987	752	1270	317	72	43	28
24	92	2730	383	1160	3620	873	997	1550	371	69	42	27
25	105	4000	1390	880	2490	841	1210	1470	481	68	41	28
26	97	4250	2530	719	1660	825	1030	1110	352	65	40	28
27	95	2370	5090	607	3740	729	807	1030	281	62	38	27
28	189	1410	10400	695	5700	659	648	1030	256	60	38	27
29	167	e1200	5740	826	---	826	558	904	243	58	38	27
30	e130	1500	3440	775	---	735	593	797	246	56	46	27
31	120	---	2710	674	---	612	---	741	---	54	71	---
TOTAL	5877	41609	71420	43544	46451	28491	24351	35542	14116	3515	1725	996
MEAN	190	1387	2304	1405	1659	919	812	1147	471	113	55.6	33.2
MAX	514	6220	10400	4100	5700	2820	1600	2320	822	230	130	60
MIN	32	147	383	396	528	458	452	708	243	54	38	27
AC-FT	11660	82530	141700	86370	92140	56510	48300	70500	28000	6970	3420	1980
CFSM	1.91	14.0	23.2	14.2	16.7	9.26	8.18	11.6	4.74	1.14	.56	.33
IN.	2.20	15.60	26.78	16.33	17.42	10.68	9.13	13.33	5.29	1.32	.65	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

MEAN	266	1023	1289	1285	1113	954	849	613	321	102	58.3	87.1
MAX	786	2224	2897	2450	2441	2018	1600	1147	817	336	240	268
(WY)	1998	1974	1974	1970	1982	1972	1993	1999	1984	1983	1968	1971
MIN	20.8	57.6	110	157	208	204	382	182	63.1	36.8	20.9	28.0
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1992	1992	1987

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1964 - 1999
ANNUAL TOTAL	266336	317637	
ANNUAL MEAN	730	870	662
HIGHEST ANNUAL MEAN			1113
LOWEST ANNUAL MEAN			311
HIGHEST DAILY MEAN	10400	Dec 28	10400
LOWEST DAILY MEAN	22	Sep 16	27
ANNUAL SEVEN-DAY MINIMUM	24	Sep 11	27
ANNUAL RUNOFF (AC-FT)	528300		630000
ANNUAL RUNOFF (CFSM)	7.36		8.77
ANNUAL RUNOFF (INCHES)	99.88		119.11
10 PERCENT EXCEEDS	1890		2190
50 PERCENT EXCEEDS	398		546
90 PERCENT EXCEEDS	38		43

e Estimated

14186100 GREEN PETER LAKE NEAR FOSTER, OR

LOCATION.--Lat 44°27'10", long 122°32'40", in NE 1/4 SE 1/4 sec.10, T.13 S., R.2 E., Linn County, Hydrologic Unit 17090006, in Green Peter Dam on Middle Santiam River, 7.0 mi northeast of Foster, and at mile 5.7.

DRAINAGE AREA.--273 mi².

PERIOD OF RECORD.--October 1966 to current year. Prior to October 1971, published as Green Peter Reservoir near Foster.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by concrete, gravity-type dam with ogee spillway completed in 1966 by Corps of Engineers; controlled storage began Oct. 6, 1966. Total capacity, 428,100 acre-ft, usable capacity 330,800 acre-ft between elevations 887.0 ft, proposed lower limit of operation, and 1,015.0 ft, top of spillway gates. Reservoir used for flood control, power development, improvement of navigation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 426,700 acre-ft April 29, 1990, elevation, 1,014.61 ft; minimum contents, 116,900 acre-ft Dec. 15, 1972, elevation, 899.20 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 411,000 acre-ft June 26, 27, elevation, 1,010.33 ft; minimum contents, 147,200 acre-ft Jan. 12, elevation, 915.75 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

899	116,600	960	251,100
900	118,300	980	309,700
920	155,700	1,000	374,800
940	199,900	1,015	428,100

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	977.89	963.38	950.54	970.17	921.53	983.28	986.19	1001.00	1009.88	1010.02	1006.24	1000.16
2	977.23	962.24	958.25	965.73	922.40	---	986.64	1002.06	1009.82	1010.05	1006.03	999.89
3	976.81	961.09	962.72	959.88	924.11	978.28	987.09	1003.83	1009.79	1010.08	1005.85	999.62
4	976.78	960.19	960.47	953.31	926.39	973.39	987.42	1004.79	1009.82	1010.08	1005.64	999.32
5	976.36	960.04	955.75	947.25	928.37	970.51	987.75	1004.79	1009.94	1010.04	1005.49	999.05
6	975.85	959.62	---	944.31	932.15	969.61	988.08	1004.86	1009.94	1010.01	1005.34	998.78
7	975.34	958.93	944.68	937.65	936.71	970.42	988.65	1004.98	1009.84	1009.98	1005.34	998.42
8	974.86	958.15	938.98	930.66	939.08	971.56	989.37	1005.58	1009.75	1010.04	1005.28	998.06
9	974.83	957.22	936.37	923.22	940.43	972.22	990.03	1006.24	1009.69	1010.01	1005.16	997.70
10	974.92	956.38	936.10	918.39	941.81	972.91	990.51	1006.73	1009.66	1009.95	1004.92	997.31
11	974.65	955.60	940.51	916.23	943.19	973.42	990.96	1006.97	1009.72	1009.92	1004.71	996.95
12	974.25	954.64	944.38	915.84	944.36	974.08	991.65	1007.45	1009.78	1009.85	1004.47	996.59
13	974.13	953.61	946.39	915.90	945.44	975.55	992.40	1008.09	1009.96	1009.73	1004.26	996.20
14	974.10	952.53	946.33	918.66	946.28	977.05	993.00	1008.66	1010.07	1009.73	1004.05	995.84
15	974.25	952.11	946.30	923.67	947.40	978.37	993.57	1009.20	1009.98	1009.64	1003.81	995.45
16	974.34	952.08	944.92	924.13	---	979.18	994.44	1009.41	1009.74	1009.49	1003.57	995.12
17	974.31	951.54	943.19	925.03	951.69	979.67	995.55	1009.69	1009.74	1009.34	1003.36	994.76
18	974.22	950.91	941.15	929.95	954.63	980.06	996.87	1009.45	1009.71	1009.16	1003.15	994.37
19	974.19	---	938.78	930.31	957.81	980.66	997.83	1009.36	1009.68	1009.03	1002.97	994.01
20	974.13	952.44	936.26	930.76	959.25	981.62	998.43	1009.27	1009.65	1008.82	1002.76	993.62
21	973.77	961.14	933.65	932.98	960.24	982.67	998.76	1009.19	1009.64	1008.64	1002.55	993.23
22	973.26	965.31	931.04	934.39	961.80	983.30	998.97	1009.76	1009.76	1008.46	1002.34	992.57
23	972.59	965.16	928.25	935.83	966.27	983.54	999.09	1010.15	1009.85	1008.28	1002.13	991.91
24	971.87	965.03	926.75	932.71	970.23	983.64	999.49	1009.61	1010.12	1008.07	1001.92	991.25
25	---	965.42	927.14	928.09	972.66	983.73	1000.12	1009.32	1010.30	1007.86	1001.71	990.56
26	970.04	967.76	928.52	924.58	973.59	983.82	1000.81	1009.38	1010.33	1007.65	1001.51	989.90
27	968.90	966.05	935.99	923.41	975.93	984.12	1000.75	1009.38	1010.24	1007.41	1001.30	989.24
28	967.88	961.67	960.74	923.11	982.05	984.33	1000.58	1009.47	1010.14	1007.20	1001.00	988.55
29	966.80	956.99	---	922.84	---	984.81	1000.49	1009.77	1010.08	1006.96	1000.73	987.86
30	965.63	952.43	974.00	922.15	---	985.17	1000.52	1009.98	1010.05	1006.72	1000.61	987.17
31	964.49	---	972.86	922.07	---	985.59	---	1010.06	---	1006.48	1000.40	---
MAX	---	---	---	970.17	---	---	1000.81	1010.15	1010.33	1010.08	1006.24	1000.16
MIN	---	---	---	915.84	---	---	986.19	1001.00	1009.64	1006.48	1000.40	987.17
(†)	263700	230900	288000	160000	316100	327300	376500	410100	410000	397300	376100	332300
(‡)	-41300	-32800	+57100	-128000	+156100	+11200	+49200	+33600	-100	-12700	-21200	-43800

CAL YR 1998 AC-FT† +121200

WTR YR 1999 AC-FT† +27300

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

WILLAMETTE RIVER BASIN

14186600 FOSTER LAKE AT FOSTER, OR

LOCATION.--Lat 44°25'00", long 122°40'25", in NW 1/4 NE 1/4 sec.27, T.13 S., R.1 E., Linn County, Hydrologic Unit 17090006, in Foster Dam on South Santiam River, 0.3 mi above Wiley Creek, 0.5 mi north of Foster, and at mile 37.7.

DRAINAGE AREA.--492 mi².

PERIOD OF RECORD.--December 1966 to current year. Prior to October 1971, published as Foster Reservoir at Foster.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Midnight lake elevations for period December 10 to March 24 obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Lake is formed by rockfill embankment with an impervious core and ogee spillway completed in 1966 by Corps of Engineers; controlled storage began in November 1966. Total capacity, 60,780 acre-ft and usable capacity 33,210 acre-ft between elevations 609.0 ft, proposed lower limit of operation, and 641.0 ft, top of spillway gates. Lake used for reregulation of water released from Green Peter Lake, flood control, power development, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 60,350 acre-ft Apr. 28, 1990, elevation, 640.66 ft; minimum contents, 26,590 acre-ft Nov. 15, 16, 1971, elevation, 607.85 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 56,900 acre-ft Aug. 16, elevation, 637.85 ft; minimum contents, 30,790 acre-ft Jan. 13, elevation, 612.69 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

607	25,880	630	47,860
610	28,430	635	53,510
615	32,870	640	59,530
620	37,570	641	60,780
625	42,550		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	636.38	620.03	613.91	613.53	622.79	614.10	613.64	614.12	636.83	637.10	637.04	636.98
2	636.68	619.73	620.09	613.41	623.43	614.29	613.94	614.24	636.98	637.07	637.04	637.01
3	636.80	619.40	613.04	613.79	622.87	613.99	613.58	614.39	636.92	637.01	637.01	637.04
4	637.01	618.80	613.07	613.71	622.87	613.83	614.06	614.21	636.83	637.01	636.98	637.19
5	637.07	618.38	613.10	613.85	622.01	613.67	613.97	614.30	636.86	636.95	636.98	637.22
6	637.04	618.05	613.07	613.67	621.19	614.34	613.94	614.33	636.77	636.95	636.98	637.22
7	636.98	617.63	613.40	613.87	620.21	613.64	613.76	614.09	636.80	636.95	637.19	637.28
8	636.95	617.03	613.28	614.19	617.27	613.23	613.97	614.09	636.71	636.71	637.22	637.28
9	637.07	616.52	613.82	614.05	615.00	614.11	613.85	614.12	636.92	636.74	637.22	637.28
10	637.22	615.98	613.97	614.01	613.95	614.03	613.97	614.21	636.83	636.92	637.34	637.25
11	637.16	615.59	615.45	615.99	613.91	614.37	614.21	614.24	637.04	636.92	637.46	637.25
12	637.16	615.02	613.78	616.28	613.53	614.79	614.24	614.24	637.19	636.92	637.55	637.22
13	637.16	614.21	613.39	612.69	613.27	614.81	614.06	614.06	637.16	636.98	637.61	637.22
14	637.34	613.46	614.59	614.74	613.79	614.41	613.94	614.21	637.16	637.01	637.64	637.19
15	636.50	613.07	615.80	614.47	613.39	614.17	614.03	614.00	637.22	636.95	637.70	637.16
16	635.21	613.04	614.17	613.17	613.54	614.38	614.42	614.06	637.13	636.95	637.82	637.04
17	633.80	613.10	613.57	613.58	614.63	614.62	614.51	614.39	637.04	636.98	637.73	637.04
18	632.30	613.13	613.33	613.14	615.57	614.06	613.64	613.97	637.13	636.98	637.67	636.98
19	630.50	613.01	613.54	613.67	614.41	614.05	614.21	614.00	636.95	636.95	637.58	636.95
20	628.61	613.73	613.39	613.86	613.73	614.50	614.09	614.12	637.10	637.01	637.52	636.92
21	627.38	617.18	613.39	614.41	613.84	614.31	614.03	613.97	636.98	637.04	637.43	636.89
22	626.66	613.40	613.37	613.43	613.93	614.01	614.24	614.18	636.98	637.04	637.34	636.83
23	626.18	613.94	613.33	613.05	613.77	613.99	614.24	615.56	636.98	636.98	637.28	636.77
24	624.95	613.52	613.41	613.23	613.30	613.97	614.00	627.20	637.10	637.04	637.16	636.77
25	623.69	613.31	613.45	613.41	613.23	614.00	614.21	636.29	637.43	636.98	637.07	636.77
26	622.58	613.55	613.15	613.29	613.43	614.06	613.22	636.80	637.22	636.98	636.95	636.80
27	622.07	613.25	615.79	613.27	613.97	614.06	613.88	636.80	637.19	636.95	636.86	636.83
28	621.56	613.25	626.67	613.31	615.12	614.00	614.24	636.95	637.04	637.01	636.92	636.86
29	621.08	613.73	618.91	613.37	---	614.30	614.33	636.83	637.10	636.98	636.95	636.89
30	620.81	614.00	613.83	616.46	---	614.06	614.12	636.71	637.16	636.95	636.80	636.89
31	620.36	---	614.29	618.73	---	613.61	---	636.89	---	636.89	636.92	---
MEAN	631.36	615.27	614.56	614.05	616.14	614.12	614.02	619.73	637.03	636.96	637.26	637.03
MAX	637.34	620.03	626.67	618.73	623.43	614.81	614.51	636.95	637.43	637.10	637.82	637.28
MIN	620.36	613.01	613.04	612.69	613.23	613.23	613.22	613.97	636.71	636.71	636.80	636.77
(†)	37920	31960	32230	36350	32980	31610	32070	55740	56060	55740	55780	55740
(‡)	-17360	-5960	+270	+4120	-3370	-1370	+460	+23670	+320	-320	+40	-40

CAL YR 1998 AC-FT† -550

WTR YR 1999 AC-FT† +460

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

237

14187000 WILEY CREEK NEAR FOSTER, OR

LOCATION.--Lat 44°22'20", long 122°37'20", in NE 1/4 NE 1/4 sec.12, T.14 S., R.1 E., Linn County, Hydrologic Unit 17090006, on right bank 0.5 mi downstream from Little Wiley Creek, 3.5 mi southeast of Foster, and at mile 4.4.

DRAINAGE AREA.--51.8 mi².

PERIOD OF RECORD.--October 1947 to July 1973, July 1988 to current year.

REVISED RECORDS.--WDR OR-90-2: 1989 (M), WDR OR-93-1: 1992.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 720 ft above sea level, from topographic map. Prior to April 6, 1965, water-stage recorder at present site at datum of 718.08 ft above sea level (Corps of Engineers bench mark). Apr. 6, 1965, to July 1973, water-stage recorder at present site at datum 2.00 ft lower than previous datum.

REMARKS.--Records good except those for the periods Dec. 11-22, May 3-7, 24-26 and estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--36 years (water years 1948-72, 1989-99), 218 ft³/s, 57.30 in/yr, 158,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s Jan. 21, 1972, gage height, 9.28 ft, datum then in use, from rating curve extended above 3,700 ft³/s; maximum gage height, 9.80 ft, Dec. 21, 1964 (backwater from debris), datum then in use; minimum discharge, 2.9 ft³/s August 28-31, 1992.

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)
Dec. 2	1500	3,030	6.61	Dec. 28	0600	*3,650	*7.23

Minimum discharge, 5.2 ft³/s Sept. 21-23, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	29	788	856	225	1140	257	169	130	37	13	14
2	11	31	2240	630	366	832	230	272	111	35	12	11
3	24	29	1430	479	410	818	226	598	95	35	12	9.5
4	41	51	821	375	454	672	214	572	87	37	11	8.7
5	22	139	567	301	418	522	212	483	93	33	12	8.1
6	14	122	429	252	1110	425	209	440	93	31	16	7.9
7	11	102	450	226	1570	342	200	427	98	33	39	7.7
8	18	112	551	198	967	307	240	389	114	30	35	7.6
9	35	89	391	176	672	276	231	313	93	28	22	7.1
10	42	89	326	160	505	233	253	264	82	26	17	6.9
11	22	94	783	167	400	204	261	264	75	25	15	7.0
12	17	73	920	178	346	215	289	318	70	24	15	6.5
13	33	60	791	161	342	304	301	308	67	24	15	6.0
14	49	52	668	391	359	325	289	289	64	23	18	5.9
15	54	122	503	1070	331	287	295	301	63	23	16	5.8
16	48	198	391	880	488	252	358	269	60	21	14	6.1
17	31	134	315	1170	706	220	406	396	55	21	12	6.5
18	25	153	267	1550	1080	201	383	595	52	20	12	6.5
19	22	139	227	1080	1060	192	327	495	49	19	12	6.2
20	18	438	181	1240	728	216	303	391	48	18	11	5.7
21	16	1920	162	1750	556	220	262	306	51	19	11	5.5
22	14	1280	e150	1400	598	221	232	253	47	19	10	5.3
23	13	994	e140	1190	1060	222	201	248	42	17	9.8	5.3
24	13	961	138	818	1130	209	206	256	49	16	9.7	5.5
25	15	961	390	606	999	213	219	238	66	16	9.0	5.5
26	15	1250	580	465	782	229	193	183	52	15	8.6	5.7
27	19	833	807	364	972	247	181	157	46	14	8.4	5.7
28	46	549	3280	343	1660	234	168	147	41	14	8.0	5.7
29	30	477	1800	310	---	440	147	134	38	13	8.1	5.5
30	23	648	1060	275	---	434	141	121	36	13	14	5.2
31	22	---	991	258	---	320	---	112	---	13	19	---
TOTAL	770.7	12129	22537	19319	20294	10972	7434	9708	2067	712	444.6	205.6
MEAN	24.9	404	727	623	725	354	248	313	68.9	23.0	14.3	6.85
MAX	54	1920	3280	1750	1660	1140	406	598	130	37	39	14
MIN	7.7	29	138	160	225	192	141	112	36	13	8.0	5.2
AC-FT	1530	24060	44700	38320	40250	21760	14750	19260	4100	1410	882	408
CFSM	.48	7.81	14.0	12.0	14.0	6.83	4.78	6.05	1.33	.44	.28	.13
IN.	.55	8.71	16.18	13.87	14.57	7.88	5.34	6.97	1.48	.51	.32	.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1999, BY WATER YEAR (WY)

	MEAN	83.8	279	417	455	396	345	271	195	88.6	32.3	16.8	18.5
MAX	397	620	1107	842	944	625	490	353	286	75.9	53.4	67.8	
(WY)	1951	1951	1965	1953	1961	1972	1955	1963	1993	1969	1968	1968	
MIN	8.08	15.7	109	82.1	112	85.0	133	62.8	20.2	11.8	4.40	5.15	
(WY)	1989	1953	1960	1963	1973	1992	1968	1973	1992	1992	1992	1992	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1948 - 1999

ANNUAL TOTAL	94206.5	106592.9	
ANNUAL MEAN	258	292	218
HIGHEST ANNUAL MEAN			318
LOWEST ANNUAL MEAN			104
HIGHEST DAILY MEAN	3280	Dec 28	6410
LOWEST DAILY MEAN	5.5	Sep 17	2.9
ANNUAL SEVEN-DAY MINIMUM	5.9	Sep 12	3.0
ANNUAL RUNOFF (AC-FT)	186900	211400	158300
ANNUAL RUNOFF (CFSM)	4.98	5.64	4.22
ANNUAL RUNOFF (INCHES)	67.65	76.55	57.30
10 PERCENT EXCEEDS	650	825	500
50 PERCENT EXCEEDS	141	161	120
90 PERCENT EXCEEDS	9.3	9.9	12

e Estimated

WILLAMETTE RIVER BASIN

14187200 SOUTH SANTIAM RIVER NEAR FOSTER, OR

LOCATION.--Lat 44°24'45", long 122°41'15", in SE 1/4 NE 1/4 sec.28, T.13 S., R.1 E., Linn County, Hydrologic Unit 17090006, on left bank 0.6 mi downstream from Wiley Creek and at mile 37.0.

DRAINAGE AREA.--557 mi².

PERIOD OF RECORD.--August 1973 to current year. Records for October 1966 to July 1973 (published as South Santiam River at Foster, station 14186700) at site 0.5 mi upstream not equivalent owing to inflow between sites.

GAGE.--Water-stage recorder. Elevation of gage is 530 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1966 by Green Peter Lake (station 14186100) and since December 1966 by Foster Lake (station 14186600). No diversion upstream from station. Continuous water-quality records for the period July 1973 to September 1997 have been collected at this location.

AVERAGE DISCHARGE.--26 years (water years 1974-99), 2,898 ft³/s, 70.66 in/yr, 2,100,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,700 ft³/s Feb. 7, 1996, gage height, 18.74 ft, from rating curve extended above 16,000 ft³/s; minimum discharge, 410 ft³/s June 3, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,400 ft³/s Dec. 28, gage height, 16.56 ft; minimum discharge, 355 ft³/s July 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	2270	10900	15600	1030	11300	1910	2570	4110	1130	628	626
2	1070	2270	12800	14600	2140	11000	1880	3050	3060	997	615	620
3	1080	2260	11600	14400	2570	13200	2160	4150	2550	988	618	619
4	1100	2550	11400	14100	1760	14200	1780	5020	2270	926	619	618
5	1090	3000	12700	12100	2060	9570	1940	5140	2310	912	621	619
6	1060	2930	12100	6990	4140	5190	1890	5140	2770	868	629	619
7	1060	2750	12000	11400	7520	2590	1470	5420	2720	880	654	724
8	1070	2820	12700	10900	6170	1690	1460	3630	2670	845	655	771
9	1100	2680	6950	10700	4660	1480	1520	2830	2130	739	639	772
10	1110	2670	3900	7560	2780	1460	1620	2550	2100	731	626	771
11	1090	2670	5450	3230	1610	1420	1610	2950	1740	727	619	769
12	1090	2670	9550	2770	1540	1430	1840	3350	2060	734	621	763
13	1090	2710	8480	3980	1510	1710	2020	3010	2180	733	651	759
14	1110	2660	7660	3310	1530	1890	2240	2720	2310	534	661	761
15	1320	2760	5320	11800	1500	1650	2260	2870	2780	730	646	757
16	1530	3290	7170	11200	1620	1830	2370	2990	2770	732	650	760
17	1490	2820	6550	11400	2340	2000	3080	5470	2150	737	632	763
18	1490	2760	6210	11900	3340	2220	3410	10200	1920	729	629	773
19	1470	2810	5820	11200	4570	1980	2870	7630	1900	726	623	773
20	1480	4400	5620	11300	3920	2060	3580	6030	1630	729	620	776
21	1490	11400	5260	12300	2940	2400	3370	5130	1640	730	618	783
22	1480	11100	5010	11700	2860	2870	2870	3410	1260	733	617	1180
23	1480	10900	4980	8890	5900	3300	2750	3680	1190	730	620	1230
24	2000	11200	3700	10800	6210	3180	2710	1160	1170	726	626	1210
25	2220	11200	4960	10600	5930	3190	2880	1250	1580	728	617	1190
26	2220	11600	7550	8260	5440	3210	2980	4170	1700	724	622	1200
27	2260	12400	7890	4830	7580	2810	2980	4170	1480	725	618	1200
28	2350	12900	14500	3630	10700	2750	2930	3940	1430	724	619	1200
29	2330	12000	15900	3520	---	3150	2510	3300	1180	723	619	1200
30	2190	12600	15700	2380	---	3570	2390	3040	1170	723	624	1210
31	2270	---	15800	1820	---	2910	---	2870	---	723	634	---
TOTAL	46250	173050	276130	279170	105870	123210	71280	122840	61930	24116	19490	26016
MEAN	1492	5768	8907	9005	3781	3975	2376	3963	2064	778	629	867
MAX	2350	12900	15900	15600	10700	14200	3580	10200	4110	1130	661	1230
MIN	1060	2260	3700	1820	1030	1420	1460	1160	1170	534	615	618
AC-FT	91740	343200	547700	553700	210000	244400	141400	243700	122800	47830	38660	51600
MEAN†	538	5116	9840	6990	6531	4135	3211	4895	2067	566	285	130
CFSM†	0.97	9.19	17.7	12.6	11.7	7.42	5.76	8.79	3.71	1.02	0.51	0.23
IN.†	1.11	10.3	20.4	14.5	12.2	8.56	6.43	10.1	4.14	1.17	0.59	0.26
AC-FT†	33080	304440	605070	429820	362730	254230	191060	300970	123020	34810	17500	7760

CAL YR 1998 TOTAL 1085137 MEAN 2973 MAX 15900 MIN 652 AC-FT 2152000 MEAN† 3139 CFSM† 5.64 IN.† 76.5 AC-FT† 2272650
WTR YR 1999 TOTAL 1329352 MEAN 3642 MAX 15900 MIN 534 AC-FT 2637000 MEAN† 3681 CFSM† 6.61 IN.† 89.7 AC-FT† 2664760

† Adjusted for change in contents in Green Peter Lake and Foster Lake.

14187500 SOUTH SANTIAM RIVER AT WATERLOO, OR

LOCATION.--Lat 44°29'55", long 122°49'20", in SW 1/4 NW 1/4 sec.28, T.12 S., R.1 W., Linn County, Hydrologic Unit 17090006, on left bank 0.1 mi downstream from highway bridge at Waterloo, 2.1 mi upstream from Hamilton Creek, and at mile 23.3.

DRAINAGE AREA.--640 mi².

PERIOD OF RECORD.--July 1905 to March 1907, October 1910 to December 1911 (gage heights only January to December 1911), July 1923 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as South Fork of Santiam River at Waterloo 1905-07, 1910-11.

REVISED RECORDS.--WSP 1248: 1907, 1924-30, 1932.

GAGE.--Water-stage recorder. Datum of gage is 370.39 ft above sea level. Prior to Dec. 31, 1911, nonrecording gage at site 0.5 mi downstream at datum about 5.0 ft lower. July 1, 1923, to Nov. 12, 1934, nonrecording gage, at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated since October 1966 by Green Peter Lake (station 14186100) and since December 1966 by Foster Lake (station 14186600). Some diversion upstream from station. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--77 years (water years 1906, 1924-99), 2,955 ft³/s, 2,141,000 acre-ft/yr (unadjusted).
32 years (water years 1968-99), 3,053 ft³/s, 2,212,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,200 ft³/s Dec. 22, 1964, gage height, 24.50 ft; minimum discharge, 61 ft³/s Oct. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,400 ft³/s Dec. 29, gage height, 10.30 ft; minimum discharge, 353 ft³/s July 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	2420	12300	16500	1530	12500	2710	2800	4290	1260	678	642
2	1150	2410	14300	15400	2450	12000	2430	3420	3640	1120	634	635
3	1170	2410	13200	15000	3600	14000	2760	4540	2930	1090	629	629
4	1200	2560	12300	14800	2520	15000	2430	5620	2640	1040	635	626
5	1200	3040	13600	13000	2760	11100	2500	5630	2500	1010	634	632
6	1150	3240	13000	7950	4680	6770	2480	5620	3080	950	649	627
7	1150	2900	12800	11800	9170	3830	2020	5930	3040	956	685	722
8	1160	2940	13700	11500	7400	2450	1930	4410	3110	942	698	810
9	1200	2890	8580	11300	6060	2160	2020	3410	2350	803	669	817
10	1240	2830	5140	9080	4120	2070	2110	3020	2520	789	649	814
11	1200	2840	6250	3700	2390	1980	2080	3240	1970	778	637	817
12	1180	2820	10800	2880	2230	2010	2250	3760	2200	780	636	818
13	1220	2850	9710	5260	2180	2220	2480	3540	2450	781	661	808
14	1250	2810	8780	3460	2170	2650	2690	3150	2430	554	686	812
15	1340	2820	6430	12200	2100	2260	2660	3330	3090	777	671	810
16	1680	3420	8050	12200	2230	2360	2820	3300	3080	777	678	811
17	1640	3100	7490	12500	3050	2570	3350	4900	2540	788	647	813
18	1620	2920	7050	13400	4240	2810	3950	10600	2140	781	643	828
19	1610	2940	6670	12200	5820	2550	3260	8530	2120	771	638	832
20	1600	3570	6470	12500	4980	2530	3980	6480	1860	773	633	827
21	1630	10500	6110	13900	3960	2900	3840	5880	1880	773	631	823
22	1600	12400	5770	13600	3510	3320	3430	4060	1480	779	630	1210
23	1600	12000	5750	10800	6530	3960	3080	4140	1350	773	626	1340
24	1970	12400	4650	12000	7270	3830	3090	1780	1260	772	644	1310
25	2310	12200	5460	11600	7060	3810	3230	1370	1670	772	629	1290
26	2350	12800	8590	9450	6390	3820	3340	3900	1940	766	629	1290
27	2390	12800	8840	6330	8530	3460	3340	4640	1700	764	629	1290
28	2470	13900	16700	4620	12000	3380	3350	4530	1620	763	628	1290
29	2490	12900	17600	4450	---	3890	2880	3650	1370	763	631	1300
30	2350	13800	16800	3320	---	4590	2690	3480	1300	759	645	1310
31	2390	---	16900	2620	---	3830	---	3250	---	762	655	---
TOTAL	49660	183430	309790	309320	130930	146610	85180	135910	69550	25966	20067	27583
MEAN	1602	6114	9993	9978	4676	4729	2839	4384	2318	838	647	919
MAX	2490	13900	17600	16500	12000	15000	3980	10600	4290	1260	698	1340
MIN	1150	2410	4650	2620	1530	1980	1930	1370	1260	554	626	626
AC-FT	98500	363800	614500	613500	259700	290800	169000	269600	138000	51500	39800	54710

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1999, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
MEAN	2176	4874	6569	5810	3878	3358	2984	2417	1622	800	791	1387
MAX	5530	9509	12910	9978	10430	9649	6529	4384	4300	1526	1239	2769
(WY)	1969	1985	1978	1999	1996	1972	1993	1999	1984	1983	1969	1968
MIN	852	827	1126	713	597	865	1059	792	616	514	568	849
(WY)	1988	1988	1977	1977	1977	1992	1968	1987	1992	1972	1974	1979

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1968 - 1999

	1998	1999	1968-1999
ANNUAL TOTAL	1193879	1493996	3053
ANNUAL MEAN	3271	4093	4666
HIGHEST ANNUAL MEAN			1407
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	17600	Dec 29	26000
LOWEST DAILY MEAN	666	Aug 18	428
ANNUAL SEVEN-DAY MINIMUM	669	Aug 25	452
ANNUAL RUNOFF (AC-FT)	2368000	2963000	2212000
10 PERCENT EXCEEDS	10000	12100	7070
50 PERCENT EXCEEDS	1730	2640	1860
90 PERCENT EXCEEDS	837	686	721

LOCATION.--Lat 44°30'54", long 122°51'49", in SW 1/4 NW 1/4 sec.19, T.12 S., R.1 W., Linn County, Hydrologic Unit 17090006, near right bank, on downstream side of bridge on Headgate Road, 2.2 mi east of Lebanon.

GAGE.--Water-stage recorder. Elevation of gage is 370 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 191 ft³/s Mar. 8, 1994; minimum daily discharge, 25 ft³/s Jan. 18, 1994.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	83	45	52	34	59	68	77	83	79	98	118
2	105	84	47	50	39	58	74	82	86	77	101	117
3	105	73	45	49	48	61	81	71	88	77	112	115
4	106	51	43	57	46	62	78	78	85	74	113	115
5	105	53	44	63	45	56	79	79	84	73	113	115
6	103	54	43	58	51	48	78	79	90	70	116	108
7	103	53	43	78	64	41	73	80	89	73	122	100
8	104	53	44	78	59	43	72	74	90	75	125	109
9	100	63	39	78	59	53	74	69	82	70	120	111
10	92	74	41	72	56	55	76	67	84	70	99	111
11	92	73	49	55	48	54	76	68	77	69	96	111
12	92	74	56	50	50	53	71	71	81	69	115	111
13	93	74	54	60	51	55	66	70	84	69	118	110
14	94	74	52	52	51	59	73	68	96	68	122	110
15	96	75	47	66	50	56	59	69	108	116	121	110
16	96	76	52	59	52	56	60	68	104	107	121	111
17	89	70	52	59	57	48	64	77	97	107	117	111
18	90	70	51	61	61	53	67	96	91	107	116	111
19	74	65	50	54	60	57	63	89	91	106	115	111
20	77	60	49	48	57	57	67	82	86	106	115	111
21	90	63	48	50	53	59	66	80	86	106	115	111
22	90	62	52	50	52	61	64	72	84	106	114	112
23	90	62	57	46	53	62	62	73	88	105	114	112
24	92	62	53	46	48	70	62	56	86	105	116	112
25	83	57	55	57	56	78	62	63	96	106	114	114
26	70	47	56	63	52	78	68	79	94	105	114	115
27	46	51	56	52	53	76	76	75	88	105	114	100
28	68	59	38	45	59	76	81	79	87	105	114	95
29	85	58	44	44	---	77	77	79	80	105	115	114
30	82	53	53	41	---	77	76	78	78	105	117	114
31	83	---	52	38	---	73	---	76	---	105	120	---
TOTAL	2800	1926	1510	1731	1464	1871	2113	2324	2643	2820	3542	3325
MEAN	90.3	64.2	48.7	55.8	52.3	60.4	70.4	75.0	88.1	91.0	114	111
MAX	106	84	57	78	64	78	81	96	108	116	125	118
MIN	46	47	38	38	34	41	59	56	77	68	96	95
AC-FT	5550	3820	3000	3430	2900	3710	4190	4610	5240	5590	7030	6600
CAL YR 1998	TOTAL 30639			MEAN 83.9	MAX 131	MIN 38	AC-FT 60770					
WTR YR 1999	TOTAL 28069			MEAN 76.9	MAX 125	MIN 34	AC-FT 55670					

WILLAMETTE RIVER BASIN

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14188610 SCHAFER CREEK NEAR LACOMB, OR

LOCATION.--Lat 44°37'11", long 122°27'53", in NE 1/4 SE 1/4 sec.8, T.11 S., R.3 E., Linn County, Hydrologic Unit 17090006, on right bank, 40 ft upstream from Crabtree Creek, and 8.0 mi east of LaComb.

DRAINAGE AREA.--1.03 mi².

PERIOD OF RECORD.--July 1993 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,900 ft above sea level, from topographic map.

REMARKS.--Records fair except those below 2.0 ft³/s and estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 8.24 ft³/s, 108.64 in/yr, 5,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 400 ft³/s Feb. 7, 1996, gage height, 7.93 ft, from rating curve extended above 110 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 0.01 ft³/s Sept. 30, 1999.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	unknown	*120	a*6.16	No other peak greater than base discharge.			
Minimum discharge, 0.01 ft ³ /s Sept. 30.							
a From crest-stage gage.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	3.5	20	e13	3.3	24	3.8	16	17	3.2	.22	.21
2	.58	3.8	56	e8.5	6.0	13	3.7	21	11	2.7	.19	.17
3	.90	3.7	23	e6.2	8.2	10	3.5	23	7.9	2.4	.20	.15
4	2.1	6.7	10	e5.0	6.7	7.9	3.2	16	7.5	2.2	.22	.13
5	1.5	17	6.3	e4.1	5.1	6.2	3.1	12	10	2.1	.23	.12
6	e1.1	12	4.5	e4.0	16	5.1	3.0	15	10	2.2	.19	.10
7	e.90	9.1	3.8	4.1	18	4.4	2.9	17	8.1	2.1	.37	.09
8	1.1	6.7	3.1	3.9	9.5	3.9	2.9	12	7.9	1.8	.48	.10
9	6.9	5.0	2.6	3.4	6.3	3.5	2.8	9.1	7.0	1.8	.47	.09
10	8.1	5.6	3.4	3.1	4.6	3.2	2.8	7.5	6.7	1.7	.43	.08
11	4.2	6.3	36	3.8	3.8	2.9	3.0	8.2	8.3	1.6	.24	.08
12	2.8	5.3	37	7.1	3.5	4.8	3.7	15	11	1.4	.23	.08
13	6.9	4.8	30	8.0	3.5	9.7	5.0	14	13	1.2	.22	.07
14	7.7	4.4	16	25	3.5	11	6.1	12	13	1.0	.22	.07
15	6.9	10	9.1	44	3.4	9.4	7.8	11	11	.91	.20	.06
16	5.6	13	6.7	26	5.3	7.6	14	10	8.9	.77	.21	.05
17	4.1	7.9	7.0	30	8.4	6.3	22	29	7.8	.71	.21	.05
18	3.1	8.1	6.0	41	10	6.0	23	33	6.7	.68	.18	.06
19	2.5	8.7	4.7	27	11	7.7	19	21	5.7	.62	.13	.05
20	2.1	30	3.6	23	7.7	14	22	15	4.9	.53	.11	.04
21	1.7	56	2.9	22	5.8	15	15	12	5.0	.49	.10	.04
22	1.5	30	2.5	14	8.0	13	10	14	4.7	.48	.11	.04
23	1.3	26	e2.3	9.1	28	12	8.9	23	4.8	.43	.11	.03
24	1.3	27	e2.0	6.1	33	11	14	30	7.4	.39	.08	.03
25	1.6	38	e2.5	4.7	23	10	19	24	8.4	.43	.07	.04
26	1.5	42	e3.5	3.9	13	9.3	15	16	5.3	.41	.08	.03
27	1.7	20	e25	3.4	30	7.7	11	17	4.0	.36	.08	.03
28	4.0	10	e70	3.5	53	6.2	8.5	17	3.4	.31	.11	.02
29	3.6	7.4	e45	4.3	---	5.5	7.0	14	3.5	.28	.09	.02
30	2.7	11	e20	4.0	---	4.7	7.5	12	3.6	.27	.19	.02
31	2.5	---	e17	3.7	---	4.1	---	12	---	.26	.30	---
TOTAL	92.78	439.0	481.5	368.9	337.6	259.1	273.2	507.8	233.5	35.73	6.27	2.15
MEAN	2.99	14.6	15.5	11.9	12.1	8.36	9.11	16.4	7.78	1.15	.20	.072
MAX	8.1	56	70	44	53	24	23	33	17	3.2	.48	.21
MIN	.30	3.5	2.0	3.1	3.3	2.9	2.8	7.5	3.4	.26	.07	.02
AC-FT	184	871	955	732	670	514	542	1010	463	71	12	4.3
CFSM	2.91	14.2	15.1	11.6	11.7	8.11	8.84	15.9	7.56	1.12	.20	.07
IN.	3.35	15.86	17.39	13.32	12.19	9.36	9.87	18.34	8.43	1.29	.23	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

MEAN	6.01	12.9	15.9	14.8	13.7	10.5	10.5	8.33	4.34	1.02	.25	.99
MAX	9.18	28.8	24.2	20.5	23.7	14.7	14.7	16.4	7.78	1.89	.41	2.38
(WY)	1997	1996	1997	1995	1996	1997	1996	1999	1999	1997	1997	1997
MIN	.33	.97	4.44	10.7	7.00	7.25	5.95	3.84	1.41	.49	.16	.072
(WY)	1994	1994	1998	1996	1997	1996	1996	1994	1996	1994	1994	1999

14189000 SANTIAM RIVER AT JEFFERSON, OR

LOCATION.--Lat 44°42'55", long 123°00'40", in SE 1/4 sec.11, T.10 S., R.3 W., Marion County, Hydrologic Unit 17090005, on right bank 350 ft upstream from Southern Pacific railroad bridge at Jefferson, 2.1 mi downstream from confluence of North and South Santiam Rivers, and at mile 9.62.

DRAINAGE AREA.--1,790 mi², approximately.

PERIOD OF RECORD.--October 1905 to June 1906 (gage heights and discharge measurements only), October 1907 to September 1916, October 1939 to current year. Gage-height records collected at same site since 1907 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 904: Drainage area. WSP 1094: 1908, 1910, 1912, 1943. WSP 1248: 1911, 1915-16(M). WSP 1935: 1909, WDR OR-93-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 199.63 ft above sea level. Prior to Sept. 22, 1940, nonrecording gages at sites within 350 ft downstream at datum 3.00 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Discharge for period July 20 to Sept. 28 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1953 by Detroit Lake (station 14180500), since 1966 by Green Peter Lake (station 14186100) and by Foster Lake (station 14186600). Salem Canal diverts from North Santiam River at Stayton for irrigation and power; most of this water reaches Willamette River by way of Mill Creek at Salem. Stayton Canal diverts from North Santiam River at Stayton for irrigation of lands near town of West Stayton; some return flow reaches North Santiam River upstream from station. Albany power canal diverts from South Santiam River at Lebanon; return flow reaches Willamette River at Albany. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location. Periodic suspended sediment data are available for the period October 1991 to September 1993.

AVERAGE DISCHARGE.--69 years (water years 1908-16, 1940-99), 7,795 ft³/s, 5,647,000 acre-ft/yr (unadjusted). 33 years (water years 1967-99), 7,799 ft³/s, 5,650,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 197,000 ft³/s Dec. 22, 1964, gage height, 24.22 ft; minimum discharge observed, 260 ft³/s Aug. 15-22, Aug. 24 to Sept. 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood stage of 25.0 ft was reached in December 1861, and 23.4 ft in February 1890 (information from Corps of Engineers). On Nov. 21, 1921, the stage reached 19.5 ft at gage on railroad bridge 350 ft downstream, corresponding gage height at present site and datum, 24.4 ft, from curve of relation, discharge, 202,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 76,800 ft³/s Dec. 28, gage height, 18.59 ft; minimum discharge, 1,410 ft³/s Aug. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3450	5070	e27000	32400	7860	29300	7520	6110	9800	3480	1670	1770
2	3540	5100	e31000	30800	7980	26000	6320	7770	9660	3520	1590	1680
3	3860	5100	29300	28500	10100	28200	6460	10400	8390	3770	1540	1670
4	4700	5240	26900	27300	8900	28300	6540	12100	7250	3570	1520	1620
5	4420	6810	27500	25300	8260	23200	6150	11500	6650	3300	1520	1610
6	3930	8090	27000	20800	10700	16000	5950	11100	7180	3000	1570	1620
7	3730	7260	26000	22300	20500	10600	5860	11700	7020	2960	1660	1810
8	3710	e7000	27900	22700	16400	7530	6310	10500	7600	2980	1790	2480
9	3920	e6800	22900	22000	13500	6860	6160	9090	6950	2920	1770	2640
10	4850	6510	15500	19500	10600	6160	5850	7840	6760	2810	1730	2550
11	4380	6650	17900	11700	7720	6070	5670	7180	5670	2730	1720	2950
12	4080	6530	26200	9090	6870	6450	5590	8160	6090	2700	1680	2950
13	4140	6480	22300	10400	6490	7110	5920	8300	6610	2850	1690	2950
14	5130	6390	19500	9030	6310	7580	5990	7910	6550	2830	1780	2920
15	5330	6580	17800	25700	5920	6860	5850	7940	7480	2870	1780	2920
16	5460	8200	17400	26100	6370	6440	6220	7730	8090	2870	1710	3000
17	5280	7710	15900	25900	8810	6250	6980	9610	8190	2770	1650	2980
18	5110	7250	13800	33000	11300	6200	8090	18600	7240	2460	1510	2960
19	4970	7530	12500	27900	13700	5980	7320	19000	6570	2160	1480	2940
20	4850	9290	11800	27800	11300	6060	8660	15900	6320	2100	1510	2930
21	4760	29200	11000	32500	9590	6490	8590	14300	6270	2080	1610	2960
22	4540	27700	10600	32800	8620	6560	8330	12300	5530	2080	1610	3080
23	4450	25100	11200	30400	15800	7730	7550	12000	4550	2040	1600	3390
24	4680	27800	11400	24800	18800	7940	7930	11400	4230	1980	1580	3370
25	5110	27600	12400	22400	17200	8330	8400	10500	5000	1900	1540	3350
26	5230	33000	18600	21100	16100	8300	8420	11300	6120	1860	1600	3420
27	5150	30400	19200	17500	20700	8160	8560	11200	5760	1780	1660	3340
28	5320	28200	60000	14700	33800	7670	8690	11100	5390	1770	1560	e3400
29	5460	25800	56600	13500	---	9080	7270	10200	4410	1780	1570	e3400
30	5090	27900	33800	12200	---	10500	6640	9780	3840	1740	1650	3380
31	4970	---	32200	9890	---	9170	---	8780	---	1720	e1660	---
TOTAL	143600	418290	713100	690010	340200	337080	209790	331300	197170	79440	50510	82040
MEAN	4632	13940	23000	22260	12150	10870	6993	10690	6572	2563	1629	2735
MAX	5460	33000	60000	33000	33800	29300	8690	19000	9800	3770	1790	3420
MIN	3450	5070	10600	9030	5920	5980	5590	6110	3840	1720	1480	1610
AC-FT	284800	829700	1414000	1369000	674800	668600	416100	657100	391100	157600	100200	162700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1999, BY WATER YEAR (WY)

	MEAN	5176	12010	16110	14940	11150	8984	7606	6688	4416	1919	1637	3120
MAX	11890	26850	31700	24520	32350	25700	16150	11270	11150	4825	2883	5325	
(WY)	1969	1974	1978	1974	1996	1972	1993	1984	1984	1983	1968	1968	
MIN	2490	2882	2420	2178	1897	3245	3874	2115	1287	958	1004	1553	
(WY)	1988	1988	1977	1977	1977	1992	1968	1973	1992	1992	1994	1967	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1967 - 1999
ANNUAL TOTAL	2966920	3592530	
ANNUAL MEAN	8129	9843	7799
HIGHEST ANNUAL MEAN			12310
LOWEST ANNUAL MEAN			3512
HIGHEST DAILY MEAN	60000	Dec 28	115000
LOWEST DAILY MEAN	1150	Aug 27	764
ANNUAL SEVEN-DAY MINIMUM	1170	Aug 25	794
ANNUAL RUNOFF (AC-FT)	5885000	7126000	5650000
10 PERCENT EXCEEDS	23100	26000	17500
50 PERCENT EXCEEDS	5110	6800	5050
90 PERCENT EXCEEDS	1460	1770	1570

e Estimated

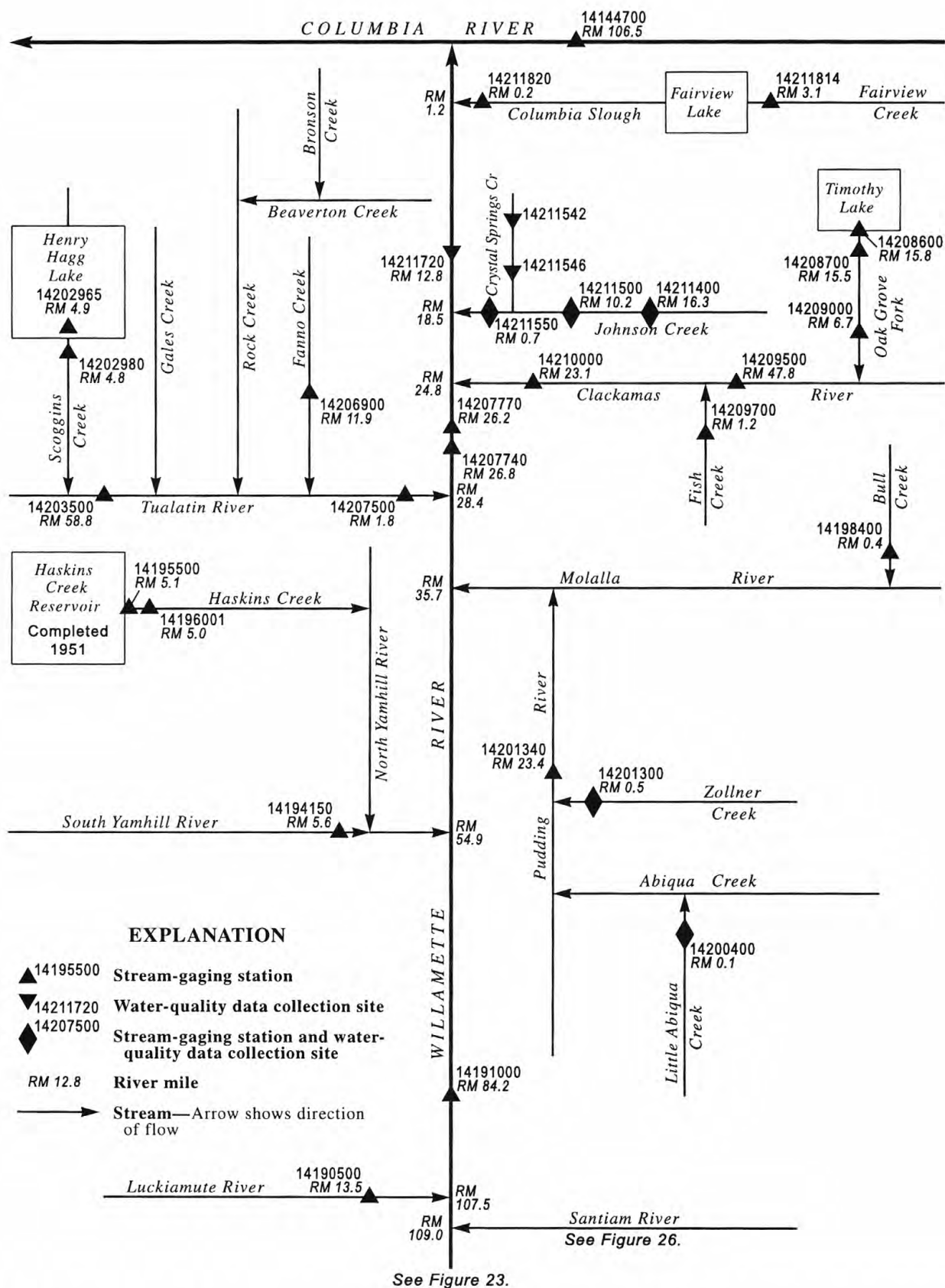


Figure 27. Schematic diagram showing gaging stations in the Willamette River Basin, from the Luckiamute River downstream to the mouth.

WILLAMETTE RIVER BASIN

14190500 LUCKIAMUTE RIVER NEAR SUVER, OR

LOCATION.--Lat 44°47'00", long 123°14'00", in SW 1/4 SW 1/4 sec.18, T.9 S., R.4 W., Polk County, Hydrologic Unit 17090003, on right bank 10 ft upstream from highway bridge at Helmick State Park, 3.0 mi northwest of Suver, 4.7 mi downstream from Little Luckiamute River, and at mile 13.5.

DRAINAGE AREA. --240 mi².

PERIOD OF RECORD.--August 1905 to October 1911, July 1940 to current year.

REVISED RECORDS.--WSP 1044: Drainage area. WSP 1094: 1945-46. WSP 1248: 1905-11.

GAGE.--Water-stage recorder. Datum of gage is 171.92 ft above sea level. Aug. 18, 1905, to Oct. 31, 1911, nonrecording gage at present site at different datum, Aug. 20 to Oct. 15, 1940, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Some diurnal fluctuation during periods of low flow caused by millpond upstream from station. A few small diversions for irrigation upstream from station. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--65 years (water years 1906-11, 1941-99), 898 ft³/s, 50.87 in/yr, 650,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,900 ft³/s Dec. 22, 1964, gage height, 34.52 ft; minimum discharge, 0.65 ft³/s Aug. 13, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	1700	10,500	28.83	Jan. 21	2130	7,300	27.07
Dec. 2	2330	9,170	28.27	Feb. 25	0300	8,040	27.60
Dec. 28	1830	*26,700	*33.41	Feb. 28	1130	9,550	28.44
Jan. 18	1830	7,230	27.02				

Minimum discharge, 13 ft³/s Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	85	4140	4580	2580	6660	1930	361	281	111	50	47
2	39	95	6490	3120	2790	4690	1600	432	271	110	52	47
3	95	111	7810	2350	3740	3710	1410	727	263	113	42	39
4	124	142	4890	1920	3340	3520	1270	846	250	117	42	34
5	140	347	3040	1630	3190	3000	1160	765	244	116	41	33
6	88	440	2760	1420	3690	2440	1040	655	241	107	42	39
7	70	444	2420	1270	5890	2050	946	650	241	101	50	28
8	62	383	3060	1120	5660	1780	895	709	246	106	69	29
9	65	310	2720	1010	4300	1600	832	645	232	100	70	25
10	123	272	2160	926	3100	1430	885	593	220	91	54	23
11	123	334	2320	864	2450	1280	909	556	210	88	46	24
12	105	287	3450	894	2030	1210	824	550	198	86	46	27
13	129	252	3350	796	1820	1460	781	503	193	74	45	28
14	234	228	2700	817	1670	1510	736	486	184	74	46	19
15	192	249	2090	1710	1490	1400	698	491	173	73	51	17
16	179	504	1730	2210	1460	1270	669	457	169	73	52	20
17	145	428	1470	2940	1870	1160	651	471	164	76	42	20
18	123	373	1280	6310	2560	1090	631	695	161	81	39	24
19	110	360	1130	6270	4400	1010	607	678	157	79	39	25
20	99	714	995	5410	3910	926	583	598	157	67	40	25
21	90	3350	875	6480	2930	867	553	542	167	64	40	18
22	85	3410	804	6720	3230	823	519	495	162	67	40	17
23	80	2590	739	5920	5420	797	489	456	149	64	39	20
24	78	2640	706	4380	7150	843	471	424	139	60	32	18
25	77	3610	1470	3050	7560	868	458	399	139	66	29	20
26	80	9020	3200	2320	5940	805	444	376	145	64	28	28
27	78	7450	2980	1880	5110	864	429	354	138	54	28	34
28	76	4200	18500	2610	8590	899	417	336	133	50	29	27
29	85	2850	19300	4290	---	1840	394	319	121	47	34	25
30	82	3440	10000	3960	---	2430	374	303	115	47	38	24
31	78	---	6570	3370	---	2370	---	291	---	47	41	---
TOTAL	3166	48918	125149	92547	107870	56602	23605	16163	5663	2473	1336	798
MEAN	102	1631	4037	2985	3852	1826	787	521	189	79.8	43.1	26.6
MAX	234	9020	19300	6720	8590	6660	1930	846	281	117	70	47
MIN	32	85	706	796	1460	797	374	291	115	47	28	17
AC-FT	6280	97030	248200	183600	214000	112300	46820	32060	11230	4910	2650	1580
CFSM	.43	6.79	16.8	12.4	16.1	7.61	3.28	2.17	.79	.33	.18	.11
IN.	.49	7.58	19.40	14.34	16.72	8.77	3.66	2.51	.88	.38	.21	.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1999, BY WATER YEAR (WY)

MEAN	184	1090	2108	2267	2087	1439	862	425	203	80.9	42.9	53.7
MAX	1241	4574	5112	4727	4769	3002	1847	1026	512	184	85.0	190
(WY)	1948	1910	1965	1956	1949	1961	1955	1963	1984	1906	1906	1959
MIN	20.2	49.4	106	151	253	391	312	190	74.3	30.0	9.45	17.0
(WY)	1953	1994	1977	1977	1977	1941	1977	1966	1992	1967	1967	1967

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1906 - 1999

ANNUAL TOTAL	414500		484290			
ANNUAL MEAN	1136		1327		898	
HIGHEST ANNUAL MEAN					1464	1974
LOWEST ANNUAL MEAN					230	1977
HIGHEST DAILY MEAN	19300	Dec 29	19300	Dec 29	25200	Dec 23 1964
LOWEST DAILY MEAN	17	Sep 9	17	Sep 15	2.6	Aug 20 1967
ANNUAL SEVEN-DAY MINIMUM	20	Sep 5	20	Sep 19	4.3	Aug 17 1967
ANNUAL RUNOFF (AC-FT)	822200		960600		650900	
ANNUAL RUNOFF (CFSM)	4.73		5.53		3.74	
ANNUAL RUNOFF (INCHES)	64.25		75.06		50.87	
10 PERCENT EXCEEDS	3050		3700		2380	
50 PERCENT EXCEEDS	360		432		353	
90 PERCENT EXCEEDS	38		39		36	

14191000 WILLAMETTE RIVER AT SALEM, OR

LOCATION.--Lat 44°56'40", long 123°02'30", in SE 1/4 SW 1/4 sec. 22, T.7 S., R.3 W., Marion County, Hydrologic Unit 17090007, on right bank 300 ft upstream from Center Street Bridge in Salem and at mile 84.16.

DRAINAGE AREA.--7,280 mi², approximately.

PERIOD OF RECORD.--October 1909 to December 1916, January 1923 to current year. Monthly discharge only January 1923 to September 1927, published in WSP 1318. Gage-height records collected at about the same site since 1892 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1318: 1915(M).

GAGE.--Water-stage recorder. Datum of gage is 106.14 ft above sea level. Oct. 1, 1909, to Dec. 31, 1916, nonrecording gage at site 0.5 mi upstream at datum 8.00 ft higher. Jan. 1, 1923, to Nov. 26, 1934, nonrecording gage at Center Street Bridge at datum 8.00 ft higher. Nov. 27, 1934, to Sept. 30, 1962, water-stage recorder at present site at datum 8.00 ft higher.

REMARKS.--Records good. Flow regulated by 12 reservoirs upstream from station (see elsewhere in this report). Many small diversions for irrigation upstream from station; part of flow of Salem Canal, which diverts water from North Santiam River, returns to Willamette River downstream from station, through Mill Creek at Salem.

AVERAGE DISCHARGE.--83 years (water years 1910-16, 1924-99), 23,570 ft³/s, 43.97 in/yr, 17,080,000 acre-ft/yr.
31 years (water years 1969-99) 24,090 ft³/s, 44.96 in/yr, 17,450,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 348,000 ft³/s Jan. 8, 1923, gage height, 38.3 ft, present datum; minimum discharge, 2,470 ft³/s Aug. 27, 1940, gage height, 3.55 ft, present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 500,000 ft³/s Dec. 4, 1861, gage height, about 47 ft present datum, from rating curve extended above 250,000 ft³/s in 1916. Floods of Jan. 16, 1881, and Feb. 5, 1890, reached stages of 44.3 ft, discharge, 428,000 ft³/s, and 45.1 ft, discharge, 448,000 ft³/s, respectively, from floodmarks and information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 162,000 ft³/s Dec. 30, gage height, 28.75 ft; minimum discharge, 7,110 ft³/s Aug. 29, gage height, 5.81 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10300	12800	91000	113000	41200	98000	33300	16300	24500	12300	8050	7480
2	10400	12900	96800	104000	36900	95900	29500	17000	25000	12000	7980	7570
3	10600	13000	105000	e91400	40600	88200	26000	19900	24300	12200	7840	7450
4	11300	12900	102000	83300	39400	86100	24500	25300	22700	12100	7990	7400
5	11800	13800	94800	75800	39100	82300	22900	29200	20600	11800	7980	7340
6	11100	16400	89900	65400	41200	68100	22100	29600	19600	11200	8090	7330
7	10700	17900	86200	55500	63600	50900	21000	29800	19000	10900	8330	7250
8	10800	18500	83700	53300	77400	38700	20600	29400	19000	10800	8780	7920
9	11100	18600	80900	50100	74300	32800	20700	26500	18700	10700	8970	9070
10	11800	18200	69800	45300	58400	28700	20400	23700	17800	10500	8670	8950
11	12200	17300	61400	35400	44100	25600	20800	21300	16900	10300	8430	9530
12	11700	17100	72500	29700	35700	23700	20000	21400	16500	10200	8320	9580
13	11600	16400	78600	28100	31600	23900	19600	21800	17000	10100	8170	9580
14	12200	15900	75000	e26100	29700	25200	19900	21600	17400	10000	8300	9530
15	13000	15300	68500	e42300	27800	26100	19900	22500	18600	9740	8410	9580
16	13200	16200	59400	65700	27100	24000	20300	23000	20100	9820	8380	9710
17	13300	17900	50300	74800	31200	23100	20600	23500	21100	9690	8270	9840
18	13300	17400	41800	90900	41300	22200	22500	32300	20200	9460	8090	9730
19	13000	18100	36300	102000	58100	21400	22400	42000	19300	9100	8010	9780
20	12700	20000	32500	102000	62900	20600	22200	42900	18500	8840	7970	9700
21	12600	39900	29900	105000	53000	20600	22500	38700	17700	8680	7990	9740
22	12400	63800	27800	114000	45600	20700	21700	34300	17100	8680	7970	9760
23	12200	71800	26100	122000	53100	21200	20400	31600	15400	8620	7960	10100
24	12200	74200	25600	112000	70100	22500	19700	31100	14600	8560	7870	10200
25	12600	82400	25500	94700	73400	23100	19600	29800	14500	8430	7740	10100
26	12700	94100	35900	82400	67800	23100	20000	31400	15800	8420	7580	10200
27	12700	99700	43700	73800	66600	23200	20000	32600	16400	8280	7550	10300
28	12700	95900	82100	67800	86100	23200	20300	30000	15700	8190	7450	10000
29	13100	87700	139000	67700	---	26400	19000	28100	14700	8110	7190	10100
30	12900	84400	156000	61100	---	33400	17500	27400	13400	8110	7170	10100
31	12600	---	133000	51000	---	34500	---	26000	---	8050	7220	---
TOTAL	374800	1120500	2201000	2285600	1417300	1177400	649900	860000	552100	303880	248720	274920
MEAN	12090	37350	71000	73730	50620	37980	21660	27740	18400	9803	8023	9164
MAX	13300	99700	156000	122000	86100	98000	33300	42900	25000	12300	8970	10300
MIN	10300	12800	25500	26100	27100	20600	17500	16300	13400	8050	7170	7250
AC-FT	743400	2223000	4366000	4533000	2811000	2335000	1289000	1706000	1095000	602700	493300	545300
CFSM	1.66	5.13	9.75	10.1	6.95	5.22	2.98	3.81	2.53	1.35	1.10	1.26
IN.	1.92	5.73	11.25	11.68	7.24	6.02	3.32	4.39	2.82	1.55	1.27	1.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	14080	30830	49350	47860	36420	29520	23330	19310	13760	7673	7358	10110
MEAN	14080	30830	49350	47860	36420	29520	23330	19310	13760	7673	7358	10110
MAX	24390	70400	106000	79800	90630	73670	46440	31280	30910	12410	9540	13340
(WY)	1969	1974	1997	1997	1996	1972	1993	1993	1984	1983	1971	1978
MIN	7935	8444	6780	6377	5313	11270	10260	7701	5657	5737	5734	6155
(WY)	1988	1988	1977	1977	1977	1992	1977	1973	1992	1992	1992	1992

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1969 - 1999
ANNUAL TOTAL	9559830	11466120	
ANNUAL MEAN	26190	31410	24090
HIGHEST ANNUAL MEAN			37960
LOWEST ANNUAL MEAN			9792
HIGHEST DAILY MEAN	156000	Dec 30	226000
LOWEST DAILY MEAN	6960	Sep 1	4140
ANNUAL SEVEN-DAY MINIMUM	7060	Aug 26	4340
ANNUAL RUNOFF (AC-FT)	18960000	22740000	17450000
ANNUAL RUNOFF (CFSM)	3.60	4.32	3.31
ANNUAL RUNOFF (INCHES)	48.85	58.59	44.96
10 PERCENT EXCEEDS	73000	82200	55800
50 PERCENT EXCEEDS	15600	20400	15300
90 PERCENT EXCEEDS	7460	8310	6900

e Estimated

14194150 SOUTH YAMHILL RIVER AT MCMINNVILLE, OR

LOCATION.--Lat 45°12'21", long 123°10'53", in SE 1/4 sec. 21, T.4 S., R.4 W., Yamhill County, Hydrologic Unit 17090008, on left bank 0.3 mi downstream from Cozine Creek, at Highway 18 McMinnville Spur bridge, in McMinnville, and at mile 5.6.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--October 1994 to current year.

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

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

AVERAGE DISCHARGE.--5 years (water years 1995-99), 2,412 ft³/s, 62.08 in/yr, 1,748,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,100 ft³/s Feb. 9, 1996, gage height, 59.33; minimum discharge, 12 ft³/s Oct. 12, 1994, but may have been lower during period of missing record Oct. 5-12, 1994.

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. 27	0400	21,300	51.52	Feb. 8	0845	15,300	46.31
Dec. 3	1615	15,200	46.16	Feb. 25	1400	23,600	52.86
Dec. 29	1245	*28,000	*55.01	Feb. 28	2345	20,000	50.53
Jan. 22	0330	15,400	46.39				

Minimum discharge, 17 ft³/s Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	110	7380	10800	6640	17600	3960	579	394	144	50	38
2	50	115	10100	6970	5630	12400	3220	591	387	143	50	45
3	63	130	14400	4720	7170	9250	2720	927	371	143	44	51
4	116	156	12800	3650	6570	7750	2490	1380	348	147	41	43
5	e185	253	8810	2940	6110	6670	2240	1330	329	147	38	37
6	e130	545	6350	2480	7170	5370	2050	1120	328	145	38	35
7	e90	560	5480	2140	11900	4230	1850	1040	343	128	46	32
8	e85	510	6180	1870	14900	3430	1720	1180	343	122	56	29
9	e90	451	6400	1660	12400	3030	1610	1110	342	120	76	26
10	126	406	5150	1510	9000	2710	1580	1010	309	113	73	25
11	220	475	4430	1410	6050	2420	1800	935	290	99	60	25
12	179	512	6800	1460	4400	2240	1740	913	269	91	47	28
13	152	412	8100	1380	3610	2540	1610	855	248	84	45	27
14	321	355	8030	1360	3250	3030	1480	815	236	78	47	25
15	371	331	6240	2430	2880	2980	1370	807	220	77	51	21
16	331	611	4370	3280	2940	2650	1290	758	212	81	55	21
17	279	709	3290	4810	4120	2330	1240	735	207	79	48	20
18	220	554	2660	9120	5720	2110	1200	963	198	81	41	19
19	189	525	e2200	12400	8600	1940	1140	1100	197	82	38	20
20	161	867	e1900	13400	9800	1760	1070	995	200	76	37	25
21	138	4950	e1600	14500	7940	1630	1010	890	202	71	40	23
22	123	6370	e1450	15100	6680	1530	932	798	226	63	43	22
23	116	5490	e1300	13600	9310	1450	860	722	198	61	43	22
24	110	5280	1200	11100	12200	1420	805	655	183	62	35	21
25	107	7230	1440	7720	21400	1620	772	607	174	60	28	20
26	103	14800	3800	5150	18000	1540	744	567	207	60	25	22
27	116	19600	4640	3830	13100	1760	722	528	215	58	25	25
28	110	13000	11200	4450	16300	1850	709	494	183	53	24	28
29	109	8380	26300	7980	---	3060	662	462	165	48	28	30
30	135	6910	22400	9130	---	4810	616	440	155	45	31	30
31	121	---	15500	8680	---	4680	---	415	---	46	31	---
TOTAL	4692	100597	221900	191030	243790	121790	45212	25721	7679	2807	1334	835
MEAN	151	3353	7158	6162	8707	3929	1507	830	256	90.5	43.0	27.8
MAX	371	19600	26300	15100	21400	17600	3960	1380	394	147	76	51
MIN	46	110	1200	1360	2880	1420	616	415	155	45	24	19
AC-FT	9310	199500	440100	378900	483600	241600	89680	51020	15230	5570	2650	1660
CFSM	.29	6.35	13.6	11.7	16.5	7.44	2.85	1.57	.48	.17	.08	.05
IN.	.33	7.09	15.63	13.46	17.18	8.58	3.19	1.81	.54	.20	.09	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999
MEAN	574	3204	6527	5857	6097
MAX	1491	3683	9904	6162	9541
(WY)	1998	1997	1997	1999	1996
MIN	151	2814	2901	5099	3378
(WY)	1999	1995	1998	1995	1997

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1995 - 1999

ANNUAL TOTAL	786390	967387	2412
ANNUAL MEAN	2154	2650	2796
HIGHEST ANNUAL MEAN			1902
LOWEST ANNUAL MEAN			1996
HIGHEST DAILY MEAN	26300	26300	40300
LOWEST DAILY MEAN	23	19	12
ANNUAL SEVEN-DAY MINIMUM	26	21	16
ANNUAL RUNOFF (AC-FT)	1560000	1919000	1748000
ANNUAL RUNOFF (CFSM)	4.08	5.02	4.57
ANNUAL RUNOFF (INCHES)	55.40	68.16	62.08
10 PERCENT EXCEEDS	6260	8470	6810
50 PERCENT EXCEEDS	606	662	1020
90 PERCENT EXCEEDS	40	38	40

e Estimated

14195500 HASKINS CREEK RESERVOIR NEAR MCMINNVILLE, OR

LOCATION.--Lat 45°18'43", long 123°21'23", in SW 1/4 NW 1/4 sec.18, T.3 S., R.5 W., Yamhill County, Hydrologic Unit 17090008, on control tower 250 ft upstream from dam on Haskins Creek, 11 mi northwest of McMinnville, and at mile 5.1.

DRAINAGE AREA.--6.88 mi².

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

REVISED RECORDS.--WSP 1738: Drainage area. WDR OR-79-1: 1978 (maximum contents).

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by city of McMinnville). Prior to February 1981, at datum 20.0 ft lower.

REMARKS.--Reservoir is formed by earthfill dam equipped with five siphon spillways which act as overflow weirs until priming occurs, approximately 815.0 ft elevation. Capacity of reservoir (based on May 1992 resurvey, new capacity table put into use Oct. 1, 1991), 721 acre-ft between elevations 741.5 ft, invert of outlet tunnel, and 815.0 ft, crest of siphon spillways. Dead storage negligible. Rated capacity of three siphons is 700 ft³/s each and remaining two siphons 350 ft³/s each. Water is used for municipal supply of City of McMinnville.

COOPERATION.--Elevation and capacity table furnished by City of McMinnville Water and Light Department. Elevations based on once-daily staff gage readings.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 748 acre-ft Nov. 17, 1954, elevation, 815.65 ft, present datum; no contents at times during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 732 acre-ft Feb. 8, Apr. 7-9, 15, 16, 18, 25, 29, May 1, 5, 16, elevation, 815.4 ft; no contents, Mar. 20-22.

MONTHEND ELEVATIONS AND CONTENTS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	810.1	609	-
Oct. 31.....	805.2	513	-96
Nov. 30.....	815.0	721	+208
Dec. 31.....	815.0	721	0
CAL YR 1998.....	-	-	0
Jan. 31.....	815.0	721	0
Feb. 28.....	814.9	717	-4
Mar. 31.....	815.2	727	+10
Apr. 30.....	815.2	727	0
May 31.....	815.0	721	-6
June 30.....	813.5	683	-38
July 31.....	805.6	520	-163
Aug. 31.....	808.3	572	+52
Sept. 30.....	808.9	584	+12
WTR YR 1999.....	-	-	-25

WILLAMETTE RIVER BASIN

14196001 HASKINS CREEK BELOW RESERVOIR, NEAR MCMINNVILLE, OR

LOCATION.--Lat 45°18'39", long 123°21'06", in SE 1/4 NW 1/4 sec.18, T.3 S., R.5 W., Yamhill County, Hydrologic Unit 17090008, on right bank 800 ft downstream from Haskins Creek Reservoir, 11 mi northwest of McMinnville, and at mile 5.0.

DRAINAGE AREA.--6.90 mi².

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

REVISED RECORDS.--WSP 1738: Drainage area. Maximum discharge for water year 1957, published in WSP 1518, has been found to be unreliable and should not be used.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 707 ft above sea level, topographic survey of 1955. Prior to Aug. 5, 1952, water-stage recorder at site 600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. All records given herein include flow in pipeline which diverts 600 ft upstream from station for municipal supply of McMinnville. Flow regulated by Haskins Creek Reservoir (station 14195500). Water from McGuire Lake (station 14302800) on the Nestucca River is diverted through a tunnel to Haskins Creek Reservoir to augment summer flows.

COOPERATION.--Meter readings for diversion and elevations of Haskins Creek Reservoir furnished by city of McMinnville.

AVERAGE DISCHARGE.--48 years (water years 1952-99), 31.4 ft³/s, 61.80 in/yr, 22,750 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s Feb. 8, 1996, gage height, 6.01 ft, from floodmark, from rating curve extended above 140 ft³/s on basis of slope-area measurement of peak flow; maximum daily discharge, 615 ft³/s Feb. 8, 1996; minimum daily, 0.10 ft³/s Oct. 27, 28, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 436 ft³/s Feb. 24; minimum daily, 6.0 ft³/s Mar. 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	7.3	151	111	112	191	50	20	14	13	17	11
2	9.8	7.4	286	95	134	149	43	23	14	13	15	10
3	8.7	7.3	163	70	132	153	42	26	13	12	16	11
4	8.5	7.1	104	66	140	150	40	28	13	8.9	17	12
5	8.6	7.0	86	52	141	130	40	26	12	8.6	16	13
6	8.5	7.2	71	50	199	117	40	25	12	11	17	13
7	8.6	6.8	79	44	276	108	30	26	13	12	12	13
8	8.5	7.0	75	43	188	90	34	26	13	12	12	13
9	8.6	6.7	71	34	153	83	39	24	12	13	8.9	13
10	8.4	6.8	54	35	148	79	46	23	19	14	14	14
11	8.4	6.8	108	33	118	77	38	23	28	15	15	13
12	8.8	6.6	150	31	100	72	48	22	26	15	14	14
13	8.5	6.9	153	30	97	69	37	22	27	16	14	13
14	7.2	6.8	114	44	93	68	33	22	17	17	13	15
15	7.3	6.6	90	52	89	71	35	21	14	16	9.9	15
16	7.2	6.8	74	70	86	65	36	20	14	15	8.9	15
17	7.2	7.1	62	154	84	61	35	22	14	13	12	15
18	7.4	7.2	46	198	93	58	33	23	14	13	12	13
19	7.2	7.2	47	180	119	45	32	22	11	14	14	13
20	7.4	45	42	188	128	40	31	21	11	16	14	15
21	7.5	98	35	213	127	38	28	21	13	16	14	15
22	8.0	78	34	171	140	25	27	20	9.7	16	14	7.3
23	7.5	86	34	120	155	14	26	18	10	15	16	13
24	7.4	120	39	97	436	13	25	18	13	15	16	13
25	8.0	388	68	85	317	10	24	17	12	15	17	11
26	7.5	316	76	86	201	6.4	23	17	10	15	16	10
27	7.4	149	282	93	297	6.0	22	16	9.2	15	14	10
28	7.4	92	418	106	283	6.0	22	16	11	16	14	10
29	7.3	82	328	163	---	7.1	22	14	12	16	14	10
30	7.3	91	236	146	---	7.3	20	14	13	16	10	12
31	7.4	---	153	118	---	26	---	13	---	17	10	---
TOTAL	247.5	1677.6	3729	2978	4586	2034.8	1001	649	423.9	439.5	426.7	375.3
MEAN	7.98	55.9	120	96.1	164	65.6	33.4	20.9	14.1	14.2	13.8	12.5
MAX	10	388	418	213	436	191	50	28	28	17	17	15
MIN	7.2	6.6	34	30	84	6.0	20	13	9.2	8.6	8.9	7.3
AC-FT	491	3330	7400	5910	9100	4040	1990	1290	841	872	846	744
MEAN†	5.32	59.5	120	96.1	164	65.9	33.4	20.9	10.4	7.27	6.12	4.82
CFSM†	.771	8.62	17.4	13.9	23.7	9.55	4.85	3.03	1.50	1.05	.886	.699
IN.†	0.89	9.62	20.11	16.06	24.72	11.01	5.41	3.49	1.68	1.22	1.02	0.78
AC-FT†	327	3538	7400	5910	9096	4050	1990	1284	618	447	376	287

CAL YR 1998 TOTAL 15274.0 MEAN 41.8 MAX 418 MIN 6.6 AC-FT 30300 MEAN† 39.8 CFSM† 5.77 IN.† 78.35 AC-FT† 28827
WTR YR 1999 TOTAL 18568.3 MEAN 50.9 MAX 436 MIN 6.0 AC-FT 36830 MEAN† 48.8 CFSM† 7.07 IN.† 95.94 AC-FT† 35299

† Adjusted for change in contents in Haskins Creek Reservoir and diversion from McGuire Lake.

14198400 BULL CREEK NEAR WILHOIT, OR

LOCATION.--Lat 44°57'42", long 122°22'59", in NW 1/4 SE 1/4 sec.13, T.7 S., R.3 E., Clackamas County, Hydrologic Unit 17090009, on left bank 0.5 mi upstream from mouth, 11 mi southeast of Wilhoit and at mile 0.43.

DRAINAGE AREA.--0.66 mi².

PERIOD OF RECORD.--April 1993 to current year.

REVISED RECORDS.--WDR OR-97-1, Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,680 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation or diversion.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 2.33 ft³/s, 47.88 in/yr, 1,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 250 ft³/s Feb. 7, 1996, gage height, 7.55 ft, from rating curve extended above 70 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.02 ft³/s Sept. 25-28, 1994, Sept. 21-24, 1995, Sept. 28-30, 1996, Oct. 1-4, 7-12, 1996, Sept. 15-17, 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 18 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	0645	37	5.86	Jan. 21	1315	19	5.23
Dec. 2	0930	48	6.15	Feb. 6	2100	36	5.81
Dec. 28	unknown	*70	*a6.55	Feb. 24	0745	26	5.50
Jan. 17	2300	50	6.20	Feb. 28	0500	46	6.11

Minimum discharge, 0.03 ft³/s several days in September.
a From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.16	10	e6.0	3.2	14	2.1	.64	.57	.26	.14	.08
2	.14	.14	38	e4.0	3.3	9.5	2.5	.85	.50	.27	.13	.06
3	.21	.14	18	e3.0	4.1	9.4	2.6	2.7	.46	.34	.13	.06
4	.34	.27	7.3	e2.2	4.7	6.7	2.3	5.1	.44	.41	.12	.05
5	.12	.65	4.5	e1.8	4.4	4.4	2.2	4.8	.45	.37	.14	.05
6	.09	.57	2.8	e1.6	18	3.4	2.4	4.3	.46	.34	.16	.05
7	.07	.54	3.0	e1.5	25	2.9	2.8	3.7	.47	.33	.17	.05
8	.16	.58	4.4	e1.3	12	2.6	3.2	3.1	.50	.30	.15	.05
9	.28	.53	3.5	e1.1	6.4	2.4	3.1	2.9	.49	.28	.13	.05
10	.24	.50	e2.8	e.95	3.9	2.1	3.1	3.1	.47	.27	.12	.05
11	.16	.44	e10	.91	2.9	1.9	3.5	2.9	.44	.23	.10	.04
12	.11	.38	e12	.87	2.4	1.8	5.7	3.0	.41	.23	.10	.04
13	.19	.34	e11	.81	2.4	2.3	6.3	3.1	.38	.21	.11	.03
14	.23	.30	e8.0	2.5	2.4	2.9	4.5	3.0	.37	.20	.13	.03
15	.26	.36	e5.4	13	2.4	2.9	3.7	3.2	.36	.20	.11	.04
16	.24	.32	e4.0	9.7	2.7	2.4	3.7	3.2	.35	.20	.10	.04
17	.22	.29	e3.4	15	3.5	2.1	3.6	3.0	.32	.21	.09	.04
18	.21	.41	e3.0	28	7.6	1.8	2.6	2.9	.31	.20	.09	.04
19	.17	.42	e2.6	14	13	1.6	1.9	2.7	.30	.20	.10	.03
20	.15	4.2	e2.2	11	8.0	1.5	1.6	2.3	.30	.19	.09	.03
21	.13	12	e2.4	17	4.9	1.4	1.3	1.9	.31	.20	.09	.03
22	.12	8.4	e1.8	15	4.9	1.2	1.2	1.6	.29	.18	.08	.03
23	.11	7.3	e1.6	10	14	1.1	1.0	1.4	.29	.18	.08	.03
24	.12	12	e1.7	6.5	21	1.0	.89	1.1	.39	.18	.07	.04
25	.13	26	e4.0	4.4	12	.97	.81	.96	.40	.18	.07	.04
26	.11	30	e7.0	3.3	7.5	.91	.73	.82	.34	.16	.07	.04
27	.16	11	e18	2.5	13	.87	.71	.72	.30	.15	.06	.03
28	.18	4.9	e50	2.4	35	.94	.69	.65	.28	.14	.06	.03
29	.13	3.3	e24	3.1	---	2.4	.65	.58	.27	.15	.06	.03
30	.12	5.2	e14	4.1	---	2.9	.61	.53	.26	.15	.09	.03
31	.13	---	e9.0	4.1	---	2.2	---	.58	---	.14	.10	---
TOTAL	5.07	131.64	289.4	191.64	244.6	94.49	71.99	71.33	11.48	7.05	3.24	1.24
MEAN	.16	4.39	9.34	6.18	8.74	3.05	2.40	2.30	.38	.23	.10	.041
MAX	.34	30	50	28	35	14	6.3	5.1	.57	.41	.17	.08
MIN	.04	.14	1.6	.81	2.4	.87	.61	.53	.26	.14	.06	.03
AC-FT	10	261	574	380	485	187	143	141	.23	.14	6.4	2.5
CFSM	.25	6.65	14.1	9.37	13.2	4.62	3.64	3.49	.58	.34	.16	.06
IN.	.29	7.42	16.31	10.80	13.79	5.33	4.06	4.02	.65	.40	.18	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999
MEAN	.69	3.51	5.83	4.74	5.38	3.08
MAX	1.73	5.85	12.0	6.28	10.8	6.49
(WY)	1998	1997	1997	1998	1996	1997
MIN	.087	.13	.91	1.25	1.27	1.14
(WY)	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1994 - 1999
ANNUAL TOTAL	1016.54	1123.17	
ANNUAL MEAN	2.79	3.08	
HIGHEST ANNUAL MEAN			2.33
LOWEST ANNUAL MEAN			3.10
HIGHEST DAILY MEAN	50	Dec 28	100
LOWEST DAILY MEAN	.03	Sep 7	.02
ANNUAL SEVEN-DAY MINIMUM	.03	Sep 7	.02
ANNUAL RUNOFF (AC-FT)	2020	2230	1690
ANNUAL RUNOFF (CFSM)	4.22	4.66	3.52
ANNUAL RUNOFF (INCHES)	57.30	63.31	47.88
10 PERCENT EXCEEDS	7.2	9.2	5.3
50 PERCENT EXCEEDS	1.2	.73	.77
90 PERCENT EXCEEDS	.08	.07	.07

e Estimated

WILLAMETTE RIVER BASIN

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR

LOCATION.--Lat 44°57'21", long 122°37'38", in SW 1/4 SE 1/4 sec.13, T.7 S., R.1 E, Marion County, Hydrologic Unit 17090009, on left bank, 4 mi south of Scotts Mills, and 0.1 mi upstream from mouth.

DRAINAGE AREA.--9.81 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 800 ft above sea level, from topographic map.

REMARKS.--Records fair except for the period Dec. 28 to May 12, and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 39.9 ft³/s, 55.30 in/yr, 28,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft³/s Feb. 7, 1996, gage height, 6.19 ft from rating curve extended above 340 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 6.57 ft Feb. 7, 1996; minimum discharge, 1.9 ft³/s Oct. 2-4, 1993.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	1400	*348	*4.15	Feb 27	2230	263	3.90

Minimum daily discharge, 3.0 ft³/s Sept. 25-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	7.2	106	127	58	171	64	18	18	10	5.0	4.0
2	5.4	6.6	169	101	72	152	61	38	16	11	5.0	3.7
3	7.2	6.4	158	86	70	145	59	74	14	10	4.8	3.5
4	8.7	10	125	72	80	125	55	74	14	10	4.8	3.4
5	4.7	25	104	58	80	105	55	61	17	9.2	5.4	3.3
6	3.9	19	90	51	118	91	50	57	16	8.9	6.0	3.4
7	3.6	16	97	46	155	77	47	58	16	9.1	7.0	3.3
8	4.5	16	106	39	122	72	51	53	16	8.5	6.3	e3.3
9	12	12	93	37	99	62	47	49	14	8.0	5.4	e3.3
10	10	12	87	33	85	54	50	45	13	7.7	4.9	e3.3
11	5.8	11	121	34	73	48	47	44	12	7.7	4.8	e3.3
12	5.0	9.3	139	33	66	48	46	42	11	7.4	4.8	e3.3
13	9.5	8.7	137	30	63	49	43	40	11	7.3	4.8	e3.2
14	11	8.2	119	60	53	50	40	42	10	7.1	5.2	e3.2
15	11	15	104	110	50	45	37	38	10	7.1	4.9	e3.2
16	7.8	15	92	97	59	45	35	34	11	7.2	4.5	e3.2
17	6.5	12	82	125	64	42	32	44	10	7.2	4.3	e3.2
18	6.0	14	72	166	96	41	29	40	9.7	6.9	4.2	e3.2
19	5.4	15	64	139	90	39	28	37	9.3	6.7	4.2	e3.1
20	4.9	67	57	128	90	38	28	34	9.4	6.5	4.1	e3.1
21	4.6	144	51	157	83	34	23	33	11	6.6	4.0	e3.1
22	4.4	114	48	167	96	34	23	30	9.7	6.5	3.9	e3.1
23	4.2	110	45	154	153	35	19	27	9.4	6.2	3.9	e3.1
24	4.4	124	46	128	148	34	18	25	19	6.1	3.9	e3.1
25	5.2	132	74	107	140	33	17	23	20	6.2	3.8	e3.0
26	4.7	171	73	86	120	35	17	21	15	6.0	3.8	e3.0
27	6.6	140	106	69	144	33	19	20	12	5.6	3.9	e3.0
28	9.8	109	249	79	203	35	19	18	11	5.4	3.5	e3.0
29	6.6	97	195	72	---	56	16	17	10	5.3	3.6	e3.0
30	5.8	109	178	72	---	69	15	16	10	5.0	4.2	e3.0
31	5.9	---	154	64	---	68	---	16	---	5.0	4.5	---
TOTAL	198.2	1555.4	3341	2727	2730	1965	1090	1168	384.5	227.4	143.0	96.9
MEAN	6.39	51.8	108	88.0	97.5	63.4	36.3	37.7	12.8	7.34	4.61	3.23
MAX	12	171	249	167	203	171	64	74	20	11	7.0	4.0
MIN	3.1	6.4	45	30	50	33	15	16	9.3	5.0	3.5	3.0
AC-FT	393	3090	6630	5410	5410	3900	2160	2320	763	451	284	192
CFSM	.65	5.29	11.0	8.97	9.94	6.46	3.70	3.84	1.31	.75	.47	.33
IN.	.75	5.90	12.67	10.34	10.35	7.45	4.13	4.43	1.46	.86	.54	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999
MEAN	19.3	58.2	79.5	78.4	84.1	59.5	41.1
MAX	43.0	89.1	141	94.3	143	95.7	51.3
(WY)	1998	1996	1997	1998	1996	1997	1998
MIN	3.06	5.09	27.4	50.5	50.6	36.5	34.8
(WY)	1994	1994	1994	1994	1994	1995	1998

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1994 - 1999

ANNUAL TOTAL	15120.1	15626.4	
ANNUAL MEAN	41.4	42.8	39.9
HIGHEST ANNUAL MEAN			50.5
LOWEST ANNUAL MEAN			21.5
HIGHEST DAILY MEAN	249	249	850
LOWEST DAILY MEAN	2.9	3.0	1.9
ANNUAL SEVEN-DAY MINIMUM	2.9	3.0	2.1
ANNUAL RUNOFF (AC-FT)	29990	30990	28920
ANNUAL RUNOFF (CFSM)	4.22	4.36	4.07
ANNUAL RUNOFF (INCHES)	57.34	59.26	55.30
10 PERCENT EXCEEDS	109	119	103
50 PERCENT EXCEEDS	27	19	23
90 PERCENT EXCEEDS	3.5	3.9	3.3

e Estimated

WILLAMETTE RIVER BASIN

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14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1993 to Sept. 1997 (discontinued).

WATER TEMPERATURE: July 1993 to current year.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 63 microsiemens Sept. 29, 30, 1993; minimum recorded, 8 microsiemens Feb. 5-7, 1996.

WATER TEMPERATURE: Maximum, 19.0°C July 23, 1994, minimum, 0.0°C Nov. 24-26, 1993.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 16.5°C several days in July and August; minimum, 0.5°C Dec. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.0	11.5	11.5	9.0	8.0	8.5	9.0	8.0	8.5	7.5	6.5	7.0
2	11.5	10.5	11.0	9.5	8.5	9.0	9.0	7.5	8.5	6.5	5.5	6.0
3	11.0	10.5	10.5	9.0	8.0	8.5	8.5	7.5	8.0	6.0	5.5	6.0
4	11.5	10.0	10.5	10.0	9.0	9.5	8.0	7.0	7.5	7.0	5.5	6.0
5	10.5	9.0	10.0	9.5	8.0	9.0	7.0	6.5	7.0	6.5	5.5	6.0
6	11.0	9.0	10.0	8.5	7.5	8.0	7.0	6.0	6.5	7.5	6.0	6.5
7	11.5	10.0	10.5	8.0	7.0	7.5	7.5	7.0	7.0	7.5	6.5	7.0
8	11.5	11.0	11.0	8.0	7.0	7.5	7.5	6.5	7.0	6.5	5.5	6.0
9	11.0	10.0	10.5	7.5	6.0	6.5	7.0	6.5	7.0	7.0	5.0	6.0
10	10.5	9.0	10.0	7.5	6.5	7.0	8.0	7.0	7.5	7.5	6.5	7.0
11	10.5	9.0	9.5	8.5	7.0	8.0	8.5	8.0	8.5	7.0	6.0	6.5
12	11.0	10.0	10.5	8.0	6.5	7.5	9.5	8.5	9.0	7.5	7.0	7.0
13	11.0	10.5	11.0	9.0	8.0	8.5	9.0	8.0	9.0	7.0	5.5	6.5
14	11.0	9.5	10.5	9.0	8.0	8.5	8.0	6.5	7.0	8.5	7.0	7.5
15	10.0	9.0	9.5	10.0	9.0	9.5	7.5	6.0	6.5	8.0	7.5	7.5
16	9.0	7.5	8.5	9.0	7.5	8.0	7.5	6.0	6.5	7.5	7.0	7.0
17	9.5	7.5	8.5	8.5	7.5	8.0	8.0	6.0	7.0	8.0	7.0	7.5
18	9.5	8.5	9.0	8.5	7.5	8.0	7.0	5.0	6.0	8.0	7.5	7.5
19	9.0	6.5	8.0	8.0	6.5	7.5	5.0	3.0	4.0	8.0	7.5	8.0
20	9.0	7.0	8.0	9.5	8.0	9.0	3.0	1.0	2.0	8.0	7.5	7.5
21	9.0	7.5	8.5	9.5	8.5	9.0	2.0	.5	1.5	7.5	7.0	7.5
22	10.0	8.0	8.5	8.5	8.0	8.5	2.0	1.0	1.5	7.5	6.0	7.0
23	9.5	8.0	8.5	9.0	8.0	8.5	2.5	1.0	1.5	7.0	6.5	6.5
24	10.0	9.0	9.5	8.5	8.5	8.5	4.5	2.5	3.5	7.0	6.0	6.5
25	11.0	9.5	10.0	9.5	8.5	9.0	6.0	4.5	5.5	6.5	5.5	6.0
26	10.0	8.5	9.5	9.5	9.0	9.0	6.5	6.0	6.0	6.5	6.0	6.0
27	10.0	8.5	9.5	9.0	8.5	9.0	7.5	6.0	6.5	6.5	6.0	6.5
28	9.5	8.5	9.0	8.5	7.5	8.0	8.0	7.0	7.5	7.0	6.5	6.5
29	8.5	7.0	7.5	8.5	8.0	8.0	8.5	8.0	8.0	7.5	6.5	7.0
30	7.5	6.0	7.0	9.0	7.5	8.0	9.0	8.0	8.5	7.0	6.0	7.0
31	8.0	6.0	7.0	---	---	---	8.5	7.0	8.0	6.0	5.5	6.0
MONTH	12.0	6.0	9.5	10.0	6.0	8.3	9.5	.5	6.4	8.5	5.0	6.7

WILLAMETTE RIVER BASIN

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	6.5	5.5	6.0	7.0	6.0	6.5	8.5	5.0	6.5	10.0	8.0	9.0
2	7.0	6.0	6.5	8.0	6.0	7.0	8.0	5.0	6.5	8.0	7.0	7.5
3	7.0	5.5	6.5	7.0	6.0	6.5	6.5	5.5	5.5	7.5	6.5	7.0
4	6.5	5.5	6.0	6.5	5.5	6.0	6.5	5.5	5.5	8.0	6.5	7.0
5	6.0	5.0	5.5	7.0	5.5	6.0	8.0	5.0	6.5	10.5	6.0	8.0
6	7.0	6.0	6.5	7.0	5.0	6.0	9.0	5.0	6.5	9.5	7.0	8.5
7	6.5	5.5	6.5	7.0	5.5	6.0	8.0	5.5	6.5	7.5	6.0	7.0
8	6.0	4.5	5.5	7.0	6.0	6.5	6.5	5.5	6.0	8.0	6.0	7.0
9	6.0	5.0	5.5	7.0	5.5	6.0	7.0	4.5	6.0	8.5	6.0	7.0
10	5.5	5.0	5.0	7.5	5.5	6.0	8.0	5.5	6.5	9.0	6.0	7.5
11	6.5	5.0	5.5	7.5	4.5	6.0	10.5	5.0	7.5	9.0	7.5	8.0
12	7.0	5.5	6.0	7.5	6.0	7.0	9.0	6.5	7.5	9.0	8.0	8.0
13	7.0	6.0	6.5	8.5	7.0	7.5	10.0	6.5	8.0	9.0	7.0	8.0
14	7.0	6.0	6.0	7.5	6.5	7.0	10.5	5.0	7.5	9.0	7.0	8.0
15	7.5	5.5	6.5	7.5	6.0	6.5	11.5	6.0	8.5	9.0	7.5	8.0
16	7.0	6.5	7.0	7.5	5.0	6.0	12.0	7.5	9.5	10.0	7.0	8.5
17	7.0	6.0	6.5	7.5	5.5	6.5	12.0	8.5	10.0	10.0	8.5	9.0
18	7.0	6.0	6.5	9.0	6.5	7.5	10.5	8.5	9.5	10.0	9.0	9.5
19	7.0	5.5	6.5	9.5	6.0	7.5	10.0	8.0	9.0	10.5	8.0	9.0
20	7.0	5.0	6.0	9.5	7.0	8.0	9.5	8.0	8.5	10.0	8.0	9.0
21	6.5	6.0	6.5	9.0	7.5	8.0	9.0	6.5	7.5	11.5	8.0	9.5
22	7.0	6.0	6.5	9.5	7.0	8.0	10.0	6.5	8.0	13.0	8.0	10.5
23	8.0	7.0	7.5	9.5	6.0	8.0	12.0	6.5	9.0	14.5	9.5	11.5
24	8.0	7.0	7.5	8.5	7.5	8.0	13.0	8.0	10.0	14.5	11.0	12.5
25	7.0	6.5	7.0	8.0	7.0	7.5	10.5	8.5	9.0	12.5	11.0	11.5
26	7.0	6.0	6.5	7.0	5.5	6.5	9.5	7.5	8.5	12.5	8.0	10.5
27	8.0	7.0	8.0	7.0	5.0	6.0	8.0	6.5	7.0	13.5	9.5	11.5
28	8.5	6.5	7.5	6.5	5.0	5.5	8.5	6.0	7.0	12.0	9.5	11.0
29	---	---	---	6.0	3.5	5.0	10.5	6.0	8.0	12.5	9.5	11.0
30	---	---	---	6.5	4.5	5.5	11.5	6.5	9.0	12.0	8.5	10.5
31	---	---	---	6.5	4.5	5.5	---	---	---	11.5	9.5	11.0
MONTH	8.5	4.5	6.4	9.5	3.5	6.6	13.0	4.5	7.7	14.5	6.0	9.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.0	9.5	10.5	13.0	12.0	12.5	15.0	13.0	14.0	13.0	10.5	12.0
2	10.5	8.5	9.5	12.0	11.0	11.5	16.0	12.5	14.5	13.5	10.5	12.0
3	11.0	8.0	9.5	12.0	10.5	11.0	16.5	13.5	15.0	13.5	11.0	12.0
4	11.0	9.5	10.0	12.5	10.5	11.5	16.5	13.5	15.0	14.0	11.0	12.5
5	11.0	9.5	10.5	13.5	10.0	12.0	15.0	14.0	14.5	14.0	11.5	12.5
6	10.0	8.5	9.5	12.5	12.0	12.0	14.5	14.0	14.5	14.0	12.0	13.0
7	9.5	8.0	9.0	12.5	11.5	12.0	14.5	14.0	14.0	13.0	10.5	12.0
8	10.0	8.5	9.0	13.5	10.5	12.0	15.0	13.5	14.5	---	---	---
9	10.5	8.0	9.0	14.5	11.5	13.0	16.0	13.0	14.5	---	---	---
10	11.5	8.0	10.0	15.5	12.5	14.0	16.5	13.5	15.0	---	---	---
11	12.5	9.5	11.0	16.0	12.5	14.0	15.0	13.5	14.0	---	---	---
12	14.0	11.5	12.5	16.0	13.0	14.0	15.0	13.0	14.0	---	---	---
13	15.0	12.0	13.5	16.0	13.0	14.0	14.0	13.0	14.0	---	---	---
14	15.5	12.5	14.0	14.0	12.0	13.0	14.0	13.0	13.5	---	---	---
15	14.0	12.5	13.0	14.0	11.0	12.5	14.5	12.5	13.5	---	---	---
16	13.5	12.0	12.5	13.5	12.5	13.0	15.5	12.5	14.0	---	---	---
17	13.5	11.5	12.5	13.5	12.0	12.5	16.0	13.0	14.5	---	---	---
18	13.5	12.0	12.5	14.5	11.0	12.5	16.0	13.5	14.5	---	---	---
19	13.5	12.0	12.5	15.0	12.0	13.5	16.0	14.0	15.0	---	---	---
20	12.0	11.0	12.0	15.5	13.0	14.0	15.5	13.5	14.5	---	---	---
21	12.5	11.5	12.0	14.5	13.0	14.0	16.0	13.5	14.5	---	---	---
22	13.0	11.5	12.0	15.5	12.5	14.0	15.5	12.5	14.0	---	---	---
23	14.5	11.0	12.5	15.5	12.5	14.0	15.5	13.0	14.5	---	---	---
24	13.5	11.5	13.0	14.5	13.0	13.5	16.5	13.5	15.0	---	---	---
25	11.5	11.0	11.0	15.0	12.5	13.5	16.5	14.0	15.0	---	---	---
26	11.5	10.5	11.0	15.0	11.5	13.5	16.0	13.5	14.5	---	---	---
27	12.5	11.0	11.5	16.0	13.0	14.5	16.5	14.0	15.0	---	---	---
28	12.0	10.5	11.0	16.5	13.0	15.0	16.5	14.0	15.5	---	---	---
29	14.0	11.5	12.5	16.0	13.5	14.5	15.0	14.0	14.5	---	---	---
30	14.0	12.5	13.0	16.0	13.0	14.5	14.0	12.5	13.0	---	---	---
31	---	---	---	16.0	13.0	14.5	14.0	12.0	12.5	---	---	---
MONTH	15.5	8.0	11.4	16.5	10.0	13.2	16.5	12.0	14.4	---	---	---

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR

LOCATION.--Lat 45°06'02", long 122°49'14", in SW 1/4 SW 1/4 sec. 28, T.5 S., R.1 W., Marion County, Hydrologic Unit 17090009, on left bank downstream corner of Monitor-McKee Road bridge, 2.3 mi north-northwest of Mount Angel and at mile 0.4.

DRAINAGE AREA.--15.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1993 to current year.

REVISED RECORD.--WDR OR-96-1: 1994 (M).

GAGE.--Water-stage recorder and velocity meter. Elevation of gage is 120 ft above sea level, from topographic map.

REMARKS.--Records fair. Flows subject to backwater from the Pudding River (14201340). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 29.6 ft³/s, 26.81 in/yr, 21,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,890 ft³/s Nov. 19, 1996, gage height 16.93; maximum gage height, 21.33 ft, Feb. 8, 1996, from floodmark (backwater from Pudding River); minimum discharge, 0.02 ft³/s Sept. 22, 1994.

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. 29	1600	600	*a17.59	Feb. 27	2300	*650	a15.22
Jan. 18	0130	550	a12.71				

Minimum discharge, 0.13 ft³/s Sept. 22.
a Backwater from Pudding River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	3.9	e180	e80	e48	e130	30	5.4	1.2	.95	.71	.22
2	1.3	6.1	e200	e48	e65	e90	17	6.7	1.3	.73	.50	.29
3	1.5	5.2	e130	e38	e80	e150	16	6.6	1.1	.56	.52	.29
4	2.9	6.2	e70	e28	e90	e110	15	5.8	1.3	.55	.58	.33
5	1.5	17	e60	e22	e80	e80	15	4.9	2.4	.51	.56	.29
6	1.3	20	e75	e18	e160	e55	14	4.6	2.3	.35	.47	.25
7	1.3	14	e75	e16	e220	e40	13	6.1	2.4	.30	.74	.21
8	1.4	17	e180	14	e130	e28	13	6.5	2.6	.50	.78	.21
9	3.4	10	e110	13	e110	e28	12	5.8	3.1	.69	.40	.18
10	4.6	8.7	e55	12	e60	e22	13	5.1	2.6	.82	.58	.18
11	2.4	8.1	e60	12	e50	e20	12	5.2	2.1	e.75	.53	.18
12	4.2	6.4	e95	14	e36	e24	12	5.1	2.0	e.50	.38	.16
13	13	5.2	e110	15	e32	38	10	4.3	1.3	.66	.37	.17
14	11	4.3	e90	25	e28	50	5.1	4.3	1.0	.58	.38	.16
15	7.3	5.2	e60	e140	e24	38	6.3	4.3	.90	.68	.38	.17
16	6.1	5.7	e40	e150	e26	28	8.9	5.5	.65	.49	.39	.19
17	4.4	5.1	e30	e220	e65	27	8.5	7.4	1.2	.50	.39	.21
18	3.0	4.6	e22	e280	e130	26	7.8	6.6	1.4	.68	.44	.22
19	2.3	4.3	e15	e130	e100	25	7.2	4.5	1.8	.68	.40	.20
20	1.8	15	12	e100	e50	25	6.9	3.8	1.3	.72	.34	.16
21	1.7	e55	10	e180	e38	24	6.9	3.4	1.6	.65	.32	.15
22	1.8	e130	9.4	e200	e40	23	6.7	3.9	1.7	.78	.30	.15
23	1.9	e120	8.7	e200	e240	21	6.3	5.5	1.5	.81	.27	.18
24	2.1	e190	8.9	e90	e170	22	6.3	3.3	1.3	.86	.27	.19
25	2.1	e140	12	e70	e150	20	6.2	2.5	1.2	.82	.25	.19
26	2.2	e320	25	e50	e150	15	5.6	2.1	.86	.59	.23	.19
27	3.9	e180	53	e36	e220	17	5.2	1.7	.99	.53	.20	.48
28	8.2	e100	e340	e26	e280	19	5.5	1.4	.93	.48	.21	.76
29	6.2	e90	e380	e26	---	46	4.7	1.4	.91	.62	.20	.34
30	4.1	e160	e220	e75	---	51	4.5	1.4	.99	.51	.23	.28
31	3.9	---	e110	e65	---	53	---	1.3	---	.71	.20	---
TOTAL	113.8	1657.0	2846.0	2393	2872	1345	300.6	136.4	45.93	19.56	12.52	7.18
MEAN	3.67	55.2	91.8	77.2	103	43.4	10.0	4.40	1.53	.63	.40	.24
MAX	13	320	380	280	280	150	30	7.4	3.1	.95	.78	.76
MIN	1.0	3.9	8.7	12	24	15	4.5	1.3	.65	.30	.20	.15
AC-FT	226	3290	5650	4750	5700	2670	596	271	91	39	25	14
CFSM	.24	3.68	6.12	5.15	6.84	2.89	.67	.29	.10	.04	.03	.02
IN.	.28	4.11	7.06	5.93	7.12	3.34	.75	.34	.11	.05	.03	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999
MEAN	11.2	60.0	80.7	68.9	66.6	40.8
MAX	23.1	121	187	103	114	91.5
(WY)	1997	1997	1997	1996	1997	1996
MIN	1.67	1.89	26.1	40.6	33.1	16.0
(WY)	1994	1994	1998	1998	1998	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1994 - 1999

ANNUAL TOTAL	8800.78	11748.99	
ANNUAL MEAN	24.1	32.2	29.6
HIGHEST ANNUAL MEAN			48.8
LOWEST ANNUAL MEAN			14.9
HIGHEST DAILY MEAN	380	Dec 29	1510
LOWEST DAILY MEAN	.31	Aug 22	.04
ANNUAL SEVEN-DAY MINIMUM	.34	Aug 19	.08
ANNUAL RUNOFF (AC-FT)	17460	23300	21450
ANNUAL RUNOFF (CFSM)	1.61	2.15	1.97
ANNUAL RUNOFF (INCHES)	21.83	29.14	26.81
10 PERCENT EXCEEDS	70	110	80
50 PERCENT EXCEEDS	6.9	5.5	7.1
90 PERCENT EXCEEDS	.70	.30	.51

e Estimated

WILLAMETTE RIVER BASIN

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1993 to September 1997 (discontinued).

WATER TEMPERATURE: July 1993 to current year.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 611 microsiemens Oct. 6, 1995, but may have been greater during periods of missing record; minimum recorded, 77 microsiemens Feb. 6, 1996, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 24.5°C July 21-23, 1994, July 26, 1996, July 28, 1998, but may have been higher during periods of missing record during the 1996 water year; minimum, 0.5°C Nov. 25, 26, 1993, Dec. 22, 23, 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 20.5°C July 12, 13, 28, Aug. 3, 4, 25, 26; minimum, 0.5°C Dec. 22, 23.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	14.5	13.5	14.0	9.5	8.5	9.0	9.5	9.0	9.0	9.0	8.0	8.5
2	14.0	13.0	13.5	11.0	9.5	10.5	9.5	9.0	9.5	8.0	7.5	7.5
3	13.5	13.0	13.5	10.5	10.0	10.5	9.5	9.0	9.0	7.5	6.0	6.5
4	13.5	12.5	13.0	11.0	10.5	11.0	9.0	8.5	9.0	6.5	5.5	6.0
5	13.5	12.0	13.0	11.5	11.0	11.0	9.0	8.0	8.5	6.0	5.0	5.5
6	13.5	11.5	12.5	11.0	10.5	10.5	8.0	7.5	7.5	6.5	5.5	5.5
7	13.5	12.0	12.5	10.5	10.0	10.0	8.0	7.5	8.0	7.0	6.5	6.5
8	13.5	13.0	13.0	10.5	9.5	10.0	8.0	7.5	8.0	6.5	5.5	6.0
9	13.0	12.5	13.0	9.5	9.0	9.5	8.0	7.5	8.0	6.5	5.5	6.0
10	12.5	11.5	12.0	9.5	9.0	9.0	9.0	8.0	8.5	7.0	6.5	6.5
11	12.5	11.5	12.0	10.0	9.5	9.5	9.5	9.0	9.0	6.5	6.0	6.0
12	13.0	12.0	12.0	10.0	9.5	10.0	10.5	9.5	10.0	7.5	6.5	7.0
13	14.0	13.0	13.5	10.5	10.0	10.0	10.5	10.0	10.5	7.5	7.5	7.5
14	14.0	13.5	14.0	10.5	10.0	10.5	10.0	9.0	9.5	8.5	7.5	8.0
15	13.5	12.5	13.0	11.5	10.5	11.0	9.0	8.5	8.5	8.5	8.0	8.5
16	12.5	11.0	11.5	11.5	9.5	10.5	8.5	8.0	8.0	8.5	7.5	8.0
17	11.5	10.5	11.0	9.5	9.0	9.5	8.0	7.5	8.0	8.0	7.5	8.0
18	11.5	11.0	11.5	10.0	9.5	10.0	8.0	7.0	7.5	8.5	8.0	8.0
19	11.0	10.0	10.5	9.5	8.5	9.0	7.0	5.0	6.0	8.5	8.0	8.5
20	11.0	9.5	10.5	11.0	9.0	10.0	5.0	2.0	3.5	8.5	8.5	8.5
21	11.0	9.0	10.0	11.0	10.5	10.5	2.0	1.0	1.0	8.5	8.0	8.0
22	10.5	9.0	10.0	10.5	10.0	10.0	1.0	.5	1.0	8.0	7.5	8.0
23	10.0	9.0	9.5	10.5	10.0	10.0	1.0	.5	1.0	7.5	7.0	7.0
24	10.5	9.5	10.0	10.5	9.5	10.0	3.5	1.0	2.0	7.5	7.5	7.5
25	11.5	10.5	11.0	10.5	9.5	10.0	5.5	3.5	4.5	7.5	7.0	7.0
26	12.0	10.5	11.5	10.5	10.0	10.5	5.5	5.0	5.0	7.0	6.5	6.5
27	11.0	10.5	11.0	10.5	10.0	10.0	8.0	5.0	6.5	7.0	6.5	6.5
28	11.5	10.5	11.0	10.0	9.5	10.0	8.5	8.0	8.5	7.5	6.5	7.0
29	11.0	9.5	10.0	9.5	9.5	9.5	9.0	8.5	8.5	8.0	7.5	7.5
30	10.0	9.0	9.5	9.5	9.0	9.5	9.5	8.5	9.0	8.0	7.5	8.0
31	9.0	8.5	8.5	---	---	---	9.5	9.0	9.5	8.0	7.5	7.5
MONTH	14.5	8.5	11.7	11.5	8.5	10.0	10.5	.5	7.2	9.0	5.0	7.2

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	7.5	7.5	7.5	9.5	8.5	8.5	10.5	7.5	9.0	14.5	12.5	13.5
2	7.5	7.0	7.5	8.5	8.0	8.0	10.0	8.0	9.5	12.5	11.5	12.0
3	7.5	7.0	7.0	8.0	7.5	8.0	9.5	8.0	9.0	12.5	11.0	11.5
4	7.5	7.0	7.5	7.5	7.0	7.5	9.0	8.5	8.5	12.5	10.5	11.5
5	7.0	7.0	7.0	7.5	7.0	7.0	10.0	8.0	9.0	14.5	10.5	12.0
6	7.5	7.0	7.5	8.0	7.0	7.5	10.5	8.0	9.5	13.5	12.0	13.0
7	7.5	7.0	7.5	8.0	7.5	7.5	10.5	9.0	10.0	12.5	10.5	11.0
8	7.0	6.0	6.5	8.5	8.0	8.0	10.0	8.5	9.5	12.0	10.0	10.5
9	6.5	6.0	6.0	8.5	7.5	8.0	9.5	8.0	9.0	12.5	10.0	11.0
10	6.5	6.0	6.0	8.5	7.5	8.0	10.5	8.5	9.5	12.5	10.5	11.0
11	6.5	6.0	6.0	8.5	7.0	8.0	12.0	8.5	10.0	12.5	11.0	12.0
12	7.5	6.5	7.0	9.0	8.0	8.5	11.5	10.0	11.0	13.0	11.5	12.0
13	8.0	7.5	7.5	9.5	9.0	9.0	12.0	9.5	11.0	12.5	11.0	12.0
14	8.0	7.0	7.5	9.5	9.0	9.0	13.5	9.0	11.0	13.0	11.0	12.0
15	8.0	7.0	7.5	9.5	8.5	9.0	14.5	10.0	12.5	13.5	11.5	12.5
16	8.0	8.0	8.0	9.0	8.0	8.5	15.5	11.5	13.5	14.0	12.0	13.0
17	8.0	7.5	8.0	10.0	8.5	9.0	16.5	13.5	15.0	14.0	12.5	13.5
18	8.0	7.5	8.0	10.5	9.0	10.0	15.0	13.5	14.0	14.0	13.0	13.5
19	8.5	7.5	7.5	11.0	8.5	10.0	14.0	12.5	13.0	15.0	12.5	13.5
20	8.0	7.0	7.5	11.5	9.5	11.0	14.0	11.5	13.0	14.5	13.0	13.5
21	7.5	7.0	7.5	12.5	10.5	11.5	13.0	11.5	12.0	16.0	12.5	14.0
22	8.0	7.5	7.5	12.5	10.5	11.5	13.5	11.0	12.0	17.5	13.0	15.0
23	8.5	8.0	8.5	12.0	10.0	11.0	15.5	11.0	13.0	18.5	15.0	16.5
24	9.0	8.5	9.0	12.0	11.5	11.5	16.5	12.5	14.5	19.5	16.5	18.0
25	9.0	8.0	8.5	11.5	10.5	11.0	15.5	13.0	14.0	19.0	16.5	17.5
26	8.0	7.0	7.5	10.5	9.0	10.0	14.0	12.0	13.0	17.0	14.0	16.0
27	9.0	8.0	8.0	10.5	8.0	9.0	13.0	11.5	12.0	17.0	15.0	16.0
28	10.0	9.0	9.5	9.0	8.0	8.5	13.0	10.5	11.5	17.0	15.5	16.0
29	---	---	---	8.5	7.5	8.0	14.5	10.5	12.5	16.5	14.5	15.5
30	---	---	---	8.5	7.5	8.0	15.0	11.5	13.0	16.0	14.0	15.5
31	---	---	---	9.5	8.0	8.5	---	---	---	16.0	15.0	15.5
MONTH	10.0	6.0	7.5	12.5	7.0	9.0	16.5	7.5	11.5	19.5	10.0	13.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.5	14.0	15.0	18.0	16.5	17.5	19.0	17.5	18.5	16.5	14.5	15.5
2	15.0	13.5	14.0	17.0	15.5	16.5	19.5	17.0	18.0	16.5	14.0	15.0
3	15.0	13.0	14.0	16.0	15.0	15.5	20.5	17.5	19.0	16.5	13.5	15.0
4	14.5	14.0	14.0	16.5	15.0	15.5	20.5	18.5	19.5	16.5	14.0	15.0
5	15.5	14.0	14.5	18.0	15.0	16.0	19.5	19.0	19.5	16.0	14.5	15.5
6	14.5	13.0	14.0	17.5	16.5	17.0	19.0	18.5	18.5	16.5	15.0	15.5
7	13.5	12.5	13.0	16.5	15.5	16.0	18.5	17.5	18.0	16.5	14.0	15.5
8	13.5	12.5	12.5	17.5	14.5	16.0	19.0	17.0	18.0	16.5	14.0	15.0
9	15.0	12.5	13.5	18.5	16.0	17.0	20.0	17.5	18.5	16.5	14.5	15.5
10	16.0	13.0	14.5	19.0	17.0	18.0	20.0	18.0	19.0	16.0	14.0	15.0
11	17.0	14.5	15.5	20.0	17.5	18.5	19.0	17.5	18.5	16.0	13.5	14.5
12	18.0	16.5	17.0	20.5	18.0	19.0	19.5	17.0	18.0	16.5	13.5	15.0
13	19.5	17.0	18.5	20.5	18.0	19.0	18.5	17.5	18.0	16.5	13.5	15.0
14	20.0	18.0	19.0	18.5	17.0	18.0	18.0	17.0	17.5	16.5	14.0	15.0
15	19.5	17.5	18.5	18.0	16.0	17.0	18.5	16.0	17.5	16.0	14.0	15.0
16	19.0	17.0	17.5	17.5	16.5	17.0	19.0	16.5	17.5	15.5	13.5	14.5
17	17.5	17.0	17.0	17.0	16.0	16.5	20.0	17.0	18.5	15.0	13.5	14.5
18	17.0	16.5	16.5	18.5	15.0	16.5	19.0	18.0	18.5	15.5	13.5	14.5
19	17.5	16.5	17.0	19.5	16.5	18.0	19.5	17.5	18.5	16.0	13.5	15.0
20	17.5	15.5	16.0	20.0	17.5	18.5	20.0	17.5	18.5	16.5	14.0	15.0
21	16.0	15.0	15.5	19.0	18.0	18.5	20.0	17.5	18.5	16.5	14.0	15.5
22	16.5	16.0	16.0	19.0	17.0	18.0	20.0	17.0	18.5	16.5	14.5	15.5
23	18.5	15.5	17.0	20.0	17.5	18.5	19.0	17.0	18.0	16.0	14.5	15.0
24	18.5	16.5	17.5	19.0	17.5	18.0	20.0	17.5	18.5	15.0	13.0	14.0
25	16.5	15.5	15.5	19.0	17.0	18.0	20.5	18.0	19.0	15.0	13.5	14.0
26	15.5	15.0	15.0	19.5	16.5	18.0	20.5	18.0	19.0	14.0	12.5	13.0
27	16.0	14.5	15.0	20.0	17.0	18.5	20.0	18.0	19.0	13.0	11.0	12.0
28	15.5	14.5	15.0	20.5	18.0	19.0	20.0	18.0	19.0	11.5	10.5	11.0
29	18.0	15.5	16.5	20.0	18.0	19.0	19.0	18.0	18.5	12.5	10.0	11.0
30	18.0	17.5	18.0	20.0	18.0	19.0	18.0	16.5	17.0	12.5	10.5	11.5
31	---	---	---	20.0	18.0	18.5	16.5	15.5	16.0	---	---	---
MONTH	20.0	12.5	15.8	20.5	14.5	17.6	20.5	15.5	18.3	16.5	10.0	14.4
YEAR	20.5	.5	12.0									

WILLAMETTE RIVER BASIN

14201340 PUDDING RIVER NEAR WOODBURN, OR

LOCATION.--Lat 45°09'05", long 122°48'11", in NW 1/4 SW 1/4 sec. 10, T.5 S., R.1 W., Marion County, Hydrologic Unit 17090009, on left bank 1.0 mile east of Woodburn, and at mile 23.4.

DRAINAGE AREA. --314 mi².

PERIOD OF RECORD.--October 1997 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 130 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--2 years (water years 1998-99), 1,023 ft³/s, 44.25 in/yr, 740,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,500 ft³/s Dec. 29, 1998, gage height, 29.05 ft; minimum discharge, 22 ft³/s Sept. 23, 1999.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996 reached a stage of 32.76 ft, from floodmark, discharge about 29,000 ft³/s, on basis of runoff comparison with nearby station.

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. 28	0300	4,250	26.20	Jan. 23	0930	4,830	27.26
Dec. 29	2000	*9,500	*29.05	Mar. 1	1530	5,130	27.64

Minimum discharge, 22 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	145	3530	4510	2390	5030	1610	521	440	182	58	42
2	52	175	3690	3900	2200	4850	1500	597	476	175	59	52
3	69	182	4010	3410	2330	4590	1360	882	425	169	60	47
4	130	182	4010	2920	2380	4430	1260	1300	383	172	55	40
5	214	319	3750	2460	2460	4080	1190	1290	361	175	55	38
6	146	608	3410	2090	2560	3710	1140	1130	380	165	59	34
7	107	630	3060	1810	3260	3340	1040	1080	394	147	64	34
8	93	630	3020	1550	3630	2950	992	1080	386	121	73	36
9	100	609	3020	1230	3630	2620	1010	1010	399	116	94	32
10	207	542	2730	1020	3390	2320	963	912	363	114	92	29
11	295	519	2480	934	3080	2030	987	830	333	108	79	30
12	197	499	2860	941	2710	1790	961	811	308	106	69	33
13	186	447	3180	959	2370	1690	924	804	285	97	67	33
14	302	409	3730	933	2130	1650	873	773	274	90	69	33
15	412	381	2960	1680	1910	1610	850	775	247	84	69	33
16	397	448	2600	2510	1740	1490	855	753	221	84	74	32
17	318	503	2250	2850	1790	1340	893	735	217	64	66	33
18	245	469	1950	3600	2030	1220	912	1030	209	61	53	36
19	206	485	1660	4070	2630	1140	885	1050	202	78	41	34
20	175	538	1340	4250	2650	1070	853	922	189	75	38	33
21	151	1730	1070	4200	2430	1020	848	811	203	82	37	27
22	135	2910	924	4400	2220	979	772	736	219	81	36	27
23	122	3070	837	4780	2760	954	709	698	208	67	35	24
24	112	3030	770	4640	3710	934	666	705	196	52	32	25
25	105	3150	805	4300	4160	888	666	696	223	68	28	27
26	109	3680	1410	3840	4270	867	672	654	317	73	29	30
27	114	4070	1740	3400	4030	867	634	590	293	54	26	31
28	120	4180	3220	2990	4540	850	610	553	240	45	26	34
29	198	3780	6340	2710	---	1080	576	520	215	40	28	32
30	185	3490	7210	2630	---	1520	532	486	198	40	31	31
31	155	---	5170	2580	---	1620	---	450	---	53	38	---
TOTAL	5406	41810	88196	88097	79390	64529	27743	25184	8804	3038	1640	1002
MEAN	174	1394	2845	2842	2835	2082	925	812	293	98.0	52.9	33.4
MAX	412	4180	7210	4780	4540	5030	1610	1300	476	182	94	52
MIN	49	145	770	933	1740	850	532	450	189	40	26	24
AC-FT	10720	82930	174900	174700	157500	128000	55030	49950	17460	6030	3250	1990
CFSM	.56	4.44	9.06	9.05	9.03	6.63	2.95	2.59	.93	.31	.17	.11
IN.	.64	4.95	10.45	10.44	9.41	7.64	3.29	2.98	1.04	.36	.19	.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

MEAN	387	1165	1934	2580	2200	1848	822	829	376	105	46.2	38.4
MAX	600	1394	2845	2842	2835	2082	925	846	459	112	52.9	43.5
(WY)	1998	1999	1999	1999	1999	1999	1999	1998	1998	1999	1999	1998
MIN	174	936	1024	2318	1564	1613	719	812	293	98.0	39.6	33.4
(WY)	1999	1998	1998	1998	1998	1998	1998	1999	1999	1999	1998	1999

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1998 - 1999
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ANNUAL TOTAL	368662		434839				
ANNUAL MEAN	1010		1191			1023	
HIGHEST ANNUAL MEAN						1191	1999
LOWEST ANNUAL MEAN						854	1998
HIGHEST DAILY MEAN	7210	Dec 30	7210	Dec 30		7210	Dec 30 1998
LOWEST DAILY MEAN	28	Sep 13	24	Sep 23		24	Sep 23 1999
ANNUAL SEVEN-DAY MINIMUM	28	Sep 12	27	Sep 21		27	Sep 21 1999
ANNUAL RUNOFF (AC-FT)	731200		862500			740800	
ANNUAL RUNOFF (CFSM)	3.22		3.79			3.26	
ANNUAL RUNOFF (INCHES)	43.68		51.52			44.25	
10 PERCENT EXCEEDS	2950		3510			2860	
50 PERCENT EXCEEDS	572		630			656	
90 PERCENT EXCEEDS	41		38			40	

WILLAMETTE RIVER BASIN

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14202980 SCOGGINS CREEK BELOW HENRY HAGG LAKE, NEAR GASTON, OR

LOCATION.--Lat 45°28'10", long 123°11'56", in SE 1/4 NE 1/4 sec.20, T.1 S., R.4 W., Washington County, Hydrologic Unit 17090010, on left bank 600 ft downstream from Scoggins Dam, 800 ft upstream from small left bank tributary, 3.7 mi northwest of Gaston, and at mile 4.8.

DRAINAGE AREA.--38.8 mi².

PERIOD OF RECORD.--January 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 187.48 ft above sea level.

REMARKS.--Records good. Flow completely regulated by Henry Hagg Lake since January 1975. Discharge not adjusted for storage or release from Henry Hagg Lake as evaporation from reservoir at times exceeds natural flow.

AVERAGE DISCHARGE.--24 years (water years 1976-99), 116 ft³/s, 84,210 acre-ft, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,210 ft³/s Apr. 23, 1996, gage height, 16.88 ft; minimum discharge, 0.72 ft³/s Nov. 4, 5, 1996, Dec. 16, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,030 ft³/s Feb. 26, gage height, 16.30 ft; minimum discharge, 20 ft³/s Jan. 28, Apr. 16, 17, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	102	42	32	911	1620	240	21	30	121	175	194
2	124	102	42	409	441	1760	239	21	32	121	175	179
3	115	102	42	557	480	1430	239	79	34	121	177	179
4	115	102	42	625	716	858	238	109	40	121	182	179
5	97	91	42	761	654	550	198	67	44	120	185	178
6	78	61	42	861	28	370	154	56	44	145	196	177
7	74	48	43	870	364	368	154	89	36	171	201	177
8	79	48	149	958	1060	362	123	101	31	170	199	177
9	88	44	212	927	e1590	309	69	82	35	170	197	177
10	87	37	259	806	e1750	269	52	25	42	170	190	171
11	87	35	321	835	1780	269	52	53	42	169	185	169
12	95	35	121	771	1790	207	52	88	42	170	179	169
13	105	35	37	574	1180	158	52	68	42	168	167	168
14	106	35	37	427	710	158	52	52	84	168	163	171
15	106	35	166	342	648	92	52	53	142	168	162	178
16	105	36	387	343	425	33	33	53	150	167	157	174
17	105	36	586	196	319	33	21	62	143	167	154	170
18	105	36	659	28	139	55	21	67	139	166	168	167
19	105	36	644	29	62	67	41	52	138	166	175	166
20	105	38	598	29	252	34	40	42	138	166	179	166
21	105	37	728	29	437	34	41	53	127	165	178	165
22	104	37	901	30	220	34	46	62	112	160	178	168
23	104	38	854	30	124	34	53	62	109	155	183	172
24	104	38	684	30	23	34	58	63	117	154	185	165
25	104	41	468	292	516	34	58	63	121	154	185	160
26	103	40	64	771	1730	34	77	51	121	166	184	160
27	103	40	95	1170	989	34	82	38	121	175	190	152
28	103	40	30	190	829	34	72	30	121	183	194	153
29	103	40	30	22	---	79	43	29	121	181	194	156
30	102	41	30	71	---	194	21	29	121	176	197	161
31	102	---	57	452	---	241	---	29	---	176	211	---
TOTAL	3160	1486	8412	13467	20167	9788	2673	1749	2619	4950	5645	5098
MEAN	102	49.5	271	434	720	316	89.1	56.4	87.3	160	182	170
MAX	142	102	901	1170	1790	1760	240	109	150	183	211	194
MIN	74	35	30	22	23	33	21	21	30	120	154	152
AC-FT	6270	2950	16690	26710	40000	19410	5300	3470	5190	9820	11200	10110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1999, BY WATER YEAR (WY)

	MEAN	93.9	67.7	164	184	144	131	84.5	59.5	58.5	124	151	130
MAX	155	233	571	700	720	326	272	122	121	201	216	206	
(WY)	1980	1985	1996	1997	1999	1983	1996	1996	1992	1994	1996	1993	
MIN	26.2	16.7	10.9	9.85	9.50	10.8	12.0	19.9	14.3	52.3	83.4	72.9	
(WY)	1978	1988	1991	1992	1977	1977	1985	1977	1977	1993	1977	1977	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1976 - 1999

ANNUAL TOTAL	56185.5	79214	116	
ANNUAL MEAN	154	217	217	
HIGHEST ANNUAL MEAN			40.4	1999
LOWEST ANNUAL MEAN				1977
HIGHEST DAILY MEAN	1010	Feb 3	1940	Jan 3 1997
LOWEST DAILY MEAN	9.5	Jan 6	5.3	May 27 1977
ANNUAL SEVEN-DAY MINIMUM	14	Jan 14	5.8	May 27 1977
ANNUAL RUNOFF (AC-FT)	111400		84210	
10 PERCENT EXCEEDS	274		223	
50 PERCENT EXCEEDS	104		78	
90 PERCENT EXCEEDS	26		13	

e Estimated

WILLAMETTE RIVER BASIN

14203500 TUALATIN RIVER NEAR DILLEY, OR

LOCATION.--Lat 45°28'30", long 123°07'23", in NE 1/4 NW 1/4 sec.24, T.1 S., R.4 W., Washington County, Hydrologic Unit 17090010, on right bank 5 ft upstream from highway bridge, 1.0 mi south of Dilley, 1.2 mi downstream from Scoggins Creek, and at mile 58.8.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to December 1939 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 147.57 ft above sea level. Prior to June 16, 1950, nonrecording gage at several sites within 200 ft of present site at datum 4.00 ft higher. June 16, 1950, to Aug. 10, 1966, water-stage recorder at present site at datum 4.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by operation of millpond on Scoggins Creek upstream from station and regulation by Henry Hagg Lake since January 1975. Diversions upstream from station of approximately 3,000 acre-ft from J. W. Barney Reservoir on the Middle Fork of North Fork Trask River for municipal water supply and irrigation in Wapato Lake area. Continuous water-quality records for the period November 1963 to September 1968 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1940-99), 395 ft³/s, 286,200 acre-ft/yr.
24 years (water years 1976-99), 367 ft³/s, 266,200 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s Dec. 22, 1964, gage height, 19.34 ft, from rating curve extended above 6,000 ft³/s; minimum discharge, 0.08 ft³/s Sept. 3, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,980 ft³/s Nov. 26, gage height, 18.00 ft; minimum discharge, 60 ft³/s June 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	141	1460	1410	2080	2850	756	139	79	157	217	266
2	157	144	2890	1240	2280	2620	710	149	78	157	216	252
3	148	146	2430	1520	2150	2520	675	216	79	158	213	234
4	178	169	1690	1370	2260	2110	647	304	78	157	222	236
5	141	197	1150	1420	2310	1800	616	272	97	156	223	237
6	92	175	932	1470	2290	1380	551	206	96	168	238	237
7	83	130	798	1450	2990	1190	511	260	90	216	249	235
8	83	140	906	1400	2860	1050	477	291	84	217	258	233
9	123	113	1030	1390	2630	944	403	282	81	213	251	232
10	138	95	936	1300	2590	801	404	174	90	217	241	226
11	121	120	1050	1210	2470	740	449	176	85	218	231	223
12	122	96	1660	1210	2340	705	425	245	70	216	228	223
13	181	85	1880	1030	2130	684	405	223	63	210	215	222
14	191	81	1650	877	1590	713	380	181	81	210	204	220
15	166	100	1210	839	1350	696	357	185	180	210	208	233
16	152	153	1170	915	1260	583	331	178	213	208	202	233
17	142	123	1300	1240	1230	529	297	190	205	209	186	227
18	140	107	1340	2340	1480	499	291	255	194	211	203	221
19	137	97	1300	2410	1830	503	291	238	196	209	214	220
20	144	261	1200	2310	1620	447	298	190	194	206	222	218
21	150	814	1120	2550	1720	431	267	176	196	205	223	218
22	141	1050	1260	2340	2130	415	259	181	163	203	224	218
23	136	888	1280	2100	2410	393	247	169	152	190	224	228
24	136	936	1190	1530	3030	395	253	161	159	188	227	228
25	139	2240	1200	1210	3000	399	254	155	168	192	228	222
26	136	3610	1100	1550	2750	382	257	137	166	202	228	226
27	135	2360	1320	1820	3000	377	272	110	162	217	231	220
28	139	1460	3580	2090	3210	370	243	92	160	224	241	212
29	139	1070	3190	2370	---	525	212	85	160	229	245	221
30	136	1140	2680	2150	---	727	147	82	160	218	247	221
31	137	---	2030	2000	---	804	---	81	---	215	263	---
TOTAL	4332	18241	47932	50061	62990	28582	11685	5783	3979	6206	7022	6842
MEAN	140	608	1546	1615	2250	922	390	187	133	200	227	228
MAX	191	3610	3580	2550	3210	2850	756	304	213	229	263	266
MIN	83	81	798	839	1230	370	147	81	63	156	186	212
AC-FT	8590	36180	95070	99300	124900	56690	23180	11470	7890	12310	13930	13570

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1999, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	148	333	755	787	753	549	350	173	114	143	167	156	156	156	156	156	156	156	156	156	156	156	156	156
MAX	320	882	2062	1615	2250	1086	974	424	183	208	268	258	258	258	258	258	258	258	258	258	258	258	258	258
(WY)	1998	1985	1996	1999	1999	1983	1991	1996	1984	1998	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997
MIN	71.8	47.2	41.1	31.8	62.0	165	99.8	80.8	65.9	91.0	93.0	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6
(WY)	1978	1988	1977	1977	1977	1992	1977	1977	1979	1977	1977	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1976 - 1999
ANNUAL TOTAL	202291	253655	
ANNUAL MEAN	554	695	367
HIGHEST ANNUAL MEAN			695
LOWEST ANNUAL MEAN			104
HIGHEST DAILY MEAN	3610	3610	8620
LOWEST DAILY MEAN	80	63	22
ANNUAL SEVEN-DAY MINIMUM	89	79	23
ANNUAL RUNOFF (AC-FT)	401200	503100	266200
10 PERCENT EXCEEDS	1340	2130	918
50 PERCENT EXCEEDS	241	235	183
90 PERCENT EXCEEDS	126	133	85

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	133	115	126
2	---	---	---	---	---	---	---	---	---	143	122	133
3	---	---	---	---	---	---	---	---	---	145	125	135
4	---	---	---	---	---	---	---	---	---	144	127	136
5	---	---	---	---	---	---	---	---	---	137	117	124
6	---	---	---	---	---	---	---	---	---	119	105	113
7	---	---	---	---	---	---	---	---	---	131	105	116
8	---	---	---	---	---	---	---	---	---	134	121	130
9	---	---	---	---	---	---	---	---	---	130	115	121
10	---	---	---	---	---	---	---	---	---	124	104	114
11	---	---	---	---	---	---	---	---	---	124	108	117
12	---	---	---	---	---	---	---	---	---	141	115	128
13	---	---	---	---	---	---	---	---	---	142	126	134
14	---	---	---	---	---	---	---	---	---	133	116	126
15	---	---	---	---	---	---	---	---	---	140	119	132
16	---	---	---	---	---	---	---	---	---	140	124	133
17	---	---	---	---	---	---	---	---	---	138	120	130
18	---	---	---	---	---	---	---	---	---	149	124	138
19	---	---	---	---	---	---	---	---	---	141	125	130
20	---	---	---	---	---	---	---	---	---	127	114	121
21	---	---	---	---	---	---	---	---	---	128	111	122
22	---	---	---	---	---	---	---	---	---	135	120	129
23	---	---	---	---	---	---	---	---	---	143	122	132
24	---	---	---	---	---	---	---	---	---	142	119	132
25	---	---	---	---	---	---	---	---	---	145	127	137
26	---	---	---	---	---	---	---	---	---	147	133	141
27	---	---	---	---	---	---	---	---	---	147	128	139
28	---	---	---	---	---	---	126	114	122	158	135	144
29	---	---	---	---	---	---	124	111	119	159	145	153
30	---	---	---	---	---	---	129	113	123	163	148	158
31	---	---	---	---	---	---	---	---	---	170	144	160
MONTH	---	---	---	---	---	---	---	---	---	170	104	132

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	168	144	160	186	158	177	225	195	213	206	167	190
2	180	146	166	183	166	175	224	184	204	188	170	183
3	176	157	170	184	168	179	224	182	205	184	161	175
4	187	161	176	199	165	186	215	184	201	186	160	176
5	181	161	174	193	164	180	207	183	197	203	161	184
6	187	160	175	193	154	173	230	204	214	216	178	200
7	190	149	172	180	155	172	245	208	228	207	163	184
8	186	149	174	188	154	177	234	193	221	185	149	171
9	182	166	176	193	161	182	215	160	190	184	152	172
10	183	158	174	188	160	177	182	144	167	195	166	182
11	183	164	175	193	157	179	171	145	165	208	175	193
12	186	163	179	200	163	183	190	155	178	213	184	202
13	185	163	179	199	164	185	198	166	185	208	175	194
14	205	166	189	198	170	187	199	173	190	204	166	189
15	218	177	198	208	177	194	202	173	191	206	171	192
16	228	193	209	213	188	204	216	172	196	200	177	193
17	227	183	211	211	179	197	202	169	190	215	187	202
18	201	161	182	204	174	193	193	165	179	213	181	199
19	185	155	174	209	174	195	207	169	185	206	180	197
20	184	156	173	201	166	185	232	202	215	203	164	187
21	192	152	174	188	157	176	230	197	217	208	166	189
22	185	158	175	217	176	196	219	188	207	208	172	192
23	182	152	170	219	178	204	214	176	200	202	175	192
24	177	155	168	216	194	208	211	171	194	205	176	195
25	182	160	172	218	187	204	206	169	188	210	187	200
26	188	167	181	232	193	212	216	179	194	205	178	194
27	182	147	165	232	191	212	224	193	210	198	163	183
28	179	148	164	219	178	197	235	195	218	193	156	179
29	175	149	165	225	193	204	239	200	220	189	157	175
30	176	155	168	232	207	219	237	205	225	194	164	182
31	---	---	---	232	199	219	216	173	196	---	---	---
MONTH	228	144	176	232	154	191	245	144	199	216	149	188

WILLAMETTE RIVER BASIN

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14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
2	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
3	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
4	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
5	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
6	7.2	7.1	7.2	7.1	---	---	---	---	---	---	---	---
7	7.2	7.2	7.1	7.1	---	---	---	---	---	---	---	---
8	7.2	7.2	7.1	7.1	---	---	---	---	---	---	---	---
9	7.2	7.2	7.2	7.1	---	---	---	---	---	---	---	---
10	7.2	7.2	7.2	7.1	---	---	---	---	---	---	---	---
11	7.3	7.2	7.2	7.1	---	---	---	---	---	---	---	---
12	7.2	7.2	7.2	7.2	---	---	---	---	---	---	---	---
13	7.2	7.2	7.2	7.2	---	---	---	---	---	---	---	---
14	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
15	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
16	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
17	7.2	7.1	7.2	7.2	---	---	---	---	---	---	---	---
18	7.2	7.2	7.2	7.2	---	---	---	---	---	---	---	---
19	7.2	7.2	7.2	7.2	---	---	---	---	---	---	---	---
20	7.2	7.2	7.2	7.2	---	---	---	---	---	---	---	---
21	7.2	7.2	7.2	7.0	---	---	---	---	---	---	---	---
22	7.3	7.2	7.0	6.8	---	---	---	---	---	---	---	---
23	7.3	7.2	6.8	6.8	---	---	---	---	---	---	---	---
24	7.3	7.2	---	---	---	---	---	---	---	---	---	---
25	7.3	7.2	---	---	---	---	---	---	---	---	---	---
26	7.3	7.2	---	---	---	---	---	---	---	---	---	---
27	7.2	7.2	---	---	---	---	---	---	---	---	---	---
28	7.2	7.2	---	---	---	---	---	---	---	---	---	---
29	7.2	7.2	---	---	---	---	---	---	---	---	---	---
30	7.3	7.2	---	---	---	---	---	---	---	---	---	---
31	7.2	7.2	---	---	---	---	---	---	---	---	---	---
MONTH	7.3	7.1	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	7.2	7.2	---	---	7.2	7.2	7.2	7.2	7.2	7.2
2	---	---	7.2	7.2	---	---	7.2	7.2	7.2	7.2	7.2	7.1
3	---	---	7.2	7.1	---	---	7.2	7.2	7.2	7.2	7.1	7.1
4	---	---	7.2	7.1	---	---	7.2	7.2	7.2	7.1	7.1	7.1
5	---	---	7.2	7.1	---	---	7.2	7.2	7.2	7.0	7.1	7.1
6	---	---	7.1	7.1	---	---	7.2	7.2	7.1	7.1	7.1	7.1
7	---	---	7.1	7.1	---	---	7.2	7.1	7.1	7.1	7.1	7.1
8	---	---	7.2	7.1	---	---	7.2	7.1	7.1	7.1	7.1	7.1
9	---	---	7.2	7.1	---	---	7.2	7.1	7.1	7.0	7.1	7.1
10	---	---	7.1	7.1	---	---	7.1	7.1	7.0	7.0	7.1	7.1
11	---	---	7.1	7.1	---	---	7.2	7.1	7.0	7.0	7.1	7.1
12	---	---	7.1	7.1	---	---	7.2	7.1	7.0	7.0	7.1	7.1
13	---	---	7.3	7.0	---	---	7.2	7.1	7.1	7.0	7.1	7.1
14	---	---	7.3	7.2	---	---	7.1	7.1	7.1	7.1	7.1	7.0
15	---	---	7.2	7.2	---	---	7.1	7.1	7.1	7.1	7.1	7.0
16	---	---	7.3	7.2	---	---	7.1	7.1	7.2	7.1	7.1	7.0
17	---	---	7.2	7.2	---	---	7.1	7.1	7.1	7.1	7.1	7.1
18	---	---	7.2	7.2	---	---	7.2	7.1	7.1	7.0	7.1	7.1
19	---	---	7.2	7.2	---	---	7.2	7.2	7.1	7.1	7.1	7.1
20	---	---	7.2	7.1	---	---	7.2	7.1	7.2	7.1	7.1	7.0
21	---	---	7.1	7.1	---	---	7.1	7.1	7.2	7.1	7.1	7.1
22	---	---	7.1	7.1	---	---	7.1	7.1	7.2	7.1	7.1	7.1
23	---	---	7.1	7.1	---	---	7.1	7.0	7.2	7.1	7.1	7.1
24	---	---	7.1	7.0	---	---	7.2	7.1	7.1	7.1	7.1	7.1
25	---	---	7.1	7.0	---	---	7.2	7.2	7.1	7.1	7.2	7.1
26	---	---	7.1	7.0	7.2	7.2	7.2	7.2	7.1	7.1	7.2	7.1
27	---	---	7.1	7.1	7.2	7.2	7.2	7.2	7.2	7.1	7.1	7.1
28	7.2	7.2	---	---	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.1
29	7.2	7.2	---	---	7.2	7.2	7.2	7.1	7.2	7.2	7.1	7.1
30	7.2	7.2	---	---	7.2	7.2	7.2	7.1	7.2	7.2	7.1	7.1
31	---	---	---	---	---	---	7.2	7.2	7.2	7.2	---	---
MONTH	---	---	---	---	---	---	7.2	7.0	7.2	7.0	7.2	7.0

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.0	16.5	16.5	11.0	10.5	11.0	---	---	---	---	---	---
2	16.5	16.0	16.0	11.5	10.5	11.0	---	---	---	---	---	---
3	16.0	15.5	15.5	11.5	11.0	11.0	---	---	---	---	---	---
4	15.5	15.0	15.0	11.5	11.0	11.5	---	---	---	---	---	---
5	15.0	14.5	15.0	12.0	11.5	11.5	---	---	---	---	---	---
6	15.0	14.5	14.5	12.0	11.5	11.5	---	---	---	---	---	---
7	15.0	14.5	15.0	11.5	10.5	11.0	---	---	---	---	---	---
8	15.5	14.5	15.0	10.5	10.5	10.5	---	---	---	---	---	---
9	15.5	15.0	15.0	10.5	10.0	10.0	---	---	---	---	---	---
10	15.0	14.5	15.0	10.0	9.5	10.0	---	---	---	---	---	---
11	14.5	14.0	14.5	10.0	9.5	9.5	---	---	---	---	---	---
12	14.0	14.0	14.0	10.0	10.0	10.0	---	---	---	---	---	---
13	14.0	14.0	14.0	10.0	10.0	10.0	---	---	---	---	---	---
14	14.5	14.0	14.5	10.5	10.0	10.5	---	---	---	---	---	---
15	14.0	14.0	14.0	11.0	10.5	10.5	---	---	---	---	---	---
16	14.0	13.0	13.5	11.0	10.5	11.0	---	---	---	---	---	---
17	13.0	12.5	13.0	11.0	11.0	11.0	---	---	---	---	---	---
18	12.5	12.0	12.5	11.0	10.5	10.5	---	---	---	---	---	---
19	12.5	12.0	12.5	10.5	10.0	10.0	---	---	---	---	---	---
20	12.5	11.5	12.0	10.0	10.0	10.0	---	---	---	---	---	---
21	12.0	11.5	12.0	10.5	10.0	10.5	---	---	---	---	---	---
22	12.5	11.5	12.0	10.0	9.5	10.0	---	---	---	---	---	---
23	12.5	12.0	12.0	9.5	9.0	9.5	---	---	---	---	---	---
24	12.5	12.0	12.0	---	---	---	---	---	---	---	---	---
25	13.0	12.0	12.5	---	---	---	---	---	---	---	---	---
26	13.0	12.5	12.5	---	---	---	---	---	---	---	---	---
27	13.0	12.5	12.5	---	---	---	---	---	---	---	---	---
28	13.0	12.5	12.5	---	---	---	---	---	---	---	---	---
29	12.5	12.0	12.5	---	---	---	---	---	---	---	---	---
30	12.0	11.5	11.5	---	---	---	---	---	---	---	---	---
31	11.5	11.0	11.0	---	---	---	---	---	---	---	---	---
MONTH	17.0	11.0	13.5	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	12.5	12.0	12.5
2	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
3	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
4	---	---	---	---	---	---	---	---	---	12.0	11.5	12.0
5	---	---	---	---	---	---	---	---	---	12.0	11.0	11.5
6	---	---	---	---	---	---	---	---	---	12.0	11.5	11.5
7	---	---	---	---	---	---	---	---	---	11.5	11.5	11.5
8	---	---	---	---	---	---	---	---	---	12.0	11.0	11.5
9	---	---	---	---	---	---	---	---	---	11.5	10.5	11.0
10	---	---	---	---	---	---	---	---	---	10.5	10.0	10.5
11	---	---	---	---	---	---	---	---	---	10.5	10.5	10.5
12	---	---	---	---	---	---	---	---	---	11.5	10.5	11.0
13	---	---	---	---	---	---	---	---	---	11.5	11.0	11.0
14	---	---	---	---	---	---	---	---	---	11.5	11.0	11.0
15	---	---	---	---	---	---	---	---	---	12.0	11.0	11.5
16	---	---	---	---	---	---	---	---	---	12.0	11.5	12.0
17	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
18	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
19	---	---	---	---	---	---	---	---	---	13.0	12.5	12.5
20	---	---	---	---	---	---	---	---	---	13.0	12.5	13.0
21	---	---	---	---	---	---	---	---	---	13.5	12.5	13.0
22	---	---	---	---	---	---	---	---	---	14.5	13.0	13.5
23	---	---	---	---	---	---	---	---	---	15.0	14.0	14.5
24	---	---	---	---	---	---	---	---	---	16.5	15.0	15.5
25	---	---	---	---	---	---	---	---	---	17.5	16.0	16.5
26	---	---	---	---	---	---	---	---	---	17.5	16.5	17.0
27	---	---	---	---	---	---	---	---	---	17.5	17.0	17.0
28	---	---	---	---	---	---	12.5	11.0	11.5	17.0	16.5	17.0
29	---	---	---	---	---	---	11.5	10.5	11.0	16.5	16.0	16.5
30	---	---	---	---	---	---	12.0	11.0	11.5	17.0	16.0	16.5
31	---	---	---	---	---	---	---	---	---	16.5	16.5	16.5
MONTH	---	---	---	---	---	---	---	---	---	17.5	10.0	13.1

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	9.6	9.2	9.4
2	---	---	---	---	---	---	---	---	---	9.3	9.0	9.1
3	---	---	---	---	---	---	---	---	---	9.5	9.0	9.3
4	---	---	---	---	---	---	---	---	---	9.9	9.4	9.6
5	---	---	---	---	---	---	---	---	---	10.3	9.7	10.0
6	---	---	---	---	---	---	---	---	---	10.3	9.9	10.1
7	---	---	---	---	---	---	---	---	---	10.2	9.8	10.0
8	---	---	---	---	---	---	---	---	---	10.2	9.8	10.0
9	---	---	---	---	---	---	---	---	---	10.6	10.1	10.4
10	---	---	---	---	---	---	---	---	---	10.9	10.5	10.7
11	---	---	---	---	---	---	---	---	---	10.9	10.6	10.7
12	---	---	---	---	---	---	---	---	---	10.7	10.6	10.7
13	---	---	---	---	---	---	---	---	---	10.6	9.7	10.1
14	---	---	---	---	---	---	---	---	---	10.1	9.9	10.0
15	---	---	---	---	---	---	---	---	---	10.0	9.8	9.9
16	---	---	---	---	---	---	---	---	---	10.0	9.8	9.9
17	---	---	---	---	---	---	---	---	---	9.9	9.7	9.8
18	---	---	---	---	---	---	---	---	---	9.7	9.2	9.5
19	---	---	---	---	---	---	---	---	---	9.7	9.2	9.5
20	---	---	---	---	---	---	---	---	---	9.6	9.2	9.6
21	---	---	---	---	---	---	---	---	---	9.7	9.2	9.5
22	---	---	---	---	---	---	---	---	---	9.6	9.5	9.5
23	---	---	---	---	---	---	---	---	---	9.5	9.3	9.4
24	---	---	---	---	---	---	---	---	---	9.3	8.9	9.1
25	---	---	---	---	---	---	---	---	---	8.9	8.4	8.7
26	---	---	---	---	---	---	---	---	---	8.5	8.2	8.4
27	---	---	---	---	---	---	---	---	---	8.6	8.1	8.3
28	---	---	---	---	---	---	9.6	9.0	9.3	8.4	7.9	8.3
29	---	---	---	---	---	---	10.0	9.4	9.7	8.4	8.1	8.2
30	---	---	---	---	---	---	9.9	9.5	9.7	8.4	8.3	8.4
31	---	---	---	---	---	---	---	---	---	8.4	8.2	8.3
MONTH	---	---	---	---	---	---	---	---	---	10.9	7.9	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	8.4	8.2	8.3	8.6	8.2	8.4	8.1	7.6	7.8	8.5	8.3	8.4
2	8.5	8.3	8.4	8.3	8.1	8.2	8.2	7.6	7.9	8.6	8.4	8.5
3	8.7	8.3	8.6	8.3	8.2	8.2	8.4	7.7	8.0	8.6	8.5	8.6
4	8.5	8.2	8.4	8.4	8.2	8.3	8.0	7.6	7.8	8.6	8.4	8.5
5	8.6	8.5	8.6	8.7	8.4	8.5	8.0	7.5	7.7	8.4	8.1	8.3
6	8.8	8.5	8.6	8.7	8.5	8.6	7.8	7.3	7.5	8.3	8.1	8.2
7	8.9	8.6	8.7	8.6	7.9	8.2	7.3	7.0	7.1	8.4	8.1	8.3
8	8.9	8.7	8.8	8.1	7.8	8.0	7.7	7.0	7.4	8.6	8.3	8.5
9	9.0	8.8	8.9	8.2	7.8	8.0	7.9	7.3	7.6	8.6	8.3	8.4
10	9.1	8.8	9.0	8.4	8.2	8.3	8.2	7.9	8.1	8.6	8.3	8.4
11	9.0	8.4	8.7	8.3	8.1	8.2	8.1	7.8	8.0	8.6	8.3	8.4
12	8.5	8.3	8.4	8.2	7.9	8.1	7.8	7.7	7.8	8.6	8.2	8.4
13	8.4	8.1	8.2	8.2	7.8	8.0	7.8	7.7	7.8	8.5	8.2	8.3
14	8.2	7.8	8.0	8.1	7.8	7.9	8.3	7.8	8.1	8.4	8.1	8.2
15	7.8	7.4	7.6	8.0	7.6	7.8	8.4	8.2	8.3	8.2	7.9	8.0
16	7.6	7.1	7.3	7.9	7.6	7.8	8.5	8.2	8.4	8.1	7.8	8.0
17	7.5	7.0	7.2	8.1	7.7	7.9	8.2	8.1	8.2	8.1	7.8	8.0
18	8.0	7.4	7.6	8.5	7.9	8.3	8.2	8.1	8.1	8.2	7.9	8.0
19	8.3	7.9	8.1	9.0	8.3	8.7	8.4	7.9	8.1	8.1	7.9	8.0
20	8.3	8.1	8.2	8.7	8.2	8.5	8.2	7.8	8.0	8.1	7.9	8.0
21	8.3	8.1	8.2	8.2	7.7	8.0	8.2	7.7	7.9	8.0	7.8	7.9
22	8.4	8.2	8.3	7.7	7.3	7.5	8.2	7.9	8.0	7.9	7.7	7.8
23	8.5	8.2	8.4	7.5	6.0	6.9	8.5	7.8	8.1	8.0	7.6	7.8
24	8.4	7.8	8.2	8.0	7.3	7.6	8.1	7.8	7.9	8.1	7.7	7.8
25	7.9	7.8	7.9	8.1	7.4	7.8	8.0	7.7	7.8	8.3	7.9	8.1
26	8.1	7.8	7.9	8.0	7.7	7.9	8.1	7.7	7.8	8.5	8.1	8.4
27	8.4	8.0	8.2	8.1	7.7	7.9	8.0	7.6	7.8	8.7	8.4	8.6
28	8.8	8.4	8.6	8.3	7.8	8.0	8.2	7.6	7.9	8.8	8.6	8.7
29	8.9	8.7	8.8	8.1	7.6	7.8	8.0	7.6	7.9	9.0	8.7	8.8
30	8.8	8.6	8.7	7.7	7.3	7.5	7.9	7.5	7.7	9.0	8.7	8.9
31	---	---	---	7.9	7.4	7.6	8.3	7.8	8.1	---	---	---
MONTH	9.1	7.0	8.3	9.0	6.0	8.0	8.5	7.0	7.9	9.0	7.6	8.3

WILLAMETTE RIVER BASIN

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14206900 FANNO CREEK AT 56TH AVENUE, PORTLAND, OR

LOCATION.--Lat 45°29'17", long 122°44'01", in NE 1/4 NW 1/4 sec.18, T.1 S., R.1 E., Multnomah County, Hydrologic Unit 17090010, on bridge at SW 56th Ave., in Portland, and at mile 11.9.

DRAINAGE AREA.--2.37 mi².

PERIOD OF RECORD.--Annual maximums, 1975-77. October 1990 to current year.

REVISED RECORDS.--WDR OR-92-1: 1991, 1991(m).

GAGE.--Water-stage recorder. Elevation of gage is 250 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--9 years (water years 1991-99), 3.68 ft³/s, 21.07 in/yr, 2,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 733 ft³/s Feb. 8, 1996, gage height, 13.2 ft, from floodmark, from rating curve extended above 200 ft³/s; minimum discharge, 0.05 ft³/s Sept. 12, 13, 29, 30, 1999.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	0100	*283	*11.69	Feb. 7	0115	193	11.23
Dec. 27	1900	171	11.10	Feb. 23	2130	163	11.05
Jan. 17	1800	277	11.66	Feb. 27	1930	151	10.97

Minimum discharge, 0.05 ft³/s Sept. 11, 13, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	1.4	31	6.3	5.2	12	2.9	1.4	2.4	.57	.23	.13
2	1.2	1.0	33	5.2	9.7	14	2.6	3.0	.73	1.3	.22	.15
3	4.6	.68	7.9	4.4	7.3	24	6.7	2.6	.59	2.6	.22	.12
4	.55	12	5.0	3.9	9.5	9.4	3.2	1.3	.58	1.6	.22	.11
5	.27	7.9	7.3	3.4	13	6.5	3.3	1.1	.59	.61	.23	.11
6	.20	6.2	7.0	3.1	46	5.2	2.3	1.9	.69	.54	1.6	.11
7	.20	4.4	12	3.0	51	4.3	2.1	3.1	1.4	.49	1.2	.12
8	.23	1.5	8.0	2.6	13	9.5	2.8	1.6	3.3	.46	.35	.10
9	8.0	.95	4.5	3.0	7.3	4.7	1.9	1.1	.81	.42	.27	.10
10	.41	2.0	8.4	3.5	5.8	3.8	13	1.1	.61	.41	.24	.13
11	.29	.85	20	3.7	4.6	3.3	3.0	2.4	.56	.37	.25	.07
12	1.5	.79	18	3.5	3.9	8.7	2.3	1.1	.51	.38	.23	.06
13	2.2	.70	17	3.4	4.0	9.1	2.0	2.9	.48	.38	.34	.09
14	1.3	1.6	6.9	9.8	3.0	9.2	1.8	2.2	.51	.35	.23	.08
15	.83	6.9	4.9	11	7.5	4.5	1.8	1.2	.47	.34	.23	.13
16	.40	1.4	4.0	23	9.0	3.8	1.7	1.0	.49	.34	.19	.09
17	.51	3.3	3.4	57	10	3.5	1.5	8.9	.44	.33	.20	.13
18	.33	1.6	3.0	25	46	3.3	1.5	2.3	.44	.34	.18	.11
19	.31	1.7	2.6	26	10	2.6	1.8	1.3	.40	.31	.19	.09
20	.33	21	2.1	24	7.5	2.3	1.5	1.1	1.7	.29	.16	.10
21	.33	17	2.0	19	5.4	2.6	1.7	1.0	1.1	.30	.15	.20
22	.34	24	1.9	38	18	3.0	1.5	.98	.57	.27	.15	.10
23	.37	23	1.8	15	37	2.0	1.2	.91	.47	.26	.16	.40
24	.45	17	6.5	6.9	29	3.1	1.2	.89	7.3	.25	.14	.16
25	.39	81	13	5.5	11	2.6	3.0	.82	5.6	.25	.16	.10
26	.38	47	4.3	4.4	8.0	2.8	1.7	.78	.98	.27	.13	.09
27	3.8	13	66	4.1	54	3.2	1.5	.76	.70	.25	.14	.10
28	.65	5.3	48	12	16	10	1.1	.72	.65	.25	.13	.08
29	.45	16	25	8.3	---	9.9	1.1	.65	.57	.23	.17	.06
30	.29	45	12	17	---	7.6	1.1	.61	.54	.24	.41	.10
31	.92	---	12	10	---	4.1	---	.65	---	.24	.27	---
TOTAL	35.83	366.17	398.5	365.0	451.7	194.6	74.8	51.37	36.18	15.24	8.99	3.52
MEAN	1.16	12.2	12.9	11.8	16.1	6.28	2.49	1.66	1.21	.49	.29	.12
MAX	8.0	81	66	57	54	24	13	8.9	7.3	2.6	1.6	.40
MIN	.20	.68	1.8	2.6	3.0	2.0	1.1	.61	.40	.23	.13	.06
AC-FT	71	726	790	724	896	386	148	102	72	30	18	7.0
CFSM	.49	5.15	5.42	4.97	6.81	2.65	1.05	.70	.51	.21	.12	.05
IN.	.56	5.75	6.25	5.73	7.09	3.05	1.17	.81	.57	.24	.14	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1999, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	2.03	6.04	7.55	7.51	7.95	4.72	3.26	2.47	1.27
MAX	4.11	14.3	20.1	11.8	16.6	9.47	5.20	4.79	1.94
(WY)	1995	1997	1997	1999	1996	1997	1998	1998	1999
MIN	.60	1.06	3.29	3.02	1.54	1.73	1.31	.73	.31
(WY)	1992	1994	1991	1994	1993	1994	1998	1994	1992

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1991 - 1999
ANNUAL TOTAL	1795.63	2001.90	
ANNUAL MEAN	4.92	5.48	
HIGHEST ANNUAL MEAN			3.68
LOWEST ANNUAL MEAN			5.95
HIGHEST DAILY MEAN	81	81	1.75
LOWEST DAILY MEAN	.13	.06	202
ANNUAL SEVEN-DAY MINIMUM	.14	.09	.06
ANNUAL RUNOFF (AC-FT)	3560	3970	.07
ANNUAL RUNOFF (CFSM)	2.08	2.31	2660
ANNUAL RUNOFF (INCHES)	28.18	31.42	1.55
10 PERCENT EXCEEDS	12	13	21.07
50 PERCENT EXCEEDS	1.6	1.6	8.6
90 PERCENT EXCEEDS	.26	.16	1.3
			.21

452359122454500 UNIFIED SEWERAGE AGENCY (USA) DURHAM WASTEWATER TREATMENT FACILITY
DURHAM, OREGON

LOCATION.--Lat 45°23'59", long 122°45'45", SW 1/4 NE 1/4, sec.13, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, located on the roof of the Solids Building at the USA Durham Wastewater Treatment Facility in Durham.

PERIOD OF RECORD.--May 1991 to November 1993, May 1994 to current year (partial record only, May through November each year).

INSTRUMENTATION.--A quantum sensor interfaced with a micrologger, modem, and phone line. The quantum sensor measures photosynthetically active radiation (PAR) on a flat surface in the 400 to 700 nanometer (nm) waveband. The unit of measurement is microeinsteins per square meter per second ($\mu\text{E}/\text{m}^2/\text{second}$).

REMARKS.--Continuous data for period May 1991 to September 1993 published in USGS Open-File Report 96-173, "Water-quality, Streamflow, and Meteorological Data for the Tualatin River Basin, Oregon, 1991-1993." Daily record data for period May 1994 to November 1994 and May 1995 to November 1995 published in USGS Open-File Report 96-316, "Water-Temperature, Specific Conductance, and Meteorological Data for the Tualatin River Basin, Oregon, 1994-1995".

EXTREMES FOR CURRENT YEAR.--Maximum hourly PAR value recorded for period April to November 1999, 1,880 microeinsteins per square meter per second ($\mu\text{E}/\text{m}^2/\text{second}$) June 19 at 1400 hrs; maximum recorded mean daily PAR value, 663 microeinsteins per meter square per second ($\mu\text{E}/\text{m}^2/\text{second}$) July 5, 1999.

LIGHT INCIDENT, 400-700NM, INTENSITY ($\mu\text{E}/\text{M}^2/\text{SC}$), APRIL TO NOVEMBER 1999

DAY	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN
		APRIL			MAY			JUNE
								JULY
1	---	---	737	250	949	322	1150	395
2	---	---	535	160	1330	395	1070	361
3	---	---	1240	330	1550	574	823	279
4	---	---	1520	419	697	205	1440	336
5	---	---	1710	562	1720	415	1780	663
6	---	---	1140	252	1460	402	1700	588
7	---	---	1410	312	1450	294	1000	280
8	---	---	1740	448	1340	350	1740	636
9	---	---	1580	415	1480	392	1690	610
10	---	---	1240	401	1810	649	1660	621
11	---	---	425	144	1730	546	1770	656
12	---	---	999	301	1730	502	---	---
13	---	---	1060	291	1790	633	---	---
14	---	---	1300	324	1740	645	815	293
15	---	---	794	284	762	225	1710	555
16	---	---	1270	377	1290	385	970	300
17	---	---	941	223	1570	371	854	309
18	---	---	908	227	1310	329	1730	635
19	---	---	---	---	1880	516	1720	631
20	---	---	---	---	886	243	1710	560
21	---	---	---	---	1020	195	1170	366
22	---	---	---	---	1260	330	1740	552
23	734	180	---	---	1840	619	1550	586
24	---	---	---	---	558	187	818	278
25	573	173	---	---	1200	274	1720	610
26	928	326	---	---	973	262	1690	605
27	1530	386	---	---	1190	392	1680	596
28	1360	381	---	---	879	305	1660	590
29	1640	566	1790	655	1510	492	1660	486
30	1750	480	1780	659	1330	291	1680	506
31	---	---	905	256	---	---	1680	533

DAY	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN
		AUGUST			SEPTEMBER			OCTOBER
								NOVEMBER
1	1600	423	1450	438	1100	319	794	197
2	1660	583	1440	469	1100	322	751	171
3	1630	584	1430	462	1090	318	345	49.1
4	1640	574	1410	412	883	253	797	172
5	1030	215	1100	325	642	116	286	55.8
6	390	113	1140	362	763	185	452	104
7	796	183	1390	447	---	---	391	77.6
8	1630	490	1340	428	190	45.5	427	64.6
9	---	---	1350	427	908	185	120	25.3
10	---	---	1340	414	966	262	504	80.6
11	474	152	1350	429	1040	214	279	48.7
12	1740	352	1340	428	982	270	126	27.0
13	1020	238	---	---	885	177	751	163
14	1190	312	---	---	750	210	346	72.3
15	1300	398	1250	282	951	255	552	109
16	1730	535	1260	269	958	264	71.9	14.9
17	1590	526	1260	286	943	252	549	109
18	505	150	1250	387	937	255	---	---
19	1540	467	1250	370	934	253	---	---
20	1550	472	1230	374	913	244	---	---
21	1530	423	1200	366	873	229	---	---
22	1560	528	1200	362	754	199	---	---
23	1500	455	1020	157	586	124	---	---
24	1510	490	1240	308	875	208	---	---
25	1480	412	1220	308	116	26.5	---	---
26	1440	495	1140	264	545	97.3	---	---
27	1150	336	1180	343	82.4	19.6	---	---
28	1200	409	1170	348	397	81.6	---	---
29	430	109	1150	329	565	110	---	---
30	1050	246	1130	253	820	177	---	---
31	1110	245	---	---	783	181	---	---

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR

WATER-QUALITY RECORDS

LOCATION.--(revised)45°24'06", long 122°53'38", in SE 1/4 NE 1/4 sec.33 T.2 S., R. 1 E., Clackamas County, Hydrologic Unit 17090010, on left bank, mounted to the fish ladder at the Lake Oswego Dam, and at mile 3.4.

DRAINAGE AREA.--706 mi², at gage 1.6 mi downstream.

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1993 to current year.

pH: May 1993 to current year.

WATER TEMPERATURE: October 1993 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

AIR TEMPERATURE: May 1993 to current year.

AIR PRESSURE: May 1999 to September 1999.

INSTRUMENTATION.--Water-quality monitor since May 1991. Electronic data logger with 60 minute recording interval.

REMARKS.--Continuous data for period May 1991 to September 1993 published in USGS Open-File Report 96-173, "Water-quality, Streamflow, and Meteorological Data for the Tualatin River Basin, Oregon, 1991-93".

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 365 microsiemens July 7, 1995; minimum recorded, 55 microsiemens

Feb. 27, 28, 1999.

pH: Maximum recorded, 9.5 units June 24, 1995; minimum recorded, 6.2 units Oct. 18, 19, 1993, Feb. 28, 1994.

WATER TEMPERATURE: Maximum recorded, 27.0°C July 22, 1994; minimum recorded, 0.5°C Jan. 15, 1993.

DISSOLVED OXYGEN: Maximum recorded, 21.8 mg/L June 23, 1992; minimum recorded, 3.2 mg/L Nov. 19, 1992.

AIR TEMPERATURE: Maximum recorded, 43.0°C July 28, 1998; minimum recorded, -9.4°C Dec. 21, 1998.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 275 microsiemens Aug. 28; minimum recorded, 55 microsiemens

Feb. 27, 28.

pH: Maximum, 8.3 units July 13, but may have been higher during period of missing record; minimum recorded, 6.6 units Jan. 31 to Feb. 13.

WATER TEMPERATURE: Maximum, 22.5°C Aug. 1, 4, 5; minimum recorded, 2.0°C Dec. 22-24.

DISSOLVED OXYGEN: Maximum, 14.2 mg/L July 13; minimum recorded, 6.1 mg/L Aug. 16.

AIR TEMPERATURE: Maximum, 36.4°C Sept. 13; minimum recorded, -9.4°C Dec. 21.

AIR PRESSURE: Maximum recorded, 770 mm of Hg Sept. 26; minimum recorded 752 mm of Hg Aug. 10.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	220	208	212	234	221	230	83	78	80	68	67	68
2	237	217	227	241	227	233	87	83	84	70	68	69
3	234	213	227	232	209	222	88	86	87	74	70	72
4	221	204	214	227	220	224	88	85	87	77	73	75
5	217	192	205	220	166	200	85	77	81	78	76	77
6	218	208	215	195	156	175	77	76	76	81	78	79
7	220	213	217	195	190	194	80	76	78	84	81	82
8	239	218	230	203	192	198	83	80	81	88	84	86
9	236	221	232	196	172	188	88	83	85	91	86	88
10	232	216	223	183	167	175	89	87	88	93	89	91
11	216	179	194	183	174	179	89	87	88	95	90	92
12	207	187	198	193	182	187	91	87	89	97	94	95
13	211	197	204	192	180	187	92	91	92	99	95	97
14	226	206	215	192	181	188	92	91	92	101	98	100
15	249	217	233	203	191	195	91	86	88	103	98	101
16	217	188	195	207	198	203	86	82	83	109	103	106
17	213	190	200	207	193	200	82	79	81	107	94	103
18	217	198	208	207	197	204	86	82	84	98	87	92
19	208	183	197	221	201	208	90	85	87	92	82	84
20	201	187	195	225	192	217	91	88	89	86	83	84
21	197	189	194	192	136	153	92	89	91	83	73	77
22	209	191	200	164	136	154	93	91	92	74	72	73
23	215	206	210	136	103	115	97	93	95	74	70	72
24	218	210	214	107	102	104	100	96	97	72	71	72
25	226	208	218	105	97	102	101	97	99	73	71	72
26	238	218	227	98	91	94	104	99	101	73	71	72
27	236	228	232	99	96	97	108	90	103	75	73	74
28	237	228	233	97	83	91	91	83	86	77	75	76
29	238	211	227	84	79	82	91	81	84	81	76	78
30	226	214	221	80	76	78	84	76	81	82	79	80
31	227	219	224	---	---	---	76	68	71	79	76	78
MONTH	249	179	214	241	76	169	108	68	87	109	67	83

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	76	73	74	62	58	60	102	93	96	156	147	151
2	73	72	73	62	58	60	95	92	93	161	146	154
3	75	72	73	60	58	59	97	92	94	166	146	157
4	76	74	75	63	59	61	97	87	91	163	146	157
5	75	73	74	67	63	65	97	88	92	168	150	160
6	75	72	74	70	67	69	99	88	96	167	154	161
7	75	72	73	71	70	71	105	99	102	162	149	156
8	76	75	76	74	71	72	110	102	106	157	135	147
9	75	69	72	75	71	73	---	---	---	149	136	141
10	69	64	67	78	75	76	---	---	---	155	140	152
11	66	63	64	80	77	79	---	---	---	161	145	153
12	67	65	66	85	80	82	---	---	---	154	138	147
13	70	67	69	88	84	86	---	---	---	153	134	145
14	70	68	69	95	88	92	115	107	111	154	134	148
15	73	69	71	95	92	94	118	113	114	164	144	159
16	76	72	74	96	93	94	119	112	115	166	144	157
17	80	76	78	95	93	94	122	115	117	162	142	153
18	82	80	81	98	94	96	127	115	120	163	143	155
19	84	80	82	102	97	99	128	116	123	157	140	151
20	85	80	83	107	101	104	128	118	125	157	143	153
21	81	72	79	110	106	108	131	120	127	166	148	158
22	72	69	71	113	107	110	133	125	129	157	140	150
23	74	71	72	116	110	113	133	126	131	156	138	149
24	74	72	72	119	112	114	139	132	136	156	135	149
25	72	68	70	120	116	118	146	137	142	159	145	154
26	68	62	65	120	115	117	148	139	144	165	151	158
27	62	55	59	121	118	119	147	138	143	170	159	164
28	58	55	56	122	114	117	150	138	144	175	161	168
29	---	---	---	121	113	117	155	142	148	180	161	171
30	---	---	---	118	112	114	153	146	149	181	165	175
31	---	---	---	114	102	108	---	---	---	182	168	176
MONTH	85	55	72	122	58	92	---	---	---	182	134	156

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	182	169	176	212	206	209	259	255	256	250	234	241
2	192	177	184	210	198	205	259	252	255	237	227	232
3	194	181	190	212	198	206	256	242	250	250	237	243
4	196	185	192	211	198	204	256	242	250	256	247	251
5	202	190	197	211	195	203	251	244	248	258	255	256
6	208	193	201	210	198	202	251	243	247	258	247	251
7	220	201	209	210	202	207	265	248	254	248	227	237
8	218	202	211	216	208	212	264	256	260	236	227	232
9	217	201	210	221	211	218	256	241	250	237	228	232
10	211	197	206	223	219	221	244	233	239	230	222	227
11	210	198	205	222	214	220	236	227	233	227	218	224
12	212	201	205	215	196	211	259	227	247	242	224	230
13	212	206	210	215	208	213	259	249	254	243	218	235
14	215	196	208	214	206	212	259	254	258	254	243	248
15	211	199	204	227	213	221	254	234	245	254	243	249
16	209	199	203	228	219	223	235	220	225	243	224	234
17	216	200	209	228	221	225	220	214	216	228	211	220
18	215	197	208	223	218	221	219	214	218	235	211	220
19	214	199	207	231	219	224	233	219	225	244	226	234
20	229	212	218	---	---	---	237	230	232	247	234	239
21	242	226	233	---	---	---	244	236	239	249	228	237
22	244	216	229	---	---	---	248	243	244	242	227	235
23	219	196	206	---	---	---	244	237	240	242	220	232
24	205	192	199	---	---	---	246	239	242	251	224	237
25	207	201	204	---	---	---	243	237	240	264	241	255
26	202	192	198	---	---	---	241	235	237	269	248	258
27	199	192	196	---	---	---	258	240	246	261	234	246
28	194	185	191	242	235	239	275	258	266	243	229	237
29	199	192	195	243	234	238	271	261	267	243	228	236
30	211	199	206	251	242	246	263	248	256	236	229	233
31	---	---	---	256	248	251	256	232	248	---	---	---
MONTH	244	169	204	---	---	---	275	214	245	269	211	238

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.1	7.1	7.1	7.0	6.8	6.7	6.9	6.9	6.6	6.6	7.1	7.0
2	7.1	7.1	7.1	7.0	6.9	6.8	6.9	6.9	6.6	6.6	7.0	7.0
3	7.1	7.1	7.0	7.0	6.9	6.9	6.9	6.9	6.6	6.6	7.1	7.0
4	7.1	7.1	7.1	7.0	6.9	6.8	6.9	6.9	6.7	6.6	7.1	7.0
5	7.1	7.1	7.1	7.0	6.8	6.8	7.0	6.9	6.7	6.6	7.1	7.0
6	7.2	7.1	7.1	7.0	6.9	6.8	7.0	7.0	6.6	6.6	7.1	7.1
7	7.2	7.1	7.1	7.1	6.9	6.8	7.0	7.0	6.6	6.6	7.1	7.0
8	7.1	7.1	7.1	7.1	6.9	6.8	7.0	7.0	6.7	6.6	7.0	6.9
9	7.1	7.1	7.1	7.0	7.0	6.9	7.0	7.0	6.7	6.6	7.0	7.0
10	7.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.6	7.0	7.0
11	6.9	6.9	7.0	7.0	7.0	6.9	7.0	7.0	6.7	6.6	7.0	6.7
12	7.0	6.9	7.1	7.0	7.0	6.9	7.0	7.0	6.7	6.6	6.7	6.7
13	7.0	7.0	7.1	7.1	7.0	7.0	7.0	7.0	6.7	6.6	6.7	6.7
14	7.0	7.0	7.1	7.1	7.0	7.0	7.0	7.0	6.8	6.7	6.7	6.7
15	7.1	7.0	7.1	7.1	7.0	7.0	7.0	7.0	6.8	6.8	6.7	6.7
16	7.0	7.0	7.1	7.1	7.0	6.9	7.1	7.0	6.8	6.7	6.7	6.7
17	7.0	7.0	7.1	7.1	7.0	6.9	7.1	7.0	6.9	6.7	6.7	6.7
18	7.0	7.0	7.1	7.1	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.7
19	7.1	7.0	7.2	7.1	7.1	7.0	7.0	6.9	7.1	6.9	6.7	6.7
20	7.1	7.0	7.2	7.1	7.1	7.1	6.9	6.9	7.1	7.1	6.8	6.7
21	7.1	7.0	7.2	7.1	7.2	7.1	7.0	6.9	7.1	7.1	6.8	6.8
22	7.0	7.0	7.1	7.0	7.2	7.2	7.0	6.9	7.1	7.1	6.8	6.8
23	7.0	7.0	7.0	6.9	7.2	7.2	6.9	6.9	7.1	7.1	6.8	6.8
24	7.1	7.0	6.9	6.9	7.2	7.1	6.9	6.9	7.1	7.1	6.9	6.8
25	7.1	7.0	6.9	6.8	7.1	7.0	6.9	6.9	7.1	7.1	6.9	6.8
26	7.1	7.0	6.8	6.8	7.1	7.0	6.9	6.8	7.1	7.1	6.9	6.8
27	7.1	7.0	6.8	6.8	7.1	7.0	6.8	6.8	7.1	7.0	6.9	6.9
28	7.0	7.0	6.8	6.7	7.0	6.9	6.8	6.7	7.0	7.0	6.9	6.9
29	7.0	7.0	6.7	6.7	6.9	6.9	6.8	6.7	---	---	6.9	6.9
30	7.0	7.0	6.7	6.7	6.9	6.8	6.7	6.7	---	---	6.9	6.9
31	7.0	7.0	---	---	6.9	6.9	6.7	6.6	---	---	6.9	6.9
MONTH	7.2	6.9	7.2	6.7	7.2	6.7	7.1	6.6	7.1	6.6	7.1	6.7
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	6.9	6.8	7.1	7.1	7.1	6.9	7.2	7.1	7.7	7.2	7.1	7.0
2	6.9	6.8	7.1	7.0	7.1	6.9	7.1	7.1	7.8	7.2	7.2	7.0
3	6.9	6.8	7.1	7.0	7.0	6.9	7.2	7.1	7.5	7.3	7.2	7.1
4	6.9	6.8	7.1	7.0	7.0	6.9	7.2	7.1	7.5	7.2	7.2	7.1
5	6.9	6.9	7.1	7.0	7.0	7.0	7.2	7.1	7.7	7.2	7.2	7.1
6	6.9	6.8	7.1	7.1	7.1	7.0	7.3	7.1	7.3	7.1	7.1	7.0
7	6.9	6.9	7.1	7.1	7.1	7.0	7.2	7.2	7.1	7.0	7.2	7.1
8	6.9	6.9	7.1	7.1	7.1	7.0	7.5	7.2	7.0	6.9	7.1	7.1
9	---	---	7.1	7.1	7.1	7.0	7.3	7.2	7.0	6.9	7.1	7.0
10	---	---	7.1	7.1	7.2	7.1	7.6	7.2	7.1	6.9	7.1	7.0
11	---	---	7.1	7.1	7.2	7.1	7.6	7.2	6.9	6.9	7.1	7.0
12	---	---	7.1	6.9	7.2	7.1	7.9	7.2	7.0	6.9	7.1	7.0
13	---	---	6.9	6.9	7.2	7.0	8.3	7.2	6.9	6.9	7.2	7.0
14	6.8	6.8	6.9	6.9	7.2	7.0	7.8	7.3	7.0	6.9	7.2	7.1
15	6.9	6.8	6.9	6.9	7.2	7.1	7.9	7.4	6.9	6.8	7.1	6.9
16	6.8	6.8	6.9	6.9	7.1	7.0	7.8	7.3	6.9	6.8	7.2	6.9
17	6.8	6.8	6.9	6.9	7.1	7.0	7.4	7.2	7.0	6.8	7.2	7.1
18	6.8	6.8	6.9	6.9	7.1	7.0	7.6	7.2	7.0	6.9	7.2	7.1
19	6.8	6.8	6.9	6.9	7.1	7.0	7.7	7.3	7.1	6.9	7.2	7.1
20	7.0	6.8	6.9	6.9	7.1	7.0	---	---	7.2	7.0	7.2	7.1
21	7.0	7.0	6.9	6.9	7.1	7.0	---	---	7.2	7.1	7.2	7.1
22	7.0	7.0	6.9	6.9	7.1	7.0	---	---	7.2	7.0	7.2	7.1
23	7.0	7.0	6.9	6.9	7.1	7.0	---	---	7.2	7.0	7.1	7.1
24	7.0	7.0	7.0	6.9	7.0	7.0	---	---	7.2	7.1	7.1	7.1
25	7.0	7.0	7.0	7.0	7.0	7.0	---	---	7.2	7.1	7.1	7.1
26	7.0	7.0	7.0	7.0	7.0	6.9	---	---	7.4	7.1	7.1	7.1
27	7.0	7.0	7.0	6.9	7.0	6.9	---	---	7.4	7.2	7.1	7.1
28	7.1	7.0	7.0	6.9	7.1	7.0	7.7	7.3	7.4	7.2	7.2	7.1
29	7.1	7.0	7.1	6.9	7.1	7.0	7.5	7.2	7.3	7.1	7.1	7.1
30	7.1	7.1	7.1	6.9	7.1	7.0	8.0	7.3	7.2	7.1	7.1	7.1
31	---	---	7.0	6.9	---	---	7.9	7.3	7.1	6.9	---	---
MONTH	---	---	7.1	6.9	7.2	6.9	---	---	7.8	6.8	7.2	6.9

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.0	16.5	16.5	12.0	11.5	12.0	8.5	8.5	8.5	9.0	8.5	8.5
2	17.0	16.5	16.5	12.5	12.0	12.0	8.5	8.5	8.5	8.5	8.0	8.0
3	16.5	15.5	16.0	12.0	12.0	12.0	8.5	8.0	8.0	8.0	7.5	7.5
4	16.0	15.5	15.5	12.0	12.0	12.0	8.0	8.0	8.0	7.5	6.5	7.0
5	15.5	15.0	15.5	12.0	12.0	12.0	8.0	7.5	7.5	6.5	6.0	6.0
6	15.5	15.5	15.5	12.0	11.0	11.5	7.5	7.0	7.0	6.0	5.5	5.5
7	16.0	15.5	15.5	11.5	11.0	11.0	7.0	6.5	7.0	5.5	5.5	5.5
8	16.0	15.5	16.0	11.5	11.0	11.0	6.5	6.5	6.5	6.0	5.5	5.5
9	15.5	15.5	15.5	11.0	11.0	11.0	6.5	6.5	6.5	6.0	6.0	6.0
10	15.5	15.0	15.0	11.0	10.5	11.0	6.5	6.5	6.5	6.5	6.0	6.0
11	15.0	14.5	14.5	10.5	10.5	10.5	7.5	6.5	7.0	6.5	6.0	6.0
12	14.5	14.5	14.5	11.0	10.5	10.5	8.0	7.5	7.5	6.5	6.5	6.5
13	15.0	14.5	14.5	10.5	10.5	10.5	9.0	8.0	8.5	7.0	6.5	7.0
14	15.0	14.5	15.0	10.5	10.5	10.5	9.0	9.0	9.0	7.0	7.0	7.0
15	15.0	14.5	14.5	11.0	10.5	11.0	9.0	8.5	9.0	7.5	7.0	7.5
16	14.5	14.0	14.0	11.0	11.0	11.0	8.5	8.0	8.5	7.5	7.5	7.5
17	14.0	13.5	13.5	11.0	10.5	11.0	8.0	7.5	8.0	8.0	7.5	8.0
18	14.0	13.5	13.5	11.0	10.5	11.0	7.5	7.0	7.5	8.0	8.0	8.0
19	13.5	13.0	13.5	11.0	10.5	10.5	7.0	6.0	6.5	8.0	8.0	8.0
20	13.5	13.0	13.0	11.0	10.5	11.0	6.0	5.0	5.5	8.0	8.0	8.0
21	13.0	13.0	13.0	11.5	10.5	11.0	5.0	3.5	4.0	8.0	8.0	8.0
22	13.0	12.5	13.0	10.5	10.0	10.5	3.5	2.0	2.5	8.0	8.0	8.0
23	13.0	12.5	13.0	10.0	10.0	10.0	2.0	2.0	2.0	8.0	7.5	7.5
24	13.0	12.5	12.5	10.0	9.5	9.5	2.5	2.0	2.0	7.5	7.0	7.5
25	13.0	12.5	12.5	10.0	9.5	9.5	3.5	2.5	3.0	7.0	7.0	7.0
26	13.0	12.5	12.5	10.0	10.0	10.0	4.0	3.5	4.0	7.0	6.5	6.5
27	13.0	12.5	12.5	10.0	10.0	10.0	6.5	4.0	5.0	6.5	6.0	6.5
28	13.0	12.5	12.5	10.0	9.5	9.5	7.5	6.5	6.5	6.5	6.0	6.0
29	13.0	12.0	12.5	9.5	9.0	9.0	8.5	7.5	8.0	7.0	6.5	6.5
30	12.5	12.0	12.0	9.0	8.5	9.0	8.5	8.5	8.5	7.0	7.0	7.0
31	12.0	11.5	12.0	---	---	---	9.0	8.5	9.0	7.5	7.0	7.0
MONTH	17.0	11.5	14.1	12.5	8.5	10.7	9.0	2.0	6.6	9.0	5.5	7.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	7.0	7.5	9.0	8.5	8.5	8.5	8.0	8.0	13.0	12.5	12.5
2	7.0	7.0	7.0	8.5	8.5	8.5	9.0	8.5	8.5	12.5	12.0	12.0
3	7.0	7.0	7.0	8.5	8.0	8.0	9.0	9.0	9.0	12.5	12.0	12.0
4	7.0	7.0	7.0	8.0	7.5	8.0	9.0	9.0	9.0	12.5	12.5	12.5
5	7.0	6.5	7.0	7.5	7.5	7.5	9.0	8.5	9.0	13.0	12.5	13.0
6	7.0	6.5	6.5	7.5	7.0	7.0	9.5	8.5	9.0	13.5	13.0	13.0
7	7.0	7.0	7.0	7.5	7.0	7.0	9.0	9.0	9.0	13.0	12.0	12.5
8	7.0	6.5	6.5	7.5	7.0	7.5	9.5	9.0	9.5	12.0	12.0	12.0
9	6.5	6.0	6.5	7.5	7.5	7.5	---	---	---	12.5	12.0	12.0
10	6.5	6.0	6.0	7.5	7.5	7.5	---	---	---	12.0	12.0	12.0
11	6.0	5.5	6.0	8.0	7.5	7.5	---	---	---	12.0	11.5	12.0
12	6.0	6.0	6.0	8.5	8.0	8.0	---	---	---	11.5	11.5	11.5
13	6.5	6.0	6.5	8.5	8.5	8.5	---	---	---	11.5	11.5	11.5
14	6.5	6.5	6.5	8.5	8.5	8.5	11.5	9.5	10.5	12.0	11.5	12.0
15	7.0	6.5	7.0	9.0	8.5	8.5	11.5	10.5	11.0	12.0	12.0	12.0
16	7.0	7.0	7.0	9.0	8.5	9.0	12.0	11.0	11.5	12.5	12.0	12.0
17	7.5	7.0	7.0	9.0	8.5	8.5	12.5	12.0	12.0	12.5	12.5	12.5
18	7.5	7.0	7.5	9.0	8.5	8.5	12.5	12.5	12.5	13.0	12.5	13.0
19	7.5	7.5	7.5	9.0	8.5	9.0	13.0	12.5	12.5	13.5	13.0	13.0
20	7.5	7.5	7.5	10.0	9.0	9.5	13.5	12.5	13.0	13.5	13.0	13.5
21	7.5	7.0	7.5	10.5	9.5	10.0	13.5	12.5	13.0	14.0	13.5	14.0
22	7.5	7.0	7.0	11.0	10.5	10.5	13.0	12.0	12.5	14.5	14.0	14.0
23	7.5	7.5	7.5	11.5	11.0	11.0	13.0	12.0	12.5	15.5	14.5	15.0
24	8.5	7.5	8.0	11.5	11.0	11.0	13.5	12.0	12.5	16.5	15.5	16.0
25	8.5	8.0	8.0	11.0	11.0	11.0	13.5	12.5	13.0	17.0	16.0	16.5
26	8.0	8.0	8.0	11.0	10.0	10.5	12.5	12.5	12.5	17.0	16.5	16.5
27	8.5	8.0	8.5	10.0	10.0	10.0	13.5	12.5	13.0	18.0	16.5	17.0
28	9.0	8.5	8.5	10.0	9.5	9.5	13.5	13.0	13.0	18.0	17.0	17.5
29	---	---	---	9.5	8.5	9.0	13.5	13.0	13.0	18.0	17.0	17.5
30	---	---	---	8.5	8.0	8.5	13.5	12.5	13.0	18.5	17.5	18.0
31	---	---	---	8.5	8.0	8.0	---	---	---	18.5	18.0	18.0
MONTH	9.0	5.5	7.1	11.5	7.0	8.8	---	---	---	18.5	11.5	13.8

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	18.0	17.5	17.5	18.0	18.0	18.0	22.5	21.5	22.0	19.5	19.0	19.5
2	17.5	17.0	17.0	18.0	17.5	18.0	22.0	21.5	22.0	19.5	19.0	19.0
3	17.0	16.5	16.5	18.0	17.5	17.5	22.0	22.0	22.0	19.5	19.0	19.0
4	17.0	16.5	17.0	17.5	17.5	17.5	22.5	22.0	22.0	19.5	19.0	19.0
5	17.0	16.5	17.0	18.0	17.0	17.5	22.5	22.0	22.5	19.0	19.0	19.0
6	16.5	16.5	16.5	19.0	17.5	18.0	22.0	22.0	22.0	19.0	18.5	19.0
7	16.5	16.0	16.5	19.0	18.5	18.5	22.0	21.0	21.5	19.0	18.0	18.5
8	16.0	15.5	16.0	19.0	18.5	18.5	21.0	21.0	21.0	18.5	18.0	18.0
9	16.0	15.5	16.0	19.0	18.5	18.5	22.0	21.0	21.0	18.5	18.0	18.0
10	16.0	15.5	16.0	20.0	19.0	19.5	22.0	21.0	21.5	18.5	17.5	18.0
11	17.0	16.0	16.5	20.5	19.5	20.0	21.5	21.0	21.5	18.5	17.5	18.0
12	17.5	16.5	17.0	21.0	19.5	20.5	21.0	20.5	21.0	18.5	17.5	18.0
13	18.0	17.0	17.5	21.5	20.0	20.5	20.5	20.0	20.5	18.5	17.5	18.0
14	18.5	17.5	18.0	21.0	20.5	20.5	20.5	20.0	20.0	18.5	18.0	18.5
15	19.0	18.5	19.0	21.0	20.0	20.5	20.0	19.5	19.5	18.5	18.0	18.5
16	19.0	19.0	19.0	20.5	20.0	20.0	20.0	19.5	19.5	18.5	18.0	18.0
17	19.0	19.0	19.0	20.0	20.0	20.0	20.5	19.5	20.0	18.0	17.5	18.0
18	19.5	19.0	19.5	20.5	19.5	20.0	20.5	20.0	20.5	18.5	17.5	18.0
19	20.0	19.5	19.5	21.0	19.5	20.0	21.0	20.0	20.5	18.5	17.5	18.0
20	20.0	19.5	20.0	---	---	---	21.0	20.0	20.5	19.0	18.0	18.0
21	20.0	19.5	19.5	---	---	---	21.0	20.5	20.5	19.0	18.0	18.5
22	19.5	19.0	19.0	---	---	---	21.0	20.5	20.5	19.0	18.5	18.5
23	19.0	18.5	18.5	---	---	---	21.0	20.5	20.5	18.5	18.5	18.5
24	19.0	18.5	19.0	---	---	---	21.5	20.5	21.0	18.5	18.0	18.0
25	18.5	17.5	18.0	---	---	---	21.5	21.0	21.0	18.0	17.5	18.0
26	17.5	17.0	17.5	---	---	---	21.5	21.0	21.0	17.5	17.0	17.5
27	17.5	17.0	17.0	---	---	---	21.5	21.0	21.5	17.0	16.5	17.0
28	17.0	16.5	17.0	21.5	21.0	21.5	22.0	21.0	21.5	17.0	16.0	16.5
29	17.5	17.0	17.0	22.0	21.5	21.5	21.5	21.0	21.5	16.5	16.0	16.5
30	18.0	17.5	18.0	22.0	21.5	22.0	21.0	20.5	20.5	16.5	16.0	16.0
31	---	---	---	22.0	21.5	22.0	20.5	19.5	20.0	---	---	---
MONTH	20.0	15.5	17.7	---	---	---	22.5	19.5	21.0	19.5	16.0	18.1

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.2	6.5	6.9	7.8	7.7	7.8	9.4	9.1	9.2	9.3	9.2	9.2
2	7.6	7.0	7.3	7.8	7.7	7.8	9.8	9.4	9.7	9.2	9.2	9.2
3	7.5	7.1	7.3	7.8	7.3	7.6	9.8	9.6	9.7	9.4	9.2	9.3
4	7.5	7.1	7.4	7.3	6.9	7.1	9.7	9.5	9.6	9.7	9.4	9.5
5	7.7	7.3	7.5	7.7	7.0	7.3	9.6	8.8	9.4	10.1	9.7	9.9
6	7.7	7.3	7.5	7.7	7.5	7.6	9.5	8.9	9.2	10.4	10.1	10.2
7	7.8	7.4	7.5	7.7	7.5	7.6	9.9	9.1	9.5	10.4	10.3	10.4
8	7.6	7.3	7.4	7.9	7.5	7.7	10.0	9.7	9.9	10.4	10.3	10.4
9	7.5	7.1	7.4	7.8	7.4	7.6	10.2	9.9	10.1	10.4	10.3	10.3
10	7.4	7.2	7.3	7.7	7.4	7.6	10.2	10.1	10.2	10.3	10.3	10.3
11	7.4	7.3	7.4	7.8	7.7	7.8	10.3	9.9	10.1	10.3	10.2	10.3
12	7.5	7.3	7.5	8.1	7.8	7.9	9.9	9.7	9.8	10.4	10.2	10.3
13	7.8	7.5	7.6	8.0	7.9	7.9	9.7	9.5	9.6	10.2	10.1	10.2
14	8.0	7.7	7.8	8.1	7.9	8.0	9.5	9.4	9.5	10.2	10.1	10.1
15	7.9	7.4	7.6	8.3	8.1	8.2	9.4	9.3	9.4	10.2	9.9	10.0
16	7.8	7.4	7.7	8.2	8.0	8.1	9.5	9.4	9.4	9.9	9.8	9.8
17	8.0	7.7	7.8	8.1	7.9	7.9	9.8	9.5	9.6	10.0	9.8	9.8
18	7.8	7.5	7.6	8.0	7.8	7.9	9.7	9.6	9.7	10.1	9.9	10.0
19	7.7	7.4	7.6	8.0	7.8	7.9	10.0	9.6	9.8	10.0	9.9	9.9
20	7.9	7.6	7.7	8.5	7.9	8.1	10.9	9.9	10.3	10.0	9.8	9.9
21	7.9	7.8	7.8	8.8	8.5	8.6	12.0	10.9	11.4	10.0	9.9	10.0
22	7.9	7.7	7.8	9.1	8.8	9.0	13.0	12.0	12.6	10.1	9.9	10.0
23	7.9	7.7	7.8	9.1	8.8	8.9	13.4	12.9	13.2	10.1	10.0	10.1
24	7.9	7.8	7.8	9.4	9.1	9.2	13.1	12.6	12.9	10.2	10.0	10.1
25	8.0	7.8	7.9	9.6	9.4	9.5	12.8	12.4	12.6	10.4	10.2	10.2
26	7.9	7.7	7.8	9.6	9.2	9.4	12.4	12.0	12.2	10.5	10.3	10.4
27	8.0	7.8	7.9	9.3	9.1	9.2	12.1	11.2	11.7	10.7	10.5	10.6
28	7.8	7.6	7.8	9.1	8.8	8.9	11.2	10.5	11.0	11.2	10.7	10.9
29	7.7	7.3	7.5	9.0	8.7	8.8	10.5	10.1	10.2	11.2	11.1	11.2
30	7.5	7.3	7.5	9.2	9.0	9.1	10.1	9.5	9.8	11.2	11.1	11.2
31	7.7	7.5	7.7	---	---	---	9.5	9.2	9.3	11.1	10.9	11.0
MONTH	8.0	6.5	7.6	9.6	6.9	8.2	13.4	8.8	10.3	11.2	9.2	10.2

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.9	10.8	10.9	11.8	11.4	11.6	10.7	10.5	10.6	10.0	9.7	9.8
2	11.2	10.8	11.0	11.6	10.4	11.1	10.7	10.4	10.6	9.9	9.5	9.7
3	11.2	11.1	11.2	11.0	10.7	10.9	10.5	10.3	10.4	9.5	9.3	9.5
4	11.3	11.1	11.2	11.0	10.6	10.8	10.5	10.3	10.4	9.4	9.3	9.3
5	11.3	11.1	11.2	11.1	10.9	11.0	10.6	10.4	10.5	9.6	9.1	9.3
6	11.4	11.2	11.3	11.2	10.9	11.0	10.7	10.4	10.5	9.7	9.5	9.6
7	11.3	11.3	11.3	11.6	11.0	11.2	10.6	10.5	10.5	9.7	9.5	9.6
8	11.3	11.2	11.3	11.1	10.8	11.0	10.5	10.2	10.3	9.7	9.5	9.6
9	11.3	8.6	9.4	11.6	10.5	10.9	---	---	---	9.8	9.5	9.7
10	10.6	9.6	10.1	11.1	10.5	10.7	---	---	---	9.8	9.6	9.7
11	10.6	10.4	10.5	10.7	10.4	10.5	---	---	---	9.8	9.6	9.7
12	11.3	10.6	10.9	10.4	10.1	10.2	---	---	---	9.7	9.4	9.6
13	11.2	11.0	11.1	10.1	9.8	9.9	---	---	---	9.7	9.5	9.6
14	11.0	10.4	10.7	9.8	9.7	9.8	10.2	9.9	10.1	9.7	9.6	9.6
15	10.7	9.9	10.4	9.8	9.7	9.7	10.1	9.9	10.0	9.6	9.4	9.5
16	10.8	10.1	10.4	9.8	9.7	9.7	10.1	9.8	10.0	9.6	9.4	9.5
17	10.2	9.9	10.1	10.0	9.8	9.8	10.0	9.6	9.8	9.5	9.3	9.4
18	10.3	10.1	10.2	10.0	9.9	9.9	9.8	9.1	9.5	9.3	9.0	9.1
19	10.3	10.1	10.3	9.9	9.8	9.9	9.5	9.1	9.2	9.6	9.1	9.3
20	10.5	10.3	10.4	9.9	9.8	9.8	9.4	8.9	9.1	9.6	9.1	9.3
21	10.8	10.5	10.6	9.8	9.5	9.6	9.4	9.0	9.2	9.2	8.8	9.0
22	11.2	10.8	11.0	9.5	9.2	9.3	9.8	9.1	9.5	9.3	9.0	9.1
23	11.3	11.2	11.2	9.3	9.1	9.2	10.0	9.5	9.8	9.2	8.9	9.0
24	11.4	11.2	11.3	9.2	9.1	9.2	9.9	9.6	9.8	9.3	9.0	9.1
25	11.4	11.2	11.3	9.3	9.1	9.2	9.8	9.6	9.7	9.5	8.9	9.2
26	11.6	11.3	11.4	9.6	9.2	9.4	9.6	9.2	9.4	9.6	8.8	9.1
27	11.7	11.5	11.6	9.7	9.4	9.6	9.3	8.9	9.1	9.9	8.7	9.1
28	11.8	11.3	11.7	9.9	9.6	9.8	9.5	9.2	9.3	9.8	8.8	9.2
29	---	---	---	10.1	9.8	10.0	9.8	9.1	9.4	10.5	8.6	9.4
30	---	---	---	10.2	10.1	10.2	9.9	9.5	9.8	10.6	8.9	9.6
31	---	---	---	10.6	10.2	10.4	---	---	---	10.0	9.2	9.6
MONTH	11.8	8.6	10.9	11.8	9.1	10.2	---	---	---	10.6	8.6	9.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.3	9.0	9.5	9.1	8.4	8.7	12.5	9.9	11.6	8.2	7.5	7.8
2	10.1	8.8	9.4	9.0	8.5	8.8	12.9	10.0	11.1	8.8	7.4	7.9
3	9.7	8.6	9.1	9.5	8.9	9.2	12.2	10.5	11.3	8.8	7.8	8.3
4	9.5	8.7	9.1	9.5	9.0	9.3	12.5	10.7	11.5	8.8	7.9	8.4
5	9.6	8.6	9.1	9.6	8.7	9.2	12.2	9.8	11.2	8.6	7.6	8.1
6	9.5	8.8	9.1	10.4	9.1	9.6	10.4	9.3	9.8	8.3	7.5	7.9
7	10.0	8.9	9.3	9.9	9.2	9.6	9.3	7.5	8.1	9.5	7.6	8.3
8	9.7	8.9	9.2	11.1	9.3	10.0	7.5	6.8	7.2	8.6	7.8	8.2
9	9.9	8.4	9.1	10.8	9.4	10.1	8.4	6.6	7.2	8.7	7.6	8.1
10	10.8	8.9	9.6	12.2	9.5	10.2	9.0	7.0	7.7	8.6	7.8	8.1
11	10.7	9.4	9.8	12.2	9.5	10.5	7.7	7.2	7.4	9.0	7.7	8.2
12	10.9	9.4	10.0	13.2	9.6	10.8	7.8	6.9	7.1	8.5	8.0	8.3
13	11.2	9.4	10.1	14.2	10.2	11.6	7.2	6.6	6.8	9.1	8.0	8.6
14	10.8	9.2	9.9	13.2	11.1	11.7	7.2	6.5	6.9	9.0	8.1	8.5
15	11.2	9.8	10.2	13.2	11.5	12.4	6.8	6.2	6.5	8.4	7.3	7.9
16	9.8	9.2	9.5	12.9	10.1	11.3	7.0	6.1	6.5	8.4	7.2	7.7
17	10.0	9.1	9.5	11.2	9.4	10.4	8.3	6.5	7.1	8.2	7.6	7.8
18	9.5	9.0	9.2	11.3	9.4	10.2	8.1	6.8	7.4	8.6	7.6	8.0
19	9.4	8.2	8.7	11.8	9.6	10.5	8.7	6.9	7.7	8.6	7.6	8.0
20	9.1	8.4	8.8	---	---	---	9.3	7.3	8.0	8.2	7.5	7.8
21	8.8	7.9	8.4	---	---	---	10.0	8.8	9.4	8.6	7.4	7.7
22	8.7	7.6	8.0	---	---	---	10.1	8.4	9.2	8.0	7.4	7.6
23	8.9	7.6	8.1	---	---	---	9.2	8.1	8.5	7.6	6.9	7.3
24	8.4	7.9	8.1	---	---	---	9.8	8.5	9.2	7.4	6.7	7.0
25	8.1	7.4	7.7	---	---	---	9.6	8.7	9.2	7.4	6.8	7.1
26	8.0	7.4	7.7	---	---	---	10.3	8.4	9.2	7.2	6.7	6.9
27	8.3	7.4	7.9	---	---	---	10.3	8.5	9.3	7.6	6.7	7.1
28	8.6	7.9	8.3	12.7	11.0	11.7	10.3	8.6	9.3	7.9	7.1	7.4
29	8.6	8.0	8.3	12.1	10.6	11.3	9.6	8.0	8.5	7.7	7.1	7.3
30	8.9	8.0	8.4	13.8	11.3	12.3	8.1	7.2	7.5	7.8	7.1	7.3
31	---	---	---	13.3	10.9	11.9	7.9	7.0	7.4	---	---	---
MONTH	11.2	7.4	9.0	---	---	---	12.9	6.1	8.5	9.5	6.7	7.8

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, AIR, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.9	11.7	14.6	13.5	9.4	10.6	9.7	5.4	7.8	6.2	1.1	3.1
2	17.5	10.3	12.4	19.7	6.6	10.9	10.0	3.9	7.1	7.6	.9	4.1
3	13.6	9.5	11.5	12.4	6.2	9.2	7.9	3.7	5.1	11.5	.8	5.2
4	23.1	9.3	12.7	13.5	9.1	11.2	7.3	1.2	4.1	6.1	-1.7	.9
5	28.5	6.3	12.7	12.5	6.4	8.7	4.9	1.2	2.9	5.5	-1.7	.8
6	31.2	7.7	15.3	10.6	6.1	7.9	5.8	2.1	3.9	6.8	.4	4.5
7	27.5	10.2	16.2	8.6	5.5	6.8	6.8	4.1	5.2	8.9	.9	5.7
8	15.7	11.9	14.1	10.6	4.5	6.6	7.6	-.2	3.9	3.9	.5	2.1
9	12.0	8.9	10.8	11.6	4.9	7.5	11.1	-.6	3.4	4.3	1.0	2.7
10	17.2	8.5	11.3	8.5	6.2	7.1	7.1	3.1	5.6	8.3	1.9	4.7
11	20.6	7.6	11.7	11.7	6.3	8.3	10.3	6.9	8.7	10.5	1.3	4.1
12	14.7	11.0	12.9	11.6	6.6	9.3	12.5	8.6	10.4	8.4	3.6	6.8
13	17.9	11.3	13.3	12.4	10.1	11.6	10.7	4.1	8.3	7.6	4.7	6.4
14	16.5	8.4	11.9	15.6	8.1	10.9	10.1	1.5	4.5	10.8	6.3	9.0
15	17.0	6.4	10.3	16.8	8.1	11.9	8.3	2.0	4.2	9.7	5.7	7.3
16	18.1	4.1	8.6	10.1	5.9	8.0	7.0	.7	2.8	7.4	4.2	5.6
17	13.9	5.7	9.3	13.6	6.8	9.0	6.8	2.1	3.9	9.8	4.5	6.7
18	19.1	6.6	10.2	15.0	4.2	8.9	3.9	-.7	1.8	10.4	6.9	8.1
19	23.3	6.9	11.9	9.3	3.3	7.1	2.9	-4.4	-1.3	9.1	6.5	7.3
20	26.8	8.1	14.6	12.0	9.3	11.1	-3.0	-9.1	-6.1	8.6	6.4	7.3
21	31.0	9.8	15.3	11.0	6.4	8.9	-5.2	-9.4	-7.0	9.7	6.3	7.3
22	27.4	5.2	12.1	8.7	5.7	6.7	-.8	-7.7	-5.0	6.5	1.8	4.7
23	19.1	6.7	10.9	10.2	5.7	8.1	-2.5	-8.1	-5.3	7.8	4.0	5.3
24	15.8	9.7	11.7	10.1	5.8	8.1	5.2	-4.3	.5	5.7	.3	2.8
25	19.8	9.1	13.5	13.2	9.3	10.5	8.0	4.9	6.5	5.1	.5	2.6
26	20.7	6.7	11.8	10.7	6.4	8.9	8.2	3.1	5.3	5.7	.6	3.0
27	13.7	7.2	10.0	10.1	4.0	7.1	9.8	3.1	7.3	6.7	.3	4.5
28	13.2	4.8	9.0	7.1	3.1	4.6	9.7	8.4	9.0	9.2	5.6	7.3
29	15.5	3.9	6.9	9.5	4.5	6.1	11.7	9.2	9.9	12.9	6.1	9.6
30	14.7	3.1	7.2	8.5	4.5	6.3	12.3	7.4	9.5	7.1	3.9	5.6
31	9.6	2.6	7.0	---	---	---	9.7	2.0	7.1	9.4	3.5	5.1
MONTH	31.2	2.6	11.7	19.7	3.1	8.6	12.5	-9.4	4.0	12.9	-1.7	5.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.5	3.3	5.9	9.4	3.3	6.0	17.7	.1	6.9	15.3	7.6	10.6
2	8.3	3.6	6.2	11.7	3.0	6.6	15.1	.0	6.7	10.7	6.2	8.2
3	7.1	2.7	4.7	6.2	3.1	4.6	11.6	2.5	5.2	14.0	6.1	9.1
4	7.9	1.7	5.1	7.1	2.2	3.8	7.9	4.0	5.4	13.8	4.5	8.4
5	6.4	.2	3.4	9.6	1.8	4.0	15.1	3.8	7.9	21.8	3.9	10.9
6	8.4	5.5	6.7	14.0	1.2	5.7	18.4	.5	8.4	16.8	5.3	10.6
7	6.7	2.3	4.6	12.7	.8	5.3	12.4	3.2	7.8	11.0	3.6	6.4
8	4.2	1.5	2.4	11.0	4.3	6.4	11.1	2.0	5.9	13.6	3.6	6.7
9	7.7	.6	2.3	9.5	2.4	5.5	---	---	---	14.1	3.5	7.4
10	5.0	.6	2.1	15.2	2.1	6.7	---	---	---	15.4	2.5	8.4
11	9.6	.6	4.3	18.7	-.7	7.0	---	---	---	13.6	5.3	9.5
12	12.1	2.1	5.8	9.1	5.7	7.6	---	---	---	12.6	6.8	9.4
13	9.5	2.6	5.7	12.4	7.8	9.5	---	---	---	12.2	5.7	8.1
14	8.3	1.2	3.9	9.8	6.1	7.5	21.8	3.0	11.6	15.6	6.3	9.4
15	10.7	1.8	5.9	10.4	4.0	6.8	24.6	8.7	16.4	16.6	6.9	10.7
16	7.9	5.2	6.5	13.4	.9	6.1	30.2	11.1	18.5	17.9	7.2	11.9
17	8.6	3.2	5.3	12.3	4.2	7.6	25.5	9.8	16.0	16.2	9.1	12.0
18	7.9	4.1	5.7	14.6	6.9	10.2	15.9	8.9	12.2	13.9	8.4	11.4
19	11.9	2.1	6.1	23.0	6.3	12.6	13.1	7.0	10.2	18.9	6.2	11.5
20	10.9	.6	5.5	18.6	6.2	11.9	17.8	7.0	10.6	16.8	6.6	11.0
21	7.8	4.1	6.0	18.6	8.4	11.5	12.7	4.2	8.1	21.4	8.1	13.3
22	8.9	5.9	7.1	17.5	6.6	10.6	21.5	5.0	10.8	27.4	6.7	15.7
23	10.2	6.7	8.3	20.7	3.1	10.7	27.6	4.8	14.1	35.3	11.4	20.6
24	11.0	5.5	8.9	13.6	7.4	10.3	34.9	6.3	16.2	27.8	12.8	18.5
25	7.7	3.6	5.7	11.2	5.3	8.2	15.0	6.3	10.9	24.2	9.3	15.8
26	9.4	2.6	5.4	9.4	3.4	6.1	15.6	4.8	8.4	27.6	4.9	14.5
27	10.9	5.4	8.5	12.0	2.2	5.9	16.8	5.0	8.6	28.4	8.5	16.4
28	13.2	4.6	8.9	9.9	3.3	5.9	18.2	4.4	9.4	19.2	7.9	13.6
29	---	---	---	10.5	3.8	5.9	24.5	2.9	11.9	26.2	5.8	14.4
30	---	---	---	11.1	3.0	6.1	24.6	3.8	12.4	26.8	5.4	14.9
31	---	---	---	13.9	1.7	6.4	---	---	---	20.1	10.0	15.3
MONTH	13.2	.2	5.6	23.0	-.7	7.4	---	---	---	35.3	2.5	11.8

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, AIR, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	14.6	7.5	11.4	22.2	12.7	15.7	26.9	12.9	17.7	27.1	10.2	16.9
2	17.0	5.8	10.9	16.1	10.1	12.4	32.6	12.5	20.9	29.1	11.4	18.4
3	24.3	5.4	13.4	16.9	9.1	12.6	33.0	14.4	21.9	32.2	11.1	18.9
4	17.9	10.8	13.5	20.5	10.2	13.7	31.0	14.5	21.2	32.5	12.2	19.5
5	17.2	8.8	13.6	29.6	8.8	17.5	22.6	16.3	18.7	26.8	12.6	19.1
6	14.4	7.6	10.8	23.8	11.7	16.5	20.8	17.2	18.4	22.9	13.2	18.1
7	14.8	6.9	9.7	19.4	12.2	15.0	20.5	15.5	17.4	28.6	8.7	17.1
8	15.2	8.0	11.0	27.6	7.7	16.6	28.0	14.7	19.0	35.2	14.8	22.1
9	19.5	9.2	13.1	34.6	10.9	20.3	31.5	13.7	20.9	28.0	12.1	18.1
10	25.4	6.3	14.3	31.5	12.8	20.8	31.9	15.5	21.8	25.6	8.6	15.9
11	30.9	9.6	18.2	31.5	10.5	19.7	19.0	15.3	17.2	30.2	10.7	19.3
12	29.0	13.6	19.8	29.7	11.9	19.7	23.3	14.3	18.8	34.6	12.6	22.4
13	31.8	15.0	20.8	29.7	11.9	18.5	20.4	15.7	17.9	36.4	15.2	23.6
14	31.3	13.9	21.0	20.1	8.0	14.4	22.1	14.2	17.0	33.5	12.7	20.7
15	20.0	14.5	17.2	25.6	10.3	17.0	26.4	13.5	18.7	26.0	14.0	18.0
16	22.6	14.1	17.6	18.6	12.1	15.3	31.9	13.9	21.1	23.8	10.5	16.0
17	24.1	12.7	16.9	18.3	11.3	15.0	34.8	15.9	22.9	25.3	13.0	17.6
18	21.3	11.7	15.6	26.6	10.7	17.2	21.8	17.4	19.4	33.6	13.8	21.1
19	22.7	12.8	16.3	32.4	12.4	20.7	29.1	16.7	20.7	35.0	15.6	22.9
20	19.2	10.3	14.3	---	---	---	29.8	14.2	21.1	31.8	16.8	22.2
21	17.6	12.3	14.9	---	---	---	27.6	17.2	21.1	33.8	13.5	20.5
22	21.7	12.4	15.8	---	---	---	31.1	12.8	20.5	33.4	13.1	20.6
23	28.1	13.7	19.2	---	---	---	32.7	14.7	22.1	21.2	10.9	15.3
24	18.3	10.0	14.1	---	---	---	34.3	16.2	22.7	21.8	7.4	14.3
25	16.0	10.0	12.5	---	---	---	32.8	16.7	22.4	20.8	9.6	15.7
26	16.7	9.8	12.6	---	---	---	32.8	15.2	21.9	18.5	8.5	12.7
27	19.8	9.9	13.4	---	---	---	31.4	16.9	22.6	19.6	4.1	10.9
28	20.1	7.7	14.0	34.5	14.5	22.0	32.2	17.6	22.8	26.0	7.2	15.1
29	26.3	12.7	18.0	28.7	12.9	19.3	19.6	15.4	17.8	27.6	7.8	15.8
30	22.7	14.5	18.0	28.9	13.4	19.4	19.4	12.9	15.3	19.0	7.0	12.3
31	---	---	---	27.3	13.0	19.4	24.0	12.6	16.0	---	---	---
MONTH	31.8	5.4	15.1	---	---	---	34.8	12.5	19.9	36.4	4.1	18.0

WILLAMETTE RIVER BASIN

275

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

BAROMETRIC PRESSURE (MM OF HG), MAY 1999 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	766	759	761
7	---	---	---	---	---	---	---	---	---	768	766	767
8	---	---	---	---	---	---	---	---	---	767	765	766
9	---	---	---	---	---	---	---	---	---	767	765	766
10	---	---	---	---	---	---	---	---	---	765	761	763
11	---	---	---	---	---	---	---	---	---	762	760	761
12	---	---	---	---	---	---	---	---	---	763	761	762
13	---	---	---	---	---	---	---	---	---	763	761	762
14	---	---	---	---	---	---	---	---	---	763	760	761
15	---	---	---	---	---	---	---	---	---	765	763	765
16	---	---	---	---	---	---	---	---	---	764	761	762
17	---	---	---	---	---	---	---	---	---	761	757	758
18	---	---	---	---	---	---	---	---	---	763	759	761
19	---	---	---	---	---	---	---	---	---	763	760	762
20	---	---	---	---	---	---	---	---	---	764	761	763
21	---	---	---	---	---	---	---	---	---	767	764	766
22	---	---	---	---	---	---	---	---	---	767	762	765
23	---	---	---	---	---	---	---	---	---	763	756	759
24	---	---	---	---	---	---	---	---	---	762	757	759
25	---	---	---	---	---	---	---	---	---	767	762	765
26	---	---	---	---	---	---	---	---	---	767	759	763
27	---	---	---	---	---	---	---	---	---	763	760	761
28	---	---	---	---	---	---	---	---	---	763	760	762
29	---	---	---	---	---	---	---	---	---	764	761	762
30	---	---	---	---	---	---	---	---	---	766	763	764
31	---	---	---	---	---	---	---	---	---	764	759	762
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	759	756	757	760	758	759	760	757	759	760	757	758
2	760	756	757	759	755	757	762	759	760	759	757	758
3	761	759	760	758	756	756	763	760	762	760	757	759
4	762	760	761	764	758	761	762	756	759	759	756	758
5	763	758	760	764	757	761	758	755	756	760	756	757
6	764	763	763	761	758	759	756	754	755	764	760	762
7	763	761	762	766	761	764	761	756	758	764	758	761
8	764	762	763	766	759	763	762	759	761	758	753	755
9	764	761	763	762	759	760	760	754	757	761	755	759
10	763	760	761	764	762	763	756	752	754	762	760	761
11	761	756	759	765	762	764	762	756	759	762	759	761
12	762	758	760	763	759	761	763	760	761	760	757	759
13	764	759	762	760	757	759	760	759	760	759	757	758
14	760	755	758	761	759	760	760	759	760	760	756	758
15	760	756	758	760	755	758	761	760	761	759	757	758
16	761	759	760	760	756	758	762	760	761	760	758	759
17	760	757	759	763	760	761	761	758	760	761	757	759
18	762	758	760	763	758	761	760	758	758	758	752	755
19	763	760	762	759	755	758	761	758	760	756	753	754
20	760	756	758	---	---	---	763	759	760	759	756	758
21	760	756	758	---	---	---	765	762	763	759	756	758
22	763	760	762	---	---	---	763	754	759	759	756	758
23	761	753	758	---	---	---	756	753	755	762	757	759
24	758	753	755	---	---	---	758	755	756	763	758	761
25	762	758	761	---	---	---	760	757	759	769	760	766
26	762	762	762	---	---	---	759	754	757	770	767	768
27	764	762	763	---	---	---	756	754	755	769	766	767
28	763	762	763	759	756	757	759	756	758	767	763	765
29	763	758	761	762	759	761	760	757	759	764	762	763
30	760	758	759	762	758	760	763	758	760	763	760	762
31	---	---	---	759	756	758	764	760	762	---	---	---
MONTH	764	753	760	---	---	---	765	752	759	770	752	760

14207500 TUALATIN RIVER AT WEST LINN, OR

LOCATION.--Lat 45°21'03", long 122°40'30", in SW 1/4 sec.34, T.2 S., R.1 E., Clackamas County, Hydrologic Unit 17090010, on left bank 300 ft upstream from bridge on State Highway 212, 0.4 mi west of West Linn city limits, and at mile 1.8.

DRAINAGE AREA.--706 mi².

PERIOD OF RECORD.--July 1928 to current year. Prior to October 1960, published as "near Willamette."

REVISED RECORDS.--WSP 1014: 1943. WSP 1184: 1947. WSP 1248: 1941. WSP 1935: Drainage area. WDR OR-75-1: 1974(M). WDR OR-77-1: 1971-73, 1975, 1976(M).

GAGE.--Water-stage recorder. Datum of gage is 85.61 ft above sea level (levels by Corps of Engineers). Prior to June 12, 1941, nonrecording gage at datum 1.02 ft higher.

REMARKS.--Water-discharge records good. October 1951 to September 1970, records published for this station included the daily flow in Oswego Canal, which diverts at point 5.0 mi upstream from station for development of power between outlet of Lake Oswego and Willamette River. Adjustment for diversion to Lake Oswego are published for the 1971-95 water years. Some regulation in low-water season by flashboards on crest of diversion dam for Oswego Canal and regulation by Henry Hagg Lake since January 1975. Several diversions upstream from station for irrigation. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--24 years (water years 1976-99), 1,486 ft³/s, 1,076,000 acre-ft/yr, river only, not adjusted for diversion to Oswego Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s Feb. 10, 1996, gage height, 18.32 ft, does not include an estimated 3,600 ft³/s flowing in Oswego Canal; minimum daily discharge, 0.20 ft³/s July 30 to Aug. 2, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,700 ft³/s Mar. 1, 2, gage height, 14.42 ft; minimum discharge, 130 ft³/s Sept. 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	322	9010	9020	8330	15500	3230	824	410	355	206	281
2	329	383	9210	8800	8740	15400	3210	804	416	341	206	281
3	392	377	8710	8080	8680	14600	3150	805	415	339	208	273
4	466	411	8710	7250	8690	13200	3080	815	398	385	205	251
5	461	681	8950	6450	8640	11700	2940	863	385	414	192	232
6	419	753	8700	5760	9160	10300	2710	874	380	422	194	226
7	345	774	8090	5150	10400	9050	2440	858	406	372	235	229
8	274	745	7600	4620	11600	8060	2200	876	438	336	300	239
9	309	665	6910	4160	12700	7270	1970	933	482	334	354	232
10	353	600	6390	3770	12500	6460	1990	914	479	318	353	224
11	384	533	6110	3450	11200	5750	2110	855	445	298	307	198
12	436	481	5890	3230	9870	5170	2240	798	405	289	270	149
13	463	451	5830	3030	8860	4790	2160	788	367	284	255	187
14	521	412	5680	2930	8040	4430	1990	805	341	262	258	205
15	598	452	5650	2820	7400	4060	1820	785	313	252	258	282
16	535	474	5660	3140	6970	3740	1670	767	342	254	261	290
17	428	497	5570	3930	6620	3420	1550	827	398	258	262	245
18	376	579	5320	5670	6640	3070	1440	861	423	261	242	237
19	346	560	4970	6150	6850	2800	1360	900	416	268	219	243
20	318	775	e4600	6790	6510	2530	1300	883	419	267	216	241
21	290	1620	e4200	7970	6500	2250	1250	810	464	241	215	233
22	284	2720	e3800	9390	6800	2020	1200	740	489	245	218	229
23	282	3530	3400	11100	7260	1890	1130	700	488	231	230	226
24	275	4010	3090	11300	8270	1790	1070	671	478	227	232	230
25	265	4940	3040	10600	9670	1740	1020	631	483	222	208	244
26	261	6800	3100	9400	12000	1730	1010	576	496	220	195	255
27	273	6590	3790	8250	13700	1710	994	544	480	230	196	262
28	336	7580	6200	7690	15000	1740	979	496	445	235	198	266
29	340	8840	6720	7310	---	2230	946	452	413	216	205	258
30	330	9230	7200	7470	---	2810	890	427	384	202	234	245
31	309	---	8350	7840	---	3160	---	413	---	209	272	---
TOTAL	11276	66785	190450	202520	257600	174370	55049	23295	12698	8787	7404	7193
MEAN	364	2226	6144	6533	9200	5625	1835	751	423	283	239	240
MAX	598	9230	9210	11300	15000	15500	3230	933	496	422	354	290
MIN	261	322	3040	2820	6500	1710	890	413	313	202	192	149
AC-FT	22370	132500	377800	401700	510900	345900	109200	46210	25190	17430	14690	14270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1999, BY WATER YEAR (WY)

	MEAN	289	1186	3210	3539	3714	2730	1616	749	373	182	154	205
	MAX	995	3062	7035	7845	9490	5625	3758	2437	762	292	254	420
	(WY)	1998	1984	1997	1997	1996	1999	1991	1996	1984	1998	1997	1997
	MIN	71.7	130	158	163	180	1043	354	229	147	59.9	79.9	79.1
	(WY)	1988	1988	1977	1977	1977	1992	1977	1977	1992	1977	1986	1987

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1976 - 1999

ANNUAL TOTAL	788705	1017427	
ANNUAL MEAN	2161	2787	1486
HIGHEST ANNUAL MEAN			2787
LOWEST ANNUAL MEAN			278
HIGHEST DAILY MEAN	9630	Jan 20	15500
LOWEST DAILY MEAN	179	Jul 17	149
ANNUAL SEVEN-DAY MINIMUM	187	Aug 10	203
ANNUAL RUNOFF (AC-FT)	1564000	2018000	1076000
10 PERCENT EXCEEDS	6130	8680	4260
50 PERCENT EXCEEDS	753	774	562
90 PERCENT EXCEEDS	228	232	122

e Estimated

WILLAMETTE RIVER BASIN

277

14207740 WILLAMETTE RIVER ABOVE FALLS, AT OREGON CITY, OR

LOCATION.--Lat 45°20'55", long 122°37'08", in SW 1/4 SW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, on right bank 0.2 mi above Willamette Falls, 1.6 mi downstream from Tualatin River, and at mile 26.8.

DRAINAGE AREA.--10,000 mi², approximately.

PERIOD OF RECORD.--October 1976 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is sea level.

REMARKS.--Flow regulated by many reservoirs upstream. Gage height elevations possibly affected by Portland General Electric powerplant operations throughout the year and by Army Corps of Engineers locks operation during summer months.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 69.47 ft Feb. 9, 1996; minimum, 52.51 ft July 12, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 64.74 ft Dec. 30; minimum, 53.52 ft July 25-27.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55.44	55.80	61.45	63.64	59.01	62.70	57.46	54.94	55.84	54.16	55.18	55.02
2	55.51	55.85	62.02	62.62	58.44	62.69	57.17	54.90	55.82	54.03	55.19	55.09
3	55.56	55.86	62.42	61.84	58.60	62.32	56.76	55.22	55.76	54.02	55.16	55.06
4	55.69	55.88	62.45	61.11	58.67	61.84	56.50	55.84	55.65	54.10	55.16	55.02
5	55.82	55.99	62.07	60.45	58.55	61.46	56.32	56.36	55.42	54.05	55.16	55.00
6	55.81	56.24	61.57	59.88	58.71	60.86	56.16	56.47	55.22	53.99	55.15	54.98
7	55.67	56.49	61.19	59.17	60.00	59.79	55.98	56.49	55.16	53.88	55.20	54.97
8	55.58	56.54	61.04	58.69	61.16	58.64	55.85	56.51	55.11	53.89	55.26	55.00
9	55.61	56.53	60.90	58.41	61.39	57.89	55.78	56.35	55.13	53.96	55.35	55.22
10	55.71	56.52	60.51	58.12	60.75	57.39	55.76	56.06	55.17	53.92	55.33	55.33
11	55.83	56.40	59.85	57.58	59.55	56.95	55.83	55.78	54.89	53.87	55.24	55.36
12	55.81	56.35	60.05	56.93	58.49	56.64	55.80	55.62	54.76	53.85	55.23	55.43
13	55.78	56.28	60.68	56.58	57.85	56.58	55.71	55.70	54.78	53.82	55.21	55.45
14	55.81	56.21	60.77	56.53	57.50	56.68	55.69	55.67	54.84	53.80	55.21	55.45
15	55.97	56.16	60.39	57.07	57.25	56.82	55.64	55.71	54.90	53.76	55.24	55.46
16	56.02	56.17	59.79	58.88	57.08	56.64	55.62	55.79	55.07	53.75	55.25	55.50
17	56.01	56.37	59.11	59.90	57.32	56.40	55.64	55.83	55.26	53.75	55.23	55.55
18	55.99	56.42	58.42	61.21	58.05	56.24	55.78	56.24	55.25	53.72	55.20	55.52
19	56.21	56.40	57.82	62.01	59.31	56.07	55.90	57.17	55.13	54.14	55.18	55.47
20	56.34	56.58	57.37	62.40	59.93	55.89	55.81	57.52	55.01	54.48	55.15	55.48
21	56.31	57.86	57.02	62.61	59.72	55.81	55.84	57.31	54.94	54.43	55.13	55.52
22	56.29	59.27	56.74	62.87	59.06	55.79	55.75	56.95	54.86	54.43	55.14	55.52
23	56.12	59.92	56.50	63.25	59.38	55.75	55.60	56.63	54.70	54.30	55.15	55.55
24	55.71	60.24	56.40	63.20	60.52	55.83	55.44	56.55	54.51	53.69	55.14	55.58
25	55.72	60.71	56.35	62.52	61.43	55.96	55.40	56.43	54.46	53.56	55.13	55.51
26	55.75	61.87	57.03	61.53	61.57	55.98	55.43	56.40	54.55	53.55	55.12	55.52
27	55.77	62.34	58.10	60.68	61.24	56.00	55.42	56.56	54.75	53.53	55.11	55.54
28	55.77	62.24	60.51	60.21	62.01	56.04	55.42	56.43	54.70	54.05	55.04	55.53
29	55.81	61.82	62.81	60.26	---	56.33	55.36	56.23	54.57	55.14	55.01	55.51
30	55.83	61.40	64.38	60.24	---	57.20	55.12	56.08	54.35	55.19	54.98	55.52
31	55.82	---	64.55	59.79	---	57.56	---	56.05	---	55.20	54.99	---
MEAN	55.84	57.76	60.01	60.33	59.38	57.70	55.86	56.19	55.02	54.06	55.17	55.36
MAX	56.34	62.34	64.55	63.64	62.01	62.70	57.46	57.52	55.84	55.20	55.35	55.58
MIN	55.44	55.80	56.35	56.53	57.08	55.75	55.12	54.90	54.35	53.53	54.98	54.97

WTR YR 1999 MEAN 56.88 MAX 64.55 MIN 53.53

WILLAMETTE RIVER BASIN

14207770 WILLAMETTE RIVER BELOW FALLS, AT OREGON CITY, OR

LOCATION.--Lat 45°21'28", long 122°36'35", in NE 1/4 NW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, on right bank 0.5 mi below Willamette Falls, 1.4 mi upstream from Clackamas River, and at mile 26.2.

DRAINAGE AREA.--10,000 mi², approximately.

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (Oregon State Highway Division bench mark).

REMARKS.--Flow regulated by many reservoirs upstream. Gage out of operation during period October 1993 to January 1994 and July to September 1994.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 46.04 ft Feb. 9, 1996, from high-water mark; minimum, 1.55 ft Sept. 7, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 29.56 ft Dec. 30; minimum, 2.97 ft Sept. 20.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	6.16	3.32	4.50	6.85	3.87	5.28	20.86	20.04	20.43	28.27	25.84	26.95
2	6.29	3.27	4.81	7.32	4.22	5.61	24.08	20.59	22.57	25.84	23.35	24.58
3	6.93	3.76	5.20	7.67	4.45	5.86	23.93	23.32	23.64	23.42	21.78	22.61
4	6.85	3.74	5.20	8.22	4.56	6.17	23.85	22.89	23.39	21.86	20.08	20.97
5	7.29	3.99	5.45	8.74	5.24	6.74	23.01	21.71	22.30	20.14	18.66	19.27
6	7.66	4.25	5.69	9.17	5.77	7.17	21.71	20.37	20.93	18.66	17.13	17.86
7	8.05	4.50	6.00	9.19	6.38	7.48	20.47	19.67	19.97	17.13	15.54	16.20
8	7.85	4.42	5.91	8.69	6.51	7.35	19.93	19.47	19.70	15.54	14.75	15.07
9	7.54	4.23	5.62	8.00	6.18	6.96	19.69	18.97	19.32	14.80	14.24	14.52
10	7.35	4.42	5.59	7.69	5.88	6.72	18.98	17.73	18.40	14.29	13.41	13.94
11	6.79	4.26	5.37	7.43	5.57	6.38	17.73	16.85	17.12	13.46	11.72	12.78
12	6.73	3.86	5.12	7.30	5.28	6.14	18.62	17.06	17.92	11.72	10.86	11.29
13	6.73	4.32	5.25	7.63	5.34	6.29	18.85	18.45	18.72	11.19	10.36	10.85
14	6.44	4.05	5.20	7.83	5.35	6.41	18.45	17.87	18.17	12.24	10.95	11.58
15	6.90	4.61	5.64	8.35	5.62	6.74	17.87	17.31	17.63	14.84	11.81	13.36
16	6.61	4.32	5.39	8.31	5.86	6.85	17.31	16.15	16.88	18.06	14.84	16.69
17	6.97	4.24	5.42	8.62	6.10	7.11	16.15	14.74	15.48	20.48	18.05	19.02
18	6.87	4.31	5.40	8.39	6.16	7.00	14.74	13.30	14.02	23.55	20.42	22.28
19	6.44	3.73	4.96	8.45	5.94	6.86	13.30	12.35	12.76	24.44	23.52	23.98
20	6.41	3.72	4.82	9.50	6.11	7.58	12.35	11.29	11.82	24.67	24.08	24.41
21	6.84	3.84	5.10	14.64	8.69	11.91	11.29	10.49	10.84	25.16	24.56	24.86
22	7.08	4.01	5.27	16.64	14.64	15.72	10.85	10.20	10.49	25.92	24.84	25.33
23	6.85	4.01	5.17	17.32	16.55	16.87	10.51	9.88	10.17	26.35	25.72	26.12
24	6.92	3.85	5.17	18.09	17.11	17.75	10.37	9.58	9.95	26.32	25.36	25.91
25	6.57	3.88	5.05	20.83	17.75	18.97	10.57	9.22	9.73	25.49	23.08	24.28
26	6.30	3.70	4.77	23.33	20.82	22.35	12.13	10.17	11.04	23.12	20.70	21.97
27	6.12	3.67	4.82	23.23	22.65	22.95	16.22	12.13	13.11	20.77	18.99	19.86
28	5.62	3.61	4.55	22.85	21.80	22.31	24.75	16.22	21.32	19.28	18.70	18.97
29	5.71	3.35	4.35	21.87	20.66	21.26	27.75	24.75	26.40	19.71	18.89	19.28
30	5.92	3.46	4.59	20.74	20.06	20.48	29.56	27.71	28.90	19.68	19.15	19.50
31	6.52	3.58	4.95	---	---	---	29.45	28.27	28.92	19.15	17.47	18.35
MONTH	8.05	3.27	5.17	23.33	3.87	10.78	29.56	9.22	17.81	28.27	10.36	19.44

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	17.47	15.78	16.53	25.96	25.48	25.75	15.34	14.45	14.95	12.29	11.21	11.73
2	16.05	15.25	15.56	25.85	24.70	25.31	14.45	13.46	13.94	11.80	11.09	11.45
3	16.38	15.52	15.83	24.99	24.29	24.69	13.46	12.10	12.74	12.47	11.50	12.09
4	16.74	15.74	16.30	24.30	23.41	23.81	12.61	11.91	12.24	13.21	12.47	12.85
5	16.58	15.58	15.92	23.42	22.57	22.94	12.24	11.52	11.87	13.72	13.08	13.37
6	17.46	15.51	16.15	22.60	20.61	21.69	11.78	11.08	11.42	13.49	12.88	13.21
7	20.76	17.46	19.20	20.61	17.87	19.20	11.20	9.92	10.49	13.20	12.73	13.03
8	22.00	20.76	21.41	17.90	15.15	16.39	10.68	9.86	10.33	12.92	12.02	12.42
9	22.10	21.38	21.86	15.17	13.46	14.21	10.14	9.40	9.80	12.23	11.09	11.73
10	21.48	19.24	20.44	13.48	13.05	13.25	9.99	9.31	9.68	11.55	11.13	11.33
11	19.24	16.36	17.81	13.15	12.51	12.93	9.96	8.95	9.64	11.86	10.82	11.37
12	16.36	14.49	15.59	12.53	11.42	11.92	9.50	8.56	9.06	11.37	10.22	10.77
13	14.49	13.39	14.01	12.21	11.44	11.84	9.50	8.62	9.01	11.15	10.04	10.51
14	13.55	12.96	13.25	12.53	11.80	12.19	10.23	8.53	9.52	11.45	10.25	10.91
15	12.97	12.30	12.67	12.46	11.84	12.13	10.51	9.25	9.77	11.97	10.76	11.19
16	13.08	12.02	12.44	12.56	11.88	12.20	10.55	9.14	9.73	12.00	10.71	11.25
17	13.80	12.21	12.95	12.32	11.46	11.92	10.63	8.76	9.52	12.26	11.02	11.58
18	15.91	13.47	14.36	12.33	11.43	11.82	11.06	9.11	10.08	13.22	11.62	12.44
19	18.33	15.91	17.19	12.00	11.02	11.45	11.00	9.78	10.29	14.11	13.20	13.65
20	18.80	18.23	18.54	11.96	10.83	11.32	11.21	10.07	10.56	14.48	14.01	14.18
21	18.55	16.98	17.85	11.92	10.76	11.23	11.62	10.66	11.05	14.34	13.39	13.92
22	17.00	16.12	16.37	11.92	10.71	11.23	11.51	10.76	11.17	13.60	12.47	13.11
23	18.74	16.43	17.37	11.58	10.60	11.02	11.55	10.95	11.32	12.71	12.00	12.42
24	21.94	18.74	20.50	11.83	10.91	11.34	11.86	11.29	11.62	12.42	11.99	12.22
25	22.98	21.94	22.38	12.00	11.37	11.65	11.87	11.30	11.66	12.51	11.98	12.31
26	22.98	22.28	22.68	12.10	11.49	11.78	11.92	11.24	11.53	13.33	12.38	13.05
27	23.57	22.02	22.46	12.38	11.79	12.10	12.03	11.22	11.61	14.66	13.29	14.23
28	25.94	23.57	25.02	12.87	11.84	12.57	12.33	11.12	11.83	15.33	14.65	15.12
29	---	---	---	14.07	12.74	13.57	12.78	12.13	12.56	15.34	14.80	15.14
30	---	---	---	15.02	13.92	14.65	12.30	11.63	11.97	14.80	14.38	14.59
31	---	---	---	15.26	14.80	15.06	---	---	---	14.49	13.75	14.19

WILLAMETTE RIVER BASIN

14208600 TIMOTHY LAKE NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°06'50", long 121°48'35", in NE 1/4 sec.27, T.5 S., R.8 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, in intake structure 350 ft upstream from dam on Oak Grove Fork, 0.4 mi upstream from Anvil Creek, 14 mi south of Government Camp, and at mile 15.8.

DRAINAGE AREA.--53.8 mi².

PERIOD OF RECORD.--May 1956 to current year. Prior to October 1957, published as Timothy Meadows Reservoir.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway built by Portland General Electric Co. Usable storage began May 28, 1956. Capacity, 65,710 acre-ft at elevation 3,190 ft, normal maximum operating level. Usable capacity increased in 1966 water year to 64,450 acre-ft between elevations 3,125.0 ft, invert of outlet pipe, and 3,192.0 ft, top of radial gates. Storage of 4,060 acre-ft below elevation 3,125.0 ft not normally available for release. Water is used for power generation. Figures given herein represent total contents.

COOPERATION.--Elevations and capacity table furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 68,800 acre-ft Oct. 3, 1967, elevation, 3,192.2 ft; minimum contents observed, 16,010 acre-ft Feb. 24, 1957, elevation, 3,144.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 68,190 acre-ft Aug. 10, elevation, 3,191.77 ft; minimum contents observed, 50,160 acre-ft Mar. 21, elevation, 3,177.97 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	3,186.45	60,930	-
Oct. 31.....	3,181.92	55,080	-5,850
Nov. 30.....	3,182.13	55,350	+270
Dec. 31.....	3,185.27	59,380	+4,030
CAL YR 1998.....	-	-	+6,380
Jan. 31.....	3,187.08	61,770	+2,390
Feb. 28.....	3,180.92	53,820	-7,950
Mar. 31.....	3,179.01	51,440	-2,380
Apr. 30.....	3,182.06	55,260	+3,820
May 31.....	3,191.55	67,880	+12,620
June 30.....	3,191.65	68,020	+140
July 31.....	3,191.71	68,100	+80
Aug. 31.....	3,190.94	67,020	-1,080
Sept. 30.....	3,188.16	63,210	-3,810
WTR YR 1999.....	-	-	+2,280

WILLAMETTE RIVER BASIN

281

14208700 OAK GROVE FORK NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°06'50", long 121°48'50", in NE 1/4 sec.27, T.5 S., R.8 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank 0.1 mi upstream from Anvil Creek, 0.3 mi downstream from Timothy Lake, 14 mi south of Government Camp, and at mile 15.5.

DRAINAGE AREA.--54.4 mi².

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

GAGE.--Water-stage recorder and artificial control. Datum of gage is 3,041.83 ft above sea level (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1956 by Timothy Lake (station 14208600). No diversion upstream from station.

AVERAGE DISCHARGE.--43 years (water years 1957-99), 135 ft³/s, 33.70 in/yr, 97,810 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,110 ft³/s Dec. 24, 1964, gage height, 3.93 ft, from rating curve extended above 290 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 3.7 ft³/s Sept. 23, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 347 ft³/s Feb. 11, 12, gage height, 2.48 ft; minimum discharge, 50 ft³/s Mar. 10, gage height, 1.44 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339	223	141	72	313	340	190	55	317	167	117	84
2	340	218	60	69	313	340	197	55	317	167	117	82
3	333	218	58	67	313	335	205	55	302	157	116	85
4	299	218	63	66	313	332	195	54	298	155	110	97
5	133	218	143	109	312	332	190	58	297	142	110	96
6	117	218	170	138	309	332	210	61	296	142	110	88
7	117	218	192	157	308	331	210	61	275	142	110	136
8	117	218	192	186	308	329	210	64	256	142	110	235
9	95	198	195	185	308	328	210	84	256	142	110	143
10	94	108	196	184	308	243	210	99	254	142	110	234
11	102	106	134	183	321	332	210	109	212	142	110	236
12	102	98	103	199	342	326	210	90	190	125	110	236
13	102	98	63	205	342	301	210	95	211	124	113	129
14	99	98	82	241	341	297	210	95	233	134	115	100
15	98	98	133	237	339	213	207	95	236	134	115	95
16	98	98	172	228	337	203	179	98	240	134	191	79
17	100	98	186	226	336	214	156	71	235	123	220	79
18	100	105	188	225	334	193	112	55	234	119	221	113
19	138	106	210	228	337	174	92	55	233	119	221	104
20	217	108	210	227	337	194	81	54	224	119	221	172
21	234	56	210	236	337	164	94	54	214	119	226	237
22	233	57	210	260	334	142	110	54	200	118	190	240
23	230	57	210	260	335	142	91	54	189	117	105	244
24	229	57	208	297	338	143	58	101	186	117	84	244
25	229	57	193	313	341	143	54	166	190	117	84	244
26	229	58	121	313	337	144	53	253	200	117	85	244
27	229	60	107	313	337	143	60	256	199	117	87	243
28	229	87	75	313	342	143	73	261	184	117	85	240
29	228	127	84	314	---	151	92	288	175	117	84	237
30	228	141	81	316	---	165	74	312	167	117	84	237
31	230	---	77	315	---	181	---	317	---	117	83	---
TOTAL	5668	3825	4467	6682	9172	7350	4453	3579	7020	4061	3954	5033
MEAN	183	128	144	216	328	237	148	115	234	131	128	168
MAX	340	223	210	316	342	340	210	317	317	167	226	244
MIN	94	56	58	66	308	142	53	54	167	117	83	79
AC-FT	11240	7590	8860	13250	18190	14580	8830	7100	13920	8050	7840	9980
MEAN†	88	132	210	254	184	198	213	321	236	132	110	104
CFSM†	1.61	2.43	3.85	4.67	3.39	3.65	3.91	5.89	4.34	2.43	2.02	1.91
IN.†	1.86	2.71	4.44	5.39	3.53	4.20	4.36	6.80	4.85	2.80	2.33	2.13
AC-FT†	5390	7860	12890	15640	10240	12200	12650	19720	14060	8130	6760	6170

CAL YR 1998 TOTAL 50707 MEAN 139 MAX 340 MIN 55 AC-FT 100600 MEAN† 148 CFSM† 2.72 IN.† 36.88 AC-FT† 107000
WTR YR 1999 TOTAL 65264 MEAN 179 MAX 342 MIN 53 AC-FT 129500 MEAN† 182 CFSM† 3.35 IN.† 45.43 AC-FT† 131800

† Adjusted for change in contents in Timothy Lake.

WILLAMETTE RIVER BASIN

14209000 OAK GROVE FORK ABOVE POWERPLANT INTAKE, OR

LOCATION.--Lat 45°04'17", long 121°56'22", SW 1/4 SE 1/4 sec 3, T.6 S., R.7 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on left bank 0.8 mi upstream from Spring Creek, 1.3 mi upstream from Kink Creek, 1.7 mi upstream from Portland General Electric Co. diversion dam, 24 mi southeast of Estacada, and at mile 6.7.

DRAINAGE AREA.--124 mi².

PERIOD OF RECORD.--May 1909 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as both Oak Grove Fork of Clackamas River at proposed intake, near Cazadero, and Oak Grove Fork of Clackamas River at intake, near Cazadero, May 1909 to September 1910, as Oak Grove Fork of Clackamas River at intake, near Cazadero, October 1910 to September 1921, and as Oak Grove Fork at Portland General Electric Power Co. intake, October 1921 to September 1929.

REVISED RECORDS.--WSP 1248:1909, 1910(M), 1916, 1918, 1923, 1932. WSP 1935: 1914, 1921.

GAGE.--Water-stage recorder. Elevation of gage is 2,100 ft above sea level, from topographic map. May 21, 1909, to Nov. 17, 1911, nonrecording gage and Mar. 26, 1912, to Sept. 30, 1923, water-stage recorder, at various sites 0.7 mi downstream, below Kink Creek, at different datum, Dec. 1923 to Sept. 1996, at site 0.6 mi downstream at different datum.

REMARKS.--Records poor. Flow regulated since 1956 by Timothy Lake (station 14208600). Low flows are affected at times by diversion to Stone Creek Hydroelectric Project.

AVERAGE DISCHARGE.--90 years (water years 1910-99), 499 ft³/s, 361,500 acre-ft/yr (unadjusted).
43 years (water years 1957-99), 487 ft³/s, 352,600 acre-ft/yr (regulated).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s Jan. 7, 1923, gage height, 5.45 ft, site and datum then in use, from rating curve extended above 2,300 ft³/s on basis of peak discharge for other stations in Clackamas River basin; minimum discharge, 161 ft³/s Sept. 16, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,110 ft³/s Dec. 28, gage height, 7.94 ft; minimum discharge, 248 ft³/s Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	652	518	573	1100	749	1140	592	e540	e1300	571	427	348
2	664	512	931	935	771	1070	597	e660	e1100	564	425	338
3	672	511	692	826	770	1010	599	e840	e960	544	426	340
4	629	517	551	721	752	947	582	e920	e920	535	420	358
5	440	533	598	707	733	912	562	e780	e1000	518	424	353
6	392	522	595	699	823	886	575	e780	e1050	516	423	331
7	390	521	601	689	851	860	582	e760	e900	502	423	394
8	390	521	579	687	794	841	e600	e680	e840	496	420	516
9	374	502	556	658	761	814	e620	e660	e800	489	422	405
10	360	384	551	652	729	682	e600	e640	e800	488	418	508
11	369	381	592	641	727	783	e600	e620	e720	486	413	508
12	367	366	606	645	761	778	e720	e660	e740	463	415	505
13	372	367	598	647	746	738	e760	e680	e840	458	421	384
14	373	367	582	820	736	725	e720	e700	e900	462	425	348
15	370	385	598	1060	725	629	e720	e680	910	459	418	342
16	366	388	613	944	737	600	e740	e660	894	458	503	313
17	367	401	611	932	744	599	e860	e780	869	441	536	308
18	365	413	601	1080	758	585	e900	e1000	843	434	537	352
19	401	406	599	1050	780	557	e840	e940	812	439	532	339
20	501	530	577	1010	754	609	e840	e800	775	441	526	416
21	535	712	604	981	731	620	e720	e680	745	436	529	492
22	528	571	601	966	752	603	e640	e680	711	431	504	495
23	525	525	602	911	913	600	e560	e860	678	430	400	503
24	522	567	607	896	999	598	e580	e1200	682	428	359	503
25	523	663	624	893	984	603	e740	e1300	726	430	351	501
26	523	872	557	860	924	602	e700	e1200	680	431	350	498
27	523	664	718	833	995	584	e600	e1100	646	428	353	497
28	531	583	1860	828	1250	572	e520	e1100	619	427	346	498
29	524	582	1740	817	---	590	e480	e1100	598	425	345	494
30	520	580	1510	796	---	589	e440	e1100	582	425	355	489
31	523	---	1300	771	---	595	---	e1100	---	428	353	---
TOTAL	14591	15364	22927	26055	22749	22321	19589	26200	24640	14483	13199	12676
MEAN	471	512	740	840	812	720	653	845	821	467	426	423
MAX	672	872	1860	1100	1250	1140	900	1300	1300	571	537	516
MIN	360	366	551	641	725	557	440	540	582	425	345	308
AC-FT	28940	30470	45480	51680	45120	44270	38850	51970	48870	28730	26180	25140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1999, BY WATER YEAR (WY)

MEAN	392	504	576	592	598	579	576	587	449	333	310	351
MAX	527	798	1047	1095	1433	1377	1024	1104	1126	595	473	619
(WY)	1997	1996	1965	1997	1997	1972	1997	1971	1974	1996	1996	1996
MIN	236	288	265	255	250	327	311	279	248	228	218	215
(WY)	1982	1988	1994	1977	1977	1977	1978	1994	1994	1994	1994	1994

SUMMARY STATISTICS

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1957 - 1999	
ANNUAL TOTAL	192848		234794			
ANNUAL MEAN	528		643		487	
HIGHEST ANNUAL MEAN					739	1996
LOWEST ANNUAL MEAN					319	1994
HIGHEST DAILY MEAN	1860	Dec 28	1860	Dec 28	3940	Feb 7 1996
LOWEST DAILY MEAN	335	Aug 24	308	Sep 17	208	Aug 30 1979
ANNUAL SEVEN-DAY MINIMUM	343	Aug 28	341	Sep 13	210	Oct 6 1994
ANNUAL RUNOFF (AC-FT)	382500		465700		352600	
10 PERCENT EXCEEDS	625		933		696	
50 PERCENT EXCEEDS	544		599		479	
90 PERCENT EXCEEDS	358		385		271	

e Estimated

14209500 CLACKAMAS RIVER ABOVE THREE LYNX CREEK, OR

LOCATION.--Lat 45°07'30", long 122°04'20", in SE 1/4 NE 1/4 sec.21, T.5 S., R.6 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank 0.1 mi upstream from Three Lynx Creek, 0.25 mi downstream from powerplant, 17 mi southeast of Estacada, and at mile 47.8.

DRAINAGE AREA.--479 mi².

PERIOD OF RECORD.--April 1909 to December 1913, October 1921 to current year. Prior to October 1911 (monthly discharge only), published in WSP 1318.

REVISED RECORDS.--WSP 1148: Drainage area. WSP 1248: 1910(M), 1912, 1948-50(M).

GAGE.--Water-stage recorder. Datum of gage is 1,091.69 ft above sea level (levels by Portland General Electric Co.). Apr. 23, 1909, to Jan. 4, 1914, nonrecording gage at about same site and datum. Nov. 1, 1921, to Dec. 27, 1924, water-stage recorder at present site at datum 0.91 ft higher.

REMARKS.--No estimated daily discharges. Records good. Regulation since May 1956 by Timothy Lake (station 14208600) and by Oak Grove powerhouse.

AVERAGE DISCHARGE.--82 years (water years 1910-13, 1922-99), 1,994 ft³/s, 56.57 in/yr, 1,445,000 acre-ft/yr. 43 years (water years 1957-99), 2,042 ft³/s, 57.93 in/yr, 1,479,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,200 ft³/s Dec. 22, 1964, gage height, 21.7 ft, from floodmark, from rating curve extended above 34,100 ft³/s on basis of slope-area measurement at gage height 15.06 ft; minimum recorded discharge, 261 ft³/s Oct. 7, 1987; minimum daily, 410 ft³/s Sept. 4, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0200	13,000	8.71	Dec. 28	0800	*23,700	*12.34
Nov. 25	1130	10,100	7.50	Jan. 18	0230	9,680	7.32
Nov. 26	1100	11,100	7.97	Feb. 28	0630	13,800	9.01
Dec. 2	1100	15,700	9.73				

Minimum discharge, 382 ft³/s Sept. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	966	910	3650	6150	2320	7900	2210	2810	4730	2160	1020	866
2	1060	860	11500	4770	2420	5680	2150	3240	4180	2100	1020	827
3	1160	928	7060	3910	2500	4880	2080	3420	3580	1940	983	814
4	1570	956	4440	3350	2570	4110	2000	3310	3430	1850	980	819
5	1030	1180	3490	2970	2430	3550	1950	2930	3470	1740	971	816
6	890	1260	2950	2730	3630	3190	1880	2900	3590	1780	1020	801
7	837	1160	2710	2580	5020	2910	1810	3080	3270	1770	1030	890
8	770	1160	2610	2400	3760	2750	1930	2870	2990	1690	1010	979
9	919	1120	2290	2240	3080	2560	1830	2670	2860	1640	948	831
10	1030	970	2150	2160	2680	2320	1760	2500	2710	1660	928	946
11	927	993	3710	2160	2380	2280	1770	2380	2760	1670	932	943
12	870	913	6200	2150	2250	2230	1910	2480	2970	1630	920	910
13	882	894	6230	2160	2150	2380	1990	2530	3420	1510	900	793
14	1010	911	4880	2940	2070	2460	2060	2460	3850	1490	970	783
15	1040	1170	3830	6630	2000	2390	2120	2430	4180	1440	933	783
16	1010	1650	3250	5230	2160	2310	2320	2350	3920	1360	975	760
17	945	1470	2920	5190	2590	2210	2690	2740	3670	1350	1040	793
18	902	1440	2670	8850	2730	2120	3340	3820	3480	1300	1010	759
19	919	1390	2470	6830	3260	2100	3440	3850	3220	1280	999	758
20	973	3400	2160	6000	2830	2340	3490	3730	3040	1350	1000	878
21	956	10200	2040	6210	2550	2740	3190	3450	2880	1350	974	908
22	933	6140	1980	5310	2650	2810	2860	3510	2760	1250	966	908
23	902	4430	1890	4400	5440	2690	2700	4070	2700	1220	812	936
24	912	5200	1900	3720	7240	2620	2880	5220	2780	1160	824	899
25	914	7950	2310	3280	5990	2630	3510	5790	3120	1140	820	852
26	897	9220	3670	2960	4560	2660	3490	5150	2740	1140	816	916
27	900	5910	6470	2700	6480	2500	3120	4700	2420	1100	816	958
28	937	3970	21300	2670	12200	2360	2810	4750	2250	1090	809	920
29	922	3250	14000	2700	---	2530	2540	4520	2160	1070	808	898
30	899	3080	9430	2610	---	2420	2540	4250	2240	1060	840	926
31	918	---	7560	2480	---	2320	---	4090	---	1070	891	---
TOTAL	29800	84085	153720	120440	101940	90950	74370	108000	95370	45360	28965	25870
MEAN	961	2803	4959	3885	3641	2934	2479	3484	3179	1463	934	862
MAX	1570	10200	21300	8850	12200	7900	3510	5790	4730	2160	1040	979
MIN	770	860	1890	2150	2000	2100	1760	2350	2160	1060	808	758
AC-FT	59110	166800	304900	238900	202200	180400	147500	214200	189200	89970	57450	51310
CFSM	2.01	5.85	10.4	8.11	7.60	6.12	5.18	7.27	6.64	3.05	1.95	1.80
IN.	2.31	6.53	11.94	9.35	7.92	7.06	5.78	8.39	7.41	3.52	2.25	2.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1999, BY WATER YEAR (WY)

	MEAN	1039	2261	3143	3128	3078	2677	2654	2512	1638	910	742	788
MAX	2145	4239	8271	6139	7671	6559	3807	4701	4136	1565	972	1242	
(WY)	1998	1996	1965	1970	1996	1972	1993	1971	1974	1974	1974	1959	
MIN	593	666	786	751	734	1353	1417	1057	674	592	534	510	
(WY)	1993	1988	1977	1977	1977	1992	1967	1992	1992	1992	1992	1994	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1957 - 1999	
ANNUAL TOTAL	805355		958870		2042	
ANNUAL MEAN	2206		2627		3128	1974
HIGHEST ANNUAL MEAN					1062	1977
LOWEST ANNUAL MEAN					48000	Dec 23 1964
HIGHEST DAILY MEAN	21300	Dec 28	21300	Dec 28	410	Sep 4 1986
LOWEST DAILY MEAN	645	Sep 3	758	Sep 19	490	Sep 1 1992
ANNUAL SEVEN-DAY MINIMUM	683	Sep 11	776	Sep 13		
ANNUAL RUNOFF (AC-FT)	1597000		1902000		1479000	
ANNUAL RUNOFF (CFSM)	4.61		5.48		4.26	
ANNUAL RUNOFF (INCHES)	62.55		74.47		57.93	
10 PERCENT EXCEEDS	3960		4880		3720	
50 PERCENT EXCEEDS	1850		2310		1570	
90 PERCENT EXCEEDS	790		899		690	

WILLAMETTE RIVER BASIN

14209700 FISH CREEK NEAR THREE LYNX, OR

LOCATION.--Lat 45°08'52", long 122°09'07", in NE 1/4 SE 1/4 sec.11, T.5 S., R.5 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank, 0.7 mi upstream from Clackamas River, and at mile 1.15.

DRAINAGE AREA.--45.2 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 940 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--10 years (water years 1990-99), 225 ft³/s, 67.77 in/yr, 163,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,540 ft³/s Feb. 7, 1996, gage height, 11.83 ft, from rating curve extended above 2,800 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 15.40 ft, backwater from debris flow; minimum discharge, 6.0 ft³/s Sept. 1, 2, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft³/s (revised) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2300	2,170	8.60	Feb. 28	0500	2,660	9.02
Dec. 27	2330	*3,950	*9.94				

Minimum discharge, 14 ft³/s Sept. 12-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	37	593	806	181	1010	203	264	448	119	27	21
2	27	38	1480	545	257	662	200	336	351	112	26	19
3	48	37	897	397	317	554	190	445	272	111	25	18
4	130	50	533	310	301	426	167	492	256	119	25	17
5	59	167	373	253	262	333	155	404	301	103	25	16
6	41	153	290	214	646	276	149	404	326	96	26	16
7	33	117	275	209	866	233	154	397	285	94	29	16
8	33	110	303	184	485	208	173	343	249	84	27	16
9	77	107	244	164	328	186	158	311	225	77	25	15
10	91	91	229	157	249	165	147	278	206	75	23	15
11	61	87	761	164	196	148	152	258	213	73	23	15
12	48	80	919	183	168	153	219	300	249	67	22	15
13	50	77	880	208	154	221	245	316	292	63	22	15
14	74	74	656	568	144	264	225	318	312	58	24	15
15	96	114	455	1240	139	243	224	316	326	53	23	14
16	93	182	347	753	215	220	267	293	278	50	22	15
17	74	147	296	933	386	193	360	394	242	48	21	14
18	65	163	256	1600	394	181	433	557	224	45	20	14
19	53	164	213	989	538	195	410	507	193	43	20	14
20	45	646	169	756	351	263	421	429	174	41	20	14
21	39	1490	181	829	269	320	340	355	169	40	19	14
22	36	902	145	641	278	300	271	350	166	38	19	14
23	33	746	131	495	1000	271	239	459	155	36	18	14
24	31	886	134	388	1150	251	292	609	183	35	18	14
25	29	1040	332	306	807	251	385	607	237	34	17	14
26	28	1410	535	249	537	246	368	471	197	33	17	14
27	28	791	1340	206	1090	223	297	411	155	31	17	14
28	44	482	3460	203	1980	202	240	406	133	30	16	14
29	42	364	2290	231	---	256	200	369	124	29	16	14
30	37	462	1470	237	---	252	193	332	125	28	19	14
31	34	---	1070	211	---	221	---	334	---	27	24	---
TOTAL	1596	11214	21257	14629	13688	8927	7477	12065	7066	1892	675	454
MEAN	51.5	374	686	472	489	288	249	389	236	61.0	21.8	15.1
MAX	130	1490	3460	1600	1980	1010	433	609	448	119	29	21
MIN	17	37	131	157	139	148	147	258	124	27	16	14
AC-FT	3170	22240	42160	29020	27150	17710	14830	23930	14020	3750	1340	901
CFSM	1.14	8.27	15.2	10.4	10.8	6.37	5.51	8.61	5.21	1.35	.48	.33
IN.	1.31	9.23	17.49	12.04	11.27	7.35	6.15	9.93	5.82	1.56	.56	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999		
MEAN	107	362	438	414	387	307	302	206	118	39.1	18.9	19.4
MAX	233	756	1006	654	817	564	447	389	236	62.8	31.4	44.0
(WY)	1998	1996	1997	1997	1996	1997	1993	1999	1999	1993	1993	1997
MIN	15.3	26.7	177	187	110	87.0	181	68.0	20.9	13.6	8.20	11.6
(WY)	1994	1994	1998	1993	1993	1992	1998	1992	1992	1992	1992	1991

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1990 - 1999

ANNUAL TOTAL	86945	100940	
ANNUAL MEAN	238	277	225
HIGHEST ANNUAL MEAN			335
LOWEST ANNUAL MEAN			133
HIGHEST DAILY MEAN	3460	Dec 28	5970
LOWEST DAILY MEAN	13	Sep 7	6.1
ANNUAL SEVEN-DAY MINIMUM	13	Sep 10	6.4
ANNUAL RUNOFF (AC-FT)	172500	200200	163300
ANNUAL RUNOFF (CFSM)	5.27	6.12	4.99
ANNUAL RUNOFF (INCHES)	71.56	83.07	67.77
10 PERCENT EXCEEDS	583	643	512
50 PERCENT EXCEEDS	152	193	135
90 PERCENT EXCEEDS	18	19	15

14210000 CLACKAMAS RIVER AT ESTACADA, OR

LOCATION.--Lat 45°18'00", long 122°21'10", in NE 1/4 sec.19, T.3 S., R.4 E., Clackamas County, Hydrologic Unit 17090011, on left bank 0.2 mi downstream from River Mill Dam, 1.5 mi northwest of Estacada, and at mile 23.1.

DRAINAGE AREA.--671 mi².

PERIOD OF RECORD.--April 1908 to current year. Monthly discharge only April 1908, published in WSP 1318. Published as "near Cazadero" January 1909 to September 1957.

REVISED RECORDS.--WSP 1248: 1908-9, 1910(M), 1916, 1917(M), 1922(M), 1923. WSP 1288: Drainage area (former site). WSP 1638: 1919(M).

GAGE.--Water-stage recorder. Datum of gage is 286.93 ft above sea level (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Oct. 1, 1957. Oct. 1, 1957, to Feb. 16, 1965, water-stage recorder at same site at datum 12.00 ft higher. Feb. 17, 1965 to Sept. 30, 1991, water-stage recorder at same site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuations and some regulation caused by powerplants at River Mill Dam and, since 1958, North Fork Dam. Minor regulation since 1956 by Timothy Lake (station 14208600). One small diversion upstream from station for city of Estacada municipal water supply.

AVERAGE DISCHARGE.--91 years (water years 1909-99), 2,760 ft³/s, 55.89 in/yr, 2,000,000 acre-ft/yr, unadjusted. 40 years (water years 1959-98), 2,848 ft³/s, 57.66 in/yr, 2,063,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,900 ft³/s Dec. 22, 1964, gage height, 28.36 ft (present datum); minimum discharge, 50 ft³/s Mar. 10, 1961, from rating curve extended below 260 ft³/s; minimum daily, 285 ft³/s Oct. 4, 5, 1958, caused by filling of North Fork dam forebay.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0230	16,500	18.25	Dec. 28	0530	*34,500	*22.39
Nov. 26	1500	15,400	17.90	Feb. 28	1000	19,900	19.19
Dec. 2	1200	20,100	19.23				

Minimum discharge, 288 ft³/s Sept. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	1200	5030	8840	3070	11300	3090	3630	6030	2840	1300	983
2	1280	1090	14800	6960	3340	8160	2900	4290	5490	2740	1280	1080
3	1490	1180	10300	5580	3450	7100	2840	4770	4590	2630	1300	1000
4	2270	1230	6610	4830	3710	5900	2740	4990	4320	2550	1250	1020
5	1780	1770	5040	3970	3470	5160	2830	4330	4410	2380	1290	1010
6	1030	1940	4160	3620	4710	4450	2430	4210	4690	2370	1360	1020
7	835	1620	3670	3530	7420	3970	2500	4420	4300	2390	1320	1190
8	740	1650	4030	3340	5640	3670	2770	4050	3980	2230	1280	1150
9	800	1630	2890	2950	4420	3460	2410	3770	3810	2090	1280	945
10	1550	1400	3070	2870	3810	3350	2460	3690	3620	2210	1150	1150
11	1220	1380	5280	2880	3060	2900	2450	3180	3420	2210	1190	1150
12	1340	1290	8850	2900	2930	2790	2640	3560	3720	2180	1190	1180
13	1030	1190	8900	3060	2850	3160	2800	3730	4270	1940	1230	995
14	1120	1210	7200	3910	2810	3490	2850	3710	4730	1980	1200	987
15	1470	1460	5550	10200	2570	3180	2810	3770	5170	1880	1190	981
16	1410	2320	4800	7970	2900	3010	3200	3610	4850	1810	1320	1090
17	1260	1920	4060	7440	3660	2960	3620	3990	4570	1780	1340	957
18	1240	2050	3730	12800	3970	2840	4430	5470	4290	1730	1260	925
19	1130	2050	3160	9680	4790	2810	4600	5550	3980	1670	1360	929
20	1210	3590	2760	8180	4050	3160	4730	5270	3710	1740	1090	1000
21	1190	13700	2630	8500	3560	3700	4300	4760	3550	1740	1150	1100
22	1080	8900	2660	7640	3480	3940	3930	4830	3530	1690	1260	1210
23	1130	6440	2490	6680	7050	3540	3400	5010	3290	1470	1150	1130
24	1070	7670	2510	5460	9850	3470	3620	6720	3480	1610	1040	1130
25	1120	9840	2980	4780	8230	3490	4550	7330	4100	1530	1050	1020
26	1100	12500	5090	4200	6540	3550	4620	6590	3650	1480	1030	1140
27	1100	8520	8110	3600	8490	3430	4140	5980	3200	1410	1030	1200
28	1250	5900	32200	3700	17500	3060	3800	6040	2950	1450	1040	1150
29	1190	4680	21600	3260	---	3560	3240	5660	2800	1390	1040	1130
30	1130	4590	14100	3550	---	3630	3100	5350	2810	1420	1180	1140
31	1130	---	10900	3270	---	3250	---	5130	---	1360	1250	---
TOTAL	37995	115910	219160	170150	141330	125440	99800	147390	121310	59900	37400	32092
MEAN	1226	3864	7070	5489	5048	4046	3327	4755	4044	1932	1206	1070
MAX	2270	13700	32200	12800	17500	11300	4730	7330	6030	2840	1360	1210
MIN	740	1090	2490	2870	2570	2790	2410	3180	2800	1360	1030	925
AC-FT	75360	229900	434700	337500	280300	248800	198000	292300	240600	118800	74180	63650
CFSM	1.83	5.76	10.5	8.18	7.52	6.03	4.96	7.09	6.03	2.88	1.80	1.59
IN.	2.11	6.43	12.15	9.43	7.84	6.95	5.53	8.17	6.73	3.32	2.07	1.78

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1999, BY WATER YEAR (WY)

	1355	3185	4178	4212	3981	3544	3695	3553	2395	1246	914	946
MEAN	1355	3185	4178	4212	3981	3544	3695	3553	2395	1246	914	946
MAX	3776	8708	11170	9656	10650	8921	6028	7486	6103	3301	1457	1993
(WY)	1948	1910	1965	1953	1996	1972	1943	1949	1917	1916	1916	1920
MIN	701	702	1030	999	977	1656	1539	1363	882	720	659	613
(WY)	1945	1937	1977	1937	1977	1941	1941	1926	1992	1926	1992	1994

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1909 - 1999
ANNUAL TOTAL	1107195	1307877	
ANNUAL MEAN	3033	3583	2760
HIGHEST ANNUAL MEAN			4407
LOWEST ANNUAL MEAN			1454
HIGHEST DAILY MEAN	32200	Dec 28	57900
LOWEST DAILY MEAN	678	Sep 2	285
ANNUAL SEVEN-DAY MINIMUM	755	Sep 2	507
ANNUAL RUNOFF (AC-FT)	2196000	2594000	2000000
ANNUAL RUNOFF (CFSM)	4.52	5.34	4.11
ANNUAL RUNOFF (INCHES)	61.38	72.51	55.89
10 PERCENT EXCEEDS	5450	6820	5260
50 PERCENT EXCEEDS	2480	3060	2080
90 PERCENT EXCEEDS	896	1130	820

WILLAMETTE RIVER BASIN

14211400 JOHNSON CREEK AT REGNER ROAD, AT GRESHAM, OR

LOCATION.--Lat 45°29'12", long 122°25'14", in SW 1/4 NE 1/4 sec.15, T.1 S., R.3 E., Multnomah County, Hydrologic unit 17090012, on left bank at Regner Road, 1.5 mi southeast of Gresham City Hall, and at mile 16.3.

DRAINAGE AREA.--17.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 305 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--1 year (water year 1999), 45.4 ft³/s, 34.65 in/yr, 32,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 629 ft³/s Feb. 27, 28, 1999, gage height, 8.58 ft; minimum discharge, 0.69 ft³/s Sept. 30, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 629 ft³/s Feb. 27, 28, gage height, 8.58 ft; minimum discharge, 0.69 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	2.5	176	126	53	172	62	7.7	5.9	5.3	1.4	1.4
2	2.0	7.8	242	89	77	136	49	19	7.0	4.7	1.4	1.2
3	4.0	3.9	142	65	79	226	64	40	5.3	5.6	1.2	1.3
4	3.8	15	97	48	104	165	51	27	4.9	5.0	2.2	1.1
5	1.9	27	79	37	91	115	44	20	5.0	3.9	3.1	1.1
6	1.6	22	89	31	183	84	34	18	4.9	3.5	1.9	1.0
7	1.6	16	94	31	260	62	29	33	5.2	3.2	3.3	1.2
8	1.9	17	124	25	169	56	35	43	6.7	3.1	2.0	1.0
9	9.7	13	81	22	126	47	30	41	6.3	2.4	1.7	1.0
10	4.2	12	74	25	100	35	51	31	5.0	2.0	1.5	1.2
11	2.4	10	190	25	79	29	40	27	4.5	2.1	1.5	1.4
12	2.2	8.2	203	29	61	41	30	23	3.9	2.2	1.5	1.2
13	4.5	8.6	202	28	48	84	24	21	3.3	2.1	1.3	1.0
14	4.5	8.8	125	68	38	83	20	29	3.1	2.2	1.4	1.1
15	4.1	12	86	117	35	63	17	23	2.9	2.2	1.6	1.4
16	3.0	13	63	180	64	57	15	20	3.0	1.9	1.3	1.6
17	2.6	11	48	283	109	44	13	66	2.9	1.9	1.2	1.6
18	2.7	12	38	263	202	42	12	58	2.8	1.9	1.2	1.5
19	2.2	14	30	197	155	32	10	49	2.6	1.9	1.7	1.4
20	2.5	57	23	184	97	27	8.9	34	2.2	1.7	1.2	1.3
21	2.8	126	e21	204	68	24	7.9	26	3.9	1.6	1.1	1.3
22	2.8	126	e18	246	99	24	8.0	20	3.1	1.5	1.1	1.3
23	2.6	107	e16	234	231	25	6.9	16	2.6	1.6	1.2	1.3
24	2.6	104	17	138	226	21	6.1	13	10	1.6	1.1	1.5
25	2.7	193	47	96	175	27	7.1	11	16	1.7	1.3	1.1
26	2.6	353	51	69	116	47	7.5	8.9	9.9	1.8	1.2	1.2
27	4.1	164	227	51	318	66	9.9	7.5	6.7	1.6	1.3	1.1
28	5.6	103	412	56	323	52	11	6.7	5.6	1.9	1.2	1.0
29	3.0	116	326	49	---	149	7.3	5.9	5.3	1.9	1.3	.90
30	2.3	175	221	84	---	117	6.3	5.3	5.0	1.7	3.4	.87
31	2.0	---	175	69	---	88	---	5.4	---	1.4	2.3	---
TOTAL	95.8	1857.8	3737	3169	3686	2240	716.9	755.4	155.5	77.1	50.1	36.57
MEAN	3.09	61.9	121	102	132	72.3	23.9	24.4	5.18	2.49	1.62	1.22
MAX	9.7	353	412	283	323	226	64	66	16	5.6	3.4	1.6
MIN	1.3	2.5	16	22	35	21	6.1	5.3	2.2	1.4	1.1	.87
AC-FT	190	3680	7410	6290	7310	4440	1420	1500	308	153	99	73
CFSM	.17	3.48	6.77	5.74	7.40	4.06	1.34	1.37	.29	.14	.09	.07
IN.	.20	3.88	7.81	6.62	7.70	4.68	1.50	1.58	.32	.16	.10	.08

WTR YR 1999 TOTAL 16577.17 MEAN 45.4 MAX 412 MIN .87 AC-FT 32880 CFSM 2.55 IN. 34.64

e Estimated

WILLAMETTE RIVER BASIN

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14211400 JOHNSON CREEK AT REGNER ROAD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: January to September 1999.

INSTRUMENTATION.--Temperature recorder since January 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE FOR PERIOD JANUARY TO SEPTEMBER: Maximum, 21.5°C June 14, July 28, Aug. 4, 5; minimum, 5.0°C Mar. 11.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	8.0	7.5	8.0
21	---	---	---	---	---	---	---	---	---	8.5	7.5	8.0
22	---	---	---	---	---	---	---	---	---	8.0	6.5	7.5
23	---	---	---	---	---	---	---	---	---	7.5	6.5	7.0
24	---	---	---	---	---	---	---	---	---	7.5	7.0	7.5
25	---	---	---	---	---	---	---	---	---	7.0	6.0	6.5
26	---	---	---	---	---	---	---	---	---	6.5	6.0	6.0
27	---	---	---	---	---	---	---	---	---	6.5	6.0	6.5
28	---	---	---	---	---	---	---	---	---	7.5	6.5	7.0
29	---	---	---	---	---	---	---	---	---	8.5	7.5	8.0
30	---	---	---	---	---	---	---	---	---	8.0	7.0	7.5
31	---	---	---	---	---	---	---	---	---	7.5	6.5	7.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.0	6.5	6.5	8.5	7.5	8.0	9.5	6.5	8.0	13.0	11.0	12.0
2	7.5	6.5	7.0	8.0	7.0	7.5	9.5	6.5	8.0	11.0	9.5	10.0
3	7.0	6.0	6.5	7.5	6.5	7.0	9.0	7.0	8.0	11.0	9.0	10.0
4	7.0	6.5	6.5	7.5	6.5	7.0	8.5	7.0	7.5	10.5	9.0	10.0
5	6.5	5.5	6.0	8.0	6.5	7.0	10.5	7.0	8.5	13.0	8.5	10.5
6	7.5	6.5	7.0	8.0	5.5	7.0	10.5	7.0	9.0	12.5	11.0	11.5
7	7.0	6.5	7.0	8.0	6.0	7.0	9.5	7.5	9.0	11.0	9.0	10.0
8	6.5	5.5	6.0	7.5	7.0	7.0	9.0	7.0	8.0	10.5	8.5	9.5
9	7.0	5.5	6.0	7.5	6.0	7.0	9.0	6.0	7.5	11.0	8.5	9.5
10	6.5	5.5	6.0	8.0	6.0	7.0	9.0	7.0	8.0	11.5	8.0	10.0
11	7.0	5.5	6.0	8.0	5.0	7.0	11.5	6.5	9.0	11.0	9.5	10.0
12	7.5	6.0	6.5	8.0	7.0	7.5	10.5	9.0	10.0	11.0	10.0	10.5
13	7.5	6.5	7.0	9.0	7.5	8.0	11.5	8.5	10.0	11.0	9.0	10.0
14	7.0	6.0	6.5	8.5	8.0	8.0	12.0	7.5	9.5	11.5	9.5	10.5
15	7.5	5.5	6.5	8.0	7.0	7.5	13.0	8.5	10.5	11.5	10.0	10.5
16	7.5	7.0	7.0	8.0	6.5	7.5	14.0	10.0	12.0	12.5	10.0	11.5
17	7.5	6.5	7.0	9.0	7.0	8.0	15.0	11.0	13.5	12.5	11.0	12.0
18	7.5	6.5	7.0	10.0	8.0	8.5	14.0	12.0	12.5	12.0	11.0	11.5
19	8.0	7.0	7.5	11.0	7.5	9.5	12.5	10.5	11.0	13.0	10.0	11.5
20	7.0	6.0	6.5	11.0	8.0	10.0	11.5	10.0	11.0	12.0	10.5	11.5
21	7.5	6.5	7.0	11.5	9.5	10.5	10.5	8.5	10.0	14.0	11.0	12.0
22	8.0	7.0	7.5	11.0	8.5	10.0	12.0	9.0	10.5	15.5	11.0	13.5
23	8.5	7.5	8.0	11.0	8.0	9.5	14.0	9.0	11.5	17.5	12.5	15.0
24	9.0	8.0	8.5	10.5	9.5	10.0	15.5	11.0	13.5	18.5	14.5	16.5
25	8.0	7.5	7.5	9.5	8.5	9.0	14.5	11.5	12.5	17.0	15.0	16.0
26	8.0	6.5	7.5	9.0	6.5	7.5	11.5	10.0	11.0	16.5	12.0	14.5
27	9.0	7.0	8.0	8.5	6.5	7.5	10.5	8.5	9.5	17.0	13.0	15.0
28	9.5	8.0	9.0	8.0	7.0	7.5	10.5	8.5	9.5	15.5	13.5	14.5
29	---	---	---	8.5	6.0	7.5	13.0	8.0	10.5	16.0	12.5	14.5
30	---	---	---	9.0	7.0	8.0	14.0	10.0	12.0	16.5	12.5	14.5
31	---	---	---	9.0	7.5	8.0	---	---	---	15.5	14.0	14.5
MONTH	9.5	5.5	7.0	11.5	5.0	8.0	15.5	6.0	10.0	18.5	8.0	12.0

WILLAMETTE RIVER BASIN

14211400 JOHNSON CREEK AT REGNER ROAD, AT GRESHAM, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	14.5	12.5	13.5	17.0	15.5	16.0	19.5	17.0	18.0	16.0	12.5	14.5
2	13.0	11.0	12.0	15.5	14.0	14.5	20.5	16.0	18.5	16.5	12.5	14.5
3	14.0	10.5	12.5	14.5	13.0	14.0	21.0	17.0	19.0	16.5	13.0	15.0
4	13.5	12.0	13.0	15.0	13.5	14.0	21.5	17.5	19.5	16.5	13.5	15.0
5	14.0	13.0	13.5	18.0	13.0	15.5	21.5	18.5	19.5	16.0	14.0	15.0
6	13.0	11.5	12.5	18.0	15.0	16.5	18.5	18.0	18.0	16.5	15.0	15.5
7	12.0	11.0	11.5	17.0	15.5	16.0	18.5	17.5	18.0	16.0	13.0	14.5
8	12.0	11.0	11.5	18.0	14.0	16.0	20.0	17.0	18.5	17.5	14.5	16.0
9	14.0	11.0	12.5	20.0	15.5	17.5	20.5	16.5	18.5	17.0	14.0	15.5
10	15.5	11.0	13.5	21.0	17.0	19.0	21.0	17.5	19.5	15.5	13.0	14.5
11	16.5	13.0	15.0	20.5	16.5	19.0	20.0	17.5	18.5	16.0	12.5	14.0
12	19.5	15.0	17.0	21.0	17.0	19.0	19.0	16.5	17.5	16.5	13.0	14.5
13	20.5	16.5	18.5	20.5	17.0	19.0	18.0	17.0	17.5	17.0	13.5	15.0
14	21.5	17.0	19.5	18.5	16.0	17.0	17.5	16.0	16.5	17.0	13.5	15.0
15	20.0	17.5	18.0	19.0	15.0	17.0	18.5	15.5	17.0	16.0	15.0	15.5
16	18.5	16.5	17.5	17.5	16.0	16.5	19.5	15.5	17.5	15.0	14.0	14.5
17	18.0	16.0	17.0	16.5	15.0	16.0	20.5	16.5	18.5	15.5	13.0	14.0
18	17.5	16.0	16.5	18.5	14.5	16.5	20.0	18.0	18.5	16.5	12.5	14.5
19	17.5	15.0	16.5	20.5	15.5	18.0	20.0	17.0	18.5	17.0	13.5	15.0
20	16.5	14.5	15.5	21.0	17.0	19.0	20.0	16.0	18.5	17.0	14.0	15.5
21	16.0	15.0	15.5	19.5	17.5	18.5	19.5	17.5	18.5	17.0	14.0	15.5
22	16.0	14.5	15.0	20.5	16.5	18.5	20.0	15.5	18.0	17.0	14.0	15.5
23	19.0	15.0	17.0	20.5	17.0	19.0	20.0	16.0	18.5	16.0	14.0	14.5
24	18.5	15.0	17.0	19.5	17.0	17.5	20.5	17.0	19.0	14.0	11.5	13.0
25	15.0	14.0	14.5	19.0	15.5	17.0	20.0	17.5	19.0	14.0	13.0	13.5
26	14.5	13.0	13.5	20.0	15.0	17.5	20.0	16.5	18.5	13.0	11.5	12.5
27	14.5	13.0	14.0	21.0	16.0	18.5	20.0	17.0	18.5	12.0	10.0	11.0
28	15.0	12.5	14.0	21.5	17.5	19.5	20.5	18.0	19.0	12.0	9.0	10.5
29	17.5	14.0	15.5	20.5	18.0	19.0	19.5	17.0	18.0	12.5	9.5	11.0
30	17.5	16.0	17.0	20.0	17.0	18.5	17.0	15.0	16.0	12.0	10.5	11.0
31	---	---	---	20.5	16.5	18.5	16.0	14.0	15.0	---	---	---
MONTH	21.5	10.5	15.0	21.5	13.0	17.4	21.5	14.0	18.2	17.5	9.0	14.2

LOCATION.--(revised) Lat 45°28'40", long 122°30'24", in lot 2, SW 1/4 sec.13, T.1 S., R.2 E., Multnomah County, Hydrologic Unit 17090012, on left bank, 2.8 mi east of I-205 in Portland, and at mile 10.2.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 228.47 ft above sea level.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft³/s Dec. 22, 1964, gage height, 14.68 ft; minimum discharge, 0.08 ft³/s Aug. 21, 1966.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	0630	914	10.24	Jan. 22	2330	506	7.60
Dec. 28	0030	*950	*10.41	Feb. 7	0530	541	7.87
Dec. 29	0300	730	9.19	Feb. 28	0030	871	10.02
Jan. 17	2200	809	9.67				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	4.9	257	166	80	247	82	17	12	11	2.4	2.7
2	16	22	346	116	125	194	68	35	12	9.7	2.4	2.4
3	15	9.3	190	86	114	348	86	68	8.6	12	2.4	2.3
4	11	46	127	66	162	232	69	41	7.5	11	2.6	2.3
5	4.3	85	102	52	141	162	61	31	7.9	7.3	8.5	2.1
6	3.1	64	120	44	280	119	47	28	7.8	5.9	3.7	2.0
7	3.3	41	128	45	394	89	39	47	11	5.6	6.4	1.8
8	3.5	47	179	35	240	85	46	67	13	5.1	3.6	2.0
9	29	28	107	32	180	74	41	59	14	4.9	2.9	1.8
10	13	26	101	38	146	55	77	43	7.9	4.2	2.7	1.9
11	6.0	e18	266	40	113	45	54	40	6.6	4.0	2.6	2.2
12	5.2	e14	274	45	88	66	41	34	6.0	4.1	2.5	2.2
13	18	e15	278	41	74	127	33	32	5.2	4.0	2.8	1.9
14	13	e16	167	91	e60	124	28	46	4.8	4.0	3.2	2.0
15	12	e19	112	157	e55	88	25	36	5.4	3.6	3.1	2.3
16	7.7	e20	82	286	e95	79	22	29	4.9	3.5	2.6	2.7
17	8.3	16	64	415	164	64	19	103	4.9	3.5	2.3	2.8
18	7.0	18	51	428	321	59	17	85	4.7	3.4	2.3	2.8
19	4.7	22	41	284	229	47	17	69	4.5	3.4	2.4	2.5
20	4.6	109	e32	263	139	39	17	49	5.0	3.3	2.6	2.4
21	4.8	241	e27	296	100	37	15	37	9.1	3.1	2.2	2.3
22	4.6	228	e22	353	137	36	15	28	5.9	3.0	2.2	2.3
23	4.9	199	e19	341	333	38	13	23	4.8	2.9	2.2	2.8
24	4.8	e190	26	188	334	33	12	19	45	2.9	2.1	3.3
25	4.6	340	82	133	253	42	18	16	45	2.9	2.1	2.8
26	4.6	571	79	96	162	64	16	14	19	2.9	2.3	2.4
27	14	218	347	73	451	90	26	12	11	3.0	2.2	2.1
28	15	130	669	90	509	75	23	11	8.8	2.8	2.3	2.2
29	6.9	160	493	79	---	208	14	9.9	8.0	3.1	2.4	2.4
30	4.6	274	301	145	---	156	12	8.8	7.0	2.7	11	2.0
31	4.2	---	228	106	---	115	---	9.2	---	2.7	5.1	---
TOTAL	262.7	3191.2	5317	4630	5479	3237	1053	1146.9	317.3	145.5	100.1	69.7
MEAN	8.47	106	172	149	196	104	35.1	37.0	10.6	4.69	3.23	2.32
MAX	29	571	669	428	509	348	86	103	45	12	11	3.3
MIN	3.1	4.9	19	32	55	33	12	8.8	4.5	2.7	2.1	1.8
AC-FT	521	6330	10550	9180	10870	6420	2090	2270	629	289	199	138
CFSM	.32	4.01	6.47	5.64	7.38	3.94	1.32	1.40	.40	.18	.12	.09
IN.	.37	4.48	7.46	6.50	7.69	4.54	1.48	1.61	.45	.20	.14	.11

MEAN	11.6	74.0	128	142	121	86.5	49.3	26.8	11.3	3.25	2.00	3.06
MAX	65.4	239	317	308	320	196	130	90.1	63.5	30.0	8.04	11.9
(WY)	1969	1951	1997	1970	1949	1957	1955	1963	1984	1983	1968	1997
MIN	1.29	1.56	4.34	9.01	16.0	18.1	9.46	3.32	1.46	.64	.44	.55
(WY)	1966	1953	1977	1977	1977	1992	1946	1966	1966	1966	1973	1970

WATER YEARS 1941 - 1999

ANNUAL TOTAL	24096.7		24949.4						
ANNUAL MEAN	66.0		68.4			54.6			
HIGHEST ANNUAL MEAN						91.7			1997
LOWEST ANNUAL MEAN						15.6			1977
HIGHEST DAILY MEAN	669	Dec 28	669	Dec 28	2150			Dec 22	1964
LOWEST DAILY MEAN	1.8	Sep 2	1.8	Sep 7		.10		Aug 7	1973
ANNUAL SEVEN-DAY MINIMUM	2.0	Aug 30	2.0	Sep 5		.11		Aug 5	1973
ANNUAL RUNOFF (AC-FT)	47800		49490		39570				
ANNUAL RUNOFF (CFSM)	2.49		2.58		2.06				
ANNUAL RUNOFF (INCHES)	33.83		35.02		28.00				
10 PERCENT EXCEEDS	188		222		148				
50 PERCENT EXCEEDS	26		22		15				
90 PERCENT EXCEEDS	2.9		2.4		1.2				

e Estimated

WILLAMETTE RIVER BASIN

14211500 JOHNSON CREEK AT SYCAMORE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1998 to current year.

INSTRUMENTATION.--Temperature recorder since April 1998.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 25.0°C July 28, 1998; minimum, 0.0°C Dec. 23, 24, 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.0°C June 14; minimum, 0.0°C Dec. 23, 24.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	15.0	14.0	14.5	10.0	8.5	9.5	9.5	8.5	9.0	8.0	7.5	7.5
2	14.5	12.5	13.5	11.0	9.5	10.5	9.5	9.0	9.5	7.5	6.5	7.0
3	13.0	12.5	12.5	10.5	10.0	10.0	9.0	8.5	9.0	6.5	6.0	6.0
4	13.5	12.5	13.0	11.5	10.0	10.5	9.0	8.0	8.5	6.0	5.5	5.5
5	13.5	11.0	12.0	11.5	10.5	11.0	8.0	7.0	7.5	5.5	5.0	5.0
6	13.5	10.5	12.0	10.5	9.5	10.0	7.5	6.5	7.0	6.5	5.0	6.0
7	14.0	12.0	13.0	10.0	9.0	9.5	8.0	7.0	7.5	7.5	6.5	7.0
8	14.0	13.0	13.5	9.0	9.0	9.0	8.0	7.0	7.5	7.0	6.0	6.5
9	13.5	12.0	13.0	9.5	9.0	9.0	7.5	7.0	7.0	6.0	5.5	6.0
10	12.5	11.5	12.0	9.0	9.0	9.0	8.0	7.5	8.0	7.0	6.0	6.5
11	12.5	11.0	11.5	9.5	---	---	9.0	8.0	8.5	6.5	6.0	6.0
12	13.0	11.5	12.0	9.5	---	---	10.5	9.0	9.5	7.5	6.5	7.0
13	13.5	12.5	13.0	10.0	9.5	9.5	10.5	9.5	10.0	8.0	7.5	7.5
14	13.5	12.5	13.0	10.5	9.5	10.0	9.5	8.5	8.5	9.0	7.5	8.0
15	12.5	11.5	12.0	11.5	10.5	11.0	8.5	8.0	8.0	8.5	8.0	8.0
16	12.0	10.5	11.0	11.0	9.5	10.5	8.5	7.5	7.5	8.0	7.0	7.5
17	11.0	10.0	10.5	9.5	9.5	9.5	8.0	7.0	7.5	7.5	7.0	7.5
18	11.0	10.0	10.5	10.0	9.5	9.5	7.5	5.5	6.5	8.5	7.5	8.0
19	10.5	8.5	9.5	9.5	8.5	9.0	5.5	3.0	4.5	8.5	8.0	8.0
20	11.0	9.5	10.0	11.0	9.0	10.0	3.0	---	---	8.5	8.0	8.0
21	11.5	10.0	10.5	11.0	10.0	10.5	---	---	---	8.5	7.5	8.0
22	11.5	10.0	10.5	10.0	9.5	9.5	.5	---	---	8.0	6.5	7.5
23	11.0	10.0	10.5	10.0	9.0	9.5	1.0	.0	.5	7.5	6.5	7.0
24	11.5	10.5	11.0	10.0	9.5	9.5	1.5	.0	1.0	7.5	7.0	7.5
25	12.0	11.0	11.5	11.0	10.0	10.5	5.0	1.5	3.0	7.0	6.0	6.5
26	11.5	10.5	11.0	11.0	10.5	10.5	5.5	5.0	5.5	6.5	6.0	6.0
27	12.0	11.0	11.5	10.5	10.0	10.0	7.5	5.5	6.5	6.5	6.5	6.5
28	12.0	10.5	11.5	10.0	9.0	9.5	8.0	7.5	8.0	8.0	6.5	7.0
29	10.5	9.0	9.5	9.5	8.5	9.0	9.0	8.0	8.5	8.5	7.5	8.0
30	9.0	7.5	8.5	9.0	8.0	8.5	9.5	9.0	9.0	8.0	7.5	8.0
31	9.0	7.5	8.0	---	---	---	9.0	8.0	9.0	7.5	7.0	7.0
MONTH	15.0	7.5	11.5	11.5	---	---	---	---	---	9.0	5.0	7.0

WILLAMETTE RIVER BASIN

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14211500 JOHNSON CREEK AT SYCAMORE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.0	6.5	7.0	8.5	7.5	8.0	9.5	7.0	8.0	13.0	11.5	12.5
2	7.5	6.5	7.0	8.0	7.0	7.5	9.5	7.5	8.5	11.5	10.5	10.5
3	7.0	6.5	7.0	7.5	7.0	7.0	9.0	7.5	8.5	11.5	9.5	10.5
4	7.5	6.5	7.0	7.5	6.5	7.0	8.5	7.5	8.0	11.0	10.0	10.5
5	7.0	6.0	6.0	7.5	6.5	7.0	10.0	7.5	8.5	12.5	9.5	11.0
6	7.5	6.5	7.0	7.5	6.0	7.0	10.0	8.0	9.0	12.5	11.5	12.0
7	7.5	7.0	7.0	8.0	6.5	7.5	10.0	8.5	9.0	11.5	10.0	10.5
8	7.0	6.0	6.0	8.0	7.0	7.5	9.0	8.5	9.0	10.0	9.0	9.5
9	6.5	6.0	6.0	7.5	6.5	7.0	9.0	7.0	8.0	11.0	9.0	10.0
10	6.5	5.5	6.0	8.0	7.0	7.5	9.0	7.5	8.5	11.0	9.0	10.0
11	6.5	5.5	6.0	8.0	6.5	7.0	11.0	8.0	9.5	11.0	10.0	10.5
12	7.0	6.0	6.5	8.5	7.5	8.0	11.0	10.0	10.5	11.0	10.5	11.0
13	7.5	7.0	7.0	9.0	8.0	8.5	12.0	9.5	10.5	11.0	10.0	10.5
14	---	6.5	---	9.0	8.5	8.5	12.0	9.0	10.5	11.5	10.0	10.5
15	---	---	---	8.5	7.5	8.0	12.5	9.5	11.0	11.5	10.5	11.0
16	7.5	---	---	8.0	7.0	7.5	14.0	10.5	12.0	13.0	10.5	11.5
17	7.5	6.5	7.0	9.0	7.5	8.0	15.0	12.0	13.5	13.0	11.5	12.5
18	7.5	6.5	7.0	9.5	8.5	9.0	14.0	12.5	13.5	12.5	11.5	12.0
19	8.0	7.0	7.5	10.5	8.5	9.5	13.0	11.5	12.0	13.0	11.0	12.0
20	7.5	6.5	7.0	11.0	9.5	10.5	12.0	11.0	11.5	12.5	11.5	12.0
21	7.5	7.0	7.0	11.5	10.0	11.0	11.5	10.0	10.5	14.0	11.0	12.5
22	8.5	7.0	7.5	11.0	10.0	10.5	13.0	9.5	11.0	15.5	12.0	14.0
23	9.0	8.0	8.0	11.0	9.0	10.0	14.5	10.0	12.0	17.5	13.5	15.5
24	9.0	8.5	8.5	11.0	10.0	10.5	16.0	11.5	13.5	18.5	15.5	17.0
25	8.5	7.5	8.0	10.5	9.5	9.5	14.0	12.5	13.0	18.0	16.0	17.0
26	8.0	7.0	7.5	9.5	7.0	8.5	12.5	11.0	12.0	17.0	14.0	15.5
27	9.0	7.5	8.0	8.5	6.5	7.5	11.5	8.0	10.5	17.5	14.0	16.0
28	9.5	8.5	9.0	8.0	7.5	8.0	10.5	8.0	9.5	16.5	14.5	15.5
29	---	---	---	8.5	6.5	7.5	13.0	8.5	10.5	17.0	13.5	15.0
30	---	---	---	9.0	7.0	8.0	14.5	10.5	12.5	17.5	13.5	15.5
31	---	---	---	9.0	7.5	8.5	---	---	---	16.0	15.0	15.5
MONTH	---	---	---	11.5	6.0	8.3	16.0	7.0	10.5	18.5	9.0	12.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.0	13.5	14.0	17.0	16.0	16.5	20.0	17.5	18.5	16.5	13.5	15.0
2	14.0	12.0	13.0	16.0	15.0	15.5	20.5	16.5	18.5	16.0	13.5	15.0
3	15.5	11.5	13.5	15.5	14.5	15.0	21.0	18.0	19.5	16.5	13.5	15.0
4	14.5	13.5	14.0	16.0	14.5	15.0	21.5	18.5	20.0	17.0	14.0	15.5
5	14.5	13.5	14.0	18.5	14.5	16.0	21.5	19.5	20.0	16.5	14.5	15.5
6	14.0	12.5	13.0	19.5	16.0	17.5	19.5	18.5	19.0	16.5	15.5	16.0
7	13.0	12.0	12.5	17.5	16.0	17.0	19.0	18.0	18.5	15.5	13.0	14.5
8	13.0	11.5	12.5	19.0	14.5	16.5	20.0	17.5	18.5	17.0	14.5	15.5
9	14.5	12.0	13.0	20.5	16.0	18.0	21.0	17.5	19.0	16.5	14.5	15.5
10	16.5	12.0	14.0	21.5	17.5	19.5	21.0	18.0	20.0	15.5	13.0	14.5
11	18.0	14.0	16.0	21.5	17.0	19.5	20.5	17.5	18.5	15.0	12.5	14.0
12	19.5	16.0	17.5	21.5	17.5	19.5	19.0	17.0	18.0	16.0	14.5	15.5
13	21.0	17.0	19.0	21.0	17.5	19.5	18.5	17.5	18.0	17.0	15.0	16.0
14	22.0	17.5	20.0	19.5	16.5	17.5	18.0	16.5	17.5	16.5	14.5	15.5
15	20.5	18.0	19.0	19.5	16.0	17.5	19.0	16.5	17.5	16.0	15.0	15.5
16	19.0	17.0	18.0	18.5	16.5	17.5	19.5	16.5	18.0	15.5	14.5	15.0
17	19.0	16.5	17.5	17.5	16.0	16.5	20.5	17.5	19.0	15.5	13.5	14.5
18	18.0	16.5	17.0	19.0	15.0	17.0	20.5	18.5	19.0	16.0	13.5	15.0
19	18.5	15.5	17.0	21.0	16.5	18.5	20.0	17.5	18.5	16.5	14.0	15.5
20	17.5	15.5	16.5	21.5	17.5	19.5	20.0	17.0	18.5	16.5	14.5	16.0
21	17.0	16.0	16.5	20.0	18.0	19.0	19.5	18.5	19.0	16.5	14.5	15.5
22	17.0	15.5	16.0	20.5	17.0	19.0	19.5	16.0	18.0	16.5	14.5	15.5
23	19.5	15.5	17.5	20.5	17.5	19.5	20.0	17.0	18.5	16.0	14.0	15.0
24	18.5	15.5	17.5	20.0	17.5	18.5	20.0	17.5	19.0	14.0	12.0	13.5
25	15.5	14.5	15.0	19.0	16.5	17.5	20.5	18.0	19.0	14.0	13.0	14.0
26	15.0	14.0	14.5	20.0	15.5	18.0	19.5	17.0	18.5	13.0	12.0	12.5
27	15.0	14.0	14.5	21.0	17.0	19.0	19.5	17.5	19.0	12.0	10.0	11.0
28	15.5	13.5	14.5	21.5	18.0	20.0	20.5	18.0	19.0	12.0	10.0	11.0
29	17.5	14.5	16.0	21.0	18.0	19.5	19.5	17.0	18.5	12.5	10.5	11.5
30	17.5	16.5	17.0	20.5	18.0	19.0	17.0	15.5	16.0	12.5	11.0	11.5
31	---	---	---	21.0	17.5	19.0	16.5	15.0	15.5	---	---	---
MONTH	22.0	11.5	15.7	21.5	14.5	18.0	21.5	15.0	18.5	17.0	10.0	14.5

WILLAMETTE RIVER BASIN

14211542 CRYSTAL SPRINGS CREEK AT BYBEE STREET, OR

WATER-QUALITY RECORDS

LOCATION.--Lat 45°28'27", long 122°38'27", Multnomah County, Hydrologic Unit 17090012, at Bybee Street in Portland, and at mile 1.0.

DRAINAGE.--Not determined.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1998 to September 1999

INSTRUMENTATION.--Temperature recorder since July 1998.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 21.5°C July 26, 1998, June 14, 1999; minimum, 4.0° Dec. 22, 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 21.5°C June 14; minimum, 4.0° Dec. 22.

TEMPERATURE, WATER (DEG. C), JULY TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	---	---	---	18.0	14.5	16.0	18.5	16.0	17.5
2	---	---	---	---	---	---	19.0	15.0	17.0	18.5	15.5	17.0
3	---	---	---	---	---	---	19.5	15.5	17.5	18.5	16.0	17.0
4	---	---	---	---	---	---	19.5	16.0	18.0	18.0	15.5	17.0
5	---	---	---	---	---	---	20.0	16.5	18.0	19.0	15.0	16.5
6	---	---	---	---	---	---	18.5	15.5	17.0	17.5	14.5	16.0
7	---	---	---	---	---	---	18.5	15.0	17.0	18.0	14.5	16.5
8	---	---	---	---	---	---	18.5	15.0	17.0	16.0	15.0	15.5
9	---	---	---	---	---	---	20.0	15.5	17.5	16.5	13.5	15.0
10	---	---	---	---	---	---	19.0	15.5	17.0	17.0	13.5	15.0
11	---	---	---	---	---	---	19.0	15.5	17.5	17.0	14.5	15.5
12	---	---	---	---	---	---	19.5	16.5	18.0	17.5	15.0	16.0
13	---	---	---	---	---	---	20.0	16.5	18.0	17.5	14.5	16.0
14	---	---	---	---	---	---	20.0	17.0	18.5	17.0	15.0	16.0
15	---	---	---	---	---	---	17.5	16.0	17.0	18.0	14.5	16.0
16	---	---	---	---	---	---	17.0	15.5	16.0	17.5	14.5	16.0
17	---	---	---	---	---	---	17.5	14.0	15.5	16.5	14.5	15.5
18	---	---	---	19.5	16.5	18.0	16.5	14.5	15.5	15.5	14.5	15.0
19	---	---	---	18.5	16.5	17.0	18.0	14.5	16.0	15.5	14.0	14.5
20	---	---	---	19.0	15.5	17.0	19.0	15.0	17.0	15.5	13.5	14.5
21	---	---	---	20.0	16.0	18.0	17.5	15.5	16.5	16.0	13.5	14.5
22	---	---	---	20.0	17.0	18.5	18.0	15.0	16.5	15.0	14.0	14.5
23	---	---	---	19.5	16.5	18.0	16.5	15.5	16.0	17.0	13.5	15.0
24	---	---	---	19.0	16.5	17.5	17.5	14.0	15.5	14.5	14.0	14.5
25	---	---	---	19.5	16.0	17.5	---	14.5	---	14.5	13.5	14.0
26	---	---	---	21.5	16.5	18.5	---	---	---	15.5	13.0	14.0
27	---	---	---	20.5	17.5	19.0	17.5	---	---	16.0	13.5	14.5
28	---	---	---	20.5	17.0	18.5	19.0	15.0	17.0	16.5	13.5	15.0
29	---	---	---	19.5	17.0	18.0	18.0	15.0	16.5	15.0	13.5	14.0
30	---	---	---	18.0	16.0	17.0	18.0	15.5	17.0	15.5	13.0	14.0
31	---	---	---	17.0	15.5	16.5	19.0	15.5	17.0	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	19.0	13.0	15.4

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	14.5	13.5	14.0	12.5	11.5	12.0	10.0	9.5	10.0	10.5	10.0	10.0
2	14.0	12.5	13.0	13.0	11.5	12.0	10.5	10.0	10.5	10.0	9.0	9.5
3	13.5	12.5	13.0	12.0	11.5	11.5	10.5	9.5	10.0	9.0	8.5	9.0
4	14.0	12.5	13.0	12.5	11.5	12.0	10.5	9.5	10.0	9.5	8.5	9.0
5	14.0	12.0	13.0	12.5	11.5	12.0	9.5	9.0	9.0	9.5	8.5	8.5
6	15.0	12.0	13.5	12.0	11.0	11.5	10.0	9.0	9.5	10.5	9.0	9.5
7	15.0	13.0	14.0	11.5	11.0	11.0	10.0	9.0	9.5	11.0	10.0	10.5
8	14.0	13.0	13.5	11.5	10.5	11.0	10.0	9.0	9.5	10.5	9.5	10.0
9	13.5	12.5	13.0	11.5	10.5	11.0	10.5	8.5	9.0	10.0	9.5	9.5
10	13.5	12.0	12.5	11.0	11.0	11.0	10.0	9.5	9.5	11.0	9.5	10.0
11	13.5	12.0	12.5	12.0	11.0	11.5	11.5	10.0	10.5	10.5	9.5	10.0
12	13.0	12.5	13.0	11.5	11.0	11.5	12.5	11.0	12.0	11.0	10.0	10.5
13	14.0	12.5	13.5	11.5	11.5	11.5	12.5	11.0	12.0	11.5	10.0	10.5
14	14.0	12.5	13.0	12.5	11.5	12.0	11.0	10.0	10.5	11.0	10.5	11.0
15	13.0	12.0	12.5	13.0	12.0	12.0	11.0	10.0	10.0	11.5	10.5	11.0
16	13.0	11.5	12.0	12.0	11.5	11.5	10.5	9.5	10.0	10.5	9.5	10.0
17	12.0	11.5	12.0	12.0	11.0	11.5	10.5	9.5	10.0	10.5	9.5	10.0
18	13.0	11.5	12.0	12.0	11.0	11.5	10.0	8.5	9.0	10.5	10.0	10.0
19	13.0	11.0	12.0	11.5	10.5	11.0	8.5	6.0	7.5	11.0	10.0	10.5
20	13.0	11.0	12.0	12.0	11.5	11.5	6.0	4.5	5.0	11.0	10.0	10.5
21	13.5	11.5	12.0	11.5	10.5	11.5	5.5	4.5	5.0	11.0	10.0	10.5
22	13.5	11.5	12.5	11.0	10.5	10.5	5.0	4.0	4.5	10.5	9.0	10.0
23	13.5	12.0	12.5	11.0	10.5	10.5	5.5	4.5	5.0	10.5	9.5	10.0
24	13.0	12.0	12.5	11.0	10.0	10.5	7.5	5.5	6.5	10.0	9.0	9.5
25	13.5	12.5	13.0	11.5	10.5	11.0	9.5	7.5	9.0	10.0	9.0	9.5
26	13.5	12.0	13.0	11.5	11.0	11.5	10.0	9.0	9.5	10.0	8.5	9.5
27	12.5	12.0	12.5	11.5	10.5	11.0	10.0	9.5	10.0	9.5	9.0	9.0
28	13.0	11.5	12.0	11.0	10.5	10.5	11.0	10.0	10.5	10.5	9.0	9.5
29	12.5	11.0	11.5	10.5	10.0	10.5	11.5	11.0	11.5	10.5	10.0	10.0
30	12.0	11.0	11.5	10.0	9.5	10.0	12.0	11.5	11.5	10.5	10.0	10.0
31	11.5	10.5	11.0	---	---	---	11.5	10.5	11.5	10.5	10.0	10.0
MONTH	15.0	10.5	12.6	13.0	9.5	11.3	12.5	4.0	9.3	11.5	8.5	9.9

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.5	9.5	10.0	11.5	10.0	10.5	14.0	10.0	11.5	15.5	12.5	13.5
2	10.5	9.0	9.5	11.0	10.0	10.5	14.0	10.5	12.0	13.0	12.0	12.5
3	10.5	9.5	9.5	10.0	9.0	9.5	13.0	10.5	11.5	14.0	11.5	12.5
4	10.0	9.0	9.5	10.5	9.0	9.5	11.5	11.0	11.5	14.0	11.5	12.5
5	9.5	8.5	9.0	11.0	9.5	9.5	14.0	10.5	12.0	15.5	11.5	13.5
6	10.5	9.0	9.5	11.5	8.5	10.0	14.5	11.0	12.5	14.5	13.0	14.0
7	10.0	9.0	9.5	12.0	9.5	10.5	13.0	12.0	12.5	13.0	11.5	12.5
8	9.0	8.5	9.0	11.5	10.0	10.5	13.0	11.0	12.0	14.5	11.0	12.5
9	10.5	8.5	9.0	11.0	9.5	10.0	13.0	10.5	11.5	13.5	11.5	12.5
10	10.0	8.5	9.0	12.0	9.5	10.5	13.0	11.0	12.0	15.0	11.5	13.0
11	10.0	8.5	9.0	13.0	9.5	11.0	16.0	11.0	13.0	13.5	12.5	13.0
12	10.0	9.0	9.5	11.5	11.0	11.0	14.5	13.0	13.5	13.5	12.0	13.0
13	11.5	9.5	10.5	12.5	11.0	11.5	15.0	12.0	13.5	14.0	12.0	13.0
14	10.5	10.0	10.0	12.0	11.0	11.5	16.0	12.0	13.5	14.0	12.0	13.0
15	11.0	9.5	10.5	12.0	10.5	11.0	15.0	12.0	13.5	14.0	12.0	13.0
16	11.0	10.0	10.5	13.0	10.0	11.0	16.5	12.0	14.5	15.5	12.5	14.0
17	11.0	9.5	10.5	12.0	10.5	11.0	17.5	13.5	15.0	15.5	13.5	14.0
18	10.5	9.5	10.0	12.5	11.0	12.0	15.0	13.5	14.0	15.0	13.5	14.0
19	11.5	9.5	10.5	14.0	11.0	12.5	13.5	13.0	13.0	16.0	12.5	14.0
20	10.0	9.0	9.5	14.5	12.0	13.0	14.5	12.0	13.0	15.0	13.5	14.0
21	10.5	9.0	9.5	14.5	12.5	13.5	13.5	12.0	12.5	16.5	13.0	14.5
22	10.5	10.0	10.0	14.0	12.5	13.0	15.0	11.5	13.0	17.5	14.0	16.0
23	11.5	10.5	11.0	14.5	11.5	13.0	16.5	12.5	14.0	19.0	15.0	17.0
24	11.5	10.5	11.0	13.5	12.5	13.0	17.5	13.5	15.5	20.0	16.0	17.5
25	11.0	10.0	10.5	13.0	11.5	12.5	16.0	13.0	14.0	18.0	15.5	16.5
26	11.5	10.0	10.5	12.5	11.0	11.5	14.5	12.0	13.0	18.0	14.5	16.0
27	11.5	10.0	10.5	12.5	10.5	11.0	14.0	12.0	13.0	18.5	15.0	16.5
28	12.0	10.5	11.5	11.5	10.0	10.5	14.0	12.0	12.5	17.0	14.5	15.5
29	---	---	---	11.5	10.0	10.5	15.5	11.5	13.5	17.5	14.0	15.5
30	---	---	---	12.5	10.0	11.0	17.0	12.5	15.0	17.5	14.0	16.0
31	---	---	---	12.5	10.5	11.5	---	---	---	16.5	15.0	15.5
MONTH	12.0	8.5	9.9	14.5	8.5	11.2	17.5	10.0	13.1	20.0	11.0	14.2
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	15.0	13.5	14.0	15.5	14.5	15.0	18.5	16.0	17.0	16.5	13.5	15.0
2	15.5	12.5	14.0	15.5	13.5	14.5	20.0	15.0	17.5	17.0	13.5	15.0
3	17.5	13.0	15.0	15.5	13.5	14.5	19.5	16.0	17.5	17.0	14.0	15.5
4	15.0	14.5	15.0	17.0	13.5	15.0	19.5	16.0	18.0	17.5	14.0	16.0
5	15.5	14.0	14.5	18.5	14.0	16.0	19.0	16.0	17.0	17.0	14.5	15.5
6	15.0	13.0	14.0	20.0	16.0	17.5	16.5	15.5	16.0	16.0	14.5	15.0
7	14.0	13.0	13.5	18.0	15.5	16.5	16.0	14.5	15.5	16.5	13.0	14.5
8	14.5	12.5	13.5	18.5	14.0	16.0	19.0	14.5	16.5	17.5	13.5	15.5
9	16.0	13.0	14.0	20.5	15.5	18.0	19.0	15.5	17.0	17.0	14.0	15.5
10	18.5	13.0	15.5	20.0	16.0	18.0	19.0	16.0	17.5	16.0	13.5	15.0
11	18.0	14.5	16.0	19.5	16.0	18.0	18.5	15.5	16.5	16.5	13.5	15.0
12	20.0	15.5	17.5	20.0	16.0	18.0	17.5	14.5	16.0	17.0	13.5	15.5
13	19.5	16.0	17.5	20.0	16.5	18.0	16.0	15.5	15.5	17.5	14.0	16.0
14	21.5	16.5	18.5	17.0	15.5	16.0	17.5	14.5	15.5	17.5	14.5	16.0
15	18.5	16.0	17.0	18.5	15.0	16.5	18.0	15.0	16.0	16.0	14.0	15.0
16	18.0	15.5	16.5	17.0	16.0	16.0	18.5	15.0	16.5	16.0	13.5	14.5
17	18.0	15.0	16.5	16.0	14.5	15.5	19.0	16.0	17.5	16.0	13.5	14.5
18	17.0	15.0	16.0	18.5	14.0	16.0	18.0	15.5	16.5	17.0	13.5	15.0
19	18.0	14.5	16.0	20.0	16.0	17.5	18.0	15.0	16.5	17.5	14.5	16.0
20	16.5	15.0	15.5	20.5	16.5	18.5	19.0	15.5	17.0	17.0	15.0	16.0
21	16.0	14.5	15.0	18.5	16.0	17.0	18.0	16.0	17.0	17.5	14.5	16.0
22	16.0	14.0	15.0	19.0	15.5	17.0	18.5	15.0	16.5	17.0	14.0	15.5
23	19.0	14.5	16.5	19.0	16.0	17.5	19.0	15.5	17.5	16.0	13.5	14.5
24	17.5	14.5	16.0	18.0	15.5	16.5	19.5	15.5	17.5	15.0	12.5	14.0
25	14.5	13.5	14.0	18.0	14.5	16.0	18.5	16.0	17.0	15.0	13.5	14.0
26	15.0	13.5	14.0	19.5	15.5	17.0	18.5	15.0	16.5	14.5	12.5	13.5
27	16.0	13.5	14.5	19.5	16.0	18.0	18.5	15.5	17.0	14.0	11.5	13.0
28	16.0	13.5	14.5	20.0	16.5	18.0	18.5	15.5	16.5	15.0	11.5	13.0
29	18.0	14.5	16.0	19.0	16.0	17.5	16.5	14.5	15.5	15.0	12.0	13.5
30	17.0	15.5	16.0	18.5	15.5	17.0	16.0	14.0	14.5	14.0	12.5	13.5
31	---	---	---	19.5	16.0	17.5	16.0	13.5	14.5	---	---	---
MONTH	21.5	12.5	15.4	20.5	13.5	16.8	20.0	13.5	16.5	17.5	11.5	14.9
YEAR	21.5	4.0	12.9									

WILLAMETTE RIVER BASIN

14211546 CRYSTAL SPRINGS CREEK AT MOUTH, OR

WATER-QUALITY RECORDS

LOCATION.--Lat 45°27'39", long 122°38'30", Multnomah County, Hydrologic Unit 17090012, at mouth.

DRAINAGE.--No determined.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1998 to September 1999.

INSTRUMENTATION.--Water temperature recorder since July 1998.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum 23.5°C July 28, 1998; minimum, 2.0°C Dec. 22, 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 23.0°C June 14; minimum, 2.0°C Dec. 22.

TEMPERATURE, WATER (DEG. C), JULY TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	19.0	15.5	17.0	21.5	17.0	19.0
2	---	---	---	---	---	---	21.0	16.0	18.0	21.0	16.5	18.5
3	---	---	---	---	---	---	22.0	17.0	19.5	21.0	16.5	18.5
4	---	---	---	---	---	---	22.0	17.5	19.5	20.5	16.5	18.5
5	---	---	---	---	---	---	22.0	17.5	20.0	20.5	16.0	18.0
6	---	---	---	---	---	---	20.5	16.5	18.5	20.0	15.0	17.5
7	---	---	---	---	---	---	20.5	16.0	18.0	20.0	15.5	17.5
8	---	---	---	---	---	---	21.0	16.0	18.0	17.5	15.5	16.5
9	---	---	---	---	---	---	21.5	16.5	19.0	18.0	14.0	16.0
10	---	---	---	---	---	---	21.5	16.0	19.0	18.0	13.5	16.0
11	---	---	---	---	---	---	22.0	17.5	19.5	19.0	15.0	16.5
12	---	---	---	---	---	---	22.5	17.5	19.5	19.5	15.5	17.0
13	---	---	---	---	---	---	22.5	17.5	20.0	19.5	15.0	17.0
14	---	---	---	---	---	---	22.5	18.5	20.0	19.5	15.5	17.0
15	---	---	---	---	---	---	19.0	17.0	18.0	19.5	15.0	17.0
16	---	---	---	---	---	---	18.0	16.0	17.0	18.5	15.0	17.0
17	---	---	---	---	---	---	19.0	14.5	16.5	17.5	15.0	16.5
18	---	---	---	---	---	---	18.0	15.0	16.5	16.5	15.0	15.5
19	---	---	---	---	---	---	20.0	15.0	17.0	16.0	14.5	15.0
20	---	---	---	21.5	16.5	---	20.5	16.0	18.0	16.5	13.5	15.0
21	---	---	---	22.5	17.0	19.5	19.0	16.5	17.5	17.5	13.5	15.5
22	---	---	---	23.0	18.0	20.5	20.0	15.5	17.5	16.0	14.0	15.0
23	---	---	---	21.5	18.0	19.5	17.5	16.0	16.5	17.5	13.5	15.5
24	---	---	---	21.0	17.0	19.0	19.5	14.5	16.5	15.5	14.0	14.5
25	---	---	---	21.0	17.5	19.0	19.5	15.5	17.0	15.5	14.0	14.5
26	---	---	---	23.0	18.0	20.5	18.0	15.5	16.5	16.5	13.0	14.5
27	---	---	---	23.0	19.5	21.0	19.5	15.0	17.0	17.5	13.5	15.0
28	---	---	---	23.5	19.0	21.0	20.5	16.0	18.0	17.5	13.5	15.5
29	---	---	---	21.0	18.5	19.5	20.0	16.0	18.0	16.5	14.0	15.0
30	---	---	---	19.5	17.0	18.0	20.5	16.0	18.0	17.0	13.0	15.0
31	---	---	---	18.0	16.5	17.5	21.0	16.5	18.5	---	---	---
MONTH	---	---	---	---	---	---	22.5	14.5	18.0	21.5	13.0	16.3

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.5	13.5	14.5	12.5	11.0	12.0	10.0	9.0	9.5	10.0	9.0	9.5
2	14.5	13.0	13.5	13.0	11.5	12.0	10.5	9.5	10.0	9.5	8.0	9.0
3	14.0	12.5	13.0	12.0	11.0	11.5	10.5	9.0	9.5	9.0	7.5	8.0
4	15.5	12.5	13.5	13.0	11.5	12.0	10.0	8.5	9.5	9.0	7.0	8.0
5	15.5	12.0	13.5	12.5	11.5	12.0	8.5	8.0	8.5	9.0	7.0	8.0
6	16.0	12.0	14.0	12.0	11.0	11.5	9.5	8.0	8.5	9.5	8.0	9.0
7	16.0	13.5	14.5	11.0	10.5	11.0	9.5	8.5	9.0	11.0	9.0	10.0
8	15.0	13.5	14.0	11.0	10.5	10.5	9.5	8.0	8.5	9.5	8.5	9.0
9	13.5	12.5	13.0	11.5	10.5	11.0	9.5	7.5	8.5	9.5	8.5	9.0
10	14.0	12.5	13.0	11.0	10.5	10.5	9.5	8.5	9.0	10.5	9.0	9.5
11	14.0	12.0	13.0	12.0	10.5	11.0	11.0	9.5	10.0	10.0	9.0	9.0
12	13.5	12.5	13.0	11.5	11.0	11.0	12.5	10.5	11.5	10.5	9.0	9.5
13	15.0	13.0	13.5	11.5	11.0	11.5	12.0	10.5	11.5	10.5	9.5	10.0
14	14.5	13.0	13.5	12.5	11.0	11.5	10.5	9.5	10.0	11.0	10.0	10.5
15	14.0	12.0	13.0	13.0	11.5	12.0	10.5	9.0	9.5	11.0	10.0	10.5
16	14.0	11.5	12.5	11.5	11.0	11.5	10.0	8.5	9.0	10.5	8.5	9.5
17	12.5	11.0	12.0	12.0	10.5	11.0	10.0	9.0	9.5	9.5	9.0	9.0
18	13.5	11.0	12.0	12.0	11.0	11.5	9.0	7.0	8.5	10.0	9.5	9.5
19	13.5	10.5	12.0	11.0	10.0	10.5	7.0	4.5	6.0	11.0	9.5	10.0
20	13.5	11.0	12.0	11.5	11.0	11.5	4.5	2.5	3.0	10.5	9.5	10.0
21	14.0	11.0	12.5	11.5	10.5	11.0	4.0	2.5	3.5	10.5	9.0	10.0
22	14.0	11.0	12.5	10.5	9.5	10.0	4.0	2.0	3.0	10.0	8.5	9.0
23	14.0	12.0	12.5	10.5	10.0	10.0	4.5	2.5	3.5	10.0	8.5	9.0
24	13.5	12.0	12.5	10.5	9.5	10.0	6.5	4.0	5.0	9.5	8.5	9.0
25	14.0	12.5	13.0	11.5	10.0	11.0	9.0	6.5	8.0	9.5	8.0	8.5
26	14.5	12.0	13.0	11.5	11.0	11.0	9.5	8.5	9.0	9.5	7.5	8.5
27	13.0	12.0	12.5	11.5	10.5	11.0	9.5	8.5	9.0	9.0	8.0	8.5
28	13.5	11.5	12.5	10.5	9.5	10.0	10.5	9.5	10.0	9.5	8.0	9.0
29	13.0	11.0	11.5	10.5	9.5	10.0	11.5	10.5	11.0	10.0	9.0	9.5
30	12.0	10.5	11.0	9.5	9.0	9.5	12.0	11.0	11.5	10.0	9.5	10.0
31	11.0	10.0	11.0	---	---	---	11.5	9.5	11.0	10.5	9.0	9.5
MONTH	16.0	10.0	12.8	13.0	9.0	11.0	12.5	2.0	8.5	11.0	7.0	9.3

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.0	8.5	9.0	11.5	10.0	11.0	14.5	10.0	12.0	16.0	13.0	14.0
2	9.5	8.0	9.0	11.0	9.5	10.5	14.5	10.0	12.0	13.0	11.5	12.5
3	9.5	8.5	9.0	10.0	8.5	9.5	13.0	10.5	11.5	15.0	11.5	12.5
4	9.5	8.0	8.5	10.5	8.5	9.5	12.0	10.5	11.0	14.5	11.0	12.5
5	8.5	7.5	8.0	11.5	9.0	10.0	15.0	10.0	12.0	17.5	11.5	14.0
6	10.0	8.0	9.0	12.5	8.0	10.0	16.0	10.5	13.0	15.5	13.0	14.5
7	9.5	8.0	9.0	12.0	9.0	10.5	13.5	12.0	12.5	13.5	11.5	12.5
8	8.5	7.5	8.0	11.5	10.0	10.5	13.0	10.5	11.5	15.0	11.0	12.5
9	9.5	7.5	8.5	11.0	9.5	10.0	13.5	10.0	11.5	14.5	11.5	13.0
10	9.0	7.0	8.0	12.5	9.5	10.5	13.5	10.5	11.5	15.5	11.0	13.0
11	9.5	7.5	8.5	13.5	9.0	11.5	17.0	10.5	13.0	14.0	12.5	13.5
12	10.0	8.0	9.0	12.0	11.0	11.5	14.0	13.0	13.5	14.0	12.5	13.0
13	11.5	9.0	10.0	13.0	11.5	12.0	16.5	11.5	13.5	14.5	12.0	13.0
14	10.5	9.0	10.0	12.5	11.5	12.0	17.0	11.5	14.0	15.0	12.0	13.0
15	11.0	9.0	10.0	12.5	10.5	11.5	17.0	11.5	13.5	14.5	12.5	13.5
16	10.5	10.0	10.5	13.5	10.0	11.5	17.5	12.0	14.5	16.5	12.5	14.5
17	11.0	9.5	10.0	12.5	10.5	11.5	18.5	13.5	16.0	16.5	13.5	14.5
18	10.5	9.5	10.0	13.5	11.0	12.0	15.5	14.0	14.5	16.0	14.0	14.5
19	11.5	9.0	10.0	15.5	11.0	13.0	14.0	13.0	13.5	17.5	13.0	15.0
20	10.0	8.5	9.5	16.0	12.0	13.5	15.0	12.0	13.5	16.0	13.5	14.5
21	10.5	8.5	9.5	15.5	13.0	14.0	14.0	11.5	13.0	18.5	13.0	15.5
22	10.5	9.0	10.0	15.0	12.5	13.5	16.5	11.0	13.0	20.0	14.0	16.5
23	11.5	10.0	11.0	15.5	11.5	13.5	18.0	12.0	15.0	21.5	15.0	18.0
24	11.5	10.5	11.0	14.0	12.5	13.5	19.0	13.5	16.0	22.0	16.5	19.0
25	11.0	9.5	10.5	13.5	11.5	12.5	16.5	13.0	14.5	20.0	16.0	18.0
26	11.5	9.0	10.5	12.5	10.5	11.5	15.0	12.0	13.5	20.0	14.0	17.0
27	11.5	10.0	11.0	12.5	10.0	11.0	15.0	12.0	13.5	21.0	15.0	17.5
28	12.5	11.0	11.5	11.5	9.5	10.5	14.5	12.0	13.0	18.5	15.0	16.5
29	---	---	---	11.5	9.5	10.5	17.5	11.5	14.0	19.5	13.5	16.5
30	---	---	---	12.5	10.0	11.0	18.0	13.0	15.0	20.0	14.0	16.5
31	---	---	---	13.5	10.0	11.5	---	---	---	17.0	15.5	16.0
MONTH	12.5	7.0	9.6	16.0	8.0	11.5	19.0	10.0	13.3	22.0	11.0	14.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	15.5	14.0	14.5	16.5	15.0	15.5	20.0	16.5	18.0	18.0	13.5	15.5
2	16.5	13.0	14.5	16.0	14.0	15.0	21.5	15.5	18.5	18.5	14.0	16.0
3	19.0	13.0	15.5	16.0	13.5	15.0	21.5	16.5	19.0	19.0	14.0	16.0
4	16.0	14.5	15.0	17.5	14.0	15.5	21.5	17.0	19.0	19.0	14.5	16.5
5	16.5	14.0	15.5	20.5	14.0	17.5	19.0	16.5	17.5	18.0	14.5	16.5
6	16.0	13.0	14.5	21.5	16.5	18.5	16.5	16.0	16.5	17.0	15.0	16.0
7	15.0	13.0	14.0	18.5	16.0	17.0	17.0	15.0	16.0	18.0	13.0	15.5
8	15.0	13.0	14.0	20.5	14.0	17.0	20.5	15.0	17.5	18.5	14.0	16.0
9	17.0	13.0	15.0	22.5	15.5	19.0	21.0	16.0	18.5	18.5	14.5	16.0
10	19.5	13.0	16.5	22.5	17.0	19.5	21.5	16.5	18.5	17.5	13.5	15.5
11	20.0	15.0	17.5	22.0	16.5	19.0	18.5	16.0	17.0	18.0	13.5	15.5
12	22.0	16.5	19.0	22.0	16.5	19.5	19.0	15.0	16.5	18.5	14.0	16.0
13	22.5	17.0	19.5	22.0	16.5	19.0	17.0	15.5	16.5	19.0	14.0	16.5
14	23.0	17.5	20.0	18.0	15.5	17.0	18.5	14.5	16.5	19.0	14.5	16.5
15	21.0	17.0	18.0	20.5	15.0	17.5	19.0	15.5	17.0	17.5	14.5	16.0
16	19.5	15.5	17.5	18.0	16.0	17.0	20.5	15.5	17.5	16.5	14.0	15.0
17	19.5	15.5	17.5	17.5	15.0	16.0	21.5	16.5	18.5	17.5	14.0	15.0
18	18.0	16.0	17.0	20.5	14.5	17.0	18.5	16.5	17.0	18.5	14.0	16.0
19	20.0	15.0	17.0	22.0	16.0	19.0	20.0	15.0	17.5	19.0	15.0	16.5
20	17.5	15.5	16.5	22.5	17.0	19.5	20.5	16.0	18.0	19.0	15.0	17.0
21	17.0	15.0	16.0	20.0	16.5	18.0	20.5	16.5	18.0	19.0	15.0	16.5
22	17.0	14.5	15.5	21.5	16.0	18.5	20.5	15.0	17.5	19.0	14.5	16.5
23	21.0	15.0	17.5	21.0	16.5	18.5	20.5	16.0	18.0	16.5	14.0	15.0
24	18.5	15.0	17.0	18.5	16.0	17.5	21.0	16.0	18.5	16.5	12.0	14.0
25	15.5	13.5	14.5	20.0	14.5	17.0	20.5	16.5	18.0	16.0	13.5	14.5
26	16.0	13.5	14.5	21.5	15.5	18.0	20.0	15.5	17.5	15.0	12.5	13.5
27	16.5	13.5	15.0	22.0	16.5	19.0	19.5	16.0	17.5	15.0	11.5	13.0
28	17.0	14.0	15.5	22.5	17.0	19.5	20.0	16.0	18.0	15.5	11.5	13.0
29	20.0	15.0	17.0	21.0	16.5	18.5	17.0	15.0	16.0	16.0	12.0	14.0
30	17.5	16.5	17.0	21.0	16.5	18.0	16.5	14.0	15.0	15.0	12.5	13.5
31	---	---	---	21.5	16.5	18.5	16.5	14.0	15.0	---	---	---
MONTH	23.0	13.0	16.3	22.5	13.5	17.8	21.5	14.0	17.4	19.0	11.5	15.4
YEAR	23.0	2.0	13.1									

WILLAMETTE RIVER BASIN

14211550 JOHNSON CREEK AT MILWAUKIE, OR

LOCATION.--Lat 45°27'11", long 122°38'31", in NE 1/4 SE 1/4 sec.26, T.1 S., R.1 E., Clackamas County, Hydrologic Unit 17090012, on the right bank upstream side of the Milport Road bridge, in the city limits of Milwaukie, and at mile 0.7.

DRAINAGE AREA.--51.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is sea level, from State of Oregon.

REMARKS.--Records fair. Small diversions for irrigation upstream from station. Significant portion of summer flow is from Crystal Springs, through Crystal Springs Creek, which enters 0.5 mi upstream from gage.

AVERAGE DISCHARGE.--10 years (water years 1990-99), 86.0 ft³/s, 22.55 in/yr, 62,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,170 ft³/s Feb. 8, 1996, gage height 30.27 ft; maximum gage height, 34.43 ft, Feb. 9, 1996, backwater from Willamette River; minimum discharge, 10 ft³/s July 1, 3-5, 1994.

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. 26	0730	1,080	28.66	Jan. 18	0100	978	28.42
Dec. 28	0330	*1,140	*28.81	Feb. 28	0230	1,120	28.76
Dec. 29	0330	904	28.23				

Minimum discharge, 19 ft³/s Sept. 28, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	27	326	199	114	355	123	46	39	36	23	24
2	41	43	421	143	152	259	101	68	43	36	22	22
3	44	34	222	113	140	499	123	97	34	38	22	22
4	41	60	144	91	211	331	105	76	33	40	22	21
5	29	140	115	78	178	221	99	63	32	33	29	21
6	25	97	133	68	374	164	82	57	32	30	29	21
7	24	69	135	68	539	131	73	78	36	29	33	20
8	24	79	202	60	313	121	77	102	43	28	27	20
9	48	56	124	55	242	119	76	97	44	27	24	20
10	47	e45	111	62	184	94	121	79	34	26	23	20
11	29	e40	280	62	151	82	97	76	31	26	23	20
12	29	e38	317	70	124	97	78	69	30	26	23	20
13	45	36	327	68	109	174	67	64	29	25	26	21
14	40	35	196	102	93	175	59	82	28	25	24	21
15	41	49	132	177	88	131	56	70	28	26	24	21
16	36	49	101	348	131	119	52	62	28	25	23	21
17	29	40	82	474	210	104	49	134	27	25	22	21
18	33	40	71	635	424	102	46	126	27	25	22	22
19	28	e50	61	369	343	85	46	108	27	25	22	22
20	26	133	54	355	189	75	46	84	29	24	22	21
21	25	e350	46	400	145	72	43	71	35	24	22	22
22	25	e300	41	437	175	71	44	60	30	24	22	21
23	25	e260	41	489	431	79	40	53	28	24	22	22
24	25	e250	46	245	476	66	39	49	61	23	22	22
25	25	e500	95	167	371	83	42	45	93	24	21	23
26	25	744	110	129	215	92	49	42	54	23	22	22
27	32	272	347	104	548	137	45	39	39	24	21	22
28	48	153	885	121	808	118	61	36	34	23	22	21
29	31	172	668	112	---	272	43	36	33	23	22	20
30	27	319	371	190	---	214	41	35	32	23	26	20
31	25	---	274	144	---	162	---	34	---	23	31	---
TOTAL	998	4480	6478	6135	7478	4804	2023	2138	1093	833	738	636
MEAN	32.2	149	209	198	267	155	67.4	69.0	36.4	26.9	23.8	21.2
MAX	48	744	885	635	808	499	123	134	93	40	33	24
MIN	24	27	41	55	88	66	39	34	27	23	21	20
AC-FT	1980	8890	12850	12170	14830	9530	4010	4240	2170	1650	1460	1260
CFSM	.62	2.88	4.03	3.82	5.16	2.99	1.30	1.33	.70	.52	.46	.41
IN.	.72	3.22	4.65	4.41	5.37	3.45	1.45	1.54	.78	.60	.53	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	39.7	113	160	179	180	115	84.0	63.9	35.4	23.7
MAX	73.2	244	411	277	386	225	137	111	49.8	36.6
(WY)	1998	1997	1997	1997	1996	1997	1993	1998	1997	1997
MIN	16.8	18.5	68.7	106	34.0	44.1	50.4	22.2	16.7	14.1
(WY)	1994	1994	1994	1992	1993	1992	1990	1994	1992	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1990 - 1999

ANNUAL TOTAL	36806	37834	
ANNUAL MEAN	101	104	86.0
HIGHEST ANNUAL MEAN			137
LOWEST ANNUAL MEAN			54.9
HIGHEST DAILY MEAN	885	885	1700
LOWEST DAILY MEAN	22	20	10
ANNUAL SEVEN-DAY MINIMUM	22	20	11
ANNUAL RUNOFF (AC-FT)	73000	75040	62280
ANNUAL RUNOFF (CFSM)	1.95	2.00	1.66
ANNUAL RUNOFF (INCHES)	26.43	27.17	22.55
10 PERCENT EXCEEDS	243	273	190
50 PERCENT EXCEEDS	60	48	43
90 PERCENT EXCEEDS	23	22	17

e Estimated

WILLAMETTE RIVER BASIN

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14211550 JOHNSON CREEK AT MILWAUKIE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1998 to current year.

INSTRUMENTATION.--Temperature recorder since May 1998.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 24.0°C July 28, 1998; minimum, 0.5°C Dec. 22, 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.5°C June 14; minimum, 0.5°C Dec. 22.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.0	14.0	14.5	12.0	11.0	11.5	9.5	8.5	9.0	8.5	7.5	8.0
2	14.5	13.0	14.0	12.0	11.0	11.5	9.5	9.0	9.5	7.5	6.5	7.0
3	14.0	13.0	13.5	11.5	10.5	11.0	9.0	8.5	9.0	7.0	6.0	6.5
4	14.5	12.5	13.5	12.5	11.0	11.5	9.0	8.0	8.5	6.5	5.5	6.0
5	15.0	12.0	13.5	11.5	10.5	11.0	8.0	7.0	7.5	6.5	5.0	5.5
6	15.5	12.0	14.0	10.5	10.0	10.5	7.5	7.0	7.0	7.5	5.5	6.5
7	16.0	13.5	14.5	10.0	9.5	10.0	8.0	7.5	7.5	8.5	7.5	8.0
8	15.0	13.5	14.0	10.0	9.0	9.5	7.5	7.0	7.5	8.0	7.0	7.5
9	13.5	12.5	13.0	10.5	9.0	9.5	7.5	7.0	7.5	7.5	6.5	7.0
10	13.5	12.0	13.0	10.0	---	---	8.0	7.0	8.0	8.0	7.0	7.5
11	13.5	11.5	12.5	---	---	---	9.0	8.0	8.5	8.0	7.0	7.5
12	14.0	12.5	13.0	11.0	---	---	10.5	9.0	9.5	8.0	7.0	7.5
13	14.5	13.0	13.5	11.0	10.5	11.0	10.5	9.5	10.0	9.0	8.0	8.5
14	14.0	13.0	13.5	12.0	10.5	11.0	9.5	8.5	9.0	9.0	8.5	9.0
15	13.5	12.5	13.0	12.5	11.0	11.5	8.5	8.0	8.5	9.0	8.5	8.5
16	13.5	11.0	12.0	11.0	10.5	11.0	8.0	7.5	8.0	8.5	7.5	7.5
17	13.0	11.0	12.0	11.0	10.0	10.5	8.0	7.5	7.5	7.5	7.5	7.5
18	13.0	11.0	12.0	11.0	10.0	10.5	7.5	6.0	7.0	8.5	7.5	8.0
19	13.0	10.5	11.5	10.5	9.5	10.0	6.0	3.0	4.5	8.5	8.0	8.5
20	13.5	11.0	12.0	11.0	10.0	10.5	3.0	1.0	1.5	8.5	8.0	8.5
21	14.0	11.0	12.5	11.0	10.0	10.5	2.0	1.0	1.5	8.5	7.5	8.0
22	14.0	11.0	12.5	10.0	9.5	9.5	2.0	.5	1.0	8.5	7.0	7.5
23	13.5	12.0	12.5	10.0	9.5	9.5	2.0	1.0	1.5	7.5	6.5	7.0
24	13.0	12.0	12.5	10.0	9.5	9.5	4.0	1.5	3.0	8.0	7.0	7.5
25	14.0	12.5	13.0	10.5	9.5	10.0	5.0	3.0	4.0	7.0	6.5	7.0
26	14.0	12.0	13.0	10.5	10.5	10.5	6.5	5.0	6.0	7.0	6.0	6.5
27	13.5	12.0	12.5	10.5	10.0	10.0	7.5	6.0	7.0	7.0	6.5	6.5
28	12.5	11.5	12.0	10.0	9.0	9.5	8.5	7.5	8.0	8.0	7.0	7.5
29	12.0	10.5	11.0	9.0	8.5	9.0	9.0	8.5	8.5	9.0	8.0	8.5
30	11.5	10.0	11.0	9.0	8.0	8.5	9.5	9.0	9.5	8.5	8.0	8.0
31	11.0	10.0	10.5	---	---	---	9.5	8.5	9.0	8.0	7.5	7.5
MONTH	16.0	10.0	12.8	---	---	---	10.5	.5	6.9	9.0	5.0	7.5

WILLAMETTE RIVER BASIN

14211550 JOHNSON CREEK AT MILWAUKIE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.0	7.0	7.5	9.0	8.0	8.5	10.5	8.0	9.0	14.5	12.0	13.5
2	7.5	7.0	7.5	8.0	7.5	8.0	11.0	8.0	9.5	12.0	11.0	11.5
3	7.5	7.0	7.5	8.0	7.0	7.5	10.0	8.0	9.0	12.5	10.0	11.0
4	7.5	7.0	7.0	7.5	6.5	7.0	9.5	8.5	9.0	12.5	10.0	11.0
5	7.0	6.0	6.5	8.0	7.0	7.5	11.5	8.0	9.5	15.0	10.0	12.5
6	7.5	6.5	7.0	8.5	6.5	7.5	12.5	8.5	10.5	14.0	12.0	13.0
7	7.5	7.0	7.0	9.0	7.0	8.0	11.0	9.5	10.0	12.0	10.5	11.5
8	7.0	6.0	6.5	9.0	8.0	8.0	10.5	9.0	9.5	12.0	10.0	11.0
9	7.0	6.0	6.5	8.5	7.0	8.0	11.0	8.0	9.5	12.0	9.5	10.5
10	6.5	5.5	6.0	10.0	7.5	8.5	9.5	8.5	9.0	13.0	9.5	11.0
11	7.0	6.0	6.5	10.5	7.0	8.5	13.0	8.5	10.5	12.5	11.0	11.5
12	8.0	6.5	7.0	9.5	8.5	9.0	12.0	10.5	11.0	12.5	11.0	11.5
13	8.5	7.0	8.0	9.5	8.5	9.0	14.0	10.0	12.0	12.5	10.5	11.5
14	8.5	7.5	7.5	9.5	8.5	9.0	14.5	10.0	12.0	12.5	10.5	11.5
15	8.5	7.0	8.0	9.0	8.0	8.5	15.0	10.0	12.5	13.0	11.0	12.0
16	8.5	7.5	8.0	9.5	7.5	8.5	16.0	11.0	13.5	14.5	11.5	13.0
17	8.0	7.5	7.5	9.5	8.0	8.5	17.0	12.5	14.5	13.5	12.0	13.0
18	7.5	7.0	7.0	11.0	9.0	10.0	14.5	13.0	14.0	13.5	12.5	13.0
19	8.0	7.0	7.5	12.5	9.0	10.5	13.5	12.0	13.0	14.5	11.5	13.0
20	7.5	7.0	7.0	13.0	10.0	11.5	14.0	11.5	12.5	13.5	12.0	13.0
21	8.0	7.0	7.5	13.5	11.0	12.0	13.0	11.0	12.0	16.0	12.0	13.5
22	8.5	7.5	8.0	13.0	11.0	11.5	15.0	10.5	12.5	17.5	13.0	15.0
23	9.0	8.0	8.5	13.0	10.0	11.5	17.0	11.5	14.0	19.5	14.0	16.5
24	9.0	8.5	9.0	12.5	11.0	11.5	18.0	12.5	15.0	20.5	16.0	18.0
25	9.0	8.0	8.0	11.5	10.0	10.5	16.0	13.0	14.0	19.0	16.0	17.5
26	8.5	7.5	8.0	10.5	8.5	9.5	14.0	11.5	12.5	19.0	14.0	16.5
27	9.0	8.0	8.5	9.0	7.5	8.0	14.0	11.0	12.5	19.5	15.0	17.0
28	9.5	8.5	9.0	9.0	7.5	8.5	12.5	10.5	11.5	17.5	14.5	16.0
29	---	---	---	8.0	7.0	7.5	15.5	10.0	12.5	18.5	13.5	16.0
30	---	---	---	9.0	7.5	8.0	16.5	11.5	14.0	19.0	13.5	16.0
31	---	---	---	10.0	8.0	9.0	---	---	---	16.5	15.0	15.5
MONTH	9.5	5.5	7.5	13.5	6.5	9.0	18.0	8.0	11.7	20.5	9.5	13.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	15.5	13.5	14.5	17.0	15.5	16.0	19.5	16.5	18.0	17.5	13.5	15.5
2	15.5	12.5	14.0	16.0	14.0	15.0	21.0	16.0	18.5	18.0	14.0	16.0
3	18.0	12.5	15.0	15.5	14.0	15.0	21.5	17.0	19.0	18.5	14.5	16.5
4	15.5	14.0	15.0	17.0	14.0	15.5	21.5	17.0	19.0	18.5	14.5	16.5
5	16.0	14.0	15.0	20.0	14.5	17.0	19.5	17.0	18.0	18.0	15.0	16.5
6	15.0	12.5	14.0	20.5	16.5	18.0	18.0	17.0	17.0	17.0	15.0	16.0
7	14.0	12.5	13.5	18.5	16.0	17.0	17.5	16.0	17.0	17.5	13.0	15.5
8	14.5	12.5	13.5	20.0	14.5	17.0	20.0	15.5	17.5	18.5	14.0	16.0
9	16.0	12.5	14.0	21.5	16.0	18.5	21.0	16.5	18.5	18.0	14.5	16.5
10	18.5	12.5	15.5	22.0	17.5	19.5	21.5	17.0	19.0	17.5	13.5	15.5
11	19.0	14.5	17.0	21.5	16.5	19.0	19.0	16.0	17.5	17.5	13.5	15.5
12	21.0	16.0	18.5	21.5	17.0	19.0	18.5	15.5	17.0	18.0	14.0	16.0
13	21.5	16.5	19.0	21.5	17.0	19.0	17.0	16.0	16.5	19.0	14.5	16.5
14	22.5	17.0	19.5	18.0	15.5	16.5	18.0	15.0	16.5	18.5	15.0	17.0
15	20.5	17.0	18.0	20.0	15.0	17.5	19.0	15.5	17.0	17.5	15.0	16.0
16	19.0	16.0	17.5	18.0	16.0	17.0	20.0	16.0	18.0	16.5	14.0	15.0
17	19.0	15.5	17.0	17.0	15.0	16.0	21.5	17.0	19.0	17.5	14.0	15.5
18	18.0	16.0	17.0	20.0	14.5	17.0	19.0	17.0	17.5	18.5	14.0	16.0
19	19.5	15.0	17.0	21.5	16.5	19.0	20.0	15.5	17.5	19.0	15.5	17.0
20	17.0	15.5	16.0	22.0	17.5	19.5	20.5	16.5	18.0	19.0	15.5	17.0
21	16.5	15.0	16.0	19.5	17.0	18.0	20.0	16.5	18.0	19.0	15.0	17.0
22	17.0	14.5	15.5	21.0	16.5	18.5	20.5	15.5	18.0	18.5	15.0	16.5
23	20.5	15.0	17.5	21.0	16.5	18.5	20.5	16.5	18.5	16.5	14.0	15.0
24	18.5	16.0	17.0	18.5	16.5	17.5	20.5	16.5	18.5	16.0	12.5	14.0
25	16.0	14.5	15.0	19.5	15.0	17.0	20.5	16.5	18.5	16.0	13.5	14.5
26	15.5	14.0	14.5	21.0	15.5	18.0	20.0	16.0	18.0	14.5	12.5	13.5
27	16.5	14.0	15.0	21.5	17.0	19.0	19.5	16.5	18.0	14.5	11.5	13.0
28	16.5	13.5	15.0	22.0	17.5	19.5	20.0	16.5	18.0	15.0	11.5	13.0
29	19.5	14.5	17.0	21.0	17.0	18.5	18.0	15.5	16.5	16.0	12.0	14.0
30	17.5	16.5	17.0	20.5	16.5	18.5	16.5	14.5	15.0	14.5	12.5	13.5
31	---	---	---	21.0	16.5	18.5	16.5	14.5	15.5	---	---	---
MONTH	22.5	12.5	16.0	22.0	14.0	17.7	21.5	14.5	17.7	19.0	11.5	15.5

WILLAMETTE RIVER BASIN

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14211720 WILLAMETTE RIVER AT PORTLAND, OR
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 45°31'07", long 122°40'00", in NW 1/4 NE 1/4 sec.3, T.1 S., R.1 E., Multnomah County, Hydrologic Unit 17090012, in pier at east end of drawspan, on upstream side of Mofrison Bridge, in Portland, and at mile 12.8.

DRAINAGE AREA.--11,100 mi², approximately.

PERIOD OF RECORD.--October 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1975 to September 1981.

WATER TEMPERATURE: November 1975 to September 1981.

REMARKS.--Water-discharge records used for computation of suspended-sediment loads were obtained by flow routing procedures using upstream records. Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS TOTAL (MG/L CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
NOV 1998												
24...	1020	E110000	56	7.0	9.2	33	12.7	763	110	18	4.7	1.5
DEC												
04...	0950	E160000	54	7.0	8.4	30	13.5	769	114	19	4.9	1.6
14...	1010	E120000	53	7.1	8.8	17	13.2	776	111	19	5.1	1.6
30...	1110	E240000	58	7.0	8.1	99	14.3	767	120	14	3.7	1.3
JAN 1999												
04...	1040	E130000	47	7.1	6.4	32	13.8	775	110	17	4.3	1.4
26...	1000	E140000	54	7.0	6.5	27	14.1	762	114	20	5.1	1.7
FEB												
09...	0940	E140000	53	7.1	6.4	38	15.0	755	123	19	5.0	1.6
16...	0930	E52000	73	7.1	7.2	15	12.5	762	103	24	6.1	2.1
MAR												
09...	1100	E68000	67	7.1	7.2	16	13.1	761	108	24	6.1	2.1
30...	0950	E44000	70	7.5	8.2	10	12.6	760	107	24	6.0	2.1
APR												
19...	1030	E36000	68	7.5	12.3	3.9	11.4	770	106	21	5.4	1.9
MAY												
24...	1040	E46000	50	7.3	13.4	3.9	11.0	763	105	17	4.4	1.4
JUN												
21...	1030	E25000	54	7.3	15.2	3.0	10.3	761	103	18	4.6	1.5
AUG												
02...	1020	E10000	89	7.3	21.7	2.7	8.0	765	91	24	6.2	2.0
SEP												
13...	0950	E12000	92	7.3	18.4	2.5	--	762	--	24	6.3	2.0

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
NOV 1998												
24...	3.4	28	.3	.83	15	18	0	2.2	3.0	<.1	12	51
DEC												
04...	3.2	26	.3	.87	14	18	0	2.5	2.8	<.1	13	53
14...	3.3	26	.3	.68	18	22	0	2.3	2.6	<.1	14	58
30...	2.6	26	.3	.94	12	15	0	2.0	2.7	<.1	10	38
JAN 1999												
04...	3.1	28	.3	.67	17	21	0	1.8	2.1	<.1	13	41
26...	3.5	27	.3	.70	18	22	0	2.4	2.6	<.1	15	46
FEB												
09...	3.3	27	.3	.64	18	22	0	3.0	2.8	<.1	13	50
16...	4.5	28	.4	.72	25	30	0	3.4	3.8	<.1	15	60
MAR												
09...	4.1	26	.4	.59	22	27	0	2.4	3.1	<.1	16	57
30...	4.7	30	.4	.60	24	29	0	2.0	3.9	<.1	15	54
APR												
19...	4.3	30	.4	.61	24	28	0	2.9	3.4	<.1	14	52
MAY												
24...	3.5	30	.4	.47	19	23	0	1.6	2.6	<.1	15	44
JUN												
21...	4.2	33	.4	.61	21	26	0	2.0	2.4	<.1	15	55
AUG												
02...	7.3	39	.6	1.0	27	33	0	2.9	5.8	<.1	17	72
SEP												
13...	8.1	41	.7	1.1	25	31	0	4.7	5.7	<.1	16	67

E Estimated.

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L) AS N (00623)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL SOLVED (MG/L) AS N (00625)	NITRO- GEN, NO2-NO3 DIS- SOLVED (MG/L) AS N (00631)	PHOS- PHORUS TOTAL SOLVED (MG/L) AS P (00665)	PHOS- PHORUS DIS- SOLVED (MG/L) AS P (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L) AS P (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L) AS C (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L) AS C (00689)
NOV 1998												
24...	41	.07	.003	.007	.2	.5	.948	.190	.046	.020	3.0	2.7
DEC												
04...	41	.07	.024	.006	.2	.3	.860	.159	.037	.028	2.6	.9
14...	43	.08	.029	.005	.2	.2	.657	.084	.044	.024	2.0	.8
30...	34	.05	.036	.006	.2	.7	.770	.381	E.037	.029	2.8	3.5
JAN 1999												
04...	40	.06	.027	.005	E.1	.2	.599	.113	E.031	.024	1.8	1.3
26...	45	.06	.032	.005	.1	.3	.718	.113	.028	.027	1.8	.5
FEB												
09...	43	.07	.037	.005	.1	.4	.635	.143	.030	.026	1.8	.7
16...	55	.08	.062	.010	.1	.3	.877	.076	.036	.036	1.4	.3
MAR												
09...	51	.08	.041	.007	.1	.2	.737	.078	.028	.026	1.4	.2
30...	51	.07	.071	.012	.2	.2	.486	.065	.031	.027	1.4	.3
APR												
19...	48	.07	.024	.009	.1	.2	.357	.051	.031	.025	1.4	.3
MAY												
24...	41	.06	.018	.006	.1	.1	.132	.039	.020	.016	1.1	.4
JUN												
21...	44	.07	.029	.006	.1	.2	.118	.042	.028	.023	1.2	.2
AUG												
02...	59	.10	.052	.013	.1	.2	.287	.080	.055	.051	1.5	.5
SEP												
13...	61	.09	.043	.009	.2	.2	.293	.075	.061	.056	1.5	.3
DATE	ALUM- INUM, 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)	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)
NOV 1998												
24...	13	<1	<1	5	<1	<16	<1	<1	<1	1	42	<1
DEC												
04...	--	--	<1	--	--	<16	--	--	--	--	38	--
14...	--	--	<1	--	--	<16	--	--	--	--	30	--
30...	--	--	<1	--	--	<16	--	--	--	--	56	--
JAN 1999												
04...	--	--	<1	--	--	<16	--	--	--	--	34	--
26...	--	--	<1	--	--	<16	--	--	--	--	38	--
FEB												
09...	--	--	<1	--	--	E9	--	--	--	--	58	--
16...	--	--	<1	--	--	<16	--	--	--	--	31	--
MAR												
09...	5	<1	<1	7	<1	<16	<1	1	<1	2	20	<1
30...	--	--	<1	--	--	<16	--	--	--	--	26	--
APR												
19...	--	--	<1	--	--	<16	--	--	--	--	24	--
MAY												
24...	7	<1	<1	3	<1	<16	<1	<1	<1	<1	20	<1
JUN												
21...	--	--	<1	--	--	E8	--	--	--	--	19	--
AUG												
02...	3	<1	<1	5	<1	E12	<1	<1	<1	2	21	<1
SEP												
13...	--	--	<1	--	--	E15	--	--	--	--	16	--
DATE	LITHIUM DIS- SOLVED (UG/L) AS LI (01130)	MANGA- NESE, DIS- SOLVED (UG/L) AS MN (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L) AS MO (01060)	NICKEL, DIS- SOLVED (UG/L) AS NI (01065)	SELE- NIUM, DIS- SOLVED (UG/L) AS SE (01145)	SILVER, DIS- SOLVED (UG/L) AS AG (01075)	STRON- TIUM, DIS- SOLVED (UG/L) AS SR (01080)	URANIUM NATURAL DIS- SOLVED (UG/L) AS U (22703)	VANA- DIUM, DIS- SOLVED (UG/L) AS V (01085)	ZINC, DIS- SOLVED (UG/L) AS ZN (01090)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
NOV 1998												
24...	<6	8	<1	<1	<1	<1	31	<1	<10	<1	<.007	<.002
DEC												
04...	<6	--	--	--	1	--	32	--	<10	--	<.007	<.002
14...	<6	--	--	--	<1	--	33	--	<10	--	<.007	<.002
30...	<6	--	--	--	<1	--	24	--	<10	--	<.007	<.002
JAN 1999												
04...	<6	--	--	--	<1	--	28	--	<10	--	<.007	<.002
26...	<6	--	--	--	<1	--	34	--	<10	--	<.007	<.002
FEB												
09...	<6	--	--	--	<1	--	32	--	<10	--	<.007	<.002
16...	<6	--	--	--	<1	--	39	--	<10	--	<.007	<.002
MAR												
09...	<6	11	<1	7	<1	<1	39	<1	<10	4	<.007	<.002
30...	<6	--	--	--	<1	--	38	--	<10	--	<.007	<.002
APR												
19...	<6	--	--	--	<1	--	34	--	<10	--	<.007	<.002
MAY												
24...	<6	10	<1	<1	<1	<1	27	<1	<10	1	<.007	<.002
JUN												
21...	<6	--	--	--	<1	--	28	--	<10	--	<.007	<.002
AUG												
02...	<6	1	<1	1	<1	<1	35	<1	E5	3	<.007	<.002
SEP												
13...	<4	--	--	--	<1	--	37	--	<10	--	<.007	<.002

E Estimated.

WILLAMETTE RIVER BASIN

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14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER, DISS, REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)
NOV 1998												
24...	.055	<.018	E.008	<.004	<.003	<.002	E.001	.007	<.004	<.001	.040	<.005
DEC												
04...	.054	<.018	E.016	<.004	<.003	<.002	E.001	E.003	<.004	<.001	.068	<.005
14...	.019	<.018	E.007	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.028	<.005
30...	.056	<.018	E.016	<.004	<.003	<.002	<.006	E.002	<.004	<.001	.076	<.005
JAN 1999												
04...	.015	<.018	E.007	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.027	<.005
26...	.015	<.018	E.010	<.004	<.003	<.002	E.0005	<.004	<.004	<.001	.026	<.005
FEB												
09...	.020	<.018	E.008	<.004	<.003	<.002	<.006	E.002	<.004	<.001	.027	<.005
16...	.012	<.018	E.008	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.019	<.005
MAR												
09...	.010	<.018	E.007	<.004	<.003	<.002	<.006	E.002	<.004	<.001	.020	<.005
30...	.016	<.018	E.005	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.027	<.005
APR												
19...	.008	<.018	E.004	<.004	<.003	<.002	<.006	E.002	<.004	<.001	.009	<.005
MAY												
24...	.008	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.005	<.005
JUN												
21...	.007	<.018	E.004	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.006	<.005
AUG												
02...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
SEP												
13...	E.004	<.018	E.004	<.004	<.003	<.002	E.002	<.004	<.004	<.001	E.003	<.005
DATE	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
NOV 1998												
24...	<.004	<.002	.217	<.002	<.002	.043	<.003	<.002	<.004	<.002	E.019	<.002
DEC												
04...	<.004	<.002	.188	<.002	<.002	.051	<.003	<.002	<.004	<.002	E.021	<.002
14...	<.004	<.002	.082	<.002	<.002	.029	<.003	<.002	<.004	<.002	E.009	<.002
30...	<.004	<.002	.239	<.002	<.002	.067	<.003	<.002	<.004	<.002	E.032	<.002
JAN 1999												
04...	<.004	<.002	.059	<.002	<.002	.015	<.003	<.002	<.004	<.002	<.007	<.002
26...	<.004	<.002	.070	<.002	<.002	.019	<.003	<.002	<.004	<.002	E.013	<.002
FEB												
09...	<.004	<.002	.087	<.002	<.002	.022	<.003	<.002	<.004	<.002	E.012	<.002
16...	<.004	<.002	.042	<.002	<.002	.009	<.003	<.002	<.004	<.002	E.007	<.002
MAR												
09...	<.004	<.002	.036	<.002	<.002	.006	<.003	<.002	<.004	<.002	E.007	<.002
30...	<.004	E.004	.055	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
APR												
19...	<.004	E.003	.027	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
MAY												
24...	<.004	<.002	.011	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
JUN												
21...	<.004	<.002	.005	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
AUG												
02...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
SEP												
13...	<.004	.006	.005	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
DATE	METHYL PARA- THION WAT FLT 0.7 U GF, REC (82667)	EPTC WATER FLTRD 0.7 U GF, REC (82668)	PBB- ULATE WATER FLTRD 0.7 U GF, REC (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (82678)
NOV 1998												
24...	<.006	<.002	<.004	E.005	<.004	<.003	<.002	E.010	<.013	E.004	<.017	<.001
DEC												
04...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
14...	<.006	<.002	<.004	E.003	<.004	<.003	<.002	<.003	<.013	E.004	<.017	<.001
30...	<.006	<.005	<.004	<.010	<.004	E.002	<.002	<.003	<.013	.082	<.017	<.001
JAN 1999												
04...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.012	<.017	<.001
26...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.011	<.017	<.001
FEB												
09...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.014	<.017	<.001
16...	<.006	<.002	<.004	E.006	<.004	<.003	<.002	<.003	<.013	.006	<.017	<.001
MAR												
09...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.005	<.017	<.001
30...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	E.004	<.017	<.001
APR												
19...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
MAY												
24...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
JUN												
21...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
AUG												
02...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
SEP												
13...	<.006	<.002	<.004	<.010	<.004	<.003	E.001	<.003	<.013	<.003	<.017	<.001

E Estimated.

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 1998												
24...	<.004	<.003	<.002	<.002	<.004	.006	<.013	<.001	<.005	111	E33000	83
DEC												
04...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	72	E31100	80
14...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	37	E12000	88
30...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	274	E178000	79
JAN 1999												
04...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	55	E19300	94
26...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	35	E13200	90
FEB												
09...	<.004	<.003	<.002	<.002	<.004	E.003	<.013	<.001	<.005	69	E26100	91
16...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	14	E1970	97
MAR												
09...	<.004	<.003	<.002	E.001	<.004	<.003	<.013	<.001	<.005	21	E3860	97
30...	<.004	<.003	<.002	<.002	<.004	.017	<.013	<.001	<.005	12	E1430	96
APR												
19...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	6	E583	94
MAY												
24...	<.004	<.003	<.002	<.002	<.004	<.003	<.070	<.001	<.005	7	E869	97
JUN												
21...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	5	E338	98
AUG												
02...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	8	E216	99
SEP												
13...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	7	E227	98

E Estimated.

WILLAMETTE RIVER BASIN

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14211814 FAIRVIEW CREEK AT GLISAN STREET, NEAR GRESHAM, OR

LOCATION.--Lat 45°31'40", long 122°26'51", in Land Grant parcel number 58, T.1 N., R.3 E., Multnomah County, Hydrologic Unit 17090012, on right bank at upstream side of culvert on Glisan St., 0.4 mi east of the intersection of 202nd Ave. and Glisan St., 1.7 mi northwest of Gresham City Hall, and at mile 3.05.

DRAINAGE AREA.--4.94 mi².

PERIOD OF RECORD.--May 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 205 ft above sea level, from topographic map.

REMARKS.--Records poor. No regulation or diversion. High flows affected to an unknown degree by two small ponds just upstream from station.

AVERAGE DISCHARGE.--7 years (water years 1993-99), 6.31 ft³/s, 17.36 in/yr, 4,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85 ft³/s Nov. 19, 1996, gage height, 6.18 ft, but may have been greater during period of missing record Feb. 7, 1996; maximum gage height, 6.34 ft Nov. 1, 1994; minimum discharge, 0.24 ft³/s Sept. 15, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1600	30	5.04	Feb. 6	1700	42	5.53
Nov. 26	0800	*69	*6.12	Feb. 18	2130	35	5.34
Dec. 2	0600	39	5.43	Feb. 24	0130	39	5.45
Dec. 28	0300	57	5.87	Feb. 28	0030	52	5.76
Jan. 17	2300	47	5.65	Mar. 3	1630	38	5.42
Jan. 22	2400	37	5.39	Mar. 29	0600	33	5.08

Minimum discharge, 0.71 ft³/s Sept. 20, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.1	26	14	8.4	29	15	8.9	3.5	3.5	1.9	1.9
2	2.4	1.8	31	12	13	23	13	13	e10	3.5	1.7	1.5
3	4.5	1.6	17	11	14	35	13	16	e6.0	4.4	1.4	1.4
4	4.8	3.1	13	10	17	27	9.8	12	e5.0	4.2	1.9	1.2
5	2.4	17	11	9.7	13	20	8.4	9.5	e5.2	3.2	3.4	1.2
6	1.6	12	14	9.3	28	17	7.4	8.9	4.9	2.8	2.7	1.2
7	1.3	6.4	14	10	35	16	6.9	11	4.6	2.6	2.5	1.2
8	1.1	5.5	17	9.7	20	16	7.7	11	9.7	2.5	2.3	1.0
9	2.5	4.1	12	8.9	17	17	7.7	11	10	2.5	2.1	1.1
10	3.8	2.6	11	10	13	15	15	9.4	8.6	2.4	1.7	1.1
11	2.1	2.2	23	9.3	13	14	13	9.9	8.0	2.3	1.2	1.2
12	1.5	1.5	23	7.7	12	15	8.4	10	5.3	2.2	1.3	1.3
13	2.4	1.3	23	5.9	12	20	9.9	8.2	3.5	2.2	1.5	1.2
14	2.3	1.2	16	7.7	12	19	10	8.8	3.1	2.2	2.2	1.2
15	1.8	1.9	12	12	11	15	9.1	7.9	4.4	2.2	3.0	1.3
16	1.5	2.9	9.8	22	16	14	6.8	6.8	5.5	2.1	2.1	1.2
17	1.4	2.3	6.4	27	18	13	7.7	13	5.3	2.1	1.9	1.1
18	1.5	2.1	5.0	36	24	13	9.1	13	3.8	2.0	1.7	1.2
19	1.3	2.0	e4.1	24	24	9.9	9.7	9.8	3.0	2.1	1.7	1.1
20	1.0	6.7	e3.5	25	13	12	9.8	7.5	2.7	2.1	1.6	.97
21	.87	25	e3.1	27	10	14	9.0	6.7	3.6	2.1	1.5	.86
22	.87	19	e2.8	26	12	15	7.9	5.1	4.5	2.0	1.4	1.0
23	.92	13	e2.5	29	25	12	6.0	3.9	3.6	1.9	1.3	1.1
24	.93	13	2.9	18	34	13	5.1	3.4	12	1.9	1.3	1.3
25	.93	27	6.2	14	27	16	5.0	3.2	20	1.8	1.4	1.4
26	.87	54	8.2	13	19	17	5.6	3.1	13	1.8	1.3	1.1
27	.99	25	18	11	34	19	5.5	3.0	5.4	1.9	1.3	1.1
28	2.5	14	46	11	44	16	7.1	2.9	3.7	1.8	1.4	1.0
29	2.2	16	33	9.6	---	28	7.7	3.0	3.2	1.5	1.3	1.0
30	1.5	24	23	14	---	21	8.1	2.9	3.0	1.4	1.4	1.1
31	1.3	---	17	11	---	18	---	3.0	---	1.8	2.3	---
TOTAL	56.28	309.3	454.5	464.8	538.4	548.9	264.4	245.8	184.1	73.0	55.7	35.53
MEAN	1.82	10.3	14.7	15.0	19.2	17.7	8.81	7.93	6.14	2.35	1.80	1.18
MAX	4.8	54	46	36	44	35	15	16	20	4.4	3.4	1.9
MIN	.87	1.1	2.5	5.9	8.4	9.9	5.0	2.9	2.7	1.4	1.2	.86
AC-FT	112	613	902	922	1070	1090	524	488	365	145	110	70
CFSM	.37	2.09	2.97	3.04	3.89	3.58	1.78	1.61	1.24	.48	.36	.24
IN.	.42	2.33	3.42	3.50	4.05	4.13	1.99	1.85	1.39	.55	.42	.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

	MEAN	3.30	7.07	9.88	11.3	11.2	9.85	6.75	6.01	4.42	2.66	1.75	1.79
	MAX	6.77	11.8	20.2	16.8	19.2	17.7	8.81	8.55	6.14	4.76	3.67	3.16
(WY)	1998	1997	1997	1997	1999	1999	1999	1999	1996	1999	1997	1997	1996
	MIN	1.18	1.42	4.39	5.27	2.54	4.74	3.64	2.47	2.15	1.04	.53	.78
(WY)	1994	1994	1994	1993	1993	1993	1993	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1993 - 1999

ANNUAL TOTAL	2676.16	3230.71	
ANNUAL MEAN	7.33	8.85	6.31
HIGHEST ANNUAL MEAN			9.11
LOWEST ANNUAL MEAN			3.01
HIGHEST DAILY MEAN	54	Nov 26	71
LOWEST DAILY MEAN	.81	Aug 30	.30
ANNUAL SEVEN-DAY MINIMUM	.91	Oct 21	.91
ANNUAL RUNOFF (AC-FT)	5310	6410	4570
ANNUAL RUNOFF (CFSM)	1.48	1.79	1.28
ANNUAL RUNOFF (INCHES)	20.15	24.33	17.36
10 PERCENT EXCEEDS	16	20	14
50 PERCENT EXCEEDS	5.2	6.0	4.1
90 PERCENT EXCEEDS	1.2	1.3	1.1

e Estimated

WILLAMETTE RIVER BASIN

14211820 COLUMBIA SLOUGH AT PORTLAND, OR

LOCATION:--Lat 45°38'21", long 122°45'43", in NE 1/4 SE 1/4 sec.23, T.2 N., R.1 W., Multnomah County, Hydrologic Unit 17090012, on right bank, 0.25 mi upstream from mouth, and 1.25 mi upstream from confluence of Willamette and Columbia Rivers.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Acoustic velocity meter with water-stage and velocity-index recorder. Datum of gage is 1.53 ft above sea level.

REMARKS.--Records fair due to large positive and negative flows.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,400 ft³/s Dec. 5, 1995, but may have been greater Dec. 2-4, 1995, Feb. 10-14, 1996; maximum gage height, 27.26 ft Feb. 9, 1996; minimum daily discharge, -6,700 ft³/s Feb. 7, 1996, but may have been less Nov. 29 to Dec. 3, 1995, Feb. 8, 9, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 956 ft³/s Mar. 1, but may have been greater Dec. 31 to Jan. 4, Jan. 24-27; maximum gage height, 15.43 ft Dec. 30; minimum daily discharge, -1,410 ft³/s Feb. 28, but may have been less Dec. 28-30, Jan. 17-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	70	---	---	319	956	320	226	-65	146	96	e75
2	72	17	---	---	320	639	296	159	-37	193	112	171
3	93	-32	---	---	249	-235	336	e64	-44	195	137	280
4	90	66	---	---	189	562	246	124	-109	195	55	123
5	1.5	176	---	---	484	486	236	121	53	239	126	198
6	-19	120	---	---	422	775	260	76	-89	177	153	188
7	-19	139	---	---	396	706	314	216	172	235	146	92
8	61	194	---	---	255	653	260	291	-25	115	141	-15
9	177	184	---	---	265	530	278	277	124	112	124	112
10	175	174	292	---	385	239	247	101	47	177	36	105
11	185	178	411	---	439	277	273	161	159	26	106	86
12	127	168	---	---	336	505	224	275	131	.46	84	187
13	150	102	---	---	361	318	174	155	106	173	26	115
14	127	119	---	---	254	362	6.3	47	-52	54	54	106
15	112	72	---	---	310	267	208	138	37	-64	138	170
16	146	140	---	---	255	214	141	86	-22	183	205	137
17	85	113	---	---	235	270	162	83	-217	170	99	156
18	112	141	---	---	373	277	44	55	-23	125	131	162
19	84	119	---	---	181	229	131	118	22	183	131	197
20	85	60	---	---	317	190	122	---	-26	230	196	142
21	62	116	---	---	328	211	62	---	-19	200	110	57
22	57	263	---	---	321	200	180	292	70	73	206	73
23	129	266	---	---	206	236	89	209	-.84	212	87	41
24	120	241	---	---	15	142	119	234	-32	108	71	92
25	146	253	---	---	169	214	116	128	112	36	67	118
26	117	374	---	---	115	166	203	-88	110	67	60	109
27	113	---	---	---	90	189	158	-158	44	176	-38	117
28	170	---	---	282	-1410	62	-30	-23	237	71	122	58
29	128	---	---	178	---	175	74	45	178	-17	117	124
30	119	---	---	404	---	209	139	12	-5.1	191	139	83
31	95	---	---	482	---	196	---	-28	---	100	63	---
TOTAL	3233.5	---	---	---	6179	10220	5388.3	---	836.06	4081.46	3300	3659
MEAN	104	---	---	---	221	330	180	---	27.9	132	106	122
MAX	185	---	---	---	484	956	336	---	237	239	206	280
MIN	-19	---	---	---	-1410	-235	-30	---	-217	-64	-38	-15
AC-FT	6410	---	---	---	12260	20270	10690	---	1660	8100	6550	7260

e Estimated

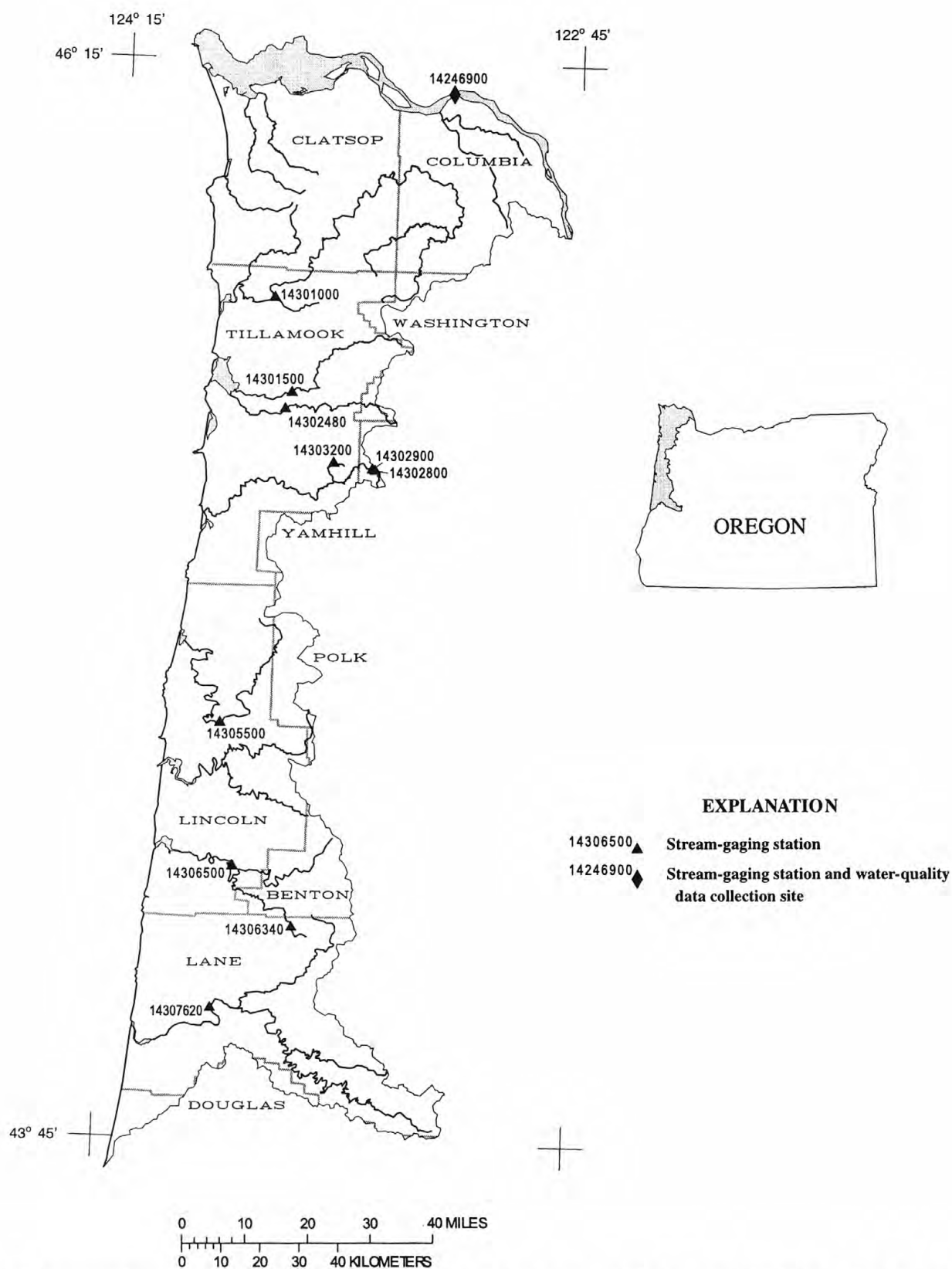


Figure 28. Location of surface-water and water-quality stations in the Oregon Coastal Drainages north of the Siuslaw River Basin and in the lower Columbia River.

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.--Acoustic velocity meter with water-stage and velocity index recorder. Datum of gage is 0.52 ft above sea level. 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 except for estimated daily discharges, which are poor. 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.--9 years (water years 1969, 1992-99), 253,300 ft³/s, 183,500,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 864,000 ft³/s Feb. 10, 1996; minimum daily discharge, 73,700 ft³/s Sept. 7, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 530,000 ft³/s Mar. 3; maximum gage height, 10.49 ft Mar. 3; minimum daily discharge, 115,000 ft³/s Sept. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142000	e155000	322000	e500000	369000	e500000	400000	364000	390000	341000	e220000	e200000
2	144000	e145000	339000	e460000	356000	e470000	381000	360000	422000	329000	e210000	e200000
3	152000	e155000	389000	e410000	371000	e530000	359000	368000	415000	324000	e220000	e180000
4	143000	e165000	406000	e420000	369000	e520000	348000	383000	410000	320000	e220000	e165000
5	143000	168000	378000	e390000	389000	e490000	339000	e400000	399000	299000	e270000	e195000
6	141000	183000	359000	374000	367000	e510000	336000	369000	420000	282000	e230000	e130000
7	139000	195000	331000	356000	403000	e450000	320000	377000	417000	266000	e250000	e115000
8	141000	200000	351000	357000	432000	e410000	315000	e350000	e390000	273000	e220000	e155000
9	142000	200000	359000	353000	441000	367000	314000	e350000	e380000	281000	e220000	e185000
10	148000	196000	340000	343000	429000	357000	301000	332000	389000	283000	212000	e145000
11	150000	185000	324000	332000	410000	364000	285000	e400000	381000	278000	234000	e160000
12	139000	180000	322000	307000	373000	346000	262000	e340000	360000	293000	221000	e175000
13	159000	180000	350000	312000	352000	335000	256000	e310000	357000	286000	229000	e125000
14	151000	181000	381000	321000	342000	341000	271000	e310000	332000	269000	243000	e150000
15	170000	166000	364000	354000	e320000	338000	279000	e340000	360000	288000	247000	150000
16	174000	215000	339000	351000	e320000	339000	256000	e320000	359000	310000	231000	e140000
17	158000	194000	324000	402000	e300000	333000	226000	e330000	378000	293000	226000	e170000
18	159000	197000	308000	426000	e310000	326000	239000	e330000	402000	e270000	238000	e170000
19	143000	195000	295000	469000	e330000	312000	267000	348000	397000	280000	240000	e165000
20	141000	192000	301000	467000	e350000	308000	279000	358000	385000	255000	234000	e125000
21	141000	237000	269000	470000	e390000	304000	315000	380000	380000	e250000	243000	e150000
22	137000	305000	276000	476000	e380000	309000	e320000	361000	374000	261000	226000	e170000
23	137000	302000	e270000	495000	e370000	315000	340000	337000	366000	253000	199000	e190000
24	128000	311000	e270000	503000	411000	324000	353000	321000	375000	246000	214000	e175000
25	145000	334000	e260000	470000	438000	338000	349000	328000	381000	e250000	205000	e180000
26	145000	423000	e210000	440000	e500000	347000	362000	371000	371000	e260000	205000	e145000
27	144000	407000	e195000	406000	e510000	359000	399000	399000	374000	e240000	209000	e145000
28	e135000	378000	e260000	389000	e520000	375000	e350000	410000	365000	e220000	228000	e150000
29	e135000	343000	e370000	406000	---	381000	e380000	424000	339000	e240000	215000	e175000
30	e145000	334000	e480000	424000	---	400000	370000	431000	339000	e247000	e170000	e150000
31	e165000	---	e490000	397000	---	394000	---	401000	---	e220000	e185000	---
TOTAL	4535000	7021000	10232000	12580000	10852000	11792000	9531000	11202000	11407000	8507000	6914000	4825000
MEAN	146300	234000	330100	405800	387600	380400	317700	361400	380200	274400	223000	160800
MAX	174000	423000	490000	503000	520000	530000	400000	431000	422000	341000	270000	200000
MIN	128000	145000	195000	307000	300000	304000	226000	310000	332000	220000	170000	115000
AC-FT	8995000	13930000	20300000	24950000	21520000	23390000	18900000	22220000	22630000	16870000	13710000	9570000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	MEAN	150100	203500	273100	305100	303500	273500	280100	358800	343800	225000	164500	133900
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	114500	136100	175400	199100	191100	196700	196200	234800	203900	139500	107100	92400	
(WY)	1995	1994	1994	1994	1993	1992	1992	1994	1992	1992	1994	1994	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1969 - 1999

ANNUAL TOTAL	90627000	109398000											
ANNUAL MEAN	248300	299700											
HIGHEST ANNUAL MEAN										253300			
LOWEST ANNUAL MEAN										338200			1997
HIGHEST DAILY MEAN	500000	May 31	530000	Mar 3	864000	Feb 10 1996				171100			1994
LOWEST DAILY MEAN	109000	Sep 8	115000	Sep 7	73700	Sep 7 1994							
ANNUAL SEVEN-DAY MINIMUM	123000	Sep 5	138000	Oct 23	81400	Sep 5 1994							
ANNUAL RUNOFF (AC-FT)	.17975866E9	.21699093E9	.18347517E9										
10 PERCENT EXCEEDS	371000	413000	412000										
50 PERCENT EXCEEDS	240000	320000	224000										
90 PERCENT EXCEEDS	144000	150000	133000										

e Estimated

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1967 to September 1970, October 1990 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1993 to current year.

WATER TEMPERATURE: August 1967 to September 1970. October 1993 to current year.

INSTRUMENTATION.--Temperature recorder August 1967 to September 1970. Temperature and specific conductance recorders from October 1992 to current year.

REMARKS.--Since February, 1994, specific conductance and temperature sensors located near right bank. Prior to that time, sensors were located near left bank. It was determined that daily record collected prior to February 1994 is not representative of the cross section due to a seasonal influence from several upstream sloughs. Additional specific conductance and temperature data for the period October 1992 to September 1993 available in the files of the Portland field office. Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 188 microsiemens Feb. 5, 1994, but may have been higher during periods of missing record; minimum recorded, 73 microsiemens Feb. 9, 1996, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 24.0°C July 28, 1998; minimum, 0.0°C Jan. 31, Feb. 1, 1969.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 183 microsiemens Nov. 7; minimum recorded, 81 microsiemens Dec. 30, 31.

WATER TEMPERATURE: Maximum, 22.0°C Aug. 10, 11, 29; minimum, 4.5°C Dec. 23-25.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PERCENT SATURATION) (00301)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS Mg) (00925)
NOV 1998												
23...	1210	302000	119	7.6	10.3	13	10.5	747	96	43	12	3.3
JAN 1999												
05...	1130	E390000	106	7.7	5.4	18	12.4	775	96	44	12	3.5
25...	1140	470000	125	7.7	6.2	19	12.9	761	104	51	13	4.2
FEB												
23...	1020	E370000	127	7.9	5.5	12	13.4	763	106	54	14	4.3
MAR												
08...	1200	E410000	134	7.8	6.2	15	13.0	752	106	56	15	4.4
29...	1140	381000	158	8.1	7.2	7.0	13.0	758	109	61	16	4.9
APR												
20...	1050	279000	136	8.1	9.9	6.5	13.4	771	117	56	15	4.3
MAY												
11...	1120	E400000	130	8.1	10.9	11	12.5	764	113	52	14	4.1
25...	1110	328000	129	7.9	13.9	11	11.0	770	106	51	14	3.9
JUN												
08...	1120	E390000	108	7.8	13.9	5.0	12.1	767	116	42	11	3.3
22...	1100	374000	111	7.8	16.1	5.4	10.5	766	106	46	13	3.4
AUG												
03...	1140	E220000	111	7.8	20.3	1.8	8.9	765	98	45	12	3.4
SEP												
14...	1120	E150000	127	7.8	18.9	2.1	8.8	762	94	47	13	3.4

DATE	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY, WAT 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)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
NOV 1998												
23...	6.3	24	.4	.98	41	50	0	7.6	4.2	<.1	11	80
JAN 1999												
05...	4.9	19	.3	1.0	44	53	0	7.0	3.0	<.1	12	69
25...	6.5	21	.4	1.3	48	59	0	8.6	4.0	<.1	13	77
FEB												
23...	5.6	18	.3	.99	51	62	0	8.1	3.4	.1	13	86
MAR												
08...	6.1	19	.4	1.1	54	66	0	9.2	3.8	<.1	13	96
29...	6.9	19	.4	1.2	63	77	0	11	4.6	.1	13	103
APR												
20...	5.7	18	.3	1.2	52	63	0	8.9	4.4	.1	13	91
MAY												
11...	5.2	18	.3	1.1	53	64	0	7.2	3.7	.1	12	89
25...	5.1	18	.3	.60	50	61	0	7.8	3.1	.1	12	84
JUN												
08...	4.6	19	.3	1.0	42	51	0	6.1	2.8	<.1	11	77
22...	4.3	17	.3	.85	43	52	0	7.0	3.2	<.1	9.4	77
AUG												
03...	4.4	17	.3	.93	45	55	0	5.6	3.5	<.1	8.6	81
SEP												
14...	4.8	18	.3	.97	43	52	0	7.5	3.2	<.1	7.8	75

E Estimated.

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)
NOV 1998												
23...	71	.11	.025	.005	<.1	.2	.345	.072	.039	.021	1.7	.6
JAN 1999												
05...	71	.09	.021	.004	<.1	.2	.395	.086	<.050	.021	1.6	.5
25...	83	.10	.022	.006	E.09	.3	.563	.097	.023	.025	1.7	.5
FEB												
23...	82	.12	.009	.003	E.07	.2	.408	.058	.017	.015	1.7	.5
MAR												
08...	88	.13	.015	.002	E.05	.2	.467	.081	.020	.019	1.6	.2
29...	98	.14	.006	.003	E.09	.2	.402	.055	.023	.022	1.7	.3
APR												
20...	85	.12	.005	.004	E.06	.2	.292	.047	.016	.011	1.9	.5
MAY												
11...	79	.12	.003	.003	<.1	.3	.115	.038	.009	.005	2.0	.5
25...	77	.11	.003	.003	.2	.2	.097	.040	.009	.006	2.1	.4
JUN												
08...	66	.10	.008	.002	.1	.2	.111	.050	.013	.010	2.5	--
22...	67	.10	<.002	.001	.1	.2	.043	.036	.007	.005	2.2	.7
AUG												
03...	66	.11	<.002	.003	E.09	.1	.075	.031	.006	.007	1.8	.4
SEP												
14...	67	.10	<.002	.002	E.07	.2	.102	.030	.012	.008	1.5	.3
DATE	ALUM- INUM, 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)	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)
NOV 1998												
23...	9	<1	<1	13	<1	E11	<1	<1	<1	1	24	<1
JAN 1999												
05...	--	--	<1	--	--	E8	--	--	--	--	E7	--
25...	--	--	<1	--	--	E7	--	--	--	--	E6	--
FEB												
23...	--	--	<1	--	--	E9	--	--	--	--	<10	--
MAR												
08...	3	<1	<1	18	<1	E10	<1	2	<1	3	<10	<1
29...	--	--	<1	--	--	E15	--	--	--	--	E7	--
APR												
20...	--	--	<1	--	--	E13	--	--	--	--	11	--
MAY												
11...	--	--	<1	--	--	E10	--	--	--	--	E6	--
25...	--	--	<1	--	--	E8	--	--	--	--	E7	--
JUN												
08...	5	<1	1	15	<1	<16	<1	--	<1	1	11	<1
22...	--	--	1	--	--	E8	--	--	--	--	E6	--
AUG												
03...	3	<1	<1	18	<1	E9	<1	<1	<1	--	E9	<1
SEP												
14...	--	--	<1	--	--	E8	--	--	--	--	<10	--
DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
NOV 1998												
23...	<6	6	<1	<1	<1	<1	66	<1	<10	2	<.007	<.002
JAN 1999												
05...	<6	--	--	--	<1	--	62	--	<10	--	<.007	<.002
25...	<6	--	--	--	<1	--	74	--	<10	--	<.007	<.002
FEB												
23...	<6	--	--	--	<1	--	78	--	<10	--	<.007	<.002
MAR												
08...	E4	3	<1	1	<1	<1	78	<1	<10	1	<.007	<.002
29...	E4	--	--	--	<1	--	91	--	<10	--	<.007	<.002
APR												
20...	<6	--	--	--	<1	--	78	--	<10	--	<.007	<.002
MAY												
11...	<6	--	--	--	<1	--	77	--	<10	--	<.007	<.002
25...	<6	--	--	--	<1	--	74	--	<10	--	<.007	E.002
JUN												
08...	E4	<1	<1	<1	<1	<1	62	<1	<10	1	<.007	<.002
22...	<6	--	--	--	<1	--	67	--	<10	--	<.007	<.002
AUG												
03...	E3	<1	<1	<1	<1	<1	67	<1	<10	--	<.007	<.002
SEP												
14...	E2	--	--	--	<1	--	74	--	<10	--	<.007	<.002

E Estimated.

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)
NOV 1998												
23...	E.005	<.018	E.003	<.004	<.003	<.002	<.006	E.004	<.004	<.001	.005	<.005
JAN 1999												
05...	.007	<.018	E.004	<.004	<.003	<.002	E.001	<.004	<.004	<.001	.010	<.005
25...	.008	<.018	E.005	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.012	<.005
FEB												
23...	.006	<.018	E.003	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.007	<.005
MAR												
08...	.006	<.018	E.003	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.008	<.005
29...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
APR												
20...	E.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
MAY												
11...	.006	E.003	E.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.004	<.005
25...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.004	<.005
JUN												
08...	E.004	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	E.004	<.005
22...	<.005	<.018	E.003	<.004	<.003	<.002	<.006	<.004	<.004	<.001	.006	<.005
AUG												
03...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005
SEP												
14...	<.005	<.018	<.002	<.004	<.003	<.002	<.006	<.004	<.004	<.001	<.002	<.005

DATE	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
NOV 1998												
23...	<.004	<.002	.006	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
JAN 1999												
05...	<.004	<.002	.021	<.002	<.002	.005	<.003	<.002	<.004	<.002	E.004	<.002
25...	<.004	<.002	.028	<.002	<.002	.009	<.003	<.002	<.004	<.002	E.006	<.002
FEB												
23...	<.004	<.002	.016	<.002	<.002	<.004	<.003	<.002	<.004	<.002	E.006	<.002
MAR												
08...	<.004	<.002	.016	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
29...	<.004	<.002	E.003	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
APR												
20...	<.004	<.002	.007	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
MAY												
11...	<.004	<.002	.005	<.002	<.002	E.003	<.003	<.002	<.004	<.002	<.007	<.002
25...	<.004	<.002	<.004	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
JUN												
08...	<.004	<.002	E.003	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
22...	<.004	<.002	E.004	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
AUG												
03...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002
SEP												
14...	<.004	<.002	<.001	<.002	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002

DATE	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)
NOV 1998												
23...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
JAN 1999												
05...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.005	<.017	<.001
25...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.007	<.017	E.002
FEB												
23...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	.004	<.017	<.001
MAR												
08...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	E.002	<.017	<.001
29...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
APR												
20...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
MAY												
11...	<.006	E.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
25...	<.006	.009	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
JUN												
08...	<.006	.005	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
22...	<.006	.004	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
AUG												
03...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001
SEP												
14...	<.006	<.002	<.004	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001

E Estimated.

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 1998												
23...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	44	35900	87
JAN 1999												
05...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	52	E54800	81
25...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	40	50800	76
FEB												
23...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	23	E23000	86
MAR												
08...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	31	E34300	62
29...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	21	21600	79
APR												
20...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	16	12100	80
MAY												
11...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	18	E19400	84
25...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	17	15100	87
JUN												
08...	<.004	<.003	<.002	E.001	<.004	<.003	<.013	<.010	<.005	26	E27400	82
22...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	20	20200	84
AUG												
03...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	14	E8320	81
SEP												
14...	<.004	<.003	<.002	<.002	<.004	<.003	<.013	<.001	<.005	9	E3640	78

E Estimated.

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BERAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	154	148	151	174	170	172	108	102	106	91	83	87
2	160	148	153	174	168	171	108	98	102	100	91	97
3	152	147	150	176	171	173	105	98	101	101	96	99
4	152	148	150	181	170	176	107	100	103	106	96	102
5	152	147	150	181	174	178	111	104	108	108	103	106
6	152	148	150	181	173	176	114	109	112	112	107	110
7	150	145	147	183	170	178	117	112	115	118	110	113
8	149	144	146	176	165	170	122	114	117	120	115	117
9	149	145	147	172	165	169	129	118	123	123	114	117
10	151	146	148	174	168	172	129	124	126	130	122	126
11	156	149	152	178	169	175	128	123	125	129	124	127
12	152	146	149	182	171	177	128	115	121	132	127	130
13	152	145	147	182	169	176	119	107	112	144	130	136
14	153	148	150	178	161	170	111	102	105	149	134	142
15	157	151	154	179	157	165	113	106	110	141	128	134
16	158	153	156	169	160	165	117	111	114	135	113	126
17	156	150	154	169	161	166	125	117	121	118	110	114
18	158	152	155	168	158	163	134	121	129	113	101	108
19	160	154	157	168	159	164	136	128	133	106	100	104
20	160	156	158	163	148	156	139	132	136	109	103	106
21	165	158	161	155	130	146	141	136	138	109	102	106
22	166	159	163	141	128	133	145	133	140	113	105	108
23	169	163	166	128	112	118	146	141	143	116	110	113
24	166	161	163	115	108	112	146	140	143	121	112	117
25	163	157	161	110	96	103	146	138	142	126	121	123
26	165	160	162	100	93	96	140	129	133	126	122	124
27	170	164	168	99	95	97	136	112	125	133	124	128
28	175	168	171	104	96	99	117	103	107	133	116	125
29	174	169	172	106	98	101	105	88	95	118	109	114
30	177	170	174	107	102	104	89	81	85	117	110	114
31	175	169	173	---	---	---	88	81	83	122	117	120
MONTH	177	144	157	183	93	151	146	81	118	149	83	116

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	120	116	118	110	105	108	158	153	155	157	155	156
2	123	110	119	109	99	104	155	152	154	157	152	154
3	135	110	122	107	102	105	154	151	153	155	146	150
4	137	124	129	114	103	108	154	149	152	149	143	145
5	131	122	129	122	111	117	159	152	155	145	138	141
6	132	123	127	126	118	121	159	154	156	139	136	137
7	124	114	119	127	121	124	155	149	152	139	133	135
8	119	112	116	134	126	131	152	146	149	134	128	132
9	118	114	116	138	132	135	150	146	148	129	127	128
10	122	117	119	145	136	138	149	145	147	131	128	129
11	126	122	123	155	144	151	151	144	147	132	129	131
12	132	126	129	158	153	156	148	142	145	136	129	132
13	138	132	135	155	148	151	149	142	146	135	129	132
14	142	135	139	154	145	150	151	144	147	131	127	129
15	140	135	138	149	139	144	148	144	147	131	127	129
16	140	134	137	148	140	144	147	143	145	130	127	129
17	137	133	135	153	145	149	146	139	144	130	126	128
18	138	133	136	150	145	147	148	138	142	131	126	129
19	137	126	130	153	147	150	144	136	141	129	123	126
20	133	126	130	150	147	148	142	136	139	125	122	124
21	136	132	134	150	143	146	143	137	140	128	123	125
22	136	128	132	146	142	144	143	139	141	129	126	127
23	131	120	126	145	142	143	144	141	143	130	126	128
24	124	106	115	149	144	146	145	143	144	131	127	129
25	115	106	110	154	148	151	146	144	145	137	127	131
26	114	107	110	159	153	155	151	145	147	130	126	128
27	120	112	115	156	152	154	152	149	150	129	125	127
28	115	109	111	159	154	156	153	148	150	131	126	128
29	---	---	---	159	154	158	156	149	152	132	126	129
30	---	---	---	157	154	155	156	154	155	129	125	126
31	---	---	---	157	154	156	---	---	---	129	124	127
MONTH	142	106	125	159	99	140	159	136	148	157	122	132

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BERAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	131	126	127	97	94	95	119	115	117	138	127	132
2	132	129	130	94	92	93	120	116	117	132	126	129
3	131	129	130	94	92	93	118	116	117	132	127	129
4	131	123	127	97	93	95	120	117	119	133	127	130
5	124	119	122	100	96	98	120	118	119	134	128	131
6	121	114	116	106	99	102	121	117	119	132	125	129
7	115	109	112	108	104	106	122	118	120	133	125	130
8	112	108	110	113	104	107	123	119	120	139	128	133
9	110	106	108	113	105	108	123	117	121	141	130	135
10	106	102	104	108	105	107	122	118	120	132	124	129
11	106	101	103	108	106	107	126	120	123	132	124	129
12	108	103	105	110	107	109	125	121	123	133	127	130
13	113	107	109	111	108	109	126	122	124	130	126	129
14	118	112	114	115	109	112	127	122	124	132	126	128
15	120	114	117	115	111	113	125	122	124	134	126	130
16	116	114	115	117	111	114	124	121	122	139	124	129
17	117	112	114	114	112	113	127	121	124	128	125	127
18	116	112	113	115	112	114	127	123	124	129	126	127
19	116	108	112	118	114	115	125	122	124	129	126	128
20	114	108	111	118	115	116	127	123	125	130	125	128
21	117	109	113	121	115	117	128	123	125	131	126	129
22	114	111	112	119	116	117	126	123	125	129	125	127
23	114	110	113	121	115	118	131	124	127	133	126	129
24	114	111	113	119	114	116	128	123	125	138	130	133
25	114	112	113	119	114	115	125	122	124	132	129	131
26	112	109	111	118	112	115	126	122	124	132	127	130
27	110	106	108	114	112	113	126	123	125	132	126	129
28	107	103	105	118	112	115	133	126	128	132	127	129
29	104	101	102	117	113	115	129	124	127	131	128	130
30	101	96	98	117	112	115	129	125	127	137	128	132
31	---	---	---	117	114	116	130	124	127	---	---	---
MONTH	132	96	113	121	92	110	133	115	123	141	124	130
YEAR	183	81	130									

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	19.5	19.0	19.0	14.0	13.5	13.5	9.5	9.5	9.5	7.5	7.0	7.0
2	19.5	18.5	19.0	14.0	13.5	13.5	9.5	9.0	9.5	7.0	6.5	7.0
3	19.0	18.5	18.5	13.5	13.0	13.0	9.5	9.0	9.0	6.5	6.0	6.5
4	18.5	18.0	18.5	13.5	13.0	13.0	9.5	9.0	9.0	6.0	6.0	6.0
5	18.5	18.0	18.0	13.5	13.0	13.0	9.0	8.5	9.0	6.0	5.5	5.5
6	18.5	18.0	18.0	13.5	12.5	13.0	8.5	8.5	8.5	5.5	5.5	5.5
7	18.5	18.0	18.0	13.0	12.5	12.5	8.5	8.5	8.5	6.0	5.5	5.5
8	18.5	18.0	18.0	12.5	12.5	12.5	8.5	8.5	8.5	6.0	6.0	6.0
9	18.0	17.5	18.0	12.5	12.0	12.0	8.5	8.0	8.5	6.0	6.0	6.0
10	18.0	17.0	17.5	12.0	12.0	12.0	8.5	8.5	8.5	6.5	6.0	6.0
11	17.5	17.0	17.0	12.5	12.0	12.0	8.5	8.5	8.5	6.0	6.0	6.0
12	17.0	16.5	17.0	12.5	12.0	12.0	9.0	8.5	8.5	6.5	6.0	6.0
13	17.0	16.5	17.0	12.0	11.5	11.5	9.0	8.5	9.0	6.5	6.0	6.0
14	17.0	16.0	16.5	12.0	11.5	11.5	9.0	8.5	8.5	6.5	6.0	6.5
15	16.5	16.0	16.0	12.0	11.5	11.5	8.5	8.5	8.5	6.5	6.0	6.5
16	16.5	16.0	16.5	12.0	11.5	12.0	8.5	8.5	8.5	6.5	6.0	6.0
17	16.5	15.5	16.0	12.0	11.5	12.0	8.5	8.0	8.0	6.5	6.0	6.5
18	16.0	15.5	16.0	12.0	11.5	11.5	8.0	7.5	8.0	6.5	6.0	6.5
19	16.0	15.0	15.5	12.0	11.5	11.5	7.5	7.0	7.5	6.5	6.5	6.5
20	15.5	15.0	15.0	11.5	11.0	11.5	7.0	6.5	6.5	6.5	6.5	6.5
21	15.5	14.5	15.0	11.5	11.0	11.0	6.5	5.5	5.5	6.5	6.5	6.5
22	15.0	14.5	15.0	11.0	10.5	11.0	5.5	5.0	5.0	6.5	6.5	6.5
23	15.0	14.5	15.0	10.5	10.0	10.5	5.0	4.5	5.0	6.5	6.5	6.5
24	14.5	14.0	14.5	10.5	10.0	10.0	4.5	4.5	4.5	6.5	6.0	6.0
25	14.5	14.0	14.5	10.0	9.5	10.0	5.0	4.5	4.5	6.0	6.0	6.0
26	15.0	14.0	14.5	10.0	10.0	10.0	5.5	5.0	5.0	6.0	6.0	6.0
27	14.5	14.5	14.5	10.5	10.0	10.0	6.0	5.0	5.5	6.0	5.5	6.0
28	14.5	14.0	14.5	10.0	10.0	10.0	6.5	5.5	6.0	6.0	5.5	6.0
29	14.5	14.0	14.0	10.0	9.5	10.0	7.0	6.5	7.0	6.0	6.0	6.0
30	14.0	13.5	14.0	10.0	9.5	9.5	7.0	7.0	7.0	6.0	6.0	6.0
31	14.0	13.5	13.5	---	---	---	7.5	7.0	7.0	6.0	6.0	6.0
MONTH	19.5	13.5	16.3	14.0	9.5	11.6	9.5	4.5	7.5	7.5	5.5	6.2

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	6.0	6.0	6.0	6.5	6.0	6.0	8.5	7.5	8.0	12.0	11.5	11.5
2	6.0	6.0	6.0	6.5	6.0	6.0	8.5	8.0	8.0	11.5	11.0	11.5
3	6.0	6.0	6.0	6.5	6.0	6.0	8.5	8.0	8.0	11.5	11.0	11.0
4	6.0	5.5	5.5	6.0	6.0	6.0	8.0	8.0	8.0	11.5	10.5	11.0
5	5.5	5.5	5.5	6.0	5.5	6.0	8.5	7.5	8.0	11.5	10.5	11.0
6	6.0	5.5	5.5	6.0	5.5	6.0	8.5	8.0	8.0	11.5	11.0	11.0
7	6.0	5.5	5.5	6.0	6.0	6.0	8.5	8.0	8.5	11.0	11.0	11.0
8	5.5	5.0	5.5	6.0	6.0	6.0	8.5	8.0	8.5	11.0	10.5	11.0
9	5.5	5.0	5.0	6.0	6.0	6.0	8.5	8.0	8.0	11.0	10.5	11.0
10	5.0	5.0	5.0	6.5	6.0	6.0	8.5	8.0	8.0	11.5	11.0	11.0
11	5.0	5.0	5.0	6.5	6.0	6.0	8.5	8.0	8.0	11.0	11.0	11.0
12	5.0	4.5	5.0	6.5	6.0	6.5	8.5	8.5	8.5	11.0	11.0	11.0
13	5.0	5.0	5.0	6.5	6.5	6.5	9.0	8.5	8.5	11.0	11.0	11.0
14	5.0	5.0	5.0	6.5	6.5	6.5	9.5	8.5	9.0	11.5	11.0	11.0
15	5.0	4.5	5.0	6.5	6.5	6.5	9.5	9.0	9.5	11.5	11.0	11.0
16	5.0	5.0	5.0	6.5	6.5	6.5	10.0	9.5	9.5	11.5	11.0	11.0
17	5.5	5.0	5.0	6.5	6.5	6.5	10.0	9.5	10.0	11.5	11.0	11.5
18	5.5	5.0	5.0	6.5	6.5	6.5	10.5	10.0	10.0	12.0	11.5	11.5
19	5.5	5.5	5.5	7.0	6.5	6.5	10.5	10.0	10.0	12.0	11.5	11.5
20	5.5	5.0	5.5	7.5	6.5	7.0	10.0	10.0	10.0	12.0	11.5	12.0
21	5.5	5.0	5.0	7.5	7.5	7.5	10.0	9.5	10.0	12.5	12.0	12.0
22	5.5	5.0	5.0	8.0	7.5	7.5	10.5	9.5	10.0	13.0	12.5	12.5
23	5.5	5.0	5.5	8.0	7.5	7.5	11.0	10.0	10.5	13.5	13.0	13.0
24	6.0	5.5	6.0	8.0	7.5	7.5	11.5	10.5	11.0	14.5	13.5	14.0
25	6.0	6.0	6.0	8.0	7.5	7.5	11.5	11.0	11.0	14.5	14.0	14.0
26	6.0	6.0	6.0	7.5	7.5	7.5	11.0	10.5	11.0	14.5	14.0	14.0
27	6.5	6.0	6.0	8.0	7.5	7.5	11.0	10.5	10.5	14.5	14.0	14.0
28	6.5	6.0	6.0	7.5	7.0	7.5	11.0	10.5	11.0	14.5	14.0	14.0
29	---	---	---	7.5	7.0	7.5	11.5	10.5	11.0	15.0	14.0	14.5
30	---	---	---	8.0	7.5	7.5	12.0	11.0	11.5	15.0	14.0	14.5
31	---	---	---	8.0	7.5	8.0	---	---	---	15.0	14.5	15.0
MONTH	6.5	4.5	5.4	8.0	5.5	6.7	12.0	7.5	9.4	15.0	10.5	12.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.0	14.5	15.0	16.5	16.0	16.5	20.5	19.5	20.0	20.5	20.0	20.0
2	15.0	14.5	14.5	16.5	16.0	16.5	21.0	20.0	20.5	20.5	20.0	20.0
3	15.0	14.5	14.5	16.5	16.0	16.0	21.0	20.0	20.5	20.5	19.5	20.0
4	15.0	14.5	15.0	16.5	16.0	16.0	21.0	20.5	21.0	20.5	20.0	20.0
5	15.0	14.5	14.5	16.5	16.0	16.5	21.0	20.5	21.0	21.0	20.0	20.5
6	15.0	14.5	14.5	18.0	16.5	17.0	21.0	20.5	20.5	21.0	20.0	20.5
7	14.5	14.0	14.0	17.5	17.0	17.0	21.0	20.5	21.0	20.5	20.0	20.5
8	14.5	14.0	14.0	17.5	17.0	17.0	21.0	20.5	21.0	20.5	19.5	20.0
9	14.5	14.0	14.0	18.0	17.0	17.5	21.5	21.0	21.0	20.5	19.5	20.0
10	14.5	14.0	14.0	18.0	17.5	17.5	22.0	21.0	21.5	20.0	19.0	19.5
11	15.0	14.5	14.5	18.0	17.5	18.0	22.0	21.0	21.5	19.5	19.0	19.0
12	15.5	14.5	15.0	18.5	18.0	18.0	21.5	21.0	21.5	19.5	19.0	19.5
13	16.0	15.0	15.5	19.0	18.0	18.0	21.5	21.0	21.0	20.0	19.0	19.5
14	16.0	15.5	15.5	18.5	18.0	18.0	21.0	21.0	21.0	19.5	19.0	19.0
15	16.0	15.5	15.5	19.0	18.0	18.0	21.0	20.5	20.5	19.5	18.5	19.0
16	16.0	15.5	15.5	18.5	18.0	18.0	21.0	20.0	20.5	19.0	18.5	19.0
17	16.0	15.5	15.5	18.0	18.0	18.0	21.0	20.5	21.0	19.0	18.5	19.0
18	16.0	15.5	15.5	18.5	17.5	18.0	21.0	21.0	21.0	19.0	18.5	19.0
19	16.5	15.5	15.5	19.0	18.0	18.5	21.0	20.5	21.0	19.5	18.5	19.0
20	16.5	15.5	16.0	19.5	19.0	19.0	21.0	20.5	20.5	19.5	19.0	19.0
21	16.5	16.0	16.0	20.0	19.0	19.5	21.0	20.5	21.0	20.0	19.0	19.5
22	16.5	16.0	16.0	20.0	19.0	19.5	21.5	20.5	21.0	20.0	19.0	19.5
23	17.0	16.0	16.5	20.0	19.5	19.5	21.0	20.5	21.0	20.0	19.0	19.5
24	17.0	16.5	16.5	20.0	19.5	19.5	21.5	20.5	21.0	19.5	18.5	19.0
25	17.0	16.5	16.5	20.0	19.0	19.5	21.5	21.0	21.0	19.0	18.5	19.0
26	16.5	16.0	16.5	19.5	19.0	19.0	21.5	21.0	21.0	19.0	18.5	18.5
27	16.5	16.0	16.0	20.0	19.0	19.5	21.5	21.0	21.0	18.5	18.0	18.5
28	16.5	16.0	16.0	20.0	19.5	20.0	21.5	21.0	21.0	18.0	17.5	17.5
29	16.5	16.0	16.5	20.5	19.5	20.0	22.0	21.0	21.0	17.5	17.5	17.5
30	17.0	16.5	16.5	21.0	20.0	20.0	21.0	20.5	21.0	17.5	17.0	17.5
31	---	---	---	20.5	20.0	20.0	21.0	20.0	20.5	---	---	---
MONTH	17.0	14.0	15.4	21.0	16.0	18.2	22.0	19.5	20.9	21.0	17.0	19.3
YEAR	22.0	4.5	12.4									

PACIFIC SLOPE BASINS IN OREGON

NEHALEM RIVER BASIN

14301000 NEHALEM RIVER NEAR FOSS, OR

LOCATION.--Lat 45°42'15", long 123°45'15", in NW 1/4 sec.35, T.3 N., R.9 W., Tillamook County, Hydrologic Unit 17100202, on right bank 0.2 mi upstream from Cook Creek, 2.2 mi northeast of Foss, and at mile 13.5.

DRAINAGE AREA.--667 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 32.60 ft above sea level (State Highway Department bench mark). Prior to Nov. 11, 1939, nonrecording gage.

REMARKS.--Records fair. No regulation. Several small diversions for irrigation and domestic use upstream from station. National Weather Service telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1940-99), 2,699 ft³/s, 54.99 in/yr, 1,956,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,300 ft³/s Feb. 8, 1996, gage height, 29.56 ft, based on slope-area measurement of peak flow; minimum discharge, 34 ft³/s Aug. 29-31, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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. 25	1800	34,300	18.87	Feb. 7	2000	20,300	13.92
Dec. 2	0430	24,500	15.50	Feb. 24	1400	30,700	17.68
Dec. 28	0030	*34,400	*18.91	Feb. 27	1830	23,800	15.27

Minimum discharge, 89 ft³/s Sept. 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	342	12200	10100	9440	17700	6140	1250	1100	515	187	133
2	145	349	22900	8130	12700	12700	5220	1610	1050	528	186	129
3	228	348	20600	6800	13400	10800	4690	2690	976	560	183	130
4	369	493	14500	5810	11600	10500	4290	2900	921	537	177	135
5	287	988	10100	5030	10900	9840	3900	2740	925	554	174	127
6	253	1270	8450	4450	14200	8490	3550	2500	949	528	172	123
7	222	1170	8600	4110	19200	7180	3270	2650	946	512	184	118
8	265	1080	9950	3690	18600	6210	3180	3120	964	471	217	114
9	613	995	9590	3320	13600	5550	3000	3260	957	438	219	111
10	646	1060	8140	3130	9940	5070	3040	3010	875	403	210	111
11	511	1030	9600	3000	7930	4560	3070	2790	790	373	207	107
12	561	923	12400	2860	6740	4320	3140	2680	731	349	188	103
13	1040	965	16600	2750	6230	5680	2970	2580	682	331	178	99
14	1230	1340	13400	4440	5910	6450	2760	2520	641	317	178	95
15	1030	2340	9840	6350	5510	5960	2580	2460	606	311	181	95
16	789	2550	7600	6990	6330	5470	2500	2360	579	302	182	96
17	649	2090	6200	9740	7910	4950	2480	2390	555	301	178	96
18	564	1690	5260	16100	9210	4480	2340	3000	543	300	171	96
19	485	1570	4530	17700	11600	4100	2180	2980	533	292	164	95
20	418	7920	3950	17100	10900	3820	2110	2710	521	283	156	94
21	370	14900	3470	17100	8880	3570	1960	2460	561	269	152	92
22	333	12000	3100	15100	13100	3300	1800	2250	552	256	150	e90
23	306	9950	2810	12200	16200	3060	1670	2060	547	245	143	e115
24	290	10900	2950	9820	28100	3060	1600	1920	529	236	136	98
25	285	25900	5330	8010	25000	3040	1560	1780	664	236	133	108
26	274	30600	8600	6690	20100	3110	1510	1600	761	231	130	106
27	272	24900	15500	5820	19600	3300	1520	1460	670	221	126	99
28	334	14500	26900	11800	21300	3720	1430	1350	616	215	126	97
29	338	9670	22600	17700	---	5620	1330	1260	558	205	117	97
30	309	9180	17400	16800	---	7660	1230	1170	519	197	123	95
31	316	---	13100	12600	---	7370	---	1110	---	190	129	---
TOTAL	13844	193013	336170	275240	364130	190640	82020	70620	21821	10706	5157	3204
MEAN	447	6434	10840	8879	13000	6150	2734	2278	727	345	166	107
MAX	1230	30600	26900	17700	28100	17700	6140	3260	1100	560	219	135
MIN	112	342	2810	2750	5510	3040	1230	1110	519	190	117	90
AC-FT	27460	382800	666800	545900	722300	378100	162700	140100	43280	21240	10230	6360
CFSM	.67	9.65	16.3	13.3	19.5	9.22	4.10	3.42	1.09	.52	.25	.16
IN.	.77	10.76	18.75	15.35	20.31	10.63	4.57	3.94	1.22	.60	.29	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1999, BY WATER YEAR (WY)

	MEAN	833	3769	6226	6255	5908	4303	2744	1276	614	274	148	215
MAX	3698	9256	11390	12450	13000	8696	6389	3028	1591	747	314	911	
(WY)	1998	1974	1956	1971	1999	1956	1996	1948	1968	1983	1968	1997	
MIN	69.9	154	599	596	1066	1171	1149	520	250	137	62.5	63.6	
(WY)	1953	1994	1977	1977	1992	1941	1989	1992	1992	1967	1967	1967	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1940 - 1999
ANNUAL TOTAL	1184791	1566565	
ANNUAL MEAN	3246	4292	2699
HIGHEST ANNUAL MEAN			4292
LOWEST ANNUAL MEAN			1063
HIGHEST DAILY MEAN	30600	Nov 26	61600
LOWEST DAILY MEAN	85	Sep 16	36
ANNUAL SEVEN-DAY MINIMUM	87	Sep 11	38
ANNUAL RUNOFF (AC-FT)	2350000	3107000	1956000
ANNUAL RUNOFF (CFSM)	4.87	6.43	4.05
ANNUAL RUNOFF (INCHES)	66.08	87.37	54.99
10 PERCENT EXCEEDS	9260	12700	7300
50 PERCENT EXCEEDS	1220	1610	1150
90 PERCENT EXCEEDS	126	133	126

e Estimated

14301500 WILSON RIVER NEAR TILLAMOOK, OR

LOCATION.--(Revised)Lat 45°29'05", long 123°41'20", in NW 1/4 NE 1/4 sec.17, T.1 S., R.8 W., Tillamook County, Hydrologic Unit 17100203, on right bank 0.1 mi downstream from Negro Jack Creek, 8.0 mi east of Tillamook, and at mile 11.5.

DRAINAGE AREA.--161 mi², at former site, 2.1 mi downstream.

PERIOD OF RECORD.--October 1914 to September 1915, August to November 1916, July 1931 to current year. Prior to January 1915 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1398: 1953. WSP 1738: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 71.89 ft above sea level. Dec. 18, 1914, to Nov. 4, 1916, nonrecording gage at site 2.8 mi downstream at different datum. July 30, 1931, to Sept. 30, 1938, nonrecording gage at site 2.82 mi downstream at datum 28.83 ft lower. Oct. 1, 1938, to Oct. 17, 1968, water-stage recorder at site 2.1 mi downstream at datum 29.76 ft lower. Oct. 18, 1968 to Sept. 6, 1973 at site 50 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for domestic use upstream from station.

AVERAGE DISCHARGE.--69 years (water years 1915, 1932-99), 1,187 ft³/s, 100.13 in/yr, 859,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft³/s Jan. 20, 1972, gage height, 16.91 ft, site then in use; maximum gage height, 19.59 ft Dec. 27, 1998, from floodmark; minimum discharge, 32 ft³/s Sept. 5, 1973, but may have been less for short period following a landslide Jan. 31, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1916 reached a stage of 20.8 ft, from floodmark, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 12,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2100	14,600	13.55	Dec. 27	2330	*35,300	*19.59
Nov. 25	1930	17,400	14.59	Feb. 24	1700	16,600	14.31
Dec. 2	0300	14,200	13.39	Feb. 27	2100	17,300	14.54

Minimum discharge, 54 ft³/s Sept. 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	219	4550	3730	3120	6620	1510	572	493	206	96	79
2	120	252	11500	2820	6600	4610	1370	952	463	210	95	75
3	274	267	6070	2230	5470	3740	1290	1530	430	211	93	71
4	356	506	3820	1820	4350	3100	1180	1500	407	209	91	69
5	197	842	2870	1530	3850	2520	1100	1280	416	197	89	69
6	143	943	2340	1350	6170	2110	1030	1130	411	187	90	71
7	119	821	2710	1220	8620	1810	1000	1190	411	195	112	68
8	142	729	3210	1080	5660	1630	997	1220	392	187	116	66
9	721	627	2620	975	3770	1500	959	1140	365	172	105	64
10	557	628	2320	905	2790	1380	1030	1040	348	163	95	63
11	380	626	4970	851	2160	1250	1020	985	326	154	91	63
12	388	557	7270	845	1800	1320	1060	958	310	148	92	60
13	1040	587	8270	815	1720	2240	1060	922	301	144	93	58
14	1090	609	4950	2300	1620	2860	1010	894	293	140	101	58
15	755	1670	3250	3140	1470	2300	964	876	286	139	98	59
16	546	1900	2400	3220	2040	1880	1010	824	279	137	93	59
17	439	1290	1910	4760	3330	1580	1120	987	265	140	89	59
18	381	1000	1590	8250	3800	1390	1100	1620	258	135	86	59
19	326	1010	1340	7640	5110	1290	1030	1510	252	128	84	57
20	285	6560	1150	6900	3700	1330	970	1250	246	123	82	56
21	257	11000	1020	7400	3000	1310	859	1070	261	120	81	55
22	235	6970	929	5750	6450	1210	763	945	243	118	79	55
23	219	4930	847	4270	7640	1130	699	875	229	114	76	55
24	207	5270	1050	3210	14100	1180	719	872	229	113	74	57
25	217	13400	4150	2530	8840	1160	772	822	293	113	74	64
26	199	11900	6280	2050	5280	1200	730	728	268	109	73	62
27	196	5870	12300	1870	10800	1210	683	652	241	106	71	60
28	211	3530	17300	7390	11400	1270	593	604	226	103	70	58
29	200	2920	11900	8660	---	1920	537	561	216	100	71	56
30	185	2920	8550	5970	---	2090	511	519	209	98	74	55
31	196	---	5330	4030	---	1750	---	499	---	97	83	---
TOTAL	10645	90353	148766	109511	144660	61890	28676	30527	9367	4516	2717	1860
MEAN	343	3012	4799	3533	5166	1996	956	985	312	146	87.6	62.0
MAX	1090	13400	17300	8660	14100	6620	1510	1620	493	211	116	79
MIN	64	219	847	815	1470	1130	511	499	209	97	70	55
AC-FT	21110	179200	295100	217200	286900	122800	56880	60550	18580	8960	5390	3690
CFSM	2.13	18.7	29.8	21.9	32.1	12.4	5.94	6.12	1.94	.90	.54	.39
IN.	2.46	20.88	34.37	25.30	33.42	14.30	6.63	7.05	2.16	1.04	.63	.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 1999, BY WATER YEAR (WY)

	MEAN	581	1893	2682	2531	2257	1778	1185	617	335	168	105	156
MAX	2249	4266	7988	5776	5166	3637	2622	1391	876	514	240	780	
(WY)	1998	1996	1934	1953	1999	1956	1991	1933	1933	1983	1968	1959	
MIN	43.5	87.2	378	344	634	406	426	202	131	76.5	44.3	40.1	
(WY)	1988	1937	1977	1977	1993	1992	1939	1939	1992	1992	1967	1967	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1915 - 1999
ANNUAL TOTAL	515422	643488	
ANNUAL MEAN	1412	1763	1187
HIGHEST ANNUAL MEAN			1811
LOWEST ANNUAL MEAN			524
HIGHEST DAILY MEAN	17300	Dec 28	28000
LOWEST DAILY MEAN	52	Sep 16	34
ANNUAL SEVEN-DAY MINIMUM	54	Sep 11	35
ANNUAL RUNOFF (AC-FT)	1022000	1276000	859600
ANNUAL RUNOFF (CFSM)	8.77	11.0	7.37
ANNUAL RUNOFF (INCHES)	119.09	148.68	100.13
10 PERCENT EXCEEDS	3790	5300	2920
50 PERCENT EXCEEDS	546	842	570
90 PERCENT EXCEEDS	73	75	88

TRASK RIVER BASIN

14302480 TRASK RIVER ABOVE CEDAR CREEK, NEAR TILLAMOOK, OR

LOCATION.--Lat 45°26'47", long 123°42'33", in NW 1/4 SE 1/4 sec.30, T.1 S., R.8 W., Tillamook County, Hydrologic Unit 17100203, on right bank 0.1 mi upstream from Cedar Creek, 6.8 mi east of Tillamook, and at mile 10.95.

DRAINAGE AREA.--156 mi², at Long Prairie Road bridge, 4.0 mi downstream, where all discharge measurements are made.

PERIOD OF RECORD.--April 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 70 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation. Water diverted from the J.W. Barney Reservoir (capacity 20,000 acre-ft) on the Middle Fork of the North Fork of the Trask River to the Tualatin River for domestic use and pollution abatement by the City of Hillsboro amounted to approximately 4,860 acre-ft for the 1999 water year.

AVERAGE DISCHARGE.--3 years (water years 1997-99), 1,301 ft³/s, 113.29 in/yr, 942,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,500 ft³/s Dec. 27, 1998, gage height, 21.32 ft; minimum discharge, 64 ft³/s Sept. 22, 23, 1999.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996 reached a stage of 23.2 ft, from floodmark; discharge, 25,800 ft³/s, from slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 9,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2100	9,880	15.30	Dec. 27	2330	*21,500	*21.32
Nov. 25	2030	12,900	16.99	Feb. 24	1400	11,700	16.37
Dec. 2	0600	11,200	16.06	Feb. 27	2030	11,400	16.18

Minimum discharge, 77 ft³/s Sept. 9, 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	171	3530	3550	2710	5490	1540	565	475	269	117	105
2	171	202	9270	2660	4560	4020	1410	870	453	287	116	92
3	274	209	5260	2100	4190	3400	1360	1480	429	286	110	86
4	360	298	3400	1710	3740	2880	1270	1430	415	286	107	82
5	188	538	2530	1440	3630	2440	1200	1180	447	274	106	82
6	140	570	2090	1290	5660	2110	1130	1040	445	252	107	88
7	119	501	2300	1150	7290	1850	1090	1060	440	273	140	83
8	146	451	2690	980	5010	1720	1090	1050	428	260	145	79
9	460	419	2220	874	3580	1620	1030	988	400	232	122	75
10	381	459	1950	803	2710	1510	1040	918	379	214	112	75
11	261	452	3570	759	2130	1400	998	903	360	200	107	75
12	275	400	5220	767	1810	1420	982	893	341	189	111	71
13	547	389	5680	740	1730	1840	959	870	327	180	112	68
14	523	363	3960	1520	1590	2150	925	867	315	175	121	68
15	402	641	2720	2110	1470	1950	877	834	307	176	116	69
16	317	748	2000	2270	1860	1730	871	789	303	169	109	71
17	276	631	1570	3440	2660	1540	863	873	290	175	102	71
18	254	655	1290	5950	3340	1420	849	1060	287	164	99	71
19	222	641	1090	5420	4800	1320	812	1030	280	155	100	68
20	183	4110	931	4960	3580	1280	782	931	274	149	96	66
21	164	6860	835	6280	2920	1240	720	849	296	147	95	66
22	151	4590	776	5010	5280	1170	668	781	277	146	92	65
23	143	3560	721	3810	6310	1110	630	725	261	140	88	66
24	137	3670	777	2890	10200	1180	617	690	267	139	87	70
25	157	9110	2110	2280	7510	1120	621	655	383	143	88	75
26	142	9410	3820	1860	4920	1180	607	612	325	134	88	75
27	144	4800	8310	1690	7920	1220	597	574	287	129	85	71
28	181	2860	13300	5160	8550	1310	551	546	267	125	83	69
29	166	2370	9960	6070	---	1960	517	521	255	122	85	67
30	147	2260	7360	4720	---	2060	497	495	251	120	95	66
31	151	---	4920	3550	---	1760	---	481	---	118	122	---
TOTAL	7267	62338	116160	87813	121660	58400	27103	26560	10264	5828	3263	2235
MEAN	234	2078	3747	2833	4345	1884	903	857	342	188	105	74.5
MAX	547	9410	13300	6280	10200	5490	1540	1480	475	287	145	105
MIN	85	171	721	740	1470	1110	497	481	251	118	83	65
AC-FT	14410	123600	230400	174200	241300	115800	53760	52680	20360	11560	6470	4430
CFSM	1.50	13.3	24.0	18.2	27.9	12.1	5.79	5.49	2.19	1.21	.67	.48
IN.	1.73	14.87	27.70	20.94	29.01	13.93	6.46	6.33	2.45	1.39	.78	.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1999, BY WATER YEAR (WY)

	1997	1998	1999	1997	1998	1999	1997	1998	1999
MEAN	844	1953	3157	2775	2645	1970	871	631	340
MAX	1688	2145	4157	2893	4345	2538	1102	857	389
(WY)	1998	1998	1997	1999	1997	1999	1997	1999	1997
MIN	234	1635	1568	2598	1764	1489	608	462	290
(WY)	1999	1997	1998	1997	1998	1998	1998	1998	1998

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1997 - 1999
ANNUAL TOTAL	424964	528891	
ANNUAL MEAN	1164	1449	1301
HIGHEST ANNUAL MEAN			1449
LOWEST ANNUAL MEAN			1108
HIGHEST DAILY MEAN	13300	Dec 28	13300
LOWEST DAILY MEAN	79	Sep 7	65
ANNUAL SEVEN-DAY MINIMUM	80	Sep 4	67
ANNUAL RUNOFF (AC-FT)	842900	1049000	942400
ANNUAL RUNOFF (CFSM)	7.46	9.29	8.34
ANNUAL RUNOFF (INCHES)	101.34	126.12	113.29
10 PERCENT EXCEEDS	2900	4140	3430
50 PERCENT EXCEEDS	460	631	695
90 PERCENT EXCEEDS	100	90	105

NESTUCCA RIVER BASIN

317

14302800 MCGUIRE LAKE NEAR FAIRDALE, OR

LOCATION.--Lat 45°18'30", long 123°24'30", in NW 1/4 SE 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, on control tower in reservoir on Nestucca River, 0.3 mi upstream from Walker Creek, and 5.0 mi southwest of Fairdale.

DRAINAGE AREA.--2.85 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Nonrecording gage. Datum of gage is sea level.

REMARKS.--Reservoir is formed by earthfill dam with ungated spillway. Capacity of reservoir is 3,840 acre-ft between elevations 1,810.0 ft and 1,865.5 ft. Dead storage negligible. Under normal operation, reservoir is filled in the spring (April or May) and drained when fall rains start. There is no planned storage during winter months; however, during periods of heavy runoff, inflow may be greater than capacity of outlet tunnel and there may be temporary storage. Water is used during summer months for municipal supply of city of McMinnville.

COOPERATION.--Elevation and capacity table furnished by city of McMinnville Water and Light Department. Elevations based on once-daily staff gage readings. Readings are taken on an average of 13 per month.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 3,920 acre-ft Jan. 29, Feb. 19, 24, 26, Mar. 1, 1999, elevation, 1,866.0 ft; no contents most of time during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 3,920 acre-ft Jan. 29, Feb. 19, 24, 26, Mar. 1, elevation, 1,866.0 ft; no contents observed Dec. 18, elevation, 1,810.0 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,850.3	2,040	-
Oct. 31.....	a1,839.5	1,160	-880
Nov. 30.....	1,825.5	412	-748
Dec. 31.....	1,845.4	1,610	+1,198
CAL YR 1998.....	-	-	+640
Jan. 31.....	a1,865.5	3,840	+2,230
Feb. 28.....	a1,866.0	3,920	+80
Mar. 31.....	1,865.4	3,830	-90
Apr. 30.....	1,865.1	3,780	-50
May 31.....	a1,865.0	3,770	-10
June 30.....	1,863.8	3,600	-170
July 31.....	a1,861.5	3,280	-320
Aug. 31.....	1,856.4	2,660	-620
Sept. 30.....	1,850.7	2,080	-580
WTR YR 1999.....	-	-	+40

a Interpolated.

NESTUCCA RIVER BASIN

14302900 NESTUCCA RIVER NEAR FAIRDALE, OR

LOCATION.--Lat 45°18'40", long 123°25'05", in SW 1/4 NW 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, on right bank 100 ft upstream from former Meadow Lake, 0.4 mi downstream from Walker Creek, 5.3 mi southwest of Fairdale, and at mile 49.3.

DRAINAGE AREA.--6.18 mi².

PERIOD OF RECORD.--June 1960 to current year.

REVISED RECORDS.--WDR OR-97-1: 1994-95 (adjusted discharge).

GAGE.--Water-stage recorder. Datum of gage is 1,778.99 ft above sea level (levels by city of McMinnville).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1969 by McGuire Lake about 1 mi upstream from gage (station 14302800). During winter months lake is empty except when inflow exceeds capacity of outlet tunnel. Trans-basin diversion upstream from station to Haskins Creek Basin (see station 14196001). About 1,580 acre-ft diverted during the 1998 water year, primarily during summer and fall.

AVERAGE DISCHARGE.--39 years (water years 1961-99), 31.9 ft³/s, 70.10 in/yr, 23,110 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 876 ft³/s Dec. 22, 1964, gage height, 10.43 ft; minimum discharge, 0.41 ft³/s Sept. 11, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 781 ft³/s Feb. 24, gage height, 9.39 ft; minimum discharge, 0.76 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.96	42	175	49	88	192	48	15	8.0	2.6	1.6	1.5
2	3.4	42	286	36	134	129	43	21	7.9	2.8	1.5	1.4
3	5.4	42	170	28	116	116	43	32	7.2	2.4	1.4	1.3
4	4.5	44	131	23	113	95	39	37	6.9	2.9	1.4	1.2
5	5.2	48	112	19	100	78	39	31	7.0	3.2	1.4	1.2
6	10	48	100	17	260	65	36	28	7.3	2.8	1.6	1.3
7	9.7	47	102	15	343	56	34	32	8.1	2.5	1.9	1.2
8	10	44	94	13	187	53	35	30	8.2	2.5	1.9	1.2
9	14	42	80	12	118	48	34	26	7.4	2.3	1.6	1.2
10	12	47	63	11	85	44	47	24	6.8	2.4	1.5	1.2
11	11	44	114	12	66	40	47	23	6.1	2.1	1.4	1.1
12	13	41	168	11	53	46	45	22	5.6	2.2	1.5	1.1
13	20	39	176	10	56	64	44	20	5.2	2.2	1.5	1.1
14	16	38	126	22	47	70	42	19	4.7	2.1	1.4	1.5
15	13	46	100	25	43	63	40	18	4.5	2.2	1.3	1.1
16	12	41	82	45	62	57	39	17	4.6	2.1	1.3	1.0
17	11	37	61	100	89	49	39	21	4.4	2.1	1.3	1.0
18	11	54	33	134	136	43	37	23	4.5	2.0	1.2	1.1
19	11	60	16	119	188	38	35	20	4.3	1.9	1.2	1.1
20	10	152	16	128	129	36	32	18	4.3	1.8	1.2	1.1
21	10	185	14	137	108	34	29	17	4.6	1.8	1.2	1.1
22	9.9	156	11	91	236	33	26	15	2.7	1.8	1.1	1.1
23	22	149	9.8	60	293	32	23	14	2.7	1.7	1.1	1.1
24	45	176	12	58	683	46	21	13	2.8	1.7	1.1	1.1
25	45	406	39	62	369	39	19	12	3.1	1.8	1.1	1.3
26	44	277	46	55	189	39	18	11	2.8	1.7	1.2	1.2
27	44	166	133	54	335	39	18	10	2.7	1.6	1.2	1.2
28	45	129	239	163	348	41	17	9.5	2.8	1.6	1.2	1.5
29	44	126	171	206	---	63	16	8.9	2.8	1.5	1.3	1.2
30	43	126	103	173	---	61	15	8.4	2.6	1.5	1.4	.94
31	43	---	71	121	---	55	---	8.0	---	1.6	1.8	---
TOTAL	598.06	2894	3053.8	2009	4974	1864	1000	603.8	152.6	65.4	42.8	35.64
MEAN	19.3	96.5	98.5	64.8	178	60.1	33.3	19.5	5.09	2.11	1.38	1.19
MAX	45	406	286	206	683	192	48	37	8.2	3.2	1.9	1.5
MIN	.96	37	9.8	10	43	32	15	8.0	2.6	1.5	1.1	.94
AC-FT	1190	5740	6060	3980	9870	3700	1980	1200	303	130	85	71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1999, BY WATER YEAR (WY)

	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
MEAN	15.8	59.2	71.6	56.2	50.4	42.5	31.0	15.8	8.40	3.95	2.88	5.13																		
MAX	87.9	133	153	132	178	98.5	83.0	30.5	18.8	9.49	9.11	16.2																		
(WY)	1998	1984	1978	1970	1999	1983	1996	1984	1981	1975	1975	1971																		
MIN	.91	6.08	17.9	4.38	8.42	6.64	7.17	6.70	2.91	1.13	.84	.93																		
(WY)	1988	1988	1979	1977	1977	1992	1977	1973	1992	1992	1995	1988																		

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1970 - 1999

	1998	1999	1970-1999
ANNUAL TOTAL	13670.34	17293.10	
ANNUAL MEAN	37.5	47.4	30.1
HIGHEST ANNUAL MEAN			47.4
LOWEST ANNUAL MEAN			10.3
HIGHEST DAILY MEAN	406	Nov 25	683
LOWEST DAILY MEAN	.76	Sep 30	.48
ANNUAL SEVEN-DAY MINIMUM	.87	Sep 2	.54
ANNUAL RUNOFF (AC-FT)	27120	34300	21830
10 PERCENT EXCEEDS	100	130	79
50 PERCENT EXCEEDS	18	20	14
90 PERCENT EXCEEDS	1.1	1.3	1.9

NESTUCCA RIVER BASIN

319

14303200 TUCCA CREEK NEAR BLAINE, OR

LOCATION.--Lat 45°19'28", long 123°32'43", in SE 1/4 NW 1/4 sec.9, T.3 S., R.7 W., Tillamook County, Hydrologic Unit 17100203, on right bank at road bridge, 80 ft upstream from confluence with Elk Creek, and 8 mi northeast of Blaine.

DRAINAGE AREA.--3.09 mi².

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair.

AVERAGE DISCHARGE.--16 years (water years 1984-99), 17.7 ft³/s, 77.99 in/yr, 12,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 680 ft³/s Feb. 6, 1996, gage height, 4.30 ft, from rating curve extended above 190 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.49 ft, Dec. 27, 1998; minimum discharge, 0.46 ft³/s Sept. 30, Oct. 1, 2, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 180 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	1700	352	4.91	Feb. 7	0015	211	4.25
Dec. 2	0915	189	4.11	Feb. 24	1300	349	4.90
Dec. 27	2245	*528	*5.49	Feb. 28	0500	204	4.21

Minimum discharge, 1.0 ft³/s Sept. 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	3.4	56	66	59	105	24	11	9.3	5.0	2.5	1.9
2	2.8	3.7	163	51	74	66	22	14	8.9	4.9	2.5	1.7
3	4.7	3.8	98	41	78	52	21	19	8.8	4.9	2.4	1.6
4	4.9	5.8	61	34	72	42	19	21	8.5	4.9	2.3	1.5
5	2.4	9.0	46	28	74	36	18	21	8.5	4.7	2.3	1.5
6	1.9	9.9	39	24	131	31	18	21	8.4	4.6	2.5	1.5
7	1.7	11	38	21	191	27	17	20	8.5	4.6	2.9	1.4
8	2.4	10	39	19	112	25	17	19	8.3	4.5	2.6	1.4
9	9.2	9.7	37	18	77	22	17	18	8.0	4.2	2.4	1.3
10	6.2	11	37	17	57	20	18	17	7.8	4.0	2.3	1.2
11	4.3	10	66	16	46	19	18	16	7.7	4.0	2.2	1.2
12	4.8	9.0	113	16	40	20	18	16	7.5	3.9	2.2	1.2
13	8.9	8.5	119	15	37	26	19	15	7.1	3.8	2.2	1.2
14	8.1	8.4	80	25	33	35	19	15	6.5	3.9	2.2	1.1
15	7.2	17	52	35	32	36	19	14	6.5	3.8	2.1	1.1
16	6.0	16	42	46	40	33	19	14	6.4	3.7	2.0	1.2
17	5.5	17	34	73	54	28	19	15	6.2	3.7	1.9	1.2
18	5.1	18	29	134	82	24	19	16	6.2	3.6	1.8	1.2
19	4.5	19	25	128	125	22	18	16	6.2	3.5	1.8	1.1
20	4.1	68	22	110	94	20	17	16	6.2	3.4	1.8	1.1
21	3.8	115	20	158	74	19	16	16	6.1	3.3	1.7	1.1
22	3.3	79	18	109	125	19	15	15	5.9	3.4	1.7	1.1
23	3.0	69	17	78	178	17	14	14	5.7	3.3	1.6	1.0
24	2.9	74	19	58	281	18	14	13	5.6	3.1	1.6	1.1
25	3.3	244	32	48	181	17	13	13	6.3	3.1	1.7	1.3
26	2.9	220	49	40	95	17	13	12	5.7	2.9	1.7	1.1
27	3.0	96	165	36	131	17	12	11	5.5	2.8	1.7	1.1
28	3.9	53	311	98	170	17	11	11	5.2	2.7	1.7	1.1
29	3.3	44	264	134	---	24	11	10	5.1	2.7	1.7	1.1
30	3.0	42	192	105	---	29	11	9.7	5.1	2.7	1.8	1.1
31	3.3	---	102	79	---	27	---	9.4	---	2.6	2.3	---
TOTAL	131.7	1304.2	2385	1860	2743	910	506	468.1	207.7	116.2	64.1	37.7
MEAN	4.25	43.5	76.9	60.0	98.0	29.4	16.9	15.1	6.92	3.75	2.07	1.26
MAX	9.2	244	311	158	281	105	24	21	9.3	5.0	2.9	1.9
MIN	1.3	3.4	17	15	32	17	11	9.4	5.1	2.6	1.6	1.0
AC-FT	261	2590	4730	3690	5440	1800	1000	928	412	230	127	75
CFSM	1.37	14.1	24.9	19.4	31.7	9.50	5.46	4.89	2.24	1.21	.67	.41
IN.	1.59	15.70	28.71	22.39	33.02	10.96	6.09	5.64	2.50	1.40	.77	.45

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	6.64	32.8	36.4	34.9	36.4	24.8	18.3	10.4	6.54	3.11	1.77	1.98				
MAX	29.2	66.1	98.5	60.0	98.0	42.4	41.4	18.7	12.0	4.49	2.44	7.64				
(WY)	1998	1996	1997	1999	1999	1997	1996	1984	1990	1997	1997	1997				
MIN	.95	1.76	15.9	12.2	10.3	6.59	9.28	4.02	2.40	1.65	1.11	.91				
(WY)	1988	1994	1987	1985	1993	1992	1990	1989	1992	1992	1986	1987				

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1984 - 1999

ANNUAL TOTAL	8049.6	10733.7	
ANNUAL MEAN	22.1	29.4	17.7
HIGHEST ANNUAL MEAN			29.4
LOWEST ANNUAL MEAN			10.5
HIGHEST DAILY MEAN	311	Dec 28	460
LOWEST DAILY MEAN	1.1	Aug 31	.55
ANNUAL SEVEN-DAY MINIMUM	1.1	Aug 31	.63
ANNUAL RUNOFF (AC-FT)	15970	21290	12850
ANNUAL RUNOFF (CFSM)	7.14	9.52	5.74
ANNUAL RUNOFF (INCHES)	96.91	129.22	77.99
10 PERCENT EXCEEDS	55	79	41
50 PERCENT EXCEEDS	9.2	14	8.8
90 PERCENT EXCEEDS	1.3	1.7	1.4

14305500 SILETZ RIVER AT SILETZ, OR

LOCATION.--Lat 44°42'55", long 123°53'10", in NW 1/4 SW 1/4 sec.11, T.10 S., R.10 W., Lincoln County, Hydrologic Unit 17100204, on right bank, 1.8 mi downstream from Baker Creek, 1.5 mi east of Siletz, and at mile 42.6.

DRAINAGE AREA.--202 mi².

PERIOD OF RECORD.--October 1905 to December 1908, January 1910 to November 1911, January 1912 to April 1912, December 1924 to current year. Monthly discharges, January to December 1909, published in WSP 1318.

REVISED RECORDS.--WSP 1935: 1943, 1947-49(M), 1953-58(M).

GAGE.--Water-stage recorder. Datum of gage is 102.32 ft above sea level. Oct. 1, 1905, to Sept 30, 1938, nonrecording gage at various sites within 2.5 mi downstream at different datums.

REMARKS.--Records good. Slight regulation from logponds. Small diversions upstream from station for irrigation. Continuous water-quality records for the period February 1972 to September 1985 have been collected at this location.

AVERAGE DISCHARGE.--78 years (water years 1906-08, 1911, 1926-99), 1,523 ft³/s, 102.44 in/yr, 1,103,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,500 ft³/s Dec. 28, 1998, gage height, 24.70 ft, from rating curve extended above 21,700 ft³/s; maximum gage height, 27.32 ft Jan. 28, 1965; minimum discharge, 47 ft³/s Oct. 20, 21, 29, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 20, 1921, reached a stage of 31.6 ft, at site 2.5 mi downstream at different datum, from floodmark, discharge, 40,800 ft³/s, from rating curve extended above 17,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2300	16,200	15.09	Dec. 28	0700	*40,500	*24.70
Nov. 26	0300	19,200	16.49	Feb. 24	1700	17,800	15.88
Dec. 2	0730	19,700	16.73	Feb. 27	2130	23,100	18.20

Minimum discharge, 63 ft³/s Sept. 22-24, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	226	5170	5330	3270	6920	2180	597	578	231	120	111
2	180	291	15300	3830	5160	4650	1870	1300	544	228	117	98
3	181	313	7710	2910	5000	3910	1720	2520	506	223	114	89
4	255	795	4600	2300	4460	3400	1540	2290	476	225	112	84
5	195	1550	3450	1880	4070	2940	1450	1830	493	217	111	81
6	141	1620	2950	1620	7650	2510	1310	1560	495	202	111	85
7	122	1410	3220	1500	8590	2130	1220	1570	480	216	128	83
8	117	1160	4070	1280	5760	1930	1220	1490	483	218	162	79
9	192	953	3330	1140	4120	1810	1120	1360	432	194	135	76
10	456	918	2820	1030	3200	1660	1270	1240	406	183	120	74
11	299	869	7860	1010	2570	1510	1240	1200	378	176	114	73
12	256	759	8710	1010	2180	1570	1180	1170	357	170	114	71
13	793	686	7720	942	2110	2360	1120	1100	343	165	112	67
14	797	633	5260	1700	1950	2550	1060	1100	330	160	114	66
15	653	1220	3690	3430	1770	2240	1020	1060	321	159	116	68
16	528	1600	2780	3520	2050	1940	1010	996	312	159	109	68
17	416	1270	2200	5640	2800	1700	1040	1470	297	167	104	68
18	357	1170	1810	8670	4220	1530	1030	2400	291	158	102	68
19	297	1140	1520	6990	6980	1370	986	2190	286	151	103	67
20	256	6330	1300	8170	4470	1270	970	1780	273	147	101	65
21	229	9960	1130	10100	3330	1200	879	1500	299	148	100	64
22	212	5780	1020	7620	6290	1130	811	1300	270	146	96	63
23	198	4530	923	6200	8910	1090	749	1150	253	141	93	63
24	187	4220	972	4530	15500	1280	722	1050	257	138	90	64
25	210	13600	4610	3350	e10700	1250	717	959	338	141	89	73
26	203	15000	6610	2590	e6800	1250	697	869	299	135	89	79
27	186	7250	10800	2100	13200	1290	719	792	258	130	86	70
28	222	4450	36700	5380	13700	1370	646	729	242	127	85	67
29	218	4050	22800	6500	---	2820	585	678	232	127	85	64
30	195	4220	13300	5630	---	3040	554	626	226	125	86	63
31	192	---	7950	4280	---	2620	---	592	---	121	104	---
TOTAL	8822	97973	202285	122182	160810	68240	32635	40468	10755	5228	3322	2211
MEAN	285	3266	6525	3941	5743	2201	1088	1305	358	169	107	73.7
MAX	797	15000	36700	10100	15500	6920	2180	2520	578	231	162	111
MIN	79	226	923	942	1770	1090	554	592	226	121	85	63
AC-FT	17500	194300	401200	242300	319000	135400	64730	80270	21330	10370	6590	4390
CFSM	1.41	16.2	32.3	19.5	28.4	10.9	5.39	6.46	1.77	.83	.53	.36
IN.	1.62	18.04	37.25	22.50	29.61	12.57	6.01	7.45	1.98	.96	.61	.41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1999, BY WATER YEAR (WY)

	731	2447	3357	3276	2982	2235	1500	837	493	224	131	199
MEAN	731	2447	3357	3276	2982	2235	1500	837	493	224	131	199
MAX	3412	6207	7828	7664	6055	4560	3560	2579	1602	602	419	1138
(WY)	1927	1907	1934	1953	1949	1932	1937	1933	1906	1910	1968	1959
MIN	50.1	72.4	401	518	752	557	387	233	144	99.7	64.5	58.6
(WY)	1988	1930	1977	1977	1973	1941	1926	1939	1928	1992	1992	1965

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1906 - 1999
ANNUAL TOTAL	641549	754931	
ANNUAL MEAN	1758	2068	1523
HIGHEST ANNUAL MEAN			2337
LOWEST ANNUAL MEAN			660
HIGHEST DAILY MEAN	36700	Dec 28	36700
LOWEST DAILY MEAN	61	Sep 16	47
ANNUAL SEVEN-DAY MINIMUM	63	Sep 11	65
ANNUAL RUNOFF (AC-FT)	1273000	1497000	1103000
ANNUAL RUNOFF (CFSM)	8.70	10.2	7.54
ANNUAL RUNOFF (INCHES)	118.15	139.03	102.44
10 PERCENT EXCEEDS	4600	5690	3850
50 PERCENT EXCEEDS	603	959	760
90 PERCENT EXCEEDS	94	92	105

e Estimated

LOCATION.--Lat 44°14'53", long 123°38'07", in NE 1/4 SE 1/4 sec.22, T.15 S., R.8 W., Benton County, Hydrologic Unit 17100205, on left bank 500 ft upstream from Lobster Creek, and 9 mi south of Alsea.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,360 ft³/s Feb. 7, 1996, gage height, 5.37 ft, from rating curve extended above 900 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.17 ft³/s Sept. 27, 28, Oct. 2, 1987.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 26	0045	462	4.07	Jan. 20	1700	334	3.78
Dec. 2	0515	441	4.02	Feb. 6	1515	372	3.88
Dec. 28	0630	*635	*4.41	Feb. 23	2345	471	4.10
Jan. 17	2015	476	4.11	Feb. 27	2115	554	4.26

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.94	2.4	147	103	94	169	77	9.4	7.7	2.8	1.5	1.0
2	1.5	2.6	326	74	116	115	66	19	7.2	2.8	1.4	.93
3	2.2	2.8	143	56	113	123	60	47	6.7	2.9	1.4	.85
4	1.7	3.6	82	44	125	109	53	55	6.3	2.9	1.4	.81
5	1.3	6.6	59	35	122	83	51	48	6.3	2.7	1.5	.79
6	1.1	14	50	29	262	64	47	36	6.2	2.6	1.6	.81
7	1.0	11	64	26	295	51	44	36	6.0	2.7	2.6	.76
8	1.1	8.5	80	22	173	45	43	39	5.6	2.6	2.6	.73
9	2.2	5.7	60	19	116	40	38	35	5.3	2.3	1.9	.70
10	2.2	6.6	46	18	86	34	46	31	5.1	2.2	1.6	.72
11	1.5	6.6	103	20	74	30	52	30	4.8	2.0	1.5	.71
12	1.6	5.0	126	21	64	30	49	29	4.5	2.0	1.5	.67
13	5.5	4.3	111	21	70	39	45	28	4.3	1.9	1.5	.65
14	4.2	3.9	80	55	64	36	40	29	4.1	1.9	1.5	.65
15	3.3	9.2	58	124	57	32	38	29	4.1	1.9	1.4	.65
16	2.8	11	44	154	65	27	38	26	4.0	1.9	1.3	.65
17	2.1	7.9	36	266	98	24	37	38	3.8	1.9	1.3	.66
18	1.9	7.4	29	289	203	22	35	51	3.8	1.9	1.2	.68
19	1.7	7.6	25	231	199	19	31	46	3.6	1.8	1.3	.67
20	1.5	133	21	267	122	17	27	37	3.6	1.7	1.2	.62
21	1.4	184	18	262	101	15	24	31	4.1	1.8	1.2	.61
22	1.3	99	17	251	213	14	21	26	3.5	1.8	1.1	.60
23	1.2	84	16	227	359	13	18	22	3.2	1.7	1.1	.61
24	1.4	125	16	148	372	19	16	18	3.5	1.7	1.0	.60
25	1.5	268	55	103	254	20	14	16	3.9	1.8	.97	.58
26	1.4	300	79	77	169	25	13	14	3.4	1.6	.96	.58
27	1.6	116	178	60	286	40	13	12	3.2	1.5	.94	.60
28	2.3	68	514	147	317	57	12	11	3.1	1.5	.92	.58
29	2.1	61	307	160	---	164	11	9.4	2.9	1.5	.89	.53
30	1.9	151	164	164	---	126	9.7	8.4	2.9	1.5	1.1	.53
31	2.0	---	136	127	---	96	---	7.8	---	1.5	1.2	---
TOTAL	59.44	1715.7	3190	3600	4589	1698	1068.7	874.0	136.7	63.3	42.58	20.53
MEAN	1.92	57.2	103	116	164	54.8	35.6	28.2	4.56	2.04	1.37	.68
MAX	5.5	300	514	289	372	169	77	55	7.7	2.9	2.6	1.0
MIN	.94	2.4	16	18	57	13	9.7	7.8	2.9	1.5	.89	.53
AC-FT	118	3400	6330	7140	9100	3370	2120	1730	271	126	84	41
CFSM	.34	10.0	18.1	20.4	28.8	9.61	6.25	4.95	.80	.36	.24	.12
IN.	.39	11.20	20.82	23.49	29.95	11.08	6.97	5.70	.89	.41	.28	.13

MEAN	5.74	42.1	52.9	58.0	60.7	39.4	26.5	15.3	8.56	2.46	1.29	1.44
MAX	32.4	115	137	116	164	77.1	49.5	28.2	21.3	3.88	1.92	4.51
(WY)	1998	1985	1997	1999	1999	1997	1993	1999	1985	1984	1996	1997
MIN	.39	1.41	17.6	16.0	13.4	11.5	10.4	5.99	1.83	1.40	.52	.66
(WY)	1988	1994	1990	1985	1993	1992	1987	1994	1992	1992	1992	1987

WATER YEARS 1984 - 1999

ANNUAL TOTAL	12146.13			17057.95					
ANNUAL MEAN	33.3			46.7			26.0		
HIGHEST ANNUAL MEAN							46.7		1999
LOWEST ANNUAL MEAN							16.2		1994
HIGHEST DAILY MEAN	514	Dec	28	514	Dec	28	817	Feb	7 1996
LOWEST DAILY MEAN	.71	Sep	6	.53	Sep	29	.25	Oct	13 1991
ANNUAL SEVEN-DAY MINIMUM	.73	Sep	4	.57	Sep	24	.29	Oct	9 1991
ANNUAL RUNOFF (AC-FT)	24090			33830			18840		
ANNUAL RUNOFF (CFSM)	5.84			8.20			4.56		
ANNUAL RUNOFF (INCHES)	79.27			111.33			62.00		
10 PERCENT EXCEEDS	93			145			64		
50 PERCENT EXCEEDS	11			13			11		
90 PERCENT EXCEEDS	1.0			1.0			1.0		

ALSEA RIVER BASIN

14306500 ALSEA RIVER NEAR TIDEWATER, OR

LOCATION.--Lat 44°23'10", long 123°49'50", in NW 1/4 NW 1/4 sec.6, T.14 S., R.9 W., Lincoln County, Hydrologic Unit 17100205, on right bank 0.9 mi downstream from Grass Creek, 2.5 mi upstream from Scott Creek, 3.8 mi southeast of Tidewater, and at mile 21.0.

DRAINAGE AREA.--334 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 48.16 ft above sea level. Prior to Nov. 16, 1939, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Diversion for irrigation upstream from station. Continuous water-quality records for the period October 1979 to September 1981 have been collected at this location.

AVERAGE DISCHARGE.--60 years (water years 1940-99), 1,492 ft³/s, 60.23 in/yr, 1,081,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,800 ft³/s Dec. 22, 1964, gage height, 27.44 ft; minimum discharge, 45 ft³/s Sept. 26, 27, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood on or about Feb. 3, 1890, reached a stage of 29.5 ft, from floodmark (discharge not determined).

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. 26	0700	18,400	17.66	Feb. 7	0630	14,500	15.51
Dec. 2	1000	18,400	17.66	Feb. 24	2000	15,200	15.90
Dec. 28	1230	*32,500	*24.04	Feb. 28	0130	18,500	17.72
Jan. 18	0130	15,100	15.89				

Minimum discharge, 69 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	143	6740	5160	4060	8970	3620	631	549	260	138	110
2	122	155	15300	4010	4770	6300	2990	828	536	259	135	104
3	148	167	9060	3240	5000	5550	2650	1380	518	258	131	97
4	163	313	5530	2690	4650	5060	2370	1560	496	256	127	92
5	168	740	4170	2290	4560	4370	2190	1380	491	250	125	89
6	133	719	3810	2000	9150	3670	1970	1180	486	235	129	89
7	115	810	3710	1800	13400	3100	1810	1160	476	236	181	88
8	110	747	4390	1600	8690	2760	1770	1250	466	234	244	85
9	155	554	3860	1450	6100	2490	1630	1180	442	221	181	83
10	255	471	3180	1340	4730	2290	1670	1090	423	208	153	81
11	186	472	3880	1310	3830	2050	1670	1060	404	199	140	80
12	163	405	5510	1290	3280	1960	1580	1000	388	193	137	79
13	325	346	5750	1160	3070	2230	1470	955	377	189	134	76
14	409	307	4620	1450	2790	2120	1370	957	362	183	131	74
15	311	450	3620	3490	2470	1930	1280	941	354	178	131	75
16	277	636	2950	4060	1780	1220	890	352	177	128	128	75
17	217	539	2460	6980	3530	1630	1170	999	341	183	122	77
18	181	498	2100	13100	5800	1550	1090	1220	337	178	117	77
19	160	482	1840	10600	8400	1420	1030	1180	331	171	118	77
20	143	3080	1630	10200	5490	1320	973	1070	319	166	117	75
21	132	8430	1430	11500	4450	1240	913	971	347	165	115	73
22	125	4580	1310	9500	6630	1190	874	891	330	164	113	72
23	119	3530	1210	9530	11100	1100	825	824	307	161	108	71
24	118	5200	1190	6940	14700	1290	788	769	302	155	104	72
25	124	11900	2390	5020	12100	1270	758	728	342	156	102	77
26	123	15200	3950	3890	8410	1290	735	692	321	155	100	78
27	122	7930	5370	3110	10300	1510	766	657	296	150	99	75
28	141	4850	28200	4390	14900	1810	717	628	279	146	97	73
29	153	4080	16300	5810	---	5240	680	603	267	143	94	72
30	137	5740	8700	6110	---	5460	647	579	259	141	97	70
31	131	---	6550	5280	---	4500	---	556	---	140	108	---
TOTAL	5259	83474	170710	150300	189010	88480	43226	29809	11498	5910	3956	2416
MEAN	170	2782	5507	4848	6750	2854	1441	962	383	191	128	80.5
MAX	409	15200	28200	13100	14900	8970	3620	1560	549	260	244	110
MIN	93	143	1190	1160	2470	1130	647	556	259	140	94	70
AC-FT	10430	165600	338600	298100	374900	175500	85740	59130	22810	11720	7850	4790
CFSM	.51	8.33	16.5	14.5	20.2	8.55	4.31	2.88	1.15	.57	.38	.24
IN.	.59	9.30	19.01	16.74	21.05	9.85	4.81	3.32	1.28	.66	.44	.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1999, BY WATER YEAR (WY)

MEAN	378	1777	3317	3566	3317	2478	1504	806	410	193	118	130
MAX	2521	6058	7419	7874	6909	5144	3203	1848	1053	363	234	452
(WY)	1948	1974	1965	1953	1996	1961	1963	1963	1993	1983	1968	1941
MIN	62.0	108	182	211	607	604	550	331	178	116	65.6	60.1
(WY)	1988	1994	1977	1977	1977	1941	1977	1966	1966	1992	1966	1965

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1940 - 1999
ANNUAL TOTAL	653274	784048	
ANNUAL MEAN	1790	2148	1492
HIGHEST ANNUAL MEAN			2541
LOWEST ANNUAL MEAN			431
HIGHEST DAILY MEAN	28200	28200	36100
LOWEST DAILY MEAN	75	70	47
ANNUAL SEVEN-DAY MINIMUM	79	74	51
ANNUAL RUNOFF (AC-FT)	1296000	1555000	1081000
ANNUAL RUNOFF (CFSM)	5.36	6.43	4.47
ANNUAL RUNOFF (INCHES)	72.76	87.33	60.68
10 PERCENT EXCEEDS	4900	5770	3850
50 PERCENT EXCEEDS	642	747	650
90 PERCENT EXCEEDS	110	104	99

SIUSLAW RIVER BASIN

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14307620 SIUSLAW RIVER NEAR MAPLETON, OR

LOCATION.--Lat 44°03'45", long 123°52'55", in SW 1/4 NW 1/4 sec.27, T.17 S., R.10 W., Lane County, Hydrologic Unit 17100206, on right bank 250 ft above Shoemaker Creek, 2.5 mi northwest of Mapleton, and at mile 23.7.

DRAINAGE AREA.--588 mi².

PERIOD OF RECORD.--October 1967 to September 1994 (discharge), February 1998 to September 1999 (gage height only).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 41 ft above sea level, from topographic map.

REMARKS.--No regulation or diversions upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 28.45 ft Jan. 21, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1964 reached a stage of about 28 ft, from information by local residents (discharge not determined). Flood of Feb. 7, 1996 reached a stage of 30.21 ft, present datum, from floodmark, discharge, 54,800 ft³/s, from rating curve extended above 40,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 25.79 ft Dec. 28; minimum gage height, 2.85 ft Sept. 28-30.

EXTREMES FOR PERIOD FEBRUARY - SEPTEMBER 1998.--Maximum recorded gage height, 13.20 ft Feb. 22; minimum gage height, 2.89 ft Sept. 17.

GAGE HEIGHT, FEET, FEBRUARY TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	7.01	7.92	6.45	4.60	5.89	---	---	3.00
2	---	---	---	---	6.96	8.15	6.23	4.66	5.53	---	---	2.99
3	---	---	---	---	6.86	8.33	6.05	4.61	5.29	---	---	2.97
4	---	---	---	---	6.86	9.18	5.91	4.53	5.11	---	---	2.95
5	---	---	---	---	6.95	8.68	5.78	4.48	4.98	---	---	2.94
6	---	---	---	---	7.14	7.90	5.68	4.43	4.86	---	---	2.94
7	---	---	---	---	7.03	7.33	5.62	4.38	4.75	---	3.19	2.93
8	---	---	---	---	7.77	7.13	5.51	4.36	4.67	---	3.18	2.92
9	---	---	---	---	8.37	6.89	5.47	4.36	4.60	---	3.17	2.93
10	---	---	---	---	8.06	6.68	5.60	4.33	4.58	---	3.17	2.92
11	---	---	---	---	8.69	6.54	5.84	4.31	4.54	---	3.16	2.92
12	---	---	---	---	9.31	6.46	5.96	4.35	4.47	---	3.15	2.92
13	---	---	---	---	10.49	6.89	5.85	4.48	4.40	---	3.14	2.92
14	---	---	---	---	9.69	6.78	5.72	4.57	4.34	---	3.12	2.91
15	---	---	---	---	9.33	6.51	5.66	4.81	4.29	---	3.10	2.91
16	---	---	---	---	9.17	6.27	5.54	5.07	4.26	---	3.10	2.98
17	---	---	---	---	8.48	6.07	5.41	5.20	4.23	---	3.10	2.90
18	---	---	---	---	7.98	5.90	5.30	5.25	4.19	---	3.09	2.99
19	---	---	---	---	8.06	5.75	5.21	5.20	4.17	---	3.09	3.35
20	---	---	---	---	8.05	5.63	5.11	5.50	4.13	---	3.09	3.20
21	---	---	---	---	11.47	5.83	5.03	6.77	4.08	---	3.08	3.10
22	---	---	---	---	12.89	10.60	4.96	6.62	4.05	---	3.07	3.06
23	---	---	---	---	11.17	11.10	5.00	5.99	---	---	3.07	3.04
24	---	---	---	---	9.36	10.52	5.02	5.66	---	---	3.08	3.03
25	---	---	---	---	8.37	9.14	4.96	5.51	---	---	3.09	3.04
26	---	---	---	---	7.69	8.27	4.87	5.40	---	---	3.07	3.09
27	---	---	---	---	7.20	7.88	4.79	5.29	---	---	3.06	3.07
28	---	---	---	---	7.57	7.59	4.72	5.18	---	---	3.04	3.03
29	---	---	---	---	---	7.19	4.67	5.38	---	---	3.03	3.01
30	---	---	---	---	---	6.84	4.61	6.42	---	---	3.01	3.00
31	---	---	---	---	---	6.67	---	6.44	---	---	3.01	---
MEAN	---	---	---	---	8.50	7.50	5.42	5.10	---	---	---	3.00
MAX	---	---	---	---	12.89	11.10	6.45	6.77	---	---	---	3.35
MIN	---	---	---	---	6.86	5.63	4.61	4.31	---	---	---	2.90

SIUSLAW RIVER BASIN

14307620 SIUSLAW RIVER NEAR MAPLETON, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.01	3.34	12.36	10.18	8.68	14.22	8.26	4.64	4.39	3.70	3.27	3.16
2	3.13	3.40	18.77	9.00	9.54	11.60	7.61	5.13	4.35	3.69	3.26	3.13
3	3.41	3.46	15.46	8.18	10.36	10.87	7.22	6.14	4.31	3.69	3.24	3.12
4	3.85	3.62	11.88	7.59	9.68	10.69	6.95	6.47	4.27	3.67	3.22	3.10
5	3.54	4.22	9.56	7.13	9.47	10.08	6.78	6.31	4.26	3.66	3.22	3.07
6	3.35	5.02	8.78	6.80	12.19	9.22	6.57	5.90	4.25	3.65	3.24	3.06
7	3.25	5.60	8.95	6.56	15.63	8.46	6.35	5.75	4.23	3.66	3.41	3.05
8	3.22	5.19	10.32	6.31	13.43	7.98	6.23	5.68	4.23	3.64	3.65	3.03
9	3.31	4.73	9.81	6.10	11.35	7.67	6.08	5.54	4.19	3.60	3.50	3.02
10	3.65	4.53	8.71	5.94	10.03	7.35	6.10	5.39	4.13	3.56	3.41	3.00
11	3.50	4.52	9.40	5.92	9.18	7.03	6.17	5.34	4.08	3.52	3.36	2.99
12	3.44	4.37	11.05	5.93	8.67	6.88	6.06	5.26	4.05	3.49	3.33	2.98
13	4.00	4.18	10.46	5.78	8.43	7.06	5.89	5.17	4.02	3.46	3.29	2.97
14	4.16	4.04	9.28	6.36	8.15	6.92	5.73	5.16	3.98	3.43	3.27	2.96
15	3.93	4.30	8.36	9.40	7.73	6.73	5.60	5.17	3.96	3.42	3.26	2.96
16	3.74	4.83	7.69	9.75	7.76	6.50	5.50	5.09	3.95	3.41	3.23	3.00
17	3.59	4.66	7.19	11.70	8.63	6.35	5.40	5.37	3.92	3.43	3.21	2.97
18	3.48	4.60	6.82	16.11	11.36	6.23	5.31	5.89	3.91	3.42	3.20	2.96
19	3.40	4.53	6.52	13.62	13.94	6.08	5.23	5.82	3.89	3.40	3.20	2.95
20	3.33	7.04	6.26	14.23	11.50	5.92	5.16	5.58	3.87	3.38	3.19	2.93
21	3.28	13.88	6.01	17.00	10.00	5.79	5.09	5.37	3.91	3.39	3.18	2.93
22	3.24	11.64	5.81	16.17	11.36	5.67	5.04	5.18	3.90	3.39	3.16	2.93
23	3.21	10.05	5.66	16.22	15.95	5.62	4.97	5.04	3.85	3.36	3.13	2.92
24	3.22	10.23	5.65	13.38	16.47	5.79	4.90	4.91	3.84	3.34	3.13	2.91
25	3.26	12.90	8.23	10.87	14.81	5.81	4.85	4.82	3.89	3.34	3.11	2.92
26	3.24	16.30	10.10	9.45	13.19	5.86	4.81	4.73	3.89	3.33	3.10	2.92
27	3.23	12.14	10.60	8.45	13.80	6.14	4.84	4.66	3.83	3.30	3.07	2.91
28	3.28	9.47	24.47	8.95	17.58	6.55	4.79	4.58	3.78	3.29	3.07	2.90
29	3.29	8.41	21.52	9.94	---	9.01	4.73	4.53	3.75	3.28	3.06	2.89
30	3.26	10.95	15.24	10.16	---	9.66	4.67	4.47	3.71	3.28	3.07	2.89
31	3.26	---	11.83	9.60	---	9.04	---	4.42	---	3.26	3.14	---
MEAN	3.42	6.87	10.41	9.77	11.39	7.70	5.76	5.27	4.02	3.47	3.23	2.98
MAX	4.16	16.30	24.47	17.00	17.58	14.22	8.26	6.47	4.39	3.70	3.65	3.16
MIN	3.01	3.34	5.65	5.78	7.73	5.62	4.67	4.42	3.71	3.26	3.06	2.89

WTR YR 1999 MEAN 6.16 MAX 24.47 MIN 2.89

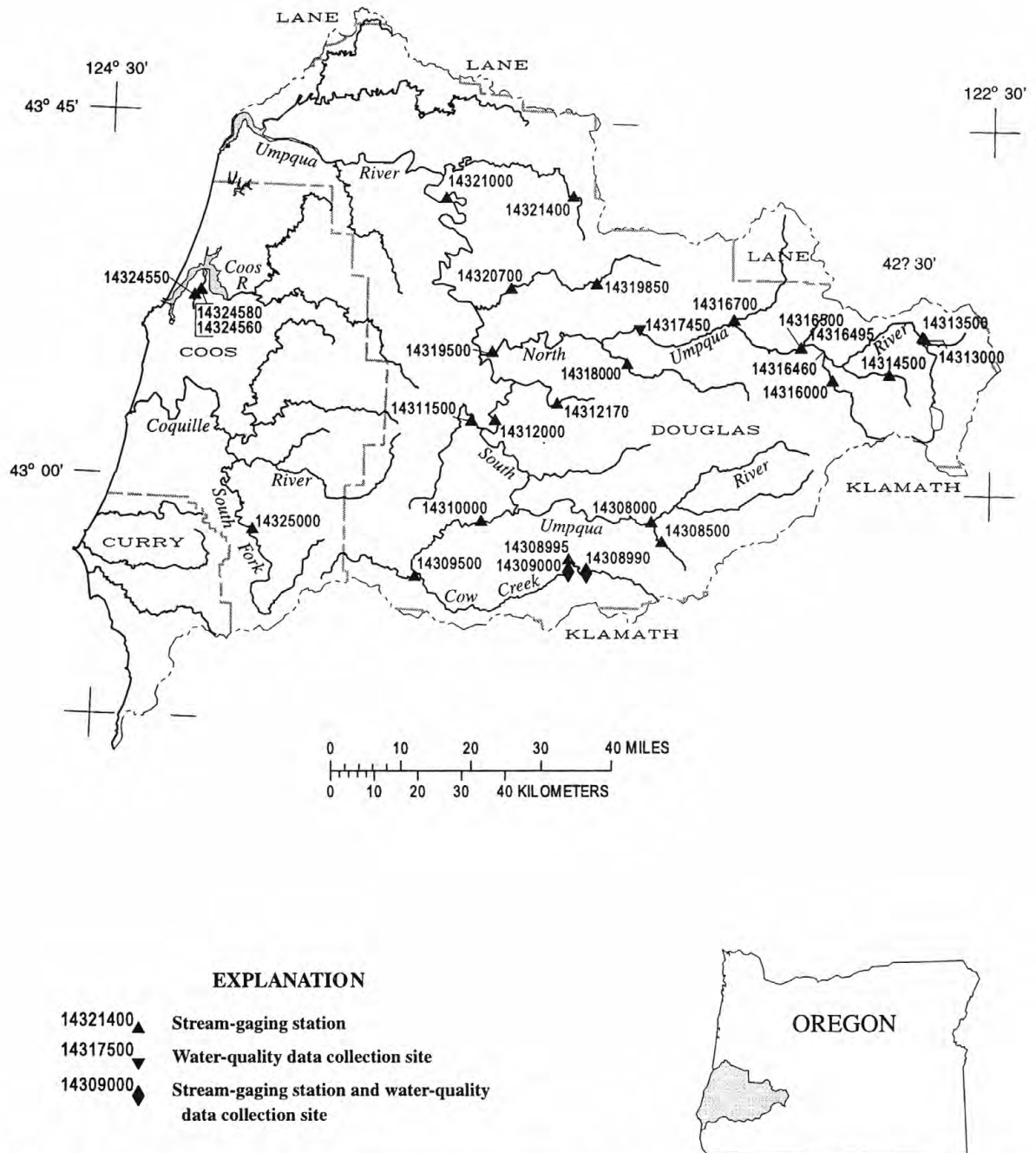


Figure 29. Location of surface-water and water-quality stations in the Umpqua, Coos and Coquille River Basins.

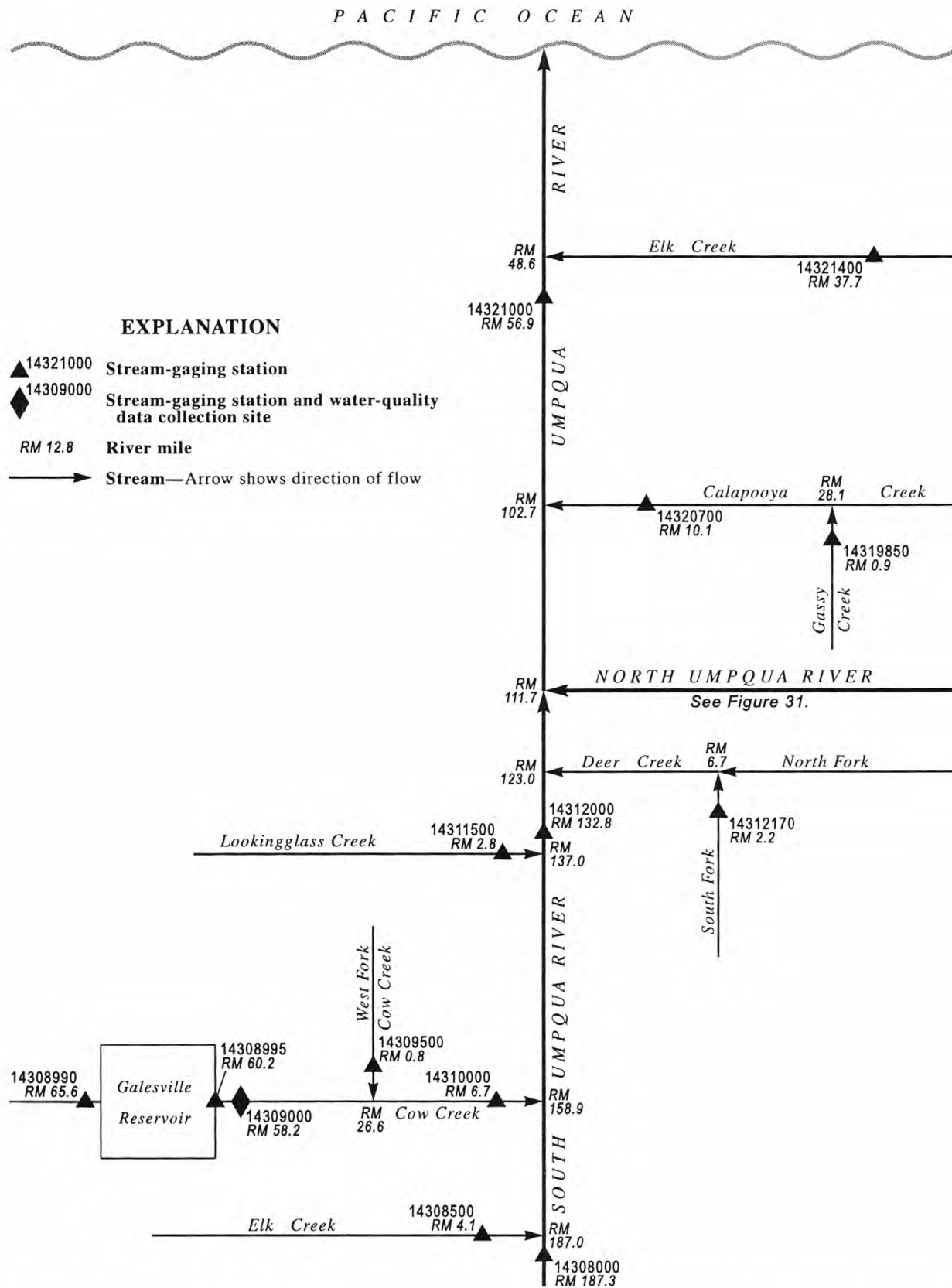


Figure 30. Schematic diagram showing gaging stations in the Umpqua and the South Fork Umpqua River Basins.

UMPQUA RIVER BASIN

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14308000 SOUTH UMPQUA RIVER AT TILLER, OR

LOCATION.--Lat 42°55'50", long 122°56'50", in NE 1/4 sec.33, T.30 S., R.2 W., Douglas County, Hydrologic Unit 17100302, Umpqua National Forest, on left bank 0.3 mi upstream from bridge on State Highway 227 at Tiller, 0.3 mi upstream from Elk Creek, and at mile 187.31.

DRAINAGE AREA.--449 mi².

PERIOD OF RECORD.--October 1910 to December 1911, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1318. Prior to December 1911, published as South Fork of Umpqua River at Tiller.

REVISED RECORDS.--WSP 1448: 1911(M), 1912, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 991.8 ft above sea level (river-profile survey). Prior to Oct. 1, 1939, nonrecording gage at site 0.2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--61 years, (water years 1911, 1940-99), 1,040 ft³/s, 31.46 in/yr, 753,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,200 ft³/s Dec. 22, 1964, gage height, 25.72 ft; minimum discharge observed, 20 ft³/s Sept. 3, 4, 1911.

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)
Nov. 21	1500	*23,300	*15.86	Jan. 18	0030	12,100	11.33
Nov. 24	0500	7,350	8.80	Jan. 22	2400	8,850	9.67
Dec. 2	1800	17,000	13.50	Feb. 7	1200	7,750	9.04
Dec. 28	1500	16,500	13.32	Feb. 28	1000	13,400	11.97
Jan. 15	0600	7,640	8.97				

Minimum discharge, 51 ft³/s Sept. 26.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	125	3190	3370	1010	7080	1210	1080	1230	395	106	96
2	65	160	9630	2490	975	4340	1190	1300	1160	370	104	85
3	84	126	8530	1950	1040	4230	1200	2070	982	344	100	80
4	86	131	3990	1600	1350	3560	1140	2050	845	321	98	76
5	86	271	2580	1350	1380	2760	1160	1740	813	299	99	74
6	74	319	1960	1180	3200	2250	1200	1770	826	282	106	71
7	68	357	1590	1050	6680	1870	1210	1780	757	278	135	70
8	83	566	1660	937	4270	1630	1380	1470	694	266	138	69
9	121	404	1500	845	2690	1500	1340	1240	647	256	120	67
10	121	318	1350	774	1960	1300	1280	1100	623	250	115	65
11	113	461	2070	732	1550	1170	1280	1040	624	249	201	64
12	88	329	2970	798	1390	1160	1540	1250	666	241	143	64
13	112	263	3290	767	1500	1730	1790	1270	745	232	119	62
14	181	259	2620	981	2110	1930	1730	1210	844	218	115	60
15	135	260	1960	6030	1990	1780	1740	1230	930	203	108	58
16	114	373	1600	5610	2020	1620	2030	1140	896	191	102	58
17	105	409	1520	5510	4400	1490	2330	1170	833	182	97	58
18	92	747	1390	8520	5070	1410	2560	1570	775	173	93	58
19	84	646	1200	5290	5290	1530	2380	1650	724	165	89	58
20	80	625	1040	5040	3380	1960	2060	1600	681	158	87	57
21	76	15200	869	6680	2620	1810	1810	1430	652	158	86	56
22	72	8600	814	6030	2130	1680	1510	1420	609	151	84	55
23	70	5980	762	6880	4210	1670	1330	1610	582	143	83	54
24	70	6100	688	3920	4110	1570	1400	1960	578	140	80	53
25	88	3550	754	2740	3970	1770	1580	2070	611	137	82	53
26	102	4150	1210	2150	3020	1620	1550	1840	532	133	77	52
27	87	3640	1680	1710	4170	1440	1330	1710	472	128	75	52
28	101	2290	12100	1450	11000	1280	1130	1710	430	122	74	54
29	116	1720	8590	1290	---	1220	973	1560	408	117	72	53
30	98	2300	4450	1200	---	1220	923	1370	403	112	85	53
31	91	---	3840	1120	---	1220	---	1230	---	109	122	---
TOTAL	2923	60679	91397	89994	88485	62800	45286	46640	21572	6523	3195	1885
MEAN	94.3	2023	2948	2903	3160	2026	1510	1505	719	210	103	62.8
MAX	181	15200	12100	8520	11000	7080	2560	2070	1230	395	201	96
MIN	60	125	688	732	975	1160	923	1040	403	109	72	52
AC-FT	5800	120400	181300	178500	175500	124600	89820	92510	42790	12940	6340	3740
CFSM	.21	4.50	6.57	6.47	7.04	4.51	3.36	3.35	1.60	.47	.23	.14
IN.	.24	5.03	7.57	7.46	7.33	5.20	3.75	3.86	1.79	.54	.26	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1999, BY WATER YEAR (WY)

	198	1074	2054	2103	2015	1732	1414	1084	527	157	78.3	76.1
MEAN	198	1074	2054	2103	2015	1732	1414	1084	527	157	78.3	76.1
MAX	1791	3976	7480	4513	4907	4776	2756	2093	1643	301	206	364
(WY)	1951	1974	1965	1972	1986	1972	1993	1963	1953	1953	1976	1986
MIN	34.5	48.2	66.6	89.7	95.1	328	433	231	108	49.5	29.9	38.9
(WY)	1988	1940	1977	1977	1977	1992	1968	1992	1992	1940	1940	1992

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1911 - 1999
ANNUAL TOTAL	489280	521379	
ANNUAL MEAN	1340	1428	1040
HIGHEST ANNUAL MEAN			1762
LOWEST ANNUAL MEAN			268
HIGHEST DAILY MEAN	15200	Nov 21	36500
LOWEST DAILY MEAN	56	Sep 17	20
ANNUAL SEVEN-DAY MINIMUM	59	Sep 12	26
ANNUAL RUNOFF (AC-FT)	970500	1034000	753200
ANNUAL RUNOFF (CFSM)	2.99	3.18	2.32
ANNUAL RUNOFF (INCHES)	40.54	43.20	31.46
10 PERCENT EXCEEDS	3240	3590	2440
50 PERCENT EXCEEDS	928	973	519
90 PERCENT EXCEEDS	72	76	59

UMPQUA RIVER BASIN

14308500 ELK CREEK NEAR DREW, OR

LOCATION.--Lat 42°53'25", long 122°55'00", in SW 1/4 sec.11, T.31 S., R.2 W., Douglas County, Hydrologic Unit 17100302, on right bank 100 ft downstream from Dixon Creek, 0.1 mi upstream from Drew Creek, 1.3 mi northwest of Drew, 3.3 mi southeast of Tiller, and at mile 4.1.

DRAINAGE AREA.--54.4 mi².

PERIOD OF RECORD.--September 1954 to September 1982, October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,279.25 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. No regulation. Several diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--41 years (water years 1955-82, 1987-99), 80.7 ft³/s, 20.15 in/yr, 58,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s Jan. 9, 1995, gage height, 11.09 ft, from rating curve extended above 2,900 ft³/s on basis of slope-area measurement at gage height 10.34 ft; no flow at times several years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 11.8 ft, from floodmarks, probably for flood in January or November 1953, discharge, about 11,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1130	2,430	7.16	Jan. 22	1500	1,440	6.16
Nov. 23	1000	2,630	6.78	Feb. 6	1300	2,060	6.81
Dec. 2	1700	2,030	6.78	Feb. 18	1300	2,010	6.76
Jan. 17	2130	1,810	6.57	Feb. 28	0530	*2,860	*7.53

Minimum discharge, 0.74 ft³/s Sept. 25, 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	5.6	432	133	54	712	93	54	21	3.4	1.3	1.8
2	1.6	6.3	1230	105	61	449	90	71	20	3.3	1.2	1.5
3	2.1	4.9	911	84	72	513	95	128	19	3.3	1.2	1.3
4	2.4	4.4	362	67	79	393	102	155	17	3.3	1.1	1.1
5	2.2	6.9	217	55	75	299	118	125	16	3.2	1.1	1.0
6	2.0	9.4	161	47	964	234	128	106	14	3.0	1.3	.97
7	1.9	15	144	41	1470	186	124	96	13	3.0	1.8	.93
8	2.6	18	192	35	567	162	148	79	12	2.8	1.9	1.0
9	3.2	14	149	31	322	149	155	68	11	2.6	1.5	1.0
10	3.3	13	124	28	211	123	152	60	9.8	2.3	3.2	.91
11	3.0	23	176	25	157	105	165	59	9.1	2.1	10	.84
12	2.5	13	228	25	144	98	193	75	8.3	2.0	3.1	.82
13	4.6	8.9	245	23	153	98	219	76	7.7	2.0	2.6	.81
14	4.3	7.5	198	23	190	104	196	78	6.9	1.9	2.3	.81
15	3.7	7.3	144	79	158	103	176	94	6.8	2.0	1.9	.79
16	3.6	11	110	107	351	99	179	86	6.8	2.0	1.7	.80
17	3.3	18	94	428	487	94	180	79	6.3	1.9	1.5	.84
18	2.9	32	80	693	1140	90	169	75	6.0	1.8	1.2	.85
19	2.7	28	66	542	739	101	142	68	5.3	1.8	1.2	.89
20	2.6	24	54	686	372	130	119	62	5.6	1.7	1.1	.85
21	2.4	1500	49	815	274	123	103	56	5.8	1.6	1.1	.79
22	2.2	741	50	885	223	113	94	51	5.5	1.6	1.1	.79
23	2.2	1300	50	720	319	129	82	48	4.8	1.5	1.2	.78
24	2.2	693	50	354	361	115	81	44	4.9	1.4	1.1	.77
25	3.2	303	50	228	455	116	84	42	6.8	1.6	1.0	.76
26	3.7	460	45	166	300	105	81	38	5.2	1.6	.95	.75
27	3.4	317	36	121	561	91	72	34	4.7	1.4	.88	.80
28	3.5	180	240	96	1910	77	63	31	4.4	1.4	.86	.86
29	3.8	136	256	81	---	72	55	28	3.9	1.3	.87	.91
30	3.5	385	160	69	---	70	51	26	3.5	1.3	1.3	.86
31	3.4	---	140	62	---	81	---	23	---	1.2	2.5	---
TOTAL	89.6	6285.2	6443	6854	12169	5334	3709	2115	271.1	65.3	55.06	27.88
MEAN	2.89	210	208	221	435	172	124	68.2	9.04	2.11	1.78	.93
MAX	4.6	1500	1230	885	1910	712	219	155	21	3.4	10	1.8
MIN	1.6	4.4	36	23	54	70	51	23	3.5	1.2	.86	.75
AC-FT	178	12470	12780	13590	24140	10580	7360	4200	538	130	109	55
CFSM	.05	3.85	3.82	4.06	7.99	3.16	2.27	1.25	.17	.04	.03	.02
IN.	.06	4.30	4.41	4.69	8.32	3.65	2.54	1.45	.19	.04	.04	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1999, BY WATER YEAR (WY)

MEAN	7.08	71.3	180	213	165	153	100	55.7	18.4	4.02	1.54	1.77
MAX	62.8	449	865	644	435	356	193	192	106	10.8	10.2	18.7
(WY)	1963	1974	1997	1974	1999	1974	1956	1998	1993	1978	1976	1978
MIN	.62	1.89	3.11	4.94	5.05	15.0	20.1	6.94	1.96	.52	.008	.043
(WY)	1988	1994	1977	1977	1977	1992	1990	1987	1987	1994	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1955 - 1999

ANNUAL TOTAL	41698.0	43418.14	
ANNUAL MEAN	114	119	80.7
HIGHEST ANNUAL MEAN			180
LOWEST ANNUAL MEAN			16.0
HIGHEST DAILY MEAN	1500	Nov 21	6670
LOWEST DAILY MEAN	1.0	Sep 5	.00
ANNUAL SEVEN-DAY MINIMUM	1.1	Sep 1	.00
ANNUAL RUNOFF (AC-FT)	82710	86120	58450
ANNUAL RUNOFF (CFSM)	2.10	2.19	1.48
ANNUAL RUNOFF (INCHES)	28.51	29.69	20.15
10 PERCENT EXCEEDS	289	318	196
50 PERCENT EXCEEDS	50	32	19
90 PERCENT EXCEEDS	1.7	1.1	.92

14308990 COW CREEK ABOVE GALESVILLE RESERVOIR, NEAR AZALEA, OR

LOCATION.--Lat 42°49'24", long 123°07'29", in SW 1/4 NW 1/4 sec.1, T.32 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on left bank, about 600 ft upstream from bridge on Houck Ranch Road (BLM), 1.1 mi downstream from Sugar Creek, 3.2 mi south of Galesville Dam, 6.9 mi northeast of Azalea, and at mile 65.6

DRAINAGE AREA.--64.7 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,900 ft above sea level, from topographic map.

REMARKS.--Records good except estimated daily discharges, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period November 1985 to September 1989 have been collected at this location.

AVERAGE DISCHARGE.--14 years (water years 1986-99), 88.5 ft³/s, 18.59 in/yr, 64,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 6,980 ft³/s Jan. 9, 1995, gage height 12.04 ft, from rating curve extended above 2,450 ft³/s; maximum gage height 12.30 ft Jan. 9, 1995 (from outside highwater mark); minimum discharge, 3.5 ft³/s Dec. 26, 1989, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1927 occurred Jan. 15, 1974. Stage and discharge not known at this site, but was 10,600 ft³/s at site 7.4 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	unknown	unknown	unknown	Feb. 7	0700	1,760	6.17
Dec. 2	1600	1,490	5.69	Feb. 18	1400	1,940	6.47
Jan. 17	2230	1,570	5.83	Feb. 28	0630	*2,650	*7.54
Jan. 22	1830	1,360	5.44				

Minimum discharge, 8.1 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	31	453	144	130	826	137	113	48	22	12	12
2	13	26	942	126	130	609	133	125	47	22	12	12
3	14	24	716	114	135	654	137	162	45	22	12	11
4	14	25	377	103	139	512	132	161	44	22	11	11
5	14	38	265	95	129	412	140	139	43	21	12	10
6	13	37	210	88	759	353	147	129	42	21	14	10
7	12	50	180	83	1280	305	150	123	41	20	16	10
8	22	45	194	77	592	290	161	112	41	19	15	10
9	17	35	162	72	400	266	154	104	38	19	13	9.7
10	18	37	146	69	295	231	161	97	37	18	15	9.9
11	15	50	170	67	246	208	175	97	34	17	43	10
12	14	34	240	66	226	197	193	102	33	17	18	9.9
13	21	30	270	63	228	193	214	104	33	17	16	9.4
14	20	28	236	65	268	197	208	104	32	16	15	9.1
15	19	34	190	116	235	190	211	110	31	16	14	9.1
16	20	53	161	133	393	184	231	100	31	16	14	9.3
17	18	56	148	400	524	176	243	95	29	16	13	9.5
18	17	58	133	633	1040	170	242	96	29	16	13	9.6
19	17	47	118	633	728	181	219	92	28	15	12	9.5
20	16	51	108	773	483	209	196	88	28	15	12	9.3
21	16	e1900	103	885	406	204	178	83	29	14	12	9.3
22	16	e1400	113	865	354	194	173	79	28	14	12	9.3
23	15	e1330	124	748	459	184	154	77	26	14	12	8.9
24	19	e550	104	442	491	185	151	74	27	14	11	8.7
25	25	317	87	336	561	191	152	70	29	14	11	9.2
26	22	544	93	271	418	177	145	67	26	14	11	9.2
27	21	337	100	220	622	161	135	62	26	13	11	9.4
28	25	209	218	195	1840	147	128	58	24	13	10	9.7
29	24	175	212	176	---	144	119	55	23	13	10	9.5
30	21	508	163	159	---	141	112	52	22	12	14	9.3
31	22	---	157	146	---	141	---	49	---	12	15	---
TOTAL	552	8059	6893	8363	13511	8232	5031	2979	994	514	431	292.8
MEAN	17.8	269	222	270	483	266	168	96.1	33.1	16.6	13.9	9.76
MAX	25	1900	942	885	1840	826	243	162	48	22	43	12
MIN	12	24	87	63	129	141	112	49	22	12	10	8.7
AC-FT	1090	15990	13670	16590	26800	16330	9980	5910	1970	1020	855	581
CFSM	.28	4.15	3.44	4.17	7.46	4.10	2.59	1.49	.51	.26	.21	.15
IN.	.32	4.63	3.96	4.81	7.77	4.73	2.89	1.71	.57	.30	.25	.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1999, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	13.5	62.9	155	206	204	170	105	77.5	37.4	17.2	10.6	9.98		
MAX	27.2	269	862	506	483	315	200	208	83.8	30.2	15.8	18.8		
(WY)	1998	1999	1997	1997	1999	1989	1993	1998	1998	1998	1993	1986		
MIN	6.41	12.2	18.2	45.2	51.1	34.2	32.5	20.8	12.7	7.03	5.16	5.66		
(WY)	1988	1988	1990	1992	1994	1992	1990	1992	1994	1994	1994	1994		

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1986 - 1999	
ANNUAL TOTAL	56248		55851.8			
ANNUAL MEAN	154		153		88.5	
HIGHEST ANNUAL MEAN					179	
LOWEST ANNUAL MEAN					26.6	
HIGHEST DAILY MEAN	1900	Nov 21	1900	Nov 21	3980	Jan 1 1997
LOWEST DAILY MEAN	10	Sep 16	8.7	Sep 24	4.2	Sep 24 1994
ANNUAL SEVEN-DAY MINIMUM	11	Sep 12	9.1	Sep 20	4.5	Sep 21 1994
ANNUAL RUNOFF (AC-FT)	111600		110800		64140	
ANNUAL RUNOFF (CFSM)	2.38		2.37		1.37	
ANNUAL RUNOFF (INCHES)	32.34		32.11		18.59	
10 PERCENT EXCEEDS	347		400		206	
50 PERCENT EXCEEDS	100		67		32	
90 PERCENT EXCEEDS	14		12		8.3	

e Estimated

UMPQUA RIVER BASIN

14308995 GALESVILLE RESERVOIR NEAR AZALEA, OR

LOCATION.--Lat 42°50'56", long 123°10'40", in NE 1/4 sec.28, T.31 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on the upstream face of Galesville dam to the right side of the spillway section, 1.2 mi downstream from McGinnis Creek, 5.6 mi northeast of Azalea, and at mile 60.2.

DRAINAGE AREA.--74.3 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Douglas County).

REMARKS.--Reservoir is formed by a roller compacted concrete dam; storage began Oct. 7, 1985. Capacity, 42,220 acre-ft between elevations 1,780.0 ft (bottom of evacuation outlet) and 1,881.5 ft (crest of spillway). Dead storage, 1,800 acre-ft below elevation 1,780.0 ft. Reservoir is used for irrigation, power generation, flood control, and recreation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Douglas County Public Works Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 43,230 acre-ft Jan. 2, 3, 1997, elevation, 1,883.62 ft; minimum contents, 7,240 acre-ft Jan. 9, 10, 1991, elevation, 1,805.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 39,790 acre-ft May 12, elevation, 1,878.15 ft; minimum contents, 20,590 acre-ft Jan. 9-11, elevation, 1,841.74 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)

1,780	1,800	1,820	11,960	1,860	29,480
1,790	3,590	1,830	15,660	1,870	34,970
1,800	5,890	1,840	19,820	1,880	40,930
1,810	8,700	1,850	24,420	1,885	44,130

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1847.99	---	1846.64	1844.64	1845.67	1866.34	1872.80	1877.94	1878.07	1876.84	1868.39	1858.90
2	1847.63	---	1848.44	1844.39	1845.46	1865.36	1873.05	1877.98	1878.06	1876.69	1868.11	1858.53
3	1847.28	---	1849.15	1844.08	1845.27	1864.62	1873.35	1878.03	1878.07	1876.54	1867.82	1858.17
4	1846.92	---	1848.03	1843.73	1845.30	1863.65	1873.60	1878.08	1878.07	1876.38	1867.52	1857.80
5	1846.56	---	1846.93	1843.34	1845.58	1863.66	1873.89	1878.04	1878.06	1876.19	1867.25	1857.43
6	---	---	1846.07	1842.93	1848.59	1863.32	1874.18	1878.01	1878.05	1875.98	1866.99	1857.07
7	---	---	1844.97	1842.49	1852.76	1863.44	1874.50	1878.00	1878.04	1875.75	1866.72	1856.72
8	---	---	1844.61	1842.01	1852.90	1863.82	1874.87	1877.97	1878.03	1875.48	1866.46	1856.40
9	---	---	1844.53	1841.74	1852.76	1864.08	1875.12	1878.01	1878.00	1875.20	1866.18	1856.08
10	---	---	1844.39	1841.74	1852.88	1864.20	1875.35	1878.05	1877.98	1874.90	1865.88	1855.76
11	---	---	1844.34	1841.76	1853.16	1864.27	1875.56	1878.11	1877.95	1874.59	1865.68	1855.45
12	---	---	1844.58	1841.79	1853.43	1864.52	1875.80	1878.14	1877.92	1874.27	1865.39	1855.14
13	---	---	1844.70	1841.78	1853.76	1864.95	1876.06	1878.13	1877.88	1873.95	1865.09	1854.82
14	---	---	1844.74	1841.83	1854.31	1865.46	1876.23	1878.12	1877.85	1873.62	1864.79	1854.50
15	---	---	1844.77	1842.11	1854.71	1865.93	1876.22	1878.12	1877.81	1873.30	1864.49	1854.18
16	---	---	1844.71	1842.28	1855.52	1866.40	1876.28	1878.08	1877.76	1872.96	1864.20	1853.85
17	---	---	1844.70	1843.52	1856.90	1866.84	1876.36	1878.07	1877.72	1872.62	1863.89	1853.53
18	---	---	1844.69	1845.75	1860.38	1867.25	1876.45	1878.08	1877.66	1872.29	1863.58	1853.22
19	---	---	1844.69	1847.10	1860.97	1867.71	1876.46	1878.09	1877.61	1871.98	1863.28	1852.90
20	---	---	1844.73	1848.17	1859.81	1868.24	1876.43	1878.10	1877.56	1871.71	1862.97	1852.57
21	---	---	1844.71	1848.92	1858.79	1868.76	1876.43	1878.11	1877.51	1871.44	1862.66	1852.26
22	---	---	1844.66	1849.29	1858.98	1869.23	1876.48	1878.11	1877.45	1871.17	1862.35	1851.93
23	---	---	1844.60	1848.98	1859.63	1869.67	1876.58	1878.10	1877.39	1870.88	1862.05	1851.61
24	---	---	1844.56	1848.02	1860.06	1870.14	1876.80	1878.09	1877.34	1870.61	1861.72	1851.28
25	---	---	1844.51	1847.60	1860.24	1870.58	1877.03	1878.10	1877.29	1870.35	1861.37	1850.95
26	---	---	1844.51	1847.00	1860.15	1870.99	1877.23	1878.11	1877.22	1870.08	1861.01	1850.62
27	---	---	1844.54	1846.38	1860.76	1871.33	1877.45	1878.12	1877.16	1869.80	1860.65	1850.30
28	---	---	1844.87	1846.20	1866.11	1871.72	1877.65	1878.12	1877.09	1869.52	1860.29	1849.96
29	---	---	1845.01	1846.17	---	1871.92	1877.80	1878.11	1877.03	1869.24	1859.93	1849.64
30	---	1846.56	1844.93	1846.06	---	1872.23	1877.90	1878.08	1876.95	1868.96	1859.61	1849.31
31	e1842.58	---	1844.83	1845.91	---	1872.52	---	1878.07	---	1868.68	1859.26	---
MAX	---	---	1849.15	1849.29	1866.11	1872.52	1877.90	1878.14	1878.07	1876.84	1868.39	1858.90
MIN	---	---	1844.34	1841.74	1845.27	1863.32	1872.80	1877.94	1876.95	1868.68	1859.26	1849.31
(†)	20976	22790	21990	22490	32780	36420	39640	39740	39060	34220	29090	24090
(‡)	-2660	+1820	-800	+500	+10290	+3640	+3220	+100	-680	-4840	-5130	-5000
CAL YR 1998	MAX	---	MIN	---	AC-FT†	+280						
WTR YR 1999	MAX	---	MIN	---	AC-FT†	+460						

e Estimated

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

‡ Change in contents, in acre-feet.

UMPQUA RIVER BASIN

331

14309000 COW CREEK NEAR AZALEA, OR

LOCATION.--Lat 42°49'30", long 123°10'40", in N-1/2 sec.4, T.32 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on right bank 0.8 mi upstream from Whitehorse Creek, 4.5 mi northeast of Azalea, and at mile 58.2.

DRAINAGE AREA.--78.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1926 to September 1928 (no winter records), April 1929 to December 1931, April 1932 to current year.

REVISED RECORDS.--WSP 984: 1933-36. WSP 1154: 1946(M), 1948(M). WSP 1448: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,694.32 ft above sea level (Douglas County Road Department bench mark). Prior to July 19, 1949, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--69 years (water years 1930-31, 1933-99), 109 ft³/s, 18.98 in/yr, 78,970 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s Jan. 15, 1974, gage height, 16.40 ft, from high-water mark in well; minimum discharge, 1.1 ft³/s Aug. 12, 1981, but may have been less during period of no gage-height record Sept. 4-30, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 940 ft³/s Jan. 21, gage height, 5.93 ft; minimum discharge, 30 ft³/s Nov. 7.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	50	432	198	208	784	74	105	58	60	91	100
2	102	50	562	197	209	852	73	131	54	70	90	100
3	102	50	607	196	208	861	75	162	52	73	90	100
4	102	51	642	195	152	795	75	165	52	79	90	100
5	101	60	547	194	87	438	76	165	52	85	90	99
6	97	71	406	193	174	477	77	150	52	90	90	97
7	92	86	435	192	453	306	77	136	52	96	91	95
8	93	81	301	191	643	231	86	128	52	103	90	88
9	83	60	201	147	493	230	101	99	51	110	94	84
10	70	54	199	79	313	229	111	92	51	116	96	84
11	63	70	199	74	214	216	133	94	51	115	96	83
12	61	59	201	74	192	165	141	106	51	114	95	83
13	56	54	254	73	188	97	150	120	52	114	95	83
14	51	54	242	74	179	87	174	120	52	114	94	83
15	51	56	201	76	184	82	219	120	52	115	94	83
16	50	77	192	113	227	76	222	120	52	117	92	83
17	50	84	164	167	232	73	222	110	52	117	94	83
18	50	84	145	219	254	72	222	102	52	117	94	83
19	50	83	130	351	624	72	222	98	51	106	93	83
20	50	85	112	595	780	72	213	92	51	95	91	83
21	50	140	102	847	674	72	191	88	51	94	91	82
22	50	272	102	825	349	72	177	88	53	94	91	82
23	50	283	101	857	295	72	137	89	51	93	91	82
24	51	430	105	699	400	72	90	83	51	94	96	82
25	54	581	115	467	521	73	90	76	51	93	101	82
26	50	644	109	437	460	72	90	70	51	93	101	82
27	50	632	107	386	480	72	83	67	51	93	102	81
28	50	584	178	269	550	72	79	67	51	92	101	81
29	50	300	205	211	---	74	79	67	51	92	101	81
30	50	240	201	210	---	74	92	66	51	92	101	81
31	50	---	199	209	---	74	---	62	---	91	101	---
TOTAL	2031	5425	7696	9015	9743	7014	3851	3238	1554	3027	2927	2593
MEAN	65.5	181	248	291	348	226	128	104	51.8	97.6	94.4	86.4
MAX	102	644	642	857	780	861	222	165	58	117	102	100
MIN	50	50	101	73	87	72	73	62	51	60	90	81
AC-FT	4030	10760	15270	17880	19330	13910	7640	6420	3080	6000	5810	5140
MEAN†	22	211	235	299	533	285	183	106	40	19	11	2
CFSM†	0.29	2.71	3.02	3.83	6.84	3.66	2.34	1.36	0.52	0.24	0.14	0.03
IN.†	0.33	3.02	3.48	4.42	7.12	4.22	2.61	1.57	0.58	0.28	0.16	0.03
AC-FT†	1370	12580	14470	18380	29620	17550	10860	6520	2400	1160	680	140

CAL YR 1998 TOTAL 57782 MEAN 158 MAX 716 MIN 50 AC-FT 114600 MEAN† 159 CFSM† 2.03 IN.† 27.62 AC-FT† 114900
WTR YR 1999 TOTAL 58114 MEAN 159 MAX 861 MIN 50 AC-FT 115300 MEAN† 160 CFSM† 2.05 IN.† 27.84 AC-FT† 115800

† Adjusted for change in contents in Galesville Reservoir.

UMPQUA RIVER BASIN

14309000 COW CREEK NEAR AZALEA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

DISSOLVED OXYGEN: November 1985 to current year.

INSTRUMENTATION.--Water-quality monitor since November 1985.

REMARKS.--Water-quality monitor located 1.9 mi upstream from water-discharge site, 1000 ft downstream from Galesville Dam, and at mile 60.1.

EXTREMES FOR PERIOD OF DAILY RECORD.--

DISSOLVED OXYGEN: Maximum recorded, 15.1 mg/L Feb. 7, 1989, Nov. 17, 20, 1996, caused by operation of bypass valve at dam; minimum, 0.9 mg/L July 30, 1988.

EXTREMES FOR CURRENT YEAR.--

DISSOLVED OXYGEN: Maximum, 12.5 mg/L Jan. 24; minimum recorded, 6.0 mg/L Nov. 7, but may have been lower during periods of missing record.

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	9.6	9.2	9.4	10.7	10.3	10.6
2	---	---	---	---	---	---	9.6	9.1	9.3	10.8	10.4	10.6
3	---	---	---	---	---	---	9.7	9.3	9.5	10.8	10.3	10.6
4	---	---	---	---	---	---	10.0	9.4	9.7	10.9	10.5	10.7
5	---	---	---	7.7	6.7	7.3	10.2	9.6	9.9	11.0	10.5	10.8
6	---	---	---	7.6	6.8	7.1	10.2	9.5	9.9	10.8	10.6	10.6
7	7.2	6.9	7.1	7.9	6.0	7.5	10.2	9.6	9.9	10.6	10.4	10.5
8	7.5	6.6	7.1	7.9	7.3	7.6	10.1	9.3	9.7	10.6	10.4	10.5
9	7.3	6.9	7.1	7.6	7.2	7.4	9.9	9.4	9.7	10.8	10.4	10.5
10	7.0	6.6	6.8	7.7	7.2	7.4	9.9	9.6	9.7	10.8	10.5	10.6
11	7.1	6.5	6.8	7.9	7.5	7.8	9.9	9.6	9.8	10.8	10.4	10.6
12	7.0	6.2	6.5	7.9	7.5	7.7	9.9	9.6	9.7	10.8	10.4	10.6
13	---	---	---	7.9	7.5	7.6	10.2	9.7	9.9	10.8	10.4	10.5
14	---	---	---	---	---	---	10.3	9.7	9.9	10.5	10.4	10.5
15	---	---	---	---	---	---	10.1	9.7	9.9	10.8	10.2	10.4
16	---	---	---	---	---	---	---	---	---	10.3	10.0	10.1
17	---	---	---	8.9	8.4	8.7	9.6	9.1	9.4	10.2	10.0	10.2
18	---	---	---	9.0	8.7	8.9	9.4	8.9	9.2	10.9	10.2	10.4
19	---	---	---	9.1	8.7	8.9	10.0	9.0	9.3	12.3	10.2	11.7
20	---	---	---	9.1	8.8	8.9	10.1	9.0	9.5	12.3	11.6	11.9
21	7.8	7.5	7.6	9.4	8.7	9.0	9.9	9.1	9.5	12.4	11.6	12.0
22	7.7	7.4	7.6	9.2	8.7	9.0	10.1	9.1	9.7	12.4	12.1	12.2
23	7.6	7.1	7.4	9.3	8.5	8.9	10.2	9.6	10.0	12.4	12.2	12.3
24	7.3	6.8	7.1	9.7	8.5	9.1	10.4	9.8	10.1	12.5	11.7	12.1
25	7.2	---	6.9	9.5	7.2	8.9	10.4	9.9	10.2	12.2	11.4	11.7
26	---	---	---	9.4	9.0	9.2	10.4	10.1	10.2	11.7	11.6	11.6
27	---	---	---	9.3	8.7	9.0	10.5	10.1	10.3	11.7	11.3	11.5
28	---	---	---	9.1	8.6	8.8	10.3	9.5	10.0	11.4	10.3	10.9
29	---	---	---	---	---	---	10.4	9.8	10.1	10.9	10.3	10.8
30	---	---	---	---	---	---	10.5	10.2	10.4	10.9	10.7	10.8
31	---	---	---	---	---	---	10.7	10.2	10.4	10.7	10.5	10.7
MONTH	---	---	---	---	---	---	---	---	---	12.5	10.0	11.0

UMPQUA RIVER BASIN

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14309000 COW CREEK NEAR AZALEA, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.7	10.5	10.6	12.1	11.9	12.0	11.2	10.7	10.9	10.6	10.2	10.4
2	10.8	10.6	10.7	12.0	11.7	11.8	11.2	10.7	10.9	10.3	10.2	10.2
3	10.9	10.7	10.8	12.0	11.8	11.9	11.1	10.7	10.8	10.4	10.2	10.3
4	10.8	10.7	10.7	12.1	11.2	11.9	11.2	10.7	10.8	10.4	10.2	10.3
5	10.8	10.3	10.6	11.8	11.2	11.6	11.0	10.5	10.7	10.5	10.2	10.3
6	10.9	10.5	10.7	11.8	11.6	11.7	11.1	10.5	10.7	10.4	10.1	10.2
7	11.7	10.5	11.2	11.7	11.1	11.4	11.0	10.4	10.6	10.4	10.1	10.2
8	11.7	11.6	11.7	11.2	11.1	11.1	11.0	10.4	10.6	10.5	10.0	10.3
9	12.2	11.7	11.8	11.1	10.9	11.1	10.9	10.5	10.6	10.8	10.0	10.3
10	11.9	10.7	11.1	11.1	11.0	11.1	10.9	10.6	10.7	10.5	10.0	10.2
11	10.9	10.8	10.8	11.1	11.0	11.0	10.7	10.4	10.6	10.4	10.1	10.2
12	11.0	10.8	10.9	11.1	10.9	11.0	11.6	10.4	10.9	10.4	10.1	10.2
13	11.2	11.0	11.1	11.2	10.9	11.0	11.6	10.4	10.9	10.4	10.0	10.2
14	11.2	11.0	11.1	11.1	10.7	11.0	11.6	10.3	10.6	10.4	10.0	10.1
15	11.2	11.0	11.1	11.1	10.7	11.0	11.0	10.4	10.6	10.6	10.0	10.2
16	11.1	11.0	11.1	11.1	10.7	10.9	10.7	10.4	10.5	10.6	10.1	10.2
17	11.4	11.0	11.1	11.1	10.7	10.9	10.6	10.4	10.5	10.3	10.0	10.1
18	11.9	11.0	11.2	11.1	10.7	10.9	10.5	10.4	10.5	10.4	10.0	10.2
19	12.3	11.9	12.1	11.0	10.7	10.8	10.6	10.3	10.5	10.4	9.9	10.1
20	12.3	11.9	12.1	11.1	10.8	10.9	10.6	10.4	10.5	10.8	9.9	10.2
21	12.0	11.9	12.0	11.2	10.9	11.0	10.5	10.3	10.4	10.3	9.8	10.1
22	12.0	11.2	11.6	11.1	10.8	10.9	10.7	10.3	10.5	10.3	9.7	10.0
23	11.7	11.2	11.5	11.1	10.7	10.9	10.7	10.4	10.5	10.1	9.6	9.8
24	11.8	11.6	11.7	11.1	10.8	10.9	10.7	10.3	10.5	10.2	9.5	9.8
25	12.1	11.8	12.0	11.1	10.8	10.9	10.7	10.2	10.4	10.0	9.6	9.8
26	12.1	11.7	11.9	11.2	10.8	10.9	10.7	10.3	10.5	10.0	9.6	9.8
27	11.8	11.7	11.7	11.4	10.7	10.9	10.6	10.3	10.4	10.0	9.6	9.8
28	11.9	11.3	11.7	11.3	10.7	10.9	10.7	10.3	10.4	10.0	9.6	9.8
29	---	---	---	11.2	10.6	10.8	10.6	10.2	10.4	10.0	9.6	9.8
30	---	---	---	11.1	10.6	10.8	10.7	10.1	10.4	10.0	9.6	9.7
31	---	---	---	11.2	10.8	10.9	---	---	---	9.9	9.5	9.7
MONTH	12.3	10.3	11.3	12.1	10.6	11.1	11.6	10.1	10.6	10.8	9.5	10.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.8	9.4	9.6	9.1	8.2	8.6	---	---	---	8.2	7.8	8.0
2	9.8	9.4	9.6	8.4	8.2	8.3	---	---	---	8.2	7.8	8.0
3	9.8	9.4	9.6	---	---	---	---	---	---	8.1	7.7	7.9
4	9.8	9.4	9.6	---	---	---	8.3	7.9	8.1	8.1	7.6	7.8
5	9.8	9.4	9.6	---	---	---	8.2	8.0	8.1	8.1	7.6	7.8
6	9.8	9.0	9.5	---	---	---	8.3	8.0	8.1	8.1	7.4	7.7
7	9.5	8.9	9.2	---	---	---	10.1	8.1	8.7	8.1	6.9	7.6
8	9.4	8.9	9.2	---	---	---	8.6	8.2	8.3	7.8	7.3	7.5
9	9.6	9.0	9.3	---	---	---	8.5	8.2	8.4	7.9	7.4	7.6
10	9.4	9.0	9.2	---	---	---	8.6	8.3	8.4	7.9	7.4	7.7
11	9.4	9.0	9.1	---	---	---	8.6	8.3	8.4	8.1	7.5	7.8
12	9.3	8.9	9.1	---	---	---	8.8	8.3	8.6	8.1	7.7	7.8
13	9.3	8.9	9.1	---	---	---	8.8	8.6	8.7	8.1	7.6	7.8
14	9.2	8.9	9.1	---	---	---	8.9	8.7	8.8	8.1	7.6	7.8
15	9.8	8.9	9.3	---	---	---	8.9	8.6	8.8	8.2	7.3	7.7
16	9.5	9.2	9.4	---	---	---	10.7	8.8	9.0	10.0	7.5	7.9
17	9.4	9.0	9.2	---	---	---	9.0	8.6	8.9	7.9	7.3	7.6
18	9.3	8.9	9.2	---	---	---	9.0	8.6	8.9	8.0	7.1	7.7
19	9.3	9.0	9.2	---	---	---	9.1	8.7	8.9	8.0	7.4	7.7
20	9.2	8.9	9.0	---	---	---	9.0	8.7	8.9	8.1	7.4	7.7
21	9.5	8.8	9.1	---	---	---	9.0	8.7	8.8	7.9	7.5	7.6
22	10.0	9.0	9.4	---	---	---	9.0	8.8	8.9	8.1	7.3	7.7
23	9.2	8.5	8.9	---	---	---	9.1	8.8	8.9	8.2	7.5	7.8
24	8.7	8.4	8.6	---	---	---	8.9	7.8	8.3	8.1	7.1	7.6
25	8.8	8.5	8.7	---	---	---	8.2	7.8	8.0	7.9	7.4	7.5
26	9.0	8.6	8.7	---	---	---	8.3	8.0	8.1	8.0	7.3	7.6
27	8.9	8.6	8.8	---	---	---	8.2	7.9	8.1	8.2	7.4	7.7
28	9.0	8.7	8.8	---	---	---	8.2	7.9	8.1	8.2	7.4	7.7
29	9.1	8.7	8.9	---	---	---	8.1	7.8	8.0	8.3	7.5	7.9
30	9.2	8.8	9.0	---	---	---	8.1	7.9	8.0	8.4	7.7	8.0
31	---	---	---	---	---	---	8.2	7.8	8.0	---	---	---
MONTH	10.0	8.4	9.2	---	---	---	---	---	---	10.0	6.9	7.7

UMPQUA RIVER BASIN

14309500 WEST FORK COW CREEK NEAR GLENDALE, OR

LOCATION.--Lat 42°48'15", long 123°36'35", in SW 1/4 NE 1/4 sec.11, T.32 S., R.8 W., Douglas County, Hydrologic Unit 17100302, on left bank 1.6 mi downstream from Bear Creek, 11 mi northwest of Glendale, and at mile 0.8.

DRAINAGE AREA.--86.9 mi².

PERIOD OF RECORD.--August 1955 to current year.

REVISED RECORDS.--WSP 1738: 1956, drainage area (former site). WSP 1935: 1956.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,018.48 ft above sea level. Prior to June 8, 1964, at site 0.6 mi upstream at different datum.

REMARKS.--Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--44 years (water years 1956-99), 262 ft³/s, 41.03 in/yr, 190,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft³/s Dec. 22, 1964, gage height, 18.59 ft, from floodmark, from rating curve extended above 2,600 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 3.0 ft³/s Aug. 29 to Sept. 1, 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. 21	1600	4,910	10.02	Feb. 6	1400	4,640	9.76
Nov. 30	1200	*6,410	*11.30	Feb. 18	1230	4,170	9.30
Jan. 17	2200	3,680	8.80	Feb. 28	0400	4,600	9.72
Jan. 22	2230	2,600	7.61				

Minimum discharge, 4.4 ft³/s Sept. 23-27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	17	2120	629	260	1610	503	96	41	11	4.6	7.5
2	8.3	17	4310	502	300	1160	487	109	40	11	4.8	7.3
3	9.9	16	2220	396	417	1410	487	181	40	11	4.8	7.3
4	9.2	19	1170	312	437	1220	437	250	38	11	4.6	6.9
5	8.7	49	769	254	437	886	425	211	36	11	4.7	6.6
6	8.3	81	605	216	2590	693	441	179	34	9.5	5.9	6.4
7	7.8	105	652	188	3020	556	450	157	34	9.4	8.3	6.3
8	9.6	100	1060	162	1580	512	444	139	34	8.6	9.4	6.2
9	13	64	771	144	1000	503	401	124	31	8.4	8.3	6.0
10	14	61	588	133	696	435	415	112	30	7.9	7.2	5.9
11	12	103	612	124	560	377	527	111	28	7.4	6.7	5.9
12	10	63	854	116	477	336	551	111	26	7.2	7.0	5.9
13	14	44	941	106	466	332	555	106	25	7.1	7.2	5.6
14	19	35	694	108	542	355	490	103	24	6.7	7.2	5.4
15	15	35	541	263	556	330	450	100	23	6.7	7.0	5.2
16	13	56	432	543	1050	295	440	93	23	7.2	6.4	5.2
17	12	115	348	1280	1740	266	395	88	21	7.3	6.1	5.4
18	11	131	289	2320	3000	244	328	97	21	7.4	5.8	5.7
19	11	96	247	1490	2350	236	273	94	19	7.2	5.6	5.9
20	11	268	214	1490	1260	233	229	87	19	7.0	5.6	5.4
21	9.9	3810	173	2250	1100	215	202	80	20	6.7	5.8	5.1
22	9.5	1650	155	1940	1270	195	181	73	18	6.5	5.8	5.0
23	9.4	1570	141	1980	2200	182	157	67	17	6.5	5.6	4.7
24	12	2160	131	1140	1940	201	148	63	16	6.1	5.8	4.6
25	15	1670	176	771	1860	245	143	59	18	6.0	5.5	4.8
26	15	2250	248	588	1460	222	134	56	16	6.1	5.4	4.8
27	13	1140	295	455	1810	219	124	52	15	5.9	5.7	4.8
28	15	653	1370	388	3380	229	118	50	14	5.4	5.5	5.0
29	16	700	1140	376	---	490	108	48	13	5.0	5.4	5.0
30	14	3380	684	352	---	598	100	44	12	5.0	6.5	5.1
31	14	---	661	312	---	525	---	42	---	4.8	7.5	---
TOTAL	366.5	20458	24611	21328	37758	15310	10143	3182	746	234.0	191.7	170.9
MEAN	11.8	682	794	688	1348	494	338	103	24.9	7.55	6.18	5.70
MAX	19	3810	4310	2320	3380	1610	555	250	41	11	9.4	7.5
MIN	6.9	16	131	106	260	182	100	42	12	4.8	4.6	4.6
AC-FT	727	40580	48820	42300	74890	30370	20120	6310	1480	464	380	339
CFSM	.14	7.85	9.14	7.92	15.5	5.68	3.89	1.18	.29	.09	.07	.07
IN.	.16	8.76	10.54	9.13	16.16	6.55	4.34	1.36	.32	.10	.08	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1999, BY WATER YEAR (WY)

MEAN	41.6	301	602	670	589	484	277	117	42.1	17.8	10.2	12.8
MAX	254	1470	1960	1496	1660	934	840	476	99.4	29.5	16.0	56.9
(WY)	1963	1974	1997	1970	1958	1983	1982	1963	1993	1983	1983	1986
MIN	5.19	13.7	13.3	24.2	66.0	91.6	56.2	38.3	17.8	7.55	3.85	3.89
(WY)	1988	1994	1977	1977	1977	1992	1990	1987	1992	1999	1992	1992

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1956 - 1999
ANNUAL TOTAL	131226.8	134499.1	
ANNUAL MEAN	360	368	262
HIGHEST ANNUAL MEAN			499
LOWEST ANNUAL MEAN			60.2
HIGHEST DAILY MEAN	4310	4310	11000
LOWEST DAILY MEAN	5.9	4.6	3.0
ANNUAL SEVEN-DAY MINIMUM	6.6	4.8	3.2
ANNUAL RUNOFF (AC-FT)	260300	266800	190100
ANNUAL RUNOFF (CFSM)	4.14	4.24	3.02
ANNUAL RUNOFF (INCHES)	56.18	57.58	41.03
10 PERCENT EXCEEDS	970	1160	686
50 PERCENT EXCEEDS	127	96	68
90 PERCENT EXCEEDS	8.6	5.8	8.6

UMPQUA RIVER BASIN

335

14310000 COW CREEK NEAR RIDDLE, OR

LOCATION.--Lat 42°55'25", long 123°25'40", in NE 1/4 sec.32, T.30 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on left bank 0.4 mi upstream from Council Creek, 3.8 mi southwest of Riddle, and at mile 6.7.

DRAINAGE AREA.--456 mi².

PERIOD OF RECORD.--September 1954 to current year.

REVISED RECORDS.--WSP 1935: 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 682.60 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1955-85), 903 ft³/s, 654,200 acre-ft/yr.
14 years (water years 1986-99), 716 ft³/s, 519,000 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,400 ft³/s Jan. 15, 1974, gage height, 28.17 ft; minimum discharge, 7.4 ft³/s Aug. 17-19, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 29, 1950, reached a stage of about 28.5 ft, present site and datum, from slope-area measurement, discharge, 41,100 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft³/s Nov. 30, gage height, 14.76 ft; minimum discharge, 89 ft³/s Oct. 21-24.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	124	107	7130	1540	1010	6720	1440	416	214	109	108	121
2	126	107	9000	1310	992	4720	1360	448	211	107	109	118
3	128	106	8100	1130	1190	5550	1320	550	210	120	109	117
4	130	107	4470	992	1210	5190	1250	685	200	129	108	115
5	130	153	3040	880	1120	3670	1200	623	191	131	108	115
6	130	225	2270	810	6680	3010	1190	580	186	135	111	113
7	127	302	2100	752	11300	2380	1180	540	183	140	124	111
8	134	325	3130	688	7090	1960	1170	499	183	139	134	111
9	144	256	2440	642	4470	1950	1100	466	178	141	127	107
10	136	205	1910	561	3120	1710	1060	416	171	144	129	101
11	124	274	1790	492	2280	1540	1200	405	166	144	124	100
12	109	237	2110	468	1900	1370	1230	412	161	144	122	100
13	107	179	2270	439	1780	1240	1250	416	155	142	124	98
14	120	149	2030	423	2010	1210	1140	421	148	142	124	95
15	109	141	1610	687	2010	1160	1110	417	144	140	121	94
16	103	155	1350	1090	2860	1060	1100	399	146	143	118	95
17	99	249	1150	2260	4810	975	1060	390	143	146	114	96
18	96	380	996	8740	8230	910	979	392	140	144	113	98
19	93	302	888	5680	9330	866	895	387	137	144	112	97
20	92	270	813	5660	5400	851	831	373	138	139	109	96
21	90	7660	681	9320	4560	819	769	354	141	127	107	94
22	89	5400	613	7700	3960	768	714	330	140	125	108	95
23	89	4060	578	8240	5170	722	652	320	134	121	108	93
24	90	6750	553	5120	5060	744	578	314	128	119	109	94
25	101	4380	578	3300	5290	883	537	302	129	120	109	95
26	101	5640	700	2500	4730	843	517	290	129	118	113	96
27	100	3850	723	1890	4490	814	493	270	126	112	113	96
28	97	2290	2220	1580	11700	792	476	256	121	113	112	94
29	100	1910	2890	1320	---	981	442	248	116	112	110	95
30	98	7600	1870	1230	---	1300	415	233	110	110	115	95
31	99	---	1630	1140	---	1390	---	225	---	109	120	---
TOTAL	3415	53769	71633	78584	123752	58098	28658	12377	4679	4009	3572	3045
MEAN	110	1792	2311	2535	4420	1874	955	399	156	129	115	102
MAX	144	7660	9000	9320	11700	6720	1440	685	214	146	134	121
MIN	89	106	553	423	992	722	415	225	110	107	107	93
AC-FT	6770	106700	142100	155900	245500	115200	56840	24550	9280	7950	7090	6040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1999, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	109	553	1362	1915	1758	1280	756	420	203	109	89.9	95.1		
MAX	249	1792	6225	4144	4420	2362	1833	1074	477	189	166	152		
(WY)	1998	1999	1997	1995	1999	1995	1993	1998	1998	1998	1993	1986		
MIN	55.4	88.5	210	577	439	282	194	147	81.0	49.3	23.1	46.5		
(WY)	1989	1988	1990	1994	1988	1992	1990	1987	1992	1994	1986	1994		

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1986 - 1999

ANNUAL TOTAL	435875	445591		
ANNUAL MEAN	1194	1221		
HIGHEST ANNUAL MEAN		716		
LOWEST ANNUAL MEAN		1221		1999
HIGHEST DAILY MEAN	10600	Feb 21	11700	Feb 28
LOWEST DAILY MEAN	89	Oct 22	89	Oct 22
ANNUAL SEVEN-DAY MINIMUM	91	Oct 18	91	Oct 18
ANNUAL RUNOFF (AC-FT)	864600	883800		
10 PERCENT EXCEEDS	2950	4190		
50 PERCENT EXCEEDS	578	354		
90 PERCENT EXCEEDS	125	102		

UMPQUA RIVER BASIN

14311500 LOOKINGGLASS CREEK AT BROCKWAY, OR

LOCATION.--Lat 43°07'50", long 123°27'50", in SE 1/4 SE 1/4 sec.13, T.28 S., R.7 W., Douglas County, Hydrologic Unit 17100302, on left bank 1.7 mi northwest of Brockway and at mile 2.85.

DRAINAGE AREA.--158 mi².

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--WSP 2135: Drainage area (former site).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 540 ft above sea level, from topographic map. Prior to Oct. 5, 1967, water-stage recorder at site 2.3 mi downstream at different datum. Oct. 5, 1967, to Oct. 5, 1976, water-stage recorder, at datum 1.00 ft lower.

REMARKS.--Records good except those below 5 ft³/s and estimated daily discharges, which are fair. Some regulation since January 1980 by Ben Irving Reservoir 17 mi upstream on Berry Creek, capacity, 11,200 acre-ft. Many diversions by pumping for irrigation upstream from station. Discharge not adjusted for storage or release from Ben Irving Reservoir as losses from reservoir at times exceed natural flow.

AVERAGE DISCHARGE.--24 years (water years 1956-79), 282 ft³/s, 204,300 acre-ft/yr.
19 years (water years 1981-99), 229 ft³/s, 166,000 acre-ft/yr. Data for the 1980 water year not included due to construction and initial filling of Ben Irving Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s Dec. 26, 1955, gage height, 24.93 ft, site and datum then in use, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 25.28 ft Dec. 23, 1964 (backwater from South Umpqua River, site and datum then in use); no flow at times each year prior to January 1980, and Aug. 6, 7, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,920 ft³/s Nov. 21, gage height, 11.18 ft, from crest-stage gage; minimum discharge, 2.8 ft³/s July 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	13	e2000	829	266	1600	701	70	28	6.5	5.8	7.3
2	13	14	e3800	658	395	1230	557	79	27	6.1	6.1	6.2
3	14	14	e2200	538	543	1300	518	130	28	6.9	4.8	6.2
4	15	14	e1400	445	612	1280	486	209	26	8.1	5.1	6.5
5	14	16	e900	374	587	1090	434	189	24	9.3	5.1	6.7
6	14	26	e700	322	1490	859	380	155	22	7.3	6.5	7.8
7	13	28	e850	279	1940	675	336	131	21	6.4	12	5.6
8	15	29	e1500	239	1700	575	309	112	21	6.6	15	4.5
9	15	25	e1100	212	1530	509	275	101	23	5.6	12	5.2
10	15	23	773	194	1200	424	259	92	22	5.2	8.9	5.4
11	15	22	609	179	982	367	260	89	22	5.4	7.4	6.0
12	15	22	520	167	804	339	234	86	21	3.9	8.7	6.1
13	16	19	461	154	708	315	209	81	18	3.8	8.1	5.7
14	14	16	430	229	700	323	187	78	18	3.9	7.9	4.9
15	12	14	347	1040	641	298	171	74	16	4.1	8.7	5.0
16	11	13	296	1220	805	270	157	70	14	4.4	7.1	5.4
17	11	17	251	1440	1520	247	142	69	15	4.7	5.9	7.9
18	11	34	217	2000	1900	229	129	69	14	5.7	4.9	7.6
19	11	27	192	1690	2120	208	119	64	14	5.8	4.2	7.1
20	11	e100	179	1520	1510	192	110	60	16	4.1	5.0	5.9
21	11	e4000	147	1990	1380	180	105	57	18	3.6	6.6	4.9
22	10	e2000	134	1900	1140	164	101	52	18	4.6	7.0	5.1
23	10	e1800	121	1910	1200	152	95	49	13	5.2	6.4	5.7
24	10	e2200	118	1480	1050	164	90	46	10	4.5	4.9	6.1
25	11	e1700	393	1060	1120	207	86	44	10	5.9	6.2	6.4
26	11	e2000	598	776	1290	190	83	42	11	6.6	6.4	6.4
27	12	e1000	743	581	1750	272	80	40	9.9	5.4	5.5	7.3
28	11	e700	2510	485	2200	304	79	38	8.4	4.1	3.8	7.2
29	11	e800	2210	415	---	446	75	35	7.4	4.3	4.5	7.0
30	11	e3000	1350	359	---	642	72	32	7.3	5.1	9.0	7.4
31	12	---	1090	320	---	811	---	30	---	5.6	9.3	---
TOTAL	383.9	19686	28139	25005	33083	15862	6839	2473	523.0	168.7	218.8	186.5
MEAN	12.4	656	908	807	1182	512	228	79.8	17.4	5.44	7.06	6.22
MAX	16	4000	3800	2000	2200	1600	701	209	28	9.3	15	7.9
MIN	8.9	13	118	154	266	152	72	30	7.3	3.6	3.8	4.5
AC-FT	761	39050	55810	49600	65620	31460	13570	4910	1040	335	434	370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1999, BY WATER YEAR (WY)

	24.4	228	599	580	597	363	248	76.9	25.7	8.48	7.15	11.6
MEAN	24.4	228	599	580	597	363	248	76.9	25.7	8.48	7.15	11.6
MAX	86.3	809	2121	1346	1544	965	826	169	81.6	21.9	13.0	37.1
(WY)	1987	1985	1997	1996	1983	1983	1982	1996	1998	1983	1983	1997
MIN	7.74	7.80	33.0	122	133	54.6	38.4	15.1	4.99	3.06	4.10	5.37
(WY)	1988	1994	1990	1981	1988	1992	1990	1987	1994	1985	1982	1987

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR				FOR 1999 WATER YEAR				WATER YEARS 1981 - 1999			
ANNUAL TOTAL	101999.7				132567.9				229			
ANNUAL MEAN	279				363				451			
HIGHEST ANNUAL MEAN									70.6			
LOWEST ANNUAL MEAN									9670			
HIGHEST DAILY MEAN	4000				Nov 21				Feb 18			
LOWEST DAILY MEAN	2.7				Sep 2				Jul 16			
ANNUAL SEVEN-DAY MINIMUM	4.1				Aug 29				Jul 11			
ANNUAL RUNOFF (AC-FT)	202300				262900				166000			
10 PERCENT EXCEEDS	717				1290				613			
50 PERCENT EXCEEDS	95				57				44			
90 PERCENT EXCEEDS	6.2				5.6				5.7			

e Estimated

14312000 SOUTH UMPQUA RIVER NEAR BROCKWAY, OR

LOCATION.--Lat 43°08'00", long 123°23'50", in SW 1/4 sec.15, T.28 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on right bank 10 ft upstream from Winston Bridge on State Highway 99, 2.5 mi northeast of Brockway, 4.2 mi downstream from Lookingglass Creek, and at mile 132.8.

DRAINAGE AREA.--1,670 mi².

PERIOD OF RECORD.--December 1905 to June 1912, October 1923 to September 1926, January 1942 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1248: 1946(M), 1948(M), 1951. WSP 1448: Drainage area. WDR OR 72-1: 1965(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 462.52 ft above sea level (State Highway Department bench mark). Prior to June 24, 1949, nonrecording gage at several sites within 400 ft of present site at various datums. June 24, 1949, to Oct. 1, 1970, at datum 461.84 ft above sea level (State Highway Department bench mark).

REMARKS.--No estimated daily discharges. Records good. Regulation from Ben Irving Reservoir, since January 1980, on Berry Creek during summer months. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--65 years (water years 1907-11, 1924-26, 1943-99), 2,810 ft³/s, 22.86 in/yr, 2,036,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125,000 ft³/s Dec. 23, 1964, gage height, 34.28 ft; minimum discharge, 16 ft³/s Aug. 23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 21, 1927, reached a stage of about 31.2 ft, present site and datum, discharge, 89,500 ft³/s. Discharge for flood of February 1890, which reached a stage 1.9 ft higher, according to local resident who lived nearby at time of both floods, has been found to be in error and should not be used.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1830	*36,800	*18.24	Feb. 7	1700	31,200	16.67
Dec. 3	1200	29,000	16.09	Feb. 18	2230	30,800	16.56
Dec. 28	2230	27,600	15.71	Feb. 28	1630	34,900	17.70
Jan. 18	0730	31,600	16.78				

Minimum discharge, 124 ft³/s Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	308	16500	7610	3220	22300	4160	1820	1680	525	206	253
2	255	326	18200	6050	3090	14100	3890	2120	1680	508	203	250
3	270	372	18000	4960	3660	14200	3790	2730	1540	500	196	221
4	281	350	12300	4130	3940	13700	3840	3840	1340	502	189	208
5	295	361	9210	3510	4130	10800	3690	3340	1210	479	190	203
6	293	598	7960	3090	12700	8520	3730	3020	1180	460	203	202
7	286	766	6620	2770	29500	6980	3640	3030	1160	440	232	192
8	302	949	8020	2500	21100	5880	3750	2760	1080	436	286	186
9	313	1070	7320	2270	13500	5580	3910	2410	1010	415	309	181
10	346	798	5860	2090	9610	4880	3670	2140	936	400	269	174
11	337	720	5720	1890	7330	4330	3740	1980	896	395	247	166
12	329	882	6810	1830	6150	3900	3830	2060	889	383	325	156
13	308	668	7490	1820	5720	4020	4150	2260	930	372	302	157
14	322	550	6920	1800	6490	4470	4030	2240	1010	360	263	152
15	380	509	5510	6890	6670	4370	3800	2310	1110	344	251	139
16	351	510	4530	9540	7080	3990	3920	2230	1180	327	239	134
17	312	682	3940	10500	12300	3660	4150	2090	1110	325	222	140
18	297	1050	3550	27000	20000	3390	4360	2270	1040	321	204	146
19	277	1350	3140	17500	25700	3270	4190	2550	976	306	200	151
20	261	1120	2820	15800	15400	3530	3770	2490	918	293	194	147
21	252	18600	2370	25700	11800	3630	3390	2350	885	281	187	141
22	244	20500	2100	22800	9510	3340	3070	2190	866	270	187	133
23	235	14300	1910	24400	10900	3190	2700	2210	795	262	187	133
24	236	20400	1840	15600	12300	3110	2530	2450	750	254	181	129
25	248	12700	2100	10400	12100	3460	2580	2730	755	250	176	130
26	271	13200	2720	7830	11300	3400	2660	2610	775	249	177	131
27	291	12700	3560	6060	11700	3230	2500	2370	693	236	187	136
28	290	7540	15100	5050	28200	3020	2300	2300	624	222	178	135
29	287	5690	20200	4350	---	3050	2030	2200	573	214	179	136
30	308	13600	10800	3880	---	3750	1850	2010	541	207	193	141
31	307	---	8060	3570	---	4070	---	1800	---	206	223	---
TOTAL	9031	153169	231180	263190	325100	183120	103620	74910	30132	10742	6785	4903
MEAN	291	5106	7457	8490	11610	5907	3454	2416	1004	347	219	163
MAX	380	20500	20200	27000	29500	22300	4360	3840	1680	525	325	253
MIN	235	308	1840	1800	3090	3020	1850	1800	541	206	176	129
AC-FT	17910	303800	458500	522000	644800	363200	205500	148600	59770	21310	13460	9730
CFSM	.17	3.06	4.47	5.08	6.95	3.54	2.07	1.45	.60	.21	.13	.10
IN.	.20	3.41	5.15	5.86	7.24	4.08	2.31	1.67	.67	.24	.15	.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 1999, BY WATER YEAR (WY)

MEAN	469	2756	5759	6938	6372	4805	3256	889	271	139	152	
MAX	6045	13590	19950	16010	15370	10950	7378	6909	3312	576	392	587
(WY)	1951	1974	1997	1956	1958	1974	1963	1963	1953	1953	1993	1986
MIN	103	190	184	262	341	882	589	446	142	52.6	40.2	69.3
(WY)	1988	1953	1977	1977	1977	1992	1926	1926	1926	1926	1973	1967

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1907 - 1999
ANNUAL TOTAL	1367441	1395882	
ANNUAL MEAN	3746	3824	2810
HIGHEST ANNUAL MEAN			5567
LOWEST ANNUAL MEAN			562
HIGHEST DAILY MEAN	21800	Feb 21	90200
LOWEST DAILY MEAN	193	Sep 4	17
ANNUAL SEVEN-DAY MINIMUM	199	Sep 3	18
ANNUAL RUNOFF (AC-FT)	2712000	2769000	2036000
ANNUAL RUNOFF (CFSM)	2.24	2.29	1.68
ANNUAL RUNOFF (INCHES)	30.46	31.09	22.86
10 PERCENT EXCEEDS	9360	11900	6860
50 PERCENT EXCEEDS	2240	1980	1100
90 PERCENT EXCEEDS	246	194	115

UMPQUA RIVER BASIN

14312170 SOUTH FORK DEER CREEK NEAR DIXONVILLE, OR

LOCATION.--Lat 43°10'16", long 123°13'23", in NW 1/4 NW 1/4 sec.6, T.28 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on left bank, 900 ft upstream from bridge on Douglas County Road Number 83, 2.6 mi southeast of Dixonville, and 2.2 mi upstream from confluence of north and south forks.

DRAINAGE AREA.--15.2 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 700 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those below 5 ft³/s, which are fair. No regulation. Minor diversion for irrigation upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--10 years (water years 1990-99), 22.7 ft³/s, 20.29 in/yr, 16,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,910 ft³/s Jan. 20, 1996, gage height, 5.33 ft; maximum gage height, 6.84 ft, from inside highwater mark, occurred Nov. 18, 1996; minimum discharge, 0.22 ft³/s Aug. 28, 1999.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	unknown	*1,820	a*6.98	Jan. 22	1030	467	3.99
Dec. 2	1200	450	3.94	Feb. 6	1030	436	3.90
Dec. 28	0730	269	3.34	Feb. 18	1100	420	3.85
Jan. 17	1900	509	4.11				

Minimum discharge, 0.22 ft³/s, Aug. 28.
a From inside high-water mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	6.7	130	64	26	88	26	8.8	6.2	2.8	2.0	1.8
2	3.0	5.2	286	56	37	70	25	11	6.1	2.8	1.9	1.6
3	2.5	4.1	180	50	41	76	28	16	5.7	2.8	1.9	1.6
4	2.4	5.6	92	44	41	69	29	15	5.4	2.8	1.9	1.3
5	1.7	9.9	74	40	37	60	30	13	5.2	2.7	2.1	1.3
6	1.5	14	79	36	189	52	29	11	5.1	2.8	3.0	1.3
7	1.5	17	80	34	198	44	27	11	4.8	2.8	3.3	1.3
8	4.4	17	83	30	119	42	33	11	4.8	2.6	3.4	1.3
9	2.5	10	72	29	83	39	34	9.9	4.5	2.5	2.4	1.1
10	2.2	14	61	27	69	34	35	9.4	4.4	2.4	2.2	1.1
11	1.9	12	57	26	59	30	33	10	4.2	2.3	2.2	1.1
12	1.8	8.7	52	25	53	28	29	14	4.0	2.3	2.3	1.0
13	4.0	6.5	52	24	52	26	26	15	3.9	2.2	2.2	.90
14	3.0	5.5	57	33	54	34	22	16	3.7	2.3	2.2	.80
15	2.6	5.5	51	88	49	31	20	17	3.8	2.3	2.1	.84
16	2.4	6.2	46	93	52	29	19	16	3.7	2.4	1.9	.92
17	2.0	16	41	182	101	27	17	15	3.7	2.4	1.8	.98
18	1.9	23	37	184	236	25	16	15	3.6	2.3	1.9	.95
19	1.8	13	34	95	133	22	15	13	3.5	2.2	2.0	.82
20	1.7	38	30	97	80	20	15	12	3.6	2.2	1.9	.74
21	1.8	749	28	275	61	19	14	11	3.8	2.3	1.8	.69
22	1.8	214	26	257	52	18	14	9.9	3.5	2.2	1.8	.69
23	1.9	124	26	150	53	17	12	9.2	3.2	2.1	1.8	.68
24	2.4	153	26	91	47	20	11	8.4	3.3	2.2	1.7	.69
25	4.8	73	34	71	46	26	10	7.9	3.4	2.3	1.6	.68
26	3.2	133	40	59	49	23	10	7.5	3.2	2.2	1.6	.69
27	3.5	73	60	48	82	22	10	7.1	3.1	2.1	1.4	.72
28	6.2	50	228	41	143	21	10	6.6	3.0	2.0	1.5	.74
29	3.3	72	124	36	---	23	9.4	6.4	2.9	2.1	1.5	.68
30	2.6	191	77	32	---	25	9.0	6.0	2.8	2.1	3.5	.59
31	4.1	---	72	30	---	26	---	5.8	---	2.0	2.1	---
TOTAL	81.9	2069.9	2335	2347	2242	1086	617.4	344.9	122.1	73.5	64.9	29.60
MEAN	2.64	69.0	75.3	75.7	80.1	35.0	20.6	11.1	4.07	2.37	2.09	.99
MAX	6.2	749	286	275	236	88	35	17	6.2	2.8	3.5	1.8
MIN	1.5	4.1	26	24	26	17	9.0	5.8	2.8	2.0	1.4	.59
AC-FT	162	4110	4630	4660	4450	2150	1220	684	242	146	129	.59
CFSM	.17	4.53	4.95	4.97	5.26	2.30	1.35	.73	.27	.16	.14	.06
IN.	.20	5.06	5.70	5.73	5.48	2.65	1.51	.84	.30	.18	.16	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1999, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	2.99	23.3	53.8	56.1	40.3	32.3	26.5	23.2	8.75	2.85
MAX	7.34	69.0	179	127	80.1	54.5	64.9	66.7	32.2	5.00
(WY)	1998	1999	1997	1996	1999	1991	1993	1998	1993	1997
MIN	1.25	1.87	2.98	14.5	14.8	6.25	6.74	3.48	2.40	1.12
(WY)	1994	1994	1990	1992	1992	1992	1990	1992	1994	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1990 - 1999

ANNUAL TOTAL	12822.7	11414.20	
ANNUAL MEAN	35.1	31.3	22.7
HIGHEST ANNUAL MEAN			36.3
LOWEST ANNUAL MEAN			7.93
HIGHEST DAILY MEAN	749	Nov 21	954
LOWEST DAILY MEAN	1.0	Sep 7	.25
ANNUAL SEVEN-DAY MINIMUM	1.2	Sep 11	.35
ANNUAL RUNOFF (AC-FT)	25430	22640	16470
ANNUAL RUNOFF (CFSM)	2.31	2.05	1.49
ANNUAL RUNOFF (INCHES)	31.32	27.88	20.29
10 PERCENT EXCEEDS	80	78	56
50 PERCENT EXCEEDS	17	10	7.4
90 PERCENT EXCEEDS	1.7	1.6	1.3

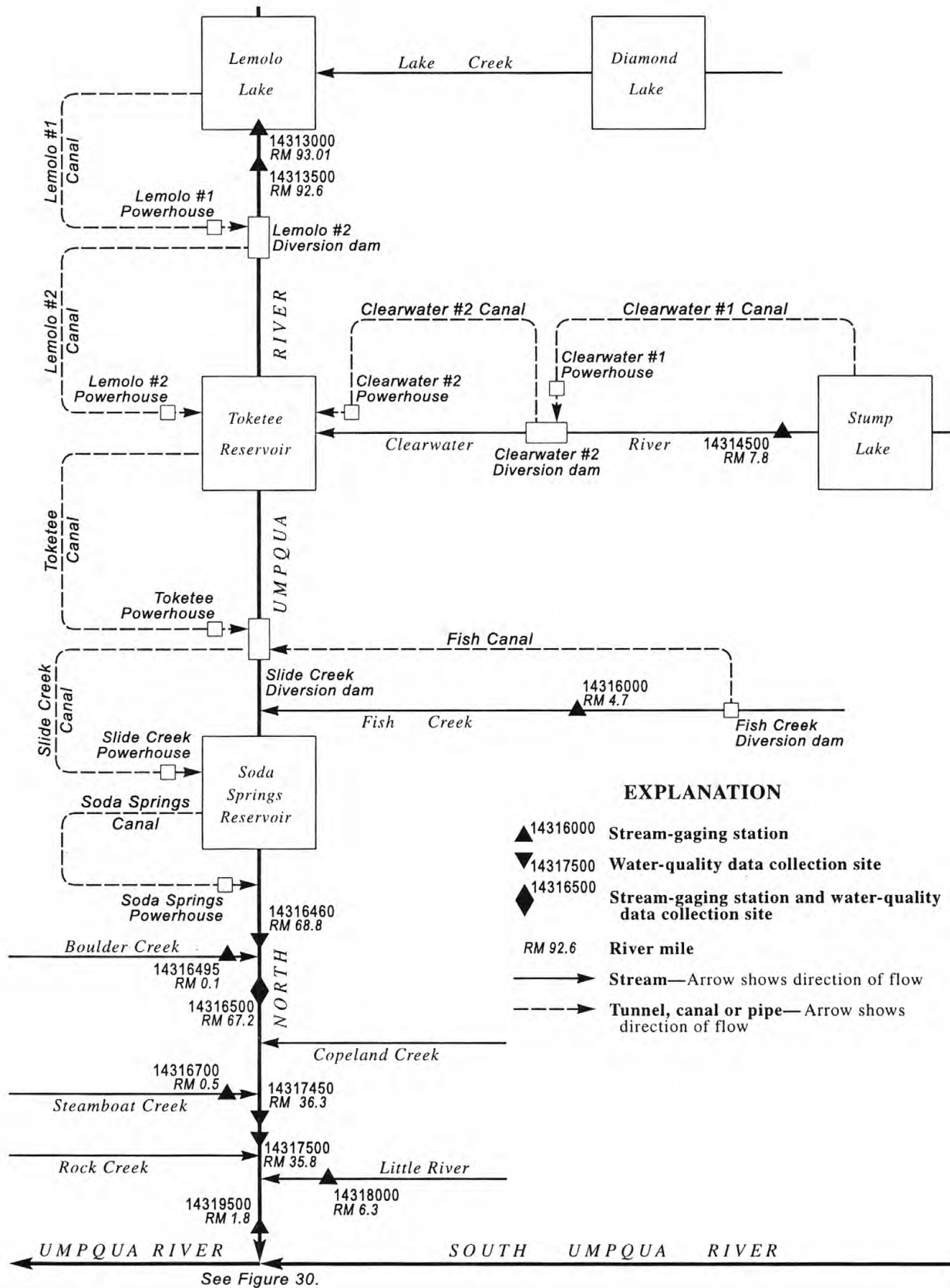


Figure 31. Schematic diagram showing gaging stations and diversions in the North Umpqua River Basin.

UMPQUA RIVER BASIN

14313000 LEMOLO LAKE NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°19'10", long 122°11'20", in SE 1/4 NW 1/4 sec.11, T.26 S., R.5 E., Douglas County, Hydrologic Unit 17100301, at Lemolo No. 1 diversion dam on North Umpqua River, 0.8 mi downstream from Lake Creek, 13.0 mi east of town of Toketee Falls, and at mile 93.01.

DRAINAGE AREA.--170 mi².

PERIOD OF RECORD.--July 1954 to current year. Prior to October 1960, published as Lemolo Reservoir near Toketee Falls.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Pacific Power).

REMARKS.--Lake is formed by Lemolo No 1 diversion dam. Storage began July 15, 1954. Usable capacity for normal operation, 12,520 acre-ft between elevations 4,097.0 ft and 4,148.5 ft. Dead storage below 4,097.0 ft, 1,040 acre-ft. Water is used for power generation. Figures given herein represent total contents.

COOPERATION.--Gage readings furnished by Pacific Power.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 14,000 acre-ft Dec. 24, 1964, elevation, 4,149.5 ft; minimum observed, 11 acre-ft Mar. 5, 1955, elevation, 4,055.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 13,330 acre-ft June 24, elevation, 4,147.95 ft; minimum observed, 1,030 acre-ft Apr. 13, elevation, 4,096.80 ft.

MONTHEND ELEVATION AND CONTENTS AT 0900, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	4,139.50	10,060	--
Oct. 31.....	4,128.10	6,430	-3,630
Nov. 30.....	4,124.70	5,470	-960
Dec. 31.....	4,123.85	5,240	-230
CAL YR 1998.....	--	--	+1,180
Jan. 31.....	4,132.35	7,710	+2,470
Feb. 28.....	4,121.55	4,640	-3,070
Mar. 31.....	4,099.40	1,230	-3,410
Apr. 30.....	4,102.70	1,530	+300
May 31.....	4,144.50	11,920	+10,390
June 30.....	4,147.15	12,990	+1,070
July 31.....	4,146.95	12,910	-80
Aug. 31.....	4,147.55	13,160	+250
Sept. 30.....	4,141.20	10,670	-2,490
WTR YR 1999.....	--	--	+610

14313500 NORTH UMPQUA RIVER BELOW LEMOLO LAKE, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°19'20", long 122°11'40", in NW 1/4 NW 1/4 sec.11, T.26 S., R.5 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on right bank 0.4 mi downstream from Lemolo Lake, 13 mi east of town of Toketee Falls, and at mile 92.6.

DRAINAGE AREA.--170 mi² (see REMARKS).

PERIOD OF RECORD.--October 1927 to December 1945, March 1946 to current year. Records since October 1983 are equivalent to earlier records if diversion to Lemolo No. 1 power canal is added to flow past station. Published as "below Lake Creek" prior to October 1952, as "below Lake Creek, near Toketee Falls" October 1952 to September 1953, and as "below Lemolo Reservoir near Toketee Falls" October 1953 to September 1960.

REVISED RECORDS.--WSP 1448: Drainage area. WDR OR-75-1: 1964(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,025 ft above sea level, from river-profile map. Prior to July 15, 1954, at site 1 mi upstream at datum about 65 ft higher. July 15, 1954, to Sept. 25, 1955, at site 400 ft upstream at datum 14.11 ft higher.

REMARKS.--Records good. Flow regulated since 1954 by Lemolo Lake (station 14313000); also slightly regulated by Diamond Lake. Records given herein do not include flow in Lemolo No. 1 power canal which, beginning July 1955, diverts 0.4 mi upstream from station for power generation with return flow 4.3 mi downstream.

AVERAGE DISCHARGE.--55 years (water years 1928-83), 423 ft³/s, 33.79 in/yr, 306,500 acre-ft/yr, adjusted for storage. 32 years (water years 1968-99), 61.0 ft³/s, 44,190 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 4,600 ft³/s Dec. 25, 1964, from rating curve extended above 450 ft³/s on basis of slope-area measurement of peak flow, gage height, 9.20 ft, from floodmark; minimum discharge, 6.4 ft³/s July 17, 1954.

Combined flow, maximum discharge, 4,680 ft³/s Dec. 25, 1964, from river rating curve extended above 450 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 9.7 ft³/s May 13, 1955.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 533 ft³/s June 2, 3, gage height, 6.52 ft; minimum discharge, 29 ft³/s many days during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	31	32	34	35	33	195	31	431	283	41	33
2	36	31	33	34	35	33	32	31	434	251	40	31
3	36	31	33	33	35	34	35	31	465	228	40	31
4	35	31	32	33	34	34	34	31	379	228	38	31
5	35	31	32	33	34	33	33	31	323	227	35	30
6	35	30	32	33	34	33	33	31	307	203	35	30
7	35	30	33	32	34	33	33	32	271	165	34	29
8	35	30	33	32	34	33	33	32	232	141	33	29
9	35	30	32	32	34	32	32	32	231	135	33	207
10	35	30	32	32	33	32	32	32	231	135	33	30
11	35	30	32	32	34	32	32	32	234	135	33	31
12	35	30	32	31	34	32	32	33	237	135	33	30
13	35	30	32	31	33	32	32	33	241	135	32	30
14	35	30	32	32	33	32	32	34	250	135	32	30
15	35	30	32	33	33	31	32	35	260	122	32	30
16	35	30	32	34	33	31	33	38	344	102	32	30
17	34	30	32	35	33	31	33	329	418	71	31	30
18	34	29	31	36	33	30	33	328	414	57	e31	30
19	34	29	31	36	32	30	33	234	410	57	e30	30
20	34	30	31	36	32	30	33	196	405	75	e30	29
21	34	33	31	36	32	29	33	201	402	87	e30	29
22	195	32	31	37	32	29	33	120	398	58	e29	29
23	136	32	31	37	32	32	33	45	334	50	29	29
24	31	32	31	37	32	34	33	51	292	50	29	29
25	31	32	31	36	32	33	34	57	331	49	30	29
26	30	32	30	36	32	33	34	167	353	44	31	29
27	30	32	31	36	32	103	34	272	349	42	31	29
28	30	32	32	36	33	145	32	354	317	41	31	29
29	31	32	32	36	---	33	30	500	298	41	31	29
30	32	32	33	36	---	32	30	495	297	41	32	29
31	32	---	33	35	---	32	---	492	---	41	33	---
TOTAL	1311	924	987	1062	929	1176	1143	4360	9888	3564	1014	1071
MEAN	42.3	30.8	31.8	34.3	33.2	37.9	38.1	141	330	115	32.7	35.7
MAX	195	33	33	37	35	145	195	500	465	283	41	207
MIN	30	29	30	31	32	29	30	31	231	41	29	29
AC-FT	2600	1830	1960	2110	1840	2330	2270	8650	19610	7070	2010	2120

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1999, 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
MEAN	38.4	34.9	40.1	44.1	35.1	38.5	39.8	114	143	86.6	68.6	47.9																				
MAX	126	150	185	307	144	200	119	301	687	301	321	225																				
(WY)	1979	1979	1997	1997	1996	1972	1987	1972	1974	1996	1979	1985																				
MIN	19.8	19.1	19.5	19.6	19.8	19.8	22.2	22.2	22.6	24.2	20.8	20.9																				
(WY)	1973	1973	1971	1985	1973	1973	1973	1973	1973	1968	1971	1972																				

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1968 - 1999
ANNUAL TOTAL	26276	27429	
ANNUAL MEAN	72.0	75.1	61.0
HIGHEST ANNUAL MEAN			125
LOWEST ANNUAL MEAN			24.1
HIGHEST DAILY MEAN	505	Jul 16	1070
LOWEST DAILY MEAN	29	Nov 18	15
ANNUAL SEVEN-DAY MINIMUM	30	Nov 13	17
ANNUAL RUNOFF (AC-FT)	52120	54410	44190
10 PERCENT EXCEEDS	120	234	133
50 PERCENT EXCEEDS	37	33	30
90 PERCENT EXCEEDS	32	30	23

e Estimated

UMPQUA RIVER BASIN

14314500 CLEARWATER RIVER ABOVE TRAP CREEK, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°14'40", long 122°17'10", in SW 1/4 sec.1, T.27 S., R.4 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on right bank 900 ft downstream from Clearwater No. 1 diversion dam, 0.4 mi upstream from Trap Creek, 8.7 mi east of town of Toketee Falls, and at mile 7.8.

DRAINAGE AREA.--41.6 mi² (see REMARKS).

PERIOD OF RECORD.--October 1927 to December 1945, March 1946 to current year. Records since October 1983 are equivalent to earlier records if diversion to Clearwater No. 1 power canal is added to flow past station. Monthly discharge only December 1927 to March 1928, published in WSP 1318. Prior to October 1952, published as "above Trap Creek."

REVISED RECORDS.--WSP 1124: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,862.84 ft above sea level (levels by Pacific Power & Light Co.). Prior to Dec. 1, 1953, at two sites about 0.4 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good. Records after September 1983 do not include flow in Clearwater No. 1 power canal, completed in June 1953, which diverts 900 ft upstream from station for generation of power and returns water to Clearwater River 2.5 mi downstream from station.

AVERAGE DISCHARGE.--55 years (water years 1928-83), 173 ft³/s, 125,300 acre-ft/yr.
16 years (water years 1984-99), 18.9 ft³/s, 13,690 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 848 ft³/s Dec. 23, 1964, gage height, 7.19 ft; maximum gage height, 7.87 ft Dec. 23, 1964, log jam; minimum discharge, 0.08 ft³/s Sept. 21, 1977, result of beavers plugging release gate at diversion dam 900 ft upstream.

Combined flow, maximum discharge, 1,020 ft³/s Dec. 23, 1964; minimum daily, 91 ft³/s Nov. 4-6, 1931.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 142 ft³/s Mar. 12, gage height, 4.05 ft; minimum discharge, 5.1 ft³/s several days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	6.5	9.2	8.4	8.4	9.0	7.7	32	104	37	7.9	7.4
2	6.7	6.5	15	8.4	8.1	8.5	7.7	38	96	32	7.7	7.4
3	6.7	6.5	10	8.3	8.1	8.5	7.7	36	74	26	7.6	7.4
4	6.7	6.5	9.6	8.0	8.2	8.2	7.7	30	59	20	7.5	7.4
5	6.7	6.6	9.3	8.0	8.0	8.0	7.7	24	54	18	7.6	7.4
6	6.7	6.5	9.3	8.0	8.4	8.0	7.7	27	54	22	7.8	7.4
7	6.7	6.5	9.0	7.9	8.5	7.7	7.7	33	45	24	7.7	7.6
8	6.7	6.5	9.0	7.7	8.0	7.8	7.7	29	40	20	7.7	7.7
9	6.7	6.5	8.8	7.7	8.0	7.9	7.7	25	37	20	7.5	7.4
10	6.7	6.5	8.7	7.7	8.0	7.5	7.7	23	36	24	7.9	7.4
11	6.6	6.5	8.9	7.7	8.0	7.4	7.7	23	38	26	12	7.2
12	6.5	6.5	8.5	7.7	7.7	25	7.7	29	43	27	7.8	7.1
13	6.7	6.5	8.7	7.7	7.7	8.6	7.7	29	55	26	7.7	7.1
14	6.7	6.5	8.4	8.4	7.5	8.4	7.8	27	75	21	7.6	8.0
15	6.7	6.5	8.4	17	7.4	8.2	8.0	24	89	14	7.4	8.6
16	6.5	6.5	8.1	11	7.5	8.0	7.9	22	87	11	7.4	8.7
17	6.5	6.5	8.0	11	7.6	8.0	8.0	29	78	10	7.4	8.0
18	6.5	6.5	7.4	12	7.7	7.8	8.3	45	73	8.7	7.4	7.7
19	6.5	6.5	7.1	10	7.5	7.7	10	53	67	8.6	7.3	7.7
20	6.5	7.1	7.1	10	7.4	7.7	14	61	60	15	7.2	7.7
21	6.5	49	7.1	9.6	7.4	7.7	16	59	55	13	7.1	7.7
22	6.5	11	7.1	9.3	7.4	7.8	14	63	49	8.6	7.1	7.7
23	6.5	11	7.1	9.2	7.7	7.9	14	78	50	8.2	7.1	6.4
24	6.5	10	7.1	9.0	7.8	7.8	19	105	58	8.2	7.1	5.1
25	6.5	9.5	7.1	9.0	7.8	8.0	26	128	54	8.0	7.1	5.1
26	6.5	9.8	7.1	8.8	7.5	8.0	30	126	40	8.0	7.1	5.1
27	6.5	9.4	7.6	8.7	7.6	8.0	29	125	34	8.0	7.1	5.1
28	6.5	9.0	9.6	8.6	11	8.0	23	133	31	8.0	7.1	5.2
29	6.5	9.0	8.8	8.4	---	8.0	19	124	33	8.0	7.1	5.4
30	6.5	9.3	8.5	8.4	---	8.0	21	109	37	8.0	7.2	5.4
31	6.5	---	8.5	8.4	---	7.9	---	97	---	8.0	7.3	---
TOTAL	204.0	267.7	264.1	280.0	221.9	265.0	375.1	1786	1705	504.3	234.5	210.5
MEAN	6.58	8.92	8.52	9.03	7.92	8.55	12.5	57.6	56.8	16.3	7.56	7.02
MAX	6.7	49	15	17	11	25	30	133	104	37	12	8.7
MIN	6.5	6.5	7.1	7.7	7.4	7.7	22	31	31	8.0	7.1	5.1
AC-FT	405	531	524	555	440	526	744	3540	3380	1000	465	418

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	12.6	8.26	13.4	18.5	23.2	14.7	21.3	47.4	17.1	23.3	16.6	10.3
MEAN	12.6	8.26	13.4	18.5	23.2	14.7	21.3	47.4	17.1	23.3	16.6	10.3
MAX	76.8	35.0	68.5	143	177	45.0	66.1	125	56.8	88.3	100	59.4
(WY)	1988	1997	1997	1997	1996	1997	1997	1984	1999	1993	1996	1994
MIN	4.91	5.04	3.48	5.43	5.32	5.56	5.98	5.10	5.56	5.43	5.04	5.02
(WY)	1989	1988	1998	1987	1990	1988	1991	1992	1992	1990	1986	1987

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1984 - 1999

ANNUAL TOTAL	5055.9	6318.1	
ANNUAL MEAN	13.9	17.3	18.9
HIGHEST ANNUAL MEAN			52.0
LOWEST ANNUAL MEAN			5.85
HIGHEST DAILY MEAN	258	Apr 30	659
LOWEST DAILY MEAN	3.3	Jan 5	2.0
ANNUAL SEVEN-DAY MINIMUM	3.3	Jan 3	3.2
ANNUAL RUNOFF (AC-FT)	10030		13700
10 PERCENT EXCEEDS	15		43
50 PERCENT EXCEEDS	6.7	8.0	6.5
90 PERCENT EXCEEDS	5.9	6.5	5.2

14316000 FISH CREEK AT BIG CAMAS RANGER STATION, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°13'50", long 122°26'45", in SE 1/4 sec.10, T.27 S., R.3 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, 0.2 mi upstream from Camas Creek, 0.7 mi east of Big Camas ranger station, 3.2 mi south of town of Toketee Falls, and at mile 4.7.

DRAINAGE AREA.--68.8 mi² (see REMARKS).

PERIOD OF RECORD.--October 1947 to current year. Records since October 1983 are equivalent to earlier records if diversion to Fish Creek power canal is added to flow past station. Prior to October 1952, published as "at Big Camas ranger station."

REVISED RECORDS.--WSP 1448: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,858.52 ft above sea level (levels by Pacific Power & Light Co.). Prior to July 10, 1951, water-stage recorder and July 10 to Aug. 10, 1951, nonrecording gage at site 1,000 ft upstream at datum 13.72 ft higher. Aug. 11 to Nov. 3, 1951, nonrecording gage at site 200 ft downstream at different datum. Nov. 4, 1951, to Sept. 30, 1956, water-stage recorder at present site at datum 1.92 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Several measurements of water temperature were made during the year. Records given herein do not include flow in Fish Creek power canal (diversion began June 18, 1952), which diverts water 2 mi upstream from station for power generation at Fish Creek powerplant; diversion discharged to North Umpqua River 600 ft downstream from Toketee powerplant.

AVERAGE DISCHARGE.--36 years (water years 1947-83), 237 ft³/s, 46.78 in/yr, 171,700 acre-ft/yr.
16 years (water years 1984-99), 134 ft³/s, 26.39 in/yr, 96,810 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 12,100 ft³/s Dec. 22, 1964, gage height, 13.9 ft, from floodmark; minimum discharge, 2.3 ft³/s Sept. 25, 1957.

Combined flow, maximum discharge, 12,100 ft³/s Dec. 22, 1964; minimum daily, 19 ft³/s July 30, 1979, result of diversion dam manipulation.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 2,320 ft³/s Nov. 21, gage height, 7.46 ft; minimum discharge, 12 ft³/s Nov. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	30	269	400	53	e620	53	268	672	298	25	34
2	24	23	1120	306	49	e530	43	297	568	261	28	33
3	23	23	862	232	43	e440	36	287	402	216	31	30
4	22	32	467	194	39	e350	30	232	322	182	30	29
5	17	40	303	162	31	e290	29	197	335	163	38	28
6	16	22	203	131	55	e260	28	252	337	172	40	29
7	15	21	146	111	148	e210	29	316	277	171	45	28
8	21	19	105	95	112	e170	32	253	247	148	34	25
9	21	14	64	77	87	e130	28	202	223	149	30	22
10	25	22	54	59	59	74	27	167	225	160	30	21
11	20	22	86	55	40	49	26	153	255	163	49	20
12	19	19	138	51	35	52	32	203	332	160	26	19
13	26	18	210	44	31	96	55	201	467	152	28	18
14	24	21	189	171	31	104	75	170	626	133	29	18
15	20	39	152	787	28	102	102	144	724	108	30	17
16	19	52	118	757	40	99	175	135	687	92	31	17
17	17	43	109	690	140	93	311	203	617	80	30	17
18	18	31	101	805	178	88	506	406	588	62	28	16
19	17	23	81	604	153	99	553	465	550	50	27	16
20	16	194	90	524	155	150	511	469	496	92	28	17
21	16	1670	231	454	553	176	446	423	487	83	32	16
22	17	745	367	416	588	173	345	461	447	49	33	16
23	17	641	496	395	e490	156	302	616	452	64	32	17
24	18	480	595	297	e440	168	341	872	491	59	32	18
25	30	362	230	237	e370	207	405	975	467	38	30	18
26	23	478	87	193	e280	203	404	872	367	30	30	18
27	22	363	194	152	e500	170	322	860	310	25	30	17
28	34	220	1060	125	e780	137	273	886	281	22	32	17
29	20	152	812	106	---	117	186	797	293	23	30	17
30	16	220	546	91	---	93	190	685	312	26	49	16
31	19	---	534	75	---	73	---	613	---	25	37	---
TOTAL	631	6039	10019	8796	5508	5679	5895	13080	12857	3456	1004	624
MEAN	20.4	201	323	284	197	183	196	422	429	111	32.4	20.8
MAX	34	1670	1120	805	780	620	553	975	724	298	49	34
MIN	15	14	54	44	28	49	26	135	223	22	25	16
AC-FT	1250	11980	19870	17450	10930	11260	11690	25940	25500	6850	1990	1240
CFSM	.30	2.93	4.70	4.12	2.86	2.66	2.86	6.13	6.23	1.62	.47	.30
IN.	.34	3.27	5.42	4.76	2.98	3.07	3.19	7.07	6.95	1.87	.54	.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	MEAN	29.6	107	183	196	174	201	218	244	147	41.0	35.0	30.5
MAX	78.8	387	747	682	545	581	434	505	429	111	74.5	74.5	74.5
(WY)	1987	1997	1997	1997	1986	1993	1989	1993	1999	1999	1985	1986	1986
MIN	11.7	17.2	42.2	32.0	29.2	31.0	83.7	36.4	28.9	23.5	23.3	13.6	13.6
(WY)	1984	1990	1993	1992	1990	1992	1994	1992	1987	1996	1992	1990	1990

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1984 - 1999
ANNUAL TOTAL	61324	73588	
ANNUAL MEAN	168	202	134
HIGHEST ANNUAL MEAN			247
LOWEST ANNUAL MEAN			40.4
HIGHEST DAILY MEAN	1710	Jan 17	4100
LOWEST DAILY MEAN	14	Nov 9	5.9
ANNUAL SEVEN-DAY MINIMUM	17	Oct 17	6.8
ANNUAL RUNOFF (AC-FT)	121600	146000	96810
ANNUAL RUNOFF (CFSM)	2.44	2.93	1.94
ANNUAL RUNOFF (INCHES)	33.16	39.79	26.39
10 PERCENT EXCEEDS	413	539	337
50 PERCENT EXCEEDS	63	104	49
90 PERCENT EXCEEDS	23	19	16

e Estimated

LOCATION.--Lat 43°18'22", long 122°30'42", in NE 1/4 SW 1/4 sec.18, T.26 S., R.3 E., Douglas County, Hydrologic Unit 17100301, on right bank 0.9 mi upstream from Boulder Creek, 4.5 mi west of Toketee Falls, and at mile 68.8.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1997 to current year.
pH: October 1997 to current year.
WATER TEMPERATURE: October 1997 to current year.
DISSOLVED OXYGEN: October 1997 to current year.

EXTREMES FOR PERIOD OCTOBER 1997 TO SEPTEMBER 1998.--

SPECIFIC CONDUCTANCE: Maximum recorded, 60 microsiemens Dec. 20, 23, 1997, July 22, 1998, but may have been higher during periods of missing record; minimum recorded, 34 microsiemens Jan. 17, 1998.
 pH: Maximum recorded, 8.2 units Aug. 9, 1998, but may have been higher during period of missing record; minimum recorded, 7.0 units Oct. 29, 1997, but may have been lower during period of missing record.
 WATER TEMPERATURE: Maximum recorded, 14.5°C July 27, 1998, but may have been higher during period of missing record; minimum recorded, 2.0°C Dec. 25, 1997.
 DISSOLVED OXYGEN: Maximum recorded, 13.5 mg/L Mar. 28, 1998; minimum recorded, 9.6 mg/L July 27, 28, 1998, but may have been lower during period of missing record.

[illegible][illegible]

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	36	35	36	44	42	42	53	52	52	56	55	56
2	36	35	35	43	42	42	53	52	53	56	55	56
3	38	36	37	44	42	43	54	52	53	56	56	56
4	39	38	38	44	43	44	54	53	53	56	56	56
5	39	39	39	45	44	44	---	---	---	56	56	56
6	39	39	39	45	45	45	---	---	---	56	56	56
7	42	39	40	46	44	45	---	---	---	56	56	56
8	42	42	42	46	45	45	---	---	---	56	56	56
9	43	42	43	46	45	45	---	---	---	60	56	56
10	44	43	43	46	45	45	55	54	54	56	56	56
11	44	42	43	46	45	45	54	52	53	56	56	56
12	43	42	42	46	45	46	54	53	54	56	56	56
13	42	40	41	46	46	46	55	54	54	56	56	56
14	---	---	---	46	46	46	54	53	54	---	---	---
15	---	---	---	47	46	47	54	54	54	---	---	---
16	38	36	37	48	47	47	55	54	54	---	---	---
17	37	36	36	48	47	48	55	54	55	---	---	---
18	37	36	37	49	48	48	55	55	55	---	---	---
19	38	36	37	50	48	49	55	55	55	---	---	---
20	38	37	37	50	47	49	55	55	55	---	---	---
21	38	37	38	49	46	48	55	55	55	---	---	---
22	39	38	38	50	49	49	56	55	55	---	---	---
23	39	38	39	51	49	50	56	55	56	---	---	---
24	39	38	38	51	48	50	56	56	56	---	---	---
25	39	38	38	51	50	50	56	56	56	---	---	---
26	41	39	40	51	50	51	56	56	56	---	---	---
27	42	40	41	52	51	51	56	56	56	---	---	---
28	42	41	42	52	51	52	56	56	56	---	---	---
29	43	42	42	53	51	52	56	56	56	---	---	---
30	43	42	42	53	52	52	56	56	56	---	---	---
31	---	---	---	53	52	52	56	56	56	---	---	---
MONTH	---	---	---	53	42	47	---	---	---	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	7.5	7.4	7.4	7.3	7.5	7.4	7.6	7.4
2	---	---	---	---	7.5	7.4	7.5	7.3	7.5	7.4	7.6	7.3
3	---	---	---	---	7.5	7.4	7.5	7.3	7.5	7.4	7.7	7.4
4	---	---	---	---	7.6	7.4	7.5	7.3	7.5	7.4	7.7	7.4
5	---	---	---	---	7.6	7.4	7.5	7.3	---	---	7.7	7.5
6	---	---	---	---	7.6	7.5	7.5	7.3	---	---	7.7	7.4
7	---	---	---	---	7.5	7.4	7.5	7.4	---	---	7.7	7.4
8	---	---	---	---	7.5	7.3	7.5	7.3	---	---	7.7	7.3
9	---	---	---	---	7.5	7.4	7.5	7.3	---	---	7.7	7.3
10	---	---	---	---	7.5	7.3	7.5	7.3	7.6	7.4	7.6	7.4
11	---	---	---	---	7.5	7.3	7.5	7.3	7.5	7.4	7.7	7.4
12	---	---	---	---	7.5	7.3	7.5	7.3	7.5	7.4	7.6	7.4
13	---	---	---	---	7.5	7.3	7.5	7.3	7.5	7.4	7.6	7.4
14	---	---	---	---	---	---	7.5	7.3	7.5	7.4	---	---
15	---	---	7.7	7.5	---	---	7.5	7.3	7.5	7.5	---	---
16	---	---	7.7	7.5	7.4	7.3	7.6	7.3	7.5	7.5	---	---
17	---	---	7.7	7.5	7.4	7.3	7.6	7.4	7.5	7.4	---	---
18	---	---	7.6	7.4	7.5	7.3	7.6	7.4	7.5	7.4	---	---
19	---	---	7.6	7.5	7.5	7.3	7.6	7.3	7.5	7.4	---	---
20	---	---	7.6	7.4	7.4	7.3	7.6	7.4	7.5	7.4	---	---
21	---	---	7.6	7.4	7.4	7.3	7.5	7.2	7.5	7.4	---	---
22	---	---	7.6	7.4	7.4	7.3	7.5	7.3	7.5	7.4	---	---
23	---	---	7.6	7.4	7.4	7.3	7.5	7.4	7.5	7.4	---	---
24	---	---	7.5	7.4	7.4	7.3	7.5	7.3	7.5	7.4	---	---
25	---	---	7.5	7.3	7.4	7.3	7.5	7.4	7.5	7.4	---	---
26	---	---	7.5	7.4	7.4	7.3	7.5	7.3	7.5	7.4	---	---
27	---	---	7.5	7.3	7.4	7.3	7.5	7.3	7.5	7.4	---	---
28	---	---	7.5	7.3	7.4	7.3	7.5	7.3	7.5	7.4	---	---
29	---	---	7.5	7.4	7.4	7.2	7.5	7.3	7.5	7.4	---	---
30	---	---	7.5	7.4	7.4	7.2	7.5	7.4	7.6	7.4	---	---
31	---	---	7.5	7.4	---	---	7.5	7.4	7.6	7.4	---	---
MONTH	---	---	---	---	---	---	7.6	7.2	---	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

UMPQUA RIVER BASIN

347

14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3.5	3.0	3.0	5.0	4.5	4.5	4.5	3.5	4.0	8.0	6.5	7.0
2	3.5	3.0	3.0	5.0	4.0	4.5	5.0	4.5	4.5	7.0	5.5	5.5
3	4.0	3.0	3.5	5.0	4.0	4.0	---	---	---	5.5	5.0	5.0
4	4.0	3.5	3.5	---	---	---	---	---	---	5.5	4.5	5.0
5	3.5	3.0	3.5	4.0	3.0	3.5	---	---	---	7.5	5.0	5.5
6	3.5	3.0	3.5	4.0	3.0	3.5	---	---	---	7.5	6.0	6.5
7	4.0	3.5	3.5	4.5	3.5	4.0	5.5	4.5	5.0	7.0	5.5	6.0
8	3.5	3.0	3.0	4.5	4.0	4.0	5.0	4.0	4.5	6.0	5.0	5.5
9	---	---	---	4.0	3.5	4.0	4.5	4.0	4.0	6.5	5.0	5.5
10	---	---	---	4.0	3.5	4.0	4.5	4.0	4.0	6.5	5.0	5.5
11	---	---	---	4.0	3.5	4.0	5.5	4.0	4.5	6.0	5.5	5.5
12	---	---	---	4.0	3.5	4.0	6.0	5.5	5.5	7.0	6.0	6.5
13	---	---	---	5.0	4.0	4.5	7.0	6.0	6.0	7.0	6.0	6.0
14	---	---	---	5.0	4.5	4.5	7.0	5.5	6.0	6.0	5.5	5.5
15	---	---	---	5.5	4.5	5.0	7.0	5.5	6.0	6.5	5.5	6.0
16	---	---	---	5.5	5.0	5.0	7.0	6.0	6.5	7.5	5.5	6.0
17	4.5	4.0	4.0	5.5	4.5	5.0	7.5	6.0	6.5	7.5	6.5	7.0
18	4.5	4.0	4.0	5.5	5.0	5.0	7.5	6.0	6.5	7.0	6.0	6.5
19	4.5	4.0	4.0	6.0	4.5	5.0	7.0	5.5	6.0	8.0	6.0	7.0
20	---	---	---	6.0	5.0	5.0	6.5	5.5	6.0	8.0	6.5	7.0
21	---	---	---	5.5	5.0	5.0	6.5	5.5	5.5	8.0	6.0	7.0
22	---	---	---	5.5	4.5	5.0	6.5	5.0	5.5	9.0	6.5	7.5
23	---	---	---	5.5	5.0	5.0	7.0	5.0	6.0	9.0	7.0	8.0
24	---	---	---	5.5	5.0	5.0	7.5	5.5	6.5	9.0	7.0	8.0
25	---	---	---	5.5	5.0	5.0	7.5	6.0	6.5	9.0	6.5	8.0
26	---	---	---	5.0	4.5	5.0	6.5	5.5	6.0	9.0	6.0	7.5
27	4.5	4.0	4.5	4.5	4.0	4.0	6.0	5.0	5.0	9.5	6.5	8.0
28	5.0	4.5	4.5	4.5	4.0	4.0	5.0	4.5	5.0	9.0	6.5	8.0
29	---	---	---	4.5	4.0	4.0	7.0	4.5	5.5	9.0	7.0	8.0
30	---	---	---	4.0	3.5	4.0	8.0	5.5	6.5	9.0	6.5	7.5
31	---	---	---	4.0	3.0	3.5	---	---	---	9.5	7.0	8.0
MONTH	---	---	---	---	---	---	---	---	---	9.5	4.5	6.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.5	7.5	8.5	11.5	10.0	10.5	12.5	11.5	12.0	10.5	9.5	10.0
2	8.5	6.5	7.0	11.5	9.5	10.0	12.5	11.5	12.0	10.5	9.5	10.0
3	7.5	6.0	6.5	10.0	9.0	9.5	12.5	12.0	12.5	11.0	10.0	10.5
4	8.0	6.5	7.5	10.0	8.5	9.5	13.0	12.0	12.5	11.0	10.5	11.0
5	8.5	7.0	8.0	11.0	9.0	10.0	---	---	---	11.5	10.5	11.0
6	8.5	7.0	7.5	11.5	10.0	11.0	---	---	---	11.5	10.5	11.0
7	8.0	7.0	7.5	12.0	10.5	11.0	---	---	---	11.0	10.0	11.0
8	8.0	6.5	7.5	11.0	9.5	10.5	---	---	---	10.5	9.5	10.0
9	8.5	6.5	7.5	12.0	10.5	11.0	12.0	---	---	10.0	9.0	9.5
10	9.0	7.0	8.0	12.0	11.0	11.5	12.5	11.5	12.0	9.5	9.0	9.5
11	9.5	7.5	8.5	12.5	11.0	12.0	12.0	11.5	12.0	9.5	8.5	9.0
12	9.5	8.0	9.0	12.5	11.5	12.0	12.0	11.5	12.0	9.5	8.5	9.0
13	10.0	8.0	9.0	12.5	11.5	12.0	12.0	10.5	11.0	9.5	9.0	9.0
14	10.0	8.5	8.5	12.5	11.0	11.5	10.5	10.0	10.0	---	---	---
15	9.5	8.5	9.0	12.0	10.5	11.0	10.5	10.0	10.5	---	---	---
16	10.5	8.0	9.0	11.5	10.5	11.0	11.0	10.0	10.5	---	---	---
17	10.0	8.0	9.0	11.5	10.5	11.0	11.5	11.0	11.5	---	---	---
18	10.0	8.5	9.0	11.5	10.5	11.0	12.0	11.5	11.5	---	---	---
19	10.5	8.5	9.5	12.0	11.0	11.5	12.0	11.5	12.0	---	---	---
20	10.5	8.5	9.0	12.5	10.5	11.5	12.0	11.5	11.5	---	---	---
21	9.5	8.5	9.0	11.0	9.5	10.0	12.0	11.5	12.0	---	---	---
22	10.5	8.5	9.5	11.5	10.5	11.0	12.0	11.5	12.0	---	---	---
23	11.0	9.0	10.0	12.0	11.0	11.5	12.0	11.5	11.5	---	---	---
24	11.0	9.0	10.0	12.0	11.0	11.5	12.0	11.5	11.5	---	---	---
25	9.5	8.0	8.5	12.0	11.0	11.5	12.0	11.5	12.0	---	---	---
26	10.0	8.5	9.0	12.0	11.0	11.5	12.0	11.5	11.5	---	---	---
27	10.0	8.5	9.5	12.5	11.5	12.0	12.0	11.5	11.5	---	---	---
28	10.5	9.0	9.5	12.5	11.5	12.0	12.0	11.5	11.5	---	---	---
29	11.5	9.5	10.5	12.5	11.5	12.0	12.0	11.0	11.5	---	---	---
30	11.5	10.0	11.0	12.5	11.5	12.0	11.0	10.5	11.0	---	---	---
31	---	---	---	12.5	11.5	12.0	10.5	10.0	10.0	---	---	---
MONTH	11.5	6.0	8.7	12.5	8.5	11.2	---	---	---	---	---	---

UMPQUA RIVER BASIN

14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	11.0	10.8	10.9	11.6	11.2	11.4	---	---	---	---	---	---
2	11.0	10.6	10.8	11.4	11.2	11.2	---	---	---	---	---	---
3	11.2	10.8	11.0	11.4	11.2	11.3	---	---	---	---	---	---
4	11.3	10.9	11.1	11.5	11.2	11.3	---	---	---	---	---	---
5	11.3	10.9	11.2	11.4	11.2	11.3	---	---	---	---	---	---
6	11.4	11.1	11.2	11.6	11.3	11.4	---	---	---	13.3	---	---
7	11.2	11.0	11.1	11.5	11.3	11.4	---	---	---	13.1	12.8	13.0
8	11.3	11.0	11.1	11.8	11.4	11.6	---	---	---	12.9	12.7	12.8
9	11.3	10.9	11.1	12.0	11.6	11.7	---	---	---	12.8	12.5	12.7
10	11.3	11.0	11.2	12.5	11.5	12.0	---	---	---	12.5	12.3	12.4
11	11.3	11.0	11.1	12.8	12.5	12.7	---	---	---	12.3	12.0	12.2
12	11.3	11.0	11.1	13.1	12.7	12.9	12.7	12.2	12.5	12.2	11.9	12.0
13	11.3	10.9	11.1	12.8	12.5	12.7	12.2	12.2	12.2	12.3	11.9	12.1
14	11.1	10.9	11.0	12.7	12.4	12.6	12.5	12.2	12.3	12.1	11.8	12.0
15	11.1	10.9	11.0	12.5	12.2	12.4	12.7	12.5	12.5	11.9	11.6	11.8
16	12.0	10.8	11.5	12.4	12.1	12.2	12.5	12.3	12.4	11.9	11.6	11.8
17	12.0	11.8	11.9	12.6	12.2	12.4	12.4	12.2	12.3	11.9	11.6	11.8
18	11.8	11.6	11.7	12.9	12.4	12.6	12.4	12.2	12.3	11.8	11.6	11.7
19	11.6	11.4	11.5	12.9	12.6	12.7	12.7	12.2	12.5	11.7	11.5	11.6
20	11.5	11.3	11.4	---	---	---	---	---	---	11.6	11.5	11.5
21	11.4	11.2	11.3	---	---	---	---	---	---	---	---	---
22	11.6	11.2	11.4	---	---	---	---	---	---	---	---	---
23	11.7	11.4	11.5	---	---	---	---	---	---	---	---	---
24	11.4	11.2	11.3	---	---	---	---	---	---	---	---	---
25	11.5	11.2	11.3	---	---	---	---	---	---	---	---	---
26	11.4	11.2	11.3	12.2	12.2	12.2	---	---	---	12.6	---	---
27	11.4	11.1	11.2	12.3	12.1	12.2	---	---	---	12.7	12.5	12.6
28	11.4	11.1	11.3	12.2	12.1	12.2	---	---	---	12.5	12.3	12.4
29	11.4	11.2	11.3	12.5	12.2	12.4	---	---	---	12.3	12.1	12.2
30	11.6	11.3	11.5	12.4	12.1	12.2	---	---	---	12.4	12.1	12.3
31	11.5	11.4	11.5	---	---	---	---	---	---	12.4	12.1	12.3
MONTH	12.0	10.6	11.3	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	12.8	12.3	12.6	13.4	13.1	13.2	13.1	12.6	12.8	11.9	11.5	11.7
2	12.7	12.5	12.6	13.2	12.6	12.9	12.8	12.3	12.6	12.1	11.6	11.9
3	12.7	12.2	12.4	13.1	12.7	13.0	---	---	---	12.2	11.9	12.0
4	12.4	12.1	12.3	---	---	---	---	---	---	12.4	11.8	12.2
5	12.6	12.2	12.4	13.3	12.8	13.1	---	---	---	12.3	11.4	12.0
6	12.5	12.2	12.4	13.0	12.6	12.8	---	---	---	11.8	11.3	11.6
7	12.4	12.1	12.2	12.9	12.5	12.7	13.2	12.7	12.9	12.3	11.6	12.1
8	12.6	12.4	12.5	12.6	12.4	12.5	13.1	12.6	12.9	12.4	12.0	12.2
9	---	---	---	12.8	12.5	12.7	13.5	12.9	13.2	12.5	11.9	12.2
10	---	---	---	13.0	12.7	12.9	13.3	12.9	13.1	12.4	11.9	12.2
11	---	---	---	13.1	12.7	12.9	13.0	12.5	12.8	12.2	11.8	12.0
12	---	---	---	12.9	12.6	12.7	12.8	12.3	12.6	12.0	11.6	11.9
13	---	---	---	12.7	12.1	12.5	12.8	12.3	12.5	12.1	11.6	11.9
14	---	---	---	12.5	12.1	12.3	12.8	12.2	12.5	---	11.8	---
15	---	---	---	12.4	12.1	12.2	12.6	12.0	12.3	---	---	---
16	---	---	---	12.4	12.0	12.2	12.4	11.8	12.1	---	---	---
17	13.8	13.5	13.7	12.4	12.0	12.2	12.3	11.7	12.0	---	---	---
18	13.5	12.8	13.1	12.3	11.9	12.1	12.2	11.7	11.9	---	---	---
19	13.2	12.9	13.1	12.5	12.0	12.2	12.2	11.7	12.0	12.3	---	---
20	---	---	---	12.3	11.9	12.1	12.2	11.8	12.0	12.4	11.8	12.1
21	---	---	---	12.7	12.1	12.4	12.2	11.8	12.0	12.6	11.7	12.3
22	---	---	---	12.7	12.4	12.6	12.9	12.0	12.4	12.3	11.5	11.9
23	---	---	---	12.7	12.2	12.5	13.0	12.2	12.6	12.2	11.3	11.7
24	---	---	---	12.6	12.2	12.4	12.6	11.9	12.3	12.2	11.3	11.7
25	---	---	---	13.4	12.3	12.5	12.6	11.9	12.3	12.6	11.4	11.9
26	---	---	---	12.6	12.3	12.4	12.7	12.2	12.5	12.4	11.2	11.8
27	13.6	13.2	13.5	13.0	12.4	12.7	12.9	12.5	12.7	12.2	11.1	11.6
28	13.4	13.2	13.3	13.0	12.5	12.8	12.9	12.6	12.7	12.1	11.1	11.7
29	---	---	---	12.7	12.4	12.6	12.8	12.0	12.5	12.0	11.1	11.6
30	---	---	---	12.9	12.5	12.7	12.5	11.6	12.1	12.2	11.2	11.7
31	---	---	---	13.0	12.5	12.8	---	---	---	11.9	10.7	11.3
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

UMPQUA RIVER BASIN

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14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.3	10.7	11.1	11.2	10.7	10.9	10.7	10.3	10.5	11.3	11.0	11.2
2	11.7	11.1	11.5	11.2	10.7	10.9	10.6	10.2	10.4	11.2	11.0	11.1
3	11.9	11.4	11.6	11.1	10.7	10.9	10.6	10.3	10.5	11.0	10.8	10.9
4	11.6	11.1	11.4	11.2	10.8	11.0	10.7	10.3	10.5	10.9	10.7	10.8
5	11.3	10.8	11.0	11.0	10.5	10.8	---	---	---	10.8	10.6	10.7
6	11.4	10.8	11.2	10.8	10.4	10.6	---	---	---	10.9	10.5	10.7
7	11.4	10.8	11.1	10.8	10.3	10.6	---	---	---	10.9	10.5	10.7
8	11.2	10.7	11.0	10.9	10.4	10.7	---	---	---	11.2	10.7	10.9
9	11.2	10.7	10.9	10.7	10.2	10.4	---	---	---	11.4	11.0	11.1
10	11.1	10.5	10.8	10.5	10.1	10.3	10.9	10.6	10.7	11.4	11.1	11.2
11	11.0	10.4	10.7	10.4	10.0	10.2	11.0	10.6	10.8	11.3	11.1	11.2
12	11.0	10.4	10.7	10.4	10.0	10.2	10.9	10.7	10.8	11.3	11.0	11.2
13	11.0	10.4	10.7	10.4	10.1	10.2	11.2	10.6	10.9	11.2	11.0	11.1
14	---	10.4	---	10.5	10.0	10.3	11.4	11.1	11.2	---	---	---
15	---	---	---	10.6	10.1	10.4	11.4	11.1	11.3	---	---	---
16	11.0	10.4	10.7	10.6	10.2	10.4	11.2	11.0	11.1	---	---	---
17	11.0	10.4	10.7	10.6	10.2	10.4	11.0	10.4	10.8	---	---	---
18	10.9	10.4	10.7	10.6	10.2	10.4	10.6	10.3	10.5	---	---	---
19	11.0	10.4	10.7	10.4	10.1	10.3	10.9	10.4	10.7	---	---	---
20	11.0	10.4	10.7	10.6	9.9	10.2	11.0	10.6	10.8	---	---	---
21	11.0	10.6	10.8	10.7	10.5	10.6	11.0	10.7	10.9	---	---	---
22	11.0	10.4	10.8	10.7	10.3	10.5	11.2	10.8	11.0	---	---	---
23	10.9	10.3	10.6	10.6	10.2	10.4	11.3	10.8	11.1	---	---	---
24	10.7	10.2	10.5	10.6	10.1	10.4	11.3	10.8	11.1	---	---	---
25	12.0	10.7	11.3	10.8	10.2	10.5	11.0	10.8	10.9	---	---	---
26	11.9	11.4	11.6	10.6	10.3	10.4	11.0	10.8	10.9	---	---	---
27	11.8	11.2	11.5	10.7	10.2	10.5	10.9	10.7	10.8	---	---	---
28	11.6	11.1	11.4	10.7	10.2	10.5	11.0	10.8	10.9	---	---	---
29	11.5	10.9	11.2	10.7	10.3	10.5	11.0	10.8	10.9	---	---	---
30	11.3	10.7	11.0	10.7	10.3	10.5	11.2	10.9	11.0	---	---	---
31	---	---	---	10.6	10.3	10.5	11.4	11.1	11.3	---	---	---
MONTH	---	---	---	11.2	9.9	10.5	---	---	---	---	---	---

UMPQUA RIVER BASIN

14316495 BOULDER CREEK NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°18'13", long 122°31'45", in NE 1/4 SW 1/4 sec.13, T.26 S., R.2 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, and at mile 0.1.

DRAINAGE AREA.--30.4 mi².

PERIOD OF RECORD.--October 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,640 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--2 year (water year 1999), 121 ft³/s, 54.03 in/yr, 87,580 acre-ft/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,370 ft³/s Nov. 21, 1998, gage height, 6.98 ft; minimum discharge, 3.0 ft³/s Oct. 7, 1998.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)
Nov. 21	1000	*2,370	*6.98	Feb. 7	unknown	unknown	unknown
Dec. 28	1200	1,480	6.08	Feb. 28	unknown	unknown	unknown
Jan. 18	unknown	unknown	unknown				

Minimum daily discharge, 3.0 ft³/s Oct. 7.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.5	15	e300	459	e120	e550	e110	176	277	79	15	11
2	e5.0	18	e500	309	e110	e340	e105	203	244	73	14	9.6
3	e6.5	16	e380	228	e130	e320	e105	263	180	64	14	9.0
4	e7.5	24	e250	175	e150	e270	e80	269	143	55	13	8.6
5	e5.5	68	e110	141	e160	198	e75	241	142	49	14	8.3
6	e4.5	49	e90	130	e400	151	e85	338	142	48	15	8.2
7	e3.0	60	e80	116	e760	126	92	325	123	48	24	8.0
8	e4.0	68	e115	103	e400	114	103	248	110	45	20	7.9
9	e5.5	52	e110	91	e130	101	96	189	100	43	16	7.7
10	e13	64	e110	83	e70	90	91	149	99	43	15	7.5
11	e12	74	e130	75	e50	84	100	146	108	43	22	7.3
12	e9.5	54	e200	e70	e40	90	169	237	131	41	16	7.1
13	e15	53	e240	e60	e40	144	250	243	169	38	14	6.9
14	e8.0	68	e220	e200	e60	198	245	230	210	34	14	6.9
15	e16	87	e195	e800	e80	191	259	231	232	31	13	6.8
16	e17	145	e180	e700	e130	195	346	208	208	29	12	6.7
17	e13	114	e170	e620	e380	167	450	274	189	28	12	6.7
18	e10	119	156	e840	e500	e150	466	391	170	25	11	6.7
19	e8.5	99	133	e510	e450	e190	430	355	156	24	11	6.5
20	e7.0	137	106	e440	e300	e240	339	333	142	24	11	6.4
21	e5.5	1310	103	e620	e200	e210	280	294	131	23	10	6.2
22	e4.5	495	86	e560	e120	e180	219	300	120	21	10	6.2
23	e4.5	405	73	e650	e360	e165	189	365	120	21	9.7	6.2
24	e5.0	377	65	e400	e280	e155	234	462	122	24	9.6	6.1
25	e6.5	307	70	e290	e200	e165	294	447	115	20	9.1	6.0
26	e7.0	376	127	e220	e160	e155	266	384	98	19	8.9	6.1
27	e9.0	299	244	e180	e280	e135	198	375	88	17	8.7	6.1
28	e11	207	1130	e160	e1100	e115	148	369	81	17	8.4	6.1
29	e12	e240	705	e150	---	e140	122	314	80	16	8.4	6.0
30	8.7	e260	506	e140	---	e160	119	284	81	16	12	5.9
31	8.6	---	518	e130	---	e135	---	261	---	15	14	---
TOTAL	256.3	5660	7402	9650	7160	5624	6065	8904	4311	1073	404.8	214.7
MEAN	8.27	189	239	311	256	181	202	287	144	34.6	13.1	7.16
MAX	17	1310	1130	840	1100	550	466	462	277	79	24	11
MIN	3.0	15	65	60	40	84	75	146	80	15	8.4	5.9
AC-FT	508	11230	14680	19140	14200	11160	12030	17660	8550	2130	803	426
CFSM	.27	6.21	7.85	10.2	8.41	5.97	6.65	9.45	4.73	1.14	.43	.24
IN.	.31	6.93	9.06	11.81	8.76	6.88	7.42	10.90	5.28	1.31	.50	.26

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

MEAN	34.3	126	157	289	178	167	143	206	111	26.0	10.2	5.52
MAX	60.3	189	239	311	256	181	202	287	144	34.6	13.1	7.16
(WY) 1998	1998	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999
MIN	8.27	64.3	75.5	267	99.3	152	84.3	125	77.4	17.5	7.27	3.89
(WY) 1999	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1998 - 1999

ANNUAL TOTAL	38703.5	56724.8	121
ANNUAL MEAN	106	155	155
HIGHEST ANNUAL MEAN			1999
LOWEST ANNUAL MEAN			86.4
HIGHEST DAILY MEAN	1310	Nov 21	1310
LOWEST DAILY MEAN	3.0	Oct 7	3.0
ANNUAL SEVEN-DAY MINIMUM	3.5	Sep 16	3.5
ANNUAL RUNOFF (AC-FT)	76770	112500	87580
ANNUAL RUNOFF (CFSM)	3.49	5.11	3.98
ANNUAL RUNOFF (INCHES)	47.36	69.41	54.03
10 PERCENT EXCEEDS	240	376	284
50 PERCENT EXCEEDS	79	110	82
90 PERCENT EXCEEDS	5.0	7.5	6.9

e Estimated

ANNUAL TOTAL	588549		669723			
ANNUAL MEAN	1612		1835		1487	
HIGHEST ANNUAL MEAN					2080	1956
LOWEST ANNUAL MEAN					897	1977
HIGHEST DAILY MEAN	6420	Jan 17	6290	Nov 21	24300	Dec 22 1964
LOWEST DAILY MEAN	860	Aug 29	888	Oct 22	565	Sep 13 1959
ANNUAL SEVEN-DAY MINIMUM	869	Aug 28	917	Oct 18	587	Sep 2 1992
ANNUAL RUNOFF (AC-FT)	1167000		1328600		1077000	
10 PERCENT EXCEEDS	2510		2920		2420	
50 PERCENT EXCEEDS	1510		1690		1240	
90 PERCENT EXCEEDS	920		974		768	

[illegible]

UMPQUA RIVER BASIN

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14316500 NORTH UMPQUA RIVER ABOVE COPELAND CREEK, NEAR TOKETEE FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), JUNE TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	---	---	---	12.5	11.5	12.0	10.5	9.5	10.0
2	---	---	---	---	---	---	12.5	12.0	12.0	10.5	9.5	10.0
3	---	---	---	---	---	---	13.0	12.5	12.5	10.5	10.0	10.0
4	---	---	---	---	---	---	13.0	12.0	12.5	10.5	10.0	10.0
5	---	---	---	---	---	---	13.0	12.0	12.5	11.0	10.0	10.5
6	---	---	---	---	---	---	12.0	10.5	11.5	11.0	10.0	10.5
7	---	---	---	---	---	---	10.5	10.5	10.5	10.5	10.0	10.0
8	8.0	7.0	7.5	---	---	---	11.0	10.0	10.5	10.5	10.0	10.0
9	8.5	6.5	7.5	---	---	---	12.0	11.0	11.5	11.0	10.0	10.5
10	9.0	7.5	8.0	---	---	---	13.0	12.0	12.0	10.5	10.0	10.0
11	9.5	8.0	8.5	---	---	---	12.5	12.0	12.0	10.5	10.0	10.0
12	9.5	8.5	9.0	---	---	---	12.5	12.0	12.0	11.0	10.0	10.0
13	10.5	8.5	9.0	---	---	---	12.0	10.5	11.5	11.0	10.0	10.5
14	10.5	8.5	9.5	---	---	---	11.0	10.0	10.5	11.0	10.0	10.5
15	10.5	8.5	9.0	---	---	---	11.0	10.0	10.5	10.5	10.0	10.0
16	10.5	8.5	9.0	---	---	---	11.5	10.5	11.0	10.5	10.0	10.0
17	---	---	---	---	---	---	12.0	11.0	11.5	10.5	9.5	10.0
18	---	---	---	---	---	---	12.5	11.5	12.0	10.5	9.5	10.0
19	---	---	---	---	---	---	---	---	---	10.5	10.0	10.0
20	---	---	---	---	---	---	---	---	---	10.5	10.0	10.0
21	---	---	---	---	---	---	---	---	---	10.5	10.0	10.0
22	---	---	---	---	---	---	---	---	---	10.5	10.0	10.0
23	---	---	---	---	---	---	---	---	---	10.5	10.0	10.0
24	---	---	---	---	---	---	---	---	---	10.5	10.0	10.0
25	---	---	---	---	---	---	12.5	---	---	10.5	9.5	10.0
26	---	---	---	---	---	---	12.5	11.5	12.0	9.5	8.5	9.0
27	---	---	---	12.5	11.5	12.5	12.0	11.5	12.0	8.5	7.5	8.5
28	---	---	---	12.5	12.0	12.5	12.5	11.5	12.0	8.5	7.5	8.0
29	---	---	---	13.0	12.0	12.5	12.0	11.5	12.0	9.0	8.0	8.5
30	---	---	---	12.5	12.0	12.0	11.5	10.5	11.0	9.0	8.5	8.5
31	---	---	---	12.5	12.0	12.0	11.0	10.0	10.5	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	11.0	7.5	9.8

OXYGEN DISSOLVED (MG/L), JUNE TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	---	---	---	11.1	10.7	10.9	12.1	11.6	11.8
2	---	---	---	---	---	---	11.1	10.6	10.9	12.1	11.6	11.8
3	---	---	---	---	---	---	11.1	10.3	10.7	11.9	11.5	11.7
4	---	---	---	---	---	---	10.7	10.0	10.4	12.0	11.6	11.8
5	---	---	---	---	---	---	10.7	10.0	10.4	11.8	11.4	11.6
6	---	---	---	---	---	---	11.1	10.4	10.7	11.7	11.3	11.5
7	---	---	---	---	---	---	11.4	10.7	11.1	11.7	11.2	11.5
8	12.6	11.9	12.3	---	---	---	11.3	10.6	11.0	11.8	11.4	11.6
9	12.6	11.7	12.2	---	---	---	10.7	10.1	10.5	11.7	11.2	11.4
10	12.3	11.7	12.0	---	---	---	10.4	10.0	10.2	11.9	11.4	11.5
11	12.2	11.5	11.9	---	---	---	10.5	10.1	10.3	11.6	11.1	11.4
12	12.0	11.5	11.8	---	---	---	10.5	9.9	10.2	11.5	11.0	11.2
13	12.0	11.3	11.7	---	---	---	10.6	9.9	10.3	11.4	10.9	11.2
14	12.0	11.1	11.5	---	---	---	10.9	10.3	10.6	11.6	9.9	11.2
15	12.0	11.1	11.5	---	---	---	10.7	10.2	10.6	11.5	11.1	11.3
16	11.8	11.0	11.5	---	---	---	10.5	10.0	10.3	11.6	11.1	11.3
17	---	---	---	---	---	---	10.3	9.9	10.1	11.4	11.0	11.2
18	---	---	---	---	---	---	10.2	9.7	10.0	11.5	10.7	11.1
19	---	---	---	---	---	---	---	---	---	11.3	10.8	11.1
20	---	---	---	---	---	---	---	---	---	11.4	10.8	11.1
21	---	---	---	---	---	---	---	---	---	11.6	11.0	11.3
22	---	---	---	---	---	---	---	---	---	11.4	11.1	11.2
23	---	---	---	---	---	---	---	---	---	11.4	11.1	11.2
24	---	---	---	---	---	---	---	---	---	11.4	11.1	11.2
25	---	---	---	---	---	---	---	---	---	11.5	11.1	11.3
26	---	---	---	---	---	---	11.2	10.4	10.8	11.8	11.3	11.6
27	---	---	---	11.8	11.2	11.5	11.2	10.6	10.9	12.0	11.7	11.9
28	---	---	---	11.6	11.1	11.3	11.4	10.7	11.1	12.3	11.8	12.0
29	---	---	---	11.5	10.9	11.2	11.3	10.9	11.1	11.9	11.6	11.8
30	---	---	---	11.3	10.8	11.1	11.6	10.9	11.3	11.9	11.6	11.7
31	---	---	---	11.2	10.8	11.0	11.9	11.4	11.7	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	12.3	9.9	11.4

UMPQUA RIVER BASIN

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14317450 NORTH UMPQUA RIVER NEAR IDLEYLD PARK, OR.

LOCATION.--Lat 43°19'29", long 122°59'55", IN SW 1/4 NE 1/4 sec.12, T.26 S., R.3 W., Douglas County, Hydrologic Unit 17100301, on right bank 0.5 mi upstream from Rock Creek bridge, 2 mi east of Idleyld Park, and at mile 36.3.

DRAINAGE AREA.--886 mi², at former site 0.5 mi downstream.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1998 to current year.

pH: January 1998 to current year.

TEMPERATURE: January 1998 to current year.

DISSOLVED OXYGEN: January 1998 to current year.

INSTRUMENTATION.--Water-quality monitor and data logger since January 1998.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 70 microsiemens Oct. 7, 1998; minimum recorded, 26 microsiemens

Nov. 21, 1998, but could have been lower during period of missing record.

pH: Maximum recorded, 8.4 units Aug. 23, 1998; minimum recorded, 6.6 units Nov. 21, 1998, but could have been lower during period of missing record.

TEMPERATURE: Maximum recorded, 20.0°C July 28, Aug. 4, 1998; minimum recorded, 3.5°C Feb. 10-12, 1999, but could have been lower during period of missing record.

DISSOLVED OXYGEN: Maximum recorded, 14.5 mg/L Feb. 10, 1999, but could have been higher during period of missing record; minimum recorded, 8.4 mg/L Aug. 15, 1998.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 70 microsiemens Oct. 7; minimum recorded, 26 microsiemens Nov. 21, but could have been lower during period of missing record.

pH: Maximum recorded, 8.2 units Sept. 8; minimum recorded, 6.6 units Nov. 21, but could have been lower during period of missing record.

WATER TEMPERATURE: Maximum recorded, 17.0°C July 12, 13; minimum recorded, 3.5°C Feb. 10-12, but could have been lower during period of missing record.

DISSOLVED OXYGEN: Maximum recorded, 14.5 mg/L Feb. 10, but could have been higher during period of missing record; minimum recorded, 8.5 mg/L Aug. 5, 18.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	61	60	60	57	56	56	---	---	---	---	---	---
2	61	60	60	57	56	57	---	---	---	---	---	---
3	61	61	61	58	57	57	---	---	---	---	---	---
4	61	60	61	57	57	57	---	---	---	---	---	---
5	62	56	59	58	56	57	---	---	---	---	---	---
6	69	54	57	56	54	55	---	---	---	---	---	---
7	70	54	57	55	54	55	---	---	---	---	---	---
8	54	53	53	54	53	54	---	---	---	---	---	---
9	64	53	54	55	54	54	---	---	---	---	---	---
10	67	56	62	56	54	55	---	---	---	---	---	---
11	63	55	58	55	52	54	---	---	---	---	---	---
12	60	54	57	56	53	55	---	---	---	---	---	---
13	60	53	55	57	55	56	---	---	---	---	---	---
14	64	55	58	58	55	57	---	---	---	---	---	---
15	57	56	56	57	55	56	---	---	---	---	---	---
16	57	56	56	57	47	52	---	---	---	---	---	---
17	57	56	56	50	48	49	---	---	---	---	---	---
18	58	56	56	51	49	50	---	---	---	---	---	---
19	56	55	56	51	49	50	---	---	---	---	---	---
20	56	55	56	52	49	52	---	---	---	---	---	---
21	55	55	55	49	26	31	---	---	---	---	---	---
22	56	55	55	35	29	32	---	---	---	---	---	---
23	56	55	56	37	34	36	---	---	---	---	---	---
24	57	56	56	37	34	35	---	---	---	---	---	---
25	57	56	57	39	37	38	---	---	---	---	---	---
26	57	57	57	38	34	36	---	---	---	---	---	---
27	57	56	56	39	35	37	---	---	---	---	---	---
28	57	56	56	42	39	41	---	---	---	---	---	---
29	59	57	58	43	42	42	---	---	---	---	---	---
30	57	56	57	43	39	41	---	---	---	---	---	---
31	57	56	56	---	---	---	---	---	---	---	---	---
MONTH	70	53	57	58	26	49	---	---	---	---	---	---

UMPQUA RIVER BASIN

14317450 NORTH UMPQUA RIVER NEAR LDLEYLD PARK, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	35	31	33	44	44	44	44	41	43
2	---	---	---	38	35	37	45	44	44	41	38	40
3	34	32	33	38	37	37	45	44	44	38	36	37
4	36	33	35	39	38	38	45	44	44	38	36	37
5	38	34	36	40	39	40	45	45	45	40	38	39
6	38	30	36	42	40	41	48	45	46	---	---	---
7	32	30	31	43	42	42	46	45	45	---	---	---
8	38	32	36	44	43	43	45	44	44	---	---	---
9	40	38	39	44	43	44	45	44	44	---	---	---
10	42	40	41	45	44	44	45	45	45	---	---	---
11	44	42	43	46	45	45	46	45	45	---	---	---
12	45	44	44	46	44	45	46	43	44	---	---	---
13	45	44	45	45	41	43	44	41	42	---	---	---
14	45	43	44	42	40	41	43	41	42	---	---	---
15	43	43	43	42	41	41	43	41	42	43	42	42
16	44	39	42	43	42	42	42	40	41	44	43	43
17	39	33	35	44	43	43	40	38	39	45	43	44
18	36	32	35	44	44	44	39	37	37	43	38	40
19	36	32	33	44	42	43	37	37	37	39	38	38
20	39	36	37	42	39	40	39	37	38	39	37	38
21	40	39	39	40	39	40	40	39	39	39	37	38
22	42	40	41	41	40	40	41	39	40	39	38	38
23	42	34	36	41	40	41	42	41	41	38	36	37
24	36	34	35	42	41	41	42	41	42	36	34	35
25	37	35	36	42	41	42	41	38	40	34	31	32
26	39	37	37	42	41	42	38	38	38	34	32	33
27	39	36	38	43	42	42	40	38	39	34	33	34
28	36	29	31	43	43	43	41	40	40	34	32	33
29	---	---	---	44	43	43	43	41	42	34	33	33
30	---	---	---	43	43	43	44	43	43	35	34	34
31	---	---	---	44	43	43	---	---	---	36	35	35
MONTH	---	---	---	46	31	41	48	37	42	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	36	35	35	44	43	44	56	56	56	58	58	58
2	35	34	34	44	41	42	56	56	56	58	57	58
3	37	35	36	43	41	42	57	56	56	58	57	58
4	39	37	38	44	42	43	58	56	57	58	57	57
5	40	39	39	45	44	44	58	56	57	59	58	58
6	40	38	39	46	45	45	58	56	57	59	58	59
7	40	38	39	46	45	46	57	56	56	61	59	59
8	41	39	40	46	45	46	58	57	57	60	59	60
9	43	41	42	47	45	46	58	57	58	60	59	60
10	43	42	43	47	47	47	59	58	59	61	60	60
11	43	42	43	47	47	47	60	57	59	61	59	60
12	43	42	42	47	46	47	58	57	58	60	59	60
13	42	40	41	47	47	47	59	57	58	61	60	60
14	40	38	39	48	47	47	59	58	58	61	60	61
15	39	36	37	48	47	47	61	58	59	65	61	61
16	37	36	37	49	47	48	63	58	60	65	60	63
17	38	37	37	50	48	49	61	57	59	65	57	59
18	38	38	38	51	48	50	59	57	58	58	57	58
19	39	38	38	52	50	51	59	59	59	59	58	59
20	39	39	39	53	51	52	59	57	57	60	58	59
21	40	39	39	52	50	51	59	57	58	63	59	61
22	41	40	40	53	51	52	59	57	59	61	60	60
23	41	40	41	54	53	53	59	59	59	60	59	59
24	41	40	41	54	51	53	61	59	60	60	59	60
25	40	39	40	53	52	53	61	60	60	61	60	60
26	41	39	40	54	53	53	61	60	61	61	59	60
27	42	41	41	57	53	54	62	57	59	60	59	59
28	44	42	43	55	54	55	57	56	56	60	59	59
29	44	43	44	56	55	55	57	56	56	60	58	59
30	44	43	44	56	56	56	57	56	57	59	58	59
31	---	---	---	56	56	56	59	57	58	---	---	---
MONTH	44	34	40	57	41	49	63	56	58	65	57	59

UMPQUA RIVER BASIN

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14317450 NORTH UMPQUA RIVER NEAR LDLEYLD PARK, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	8.0	7.4	7.7	7.4	---	---	---	---	---	---	7.3	7.1
2	8.0	7.4	7.7	7.4	---	---	---	---	---	---	7.4	7.3
3	8.0	7.4	7.7	7.4	---	---	---	---	7.7	7.7	7.4	7.3
4	7.9	7.4	7.7	7.4	---	---	---	---	7.7	7.6	7.4	7.3
5	7.7	7.4	7.6	7.4	---	---	---	---	7.7	7.6	7.5	7.4
6	7.9	7.4	7.6	7.4	---	---	---	---	7.6	7.4	7.5	7.4
7	7.9	7.4	7.6	7.4	---	---	---	---	7.4	7.3	7.5	7.4
8	8.0	7.4	7.5	7.3	---	---	---	---	7.4	7.3	7.5	7.4
9	8.0	7.4	7.6	7.3	---	---	---	---	7.5	7.4	7.6	7.5
10	7.8	7.4	7.6	7.4	---	---	---	---	7.5	7.4	7.6	7.5
11	7.8	7.4	7.5	7.4	---	---	---	---	7.6	7.4	7.6	7.5
12	8.0	7.4	7.7	7.4	---	---	---	---	7.6	7.5	7.6	7.5
13	7.9	7.4	7.8	7.5	---	---	---	---	7.6	7.5	7.5	7.4
14	7.8	7.4	7.8	7.5	---	---	---	---	7.6	7.5	7.5	7.4
15	7.8	7.4	7.7	7.4	---	---	---	---	7.6	7.4	7.5	7.4
16	7.7	7.4	7.5	7.4	---	---	---	---	7.4	7.3	7.5	7.4
17	7.9	7.4	7.6	7.4	---	---	---	---	7.3	7.1	7.5	7.4
18	7.8	7.4	7.6	7.4	---	---	---	---	7.3	7.1	7.6	7.4
19	7.7	7.4	7.6	7.4	---	---	---	---	7.4	7.2	7.5	7.3
20	7.7	7.4	7.6	7.4	---	---	---	---	7.4	7.3	7.3	7.3
21	7.7	7.4	7.4	6.6	---	---	---	---	7.5	7.3	7.4	7.2
22	7.8	7.4	7.2	6.8	---	---	---	---	7.5	7.3	7.4	7.2
23	7.7	7.4	7.2	7.1	---	---	---	---	7.4	7.3	7.4	7.3
24	7.8	7.4	7.2	7.1	---	---	---	---	7.4	7.3	7.4	7.3
25	7.8	7.4	7.2	7.2	---	---	---	---	7.4	7.3	7.4	7.3
26	7.6	7.4	7.3	7.2	---	---	---	---	7.4	7.3	7.5	7.3
27	7.7	7.4	7.3	7.2	---	---	---	---	7.4	7.3	7.5	7.4
28	7.8	7.4	7.4	7.3	---	---	---	---	7.3	7.0	7.5	7.4
29	7.7	7.4	7.4	7.3	---	---	---	---	---	---	7.5	7.4
30	7.7	7.4	7.3	7.3	---	---	---	---	---	---	7.5	7.4
31	7.6	7.4	---	---	---	---	---	---	---	---	7.5	7.5
MONTH	8.0	7.4	7.8	6.6	---	---	---	---	---	---	7.6	7.1

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	7.5	7.4	7.7	7.5	7.5	7.3	7.8	7.4	7.9	7.2	7.9	7.2
2	7.6	7.5	7.6	7.5	7.4	7.3	7.8	7.4	7.9	7.2	7.9	7.2
3	7.6	7.5	7.5	7.4	7.5	7.3	7.8	7.4	7.9	7.3	7.9	7.2
4	7.6	7.5	7.5	7.4	7.5	7.4	7.8	7.4	8.0	7.3	8.0	7.2
5	7.6	7.5	7.6	7.4	7.5	7.3	7.8	7.4	7.9	7.3	7.9	7.3
6	7.6	7.5	---	---	7.5	7.4	7.8	7.4	7.7	7.3	7.9	7.3
7	7.6	7.5	---	---	7.5	7.4	7.9	7.5	7.8	7.3	8.1	7.3
8	7.6	7.5	---	---	7.5	7.4	7.9	7.4	7.9	7.3	8.2	7.4
9	7.6	7.5	---	---	7.5	7.4	7.8	7.4	7.8	7.2	8.0	7.4
10	7.6	7.5	---	---	7.6	7.4	7.8	7.3	7.8	7.2	8.0	7.4
11	7.6	7.5	---	---	7.6	7.4	7.8	7.3	7.8	7.2	8.0	7.4
12	7.6	7.5	---	---	7.6	7.3	7.8	7.3	7.9	7.2	8.0	7.4
13	7.5	7.4	---	---	7.5	7.3	7.9	7.3	7.9	7.2	8.1	7.3
14	7.5	7.4	---	---	7.5	7.3	7.9	7.4	7.9	7.2	8.0	7.3
15	7.6	7.4	7.5	7.4	7.5	7.3	7.9	7.4	7.8	7.2	8.1	7.4
16	7.5	7.4	7.5	7.4	7.5	7.3	7.9	7.4	7.8	7.2	8.0	7.4
17	7.5	7.4	7.4	7.3	7.5	7.3	8.0	7.4	7.9	7.3	7.9	7.4
18	7.5	7.4	7.3	7.2	7.5	7.3	7.9	7.4	8.0	7.3	8.1	7.4
19	7.5	7.3	7.4	7.2	7.6	7.3	8.0	7.4	8.1	7.3	8.1	7.3
20	7.6	7.4	7.5	7.3	7.6	7.3	8.0	7.4	8.0	7.3	7.9	7.4
21	7.6	7.4	7.5	7.4	7.6	7.3	7.9	7.4	8.0	7.3	8.0	7.4
22	7.6	7.5	7.5	7.4	7.6	7.3	8.0	7.4	8.0	7.3	8.0	7.3
23	7.6	7.5	7.5	7.3	7.6	7.3	8.0	7.4	7.8	7.3	8.1	7.3
24	7.6	7.5	7.4	7.3	7.6	7.3	8.0	7.4	8.0	7.3	7.9	7.4
25	7.6	7.4	7.4	7.3	7.7	7.4	8.0	7.4	8.0	7.3	8.0	7.3
26	7.6	7.5	7.4	7.3	7.7	7.4	8.0	7.4	8.1	7.3	7.9	7.4
27	7.6	7.5	7.4	7.3	7.7	7.4	7.9	7.4	8.0	7.3	7.8	7.4
28	7.6	7.5	7.4	7.3	7.7	7.4	7.9	7.3	8.0	7.2	7.8	7.4
29	7.7	7.5	7.4	7.3	7.7	7.4	7.9	7.3	8.0	7.2	7.8	7.3
30	7.7	7.5	7.5	7.3	7.7	7.4	7.9	7.2	8.0	7.3	7.8	7.3
31	---	---	7.5	7.3	---	---	7.8	7.2	8.0	7.3	---	---
MONTH	7.7	7.3	---	---	7.7	7.3	8.0	7.2	8.1	7.2	8.2	7.2

UMPQUA RIVER BASIN

14317450 NORTH UMPQUA RIVER NEAR LDLEYLD PARK, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.0	11.5	11.5	7.0	6.0	6.5	---	---	---	---	---	---
2	11.5	11.0	11.5	7.5	7.0	7.0	---	---	---	---	---	---
3	11.0	10.5	11.0	7.0	7.0	7.0	---	---	---	---	---	---
4	11.0	10.5	10.5	7.5	7.0	7.5	---	---	---	---	---	---
5	10.5	9.5	10.0	7.5	7.5	7.5	---	---	---	---	---	---
6	10.0	9.0	9.5	7.5	7.0	7.0	---	---	---	---	---	---
7	10.5	9.0	9.5	7.0	6.5	6.5	---	---	---	---	---	---
8	11.0	9.5	10.5	6.5	6.5	6.5	---	---	---	---	---	---
9	10.5	10.0	10.0	6.5	6.0	6.0	---	---	---	---	---	---
10	10.0	9.5	10.0	6.0	6.0	6.0	---	---	---	---	---	---
11	10.0	9.0	9.5	6.0	6.0	6.0	---	---	---	---	---	---
12	10.0	9.5	9.5	6.0	5.5	5.5	---	---	---	---	---	---
13	10.0	9.5	10.0	6.0	5.5	6.0	---	---	---	---	---	---
14	10.0	9.5	10.0	6.0	6.0	6.0	---	---	---	---	---	---
15	9.5	8.5	9.0	7.0	6.0	6.5	---	---	---	---	---	---
16	8.5	8.0	8.5	7.5	7.0	7.0	---	---	---	---	---	---
17	8.0	7.5	8.0	7.5	7.0	7.0	---	---	---	---	---	---
18	9.0	8.0	8.5	7.0	7.0	7.0	---	---	---	---	---	---
19	8.5	8.0	8.5	7.0	6.5	6.5	---	---	---	---	---	---
20	8.0	7.5	8.0	7.0	6.5	6.5	---	---	---	---	---	---
21	8.0	7.5	7.5	9.0	7.0	8.5	---	---	---	---	---	---
22	8.0	7.5	8.0	8.5	7.5	8.0	---	---	---	---	---	---
23	8.5	7.5	8.0	8.0	7.5	7.5	---	---	---	---	---	---
24	8.5	7.5	8.0	7.5	7.5	7.5	---	---	---	---	---	---
25	9.0	8.5	8.5	8.0	7.5	7.5	---	---	---	---	---	---
26	9.0	8.0	8.5	8.0	8.0	8.0	---	---	---	---	---	---
27	8.5	8.0	8.0	8.0	7.0	7.5	---	---	---	---	---	---
28	9.0	8.0	8.5	7.0	6.5	6.5	---	---	---	---	---	---
29	8.5	7.5	8.0	6.5	6.0	6.0	---	---	---	---	---	---
30	7.5	6.5	7.0	7.0	6.0	6.5	---	---	---	---	---	---
31	6.5	6.0	6.5	---	---	---	---	---	---	---	---	---
MONTH	12.0	6.0	9.0	9.0	5.5	6.8	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	6.5	6.0	6.0	6.0	4.5	5.0	9.0	8.5	8.5
2	---	---	---	6.5	5.5	6.0	6.5	5.0	5.5	8.5	6.5	7.5
3	4.5	4.0	4.0	6.5	5.5	6.0	6.0	5.0	5.5	6.5	6.0	6.5
4	5.0	4.5	5.0	5.5	4.5	5.0	5.5	4.5	5.0	7.0	6.0	6.5
5	5.0	4.0	4.5	5.0	4.5	4.5	6.0	4.5	5.0	8.5	6.0	7.0
6	5.5	4.5	5.0	5.0	4.0	4.5	7.0	5.0	6.0	---	---	---
7	6.0	5.5	6.0	5.0	4.5	5.0	6.5	5.5	6.0	---	---	---
8	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	6.0	---	---	---
9	5.0	4.0	4.5	5.5	4.5	5.0	5.5	4.5	5.0	---	---	---
10	4.0	3.5	4.0	5.0	4.5	5.0	6.0	5.0	5.5	---	---	---
11	4.0	3.5	4.0	5.0	4.0	4.5	7.5	5.0	6.0	---	---	---
12	4.5	3.5	4.0	5.0	4.5	4.5	7.5	6.0	7.0	---	---	---
13	5.0	4.5	4.5	6.0	5.0	5.5	8.5	7.0	7.5	---	---	---
14	5.5	5.0	5.0	6.0	6.0	6.0	8.0	6.5	7.5	---	---	---
15	5.5	5.0	5.0	6.5	6.0	6.0	8.5	6.5	7.5	8.5	6.5	7.5
16	6.0	5.0	5.5	7.0	6.0	6.5	8.5	7.0	8.0	8.5	7.0	7.5
17	6.0	5.5	6.0	6.5	5.5	6.0	8.5	7.5	8.0	8.5	8.0	8.5
18	6.0	5.5	6.0	6.5	6.0	6.5	8.5	7.5	8.0	8.5	8.0	8.0
19	6.0	6.0	6.0	6.5	6.0	6.5	8.0	7.5	7.5	9.5	8.0	8.5
20	6.0	5.0	5.5	6.5	6.5	6.5	8.0	7.0	7.5	9.5	8.5	9.0
21	6.0	5.5	5.5	7.0	6.0	6.5	7.5	7.0	7.0	10.0	7.5	8.5
22	5.5	5.5	5.5	7.0	6.0	6.5	7.5	6.5	7.0	10.5	8.5	9.5
23	6.5	5.5	6.0	7.0	6.0	6.5	8.5	6.0	7.5	11.0	9.0	10.0
24	6.5	6.5	6.5	7.0	6.5	6.5	9.0	7.5	8.0	11.0	9.5	10.5
25	6.5	5.5	6.0	6.5	6.0	6.5	8.5	8.0	8.0	10.5	9.0	9.5
26	5.5	5.0	5.5	6.5	6.0	6.0	8.0	7.0	7.5	10.0	9.0	9.5
27	6.5	5.5	6.0	6.0	5.0	5.5	7.0	6.0	6.5	10.5	9.5	10.0
28	6.5	6.5	6.5	5.5	4.5	5.0	6.0	5.5	6.0	10.0	9.5	10.0
29	---	---	---	5.5	5.0	5.0	8.0	5.5	6.5	10.0	9.0	9.5
30	---	---	---	5.5	4.5	5.0	9.0	7.0	8.0	10.0	9.0	9.5
31	---	---	---	5.0	4.0	4.5	---	---	---	11.0	9.0	10.0
MONTH	---	---	---	7.0	4.0	5.6	9.0	4.5	6.7	---	---	---

UMPQUA RIVER BASIN

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14317450 NORTH UMPQUA RIVER NEAR LDLEYLD PARK, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.5	9.5	10.5	15.0	12.5	14.0	16.5	14.5	15.5	13.0	12.0	12.5
2	9.5	8.5	9.0	14.0	12.0	12.5	16.5	14.5	15.5	13.5	12.0	12.5
3	8.5	7.5	8.0	12.5	11.0	12.0	17.0	15.0	16.0	13.0	12.0	12.5
4	9.5	7.5	8.5	12.5	10.5	11.5	17.0	15.5	16.5	13.0	12.0	12.5
5	10.5	8.5	9.5	14.0	10.5	12.5	17.0	15.5	16.0	13.0	12.0	12.5
6	10.0	9.0	9.5	14.5	11.5	13.0	16.0	14.0	15.0	14.0	13.0	13.5
7	9.0	8.0	9.0	15.0	12.5	14.0	14.0	13.0	13.5	13.5	12.0	13.0
8	10.0	8.0	9.0	15.0	12.0	13.5	14.5	12.5	13.5	13.5	12.5	13.0
9	10.5	8.0	9.5	15.5	12.0	14.0	16.0	13.5	14.5	13.5	12.5	13.0
10	11.5	8.5	10.0	16.5	13.0	15.0	16.5	15.5	16.0	13.5	12.5	13.0
11	12.0	9.0	11.0	17.0	13.5	15.5	17.0	15.0	15.5	13.0	11.5	12.5
12	12.5	10.0	11.5	17.0	14.0	15.5	16.0	14.5	15.0	13.0	12.0	12.5
13	13.0	10.5	11.5	17.0	14.0	15.5	16.0	14.5	15.0	13.5	12.0	12.5
14	13.5	11.0	12.5	16.5	14.0	15.5	14.5	13.0	13.5	13.5	12.0	13.0
15	12.5	11.5	11.5	16.0	13.0	14.5	13.5	12.5	13.0	13.0	12.0	12.5
16	13.0	10.5	11.5	15.5	13.0	14.0	15.5	13.0	14.0	13.0	12.0	12.5
17	12.5	11.0	12.0	15.0	13.0	14.0	15.5	14.0	14.5	12.5	11.5	12.0
18	13.0	11.0	12.0	15.5	13.0	14.0	16.0	14.5	15.5	13.0	11.5	12.0
19	13.0	11.0	12.0	16.0	13.5	14.5	16.5	15.5	16.0	13.0	12.0	12.5
20	12.5	11.0	11.5	16.0	14.0	15.0	16.0	15.0	15.5	13.0	12.0	12.5
21	12.0	10.5	11.0	15.5	13.0	14.5	16.0	15.0	15.5	13.0	12.0	12.5
22	13.5	10.5	12.0	15.5	12.5	14.0	16.0	15.0	15.5	13.0	12.0	12.5
23	14.0	11.5	13.0	16.0	14.0	15.0	16.0	14.5	15.5	13.0	12.0	12.5
24	13.5	12.0	12.5	16.0	13.5	15.0	16.5	14.5	15.5	13.0	12.0	12.5
25	12.0	10.5	11.0	16.0	14.0	15.0	16.5	15.0	16.0	12.5	12.0	12.5
26	12.0	10.5	11.0	16.0	14.0	15.0	16.5	15.5	16.0	12.0	10.5	11.0
27	13.0	10.0	11.5	16.5	14.5	15.5	16.0	15.0	15.5	10.5	9.5	10.0
28	13.5	10.5	12.0	17.0	15.0	16.0	16.0	15.0	15.5	10.0	9.0	9.5
29	14.5	11.0	13.0	17.0	15.0	16.0	16.0	14.5	15.0	10.0	9.0	9.5
30	15.5	12.0	13.5	16.5	15.0	16.0	14.5	13.0	14.0	11.0	9.5	10.0
31	---	---	---	16.0	15.0	16.0	14.0	13.0	13.0	---	---	---
MONTH	15.5	7.5	11.0	17.0	10.5	14.5	17.0	12.5	15.0	14.0	9.0	12.2

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	11.1	11.3	12.5	12.1	12.3	---	---	---	---	---	---
2	11.5	11.0	11.2	12.3	12.1	12.2	---	---	---	---	---	---
3	11.5	10.8	11.1	12.3	12.0	12.1	---	---	---	---	---	---
4	11.4	11.0	11.1	12.3	11.9	12.1	---	---	---	---	---	---
5	11.7	11.0	11.3	12.1	11.8	11.9	---	---	---	---	---	---
6	11.8	11.3	11.6	12.2	11.8	12.0	---	---	---	---	---	---
7	11.7	11.3	11.4	12.3	11.9	12.1	---	---	---	---	---	---
8	11.6	11.1	11.3	12.4	12.1	12.2	---	---	---	---	---	---
9	11.7	11.2	11.4	12.6	12.2	12.4	---	---	---	---	---	---
10	11.6	11.0	11.3	12.6	12.2	12.4	---	---	---	---	---	---
11	11.6	11.1	11.3	12.7	12.4	12.6	---	---	---	---	---	---
12	11.6	11.0	11.3	13.0	12.6	12.8	---	---	---	---	---	---
13	11.5	11.0	11.2	12.9	12.5	12.7	---	---	---	---	---	---
14	11.5	11.0	11.3	12.6	12.1	12.4	---	---	---	---	---	---
15	11.8	11.2	11.5	12.3	11.9	12.1	---	---	---	---	---	---
16	12.0	11.5	11.8	12.0	11.6	11.8	---	---	---	---	---	---
17	12.4	11.7	12.1	12.0	11.6	11.8	---	---	---	---	---	---
18	12.1	11.7	11.9	12.1	11.8	12.0	---	---	---	---	---	---
19	12.0	11.7	11.9	12.4	11.9	12.1	---	---	---	---	---	---
20	12.1	11.8	12.0	12.1	11.7	11.9	---	---	---	---	---	---
21	12.1	11.8	12.0	12.0	11.7	11.8	---	---	---	---	---	---
22	12.4	11.8	12.2	11.9	11.5	11.7	---	---	---	---	---	---
23	12.3	11.9	12.1	11.6	11.3	11.4	---	---	---	---	---	---
24	12.2	11.8	12.0	11.8	11.5	11.7	---	---	---	---	---	---
25	12.2	11.8	11.9	11.6	11.3	11.5	---	---	---	---	---	---
26	12.1	11.7	11.9	11.7	11.3	11.5	---	---	---	---	---	---
27	12.3	11.7	12.0	11.7	11.6	11.6	---	---	---	---	---	---
28	12.2	11.9	12.0	11.8	11.5	11.7	---	---	---	---	---	---
29	12.3	11.9	12.0	11.9	11.6	11.8	---	---	---	---	---	---
30	12.5	11.9	12.3	11.9	11.5	11.7	---	---	---	---	---	---
31	12.6	12.3	12.4	---	---	---	---	---	---	---	---	---
MONTH	12.6	10.8	11.7	13.0	11.3	12.0	---	---	---	---	---	---

UMPQUA RIVER BASIN

14317450 NORTH UMPQUA RIVER NEAR LDLEYLD PARK, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	12.9	12.6	12.7	12.6	12.1	12.4	11.6	11.3	11.4
2	---	---	---	12.6	12.1	12.4	12.6	12.0	12.3	12.0	11.5	11.8
3	12.5	12.1	12.3	12.5	12.1	12.4	12.4	12.0	12.3	12.2	11.9	12.1
4	12.2	12.1	12.1	12.8	12.5	12.7	12.7	12.2	12.5	12.5	12.1	12.3
5	12.4	12.2	12.3	13.1	12.8	13.0	12.4	12.0	12.2	12.4	11.4	12.0
6	12.3	12.1	12.2	13.0	12.7	12.9	12.5	11.9	12.2	---	---	---
7	12.4	12.0	12.1	12.8	12.5	12.7	12.3	11.9	12.1	---	---	---
8	14.0	12.4	13.1	12.6	12.4	12.5	12.4	11.9	12.2	---	---	---
9	14.2	13.9	14.0	12.7	12.4	12.6	12.8	12.3	12.5	---	---	---
10	14.5	14.2	14.4	12.8	12.6	12.7	12.5	12.1	12.3	---	---	---
11	14.4	14.0	14.3	13.1	12.6	12.8	12.6	11.9	12.3	---	---	---
12	14.2	13.7	14.0	12.9	12.6	12.8	12.4	11.9	12.1	---	---	---
13	13.8	13.5	13.7	12.6	12.2	12.5	12.4	11.7	12.1	---	---	---
14	13.5	13.3	13.4	12.5	12.2	12.3	12.4	11.7	12.1	---	---	---
15	13.5	13.1	13.3	12.4	12.2	12.3	12.3	11.6	11.9	12.5	11.8	12.1
16	13.2	12.9	13.1	12.5	12.2	12.3	12.2	11.6	11.9	12.2	11.6	11.9
17	13.2	12.9	13.1	12.6	12.2	12.4	12.1	11.6	11.8	11.8	11.6	11.7
18	12.9	12.5	12.7	12.4	12.2	12.3	12.1	11.6	11.9	12.1	11.7	11.9
19	12.9	12.7	12.8	12.4	12.1	12.3	12.1	11.8	12.0	12.1	11.4	11.9
20	12.9	12.6	12.8	12.4	12.1	12.3	12.3	11.9	12.1	12.0	11.5	11.7
21	13.0	12.6	12.8	12.4	12.1	12.3	12.2	12.0	12.1	12.0	11.2	11.6
22	13.0	12.8	12.9	12.2	12.0	12.1	12.5	12.1	12.3	11.8	11.0	11.4
23	12.8	12.5	12.7	12.2	11.8	12.1	12.4	11.7	12.2	11.5	10.8	11.2
24	12.6	12.4	12.5	12.0	11.9	11.9	12.1	11.5	11.8	11.7	11.0	11.3
25	12.9	12.4	12.7	12.1	12.0	12.0	11.9	11.6	11.8	11.9	11.1	11.6
26	13.1	12.8	13.0	12.3	12.0	12.2	12.2	11.8	12.1	11.8	11.2	11.5
27	12.9	12.6	12.8	12.7	12.2	12.4	12.4	12.1	12.3	11.5	11.1	11.4
28	12.8	12.6	12.7	12.5	12.1	12.3	12.6	12.3	12.5	11.7	11.1	11.4
29	---	---	---	12.2	12.0	12.1	12.6	11.7	12.2	11.7	11.2	11.4
30	---	---	---	12.4	12.1	12.2	12.1	11.3	11.7	11.6	11.2	11.4
31	---	---	---	12.6	12.2	12.4	---	---	---	11.5	11.0	11.3
MONTH	---	---	---	13.1	11.8	12.4	12.8	11.3	12.1	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.2	11.0	11.1	10.3	9.6	9.9	9.8	8.8	9.1	10.1	9.2	9.7
2	11.5	11.2	11.4	10.5	9.7	10.1	9.5	8.7	9.1	9.9	9.2	9.6
3	11.8	11.4	11.6	10.6	9.9	10.3	9.6	8.7	9.1	10.1	9.3	9.7
4	11.7	11.1	11.5	10.9	10.1	10.5	9.4	8.6	9.0	10.1	9.3	9.7
5	11.4	10.9	11.2	10.9	9.7	10.3	9.3	8.5	9.0	10.0	9.3	9.6
6	11.4	11.0	11.2	10.6	9.7	10.2	9.4	8.7	9.1	10.0	9.2	9.5
7	11.6	11.2	11.4	10.6	9.7	10.1	9.8	9.2	9.5	10.0	9.2	9.6
8	12.0	11.2	11.5	10.8	9.7	10.2	10.0	9.1	9.6	9.6	8.9	9.3
9	11.9	11.0	11.5	10.7	9.2	9.9	9.7	8.7	9.2	9.6	9.0	9.3
10	11.7	10.8	11.3	10.1	9.1	9.7	9.3	8.7	9.0	9.7	9.1	9.4
11	11.4	10.6	11.0	10.0	9.1	9.5	9.5	8.6	9.0	9.9	9.2	9.5
12	11.1	10.6	10.9	9.9	9.1	9.5	9.5	8.7	9.1	9.9	9.2	9.5
13	11.2	10.4	10.8	10.0	9.1	9.6	9.7	8.8	9.3	9.9	9.3	9.5
14	10.9	10.3	10.6	10.6	9.4	10.1	9.7	9.1	9.4	9.9	9.2	9.6
15	10.8	10.4	10.7	11.1	9.8	10.4	10.0	9.3	9.6	10.0	9.4	9.7
16	11.0	10.4	10.7	11.6	10.0	10.7	10.5	9.0	9.6	10.2	9.5	9.8
17	10.9	10.5	10.7	10.9	9.9	10.5	9.4	8.7	9.1	10.2	9.6	9.9
18	10.8	10.3	10.6	10.7	9.7	10.2	9.4	8.5	8.9	10.2	9.5	9.8
19	10.7	10.1	10.5	10.3	9.6	9.9	9.3	8.6	8.9	10.2	9.6	9.9
20	10.6	10.3	10.5	10.1	9.4	9.7	9.4	8.6	9.0	10.2	9.6	9.8
21	10.9	10.5	10.7	10.3	9.4	9.9	9.5	8.7	9.1	10.4	9.6	9.9
22	11.0	10.1	10.6	10.3	9.4	9.9	9.5	8.8	9.1	10.1	9.5	9.7
23	10.7	9.8	10.3	10.1	9.3	9.7	9.5	8.8	9.2	10.1	9.5	9.8
24	10.6	9.9	10.3	10.3	9.3	9.7	9.6	9.0	9.3	10.0	9.4	9.7
25	10.8	10.2	10.5	10.1	9.3	9.7	9.6	9.0	9.2	10.2	9.5	9.9
26	10.8	10.3	10.6	10.0	9.3	9.6	9.8	9.0	9.3	10.5	9.8	10.2
27	11.0	10.0	10.5	10.0	8.7	9.4	9.5	8.9	9.2	10.8	10.1	10.5
28	10.7	10.0	10.4	9.4	8.6	9.0	9.4	8.7	9.0	10.9	10.4	10.6
29	10.6	9.7	10.2	9.5	8.7	9.1	9.5	8.7	9.1	10.9	10.4	10.6
30	10.5	9.5	10.0	9.5	8.7	9.1	9.7	9.0	9.3	10.7	10.2	10.5
31	---	---	---	9.5	8.7	9.1	9.9	9.4	9.6	---	---	---
MONTH	12.0	9.5	10.8	11.6	8.6	9.9	10.5	8.5	9.2	10.9	8.9	9.8

NORTH UMPQUA RIVER BASIN

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14318000 LITTLE RIVER AT PEEL, OR

WATER-QUALITY RECORDS

LOCATION.--Lat 43°15'10", long 123°01'30", in NW 1/4 sec.2, T.27 S., R.3 W., Douglas County, Hydrologic Unit 17100301, on left bank 0.6 mi southeast of Peel, 0.9 mi downstream from Cavitt Creek, and at mile 6.3.

DRAINAGE AREA.--177 mi².

PERIOD OF RECORD.--

WATER TEMPERATURE: June 1999 to September 1999.

INSTRUMENTATION.--Temperature recorder since June 1999.

EXTREMES FOR PERIOD JUNE TO SEPTEMBER.--

WATER TEMPERATURE: Maximum 22.5°C Aug. 28: minimum, 10.0°C Sept. 28, 29.

TEMPERATURE, WATER (DEG. C), JUNE TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	20.0	17.0	18.5	21.0	19.0	20.0	16.0	13.5	15.5
2	---	---	---	18.0	15.5	16.5	21.0	18.0	20.0	16.5	14.0	15.5
3	---	---	---	16.0	13.5	15.0	22.0	19.0	20.5	16.0	14.0	15.5
4	---	---	---	15.5	13.5	14.5	21.5	19.5	21.0	16.5	14.5	15.5
5	---	---	---	17.5	13.0	15.0	21.0	19.5	20.0	17.0	15.0	16.0
6	---	---	---	17.0	14.5	15.5	19.5	18.0	18.5	18.0	16.0	17.0
7	---	---	---	18.0	14.0	15.5	18.0	17.0	17.5	17.0	15.0	16.0
8	---	---	---	18.5	14.5	16.5	19.0	16.5	17.5	17.0	15.0	16.0
9	---	---	---	20.5	15.5	18.0	20.5	17.0	19.0	17.0	15.5	16.0
10	---	---	---	21.5	17.5	19.5	22.0	19.0	20.5	17.0	15.0	16.0
11	---	---	---	22.0	18.0	20.0	21.5	19.0	20.0	16.0	14.0	15.5
12	---	---	---	22.0	18.0	20.5	19.0	18.0	18.5	16.5	14.5	15.5
13	---	---	---	22.0	18.5	20.5	18.5	18.0	18.0	17.0	15.0	16.0
14	---	---	---	21.5	18.0	20.0	18.5	17.0	17.5	17.5	15.0	16.5
15	---	---	---	20.0	16.5	18.5	18.0	15.5	17.0	17.0	15.5	16.5
16	---	---	---	19.5	16.5	18.5	19.0	16.0	17.5	16.5	15.0	15.5
17	---	---	---	19.0	16.5	18.0	20.5	17.5	19.0	15.5	13.5	14.5
18	---	---	---	19.5	15.5	18.0	20.0	18.5	19.5	16.0	14.0	15.0
19	---	---	---	21.0	17.0	19.0	20.5	18.0	19.5	16.5	14.5	15.5
20	---	---	---	21.0	18.0	19.5	20.0	18.5	19.5	17.0	14.5	16.0
21	---	---	---	21.0	18.0	19.5	20.5	19.0	19.5	17.0	14.5	16.0
22	---	---	---	21.5	18.0	20.0	20.5	18.5	19.5	17.0	15.0	16.0
23	---	---	---	21.5	18.5	20.0	20.0	19.0	19.5	17.5	15.5	16.5
24	---	---	---	21.0	18.5	20.0	21.5	18.5	20.0	18.0	16.0	17.0
25	15.5	13.0	14.5	21.0	18.0	19.5	21.5	19.5	20.5	17.5	16.0	16.5
26	15.5	13.5	14.5	21.0	18.0	19.5	21.5	19.5	20.5	16.0	13.5	14.5
27	16.0	12.0	14.0	21.5	18.5	20.5	21.5	20.0	21.0	13.5	11.5	12.5
28	17.0	13.5	15.5	22.0	19.0	21.0	22.5	20.5	21.5	12.0	10.0	11.0
29	19.0	15.0	17.0	21.5	19.5	21.0	21.5	20.0	20.5	12.5	10.0	11.5
30	19.5	16.5	18.0	21.0	18.5	20.0	20.0	17.0	18.5	13.0	10.5	12.0
31	---	---	---	21.5	19.0	20.5	17.0	15.0	16.0	---	---	---
MONTH	---	---	---	22.0	13.0	18.7	22.5	15.0	19.3	18.0	10.0	15.3

14319500 NORTH UMPQUA RIVER AT WINCHESTER, OR

LOCATION.--Lat 43°16'20", long 123°24'40", in NW 1/4 NE 1/4 sec.33, T.26 S., R.6 W., Douglas County, Hydrologic Unit 17100301, on left bank 300 ft downstream from county bridge, 3.0 mi west of Winchester, and at mile 1.8.

DRAINAGE AREA.--1,344 mi².

PERIOD OF RECORD.--October 1908 to December 1913, October 1923 to September 1929, August 1954 to current year. Prior to December 1908, monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1448: 1909-12, drainage area. WDR OR-65-1: 1954(M). WDR OR-72-1: 1965(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 372.97 ft above sea level (Douglas County Road Department bench mark). Oct. 1, 1908, to Dec. 31, 1913, and Oct. 1, 1923, to Sept. 30, 1929, nonrecording gage at site 4.8 mi upstream at different datums. Aug. 27, 1954, to Aug. 12, 1965, water-stage recorder on right bank at same datum.

REMARKS.--No estimated daily discharges. Records good. Occasional regulation caused by upstream powerplants; slight regulation by Lemolo Lake and Diamond Lake. Several small diversions for irrigation upstream from station. Continuous water-quality records for water years 1967-69, 1971-91, have been collected at this site.

AVERAGE DISCHARGE.--56 years (water years 1909-13, 1924-29, 1955-99), 3,760 ft³/s, 38.03 in/yr, 2,726,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 150,000 ft³/s Dec. 22, 1964, gage height, 34.2 ft, from floodmark; minimum discharge, 235 ft³/s Aug. 27, 1987, result of regulation at Winchester Dam 5.2 mi upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 29, 1950, reached a stage of 23.2 ft, from floodmark, at site 4.8 mi upstream at different datum, discharge, 88,000 ft³/s. Flood of Nov. 23, 1953, reached a stage of 28.4 ft, from floodmarks, present site and datum, discharge, 93,300 ft³/s.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1730	*59,000	*20.29	Jan. 18	0600	27,200	12.05
Nov. 24	0630	21,100	10.32	Jan. 21	1230	21,800	10.53
Dec. 2	1930	45,900	16.90	Feb. 7	1530	20,300	10.10
Dec. 28	1600	47,100	17.20	Feb. 18	2230	22,400	10.70
Jan. 15	1000	20,100	10.04	Feb. 28	1430	30,600	13.00

Minimum daily discharge, 839 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1010	1160	12400	11000	3810	20400	4910	3680	5040	2660	1370	1250
2	1060	1310	25500	8280	3930	12700	4720	4570	5050	2670	1380	1130
3	1150	1260	26500	6580	4400	11400	4710	6830	4520	2500	1360	1190
4	1170	1280	12800	5500	4880	10200	4530	8280	3990	2450	1320	1170
5	1160	1860	8650	4760	4970	8250	4330	6860	3720	2290	1280	1150
6	1060	2460	7010	4170	7640	6960	4380	6290	3750	2210	1350	1130
7	980	2220	5720	3920	18000	5980	4370	6480	3600	2220	1480	1130
8	1030	3050	7090	3570	13500	5350	4870	5770	3380	2190	1570	1020
9	1060	2640	6320	3310	8840	5180	5000	4980	3150	2150	1460	1010
10	1120	2110	5240	3150	6840	4600	4620	4330	3060	2000	1310	839
11	1160	2790	5650	2910	5520	4270	4620	4140	3020	1970	1300	1020
12	1090	2300	7670	3010	4890	3970	5110	4680	3150	2040	1440	1090
13	1110	1880	8710	3040	4750	4850	5920	5200	3430	2050	1400	1020
14	1320	1720	7600	3200	5390	6120	5920	5080	3780	1950	1350	973
15	1290	1690	6080	15100	5650	5720	5570	5130	4180	1910	1270	989
16	1280	2370	5180	15600	5900	5240	6050	4850	4150	1820	1250	1090
17	1300	2900	4630	13900	12400	4880	6640	4680	4120	1740	1310	1130
18	1190	3440	4320	22600	16300	4630	7240	6340	3960	1690	1260	1080
19	1090	3400	4090	14900	18200	4640	7050	6580	3760	1660	1200	988
20	1070	2960	3680	12300	11100	5360	6470	6120	3710	1590	1180	995
21	1100	40200	3150	18800	8160	5570	5870	5530	3570	1680	1220	1050
22	1080	29500	2910	17100	6680	5170	5330	5130	3460	1780	1230	1040
23	1000	16100	2900	18900	9740	5150	4680	5390	3350	1570	1090	1040
24	1000	18900	2750	11800	11600	4950	4630	6180	3240	1570	1120	1040
25	1090	12400	3270	8430	10800	5250	5180	6940	3380	1540	983	1010
26	1150	13400	5390	6870	9150	5190	5290	6440	3230	1530	1050	976
27	1150	12000	6430	5690	10700	5190	4840	6080	3020	1520	1030	1000
28	1180	7760	37200	4990	24600	4760	4340	6140	2860	1480	1110	1020
29	1210	6370	27200	4520	---	4800	3860	5940	2760	1440	1100	995
30	1130	8950	14200	4240	---	5560	3600	5540	2750	1350	1290	989
31	1110	---	11400	4060	---	5200	---	5080	---	1300	1280	---
TOTAL	34900	210380	291640	266200	258340	197490	154650	175260	108140	58520	39343	31554
MEAN	1126	7013	9408	8587	9226	6371	5155	5654	3605	1888	1269	1052
MAX	1320	40200	37200	22600	24600	20400	7240	8280	5050	2670	1570	1250
MIN	980	1160	2750	2910	3810	3970	3600	3680	2750	1300	983	839
AC-FT	69220	417300	578500	528000	512400	391700	306700	347600	214500	116100	78040	62590
CFSM	.84	5.22	7.00	6.39	6.86	4.74	3.84	4.21	2.68	1.40	.94	.78
IN.	.97	5.82	8.07	7.37	7.15	5.47	4.28	4.85	2.99	1.62	1.09	.87

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1999, BY WATER YEAR (WY)

	MEAN	1373	4202	6403	6783	6308	5636	4844	3905	2486	1353	1006	992
MAX	2752	12550	23640	15220	13250	12880	8881	7147	4992	2824	1578	1689	
(WY)	1963	1974	1965	1965	1986	1972	1993	1963	1984	1913	1976	1986	
MIN	683	931	1005	1125	1019	1681	1605	1401	913	717	635	708	
(WY)	1988	1994	1977	1977	1977	1992	1926	1926	1926	1926	1992	1929	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1909 - 1999
ANNUAL TOTAL	1692993	1826417	
ANNUAL MEAN	4638	5004	3762
HIGHEST ANNUAL MEAN			6116
LOWEST ANNUAL MEAN			1639
HIGHEST DAILY MEAN	40200	Nov 21	40200
LOWEST DAILY MEAN	780	Sep 10	839
ANNUAL SEVEN-DAY MINIMUM	791	Sep 5	992
ANNUAL RUNOFF (AC-FT)	3358000		3623000
ANNUAL RUNOFF (CFSM)	3.45		3.72
ANNUAL RUNOFF (INCHES)	46.86		50.55
10 PERCENT EXCEEDS	9110		11000
50 PERCENT EXCEEDS	3610		3920
90 PERCENT EXCEEDS	987		1090

UMPQUA RIVER BASIN

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14319850 GASSY CREEK NEAR NONPAREIL, OR

LOCATION.--Lat 43°25'02", long 123°07'14", in NW 1/4 NE 1/4 sec.12, T.25 S., R.4 W., Douglas County, Hydrologic Unit 17100303, on right bank 0.9 mi upstream from confluence with Calapooya Creek, and 4.2 mi northeast of community of Nonpareil.

DRAINAGE AREA.--9.19 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 790 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--11 years (water years 1989-99), 16.3 ft³/s, 24.15 in/yr, 11,830 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,940 ft³/s Nov. 18, 1996, gage height, 6.59 ft, from slope-area measurement of peak flow; no flow on many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 240 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0900	*1,100	*5.34	Dec. 28	1000	498	3.97
Nov. 24	0430	296	3.27	Jan. 17	2030	305	3.30
Dec. 2	1300	440	3.79				

No flow several days in September.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	3.0	110	47	7.0	72	49	4.0	2.8	.79	.20	.36
2	.56	2.1	300	35	24	47	38	7.6	2.6	.77	.19	.28
3	.44	1.6	188	25	39	44	35	31	2.4	.79	.16	.23
4	.65	1.9	78	18	40	45	38	33	2.2	.79	.16	.18
5	.45	5.5	49	15	49	44	37	23	2.2	.73	.23	.12
6	.33	8.2	43	12	62	38	32	18	2.1	.73	.35	.07
7	.30	11	52	10	175	30	27	14	2.0	.80	.67	.05
8	1.2	20	77	8.3	104	25	35	12	2.0	.69	.98	.04
9	.73	7.2	59	6.3	61	22	39	10	1.9	.57	.69	.03
10	.86	7.3	41	4.8	42	18	37	8.7	1.8	.50	.49	.03
11	.60	6.6	34	4.3	34	15	33	9.3	1.6	.46	.41	.02
12	.47	4.3	28	5.2	31	13	28	12	1.5	.41	.40	.02
13	1.3	3.0	27	4.6	36	12	24	14	1.4	.38	.37	.01
14	1.1	2.3	32	17	35	18	20	17	1.4	.35	.39	.01
15	1.1	2.3	29	95	35	19	17	20	1.4	.35	.35	.00
16	1.5	4.4	23	94	37	18	15	17	1.4	.36	.30	.00
17	.90	12	17	134	57	15	12	16	1.3	.38	.26	.00
18	.63	14	13	146	168	13	10	16	1.3	.34	.26	.00
19	.51	8.8	11	69	126	11	8.4	14	1.2	.32	.33	.00
20	.46	39	8.8	65	62	9.7	7.3	11	1.2	.30	.33	.00
21	.42	662	8.6	170	41	8.9	6.7	9.1	1.4	.30	.31	.00
22	.39	220	6.4	147	33	8.2	6.6	7.2	1.3	.30	.25	.00
23	.37	147	5.8	104	39	8.0	5.5	6.1	1.1	.27	.21	.00
24	.61	210	5.9	54	36	9.8	5.0	5.2	1.2	.23	.19	.00
25	1.0	87	15	36	35	15	4.6	4.6	1.4	.26	.13	.00
26	.94	128	32	26	45	16	4.5	4.1	1.1	.27	.08	.00
27	1.2	82	79	18	82	20	4.5	3.6	1.0	.23	.05	.00
28	3.0	52	364	14	129	24	4.5	3.2	.97	.19	.03	.00
29	1.8	47	134	12	---	40	4.2	2.9	.91	.17	.02	.00
30	1.2	138	58	10	---	43	3.8	2.7	.81	.20	.28	.00
31	1.4	---	52	8.7	---	51	---	2.5	---	.20	.48	---
TOTAL	26.59	1937.5	1980.5	1415.2	1664.0	772.6	591.6	358.8	46.89	13.43	9.55	1.45
MEAN	.86	64.6	63.9	45.7	59.4	24.9	19.7	11.6	1.56	.43	.31	.048
MAX	3.0	662	364	170	175	72	49	33	2.8	.80	.98	.36
MIN	.17	1.6	5.8	4.3	7.0	8.0	3.8	2.5	.81	.17	.02	.00
AC-FT	53	3840	3930	2810	3300	1530	1170	712	93	27	19	2.9
CFSM	.09	7.03	6.95	4.97	6.47	2.71	2.15	1.26	.17	.05	.03	.01
IN.	.11	7.84	8.02	5.73	6.74	3.13	2.39	1.45	.19	.05	.04	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1999, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
MEAN	1.42	21.3	35.0	41.1	29.7	25.9	21.1	15.3	4.88	.65	.23	.17
MAX	5.13	64.6	102	86.9	59.4	41.4	50.3	49.9	26.6	2.42	1.38	1.03
(WY)	1997	1999	1997	1996	1999	1989	1993	1998	1993	1993	1993	1997
MIN	.14	.62	2.93	10.8	11.6	4.18	5.44	2.01	.73	.14	.000	.000
(WY)	1989	1994	1990	1992	1992	1992	1990	1992	1992	1994	1992	1992

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1989 - 1999
ANNUAL TOTAL	10128.07	8818.11	
ANNUAL MEAN	27.7	24.2	16.3
HIGHEST ANNUAL MEAN			24.4
LOWEST ANNUAL MEAN			6.47
HIGHEST DAILY MEAN	662 Nov 21	662 Nov 21	736 Nov 18 1996
LOWEST DAILY MEAN	.00 Jul 29	.00 Sep 15	.00 Aug 15 1989
ANNUAL SEVEN-DAY MINIMUM	.00 Sep 3	.00 Sep 15	.00 Aug 15 1989
ANNUAL RUNOFF (AC-FT)	20090	17490	11830
ANNUAL RUNOFF (CFSM)	3.02	2.63	1.78
ANNUAL RUNOFF (INCHES)	41.00	35.69	24.15
10 PERCENT EXCEEDS	68	58	44
50 PERCENT EXCEEDS	8.2	5.5	4.2
90 PERCENT EXCEEDS	.05	.19	.03

UMPQUA RIVER BASIN

14320700 CALAPOOYA CREEK NEAR OAKLAND, OR

LOCATION.--Lat 43°24'10", long 123°21'45", in NW 1/4 sec.13, T.25 S., R.6 W., Douglas County, Hydrologic Unit 17100303, near center of span on downstream side of highway bridge, 0.9 mi downstream from Williams Creek, 2.5 mi northwest of Sutherlin, 3.5 mi southwest of Oakland, and at mile 10.1

DRAINAGE AREA.--210 mi².

PERIOD OF RECORD.--October 1955 to September 1973, October 1986 to current year. Records for the years 1974-86 are available at the Douglas County Water Resources Dept. in Roseburg.

GAGE.--Water-stage recorder. Datum of gage is 371.26 ft above sea level. Prior to June 22, 1968, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records fair. Diversion upstream from station for municipal supply of cities of Sutherlin and Oakland. Small diversions by pumping for irrigation upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1956-73, 1987-99), 460 ft³/s, 29.79 in/yr, 333,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s Nov. 18, 1996, gage height, 21.62 ft; no flow Sept. 9-11, 1966, Sept. 8, 1988, all or part of several days in August 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1530	*8,410	*15.89	Dec. 28	1500	8,280	15.75
Dec. 2	1500	7,150	14.25	Jan. 17	2330	6,370	13.10

Minimum discharge, 5.2 ft³/s Aug. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	43	2480	1410	416	2210	1080	170	113	30	8.9	14
2	15	55	5270	1100	664	1580	881	230	114	29	7.7	11
3	24	44	4020	878	861	1500	809	568	105	29	7.1	9.6
4	24	43	2050	701	1020	1550	753	765	97	30	5.7	7.7
5	24	107	1460	580	1020	1390	723	575	92	29	6.8	7.1
6	20	151	1350	500	2740	1120	656	466	96	27	8.4	6.2
7	18	131	1400	440	3950	907	589	454	90	28	14	5.7
8	24	256	2010	387	2600	779	649	402	87	26	32	5.5
9	41	181	1530	350	1930	707	670	355	81	24	30	5.8
10	32	132	1120	317	1450	589	644	312	75	22	21	5.7
11	34	144	1130	293	1150	512	614	301	69	21	15	5.9
12	26	110	1110	304	965	478	573	335	66	19	13	5.8
13	26	83	1060	281	912	464	552	363	61	18	13	5.8
14	47	67	1080	470	857	583	506	399	55	17	12	4.9
15	36	57	894	2200	745	573	478	460	52	17	12	3.1
16	37	77	737	2460	929	518	476	415	52	17	11	3.0
17	38	118	614	3050	1550	469	461	385	50	16	8.6	5.0
18	30	218	526	3930	3600	431	424	468	49	16	7.6	6.1
19	26	209	457	2260	3270	398	378	440	46	15	7.7	6.4
20	23	215	401	2440	1950	373	341	388	43	15	8.3	6.9
21	21	6210	328	5120	1390	360	311	336	46	14	9.6	7.6
22	19	4030	302	3800	1160	333	295	289	47	14	9.2	6.7
23	18	2520	276	3190	1380	347	267	260	41	14	9.2	5.0
24	19	3790	261	2030	1300	348	248	234	38	12	9.7	4.5
25	21	1970	437	1430	1310	431	239	210	48	12	8.6	5.5
26	27	2610	645	1090	1370	412	232	190	45	12	7.9	5.3
27	28	1790	1340	845	2050	502	218	169	40	12	6.1	6.6
28	44	1140	7190	717	3510	572	215	152	36	11	4.8	7.6
29	55	1040	4000	610	---	803	192	138	32	9.6	6.3	8.2
30	39	2710	1950	527	---	1010	174	125	30	9.4	8.4	7.2
31	34	---	1690	474	---	1080	---	116	---	9.1	17	---
TOTAL	883	30251	49118	44184	46049	23329	14648	10470	1896	574.1	346.6	195.4
MEAN	28.5	1008	1584	1425	1645	753	488	338	63.2	18.5	11.2	6.51
MAX	55	6210	7190	5120	3950	2210	1080	765	114	30	32	14
MIN	13	43	261	281	416	333	174	116	30	9.1	4.8	3.0
AC-FT	1750	60000	97430	87640	91340	46270	29050	20770	3760	1140	687	388
CFSM	.14	4.80	7.55	6.79	7.83	3.58	2.33	1.61	.30	.09	.05	.03
IN.	.16	5.36	8.70	7.83	8.16	4.13	2.59	1.85	.34	.10	.06	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1999, BY WATER YEAR (WY)

	MEAN	61.4	488	1091	1181	927	824	490	312	115	28.3	11.2	13.5
MAX	329	1517	3856	2296	1912	1342	960	595	73.1	41.9	35.0		
(WY)	1957	1997	1956	1956	1961	1963	1998	1993	1993	1993	1971		
MIN	6.48	22.6	104	120	290	142	164	58.0	19.9	9.05	1.59	3.06	
(WY)	1988	1994	1990	1963	1973	1992	1987	1966	1992	1973	1994	1991	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1956 - 1999

ANNUAL TOTAL	226511.9						221944.1						
ANNUAL MEAN	621						608						
HIGHEST ANNUAL MEAN										460			
LOWEST ANNUAL MEAN										905			1956
HIGHEST DAILY MEAN	7190	Dec 28					7190	Dec 28		186			1994
LOWEST DAILY MEAN	3.3	Sep 8					3.0	Sep 16		15200	Dec 26	1955	
ANNUAL SEVEN-DAY MINIMUM	4.5	Sep 4					4.8	Sep 11		.00	Sep 9	1966	
ANNUAL RUNOFF (AC-FT)	449300						440200			.34	Aug 30	1992	
ANNUAL RUNOFF (CFSM)	2.96						2.90			333600			
ANNUAL RUNOFF (INCHES)	40.12						39.32			2.19			
10 PERCENT EXCEEDS	1650						1730			29.79			
50 PERCENT EXCEEDS	277						218			1200			
90 PERCENT EXCEEDS	12						8.1			147			
										8.6			

UMPQUA RIVER BASIN

365

14321000 UMPQUA RIVER NEAR ELKTON, OR

LOCATION.--Lat 43°35'10", long 123°33'15", in NW 1/4 sec.8, T.23 S., R.7 W., Douglas County, Hydrologic Unit 17100303, on left bank 3.5 mi south of Elkton, 8.3 mi upstream from Elk Creek, and at mile 56.9.

DRAINAGE AREA.--3,683 mi².

PERIOD OF RECORD.--October 1905 to current year.

REVISED RECORDS.--WSP 1184: 1927(M), 1938(M), 1943(M), 1946(M). WSP 1448: 1911-13, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 90.42 ft above sea level. Prior to June 29, 1972, at site 2,400 ft downstream at same datum. See WSP 1931 or 2135 for history of changes prior to June 29, 1972.

REMARKS.--No estimated daily discharges. Records good. Regulation by powerplants on North Umpqua River ordinarily does not affect discharge at this station. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--94 years (water years 1906-99), 7,462 ft³/s, 27.53 in/yr, 5,406,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 265,000 ft³/s Dec. 23, 1964, gage height, 51.95 ft, from floodmarks; minimum discharge observed, 640 ft³/s July 18, 1926.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least December 1861, 51.95 ft on Dec. 23, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 52,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 22	0230	*117,000	*31.39	Jan. 21	2300	67,800	22.56
Dec. 3	1530	97,900	28.14	Feb. 7	2230	62,500	21.53
Dec. 29	0030	93,800	27.42	Feb. 19	0730	66,900	22.38
Jan. 18	1630	68,800	22.75	Feb. 28	2230	75,500	24.00

Minimum discharge, 1,070 ft³/s Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1450	1610	42400	23400	8840	60200	12300	5770	6930	3270	1620	1510
2	1470	1630	47300	18900	8330	35400	11100	6300	7060	3170	1630	1540
3	1490	1740	83200	15100	10300	29100	10600	8070	6750	3150	1650	1470
4	1560	1750	41100	12500	10900	29400	10600	12800	6040	2990	1630	1480
5	1600	1830	24600	10700	12200	25100	10100	12200	5370	2940	1600	1440
6	1600	2470	21100	9270	16200	19800	9760	10400	5120	2770	1570	1410
7	1540	3090	17000	8420	55000	16700	9580	10200	5130	2670	1650	1390
8	1480	3280	18600	7680	50500	14200	9590	9850	4880	2620	1800	1400
9	1550	4390	19500	6990	32000	13000	10500	8640	4600	2590	1880	1310
10	1570	3860	15500	6500	22800	11900	9980	7560	4300	2520	1840	1280
11	1610	3170	13300	6040	17800	10600	9670	6860	4180	2390	1700	1220
12	1670	3740	15700	5680	14600	9670	9690	6720	4090	2380	1640	1210
13	1620	3180	17800	5760	13100	9370	10600	7660	4280	2420	1750	1320
14	1630	2650	18200	5770	13200	11300	11200	8070	4560	2390	1790	1280
15	1760	2400	14900	16100	14500	12000	10500	7910	5020	2280	1690	1230
16	1760	2310	12400	30900	14400	10900	10400	7970	5460	2230	1620	1220
17	1770	3180	10700	29100	22200	10100	11200	7540	5340	2150	1590	1290
18	1750	3780	9700	57200	39400	9450	12000	7990	5290	2080	1610	1320
19	1640	4890	8960	45300	60600	8970	12300	9840	5010	2050	1560	1300
20	1560	4860	8120	36400	37700	9130	11500	9550	4780	2010	1510	1260
21	1520	39800	7190	50900	26100	10200	10400	8860	4650	1930	1490	1250
22	1520	89800	6160	56200	20800	9700	9480	8060	4480	1980	1500	1290
23	1500	37800	5640	54600	21400	9210	8560	7760	4340	2030	1500	1290
24	1450	47700	5470	39800	29200	9150	7730	8290	4160	1870	1410	1280
25	1450	35600	5650	25800	26500	9360	7870	9640	4010	1850	1420	1270
26	1510	29200	8070	19400	26500	9830	8440	9870	4170	1830	1320	1250
27	1550	33700	11400	15500	25700	9830	8260	9090	3970	1810	1330	1230
28	1580	21300	55100	12900	50600	9710	7530	8740	3700	1800	1330	1250
29	1610	15500	74800	11400	---	9780	6790	8610	3480	1760	1380	1280
30	1640	21400	36900	10200	---	11900	6150	8210	3310	1720	1400	1280
31	1590	---	24600	9440	---	12400	---	7540	---	1650	1530	---
TOTAL	49000	431610	701060	663850	701370	467360	294380	266570	144460	71300	48940	39550
MEAN	1581	14390	22610	21410	25050	15080	9813	8599	4815	2300	1579	1318
MAX	1770	89800	83200	57200	60600	60200	12300	12800	7060	3270	1880	1540
MIN	1450	1610	5470	5680	8330	8970	6150	5770	3310	1650	1320	1210
AC-FT	97190	856100	1391000	1317000	1391000	927000	583900	528700	286500	141400	97070	78450
CFSM	.43	3.91	6.14	5.81	6.80	4.09	2.66	2.33	1.31	.62	.43	.36
IN.	.49	4.36	7.08	6.71	7.08	4.72	2.97	2.69	1.46	.72	.49	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1999, BY WATER YEAR (WY)

	1884	7141	13530	15940	15140	12280	9580	6560	3779	1736	1182	1200
MEAN	1884	7141	13530	15940	15140	12280	9580	6560	3779	1736	1182	1200
MAX	14200	29500	51220	34900	32800	27100	20480	15800	9526	5063	1867	3475
(WY)	1951	1974	1965	1956	1907	1972	1937	1921	1953	1913	1976	1920
MIN	857	832	1238	1440	1365	2909	2432	1934	1053	742	703	740
(WY)	1930	1930	1977	1977	1977	1992	1926	1934	1926	1926	1931	1931

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1906 - 1999
ANNUAL TOTAL	3654540	3879450	
ANNUAL MEAN	10010	10630	7462
HIGHEST ANNUAL MEAN			13360
LOWEST ANNUAL MEAN			2321
HIGHEST DAILY MEAN	89800	Nov 22	260000
LOWEST DAILY MEAN	1300	Sep 5	663
ANNUAL SEVEN-DAY MINIMUM	1300	Sep 4	663
ANNUAL RUNOFF (AC-FT)	7249000	7695000	5406000
ANNUAL RUNOFF (CFSM)	2.72	2.89	2.03
ANNUAL RUNOFF (INCHES)	36.91	39.18	27.53
10 PERCENT EXCEEDS	21800	26500	17300
50 PERCENT EXCEEDS	6430	6720	3980
90 PERCENT EXCEEDS	1430	1460	1060

14321400 ELK CREEK NEAR ELKHEAD, OR

LOCATION.--Lat 43°35'45", long 123°11'35", in NW 1/4 SE 1/4 sec.5, T.23 S., R.4 W., Douglas County, Hydrologic Unit 17100303, on right bank downstream side of Milltown Hill Bridge, 1.5 mi upstream from Adams Creek, 4.0 mi north of Elkhead, and at mile 37.7.

DRAINAGE AREA.--28.7 mi².

PERIOD OF RECORD.--January to August 1968 (gage heights and discharge measurements only), September 1968 to June 1972, October 1986 to September 1999 (discontinued).

REVISED RECORDS.--WDR OR-93-1: 1991-92, 1991-92 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 463.99 ft above sea level (Douglas County Highway Department bench mark). Prior to Sept. 1, 1968, nonrecording gage at site 20 ft upstream at datum 1.70 ft lower.

REMARKS.--Records for flows greater than 10 ft³/s good, those below and estimated daily discharges fair.

AVERAGE DISCHARGE.--16 years (water years 1969-71, 1987-99), 54.3 ft³/s, 25.69 in/yr, 39,320 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,670 ft³/s Nov. 18, 1996, gage height, 10.82 ft, from rating curve extended above 763 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.15 ft³/s Aug. 28, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 820 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1700	1,730	7.02	Jan. 17	2200	1,060	6.06
Nov. 24	0600	890	5.76	Jan. 21	1030	1,480	6.69
Dec. 2	1300	1,130	6.17	Feb. 7	0300	956	5.88
Dec. 28	1230	*1,860	*7.18	Feb. 18	1200	923	5.82

Minimum discharge, 1.0 ft³/s Sept. 14-23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	13	371	139	50	262	186	21	17	8.5	4.1	2.5
2	4.3	11	829	112	88	181	136	31	16	8.4	4.1	2.1
3	4.7	9.3	468	91	107	199	121	74	16	8.4	3.7	1.9
4	4.1	12	217	74	135	195	106	79	15	8.5	3.6	1.7
5	3.8	23	148	63	141	165	98	62	15	8.3	3.8	1.6
6	3.7	24	145	57	451	134	83	56	15	8.1	4.2	1.5
7	3.6	21	191	50	669	107	72	60	15	8.4	7.0	1.4
8	8.9	30	e300	45	345	94	81	54	14	8.0	8.2	1.4
9	7.8	19	e215	41	236	83	73	48	14	7.7	5.7	1.3
10	8.0	16	e140	38	171	70	72	43	13	7.3	4.4	1.3
11	5.7	15	142	37	136	62	67	43	13	6.9	3.9	1.2
12	4.6	13	129	37	116	59	59	41	12	6.6	3.9	1.2
13	7.1	11	124	34	115	55	52	38	12	6.4	3.6	1.1
14	8.1	9.9	126	80	110	73	47	45	11	6.3	3.6	1.0
15	7.0	11	104	319	96	70	43	50	11	6.5	3.3	1.0
16	7.1	12	85	332	127	63	40	45	11	6.4	3.1	1.0
17	6.2	16	71	450	216	57	36	49	11	6.4	2.9	1.1
18	5.5	29	61	501	599	53	33	56	11	6.3	2.7	1.1
19	5.3	22	54	274	e530	48	31	49	10	5.9	2.8	1.0
20	5.2	35	47	395	e330	44	30	44	10	5.6	2.7	1.1
21	5.1	924	39	1140	e210	42	28	39	12	5.8	2.6	1.1
22	4.8	640	35	535	e150	39	29	34	11	5.5	2.5	1.1
23	4.8	329	33	418	e190	38	26	31	10	5.3	2.3	1.1
24	5.5	616	33	249	e170	41	25	27	10	5.1	2.2	1.1
25	6.8	274	53	167	e175	51	24	25	12	4.9	2.1	1.1
26	7.1	373	77	125	174	50	23	24	11	4.7	1.9	1.1
27	7.0	241	179	96	243	70	24	22	9.8	4.5	1.8	1.2
28	9.1	161	1320	84	461	80	25	20	9.4	4.3	1.7	1.2
29	9.1	167	515	72	---	127	23	19	9.0	4.2	1.6	1.3
30	7.7	375	218	63	---	172	21	18	8.6	4.2	3.2	1.3
31	7.9	---	182	57	---	196	---	17	---	4.1	3.3	---
TOTAL	188.7	4452.2	6651	6175	6541	2980	1714	1264	364.8	197.5	106.5	39.1
MEAN	6.09	148	215	199	214	96.1	57.1	40.8	12.2	6.37	3.44	1.30
MAX	9.1	924	1320	1140	669	262	186	79	17	8.5	8.2	2.5
MIN	3.1	9.3	33	34	50	38	21	17	8.6	4.1	1.6	1.0
AC-FT	374	8830	13190	12250	12970	5910	3400	2510	724	392	211	78
CFSM	.21	5.17	7.48	6.94	8.14	3.35	1.99	1.42	.42	.22	.12	.05
IN.	.24	5.77	8.62	8.00	8.48	3.86	2.22	1.64	.47	.26	.14	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1999, BY WATER YEAR (WY)

	6.67	70.2	129	154	106	86.6	58.9	37.3	15.4	4.30	1.91	1.94
MAX	20.8	278	397	280	234	184	133	117	71.7	7.72	5.21	4.01
(WY)	1998	1997	1997	1996	1999	1972	1993	1998	1993	1993	1993	1971
MIN	1.51	3.66	15.6	35.4	31.1	19.2	21.0	8.16	3.27	1.61	.46	.43
(WY)	1988	1994	1990	1992	1988	1992	1987	1987	1992	1994	1994	1994

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1969 - 1999
ANNUAL TOTAL	28862.0	30673.8	
ANNUAL MEAN	79.1	84.0	54.3
HIGHEST ANNUAL MEAN			95.4
LOWEST ANNUAL MEAN			22.3
HIGHEST DAILY MEAN	1320	Dec 28	2920
LOWEST DAILY MEAN	1.5	Sep 3	.22
ANNUAL SEVEN-DAY MINIMUM	1.5	Sep 2	.25
ANNUAL RUNOFF (AC-FT)	57250	60840	39320
ANNUAL RUNOFF (CFSM)	2.76	2.93	1.89
ANNUAL RUNOFF (INCHES)	37.41	39.76	25.69
10 PERCENT EXCEEDS	192	216	141
50 PERCENT EXCEEDS	35	25	19
90 PERCENT EXCEEDS	2.1	2.4	1.5

e Estimated

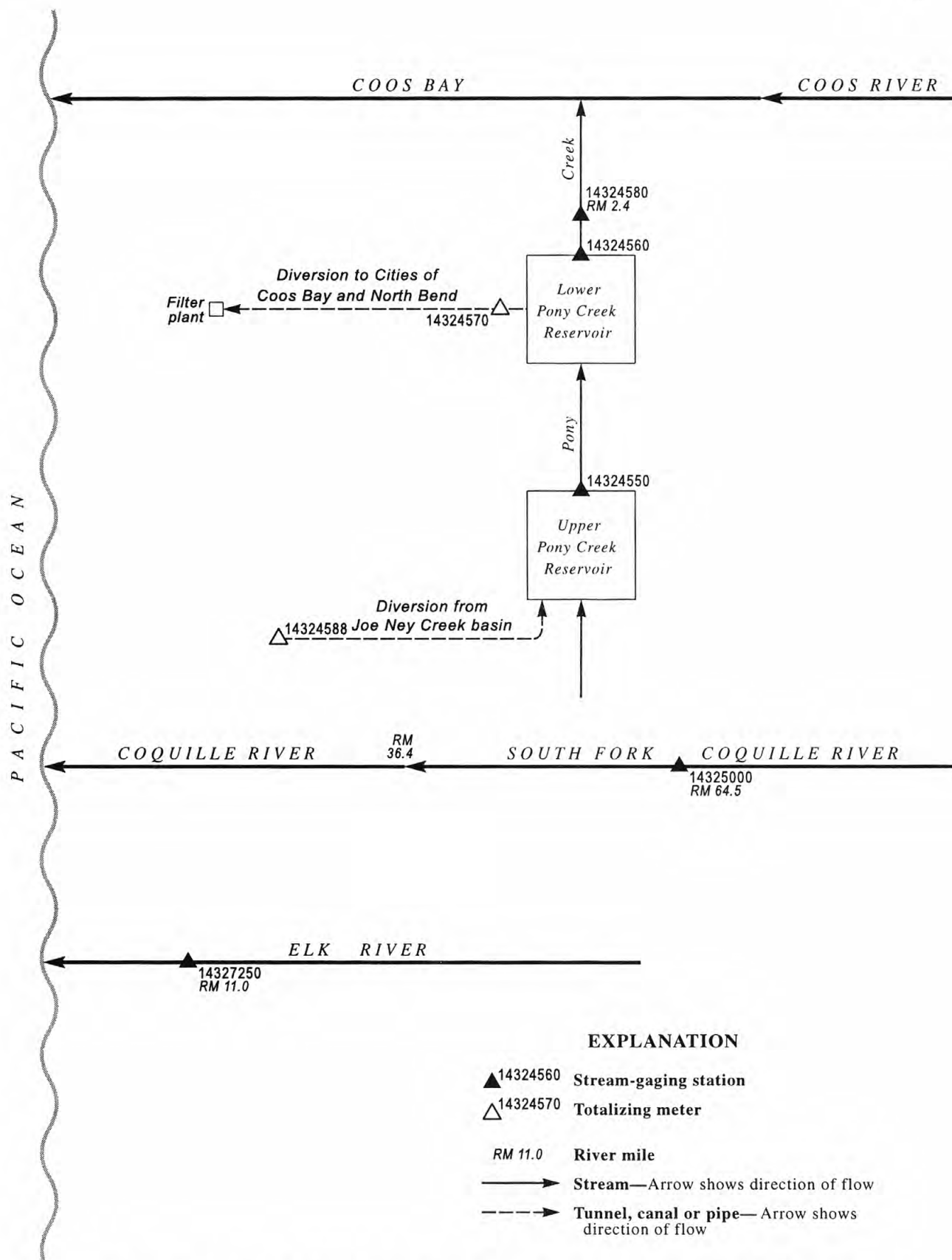


Figure 32. Schematic diagram showing gaging stations and diversions in the Pony Creek Basin.

14324580 PONY CREEK AT COOS BAY, OR

LOCATION.--Lat 43°22'44", long 124°14'29", in NE 1/4 NE 1/4 sec.28, T.25 S., R.13 W., Coos County, Hydrologic Unit 17100304, at spillway for Lower Pony Creek Reservoir, in Coos Bay, and at mile 2.3.

DRAINAGE AREA.--3.88 mi².

PERIOD OF RECORD.--July 1975 to current year.

REVISED RECORDS.--WDR OR-93-1: Drainage Area.

GAGE.--Water-stage recorder. Datum of gage is sea level (Coos Bay-North Bend Water Board bench mark). Oct. 1, 1982 to September 30, 1987, gage at site 500 ft downstream at same datum. July 1975 to Sept. 30, 1982 and Oct. 1, 1987 to Sept. 30, 1992, at site 0.1 mi downstream, at datum 12.23 ft above sea level.

REMARKS.--Records good. Records prior to 1993 were computed for site at the lower end of culvert under Ocean Boulevard. Flow regulated by Upper and Lower Pony Creek Reservoirs (stations 14324550 and 14324560), diversion upstream from station from Lower Pony Creek Reservoir to municipal water supply of Coos Bay-North Bend (station 14323570) and diversion into the basin from Joe Ney Creek (station 14324590). Approximately 5.5 ft³/s is diverted to the Coos Bay-North Bend water treatment plant, maximum capacity, 10.8 ft³/s.

COOPERATION.--Data for diversion from Joe Ney Creek into Pony Creek (14324590), and diversion from Lower Pony Creek Reservoir to City of Coos Bay (14324570) provided by Coos Bay-North Bend Water Board.

AVERAGE DISCHARGE.--24 years (water years 1976-99), 10.33 ft³/s, 35.97 in/yr, 7,480 acre-ft/yr, adjusted for Joe Ney diversion into Pony Creek, Coos Bay-North Bend diversion, and change in contents in Upper and Lower Pony Creek Reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 181 ft³/s Dec. 6, 1981, gage height, 6.19 ft; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 84 ft³/s Dec. 2, gage height, 39.91 ft; minimum discharge, no flow many days during year.

MONTHLY DISCHARGE OF PONY CREEK, JOE NEY CREEK DIVERSION, PONY CREEK DIVERSION AND MONTHLY CHANGE IN CONTENTS OF RESERVOIRS NEAR COOS BAY, OR, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

	14324588 Diversion from Joe Ney Creek into Pony Creek (acre-feet)	14324580 Pony Creek at Coos Bay (acre-feet)	14324570 Diversion from Lower Pony Creek Reservoir to City of Coos Bay (acre-feet)	14324560 Lower Pony Creek Reservoir Change in Contents (acre-feet)	14324550 Upper Pony Creek Reservoir Change in Contents (acre-feet)	Pony Creek adjusted for diversion and change in contents (acre-feet) (inches)	
October.....	0	0	296.7	-35.5	-67.0	194.2	0.93
November.....	0	299.8	270.1	+127.2	+610.0	1,307.1	6.29
December.....	0	1,705.8	338.0	-53.4	-43.0	1,947.4	9.36
CAL YR 1998...	0	6,550.5	3,903.6	+109.0	+511.0	11,074.1	53.25
January.....	0	1,255.6	320.2	+2.4	+3.0	1,581.1	7.60
February.....	0	1,846.6	273.5	+10.8	+2.0	2,132.9	10.26
March.....	0	617.5	294.0	-19.2	+315.0	1,207.3	5.81
April.....	0	413.6	306.5	-20.1	+7.0	707.0	3.40
May.....	0	238.1	329.5	-13.9	-15.0	538.7	2.59
June.....	0	0.4	376.2	-53.3	-81.0	242.3	1.17
July.....	0	0.7	464.1	-39.8	-357.0	147.6	0.71
August.....	0	0	420.4	-38.3	-337.0	45.1	0.22
September.....	0	0	381.4	+10.4	-330.0	61.8	0.30
WTR YR 1999...	0	6,378.1	4,070.6	-43.1	-291.0	10,114.6	48.64

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	74	23	25	27	20	1.7	.00	.00	.00	.00
2	.00	.00	78	17	26	8.9	14	4.7	.13	.00	.00	.00
3	.00	.00	70	14	28	4.9	13	11	.07	.00	.00	.00
4	.00	.00	45	11	27	3.3	12	9.0	.00	.00	.00	.00
5	.00	.00	34	9.0	23	2.4	10	7.0	.00	.00	.00	.00
6	.00	.00	32	10	34	1.2	10	7.7	.00	.00	.00	.00
7	.00	.00	30	7.8	47	1.7	8.4	5.3	.00	.00	.00	.00
8	.00	.00	29	6.2	44	2.3	11	4.4	.00	.00	.00	.00
9	.00	.00	23	5.1	46	6.0	12	3.2	.00	.00	.00	.00
10	.00	.00	18	4.4	37	5.1	12	2.4	.00	.00	.00	.00
11	.00	.00	22	6.1	30	7.4	13	2.7	.00	.00	.00	.00
12	.00	.00	22	6.0	24	12	10	3.3	.00	.00	.00	.00
13	.00	.00	28	4.5	21	14	7.0	2.9	.00	.00	.00	.00
14	.00	.00	32	5.9	18	18	6.6	7.7	.00	.00	.00	.00
15	.00	.00	25	14	16	16	7.2	7.4	.00	.00	.00	.00
16	.00	.00	20	21	17	13	6.6	4.7	.00	.00	.00	.00
17	.00	.00	16	25	16	12	4.4	5.1	.00	.00	.00	.00
18	.00	.00	13	44	40	15	3.4	6.2	.00	.00	.00	.00
19	.00	.00	14	43	51	10	2.9	4.7	.00	.00	.00	.00
20	.00	.00	11	40	36	8.3	2.5	4.0	.00	.00	.00	.00
21	.00	.00	9.6	40	31	11	2.4	5.5	.00	.00	.00	.00
22	.00	.00	6.6	36	34	7.5	2.1	2.5	.00	.00	.00	.00
23	.00	.00	5.5	41	45	8.6	1.6	1.5	.00	.00	.00	.00
24	.00	.05	3.1	35	48	9.3	1.5	1.1	.00	.00	.00	.00
25	.00	2.1	5.6	27	46	8.5	1.5	.73	.00	.00	.00	.00
26	.00	16	9.6	22	39	10	1.5	.83	.00	.36	.00	.00
27	.00	30	12	17	40	8.8	2.3	2.0	.00	.00	.00	.00
28	.00	26	51	17	42	8.1	4.3	.66	.00	.00	.00	.00
29	.00	23	57	18	---	14	2.3	.13	.00	.00	.00	.00
30	.00	54	36	30	---	18	3.0	.00	.00	.00	.00	.00
31	.00	---	28	33	---	19	---	.00	---	.00	.00	---
TOTAL	0.00	151.15	860.0	633.0	931	311.3	208.5	120.05	0.20	0.36	0.00	0.00
MEAN	.000	5.04	27.7	20.4	33.2	10.0	6.95	3.87	.007	.012	.000	.000
MAX	.00	54	78	44	51	27	20	11	.13	.36	.00	.00
MIN	.00	.00	3.1	4.4	16	1.2	1.5	.00	.00	.00	.00	.00
AC-FT	.00	300	1710	1260	1850	617	414	238	.4	.7	.00	.00

CAL YR 1998 TOTAL 3302.49 MEAN 9.05 MAX 78 MIN .00 AC-FT 6550
WTR YR 1999 TOTAL 3215.56 MEAN 8.81 MAX 78 MIN .00 AC-FT 6380

COQUILLE RIVER BASIN

369

14325000 SOUTH FORK COQUILLE RIVER AT POWERS, OR

LOCATION.--Lat 42°53'30", long 124°04'10", in SE 1/4 sec.12, T.31 S., R.12 W., Coos County, Hydrologic Unit 17100305, on left bank 0.6 mi downstream from highway bridge at Powers, 0.9 mi upstream from Woodward Creek, and at mile 64.5.

DRAINAGE AREA.--169 mi².

PERIOD OF RECORD.--September 1916 to September 1926, October 1928 to current year.

REVISED RECORDS.--WSP 1184: 1946(M). WSP 1448: 1917-18(M), 1919, 1920(M), 1925.

GAGE.--Water-stage recorder. Datum of gage is 197.42 ft above sea level. Prior to Nov. 17, 1938, nonrecording gage at various sites within 1 mi of present site at different datums.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--80 years (water years 1917-26, 1930-99), 789 ft³/s, 63.40 in/yr, 571,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,900 ft³/s Dec. 22, 1964, gage height, 26.51 ft, from floodmarks, from rating curve extended above 19,000 ft³/s on basis of contracted-opening measurement at gage height 18.14 ft and slope-area measurement of peak flow; minimum discharge, 6.4 ft³/s Oct. 10-12, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1000	16,400	12.88	Jan. 17	2030	9,630	9.63
Nov. 26	0800	10,100	9.85	Feb. 6	1500	11,600	10.63
Nov. 30	1100	12,300	10.97	Feb. 18	1930	10,600	10.09
Dec. 2	1330	*16,900	*13.11	Feb. 28	0230	13,200	11.38

Minimum discharge, 20 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	45	6390	1880	1090	4400	1770	446	231	72	34	26
2	30	48	13500	1450	1020	2820	1390	610	224	72	34	25
3	33	47	6420	1120	1130	3340	1300	1310	216	70	33	24
4	29	66	3060	890	1430	2750	1240	1640	198	67	31	23
5	28	215	2120	740	1420	2050	1260	1290	188	66	32	22
6	26	513	1870	641	7390	1610	1240	1040	188	65	35	22
7	25	646	1810	555	8580	1270	1170	923	181	65	45	23
8	33	543	2330	491	4380	1250	1190	779	172	63	46	22
9	49	365	1800	441	2760	1270	1120	681	161	60	44	22
10	54	383	1380	403	1960	1070	1230	601	150	58	39	22
11	44	601	1460	368	1550	928	1400	561	140	55	37	22
12	37	366	2280	346	1260	829	1400	575	135	53	36	22
13	89	258	2760	320	1180	863	1460	589	130	51	36	21
14	121	198	2320	386	1170	1130	1460	623	127	49	36	21
15	80	342	1730	1350	1150	1040	1610	690	127	46	34	21
16	62	631	1300	1750	2260	940	1800	644	124	46	32	21
17	49	764	1030	3820	3760	846	1750	605	116	45	31	21
18	43	968	850	5660	7580	781	1500	807	113	44	31	22
19	40	700	727	3920	6270	748	1230	719	108	43	31	21
20	37	2330	646	4390	3130	733	1030	633	105	42	30	22
21	35	13200	538	6470	2410	695	880	555	105	42	30	22
22	33	5670	484	5620	3930	667	786	500	105	42	29	21
23	31	4950	440	5220	8390	628	701	462	93	40	28	21
24	32	5850	408	2930	6850	919	672	431	88	40	28	21
25	44	5730	758	1990	5890	1120	661	398	91	38	27	21
26	45	7570	1320	1500	3660	934	611	363	90	37	26	22
27	41	3660	1580	1150	5570	871	545	332	85	37	25	22
28	52	2040	5410	1090	9680	859	512	304	80	36	25	21
29	57	2030	3270	1330	---	1980	485	280	76	36	25	21
30	48	8160	1960	1550	---	2310	457	262	74	35	26	20
31	43	---	2010	1360	---	2230	---	244	---	35	27	---
TOTAL	1394	68889	73961	61131	106850	43881	33860	19897	4021	1550	1003	657
MEAN	45.0	2296	2386	1972	3816	1416	1129	642	134	50.0	32.4	21.9
MAX	121	13200	13500	6470	9680	4400	1800	1640	231	72	46	26
MIN	24	45	408	320	1020	628	457	244	74	35	25	20
AC-FT	2760	136600	146700	121300	211900	87040	67160	39470	7980	3070	1990	1300
CFSM	.27	13.6	14.1	11.7	22.6	8.38	6.68	3.80	.79	.30	.19	.13
IN.	.31	15.16	16.28	13.46	23.52	9.66	7.45	4.38	.89	.34	.22	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1999, BY WATER YEAR (WY)

MEAN	203	1034	1722	1816	1667	1336	930	460	175	61.6	34.8	45.7
MAX	1945	4232	5361	4244	4151	3818	2451	1568	699	186	101	384
(WY)	1951	1974	1965	1970	1958	1938	1963	1953	1937	1947	1947	1978
MIN	11.1	15.8	44.1	97.3	209	330	203	78.3	50.8	27.7	17.4	12.1
(WY)	1988	1937	1977	1977	1977	1934	1990	1939	1924	1926	1939	1987

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1917 - 1999
ANNUAL TOTAL	402676	417094	
ANNUAL MEAN	1103	1143	789
HIGHEST ANNUAL MEAN			1374
LOWEST ANNUAL MEAN			237
HIGHEST DAILY MEAN	13500	Dec 2	34900
LOWEST DAILY MEAN	24	Sep 15	7.2
ANNUAL SEVEN-DAY MINIMUM	25	Sep 12	7.3
ANNUAL RUNOFF (AC-FT)	798700	827300	571300
ANNUAL RUNOFF (CFSM)	6.53	6.76	4.67
ANNUAL RUNOFF (INCHES)	88.64	91.81	63.40
10 PERCENT EXCEEDS	2910	3090	2020
50 PERCENT EXCEEDS	536	462	264
90 PERCENT EXCEEDS	32	26	26

14327250 ELK RIVER ABOVE ANVIL CREEK, NEAR PORT ORFORD, OR

LOCATION (Revised).--Lat 42°44'07", long 124°24'01", in SW 1/4 NE 1/4 sec.7, T.33 S., R.14 W., Curry County, Hydrologic Unit 17100306, on left bank, 0.6 mi upstream from Anvil Creek, 5.0 mi east of Port Orford, and at mile 13.6.

DRAINAGE AREA.--70.7 mi², at cableway 0.6 mi downstream where all discharge measurements are made.

PERIOD OF RECORD.--October 1993 to current year. Operated by Oregon Water Resources Department January 1977 to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above sea level, from topographic map. Oct. 1, 1993 to Sept. 12, 1995 at site 0.7 mi downstream at different datum. Prior to Oct. 1, 1993 gage operated by Oregon Water Resources Department at several different sites both above and below Anvil Creek.

REMARKS.--Records good except for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--6 years (water years 1994-99), 619 ft³/s, 118.95 in/yr, 448,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,900 ft³/s Nov. 18, 1996, gage height 22.58 ft; minimum discharge, 18 ft³/s Sept. 26, 1994.

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. 21	0930	*14,600	*17.14	Feb. 23	0930	5,560	12.04
Dec. 2	1030	12,300	16.33	Feb. 28	0230	7,310	13.37
Dec. 28	1400	5,480	11.98				

Minimum discharge, 29 ft³/s Oct. 1, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	44	2250	1300	1170	2140	1150	208	e170	e85	58	48
2	43	43	8300	1030	1040	1550	955	538	e160	e84	57	47
3	36	47	3200	839	1040	1450	858	1280	e155	e84	57	47
4	34	89	1790	693	1080	1330	764	1000	e150	e82	56	46
5	33	194	1390	585	983	1100	776	753	e140	e81	58	46
6	32	530	1200	503	1880	914	757	618	e135	e80	60	46
7	34	507	1160	440	2360	763	706	532	e130	e78	93	45
8	60	333	1420	391	1770	772	716	454	e125	e77	82	45
9	48	229	1140	351	1460	769	679	398	e120	e76	65	45
10	46	248	914	320	1230	687	836	359	e118	e75	61	44
11	40	374	1030	322	1020	608	1060	336	e115	e74	59	44
12	69	236	1450	324	864	555	912	314	e110	e73	58	44
13	154	166	1640	285	827	591	827	297	e108	e72	57	44
14	91	133	1440	498	782	837	748	317	e105	70	56	44
15	61	318	1120	1420	725	746	721	317	e100	69	55	43
16	51	570	893	1670	1070	638	693	297	e99	69	54	43
17	45	536	727	2120	1660	552	624	374	e98	68	54	43
18	42	752	605	2390	2490	491	531	509	e97	67	53	43
19	40	556	520	1710	2470	443	462	478	e95	66	53	43
20	38	2290	454	2060	1640	408	409	421	e93	66	53	43
21	37	10900	392	2260	1350	371	369	341	e92	66	52	42
22	36	2990	351	2100	2020	383	337	315	e92	65	51	42
23	35	1880	317	2310	4670	374	308	e280	e91	64	51	42
24	41	2180	300	1650	3200	770	295	e260	e91	63	50	41
25	43	1880	1150	1300	2780	812	283	e240	e90	62	50	42
26	39	2710	1510	1060	2020	662	266	e230	e90	61	49	41
27	45	1890	1420	837	2680	585	252	e220	e89	60	49	41
28	51	1370	4150	749	4800	610	233	e210	e88	60	49	41
29	44	1310	2810	730	---	1270	220	e200	e88	60	48	40
30	42	2600	1690	1710	---	1400	210	e190	e87	59	48	40
31	42	---	1520	1570	---	1340	---	e180	---	59	48	---
TOTAL	1485	37905	48253	35527	51081	25921	17957	12466	3321	2175	1744	1305
MEAN	47.9	1264	1557	1146	1824	836	599	402	111	70.2	56.3	43.5
MAX	154	10900	8300	2390	4800	2140	1150	1280	170	85	93	48
MIN	32	43	300	285	725	371	210	180	87	59	48	40
AC-FT	2950	75180	95710	70470	101300	51410	35620	24730	6590	4310	3460	2590
CFSM	.68	17.9	22.0	16.2	25.8	11.8	8.47	5.69	1.57	.99	.80	.62
IN.	.78	19.94	25.39	18.69	26.88	13.64	9.45	6.56	1.75	1.14	.92	.69

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999
MEAN	164	832	1457	1491	1282	849
MAX	509	1580	2782	2151	1931	1146
(WY)	1998	1997	1996	1995	1994	1993
MIN	44.6	47.5	710	743	600	529
(WY)	1994	1994	1998	1994	1994	1994

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1994 - 1999

ANNUAL TOTAL	237239	239140	
ANNUAL MEAN	650	655	619
HIGHEST ANNUAL MEAN			759
LOWEST ANNUAL MEAN			309
HIGHEST DAILY MEAN	10900	10900	14200
LOWEST DAILY MEAN	32	32	23
ANNUAL SEVEN-DAY MINIMUM	33	35	23
ANNUAL RUNOFF (AC-FT)	470600	474300	448400
ANNUAL RUNOFF (CFSM)	9.19	9.27	8.75
ANNUAL RUNOFF (INCHES)	124.83	125.83	118.95
10 PERCENT EXCEEDS	1690	1700	1530
50 PERCENT EXCEEDS	265	297	293
90 PERCENT EXCEEDS	38	44	44

e Estimated

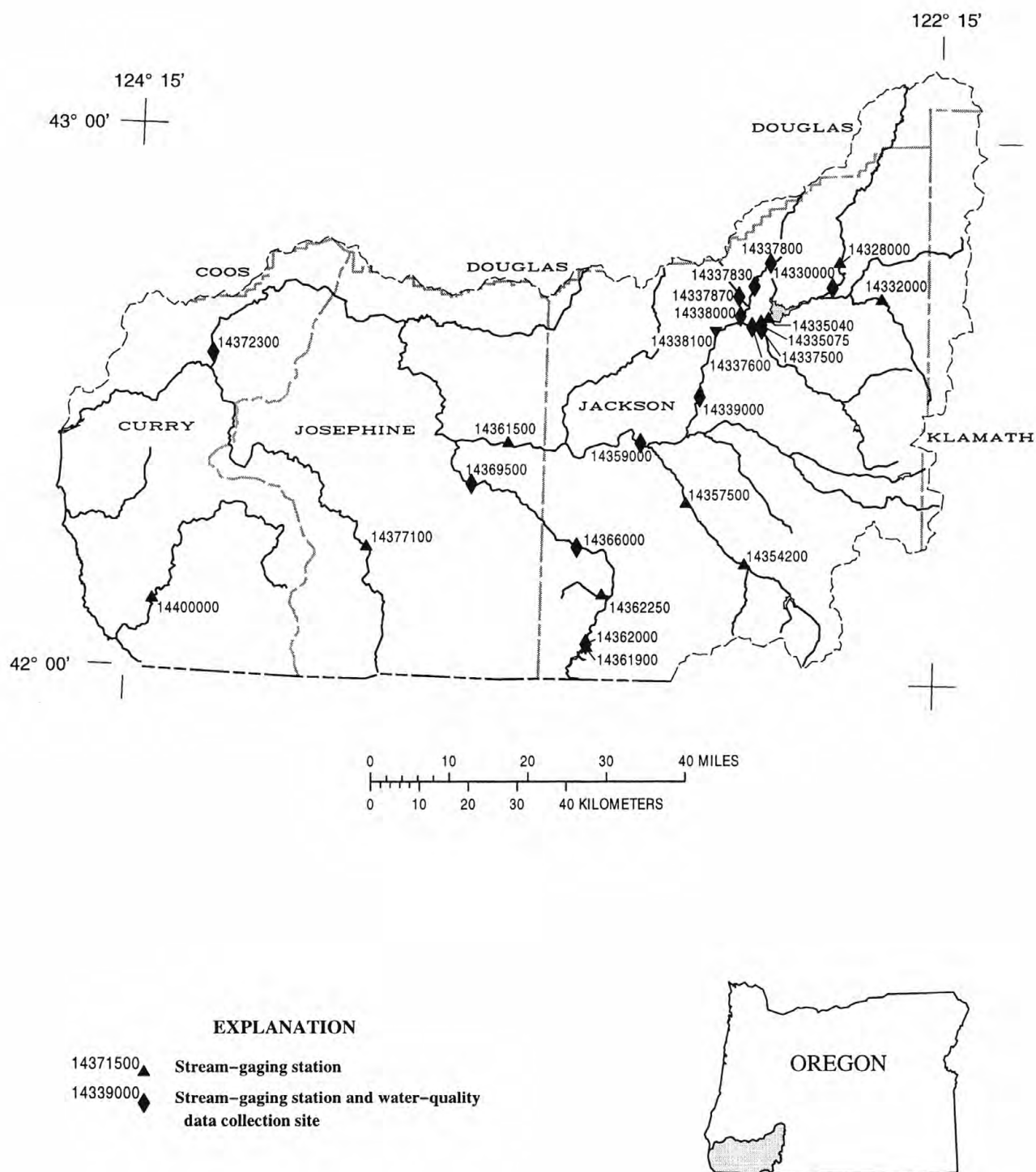


Figure 33. Location of surface-water and water-quality stations in the Rogue and Chetco River Basins.

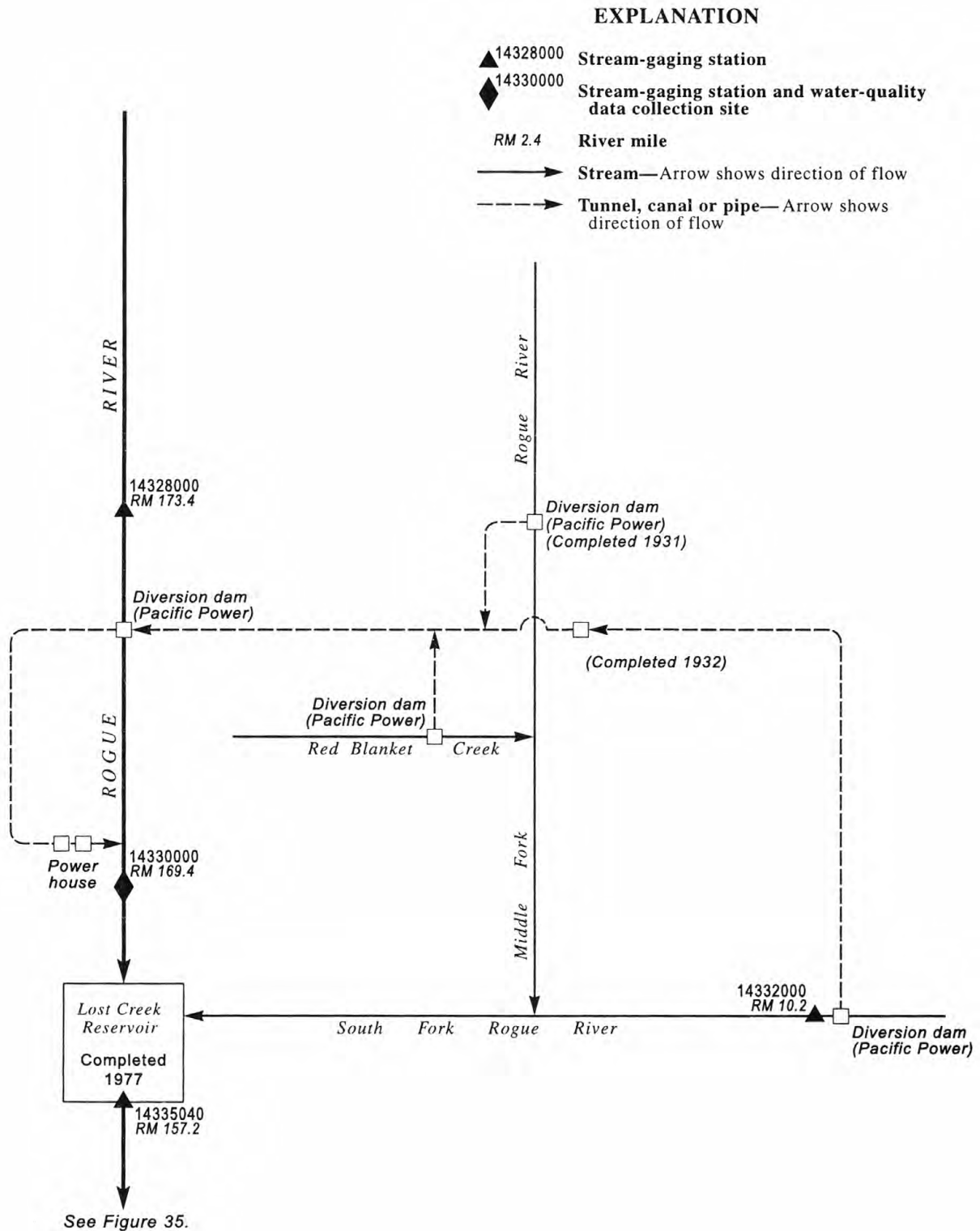


Figure 34. Schematic diagram showing gaging stations in the Rogue River Basin, upstream from Lost Creek Reservoir.

ROGUE RIVER BASIN

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14330000 ROGUE RIVER BELOW PROSPECT, OR

LOCATION.--Lat 42°43'50", long 122°30'55", in SE 1/4 NW 1/4 sec.6, T.33 S., R.3 E., Jackson County, Hydrologic Unit 17100307, on right bank 600 ft downstream from Prospect No. 1 powerplant, 1.4 mi downstream from Mill Creek, 2.0 mi southwest of Prospect, 2.1 mi upstream from South Fork Rogue River, and at mile 169.4.

DRAINAGE AREA.--379 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1913 to September 1930, October 1968 to current year.

REVISED RECORDS.--WSP 1518: 1914-23, 1924(M), 1925, 1928.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,964.56 ft above sea level (Pacific Power and Light Co. bench mark). Prior to September 1927 nonrecording gage at site 1,000 ft upstream, above powerplants, at different datum, also concurrent nonrecording gage on headrace to obtain equivalent combined flow.

REMARKS.--No estimated daily discharges. Records good. Fluctuations caused by powerplant 600 ft upstream from station. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--31 years, (water years 1969-99), 1,486 ft³/s, 1,076,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s Jan. 1, 1997, gage height, 8.15 ft; minimum discharge, 166 ft³/s Sept. 29, 1992, result of regulation by upstream diversion gates.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 12.4 ft Dec. 22, 1964, from floodmarks, discharge, 25,000 ft³/s, from records for station upstream from Prospect (station 14328000) and for station downstream from South Fork Rogue River near Prospect (station 14335000) after adjusting for estimated intervening tributary inflow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,270 ft³/s Nov. 21, gage height 5.66 ft; minimum discharge, 331 ft³/s Aug. 30, result of regulation by upstream diversion gates.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	961	1010	1840	2080	1520	3080	1720	2530	3240	2010	1170	994
2	999	997	3090	1890	1530	2580	1690	2670	3060	2040	1160	1080
3	1000	978	3020	1770	1500	2460	1680	2610	2710	1980	1140	1090
4	1010	1020	2200	1680	1500	2160	1640	2440	2540	1930	1140	1090
5	986	1050	1900	1610	1470	1980	1630	2310	2570	1870	1150	1090
6	963	1050	1750	1610	1570	1960	1570	2380	2600	1760	1170	1090
7	938	1080	1610	1600	1920	1900	1580	2480	2490	1780	1230	1090
8	1010	1060	1550	1560	1780	1860	1600	2350	2380	1730	1190	1080
9	1010	1030	1450	1530	1670	1820	1560	2210	2210	1700	1130	1070
10	1020	1040	1420	1470	1590	1740	1590	2130	2180	1720	1180	1080
11	984	1030	1480	1420	1540	1700	1560	2080	2310	1780	1210	1100
12	880	1020	1560	1460	1520	1700	1620	2310	2380	1650	1130	1090
13	831	1010	1630	1440	1530	1800	1720	2360	2500	1640	1130	1100
14	841	1020	1640	1560	1530	1790	1850	2240	2620	1570	1120	1120
15	803	1070	1580	3130	1510	1790	1950	2120	2810	1530	1090	1110
16	801	1180	1540	2750	1580	1780	2170	2080	2800	1640	1080	1120
17	886	1200	1570	2570	1850	1780	2420	2220	2730	1620	1070	1120
18	957	1190	1580	3160	1970	1790	2710	2510	2700	1590	1060	1110
19	955	1140	1540	2690	2000	1810	2780	2630	2670	1540	1030	1110
20	950	1150	1440	2600	1830	1980	2680	2690	2600	1530	1060	1110
21	951	4250	1180	2470	1770	2020	2620	2650	2420	1540	1050	1110
22	948	2630	1280	2330	1700	2030	2450	2750	2320	1430	1030	1100
23	945	2470	1260	2250	1960	1980	2410	3030	2280	1490	990	1100
24	954	2340	1330	1970	2080	2010	2560	3600	2270	1330	1000	1100
25	988	1840	1330	1860	2140	2160	2680	4030	2440	1290	993	1100
26	967	2120	1390	1790	1950	2130	2670	3810	2330	1220	999	1100
27	964	1980	1330	1680	1970	2020	2550	3710	2220	1170	992	1100
28	993	1680	2650	1640	3470	1930	2360	3880	2040	1160	1010	1100
29	968	1560	2620	1610	---	1900	2220	3710	2010	1150	980	1090
30	957	1580	2250	1580	---	1830	2290	3410	2020	1200	995	1090
31	960	---	2220	1560	---	1790	---	3120	---	1180	1030	---
TOTAL	29380	43775	54230	60320	49950	61260	62530	85050	74450	48770	33709	32834
MEAN	948	1459	1749	1946	1784	1976	2084	2744	2482	1573	1087	1094
MAX	1020	4250	3090	3160	3470	3080	2780	4030	3240	2040	1230	1120
MIN	801	978	1180	1420	1470	1700	1560	2080	2010	1150	980	994
AC-FT	58280	86830	107600	119600	99080	121500	124000	168700	147700	96740	66860	65130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1999, BY WATER YEAR (WY)

	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
MEAN	953	1251	1593	1717	1694	1842	1888	2059	1662	1207	1021	955																			
MAX	1342	2100	3312	3012	2728	3627	2668	3282	2923	1660	1356	1267																			
(WY)	1985	1974	1997	1997	1996	1972	1989	1971	1974	1971	1984	1984																			
MIN	606	728	926	946	946	1045	1272	933	765	717	632	623																			
(WY)	1993	1995	1991	1977	1977	1977	1977	1992	1992	1992	1992	1992																			

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1969 - 1999
ANNUAL TOTAL	579345	636258	
ANNUAL MEAN	1587	1743	1486
HIGHEST ANNUAL MEAN			2053
LOWEST ANNUAL MEAN			968
HIGHEST DAILY MEAN	5960	Jan 17	10500
LOWEST DAILY MEAN	801	Oct 16	555
ANNUAL SEVEN-DAY MINIMUM	857	Oct 12	560
ANNUAL RUNOFF (AC-FT)	1149000	1262000	1076000
10 PERCENT EXCEEDS	2280	2640	2300
50 PERCENT EXCEEDS	1560	1620	1320
90 PERCENT EXCEEDS	983	1000	842

ROGUE RIVER BASIN

14330000 ROGUE RIVER BELOW PROSPECT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 73 microsiemens Sept. 22, 1980; minimum recorded, 28 microsiemens Jan. 13, 1980, may have been lower during period of missing record Jan. 14-17, 1980.

pH: November 1976 to September 1981.

WATER TEMPERATURE: October 1968 to current year.

DISSOLVED OXYGEN: October 1979 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: November 1976 to September 1981 (October to April only, 1980 water year, November to April only, 1981 water year).

INSTRUMENTATION.--Water-quality monitor since November 1976. Automatic pumping sediment sampler November 1976 to April 1981.

REMARKS.--During low flows and warm weather, water temperatures may be influenced by return flows from hydroelectric plant 600 ft upstream.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 73 microsiemens Sept. 22, 1980; minimum recorded, 28 microsiemens Jan. 13, 1980, may have been lower during period of missing record Jan. 14-17, 1980.

pH: Maximum recorded, 8.3 units Aug. 10, 1981, may have been higher during period of no record in July and August 1981; minimum, 7.0 units Nov. 30, 1976.

WATER TEMPERATURE: Maximum, 20.5°C July 20, 1979 (result of regulation); minimum, 0.0°C at times most years.

DISSOLVED OXYGEN: Maximum, 13.6 mg/L Dec. 8, 1980, Feb. 21, 1981; minimum, 7.2 mg/L June 21, 1980, result of regulation.

SEDIMENT CONCENTRATION: Maximum daily mean (water years 1977-79), 1,270 mg/L (estimated) Jan. 11, 1979; minimum, 0 mg/L on many days each year. Maximum daily mean (period October 1979 to April 1981), 716 mg/L Oct. 25, 1979; minimum daily mean, 0 mg/L on several days in October and December 1979, Nov. 15-21, 28, Dec. 1, 1980, Jan. 19, 1981.

SEDIMENT DISCHARGE: Maximum daily (water years 1977-79), 17,790 tons Dec. 15, 1977; minimum daily, 0 tons on many days each year. Maximum daily (period October 1979 to April 1981), 5,570 tons Jan. 13, 1980; minimum daily, 0 tons on several days in October and December 1979, Nov. 15-21, 28, Dec. 1, 1980, Jan. 19, 1981.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.0°C July 27-29, Aug. 3, 4; minimum, 0.5°C Dec. 20, 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	7.5	8.5	6.0	5.0	5.0	5.0	4.5	5.0	4.5	4.0	4.0
2	8.5	8.0	8.0	6.0	5.0	5.5	6.0	5.0	5.5	4.0	3.5	3.5
3	8.0	7.0	7.5	6.0	5.0	5.5	5.0	4.0	4.5	3.5	3.0	3.0
4	8.0	7.0	7.5	6.5	5.5	6.0	4.5	3.5	4.0	3.5	2.5	3.0
5	8.0	6.5	7.0	6.5	5.5	6.0	3.5	2.0	3.0	3.5	3.0	3.5
6	8.0	6.0	7.0	6.0	4.5	5.0	3.0	2.0	2.5	3.5	3.0	3.0
7	8.0	6.5	7.5	4.5	4.0	4.0	3.5	3.0	3.0	3.5	3.0	3.5
8	8.0	7.5	7.5	4.0	3.5	4.0	3.0	2.5	3.0	3.0	2.5	3.0
9	7.5	7.0	7.5	5.0	3.5	4.0	2.5	2.0	2.5	3.0	2.5	2.5
10	7.5	6.5	7.0	4.5	4.0	4.5	3.5	2.5	3.0	3.0	2.5	2.5
11	7.5	6.5	7.0	4.0	3.0	3.5	4.0	3.5	4.0	3.5	2.5	3.0
12	8.0	6.5	7.0	4.5	3.0	4.0	4.5	4.0	4.5	4.5	3.5	4.0
13	8.0	7.0	7.5	5.0	4.0	4.5	5.0	4.0	4.5	4.0	3.5	4.0
14	8.0	7.5	7.5	5.0	4.0	4.5	4.5	4.0	4.5	4.5	3.5	4.0
15	7.5	6.5	6.5	5.5	5.0	5.0	4.0	3.5	3.5	4.5	3.5	4.0
16	6.5	5.5	6.0	6.0	5.0	5.5	4.0	3.0	3.5	4.5	4.0	4.5
17	6.0	5.0	5.5	5.5	5.0	5.5	4.0	3.0	3.5	4.0	3.5	4.0
18	6.5	5.0	6.0	5.5	5.0	5.0	3.5	3.0	3.0	4.5	4.0	4.5
19	6.5	5.5	6.0	5.0	4.5	4.5	3.0	1.5	2.0	4.5	4.0	4.5
20	6.5	5.0	6.0	5.5	4.5	5.0	1.5	.5	1.0	4.5	3.5	4.0
21	6.5	5.5	6.0	6.0	4.5	5.5	2.5	.5	1.5	3.5	3.0	3.0
22	7.0	5.5	6.0	5.0	4.5	4.5	2.0	1.0	1.5	3.0	2.0	2.5
23	6.5	5.5	6.0	6.0	5.0	5.5	2.0	1.0	1.5	3.0	2.0	2.5
24	7.0	6.5	6.5	5.5	4.5	5.0	1.5	1.0	1.5	3.0	2.5	3.0
25	7.5	6.5	7.0	6.0	5.0	5.5	2.0	1.5	1.5	2.5	2.0	2.5
26	7.0	6.0	6.5	6.5	6.0	6.0	2.0	1.5	2.0	3.5	2.5	3.0
27	7.0	5.5	6.0	6.0	5.5	5.5	2.0	1.5	2.0	3.5	2.5	3.0
28	7.0	6.0	6.5	5.5	5.0	5.5	3.0	2.0	2.5	3.5	2.5	3.0
29	6.5	5.0	5.5	5.0	3.5	4.5	4.5	3.0	4.0	3.5	2.5	3.0
30	5.0	4.0	4.5	5.0	3.5	4.0	4.5	4.0	4.0	3.5	2.5	3.0
31	5.0	4.0	4.5	---	---	---	4.5	4.0	4.5	3.5	3.0	3.5
MONTH	9.0	4.0	6.6	6.5	3.0	4.9	6.0	.5	3.1	4.5	2.0	3.4

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
February				March			April			May		
1	3.0	2.5	2.5	4.5	3.5	4.0	4.5	3.0	3.5	7.5	6.5	7.0
2	2.5	2.0	2.0	4.5	3.5	4.0	5.0	3.5	4.0	6.5	4.0	5.0
3	3.5	2.0	3.0	4.5	3.5	3.5	4.5	3.5	4.0	5.0	4.0	4.5
4	4.0	3.0	3.5	3.5	3.0	3.0	4.0	3.0	3.5	6.0	4.5	5.5
5	3.5	2.5	2.5	3.5	2.5	3.0	4.5	3.0	3.5	7.5	4.5	6.0
6	3.0	2.0	2.5	3.5	2.5	3.0	5.5	3.5	4.0	7.0	6.0	6.5
7	2.5	2.0	2.5	4.0	3.0	3.5	5.5	4.0	4.5	6.5	5.0	5.5
8	2.5	2.0	2.5	4.0	3.5	3.5	5.0	4.0	4.5	6.0	4.5	5.0
9	3.0	2.0	2.5	3.5	3.0	3.5	4.5	3.5	4.0	6.5	4.5	5.5
10	2.5	2.0	2.0	4.0	3.0	3.5	4.0	3.5	3.5	6.0	5.0	5.5
11	2.5	1.5	2.0	4.5	3.0	3.5	6.0	3.5	4.5	6.0	5.0	5.5
12	4.0	2.5	3.0	3.5	3.0	3.0	6.5	4.5	5.5	7.5	5.5	6.5
13	4.0	3.0	3.5	4.5	3.0	4.0	7.0	5.0	6.0	7.0	5.5	6.0
14	4.0	3.0	3.5	5.0	4.0	4.5	6.5	5.0	6.0	6.0	5.0	5.5
15	4.0	3.0	3.5	5.0	4.0	4.5	7.0	5.0	6.0	6.5	5.0	5.5
16	4.0	3.5	3.5	5.5	4.0	4.5	6.5	5.0	6.0	7.0	5.5	6.5
17	4.0	3.5	3.5	5.5	4.0	4.5	7.0	5.0	6.0	7.5	6.5	7.0
18	4.0	3.0	3.5	5.5	4.5	5.0	6.5	5.0	6.0	7.0	6.0	6.5
19	4.0	3.0	3.5	6.0	4.0	5.0	6.0	5.0	5.5	7.5	5.0	6.5
20	4.0	3.0	3.5	5.5	4.5	5.0	6.5	4.5	5.5	7.5	6.0	6.5
21	4.0	3.0	3.5	5.5	4.5	5.0	6.0	5.0	5.5	8.0	5.5	6.5
22	4.0	3.0	3.5	5.0	4.0	4.5	6.5	4.5	5.5	8.5	5.5	7.5
23	4.0	3.5	3.5	5.5	4.5	5.0	7.0	5.0	6.0	8.5	6.0	7.5
24	4.0	3.5	4.0	5.0	4.5	5.0	7.5	5.5	6.5	8.5	5.5	7.5
25	4.0	3.5	4.0	5.0	4.0	4.5	7.5	5.0	6.0	8.5	5.0	7.0
26	4.0	3.0	3.5	5.0	4.5	4.5	6.5	5.0	6.0	8.5	5.5	7.0
27	4.0	3.0	3.5	4.5	3.5	4.0	6.0	4.0	5.0	8.5	6.0	7.5
28	4.0	3.5	3.5	4.5	3.5	4.0	6.0	4.0	5.0	8.5	5.5	7.5
29	---	---	---	4.5	3.5	4.0	7.0	5.0	6.0	8.5	6.0	7.0
30	---	---	---	3.5	3.0	3.5	7.5	6.0	6.5	8.0	5.5	7.0
31	---	---	---	3.5	2.5	3.0	---	---	---	8.5	6.0	7.5
Month	4.0	1.5	3.1	6.0	2.5	4.0	7.5	3.0	5.1	8.5	4.0	6.4

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
June				July			August			September		
1	9.0	7.0	7.5	11.0	9.5	10.0	13.5	11.0	12.0	10.0	7.5	8.5
2	8.0	5.5	6.5	10.0	9.0	9.5	13.5	11.0	12.0	10.0	7.5	9.0
3	6.0	5.0	5.5	9.0	8.0	8.5	14.0	11.5	12.5	10.0	8.0	9.0
4	7.5	5.5	6.5	10.0	7.5	8.5	14.0	11.5	12.5	10.0	8.0	9.0
5	8.5	7.0	7.5	10.5	8.5	9.5	13.5	12.0	12.5	11.0	8.5	9.5
6	8.0	6.5	7.0	12.0	9.5	10.5	12.5	10.5	11.5	11.0	8.5	9.5
7	7.5	6.0	7.0	12.0	10.5	11.0	10.5	9.5	10.0	10.0	8.0	9.0
8	8.0	6.5	7.0	11.0	9.5	10.5	11.0	9.5	10.0	10.5	8.0	9.0
9	8.0	6.5	7.5	12.0	10.0	11.0	12.5	9.5	11.0	10.5	8.5	9.5
10	8.5	7.0	8.0	13.0	11.0	11.5	13.0	10.5	11.5	10.5	8.5	9.5
11	9.0	7.5	8.5	13.0	11.0	12.0	12.0	11.0	11.5	10.5	8.0	9.5
12	9.5	8.5	9.0	13.5	11.5	12.5	13.0	11.0	11.5	10.5	8.0	9.0
13	10.0	8.5	9.0	13.5	11.5	12.5	12.0	10.5	11.0	10.5	8.5	9.5
14	10.5	9.0	9.5	13.0	11.0	12.0	11.0	9.5	10.5	10.5	8.5	9.5
15	10.5	8.5	9.5	12.0	10.0	11.0	11.0	9.0	10.0	10.5	8.5	9.5
16	9.5	8.0	9.0	12.0	9.5	10.5	12.0	9.0	10.5	10.5	8.5	9.5
17	9.5	7.5	8.5	12.0	9.5	10.5	12.5	10.0	11.0	10.0	8.0	9.0
18	9.5	8.0	9.0	12.0	9.5	10.5	13.0	10.5	11.5	10.5	8.0	9.0
19	9.5	8.0	8.5	13.0	10.0	11.0	13.0	10.0	11.5	10.5	9.0	9.5
20	9.5	7.5	8.5	13.0	10.5	11.5	13.0	10.5	11.5	10.0	8.5	9.5
21	8.5	8.0	8.0	11.5	9.5	10.5	13.0	10.5	11.5	10.5	8.5	9.5
22	9.5	7.5	8.5	12.5	10.0	11.0	13.0	10.5	11.5	10.5	8.5	9.5
23	10.0	9.0	9.5	13.0	10.5	11.5	13.0	11.0	11.5	10.0	8.5	9.5
24	10.5	9.0	9.5	13.0	11.0	12.0	13.0	10.0	11.5	10.0	8.5	9.0
25	9.0	8.0	8.5	13.0	10.5	11.5	13.0	10.5	11.5	10.0	8.5	9.0
26	9.5	8.0	8.5	13.5	10.5	12.0	13.0	10.5	11.5	8.5	7.0	8.0
27	9.5	8.0	9.0	14.0	11.5	12.5	12.0	10.5	11.5	8.0	6.0	6.5
28	10.5	9.0	9.5	14.0	11.5	12.5	13.0	10.5	11.5	7.5	5.5	6.5
29	11.0	9.5	10.5	14.0	11.5	12.5	12.5	10.5	11.5	8.0	5.5	6.5
30	11.0	10.0	10.5	13.5	11.0	12.0	11.5	8.5	10.5	9.0	6.5	7.5
31	---	---	---	13.5	11.0	12.0	10.0	8.0	9.0	---	---	---
Month	11.0	5.0	8.4	14.0	7.5	11.1	14.0	8.0	11.3	11.0	5.5	8.9
Year	14.0	.5	6.4									

ROGUE RIVER BASIN

14332000 SOUTH FORK ROGUE RIVER NEAR PROSPECT, OR

LOCATION.--Lat 42°42'30", long 122°23'30", in SE 1/4 SW 1/4 sec.7, T.33 S., R.4 E., Jackson County, Hydrologic Unit 17100307, in Rogue River National Forest, on left bank 0.3 mi downstream from South Fork dam and intake of South Fork power canal, 0.31 mi downstream from Innaha Creek, 5.6 mi southeast of Prospect, and at mile 10.2.

DRAINAGE AREA.--83.8 mi². Drainage area at site upstream from Innaha Creek was used October 1931 to September 1949, 61.3 mi²; and Innaha Creek near Prospect, 22.2 mi².

PERIOD OF RECORD.--April 1924 to September 1931, October 1949 to current year. Equivalent records for period October 1931 to September 1949 may be obtained by combining flow of South Fork Rogue River above Innaha Creek, near Prospect and Innaha Creek near Prospect. Records for period October 1949 to September 1983 included flow of South Fork power canal.

REVISED RECORDS.--WSP 1318: 1925(M), 1927(M), 1930(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,300 ft above sea level, from topographic map. Prior to Sept. 10, 1965, at site 1,000 ft upstream at different datum.

REMARKS.--Records fair. All records given herein do not include flow in South Fork power canal (completed in March 1932) which diverts 1,500 ft upstream from station and returns water to main stem Rogue River upstream from South Fork Rogue River; practically no storage upstream from diversion dam.

AVERAGE DISCHARGE.--59 years (water years 1925-83), 178 ft³/s, 129,000 acre-ft/yr (includes flow of South Fork power canal). 16 years (water years 1984-99), 82.6 ft³/s, 59,820 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 7,010 ft³/s Dec. 22, 1964, gage height, 11.1 ft, from floodmark, from rating curve extended above 410 ft³/s on basis of measurement of flow over dam of 3,180 ft³/s; no flow Jan. 31, 1950, Sept. 29, 30, 1967 (entire flow diverted to canal).

Combined flow, maximum discharge, 7,010 ft³/s Dec. 22, 1964 (no flow in canal); minimum daily, about 38 ft³/s Aug. 1-31, 1931.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 776 ft³/s Nov. 21, gage height, 4.21 ft; minimum discharge, 5.0 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	19	67	64	71	291	56	222	e190	e46	14	13
2	8.3	15	288	56	64	243	50	267	e180	e45	14	13
3	7.8	17	392	50	58	226	46	268	e160	e45	14	13
4	7.0	16	217	44	54	310	40	220	e140	e43	14	13
5	6.5	19	151	38	44	242	37	196	e120	e42	15	13
6	6.6	17	114	33	54	134	32	217	e110	e40	15	13
7	35	21	94	29	70	118	29	235	e105	e39	17	13
8	18	18	81	24	54	107	30	208	e95	e38	14	13
9	13	15	60	21	51	97	26	183	e90	e37	14	13
10	14	19	47	20	42	84	22	163	e85	e36	15	13
11	12	17	46	20	37	74	21	162	e80	e35	15	12
12	12	18	47	20	34	67	21	217	e83	e33	14	12
13	16	19	51	19	33	68	27	223	e84	31	15	13
14	13	19	43	28	32	64	36	192	e86	28	15	12
15	15	22	34	274	29	59	50	165	e90	24	14	12
16	15	20	31	275	32	57	80	150	e85	21	14	13
17	16	21	29	245	53	116	160	160	e80	19	14	12
18	12	18	27	353	58	50	175	212	e75	17	14	12
19	12	15	23	281	56	54	207	241	e70	17	14	12
20	14	19	20	271	54	67	219	385	e65	17	14	12
21	13	453	46	240	50	72	234	353	e60	16	14	11
22	13	243	38	251	46	73	207	383	e58	16	14	12
23	13	262	35	273	69	74	190	386	e56	16	14	12
24	14	219	32	215	78	76	205	e400	e55	16	14	11
25	16	127	33	182	77	82	229	e500	e54	15	13	11
26	15	128	31	158	68	94	251	e450	e52	15	14	11
27	15	103	21	133	94	90	235	e400	e50	15	13	11
28	15	75	73	120	262	80	195	e350	e49	15	13	11
29	15	62	90	108	---	76	165	e300	e48	14	13	11
30	18	61	69	97	---	68	166	e250	e47	14	14	11
31	17	---	73	87	---	63	---	e200	---	14	13	---
TOTAL	424.9	2097	2403	4029	1728	3313	3397	8258	2602	819	438	364
MEAN	13.7	69.9	77.5	130	61.7	107	113	266	86.7	26.4	14.1	12.1
MAX	35	453	392	353	262	310	251	500	190	46	17	13
MIN	6.5	15	20	19	29	50	21	150	47	14	13	11
AC-FT	843	4160	4770	7990	3430	6570	6740	16380	5160	1620	869	722

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	MEAN	25.1	45.1	103	104	101	109	137	176	115	29.3	19.5	28.1
MAX	116	161	526	435	323	238	345	347	301	155	121	115	
(WY)	1998	1997	1997	1997	1996	1993	1989	1997	1984	1997	1997	1997	
MIN	1.85	5.38	3.80	2.87	3.42	9.91	19.9	12.8	5.23	5.30	4.11	1.16	
(WY)	1984	1986	1987	1985	1985	1985	1988	1992	1987	1988	1986	1984	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1984 - 1999
ANNUAL TOTAL	47001.8	29872.9	
ANNUAL MEAN	129	81.8	82.6
HIGHEST ANNUAL MEAN			224
LOWEST ANNUAL MEAN			17.6
HIGHEST DAILY MEAN	1410	Jan 17	2670
LOWEST DAILY MEAN	6.5	Oct 5	.22
ANNUAL SEVEN-DAY MINIMUM	7.3	Sep 30	.23
ANNUAL RUNOFF (AC-FT)	93230	59250	59820
10 PERCENT EXCEEDS	300	234	220
50 PERCENT EXCEEDS	90	44	19
90 PERCENT EXCEEDS	11	13	4.2

e Estimated

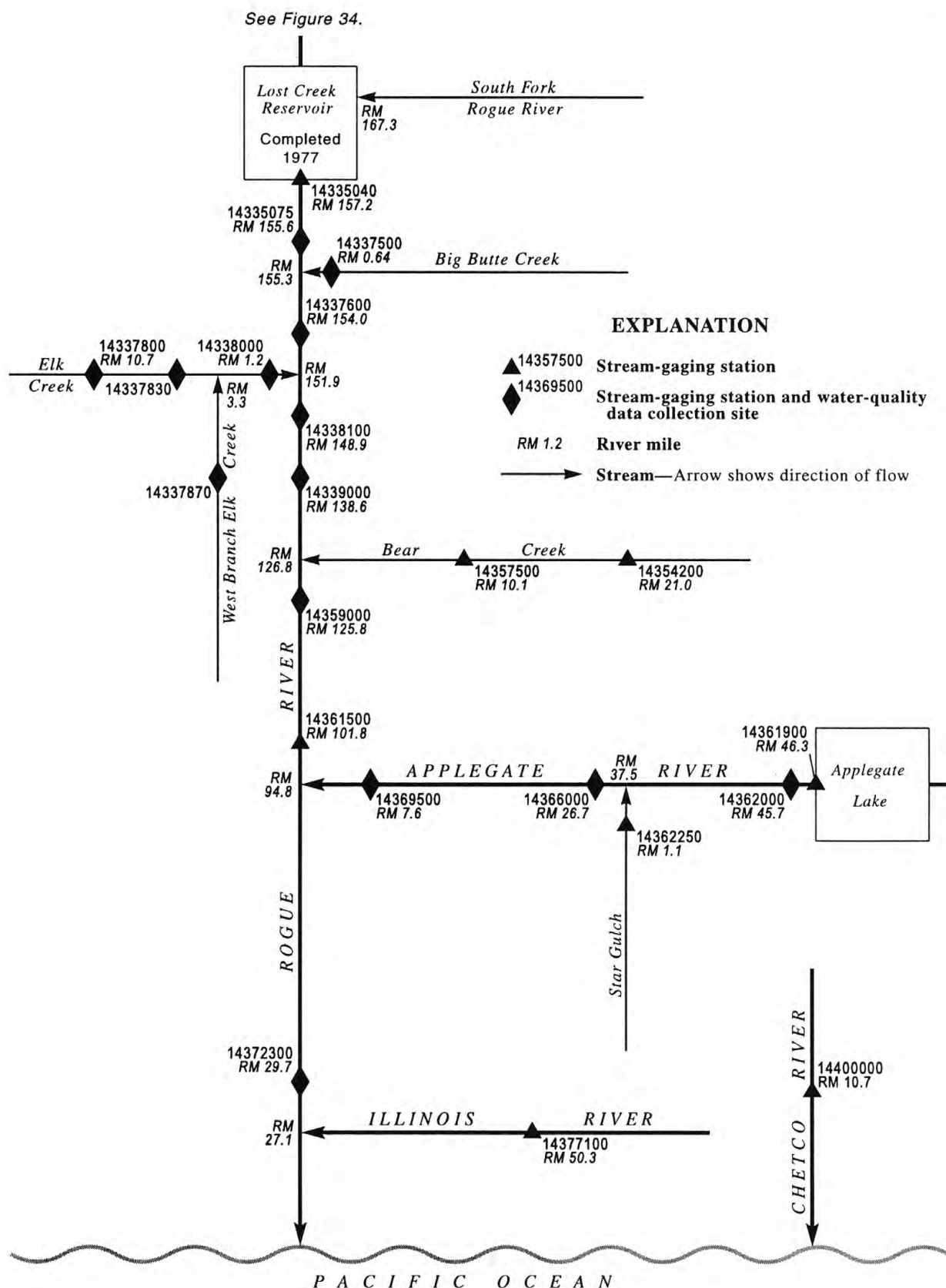


Figure 35. Location of surface-water and water-quality stations in the Rogue River Basin, downstream from Lost Creek Reservoir.

ROGUE RIVER BASIN

14335040 LOST CREEK LAKE NEAR MCLEOD, OR

LOCATION.--Lat 42°40'16", long 122°40'25", in SW 1/4 sec.26, T.33 S., R. 1 E., Jackson County, Hydrologic Unit 17100307, in outlet structure of Lost Creek Dam on Rogue River, 1.0 mi northeast of McLeod and at mile 157.2.

DRAINAGE AREA.--686 mi².

PERIOD OF RECORD.--February 1977 to current year.

REVISED RECORDS.--WDR OR-85-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Prior to Nov. 28, 1977, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed in October 1976. Storage began in February 1977. Total capacity, 465,000 acre-ft between elevations 1,551.0 ft and 1,872.0 ft, maximum pool elevation. Elevation of gated spillway crest, 1,823.0 ft. Usable storage, 315,000 acre-ft between elevation 1,751.0 ft and 1,872.0 ft. Water is used for flood control, recreation, power generation, pollution abatement, domestic use and other purposes.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 465,800 acre-ft June 1, 2, 1988, elevation, 1,872.24 ft; minimum contents since first filling, 100,800 acre-ft Oct. 29, 1977, elevation, 1,720.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 459,000 acre-ft June 21, elevation, 1,870.26 ft; minimum contents, 279,600 acre-ft Dec. 27, 28, elevation, 1,809.93 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)

1,720	100,100	1,850	393,100
1,750	148,200	1,872	465,000
1,800	254,600	1,899	562,900

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1811.09	1811.67	1811.18	1812.62	1822.88	1850.35	1850.25	1860.96	1866.06	1864.06	1837.13	1816.62
2	1811.14	1811.66	1813.04	1812.70	1823.48	1850.85	1850.80	1861.70	1865.96	1863.38	1836.37	1815.97
3	1811.20	1811.64	1814.54	1812.96	1824.03	1851.10	1851.33	1862.20	1865.86	1862.75	1835.64	1815.30
4	1811.24	1811.70	1814.31	1813.37	1824.56	1851.06	1851.81	1862.38	1865.78	1862.10	1834.89	1814.63
5	1811.27	1811.77	1813.71	1813.80	1825.06	1850.86	1852.30	1862.70	1865.80	1861.52	1834.18	1813.97
6	1811.28	1811.81	1813.19	1814.21	1825.92	1850.83	1852.74	1863.15	1865.90	1860.98	1833.47	1813.39
7	1811.32	1811.80	1813.15	1814.56	1827.38	1850.77	1853.10	1863.69	1865.85	1860.46	1832.83	1812.91
8	1811.41	1811.77	1813.20	1814.92	1828.46	1850.69	1853.32	1864.08	1865.73	1859.83	1832.18	1812.56
9	1811.46	1811.75	1813.15	1815.31	1829.35	1850.58	1853.43	1864.35	1865.70	1859.14	1831.46	1812.32
10	1811.50	1811.77	1813.09	1815.66	1830.05	1850.59	1853.46	1864.57	1865.77	1858.42	1830.74	1812.13
11	1811.51	1811.77	1813.03	1816.02	1830.66	1850.51	1853.45	1864.76	1865.89	1857.54	1829.87	1812.06
12	1811.50	1811.79	1812.96	1816.41	1831.23	1850.40	1853.48	1865.14	1866.12	1856.61	1828.94	1812.02
13	1811.56	1811.88	1812.98	1816.74	1831.83	1850.39	1853.72	1865.57	1866.48	1855.67	1828.05	1812.02
14	1811.61	1811.94	1813.02	1817.25	1832.44	1850.36	1854.18	1865.90	1867.05	1854.66	1827.25	1812.09
15	1811.62	1812.01	1812.96	1818.77	1833.03	1850.30	1854.75	1866.14	1867.72	1853.59	1826.51	1812.15
16	1811.63	1812.09	1812.86	1819.13	1833.75	1850.24	1855.48	1866.35	1868.34	1852.46	1825.78	1812.19
17	1811.65	1812.21	1812.75	1819.32	1834.81	1850.16	1856.08	1866.66	1868.88	1851.32	1825.23	1812.12
18	1811.66	1812.25	1812.66	1820.23	1836.21	1850.08	1856.79	1867.08	1869.35	1850.23	1824.66	1812.03
19	1811.67	1812.22	1812.50	1820.62	1837.49	1850.01	1857.07	1867.34	1869.77	1849.17	1824.14	1811.96
20	1811.66	1812.17	1812.25	1820.80	1838.51	1850.08	1857.23	1867.37	1870.11	1848.15	1823.65	1811.87
21	1811.65	1816.18	1811.82	1820.84	1839.43	1850.21	1857.81	1867.36	1870.24	1847.24	1823.12	1811.80
22	1811.63	1815.18	1811.41	1821.48	1840.27	1850.27	1858.26	1867.29	1869.81	1846.32	1822.58	1811.83
23	1811.61	1813.68	1810.99	1821.40	1841.41	1850.27	1858.66	1867.36	1869.26	1845.44	1822.02	1811.87
24	1811.64	1812.28	1810.63	1821.21	1842.63	1850.27	1859.18	1867.10	1868.69	1844.59	1821.53	1811.91
25	1811.72	1811.19	1810.31	1821.44	1843.89	1850.26	1859.76	1866.98	1868.07	1843.69	1820.93	1811.95
26	1811.74	1810.74	1810.11	1821.51	1844.95	1850.23	1860.03	1866.92	1867.32	1842.75	1820.32	1811.98
27	1811.75	1810.49	1809.93	1821.67	1846.25	1850.18	1860.17	1866.94	1866.52	1841.79	1819.72	1812.04
28	1811.77	1810.51	1811.17	1821.99	1848.81	1850.20	1860.24	1867.03	1865.84	1840.82	1819.13	1812.08
29	1811.75	1810.66	1811.98	1822.23	---	1850.19	1860.25	1866.95	1865.34	1839.82	1818.49	1812.11
30	1811.70	1810.83	1812.26	1822.40	---	1850.12	1860.47	1866.64	1864.70	1838.80	1817.89	1812.15
31	1811.66	---	1812.54	1822.52	---	1850.04	---	1866.19	---	1837.93	1817.26	---
MAX	1811.77	1816.18	1814.54	1822.52	1848.81	1851.10	1860.47	1867.37	1870.24	1864.06	1837.13	1816.62
MIN	1811.09	1810.49	1809.93	1812.62	1822.88	1850.01	1850.25	1860.96	1864.70	1837.93	1817.26	1811.80
(†)	284110	281960	286400	313040	389410	393220	426430	445320	440350	356660	298850	285390
(+)	+1500	-2150	+4440	+26640	+76370	+3810	+33210	+18890	-4970	-83690	-57810	-13460

CAL YR 1998 MAX --- MIN --- AC-FT† +860
WTR YR 1999 MAX 1870.24 MIN 1809.93 AC-FT† +2780

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

ROGUE RIVER BASIN

379

14335075 ROGUE RIVER AT MCLEOD, OR

LOCATION.--Lat 42°39'35", long 122°41'30", in SW 1/4 NW 1/4 sec.34, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 0.3 mi upstream from Big Butte Creek, 0.1 southwest of McLeod, and at mile 155.6.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--May 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1976 to September 1981.

pH: November 1976 to September 1981.

WATER TEMPERATURE: November 1976 to current year.

DISSOLVED OXYGEN: November 1976 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: October 1976 to September 1981 (October to April only, 1980 water year, November to April only, 1981 water year).

INSTRUMENTATION.--Water-quality monitor since November 1976. Automatic pumping sediment sampler November 1976 to April 1981. February 1998 water-quality monitor replaced with a temperature probe and data logger.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 76 microsiemens Nov. 11, 1977; minimum, 45 microsiemens Dec. 24, 25, 1977.

pH: Maximum, 9.2 units May 8, 9, 11, 12, 1981; minimum, 6.7 units Nov. 8-13, 1978.

WATER TEMPERATURE: Maximum, 15.5°C June 23, 1985, several days in July and August 1994; minimum, 0.5°C

Jan. 9, 1977; minimum since full operation of Lost Creek Lake, 3.5°C several days in February 1979, February 1985, February and March 1989. The minimum may have been lower during period of missing record Feb. 1-20, 1985.

DISSOLVED OXYGEN: Maximum, 15.7 mg/L Jan. 8, 1977; minimum, 6.8 mg/L Aug. 20, 1977.

SEDIMENT CONCENTRATION: Maximum recorded daily mean, 75 mg/L Dec. 14, 1977; minimum daily, 0 mg/L many days.

SEDIMENT DISCHARGE: Maximum recorded daily, 1,570 tons Dec. 14, 1977; minimum daily, 0 tons many days.

EXTREMES FOR PERIOD FEBRUARY TO SEPTEMBER.--

WATER TEMPERATURE: Maximum recorded, 14.5°C Aug. 18; minimum recorded, 2.5°C Feb. 8, 10, 11.

TEMPERATURE, WATER (DEG. C), FEBRUARY TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	7.5	4.5	6.0	6.5	5.5	6.0	8.0	6.0	6.5
2	---	---	---	7.0	4.5	5.5	7.0	5.5	6.0	7.0	6.0	6.5
3	---	---	---	5.5	5.0	5.5	7.0	5.0	6.0	6.5	6.0	6.5
4	---	---	---	6.0	4.5	5.5	5.5	5.0	5.5	6.5	6.0	6.0
5	---	---	---	5.5	4.5	5.0	7.0	5.5	6.0	7.5	6.0	6.5
6	---	---	---	6.0	5.0	5.5	7.0	5.5	6.0	8.0	6.5	7.5
7	6.0	3.0	4.0	6.5	5.5	6.0	6.5	5.5	6.0	9.5	7.0	8.0
8	6.0	2.5	4.5	6.5	4.5	5.0	6.0	5.5	5.5	10.0	8.5	9.0
9	6.0	3.0	4.0	5.0	4.5	5.0	6.0	5.0	5.5	10.0	8.5	9.5
10	6.0	2.5	4.0	5.5	5.0	5.0	6.5	5.0	6.0	10.0	9.0	9.5
11	6.0	2.5	4.5	5.5	5.0	5.0	7.0	5.5	6.0	9.5	8.5	9.0
12	5.0	4.5	4.5	5.0	5.0	5.0	6.5	5.5	6.0	11.0	8.5	9.5
13	4.5	4.5	4.5	5.5	5.0	5.0	7.0	5.0	6.0	10.5	8.5	9.0
14	5.0	4.5	4.5	5.0	5.0	5.0	7.5	5.5	6.5	10.5	8.5	9.0
15	5.0	4.5	4.5	5.5	5.0	5.0	7.0	5.5	6.0	10.0	8.5	9.0
16	4.5	4.5	4.5	5.5	5.0	5.0	7.0	5.5	6.0	10.5	9.0	10.0
17	5.0	4.5	4.5	5.0	5.0	5.0	6.5	6.0	6.0	10.0	8.0	9.0
18	4.5	4.5	4.5	5.5	5.0	5.5	6.5	6.0	6.0	10.0	9.0	9.5
19	4.5	4.0	4.5	6.0	5.5	5.5	8.5	6.5	7.0	10.0	8.5	9.0
20	4.5	4.0	4.0	6.0	5.5	5.5	10.5	5.5	8.5	9.5	8.0	8.5
21	4.5	4.0	4.5	6.0	5.5	5.5	6.5	5.0	6.0	10.0	8.0	9.0
22	4.5	4.5	4.5	6.0	5.0	5.5	7.0	6.0	6.5	9.5	8.0	9.0
23	5.0	4.5	4.5	6.0	5.0	5.5	8.5	5.5	6.5	9.5	8.5	9.0
24	4.5	4.0	4.5	5.5	5.0	5.5	8.5	6.0	7.0	9.5	8.0	8.5
25	4.5	4.0	4.5	6.0	5.5	5.5	8.0	6.0	6.5	9.0	7.5	8.5
26	4.5	4.0	4.0	6.0	5.0	5.5	8.0	6.5	7.0	9.5	7.5	8.5
27	4.5	4.0	4.5	5.5	5.0	5.5	7.5	6.0	6.5	10.5	9.0	9.5
28	7.5	4.5	6.0	6.5	5.0	5.5	6.5	5.5	6.0	10.5	8.5	9.5
29	---	---	---	5.5	5.0	5.0	7.0	5.5	6.0	10.0	8.5	9.0
30	---	---	---	6.0	5.0	5.5	7.0	5.5	6.5	10.0	8.5	9.5
31	---	---	---	6.0	5.5	5.5	---	---	---	10.0	8.5	9.5
MONTH	---	---	---	7.5	4.5	5.3	10.5	5.0	6.2	11.0	6.0	8.6

ROGUE RIVER BASIN

14335075 ROGUE RIVER AT MCLEOD, OR--Continued

TEMPERATURE, WATER (DEG. C), FEBRUARY TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	9.0	9.5	12.5	10.5	11.5	12.5	10.0	11.5	13.0	12.0	12.5
2	9.5	8.5	9.0	12.5	10.5	11.5	12.5	10.0	11.5	13.0	11.5	12.5
3	10.0	9.0	9.5	12.5	11.0	11.5	12.5	10.5	12.0	13.0	12.0	12.5
4	11.0	9.0	10.0	12.5	11.0	11.5	13.0	11.0	12.0	13.0	12.0	12.5
5	11.5	9.5	10.5	13.0	11.0	12.0	12.5	11.0	12.0	13.0	11.5	12.5
6	11.5	9.0	10.0	13.0	11.0	12.0	12.5	11.0	12.0	13.0	12.0	12.5
7	11.0	9.0	9.5	12.0	10.5	11.0	12.5	11.5	12.0	13.0	11.5	12.0
8	10.5	9.5	10.0	12.0	11.0	11.5	12.5	11.5	12.0	12.5	11.5	12.0
9	11.5	9.5	10.5	12.5	11.0	11.5	13.0	11.0	12.5	12.5	11.5	12.0
10	11.5	10.0	10.5	13.0	10.5	12.0	13.0	12.0	12.5	12.5	11.5	12.0
11	11.5	10.0	10.5	13.0	11.0	12.0	13.0	11.5	12.5	13.0	11.5	12.0
12	11.5	10.0	10.5	12.5	11.0	12.0	13.5	12.0	12.5	12.5	11.5	12.0
13	12.0	10.0	10.5	12.5	11.0	12.0	13.5	12.0	12.5	13.0	11.5	12.0
14	12.0	10.0	11.0	12.0	11.0	11.5	13.5	12.0	13.0	13.5	11.5	12.0
15	12.0	10.0	11.0	12.0	11.0	11.5	13.5	12.5	13.0	13.5	11.5	12.0
16	12.0	10.0	11.0	12.5	10.5	11.5	14.0	12.5	13.5	13.0	11.0	12.0
17	12.0	10.0	11.0	12.0	10.0	11.0	14.0	12.5	13.0	11.0	9.0	10.0
18	12.0	10.0	10.5	11.5	10.0	11.0	14.5	12.0	13.0	10.5	9.0	9.5
19	12.0	10.0	10.5	11.5	10.0	10.5	13.5	12.0	13.0	10.5	9.0	9.5
20	11.5	10.0	10.5	12.0	9.5	10.5	14.0	11.5	13.0	10.5	9.0	9.5
21	11.5	9.5	10.5	11.0	9.5	10.0	13.5	12.0	13.0	10.5	9.0	10.0
22	10.5	9.5	10.0	10.0	8.5	9.5	13.5	12.0	13.0	11.0	9.5	10.0
23	11.5	9.5	10.5	10.0	9.0	9.5	13.5	11.5	13.0	10.5	8.5	10.0
24	12.0	9.0	10.5	10.5	9.0	10.0	13.5	12.0	12.5	10.5	8.0	9.0
25	12.0	10.0	11.0	10.5	9.0	10.0	13.0	12.0	12.5	10.0	8.5	9.0
26	12.0	10.5	11.0	11.0	9.0	10.0	13.0	12.0	12.5	10.0	8.0	9.0
27	12.5	10.5	11.0	11.0	9.5	10.5	13.0	12.0	12.5	11.0	8.0	9.0
28	12.5	10.5	11.5	11.0	9.5	10.5	13.5	12.5	13.0	10.5	8.0	9.0
29	12.5	11.0	11.5	12.0	9.5	11.0	13.0	12.5	13.0	10.5	8.5	9.0
30	13.5	11.0	12.0	12.0	9.5	11.0	13.0	12.0	12.5	10.5	8.5	9.5
31	---	---	---	12.0	10.0	11.5	13.5	12.0	12.5	---	---	---
MONTH	13.5	8.5	10.5	13.0	8.5	11.1	14.5	10.0	12.5	13.5	8.0	10.9

ROGUE RIVER BASIN

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14337500 BIG BUTTE CREEK NEAR MCLEOD, OR

LOCATION.--Lat 42°39'05", long 122°41'25", in NE 1/4 NW 1/4 sec.3, T.34 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 225 ft upstream from county road bridge, 0.9 mi south of McLeod, and at mile 0.64.

DRAINAGE AREA.--245 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to September 1957. October 1967 to current year.

REVISED RECORDS.--WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,525.95 ft above sea level. Oct. 9, 1945, to Sept. 30, 1957, nonrecording gage at site 260 ft downstream at datum 0.53 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Slight regulation by fish hatchery 600 ft upstream from station. Several diversions in the vicinity of Butte Falls, the two largest being the city of Medford diversion and Eagle Point Irrigation District Canal.

AVERAGE DISCHARGE.--44 years (water years 1946-57, 1968-99), 263 ft³/s, 190,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,950 ft³/s Dec. 22, 1955, gage height, 12.75 ft, site and datum then in use, from rating curve extended above 3,300 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 6.4 ft³/s June 23, 24, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 18.6 ft, present site, from floodmark by local resident, discharge, 16,800 ft³/s, from rating curve, at former site, extended above 9,000 ft³/s and field estimate of overflow.

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. 21	unknown	unknown	unknown	Feb. 18	1330	1,880	6.58
Dec. 2	unknown	unknown	unknown	Feb. 28	0800	2,600	7.63
Jan. 22	1900	*2,970	*8.13				

Minimum discharge, 68 ft³/s Sept. 4, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	e94	e730	386	403	1680	360	262	174	86	74	76
2	e86	e92	e1250	357	396	1370	336	302	171	87	75	73
3	e80	e90	e1050	337	399	1310	325	394	166	88	74	72
4	e82	e93	e870	312	395	1070	313	369	159	88	76	71
5	e80	e102	e750	294	364	890	320	314	152	86	75	70
6	e78	e105	e600	275	505	779	315	303	148	87	78	71
7	e76	e115	e500	264	1080	698	301	296	141	84	86	71
8	e81	e118	e450	247	815	646	347	281	134	84	84	71
9	e85	e107	e320	233	750	634	343	268	130	82	78	73
10	e87	e105	e300	222	618	566	331	257	126	79	90	74
11	e84	e114	e310	217	546	521	321	263	123	79	127	73
12	e82	e97	e450	230	531	493	316	266	119	78	87	73
13	e87	e93	e560	219	553	493	318	251	118	77	84	74
14	e90	e93	e500	232	732	474	329	254	115	76	83	75
15	e89	e98	e460	488	598	466	344	256	113	76	82	75
16	e88	e100	e420	604	648	458	363	229	111	76	79	74
17	e86	e120	384	787	969	451	373	218	108	77	76	74
18	e85	e130	360	1060	1320	445	390	220	104	77	76	73
19	e84	e120	339	931	1110	441	394	216	102	76	74	72
20	e83	e115	319	1080	896	455	386	216	104	75	74	70
21	e83	e1600	273	1450	856	508	379	211	105	77	74	71
22	e83	e930	263	1980	743	535	362	206	105	75	75	70
23	e83	e980	251	2020	823	489	336	207	100	74	74	72
24	e86	e780	244	1270	770	438	319	213	99	80	108	73
25	e90	e530	261	984	848	426	317	220	97	75	74	73
26	e88	e700	313	836	772	428	314	219	95	73	73	75
27	e86	e590	297	710	1070	412	310	215	95	70	73	76
28	e88	e520	407	637	2150	392	297	212	91	70	73	76
29	e87	e510	403	559	---	390	275	206	89	70	72	74
30	e86	e600	364	473	---	386	263	191	89	73	78	74
31	e87	---	429	443	---	377	---	183	---	73	e75	---
TOTAL	2615	9841	14427	20137	21660	19121	9997	7718	3583	2428	2481	2189
MEAN	84.4	328	465	650	774	617	333	249	119	78.3	80.0	73.0
MAX	90	1600	1250	2020	2150	1680	394	394	174	88	127	76
MIN	75	90	244	217	364	377	263	183	89	70	72	70
AC-FT	5190	19520	28620	39940	42960	37930	19830	15310	7110	4820	4920	4340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1999, BY WATER YEAR (WY)

	123	192	405	489	487	494	368	244	141	80.7	67.9	70.4
MEAN	123	192	405	489	487	494	368	244	141	80.7	67.9	70.4
MAX	330	535	1542	1325	1234	1362	723	492	450	148	121	106
(WY)	1951	1974	1997	1956	1996	1972	1974	1953	1953	1948	1956	1948
MIN	64.4	60.2	58.0	64.2	91.7	92.2	73.4	57.0	43.7	36.7	43.0	43.8
(WY)	1982	1988	1977	1977	1977	1992	1977	1968	1968	1968	1992	1988

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1946 - 1999

ANNUAL TOTAL	116838	116197	
ANNUAL MEAN	320	318	
HIGHEST ANNUAL MEAN			263
LOWEST ANNUAL MEAN			501
HIGHEST DAILY MEAN	2140	2150	7190
LOWEST DAILY MEAN	69	70	15
ANNUAL SEVEN-DAY MINIMUM	70	71	30
ANNUAL RUNOFF (AC-FT)	231700	230500	190300
10 PERCENT EXCEEDS	686	758	594
50 PERCENT EXCEEDS	257	216	142
90 PERCENT EXCEEDS	73	74	58

e Estimated

ROGUE RIVER BASIN

14337500 BIG BUTTE CREEK NEAR MCLEOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1970 to current year.

INSTRUMENTATION.--Temperature recorder since August 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 24.0°C at times in 1973, 1977, 1979-81, 1990; minimum, 0.0°C at times most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 21.0°C July 21, 13; minimum recorded, 0.0°C Dec. 21-23.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.5	10.5	12.0	---	---	---	---	---	---	5.5	4.5	5.0
2	---	---	---	---	---	---	---	---	---	4.5	3.5	4.0
3	---	---	---	---	---	---	---	---	---	4.0	3.0	3.5
4	---	---	---	---	---	---	---	---	---	4.0	3.0	3.5
5	---	---	---	---	---	---	---	---	---	4.5	3.5	4.0
6	---	---	---	---	---	---	---	---	---	4.0	3.0	3.5
7	---	---	---	---	---	---	---	---	---	5.0	3.5	4.0
8	---	---	---	---	---	---	---	---	---	4.5	3.0	3.5
9	---	---	---	---	---	---	---	---	---	4.0	3.0	3.5
10	---	---	---	---	---	---	---	---	---	4.0	3.0	3.5
11	---	---	---	---	---	---	---	---	---	5.5	3.5	4.5
12	---	---	---	---	---	---	---	---	---	6.5	5.5	6.0
13	---	---	---	---	---	---	---	---	---	6.0	5.0	5.5
14	---	---	---	---	---	---	---	---	---	6.0	5.0	5.5
15	---	---	---	---	---	---	---	---	---	6.5	5.5	6.0
16	---	---	---	---	---	---	---	---	---	6.5	6.0	6.0
17	---	---	---	---	---	---	5.0	4.5	5.0	6.5	5.5	6.0
18	---	---	---	---	---	---	5.0	4.5	4.5	6.5	5.0	6.0
19	---	---	---	---	---	---	4.5	3.0	3.5	6.5	5.5	6.0
20	---	---	---	---	---	---	3.0	1.0	2.0	6.0	5.0	5.5
21	---	---	---	---	---	---	1.0	.0	.5	6.0	4.5	5.5
22	---	---	---	---	---	---	1.0	.0	.5	5.5	4.5	5.0
23	---	---	---	---	---	---	1.5	.0	1.0	5.5	4.5	5.0
24	---	---	---	---	---	---	3.0	1.0	2.0	5.0	4.5	5.0
25	---	---	---	---	---	---	4.0	3.0	3.5	5.0	3.0	4.0
26	---	---	---	---	---	---	4.5	4.0	4.0	5.0	4.5	4.5
27	---	---	---	---	---	---	5.0	4.0	4.5	5.0	4.0	4.5
28	---	---	---	---	---	---	5.5	4.5	5.0	6.0	4.5	5.0
29	---	---	---	---	---	---	6.0	5.0	5.5	5.5	4.0	4.5
30	---	---	---	---	---	---	6.0	5.0	5.5	5.5	4.0	5.0
31	---	---	---	---	---	---	6.0	5.0	5.5	5.5	4.5	5.0
MONTH	---	---	---	---	---	---	---	---	---	6.5	3.0	4.8

ROGUE RIVER BASIN

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14337500 BIG BUTTE CREEK NEAR MCLEOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	3.5	4.0	7.0	6.0	6.5	8.0	5.0	6.0	13.0	10.5	11.5
2	5.0	4.0	4.5	7.5	5.0	6.0	8.0	4.5	6.5	10.5	8.5	9.0
3	6.0	4.5	5.5	7.0	5.5	6.0	7.5	6.0	7.0	9.5	8.0	8.5
4	6.0	5.0	5.5	6.0	4.5	5.5	6.5	5.5	6.0	9.5	7.0	8.5
5	5.0	3.5	4.0	6.0	4.0	5.0	8.0	5.0	6.5	12.0	7.0	9.5
6	5.5	4.5	5.0	6.0	4.0	5.0	9.5	5.5	7.5	11.5	9.5	10.5
7	5.5	4.5	5.0	6.5	4.5	5.5	8.5	6.0	7.5	10.5	8.0	9.0
8	4.5	3.5	4.0	6.5	5.5	6.0	8.0	5.5	7.0	10.0	7.0	8.5
9	4.0	3.5	3.5	6.5	4.5	5.5	7.5	5.0	6.0	11.0	7.0	9.0
10	4.5	3.5	4.0	6.5	4.0	5.0	7.5	6.0	7.0	9.0	7.5	8.5
11	4.5	3.0	4.0	6.5	4.0	5.5	10.0	6.0	8.0	10.0	8.5	9.0
12	6.0	4.0	5.0	6.5	5.0	5.5	10.5	7.0	9.0	13.0	9.0	10.5
13	6.0	5.0	5.5	8.0	6.0	7.0	11.5	8.0	10.0	10.5	8.5	9.5
14	6.0	5.0	5.5	7.5	6.5	7.0	11.5	7.5	9.5	9.5	8.5	9.0
15	6.0	4.5	5.0	8.5	6.0	7.5	12.0	7.5	10.0	11.5	7.5	9.5
16	6.5	5.5	6.0	9.0	7.0	8.0	11.5	8.5	10.0	12.0	8.0	10.0
17	6.5	5.5	6.0	8.0	6.5	7.5	12.5	9.0	11.0	14.0	11.0	12.0
18	7.0	5.5	6.0	8.5	6.5	7.5	11.5	10.0	11.0	14.0	11.0	12.0
19	6.5	5.0	6.0	9.5	7.0	8.0	11.0	9.5	10.0	14.0	9.5	11.5
20	6.0	4.5	5.0	9.0	7.5	8.0	12.0	9.0	10.5	12.5	11.0	11.5
21	6.0	4.5	5.5	9.0	7.5	8.5	10.0	8.5	9.5	14.0	9.0	11.5
22	6.5	5.0	6.0	8.5	6.5	7.5	11.0	7.5	9.0	15.5	10.5	13.0
23	7.5	6.0	7.0	8.5	6.5	7.5	12.0	7.0	9.5	16.5	11.5	14.0
24	7.0	6.0	6.5	8.5	7.5	8.0	12.5	8.5	10.5	17.0	12.5	14.5
25	6.5	5.5	6.0	8.0	7.0	7.5	12.0	9.5	11.0	16.0	12.5	14.0
26	6.0	5.0	5.5	8.5	7.0	7.5	12.0	9.5	10.5	16.0	11.5	13.5
27	7.5	5.5	6.0	8.0	6.0	7.0	9.5	7.5	8.5	16.5	12.5	14.5
28	7.5	6.5	7.0	8.0	6.0	7.0	10.0	7.0	8.0	16.0	12.0	14.0
29	---	---	---	7.5	6.0	7.0	11.5	6.5	9.0	15.5	11.5	13.5
30	---	---	---	6.0	5.0	6.0	12.5	8.0	10.5	15.0	10.5	12.5
31	---	---	---	6.5	5.0	5.5	---	---	---	16.0	11.0	13.5
MONTH	7.5	3.0	5.3	9.5	4.0	6.7	12.5	4.5	8.7	17.0	7.0	11.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.0	12.5	13.5	19.0	14.0	16.0	20.0	14.5	17.0	15.0	10.0	12.5
2	13.0	10.5	11.5	17.0	13.0	15.0	19.5	14.5	17.0	15.5	11.0	13.0
3	10.5	9.0	9.5	15.0	12.5	13.5	20.0	15.0	17.0	15.5	11.0	13.0
4	13.5	9.0	11.0	17.0	11.0	14.0	20.5	15.0	17.5	16.0	11.0	13.0
5	14.5	10.5	12.5	18.5	12.0	14.5	18.0	15.5	16.5	16.5	11.5	14.0
6	14.0	10.5	12.0	19.0	13.0	16.0	16.0	14.0	14.5	16.5	12.0	14.0
7	13.5	9.5	11.5	18.5	13.5	16.0	14.5	13.0	14.0	16.0	11.0	13.5
8	14.5	9.5	12.0	18.5	12.5	15.5	17.0	12.5	14.5	16.0	11.5	13.5
9	15.0	9.0	12.0	19.5	13.5	16.0	18.5	13.5	15.5	16.0	12.0	14.0
10	16.0	10.0	12.5	20.5	14.5	17.0	18.0	15.0	16.5	16.0	11.5	13.5
11	16.5	10.5	13.5	20.5	15.0	17.5	18.0	14.5	16.0	15.5	11.0	13.0
12	16.0	12.0	14.0	21.0	15.0	18.0	19.5	15.0	16.5	16.0	11.0	13.0
13	18.0	12.5	15.0	21.0	15.5	18.0	16.5	15.0	15.5	15.5	11.5	13.5
14	19.0	13.0	16.0	19.5	14.5	17.0	16.5	13.0	14.5	16.0	11.5	13.5
15	18.0	14.0	16.0	18.0	12.5	15.5	17.0	12.0	14.5	15.5	11.5	13.0
16	18.5	13.5	15.5	19.0	13.0	15.5	18.5	13.0	15.0	15.5	11.5	13.5
17	17.5	12.5	15.0	18.0	13.0	15.5	18.5	14.0	16.0	15.0	11.0	13.0
18	18.5	13.0	15.5	18.5	12.5	15.0	19.0	14.5	16.5	15.5	11.5	13.0
19	18.0	13.0	15.0	19.5	14.0	16.5	19.0	14.0	16.5	15.5	12.0	13.5
20	15.5	12.5	14.0	19.5	14.5	16.5	19.0	14.0	16.5	16.0	11.5	13.5
21	16.5	13.0	14.5	19.0	14.0	16.0	18.5	14.0	16.0	15.5	11.5	13.5
22	18.5	12.0	15.0	19.5	14.0	16.5	19.5	14.0	16.5	16.0	12.0	13.5
23	19.5	13.0	16.0	19.0	14.0	16.5	19.0	15.0	17.0	16.0	12.0	14.0
24	18.0	14.0	16.0	19.0	14.5	16.5	19.0	14.0	16.5	15.0	12.0	13.5
25	17.5	12.5	14.5	19.5	13.5	16.0	19.5	14.5	16.5	15.0	12.0	13.0
26	17.0	12.0	14.0	20.0	14.0	17.0	19.0	14.5	16.5	13.0	9.5	11.0
27	17.0	11.5	14.0	20.5	14.5	17.5	17.5	15.0	16.0	12.0	8.5	10.0
28	18.5	12.0	15.0	20.5	15.0	17.5	19.0	14.5	16.5	12.0	8.0	10.0
29	19.5	13.5	16.0	20.0	14.5	17.5	19.0	14.5	16.5	13.0	8.5	10.5
30	19.5	14.0	16.5	19.5	14.0	16.5	16.5	13.0	15.0	13.5	9.5	11.0
31	---	---	---	19.5	14.0	16.5	---	---	---	---	---	---
MONTH	19.5	9.0	14.0	21.0	11.0	16.2	---	---	---	16.5	8.0	12.9

14337600 ROGUE RIVER NEAR MCLEOD, OR

LOCATION.--Lat 42°39'20", long 122°42'50", in SW 1/4 sec.33, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on left bank at Obstinate J Ranch, 1.3 mi downstream from Big Butte Creek, 1.6 mi southwest of McLeod, and at mile 154.0.

DRAINAGE AREA.--938 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,489.08 ft above sea level.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Diversions for irrigation upstream from station; most of low flow of Big Butte Creek is diverted near Butte Falls.

AVERAGE DISCHARGE.--12 years (water years 1966-77), 2,176 ft³/s, 1,577,000 acre-ft/yr.
22 years (water years 1978-99), 2,111 ft³/s, 1,529,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s Mar. 3, 1972, gage height, 12.24 ft; minimum discharge, 468 ft³/s Feb. 18, 1977, result of closure of Lost Creek Dam, minimum prior to that time, 604 ft³/s Sept. 5, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1928, 20.35 ft Dec. 22, 1964, from floodmarks, discharge, 74,300 ft³/s, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 11,100 ft³/s Nov. 23; minimum daily discharge, 1,180 ft³/s Oct. 1, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1180	1310	e3400	e3650	1800	e6800	2170	2590	4630	e3980	2760	2300
2	1200	1300	e6600	2940	1610	e5900	1500	2710	4320	e3880	2670	2280
3	1220	1280	e7700	2470	1570	e5500	1510	3320	3670	e3730	2730	2290
4	1290	1280	e5800	2100	1540	e5300	1520	e3720	3260	e3570	2680	2280
5	1290	1280	4190	1850	1440	4430	1550	2540	3100	e3420	2610	2260
6	1280	1360	3620	1760	e2700	3930	1520	2370	3090	e3290	2670	2160
7	1250	1550	2740	1800	e6700	3550	1630	2420	3100	e3300	2620	2020
8	1280	1460	2720	1670	e3700	3520	2000	2480	3040	e3360	2550	1820
9	1320	1380	2390	1520	e2700	3380	2060	2440	2790	e3420	2600	1690
10	1310	1350	2250	1480	1830	2920	2180	2420	2600	e3470	2800	1610
11	1310	1340	2210	1470	1730	e2800	2170	2430	2580	e3740	2960	1430
12	1310	1250	2290	1490	1700	e2700	2110	2460	2540	e3910	2910	1400
13	1330	e1210	2310	1500	1720	e2700	2040	2450	2520	e3850	2850	1320
14	1320	1200	2410	1490	1910	2900	1830	2440	2560	3710	2680	1220
15	1330	1270	2350	2870	1840	3100	1770	2440	2700	3770	2550	1240
16	1320	1370	2350	4210	e2700	2940	1860	2360	2720	3750	2520	1280
17	1290	1490	2380	e5300	e4300	2890	2350	2330	2690	3700	2250	1440
18	1290	1540	2390	e7100	e5700	2910	2800	2610	2660	3580	2250	1440
19	1260	1530	2350	e5400	e5100	2910	e3740	3110	2640	3490	2160	1440
20	1270	1670	2310	e6500	e3000	e3120	e3980	3540	2640	3420	2130	1440
21	1250	e10900	2210	e8400	e3600	e3130	2870	3560	e3220	3320	2170	e1430
22	1280	e10900	2320	e8700	e2200	e3260	2700	3830	e4000	3230	2160	e1260
23	1270	e11100	2310	e9500	e2600	e3270	2690	4100	3840	3130	2180	e1260
24	1270	e9500	2280	e6800	e2700	e3120	2690	e4900	3910	3100	2160	e1250
25	1280	e5800	2320	3710	e2800	e3200	2820	5650	3920	3090	2240	e1260
26	1260	e6000	2380	3550	e2500	3160	3330	5240	3870	3100	2240	e1250
27	1200	e4900	2470	3020	e3300	3040	e3500	4980	3760	3110	2240	e1230
28	1230	2940	e3620	2550	e5200	2750	3120	5090	e4100	3170	2240	e1230
29	1250	2660	e5100	2400	---	2810	2950	5210	e3600	3200	2270	e1250
30	1180	e3400	e3900	2350	---	2780	2650	5120	e3970	3170	2290	e1250
31	1290	---	e3800	2410	---	2840	---	5030	---	2900	2320	---
TOTAL	39410	95520	97470	111960	80190	107560	71610	105890	98040	106860	76460	47030
MEAN	1271	3184	3144	3612	2864	3470	2387	3416	3268	3447	2466	1568
MAX	1330	11100	7700	9500	6700	6800	3980	5650	4630	3980	2960	2300
MIN	1180	1200	2210	1470	1440	2700	1500	2330	2520	2900	2130	1220
AC-FT	78170	189500	193300	222100	159100	213300	142000	210000	194500	212000	151700	93280

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1999, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1265	1703	2404	2258	1816	2112	2375	2769	2487	2229	2182	1698										
MAX	1905	3544	6464	7584	4131	3557	3821	4024	3755	3447	2921	2195										
(WY)	1984	1985	1997	1997	1996	1986	1989	1996	1984	1999	1984	1983										
MIN	894	898	964	1049	844	843	864	1578	1658	1123	1761	1290										
(WY)	1993	1993	1993	1992	1988	1988	1994	1992	1992	1992	1994	1980										

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1978 - 1999

	1998	1999	1978-1999
ANNUAL TOTAL	987640	1038000	
ANNUAL MEAN	2706	2844	2111
HIGHEST ANNUAL MEAN			3224
LOWEST ANNUAL MEAN			1314
HIGHEST DAILY MEAN	11100	11100	16500
LOWEST DAILY MEAN	1000	1180	730
ANNUAL SEVEN-DAY MINIMUM	1190	1240	734
ANNUAL RUNOFF (AC-FT)	1959000	2059000	1529000
10 PERCENT EXCEEDS	4220	4510	3390
50 PERCENT EXCEEDS	2440	2600	1900
90 PERCENT EXCEEDS	1280	1280	1040

e Estimated

ROGUE RIVER BASIN

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14337600 ROGUE RIVER NEAR MCLEOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1970 to current year.

INSTRUMENTATION.--Temperature recorder since August 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 18.0°C July 17, 18, Aug. 7, 1973; minimum, 0.5°C Jan. 3-5, 14, 15, 1971. Maximum since full operation of Lost Creek Lake, 16.5°C Sept. 14, 1999, but may have been higher during period of missing record Sept. 21-30; minimum, 2.5°C Jan. 10, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 16.5°C Sept. 14, but may have been higher during period of missing record Sept. 21-30; minimum, 2.5°C Jan. 10.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.5	9.5	9.5	7.5	7.5	7.5	---	---	---	5.0	5.0	5.0
2	9.5	9.5	9.5	7.5	7.5	7.5	---	---	---	5.0	4.5	5.0
3	9.5	9.0	9.5	8.0	7.5	7.5	7.0	6.5	7.0	5.0	4.5	4.5
4	9.5	9.0	9.5	8.0	7.5	7.5	7.0	6.5	7.0	5.0	4.5	4.5
5	9.5	9.0	9.0	8.0	7.5	8.0	6.5	6.5	6.5	5.0	4.5	4.5
6	9.5	9.0	9.0	8.0	7.5	7.5	7.0	6.5	6.5	5.0	4.5	4.5
7	9.0	9.0	9.0	8.0	7.5	7.5	6.5	6.0	6.5	5.0	4.0	4.5
8	9.5	9.0	9.0	8.0	7.5	7.5	6.5	6.0	6.0	5.0	4.0	4.5
9	9.0	8.0	8.5	8.0	7.5	7.5	6.5	6.0	6.0	4.5	3.5	4.0
10	8.5	8.0	8.0	8.0	7.5	7.5	6.5	6.0	6.0	4.5	2.5	4.0
11	8.0	8.0	8.0	8.0	7.5	7.5	6.5	6.0	6.0	5.0	3.0	4.0
12	8.0	8.0	8.0	8.0	7.5	7.5	6.5	6.0	6.5	5.5	4.5	4.5
13	8.0	8.0	8.0	8.0	7.5	7.5	6.5	6.0	6.5	5.0	4.5	4.5
14	8.0	8.0	8.0	8.0	7.5	7.5	6.5	6.0	6.0	5.0	4.5	4.5
15	8.0	7.5	8.0	8.0	7.5	8.0	6.0	6.0	6.0	5.0	5.0	5.0
16	8.0	7.5	7.5	8.0	8.0	8.0	6.0	5.5	6.0	5.0	4.5	5.0
17	7.5	7.0	7.5	8.0	8.0	8.0	6.0	5.5	6.0	5.0	4.5	5.0
18	7.5	7.0	7.5	8.0	7.5	8.0	6.0	5.5	5.5	5.0	4.5	5.0
19	7.5	7.0	7.5	8.0	7.5	7.5	6.0	5.5	5.5	5.0	5.0	5.0
20	7.5	7.0	7.5	8.0	7.5	7.5	5.5	5.0	5.5	5.0	4.5	5.0
21	7.5	7.0	7.5	8.0	8.0	8.0	5.0	4.5	5.0	5.0	4.5	4.5
22	7.5	7.5	7.5	8.5	8.0	8.0	5.0	4.5	5.0	5.0	4.5	4.5
23	7.5	7.0	7.5	8.5	8.5	8.5	5.5	4.5	5.0	5.0	4.5	4.5
24	8.0	7.5	7.5	8.5	8.5	8.5	5.0	5.0	5.0	5.0	4.5	4.5
25	8.0	7.5	7.5	8.5	8.0	8.5	5.5	5.0	5.0	4.5	4.0	4.5
26	8.0	7.5	7.5	8.0	8.0	8.0	5.5	5.0	5.0	5.0	4.5	4.5
27	7.5	7.5	7.5	8.0	8.0	8.0	5.0	5.0	5.0	5.0	4.5	4.5
28	8.0	7.5	7.5	8.0	8.0	8.0	5.0	5.0	5.0	5.0	4.5	4.5
29	7.5	7.5	7.5	8.0	8.0	8.0	5.5	5.0	5.0	5.0	4.5	4.5
30	7.5	7.0	7.5	8.0	8.0	8.0	5.5	5.0	5.0	5.0	4.5	4.5
31	7.5	7.0	7.5	---	---	---	5.5	5.0	5.0	5.0	4.5	4.5
MONTH	9.5	7.0	8.1	8.5	7.5	7.8	---	---	---	5.5	2.5	4.6

ROGUE RIVER BASIN

14337600 ROGUE RIVER NEAR MCLEOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.0	4.5	5.5	5.0	5.0	7.0	5.5	6.0	8.5	6.5	7.0
2	4.5	4.0	4.5	5.0	4.5	5.0	7.0	5.5	6.0	8.0	6.5	7.0
3	5.0	4.5	4.5	5.0	4.5	4.5	7.0	5.5	6.0	7.0	6.5	6.5
4	5.0	4.5	4.5	5.0	4.5	4.5	6.0	5.0	5.5	7.0	6.0	6.5
5	4.5	4.0	4.5	5.0	4.5	4.5	7.0	5.0	6.0	8.5	6.0	7.5
6	5.0	4.5	4.5	5.0	4.5	4.5	7.5	5.5	6.0	8.5	7.0	8.0
7	5.0	4.0	4.5	5.0	4.5	4.5	7.0	5.5	6.0	9.5	7.0	8.5
8	4.5	4.0	4.0	5.0	4.5	5.0	6.0	5.5	6.0	10.0	8.0	9.0
9	4.0	4.0	4.0	5.0	4.5	4.5	6.0	5.5	5.5	10.5	8.5	9.5
10	4.5	3.5	4.0	5.0	4.5	4.5	6.5	5.5	6.0	10.0	9.0	9.5
11	4.5	3.5	4.0	5.5	4.5	4.5	7.5	6.0	6.5	9.5	8.5	9.0
12	5.0	4.0	4.5	5.0	4.5	5.0	7.0	6.0	6.5	11.0	8.5	9.5
13	5.0	4.5	4.5	5.5	4.5	5.0	7.5	6.0	6.5	10.5	8.5	9.0
14	5.0	4.5	4.5	5.0	4.5	5.0	8.0	6.0	7.0	10.5	8.5	9.0
15	5.0	4.0	4.5	5.5	4.5	5.0	8.0	6.0	7.0	10.5	8.5	9.5
16	5.0	4.5	5.0	5.5	5.0	5.0	8.0	6.5	7.0	11.0	9.5	10.0
17	5.5	5.0	5.0	5.0	5.0	5.0	7.5	6.5	7.0	10.5	8.5	9.5
18	5.5	4.5	5.0	5.5	5.0	5.0	7.5	6.5	7.0	10.5	9.5	10.0
19	5.5	4.5	5.0	6.0	5.5	5.5	7.0	6.0	6.5	10.5	9.0	9.5
20	4.5	4.0	4.5	6.0	5.5	5.5	7.0	6.0	6.5	10.0	8.5	9.0
21	5.0	4.0	4.5	6.0	5.5	5.5	7.0	6.0	6.5	10.5	8.0	9.0
22	5.0	4.5	5.0	6.0	5.5	5.5	7.5	6.5	7.0	10.0	8.5	9.5
23	6.0	5.0	5.5	6.5	5.0	5.5	8.5	6.0	7.0	10.0	9.0	9.5
24	5.5	5.0	5.0	6.0	5.5	5.5	8.5	6.0	7.0	9.5	8.5	9.0
25	5.5	4.5	5.0	6.0	5.5	6.0	8.0	6.5	7.0	9.5	8.0	8.5
26	4.5	4.5	4.5	6.0	5.0	5.5	7.5	6.0	7.0	10.0	8.0	9.0
27	6.0	4.5	5.0	6.0	5.0	5.5	7.0	6.0	6.5	10.5	9.0	10.0
28	6.0	5.5	5.5	6.5	5.5	6.0	7.0	6.0	6.5	11.0	8.5	9.5
29	---	---	---	5.5	5.0	5.0	7.5	5.5	6.5	10.0	9.0	9.5
30	---	---	---	6.0	5.0	5.5	8.0	6.0	7.0	10.5	9.0	9.5
31	---	---	---	6.0	5.0	5.5	---	---	---	10.5	9.0	9.5
MONTH	6.0	3.5	4.6	6.5	4.5	5.1	8.5	5.0	6.5	11.0	6.0	8.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	9.0	10.0	12.5	11.0	12.0	12.5	10.0	11.5	13.0	12.0	12.5
2	10.0	8.5	9.5	12.5	10.5	11.5	13.0	10.0	12.0	13.0	11.5	12.5
3	10.0	9.0	9.5	12.5	11.0	11.5	13.0	10.5	12.0	13.0	12.0	12.5
4	11.0	9.0	10.0	12.5	11.0	12.0	13.5	11.0	12.0	13.0	12.0	12.5
5	11.5	9.5	10.5	13.0	11.0	12.0	13.0	11.0	12.0	13.0	12.0	12.5
6	11.5	9.5	10.0	13.0	11.5	12.5	12.5	11.5	12.0	13.0	12.0	12.5
7	11.0	9.0	10.0	12.5	10.5	11.5	12.5	12.0	12.0	13.0	11.5	12.5
8	11.0	9.5	10.0	12.5	11.0	11.5	13.0	11.5	12.0	13.0	11.5	12.0
9	11.5	9.5	10.5	12.5	11.0	12.0	13.0	11.5	12.5	13.0	11.5	12.5
10	11.5	10.0	11.0	13.0	11.0	12.0	13.5	12.0	12.5	13.0	11.5	12.5
11	11.5	10.5	11.0	13.0	11.0	12.0	13.5	12.0	12.5	13.5	11.5	12.5
12	11.5	10.5	11.0	13.0	11.5	12.0	14.0	12.0	13.0	13.0	11.5	12.0
13	12.0	10.0	11.0	12.5	11.0	12.0	13.5	12.0	13.0	16.5	12.0	13.0
14	12.5	10.0	11.5	12.0	11.0	11.5	13.5	12.5	13.0	15.5	8.5	12.0
15	12.5	10.0	11.0	12.0	11.0	11.5	14.0	12.5	13.5	13.5	11.5	12.5
16	12.5	10.0	11.0	12.5	10.5	11.5	14.0	12.5	13.5	13.5	11.5	12.5
17	12.5	10.5	11.5	12.0	10.0	11.0	14.0	12.5	13.5	11.5	9.5	10.5
18	12.0	10.0	11.0	11.5	10.0	11.0	14.5	12.5	13.5	11.0	9.5	10.0
19	12.0	10.0	11.0	11.5	10.0	11.0	14.0	12.0	13.0	11.0	9.5	10.0
20	12.0	10.0	11.0	12.0	9.5	10.5	14.0	11.5	13.0	11.0	9.5	10.0
21	11.5	10.0	10.5	11.0	9.5	10.5	14.0	12.0	13.0	---	---	---
22	11.0	9.5	10.5	10.5	8.5	10.0	14.0	12.0	13.0	---	---	---
23	12.0	9.5	11.0	10.5	9.0	10.0	13.5	12.0	13.0	---	---	---
24	12.0	9.0	10.5	11.0	9.0	10.0	13.5	12.0	13.0	---	---	---
25	12.0	10.5	11.0	10.5	9.0	10.0	13.5	12.5	13.0	---	---	---
26	12.0	10.5	11.0	11.0	9.0	10.5	13.5	12.0	13.0	---	---	---
27	12.5	10.5	11.0	11.5	9.5	10.5	13.5	12.0	13.0	---	---	---
28	12.5	10.5	11.5	11.5	9.5	10.5	14.0	12.5	13.0	---	---	---
29	12.5	11.0	12.0	12.0	9.5	11.0	13.5	12.5	13.0	---	---	---
30	13.5	11.5	12.5	12.0	9.5	11.0	13.0	12.0	12.5	---	---	---
31	---	---	---	12.5	10.0	11.5	13.5	12.0	12.5	---	---	---
MONTH	13.5	8.5	10.8	13.0	8.5	11.2	14.5	10.0	12.7	---	---	---

14337800 ELK CREEK NEAR CASCADE GORGE, OR

LOCATION.--Lat 42°46'25", long 122°40'15", in NW 1/4 sec.23, T.32 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 0.1 mi downstream from Sugarpine Creek, 6.5 mi northwest of town of Cascade Gorge, and at mile 10.7.

DRAINAGE AREA.--78.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1973 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,813.83 ft above sea level (levels by Corps of Engineers).

REMARKS.--No estimated daily discharges. Records fair. No regulation. Some diversions upstream from station for irrigation. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--26 years (water years 1974-99), 143 ft³/s, 24.69 in/yr, 103,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,780 ft³/s Jan. 15, 1974, gage height, 8.9 ft, from floodmark; minimum discharge, 0.45 ft³/s Aug. 31, 1992.

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. 21	1000	3,310	7.04	Jan. 22	1800	1,630	5.71
Dec. 2	1500	2,360	6.36	Feb. 7	0700	1,850	5.92
Dec. 28	1600	1,840	5.91	Feb. 28	0700	*3,350	*7.07
Jan. 17	2130	1,620	5.70				

Minimum discharge, 3.3 ft³/s Sept. 22, 25, 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	14	486	429	136	1160	152	167	141	26	7.9	7.7
2	4.7	12	1400	335	133	722	155	201	126	26	7.3	6.6
3	6.7	10	998	263	135	650	161	283	107	26	6.7	5.7
4	7.1	12	503	214	165	532	150	300	96	24	6.9	5.5
5	5.9	19	334	179	168	420	161	253	94	23	7.5	5.3
6	5.2	21	246	157	662	348	169	245	90	21	9.1	5.1
7	4.4	36	197	138	1430	287	170	233	80	20	15	4.9
8	7.3	38	200	122	702	257	194	197	72	19	12	4.8
9	8.4	28	176	108	436	237	186	170	67	18	9.6	4.7
10	8.9	27	158	98	306	208	182	151	64	17	15	4.7
11	7.2	37	187	94	237	184	194	149	62	16	23	4.7
12	6.0	27	288	106	211	183	250	166	63	15	13	4.2
13	9.5	22	421	99	223	215	310	166	63	15	11	3.9
14	10	22	342	131	306	252	311	160	64	14	11	3.8
15	9.4	29	250	447	286	253	312	154	65	14	9.6	3.8
16	9.2	35	203	424	512	243	360	146	62	13	8.6	3.9
17	8.0	54	194	632	766	228	405	150	57	13	7.9	4.2
18	7.3	77	177	1050	1160	225	433	172	52	13	7.4	3.9
19	6.9	57	151	731	996	270	397	177	49	12	7.0	3.9
20	6.2	50	129	886	596	371	336	177	47	11	7.1	3.9
21	5.7	1980	199	990	469	343	292	170	46	15	6.5	3.8
22	5.7	972	178	1130	420	307	239	175	42	12	6.2	3.5
23	5.7	1040	169	1030	677	281	214	198	38	11	6.4	3.6
24	6.4	689	150	578	715	264	227	230	36	12	7.7	3.6
25	10	411	94	412	749	272	251	241	36	11	6.2	3.5
26	9.2	543	118	320	582	248	244	220	34	9.9	5.9	3.7
27	7.8	449	147	248	810	217	212	208	33	9.3	5.4	4.1
28	9.1	280	1150	210	2420	187	177	199	30	9.3	5.3	4.1
29	8.4	255	950	185	---	173	152	183	28	8.4	5.3	4.0
30	7.8	428	551	169	---	161	144	163	26	8.1	7.6	3.8
31	8.2	---	494	154	---	160	---	146	---	7.8	9.1	---
TOTAL	226.0	7674	11240	12069	16408	9858	7140	5950	1870	469.8	274.2	132.9
MEAN	7.29	256	363	389	586	318	238	192	62.3	15.2	8.85	4.43
MAX	10	1980	1400	1130	2420	1160	433	300	141	26	23	7.7
MIN	3.7	10	94	94	133	160	144	146	26	7.8	5.3	3.5
AC-FT	448	15220	22290	23940	32550	19550	14160	11800	3710	932	544	264
CFSM	.09	3.25	4.60	4.94	7.44	4.04	3.02	2.44	.79	.19	.11	.06
IN.	.11	3.62	5.31	5.70	7.75	4.65	3.37	2.81	.88	.22	.13	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1999, BY WATER YEAR (WY)

MEAN	13.2	135	302	300	316	260	198	128	50.0	13.0	5.57	6.15
MAX	39.8	656	1143	802	717	556	352	300	156	27.1	16.4	33.7
(WY)	1980	1974	1997	1974	1996	1974	1993	1975	1993	1995	1976	1986
MIN	2.47	7.76	8.00	11.3	11.2	34.1	54.5	18.3	7.10	3.57	.94	.91
(WY)	1989	1994	1977	1977	1977	1992	1992	1992	1992	1994	1992	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1974 - 1999

ANNUAL TOTAL	68819.9	73311.9	
ANNUAL MEAN	189	201	
HIGHEST ANNUAL MEAN			143
LOWEST ANNUAL MEAN			292
HIGHEST DAILY MEAN	1980	Nov 21	27.4
LOWEST DAILY MEAN	3.1	Sep 15	5200
ANNUAL SEVEN-DAY MINIMUM	3.4	Aug 31	.52
ANNUAL RUNOFF (AC-FT)	136500		.60
ANNUAL RUNOFF (CFSM)	2.39		1.82
ANNUAL RUNOFF (INCHES)	32.49		24.69
10 PERCENT EXCEEDS	493		360
50 PERCENT EXCEEDS	120		50
90 PERCENT EXCEEDS	4.7		4.0

ROGUE RIVER BASIN

14337800 ELK CREEK NEAR CASCADE GORGE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to October 1976, August 1977 to current year.

INSTRUMENTATION.--Temperature recorder August 1973 to October 1976 and since August 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5°C July 29, 30, 1973, Aug. 9-11, 1981; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 25.0°C July 28, Aug. 3, but may have been higher during period of missing record; minimum, 1.5°C Dec. 26, but may have been lower during period of missing record.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.0	11.5	12.5	7.5	6.0	6.5	8.0	7.0	7.5	6.0	4.5	5.0
2	12.5	11.5	12.0	7.5	6.5	7.0	9.0	7.5	8.0	5.5	4.0	5.0
3	12.0	10.0	11.0	8.0	6.5	7.5	7.5	6.5	7.5	5.0	3.5	4.5
4	12.0	9.5	10.5	8.5	7.0	8.0	6.5	5.5	6.0	5.0	3.5	4.5
5	11.0	9.0	10.0	8.0	7.5	7.5	6.0	4.0	5.0	5.0	3.5	4.5
6	11.0	9.0	10.0	7.5	6.5	7.0	5.0	4.0	4.5	4.5	3.5	4.0
7	11.0	9.0	10.0	7.0	6.0	6.5	5.5	4.0	5.0	5.0	3.5	4.0
8	11.5	10.5	11.0	7.0	5.5	6.0	6.0	4.0	5.0	4.5	2.5	3.5
9	10.5	9.0	10.0	6.5	5.5	6.0	4.5	3.0	4.0	4.0	2.5	3.0
10	10.0	8.5	9.5	6.5	5.5	6.0	5.5	4.0	5.0	4.0	2.0	3.0
11	10.0	9.0	9.5	6.5	5.0	5.5	6.0	4.5	5.5	5.5	3.0	4.0
12	10.5	8.5	9.5	6.0	4.0	5.0	7.0	5.0	6.0	6.0	4.5	5.0
13	10.5	9.5	10.0	7.0	5.0	6.0	7.0	5.5	6.5	5.5	4.0	4.5
14	10.0	8.5	9.5	7.0	5.0	6.0	6.5	5.0	6.0	6.0	4.0	5.0
15	9.0	7.0	8.0	7.5	6.0	7.0	6.0	4.5	5.0	7.0	5.0	6.0
16	8.5	6.5	7.5	8.0	7.0	7.5	5.5	4.0	5.0	6.5	5.0	6.0
17	8.0	6.0	7.0	8.0	6.5	7.5	5.5	4.5	5.0	6.5	5.0	6.0
18	8.0	6.0	7.0	8.0	6.5	7.0	5.0	4.0	4.5	7.5	6.0	6.5
19	8.0	6.0	7.0	7.0	5.5	6.0	4.0	2.0	3.0	9.0	5.0	6.5
20	8.0	5.5	7.0	7.5	6.0	7.0	---	---	---	7.0	4.5	6.0
21	8.5	6.5	7.5	8.5	7.0	8.0	---	---	---	6.5	4.5	5.5
22	9.0	7.0	8.0	8.5	7.0	7.5	---	---	---	6.0	3.5	5.0
23	8.5	7.0	8.0	8.5	7.0	8.0	---	---	---	7.5	3.0	5.5
24	9.5	8.5	9.0	8.0	7.0	7.5	---	---	---	7.0	4.5	6.0
25	10.0	8.5	9.0	9.0	7.0	8.0	---	---	---	7.0	4.5	5.5
26	9.0	7.5	8.5	8.5	7.5	8.0	3.5	1.5	2.5	7.0	2.0	4.5
27	9.0	7.5	8.0	8.0	7.0	7.5	4.0	3.0	3.5	7.5	4.0	6.0
28	9.0	8.0	8.5	7.5	6.5	7.0	6.0	3.0	4.5	7.5	3.5	6.0
29	8.0	6.5	7.0	6.5	5.5	6.0	6.5	5.5	6.0	---	---	---
30	6.5	5.5	6.0	8.5	6.0	7.5	6.5	5.0	6.0	---	---	---
31	6.5	5.5	6.0	---	---	---	6.5	5.0	6.0	---	---	---
MONTH	13.0	5.5	8.8	9.0	4.0	6.9	---	---	---	---	---	---

ROGUE RIVER BASIN

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14337800 ELK CREEK NEAR CAS ADE GORGE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	7.0	6.0	6.5	7.5	3.0	4.5	11.0	8.0	9.0
2	---	---	---	7.5	5.5	6.5	7.5	2.5	5.0	8.0	5.5	6.0
3	---	---	---	6.5	5.5	6.0	5.5	3.0	4.0	7.0	5.5	6.0
4	---	---	---	6.5	5.0	5.5	5.5	3.0	4.0	8.0	5.0	6.0
5	---	---	---	6.0	4.0	5.0	6.5	3.0	4.5	10.0	4.5	7.0
6	---	---	---	6.0	4.0	5.0	8.0	3.0	5.0	9.5	6.5	8.0
7	---	---	---	6.5	4.0	5.0	7.5	3.5	5.0	8.0	5.0	6.5
8	---	---	---	6.5	4.5	5.0	6.0	4.0	5.0	8.0	4.0	6.0
9	---	---	---	6.5	3.5	5.0	6.0	3.5	4.5	9.5	4.0	6.5
10	---	---	---	---	---	---	6.5	3.5	5.0	7.0	5.0	6.5
11	---	---	---	7.0	3.0	4.5	9.0	4.0	6.0	8.5	6.5	7.5
12	---	---	---	5.5	3.5	4.5	8.5	4.5	6.5	11.5	7.0	8.5
13	---	---	---	7.0	4.5	5.5	9.0	5.0	6.5	9.0	5.5	7.0
14	---	---	---	7.0	5.0	6.0	9.0	4.5	6.5	8.5	5.5	6.5
15	---	---	---	7.5	4.5	6.0	10.0	5.0	7.0	9.5	5.0	7.0
16	---	---	---	7.5	5.0	6.0	9.0	5.5	7.0	11.0	5.0	8.0
17	---	---	---	7.5	5.0	6.0	10.0	6.0	7.5	11.0	8.0	9.5
18	---	---	---	7.5	5.0	6.0	9.0	6.5	7.5	11.0	8.0	9.5
19	---	---	---	8.5	5.0	6.5	8.5	6.5	7.5	13.0	7.0	9.5
20	---	---	---	7.0	5.5	6.5	9.5	6.0	7.5	11.5	8.5	9.5
21	---	---	---	7.5	6.0	6.5	7.5	6.0	7.0	13.5	6.5	9.5
22	---	---	---	7.0	5.0	6.0	10.0	5.5	7.0	14.5	8.0	11.0
23	---	---	---	7.5	5.0	6.0	11.5	5.0	7.5	15.5	9.0	11.5
24	7.0	6.0	6.5	7.0	6.0	6.5	12.0	6.0	8.5	15.0	9.5	12.0
25	6.5	5.5	6.0	7.0	5.0	6.0	10.5	6.5	8.5	14.0	9.0	11.5
26	6.0	5.0	6.0	7.0	5.0	6.0	10.0	6.5	7.5	14.0	8.5	11.0
27	7.0	5.0	6.0	7.0	4.0	5.0	6.5	4.5	5.5	15.0	9.5	12.0
28	7.0	6.0	6.5	6.5	4.0	5.0	8.0	4.0	5.5	14.5	9.0	11.5
29	---	---	---	6.0	4.5	5.5	11.5	4.0	7.0	14.0	9.0	11.0
30	---	---	---	5.5	3.5	4.5	12.0	5.5	8.5	14.0	8.0	10.5
31	---	---	---	5.0	2.0	3.5	---	---	---	15.0	9.0	11.5
MONTH	---	---	---	---	---	---	12.0	2.5	6.3	15.5	4.0	8.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.5	10.0	11.5	18.0	12.5	15.0	24.0	17.5	20.5	---	---	---
2	10.5	8.0	9.5	16.0	11.5	13.5	23.5	17.0	20.0	---	---	---
3	10.0	7.0	8.5	15.5	11.0	12.5	25.0	17.5	21.0	---	---	---
4	12.0	8.0	10.0	15.5	10.0	12.5	24.5	18.0	21.0	---	---	---
5	13.5	9.5	11.5	17.0	10.0	13.5	22.5	18.5	20.0	---	---	---
6	12.0	8.5	10.0	18.0	12.0	15.0	19.0	17.5	18.0	---	---	---
7	11.5	7.5	9.5	17.5	12.5	15.0	18.0	16.5	17.5	---	---	---
8	13.0	7.5	10.0	17.5	11.5	14.5	21.0	16.0	18.0	---	---	---
9	14.0	6.5	10.0	19.5	13.0	16.0	22.0	16.5	19.0	---	---	---
10	15.0	7.5	11.0	21.0	14.5	17.5	23.5	17.5	20.0	---	---	---
11	15.5	8.5	12.0	21.5	15.0	18.0	21.0	17.5	19.0	---	---	---
12	16.0	10.5	13.0	22.0	15.5	18.5	22.0	16.5	18.5	---	---	---
13	18.0	11.5	14.5	22.0	16.0	18.5	19.0	16.5	17.5	---	---	---
14	19.0	12.0	15.5	20.5	15.0	17.5	19.0	15.0	16.5	---	---	---
15	16.5	12.5	14.5	19.0	12.5	15.5	18.5	13.0	15.5	---	---	---
16	17.0	12.0	14.0	19.0	13.0	16.0	20.0	13.5	16.5	---	---	---
17	15.5	11.0	13.5	18.5	12.5	15.5	21.0	15.0	17.5	---	---	---
18	16.5	11.5	14.0	19.0	12.0	15.5	---	---	---	---	---	---
19	17.0	11.0	13.5	20.5	14.0	17.0	---	---	---	---	---	---
20	14.0	11.0	12.5	20.5	15.0	17.5	---	---	---	---	---	---
21	15.0	12.0	13.0	20.0	14.5	17.0	---	---	---	---	---	---
22	17.5	10.5	13.5	20.5	14.5	17.0	---	---	---	---	---	---
23	18.0	12.0	15.0	20.5	14.5	17.5	---	---	---	---	---	---
24	17.5	13.0	14.5	20.5	15.5	17.5	---	---	---	---	---	---
25	16.0	10.5	13.0	20.5	14.0	17.0	---	---	---	---	---	---
26	15.5	10.0	12.5	21.0	14.5	18.0	---	---	---	---	---	---
27	16.0	9.5	12.5	24.5	15.5	19.5	---	---	---	---	---	---
28	17.0	11.0	14.0	25.0	19.0	22.0	---	---	---	---	---	---
29	18.5	12.5	15.5	24.5	18.5	21.5	---	---	---	---	---	---
30	18.5	13.0	15.5	24.0	17.0	20.5	---	---	---	---	---	---
31	---	---	---	24.0	17.0	20.5	---	---	---	---	---	---
MONTH	19.0	6.5	12.6	25.0	10.0	16.9	---	---	---	---	---	---

ROGUE RIVER BASIN

14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR

LOCATION.--Lat 42°40'46", long 122°42'37", in NW 1/4 sec.4, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on Corps of Engineers' Land, on right bank 500 ft downstream from Alco Creek, and 7.5 mi northeast of Trail.

DRAINAGE AREA.--111 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1986 to current year (operated as a low-flow station only).

GAGE.--Water-stage recorder. Elevation of gage is 1,680 ft above sea level, from topographic map.

REMARKS.--Records good. No regulation. Some diversions upstream from station for irrigation. Operated as a low-flow station only. Discharges above 440 ft³/s not published. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Minimum discharge recorded, 0.54 ft³/s Sept. 23, 1992, but may have been less during period of estimated discharge during that year.

EXTREMES FOR CURRENT YEAR.--Minimum discharge, 4.1 ft³/s Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	12	---	---	145	---	228	260	146	29	e7.4	10
2	5.0	13	---	---	140	---	267	291	130	28	e7.0	9.1
3	6.6	10	---	362	140	---	244	---	113	28	e6.4	e7.0
4	7.4	11	---	286	182	---	202	---	103	27	6.6	e6.7
5	6.4	17	---	230	192	---	243	378	99	25	7.2	e6.5
6	5.9	20	283	196	---	---	262	354	95	23	8.8	e6.2
7	5.4	32	212	166	---	373	259	335	86	22	15	e6.0
8	6.3	37	227	145	---	331	321	256	80	20	13	e5.7
9	8.8	25	211	122	---	299	312	205	76	20	11	5.5
10	8.8	23	182	107	---	276	280	180	72	e19	10	5.5
11	8.0	35	218	95	373	267	348	173	70	e18	25	5.7
12	6.8	24	---	107	333	254	---	217	72	17	15	5.4
13	8.6	19	---	100	334	289	---	195	70	16	12	4.9
14	10	18	---	125	---	358	---	199	68	14	12	4.7
15	9.4	21	293	---	---	371	---	180	69	14	11	4.5
16	9.2	33	222	---	---	355	---	171	67	14	10	4.6
17	8.4	49	205	---	---	357	---	182	62	14	9.2	5.0
18	7.6	78	181	---	---	349	---	201	59	14	8.3	5.0
19	7.3	61	149	---	---	---	---	204	55	13	8.3	4.7
20	7.0	48	---	---	---	---	---	203	52	12	7.7	4.7
21	6.5	---	97	---	---	---	---	190	52	15	7.6	4.6
22	6.3	---	86	---	---	---	359	194	48	13	7.3	4.5
23	6.3	---	82	---	---	394	313	213	44	12	7.1	4.6
24	6.9	---	77	---	---	398	326	247	43	13	8.7	4.7
25	9.9	---	85	---	---	398	385	273	42	12	8.0	4.6
26	10	---	110	---	---	366	370	244	39	11	7.0	4.7
27	8.5	---	147	301	---	324	319	212	37	10	6.4	5.3
28	9.1	335	---	244	---	275	315	201	35	9.4	6.3	5.6
29	9.4	295	---	211	---	253	254	190	32	e8.3	6.1	5.7
30	8.4	---	---	186	---	235	207	159	30	e7.8	7.5	5.5
31	8.7	---	---	167	---	234	---	141	---	e7.6	12	---
TOTAL	237.4	---	---	---	---	---	---	---	2046	506.1	294.9	167.2
MEAN	7.66	---	---	---	---	---	---	---	68.2	16.3	9.51	5.57
MAX	10	---	---	---	---	---	---	---	146	29	25	10
MIN	4.5	---	---	---	---	---	---	---	30	7.6	6.1	4.5
AC-FT	471	---	---	---	---	---	---	---	4060	1000	585	332
CFSM	.07	---	---	---	---	---	---	---	.61	.15	.09	.05
IN.	.08	---	---	---	---	---	---	---	.69	.17	.10	.06

e Estimated

ROGUE RIVER BASIN

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14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1986 to current year.

INSTRUMENTATION.--Temperature recorder since April 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5°C June 22, 1992, but may have been higher during period of missing record in August 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 27.5°C Aug. 4; minimum, 1.0°C Dec. 26, but may have been lower during period of missing record.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	18.0	13.5	15.5	9.5	6.5	8.0	7.5	7.0	7.5	5.5	4.5	5.0
2	16.0	13.0	14.5	10.5	7.0	8.5	8.5	7.5	7.5	5.0	4.0	4.5
3	15.0	12.0	13.0	10.0	7.5	8.5	7.5	6.0	7.0	4.5	3.5	4.0
4	16.0	11.0	13.0	11.0	8.5	9.5	6.0	5.5	6.0	5.0	3.0	4.0
5	16.5	10.0	12.5	10.0	8.0	9.0	5.5	3.5	4.5	4.5	3.5	4.0
6	16.0	10.0	12.5	8.0	7.0	7.5	5.0	3.5	4.5	4.0	3.0	3.5
7	16.0	10.0	13.0	7.5	6.5	7.0	5.0	4.5	4.5	4.5	3.0	3.5
8	15.5	12.0	13.5	8.0	6.5	7.0	5.5	4.5	5.0	3.5	2.5	3.0
9	13.5	10.5	12.0	7.5	6.0	7.0	4.5	3.5	4.0	3.5	2.0	2.5
10	14.5	10.0	12.0	---	---	---	5.5	4.5	5.0	3.0	2.0	2.5
11	13.5	10.5	11.5	7.0	6.0	6.5	5.5	5.0	5.0	5.0	2.5	3.5
12	14.0	10.0	12.0	6.5	5.0	6.0	7.0	5.5	6.0	5.5	4.5	5.0
13	13.5	12.0	12.5	8.0	5.5	6.5	7.0	6.0	6.5	5.5	4.0	4.5
14	12.5	10.5	11.5	8.0	5.5	6.5	6.5	5.5	6.0	5.5	4.0	5.0
15	11.0	8.5	9.5	8.0	7.0	7.5	5.5	4.5	5.0	6.5	5.5	6.0
16	12.5	8.5	10.0	8.5	7.5	8.0	5.5	4.0	5.0	6.5	5.5	6.0
17	12.0	7.0	9.5	8.5	7.5	8.0	5.5	4.5	5.0	6.5	5.5	6.0
18	12.5	7.5	9.5	8.0	7.0	7.5	5.0	4.0	4.5	7.0	6.5	6.5
19	13.0	7.5	10.0	7.0	6.0	6.5	4.0	2.5	3.0	7.0	6.0	6.5
20	13.0	7.5	9.5	7.5	6.5	7.0	---	---	---	6.5	6.0	6.5
21	13.0	7.0	9.5	8.5	7.5	8.0	---	---	---	6.5	6.0	6.0
22	13.5	7.5	10.0	8.5	8.0	8.0	---	---	---	6.0	5.0	5.5
23	13.0	7.5	10.0	8.5	8.0	8.0	---	---	---	6.0	5.5	6.0
24	12.5	10.0	11.0	8.0	7.5	7.5	---	---	---	5.5	4.5	5.0
25	13.0	10.0	11.5	8.5	7.5	8.0	---	---	---	5.0	3.5	4.5
26	13.0	8.5	10.5	8.5	7.5	8.0	3.0	1.0	2.5	5.5	4.5	5.0
27	12.5	8.5	10.0	8.0	7.0	7.5	3.5	2.5	3.0	5.0	4.0	4.5
28	12.0	8.5	10.0	7.0	6.5	6.5	5.5	3.5	4.5	5.5	4.0	4.5
29	10.5	6.5	8.0	6.5	5.5	6.0	6.5	5.5	6.0	5.0	3.5	4.5
30	9.5	5.0	7.0	8.0	6.0	7.0	6.0	5.5	6.0	5.0	3.0	4.0
31	7.0	5.5	6.5	---	---	---	6.5	5.0	6.0	5.5	3.5	4.5
MONTH	18.0	5.0	11.0	---	---	---	---	---	---	7.0	2.0	4.7

ROGUE RIVER BASIN

14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	2.0	3.0	7.0	5.5	6.0	7.5	3.0	5.0	11.5	8.5	9.5
2	3.0	2.0	3.0	7.5	5.0	6.0	8.0	2.5	5.5	8.5	6.0	6.5
3	5.0	3.0	4.0	6.5	5.0	5.5	6.5	3.5	5.0	8.0	5.5	6.5
4	5.0	4.0	4.5	6.0	4.5	5.0	5.5	3.0	4.5	9.0	5.5	6.5
5	4.0	3.0	3.5	5.5	3.5	4.5	7.0	3.0	5.0	11.0	4.5	7.5
6	5.5	3.5	4.5	6.0	3.5	4.5	8.5	3.5	5.5	10.0	7.0	8.5
7	6.5	5.5	5.5	6.0	3.5	4.5	7.5	3.5	5.5	9.0	5.0	7.0
8	5.5	5.0	5.0	5.5	4.5	5.0	7.0	4.0	5.5	9.0	4.0	6.5
9	5.0	4.0	4.5	6.0	4.0	5.0	6.0	3.5	4.5	10.0	4.0	7.0
10	4.5	3.5	4.0	6.0	3.5	4.5	6.5	3.5	5.0	7.0	5.0	6.0
11	4.5	3.0	4.0	6.5	3.0	4.5	9.5	4.5	6.5	9.0	6.5	7.5
12	6.0	3.5	4.5	5.5	3.5	4.5	9.0	4.5	7.0	11.5	7.0	9.0
13	5.5	4.0	4.5	7.0	4.5	6.0	10.0	5.0	7.5	9.5	6.0	7.5
14	6.0	4.5	5.0	7.0	5.5	6.0	10.0	5.0	7.0	8.5	6.0	7.0
15	6.0	4.0	5.0	8.0	4.5	6.0	11.0	5.0	7.5	10.0	5.0	7.5
16	6.0	5.0	5.5	8.0	5.0	6.5	10.5	5.5	8.0	11.0	5.5	8.0
17	7.0	5.0	6.0	8.0	4.5	6.0	11.0	6.0	8.5	11.5	8.0	9.5
18	6.5	4.5	6.0	8.0	5.0	6.5	10.0	6.5	8.0	11.0	8.0	9.5
19	8.5	4.5	6.0	9.0	5.5	7.0	9.0	6.0	7.5	12.5	6.5	9.5
20	6.0	5.0	5.5	7.5	6.0	6.5	10.0	6.0	8.0	11.5	8.0	9.5
21	6.0	5.0	5.5	8.5	6.0	7.0	8.0	6.0	7.0	12.5	6.5	9.5
22	6.0	4.5	5.5	7.0	5.5	6.5	10.5	5.0	7.5	14.0	7.5	10.5
23	7.0	5.5	6.0	8.0	5.5	6.5	11.5	4.5	8.0	14.5	8.5	11.5
24	7.0	6.0	6.5	7.5	6.0	7.0	12.0	6.0	8.5	14.5	9.0	11.5
25	6.5	5.5	6.0	7.5	5.5	6.5	11.0	6.5	8.5	13.5	8.5	11.0
26	6.0	5.0	5.5	7.5	5.5	6.5	10.0	6.5	8.0	13.5	7.5	10.5
27	6.5	5.0	6.0	7.0	4.5	5.5	7.0	4.5	6.0	14.5	8.5	11.5
28	7.0	6.0	6.5	7.0	4.5	5.5	8.5	4.0	6.0	14.0	8.5	11.0
29	---	---	---	6.5	5.0	5.5	11.0	4.0	7.5	13.5	8.5	11.0
30	---	---	---	5.0	4.0	4.5	12.0	6.0	9.0	13.0	7.5	10.5
31	---	---	---	5.0	3.0	4.0	---	---	---	14.5	8.5	11.5
MONTH	8.5	2.0	5.0	9.0	3.0	5.6	12.0	2.5	6.8	14.5	4.0	8.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.0	10.0	11.5	21.0	15.0	18.0	26.0	18.0	21.5	20.0	12.5	16.0
2	10.5	8.0	9.0	18.5	13.5	16.0	26.0	18.0	21.5	21.0	13.5	16.5
3	9.0	7.0	8.0	17.0	12.5	14.5	27.0	18.5	22.5	---	---	---
4	12.5	8.0	9.5	18.5	12.0	15.0	27.5	19.5	23.0	---	---	---
5	14.0	9.0	11.0	20.0	12.0	16.0	24.5	19.5	21.5	---	---	---
6	11.5	8.5	10.0	21.5	14.0	17.5	20.0	18.0	19.0	---	---	---
7	12.0	7.5	9.5	20.5	14.5	17.5	18.5	17.0	18.0	---	---	---
8	13.5	7.5	10.0	21.5	13.5	17.5	22.0	15.5	18.5	22.0	14.5	18.0
9	13.5	7.0	10.5	23.0	15.0	19.0	24.5	16.5	20.0	22.0	15.5	18.0
10	14.5	8.0	11.5	24.5	16.5	20.5	25.5	18.5	21.5	22.0	14.5	17.5
11	15.5	9.0	12.5	25.0	17.5	21.0	21.5	18.0	19.5	22.0	14.0	17.5
12	15.5	11.0	13.5	25.5	17.5	21.5	23.0	17.0	20.0	23.0	14.0	18.0
13	18.5	12.0	15.0	25.5	18.0	21.5	20.5	17.0	18.5	22.5	14.5	18.0
14	19.5	13.0	16.0	24.5	17.5	20.5	20.5	15.5	18.0	22.5	14.5	18.0
15	18.0	13.5	16.0	23.0	15.0	19.0	22.0	14.5	18.0	22.0	14.5	18.0
16	19.0	13.0	15.5	23.0	15.5	19.0	23.5	15.0	19.0	22.0	15.0	18.0
17	17.0	12.0	15.0	22.0	14.5	18.0	24.0	17.0	20.5	21.5	14.0	17.5
18	18.5	12.5	15.5	23.0	14.0	18.5	25.0	18.0	21.0	22.5	14.5	18.0
19	18.5	12.5	15.0	24.0	16.0	20.0	25.0	17.5	21.0	22.0	15.5	18.5
20	15.5	12.0	14.0	25.0	17.5	20.5	25.0	17.5	21.0	23.0	15.0	18.5
21	17.5	12.5	15.0	24.0	17.0	20.0	25.0	17.0	20.5	22.5	15.0	18.5
22	19.5	12.0	15.5	24.5	16.5	20.5	26.0	17.5	21.5	23.0	15.5	19.0
23	20.5	13.5	17.0	24.5	17.0	21.0	26.0	19.5	22.0	22.5	15.5	18.5
24	19.0	14.5	16.5	24.0	17.0	20.5	26.5	19.0	22.0	22.0	16.0	18.5
25	18.5	12.0	15.0	24.5	16.0	20.0	27.0	19.0	22.5	20.5	16.0	18.0
26	18.0	12.0	14.5	25.5	17.0	21.0	26.5	18.5	22.5	18.5	12.5	15.5
27	18.0	11.5	14.5	26.0	18.0	22.0	24.5	19.5	22.0	17.5	10.5	13.5
28	19.5	12.5	16.0	26.5	18.5	22.0	27.0	19.5	22.5	18.0	9.5	13.5
29	21.5	14.5	17.5	26.0	18.0	22.0	26.0	19.0	22.0	18.5	10.5	14.0
30	21.5	15.0	18.0	25.5	17.5	21.5	20.5	16.5	19.0	19.5	11.5	15.0
31	---	---	---	25.5	17.5	21.5	20.0	14.0	16.5	---	---	---
MONTH	21.5	7.0	13.6	26.5	12.0	19.5	27.5	14.0	20.5	---	---	---

14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR

LOCATION.--Lat 42°42'40", long 122°44'55", in SW 1/4 sec.7, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on Bureau of Land Management land, on left bank 300 ft upstream from Spot Creek and 5.3 mi northeast of Trail.

DRAINAGE AREA.--14.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to September 1976, October 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,772.29 ft above sea level (Corps of Engineers bench mark). Prior to Dec. 8, 1996, at datum 0.95 ft higher.

REMARKS.--Records good. No regulation or diversions upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--25 years (water years 1974-76, 1978-99), 19.4 ft³/s, 18.57 in/yr, 14,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft³/s Jan. 15, 1974, gage height, 6.25 ft, present datum, from rating curve extended above 600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.18 ft³/s Aug. 17-19, 21, 1992 and Sept. 23, 1994.

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)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	0930	*427	*4.08	Feb. 28	0730	377	3.91

Minimum discharge, 1.6 ft³/s Aug. 2, 3, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	4.0	77	33	17	151	18	11	5.3	2.8	2.0	2.5
2	2.0	3.5	148	27	16	98	19	16	5.4	2.9	1.9	2.3
3	2.3	3.4	126	21	16	88	21	25	5.4	3.1	1.9	e2.1
4	2.4	3.5	59	17	20	73	20	27	5.2	3.1	1.9	e2.1
5	2.3	4.6	34	13	21	58	21	26	5.2	2.9	2.0	e2.1
6	2.2	5.4	23	11	93	49	23	23	5.0	2.8	2.5	e2.1
7	2.0	8.6	18	9.8	229	40	27	19	4.8	2.8	3.2	e2.0
8	2.9	7.3	22	8.4	128	37	29	16	4.7	2.7	2.8	e2.0
9	2.8	6.0	23	7.5	73	34	26	14	4.6	2.6	2.5	e2.0
10	3.2	5.5	19	7.0	47	30	25	13	4.4	2.5	3.1	e2.0
11	3.0	e6.0	22	6.8	35	27	28	13	4.2	2.4	4.8	e2.0
12	2.8	e4.9	40	6.7	30	26	40	14	4.3	2.3	2.8	e2.0
13	3.4	4.2	59	6.2	29	27	49	14	4.2	2.3	2.7	e1.9
14	3.3	4.3	40	7.5	37	33	41	14	4.0	2.3	2.7	e1.9
15	3.2	5.4	28	24	40	33	36	14	4.1	2.3	2.6	e1.9
16	3.2	6.6	21	38	83	33	35	14	4.0	2.2	2.4	e1.9
17	3.0	10	19	69	146	31	33	13	3.8	2.3	2.3	e2.0
18	2.9	11	17	139	176	30	30	12	3.7	2.3	2.2	e1.9
19	2.7	9.2	13	88	165	37	25	11	3.7	2.1	2.2	e1.9
20	2.7	9.4	11	123	99	49	21	9.8	3.7	2.1	2.2	e1.9
21	2.4	244	9.3	155	70	38	19	9.3	3.9	2.3	2.2	e1.9
22	2.4	143	12	136	60	34	18	9.0	3.6	2.1	2.2	e1.9
23	2.4	129	11	154	107	35	16	8.3	3.4	2.0	2.1	e1.9
24	2.9	93	6.9	83	127	32	15	7.6	3.4	2.6	2.0	e1.9
25	3.5	50	6.9	55	128	29	16	7.1	3.4	2.4	2.0	e1.9
26	3.4	75	8.2	40	88	26	15	6.7	3.3	2.2	1.9	e1.9
27	3.2	60	12	29	110	23	14	6.3	3.3	2.1	2.0	e2.0
28	3.2	30	59	25	281	20	13	6.0	3.1	2.0	1.9	e2.0
29	3.2	27	76	22	---	19	11	5.8	2.9	2.0	1.9	e1.9
30	3.2	68	45	21	---	18	11	5.5	2.8	1.9	2.4	e1.9
31	3.4	---	37	20	---	19	---	5.3	---	1.9	2.7	---
TOTAL	87.3	1041.8	1102.3	1402.9	2471	1277	715	395.7	122.8	74.3	74.0	59.7
MEAN	2.82	34.7	35.6	45.3	88.2	41.2	23.8	12.8	4.09	2.40	2.39	1.99
MAX	3.5	244	148	155	281	151	49	27	5.4	3.1	4.8	2.5
MIN	1.8	3.4	6.9	6.2	16	18	11	5.3	2.8	1.9	1.9	1.9
AC-FT	173	2070	2190	2780	4900	2530	1420	785	244	147	147	118
CFSM	.20	2.45	2.50	3.19	6.21	2.90	1.68	.90	.29	.17	.17	.14
IN.	.23	2.73	2.89	3.68	6.47	3.35	1.87	1.04	.32	.19	.19	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1999, BY WATER YEAR (WY)

	MEAN	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
MEAN	2.93	19.1	39.2	42.2	47.1	37.3	24.4	11.6	5.13	2.19	1.62	1.74															
MAX	7.27	102	148	140	100	124	52.4	28.2	17.2	4.94	4.30	4.44															
(WY)	1980	1974	1977	1974	1983	1974	1974	1979	1993	1983	1976	1986															
MIN	.75	1.70	3.45	6.53	9.47	3.18	4.54	1.67	.74	.31	.26	.36															
(WY)	1989	1994	1990	1992	1988	1992	1990	1992	1994	1994	1992	1994															

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1974 - 1999
ANNUAL TOTAL	8353.9	8823.8	
ANNUAL MEAN	22.9	24.2	19.4
HIGHEST ANNUAL MEAN			49.8
LOWEST ANNUAL MEAN			4.05
HIGHEST DAILY MEAN	251	281	904
LOWEST DAILY MEAN	1.5	1.8	.20
ANNUAL SEVEN-DAY MINIMUM	1.6	1.9	.21
ANNUAL RUNOFF (AC-FT)	16570	17500	14060
ANNUAL RUNOFF (CFSM)	1.61	1.70	1.37
ANNUAL RUNOFF (INCHES)	21.88	23.12	18.57
10 PERCENT EXCEEDS	62	69	50
50 PERCENT EXCEEDS	9.3	7.5	5.3
90 PERCENT EXCEEDS	1.9	2.0	1.0

e Estimated

ROGUE RIVER BASIN

14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1977 to current year.

INSTRUMENTATION.--Temperature recorder since August 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.0°C Aug. 14, 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 20.0°C July 12, 13; minimum, 0.0°C Dec. 20-25.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.5	11.5	13.0	8.0	6.5	7.5	8.0	7.5	7.5	5.5	4.5	5.0
2	13.0	11.0	11.5	8.0	7.0	7.5	8.5	7.5	8.0	4.5	4.0	4.5
3	11.0	10.0	10.5	8.5	7.0	7.5	7.5	6.5	7.0	4.5	3.5	4.0
4	11.0	9.0	10.0	9.5	8.0	8.5	6.5	5.5	6.0	4.5	3.5	4.0
5	11.0	8.0	9.5	8.5	7.5	8.0	5.5	3.0	4.5	4.0	3.5	4.0
6	11.0	8.5	10.0	7.5	6.5	7.0	4.5	3.0	4.5	3.5	3.0	3.5
7	11.5	9.0	10.5	6.5	6.0	6.5	4.5	4.0	4.5	4.5	3.0	3.5
8	12.0	10.0	11.0	7.0	6.0	6.5	5.5	4.5	5.0	3.5	2.5	3.0
9	10.0	8.5	9.5	7.0	5.5	6.0	5.0	4.5	4.5	3.0	2.0	2.5
10	10.0	8.5	9.5	---	---	---	5.5	5.0	5.0	3.0	2.0	2.5
11	10.5	8.5	9.5	---	---	---	5.5	5.0	5.0	4.5	2.5	3.5
12	10.5	8.5	10.0	---	---	---	6.5	5.5	6.0	5.5	4.5	5.0
13	11.0	10.0	10.5	---	---	---	7.0	6.0	6.5	5.0	4.0	4.5
14	10.5	8.5	9.5	7.0	5.0	6.0	6.5	5.0	6.0	6.0	4.0	5.0
15	8.5	7.5	8.0	8.0	6.5	7.0	5.5	4.5	5.0	6.5	5.5	6.0
16	8.5	7.5	8.0	8.0	7.0	7.5	5.0	4.5	5.0	6.5	6.0	6.0
17	8.0	6.0	7.5	8.0	7.5	7.5	5.0	4.5	5.0	7.0	5.5	6.5
18	8.5	7.0	8.0	7.5	6.5	7.0	4.5	3.5	4.0	7.0	6.5	7.0
19	8.5	6.5	8.0	6.5	6.0	6.0	3.5	2.0	2.5	7.0	6.5	6.5
20	8.5	6.5	8.0	7.5	6.5	7.0	2.0	.0	1.0	7.0	6.5	6.5
21	8.5	6.5	8.0	9.0	7.5	8.5	.0	.0	.0	7.0	6.5	6.5
22	9.0	7.0	8.5	8.5	8.0	8.5	.0	.0	.0	6.5	5.0	6.0
23	9.0	7.0	8.5	9.0	8.0	8.5	.0	.0	.0	6.5	6.0	6.0
24	10.0	9.0	9.5	8.0	7.5	8.0	.0	.0	.0	6.0	5.0	5.5
25	10.5	9.0	9.5	8.5	8.0	8.0	1.5	.0	.5	5.0	4.0	4.5
26	9.0	7.5	8.5	9.0	8.0	8.5	2.5	1.5	2.0	5.5	4.5	5.0
27	10.0	7.5	8.5	8.5	7.5	8.0	3.5	2.5	3.0	5.0	4.0	4.5
28	9.5	7.5	8.5	7.5	6.5	7.0	5.5	3.5	4.5	5.5	4.5	5.0
29	7.5	6.0	6.5	6.5	5.5	6.0	6.5	5.5	6.0	5.0	4.0	4.5
30	6.5	4.5	5.5	8.0	6.5	7.5	6.0	5.5	6.0	5.0	3.5	4.0
31	6.5	5.0	6.0	---	---	---	6.5	5.0	6.0	5.0	3.5	4.5
MONTH	14.5	4.5	9.0	---	---	---	8.5	.0	4.2	7.0	2.0	4.8

ROGUE RIVER BASIN

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14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	2.5	3.0	---	---	---	7.0	3.0	4.5	11.5	8.5	10.0
2	3.5	2.5	3.5	---	---	---	7.5	3.0	5.5	8.5	7.0	7.5
3	5.0	3.5	4.5	---	---	---	5.5	3.5	4.5	8.5	6.5	7.0
4	5.0	4.0	4.5	---	---	---	5.0	3.5	4.0	8.5	5.5	7.0
5	4.0	3.0	3.5	---	---	---	6.0	3.0	4.5	10.5	5.0	7.5
6	6.0	4.0	5.0	6.0	4.0	5.0	8.0	3.5	5.5	10.0	7.0	8.5
7	6.5	5.5	6.0	6.0	4.0	5.0	7.5	4.0	5.5	8.0	5.5	6.5
8	5.5	5.5	5.5	6.0	4.5	5.0	6.0	4.0	5.0	8.5	4.5	6.0
9	5.5	4.5	5.0	6.0	4.5	5.0	5.5	3.5	4.5	9.5	4.0	6.5
10	5.0	4.0	4.5	6.0	4.0	5.0	6.0	4.0	5.0	7.0	5.0	6.5
11	5.0	3.5	4.0	6.0	3.5	4.5	9.5	4.0	6.5	8.5	7.0	7.5
12	5.5	4.5	4.5	6.0	4.0	5.0	9.0	5.0	7.0	11.5	7.0	8.5
13	6.0	4.5	5.0	7.0	5.0	6.0	9.5	5.5	7.0	9.0	6.0	7.5
14	6.5	5.0	5.5	7.0	5.5	6.0	10.0	5.0	7.0	8.0	6.0	7.0
15	6.0	4.5	5.5	7.5	5.0	6.0	10.5	5.5	7.5	9.0	5.5	7.0
16	6.5	5.5	6.0	7.5	5.0	6.0	10.5	6.0	8.0	10.5	5.5	8.0
17	7.0	6.0	6.5	7.5	5.0	6.0	11.5	7.0	9.0	11.5	8.5	10.0
18	6.5	6.0	6.5	8.0	5.5	6.5	10.5	7.5	9.0	11.0	9.0	10.0
19	7.0	6.0	6.5	9.0	6.0	7.5	10.0	8.0	9.0	12.5	7.5	10.0
20	6.5	5.5	6.0	7.5	6.5	7.0	11.0	7.0	8.5	11.5	9.0	10.0
21	6.0	5.5	6.0	8.0	6.5	7.0	8.0	7.0	7.5	13.0	7.0	10.0
22	6.5	5.0	6.0	7.0	5.5	6.5	10.5	5.5	7.5	14.5	8.5	11.0
23	7.5	6.0	6.5	8.0	5.0	6.5	11.5	5.5	8.0	16.0	10.0	12.5
24	7.0	6.5	7.0	7.5	6.5	7.0	12.5	6.5	9.5	17.0	11.5	13.5
25	6.5	6.0	6.5	7.5	5.5	6.5	12.0	8.0	9.5	16.0	11.5	13.0
26	6.5	5.5	6.0	7.5	5.5	6.0	11.0	7.5	9.0	15.5	10.0	12.5
27	7.0	5.5	6.5	6.5	4.5	5.5	7.5	5.0	6.0	16.5	11.0	13.5
28	7.5	7.0	7.0	6.5	4.5	5.5	8.0	4.5	6.0	16.0	11.0	13.0
29	---	---	---	6.0	4.5	5.5	11.0	5.0	7.5	15.0	10.5	12.5
30	---	---	---	5.0	4.0	4.5	12.0	6.0	9.0	14.5	9.0	11.5
31	---	---	---	4.5	3.0	4.0	---	---	---	15.5	10.0	12.5
MONTH	7.5	2.5	5.4	---	---	---	12.5	3.0	6.9	17.0	4.0	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	14.0	11.0	12.5	17.5	13.0	15.0	19.0	14.5	17.0	13.0	9.5	11.5
2	11.0	9.0	10.0	15.0	12.0	13.0	18.5	14.5	17.0	14.0	10.5	12.5
3	10.5	8.0	9.5	13.5	11.0	12.0	19.5	15.0	17.5	---	---	---
4	12.5	9.0	10.5	14.5	10.0	12.0	19.5	16.0	18.0	---	---	---
5	14.0	10.5	11.5	16.0	10.0	13.0	19.0	16.5	17.5	---	---	---
6	11.0	9.0	10.0	17.0	12.0	14.0	17.0	15.0	15.5	---	---	---
7	11.0	7.5	9.0	16.0	11.5	13.5	16.0	14.5	15.0	---	---	---
8	11.5	7.5	9.5	16.5	11.0	14.0	16.5	13.5	15.0	---	---	---
9	12.5	7.0	9.5	18.0	12.5	15.0	17.5	14.0	16.0	---	---	---
10	13.5	8.0	10.5	19.0	14.0	16.5	18.5	15.0	16.5	---	---	---
11	14.5	9.0	11.5	19.5	14.5	17.0	17.0	15.0	16.0	---	---	---
12	14.5	10.5	12.5	20.0	15.0	17.5	17.5	14.5	16.0	---	---	---
13	17.0	11.5	14.0	20.0	15.0	17.5	16.0	14.5	15.0	---	---	---
14	18.0	12.5	15.0	18.5	14.5	16.5	15.5	13.5	14.5	---	---	---
15	17.0	13.5	15.0	17.5	12.0	15.0	15.0	11.5	13.5	---	---	---
16	17.5	12.5	14.5	17.5	13.0	15.5	16.0	12.0	14.5	---	---	---
17	16.5	12.0	14.0	16.5	12.0	14.5	17.0	13.5	15.5	---	---	---
18	17.0	12.5	14.5	17.0	11.5	14.5	17.5	14.5	16.0	---	---	---
19	17.0	12.0	14.0	18.0	13.0	16.0	17.5	14.0	16.0	---	---	---
20	14.5	11.5	13.0	18.5	14.5	16.5	17.5	14.0	16.0	---	---	---
21	15.5	12.5	13.5	17.5	14.0	16.0	17.5	14.0	16.0	---	---	---
22	17.0	11.5	14.0	18.0	13.5	16.0	17.5	14.0	16.0	---	---	---
23	18.0	12.0	15.0	18.0	14.0	16.5	18.5	15.5	17.0	---	---	---
24	17.0	13.5	15.0	18.0	14.5	16.0	19.0	15.5	17.0	---	---	---
25	15.0	10.5	13.0	18.0	13.0	15.5	19.0	15.5	17.0	---	---	---
26	15.0	10.5	12.5	18.5	14.0	16.5	18.5	15.5	17.0	---	---	---
27	15.0	10.0	12.5	19.0	14.5	17.0	18.5	16.0	17.5	---	---	---
28	16.5	11.0	13.5	19.5	15.0	17.5	19.5	16.0	17.5	---	---	---
29	18.0	12.5	15.0	19.0	15.0	17.0	19.0	16.0	17.0	---	---	---
30	18.0	13.0	15.5	18.5	14.0	16.5	16.5	13.0	15.0	---	---	---
31	---	---	---	18.5	14.0	16.5	13.5	11.0	12.5	---	---	---
MONTH	18.0	7.0	12.7	20.0	10.0	15.5	19.5	11.0	16.0	---	---	---

ROGUE RIVER BASIN

14338000 ELK CREEK NEAR TRAIL, OR

LOCATION.--Lat 42°40'30", long 122°44'38", in NE 1/4 sec.30, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 3.7 mi northeast of Trail and at mile 1.2.

DRAINAGE AREA.--129 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year. Prior to March 1946 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WDR OR-89-2: Drainage area. WDR OR-92-1: 1989(M), 1990(M), 1991(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,493.91 ft above sea level. Prior to July 5, 1946, nonrecording gage at various sites within 1.0 mi of present site at different datums. July 5, 1946, to June 22, 1950, nonrecording gage, and June 23, 1950, to May 23, 1954, water-stage recorder, at site 0.5 mi downstream at datum 25.21 ft lower, May 24, 1954, to Sept. 30, 1988 at site 0.8 mi downstream at datum 37.35 ft lower.

REMARKS.--Records good. Diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--53 years (water years 1947-99), 221 ft³/s, 160,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s Dec. 22, 1964, gage height, 18.84 ft, from rating curve extended above 4,700 ft³/s on basis of slope-area measurement of peak flow, site and datum then in use; minimum discharge, 0.01 ft³/s Oct. 8, 1987, result of dam construction 1.3 mi upstream.

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. 21	1400	*5,210	*9.51	Feb. 28	unknown	unknown	unknown
Minimum discharge. 2.6 ft ³ /s Sept. 22, 23.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	15	869	596	217	e1550	213	199	164	43	10	11
2	6.4	19	1920	465	207	1130	223	241	153	42	10	9.1
3	8.5	16	1760	369	209	1050	231	339	136	42	8.9	7.3
4	11	16	865	302	248	901	222	400	124	41	8.8	6.3
5	10	22	520	260	261	672	232	344	121	39	9.2	5.8
6	9.3	30	385	226	832	544	261	313	118	37	11	5.7
7	8.0	47	310	199	2410	453	271	295	108	35	20	5.6
8	7.8	58	344	175	1360	397	302	253	101	33	20	5.0
9	11	43	325	157	809	373	294	220	97	31	15	4.6
10	12	37	284	145	529	329	284	197	94	29	15	4.4
11	12	55	310	137	404	303	310	188	91	27	36	4.6
12	10	41	450	148	349	279	394	214	91	25	23	4.6
13	11	33	651	141	348	309	467	216	92	25	16	4.0
14	14	29	538	150	466	359	457	207	91	23	17	3.5
15	14	32	391	514	455	364	427	205	92	23	14	3.4
16	13	50	310	595	722	352	455	192	90	22	13	3.2
17	13	68	292	714	1360	333	495	190	86	22	11	3.6
18	12	114	265	1720	1790	324	535	208	82	22	9.6	4.1
19	10	98	231	1130	1760	375	494	214	77	20	9.3	3.5
20	9.9	74	201	1370	1050	507	411	212	73	19	7.9	3.5
21	9.3	2870	158	1750	802	476	357	203	74	23	7.6	3.2
22	8.6	1910	150	1750	634	417	300	205	68	21	7.2	2.9
23	8.4	1550	132	1820	996	393	266	223	62	18	6.5	2.9
24	8.8	1290	117	1060	1190	364	272	249	59	19	7.0	2.9
25	11	681	127	669	e1230	360	292	264	60	20	8.1	3.0
26	14	815	165	507	e1020	335	290	246	57	17	6.2	3.1
27	12	761	207	392	e1200	295	260	230	54	15	5.6	3.4
28	11	425	1180	328	e2800	255	225	223	51	14	5.0	4.0
29	13	397	1410	288	---	236	195	209	47	13	4.6	4.1
30	12	675	821	264	---	220	180	189	44	12	5.5	3.9
31	12	---	664	245	---	218	---	169	---	11	11	---
TOTAL	329.2	12271	16352	18586	25658	14473	9615	7257	2657	783	359.0	136.2
MEAN	10.6	409	527	600	916	467	320	234	88.6	25.3	11.6	4.54
MAX	14	2870	1920	1820	2800	1550	535	400	164	43	36	11
MIN	6.2	15	117	137	207	218	180	169	44	11	4.6	2.9
AC-FT	653	24340	32430	36870	50890	28710	19070	14390	5270	1550	712	270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1999, BY WATER YEAR (WY)

MEAN	31.0	190	446	523	512	423	286	167	61.0	15.2	6.64	7.25
MAX	404	1008	1851	1283	1131	1074	565	358	254	36.1	25.1	43.7
(WY)	1951	1974	1965	1965	1958	1972	1956	1975	1953	1953	1976	1986
MIN	3.17	8.92	13.1	19.8	23.1	45.4	65.8	21.6	7.42	1.39	.21	.60
(WY)	1953	1994	1977	1977	1977	1992	1968	1992	1992	1994	1994	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1947 - 1999

ANNUAL TOTAL	99329.3			108476.4					
ANNUAL MEAN	272			297			221		
HIGHEST ANNUAL MEAN							438		1974
LOWEST ANNUAL MEAN							41.7		1977
HIGHEST DAILY MEAN	2880	Jan 17		2870	Nov 21		12200	Dec 22	1964
LOWEST DAILY MEAN	4.0	Sep 7		2.9	Sep 22		.12	Sep 1	1994
ANNUAL SEVEN-DAY MINIMUM	4.5	Sep 1		3.1	Sep 21		.12	Sep 1	1994
ANNUAL RUNOFF (AC-FT)	19700			21520			160200		
10 PERCENT EXCEEDS	753			811			557		
50 PERCENT EXCEEDS	142			158			68		
90 PERCENT EXCEEDS	7.0			7.1			4.8		

e Estimated

WATER-QUALITY RECORDS

WATER TEMPERATURE: June 1973 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

EXTREMES FOR CURRENT YEAR. --

WATER TEMPERATURE: Maximum, 33.0°C Aug. 24; minimum, 0.0°C Dec. 21-25.

[illegible]

ROGUE RIVER BASIN

399

14338100 ROGUE RIVER AT TRAIL, OR

LOCATION.--Lat 42°38'51", long 122°48'18", in NW 1/4 NE 1/4 sec.3, T.34 S., R.1 W., Jackson County, Hydrologic Unit 17100307, on right bank 0.2 mi upstream from Trail Creek, and at mile 148.9.

DRAINAGE AREA.--Not determined.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1988 to current year.

INSTRUMENTATION.--Water-quality monitor since March 1988.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.0°C July 27, 29, 1992; minimum, 2.0°C Feb. 5, 6, 1989, Feb. 14, 15, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.5°C Aug. 16-22, Sept. 14; minimum, 3.5°C Jan. 9, 10, Feb. 11.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	8.5	9.5	8.0	7.0	7.5	7.5	7.5	7.5	5.0	5.0	5.0
2	10.5	9.0	9.5	8.0	7.0	7.5	8.0	7.5	7.5	5.0	4.5	4.5
3	10.5	9.0	9.5	8.0	7.0	7.5	7.5	7.0	7.0	5.0	4.0	4.5
4	11.0	8.5	9.5	8.5	7.5	7.5	7.0	6.5	7.0	5.0	4.0	4.5
5	11.5	8.5	9.5	8.0	7.0	7.5	6.5	6.0	6.5	5.0	4.0	4.5
6	11.0	8.5	9.5	7.5	7.0	7.0	6.5	6.0	6.5	4.5	4.0	4.5
7	10.5	8.5	9.5	7.5	7.0	7.5	6.5	6.0	6.5	5.0	4.0	4.5
8	10.5	8.0	9.5	8.0	7.0	7.5	6.5	6.0	6.0	5.0	4.0	4.5
9	8.5	7.0	8.0	8.0	7.0	7.5	6.0	5.5	6.0	4.5	3.5	4.0
10	9.5	7.5	8.0	7.5	7.0	7.5	6.5	6.0	6.0	4.5	3.5	4.0
11	9.0	7.5	8.0	8.0	7.0	7.0	6.5	6.0	6.0	5.0	4.0	4.5
12	9.0	7.0	8.0	8.0	7.0	7.0	7.0	6.5	6.5	5.5	4.5	5.0
13	9.0	7.5	8.0	8.0	7.0	7.5	7.0	6.0	6.5	5.5	4.5	5.0
14	8.5	7.5	8.0	8.0	7.0	7.5	6.5	6.0	6.0	5.0	4.5	5.0
15	8.0	7.0	7.5	8.0	7.5	7.5	6.0	5.5	6.0	5.5	5.0	5.5
16	8.5	7.0	7.5	8.0	7.5	7.5	6.0	5.5	5.5	5.5	5.0	5.0
17	8.5	6.5	7.0	8.0	7.5	7.5	6.0	5.5	5.5	5.5	5.0	5.0
18	9.0	6.5	7.5	7.5	7.5	7.5	6.0	5.5	5.5	5.5	5.5	5.5
19	9.0	6.5	7.5	7.5	7.0	7.5	5.5	5.0	5.0	5.5	5.5	5.5
20	9.0	6.5	7.5	7.5	7.0	7.5	5.5	4.5	5.0	5.5	5.0	5.5
21	9.0	6.5	7.0	8.5	7.5	8.0	5.0	4.0	4.5	5.5	5.0	5.0
22	8.5	6.5	7.5	8.5	8.0	8.0	4.5	4.0	4.5	5.0	5.0	5.0
23	8.5	6.5	7.5	8.5	8.0	8.5	5.0	4.0	4.5	5.5	5.0	5.0
24	8.5	7.0	7.5	8.0	8.0	8.0	5.0	4.5	4.5	5.0	5.0	5.0
25	8.5	7.0	7.5	8.5	7.5	8.0	5.0	4.5	5.0	5.0	4.0	4.5
26	9.0	6.5	7.5	8.0	8.0	8.0	5.0	5.0	5.0	5.0	4.5	4.5
27	8.5	6.5	7.5	8.0	7.5	7.5	5.0	5.0	5.0	5.0	4.5	4.5
28	9.0	7.0	7.5	7.5	7.0	7.5	5.0	5.0	5.0	5.0	4.5	5.0
29	8.5	6.5	7.0	7.5	7.0	7.0	5.5	5.0	5.5	5.0	4.5	4.5
30	8.5	6.0	7.0	7.5	7.0	7.5	5.5	5.0	5.5	5.0	4.0	4.5
31	7.0	6.5	7.0	---	---	---	5.5	5.0	5.5	5.0	4.5	4.5
MONTH	11.5	6.0	8.0	8.5	7.0	7.6	8.0	4.0	5.8	5.5	3.5	4.8

ROGUE RIVER BASIN

14338100 ROGUE RIVER AT TRAIL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.0	4.5	6.0	5.5	5.5	7.5	5.5	6.0	8.5	7.0	7.5
2	4.5	4.0	4.5	5.5	4.5	5.5	---	---	---	8.5	6.5	7.0
3	5.5	4.5	5.0	5.5	5.0	5.0	---	---	---	7.5	6.5	7.0
4	5.5	4.5	5.0	5.5	4.5	5.0	---	---	---	7.5	6.0	7.0
5	4.5	4.0	4.5	5.5	4.5	5.0	---	---	---	9.5	6.0	7.5
6	5.0	4.5	4.5	5.5	4.5	5.0	---	---	---	---	---	---
7	5.5	5.0	5.5	5.5	4.5	5.0	7.5	6.0	6.5	---	---	---
8	5.0	4.5	4.5	5.5	5.0	5.0	6.5	5.5	6.0	10.0	8.0	9.0
9	4.5	4.0	4.5	5.0	4.5	5.0	6.5	5.0	5.5	11.0	8.0	9.5
10	4.5	4.0	4.0	5.5	4.0	4.5	6.5	5.5	6.0	10.0	9.0	9.5
11	4.5	3.5	4.0	6.0	4.0	5.0	8.5	6.0	7.0	9.5	8.5	9.5
12	5.5	4.0	4.5	5.0	4.5	5.0	8.0	6.0	7.0	11.0	8.5	10.0
13	5.0	4.5	5.0	5.5	4.5	5.0	9.0	6.5	7.5	---	9.0	9.0
14	5.5	4.5	5.0	5.5	5.0	5.0	9.0	6.0	7.5	10.0	8.5	9.0
15	5.0	4.5	5.0	6.5	5.0	5.5	9.5	6.0	7.5	11.0	8.5	9.5
16	5.5	5.0	5.0	6.5	5.0	5.5	9.0	7.0	8.0	11.5	9.5	10.0
17	6.0	5.5	5.5	5.5	5.0	5.5	9.0	7.0	8.0	11.5	9.0	10.0
18	6.0	5.0	5.5	6.0	5.0	5.5	8.0	7.0	7.5	11.0	9.0	10.0
19	6.0	5.0	5.5	7.0	5.5	6.0	7.5	6.5	7.0	11.0	9.0	10.0
20	5.0	4.5	5.0	6.5	6.0	6.0	8.0	6.5	7.0	10.5	8.5	9.5
21	5.5	4.5	5.0	6.5	5.5	6.0	7.0	6.0	6.5	10.5	8.0	9.5
22	5.5	5.0	5.0	6.5	5.5	6.0	8.5	6.5	7.0	11.0	8.5	10.0
23	6.5	5.5	6.0	7.0	5.5	6.0	8.5	6.0	7.5	11.0	9.0	10.0
24	6.0	5.5	6.0	6.0	5.5	6.0	9.0	6.0	8.0	10.0	9.0	9.5
25	6.0	5.5	5.5	6.5	5.5	6.0	8.0	7.0	7.5	10.0	8.0	9.0
26	5.5	5.0	5.0	6.5	5.5	6.0	8.0	6.5	7.5	10.5	8.0	9.5
27	6.5	5.0	5.5	6.0	5.0	5.5	7.5	6.0	6.5	11.0	9.0	10.0
28	6.5	6.0	6.5	7.0	5.5	6.0	7.5	6.0	6.5	11.0	9.0	10.0
29	---	---	---	6.0	5.0	5.5	8.5	5.5	7.0	10.5	9.0	9.5
30	---	---	---	6.0	5.0	5.5	9.0	6.0	7.5	10.5	9.0	10.0
31	---	---	---	6.0	5.0	5.5	---	---	---	11.0	9.0	10.0
MONTH	6.5	3.5	5.0	7.0	4.0	5.4	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.0	9.5	10.0	13.5	11.5	12.5	14.0	10.5	12.5	14.5	12.0	13.0
2	10.0	8.5	9.5	13.0	11.0	12.0	14.0	10.5	12.5	14.5	11.5	13.0
3	10.5	9.0	9.5	13.0	11.5	12.0	14.0	11.0	12.5	14.5	11.5	13.0
4	11.5	9.0	10.0	13.5	11.0	12.5	14.5	11.5	13.0	14.0	12.0	13.0
5	11.5	10.0	10.5	14.0	11.0	12.5	14.0	11.5	13.0	14.5	12.0	13.0
6	11.5	9.5	10.5	14.5	11.5	13.0	13.0	11.5	12.5	14.5	12.0	13.0
7	11.0	9.0	10.0	13.0	10.5	12.0	13.5	12.0	12.5	14.5	11.5	13.0
8	11.5	9.5	10.5	13.5	11.0	12.0	14.0	12.0	13.0	14.5	12.0	13.0
9	12.0	9.5	11.0	13.5	11.0	12.5	14.5	11.5	13.0	15.0	12.0	13.0
10	12.5	10.0	11.0	13.5	11.0	12.5	14.5	12.5	13.5	14.5	11.5	13.0
11	13.0	10.5	11.5	14.0	11.5	12.5	14.5	12.0	13.5	15.0	11.5	13.0
12	13.0	10.5	11.5	14.0	11.5	12.5	14.5	12.0	13.5	15.0	11.5	13.0
13	12.5	10.5	11.5	13.5	11.5	12.5	14.0	12.0	13.0	15.0	12.0	13.0
14	13.5	10.5	12.0	13.5	11.0	12.0	15.0	12.5	13.5	15.5	11.5	13.0
15	13.0	10.5	12.0	12.5	11.0	12.0	15.0	12.5	13.5	15.0	11.5	13.0
16	13.0	10.5	11.5	13.0	10.5	12.0	15.5	12.5	14.0	15.0	11.5	13.0
17	---	---	---	13.0	10.5	11.5	15.5	13.0	14.0	12.5	10.0	11.5
18	13.0	10.5	12.0	12.5	10.0	11.5	15.5	12.5	14.0	12.5	9.5	10.5
19	13.0	10.5	12.0	12.5	10.0	11.5	15.5	12.0	14.0	12.5	9.5	11.0
20	12.5	10.5	11.5	12.0	10.0	11.0	15.5	12.0	13.5	13.0	9.5	11.0
21	12.0	10.5	11.5	12.0	9.5	11.0	15.5	12.0	14.0	13.0	9.5	11.0
22	12.0	10.0	11.0	11.5	9.0	10.5	15.5	12.5	14.0	13.5	10.0	11.0
23	12.5	10.0	11.5	11.5	9.0	10.5	15.0	13.0	14.0	13.0	9.5	11.0
24	12.0	9.5	11.0	12.5	9.5	11.0	15.0	12.5	13.5	12.5	9.0	10.5
25	12.5	10.5	11.5	12.0	9.0	11.0	15.0	12.5	13.5	12.0	9.0	10.0
26	12.5	10.5	11.5	12.5	9.5	11.0	15.0	12.0	13.5	12.0	8.5	10.0
27	---	---	---	12.5	9.5	11.5	14.5	12.5	13.0	12.0	8.0	9.5
28	---	---	---	13.0	10.0	11.5	15.0	12.5	13.5	12.0	8.0	10.0
29	13.5	11.5	12.5	13.0	10.0	11.5	15.0	12.5	13.5	12.5	8.5	10.0
30	14.0	11.5	13.0	13.0	10.0	12.0	13.5	12.5	13.0	12.5	9.0	10.5
31	---	---	---	13.5	10.0	12.0	14.5	12.0	13.0	---	---	---
MONTH	---	---	---	14.5	9.0	11.8	15.5	10.5	13.3	15.5	8.0	11.9

ROGUE RIVER BASIN

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14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR

LOCATION.--Lat 42°31'30", long 122°50'30", in SE 1/4 sec.17, T.35 S., R.1 W., Jackson County, Hydrologic Unit 17100307, on right bank 50 ft upstream from Dodge Bridge, 0.7 mi downstream from Reese Creek, 4.3 mi northwest of Eagle Point, and at mile 138.6.

DRAINAGE AREA.--1,215 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year.

REVISED RECORDS.--WSP 1094: 1942(M), 1943, 1945(M), 1946. WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,271.99 ft above sea level. Prior to Dec. 21, 1938, nonrecording gage, Dec. 21, 1938, to Aug. 15, 1968, water-stage recorder, at datum 2.27 ft higher, Aug. 16, 1968, to Sept. 30, 1976, water-stage recorder, at datum 1.00 ft higher.

REMARKS.--Records good. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Diversions for irrigation upstream from station; most of low flow of Big Butte Creek (station 14337500) is diverted near Butte Falls. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1939-77), 2,636 ft³/s, 1,910,000 acre-ft/yr.
22 years (water years 1978-99), 2,472 ft³/s, 1,791,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,600 ft³/s Dec. 22, 1964, gage height, 12.78 ft, datum then in use, from rating curve extended above 23,000 ft³/s; minimum discharge, 567 ft³/s Feb. 18, 1977, result of closure of Lost Creek dam, minimum prior to that time, 611 ft³/s Aug. 6, 14, 29, Sept. 9, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,800 ft³/s Nov. 21, gage height, 9.45 ft; minimum discharge, 999 ft³/s Nov. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	1430	4440	4330	2520	8560	2740	2980	5570	4250	3120	2480
2	1320	1420	7770	3820	2050	e7500	1950	3100	5220	4170	3000	2460
3	1330	1400	8690	3190	2080	e7000	1930	3640	4510	3990	2940	2470
4	1400	1390	6660	2670	2120	6820	1910	4070	4050	3830	2930	2460
5	1390	1410	5670	2420	2080	6080	1930	3370	3790	3660	2910	2440
6	1380	1480	4940	2210	3450	5100	1980	3100	3790	3530	2980	2340
7	1360	1680	3880	2200	8000	4640	2020	3120	3760	3530	3000	2180
8	1370	1650	4070	2070	4960	4380	2470	3070	3700	3620	2860	1990
9	1420	1510	3550	1870	3920	4320	2550	3030	3460	3690	2910	1820
10	1420	1480	3160	1830	3140	3730	2650	2980	3200	3740	3000	1750
11	1420	1490	3120	1780	2740	3610	2700	2990	3180	4000	e3125	1530
12	1420	1410	3400	1800	2580	3520	2750	2990	3180	4150	3250	1510
13	1430	1300	3700	1840	2570	3550	2720	2960	3180	4080	3200	1430
14	1430	1320	3620	1850	3140	3540	2460	2930	3180	4100	3040	1300
15	1430	1360	3340	3650	2830	3550	2340	2950	3350	4160	2840	1320
16	1430	1470	3150	5610	3570	3520	2430	2890	3380	4170	2820	1330
17	1400	1600	3070	6630	5240	3480	2940	2780	3370	4150	2530	1510
18	1390	1720	3000	8900	6860	3460	3510	2990	3340	4040	2500	1510
19	1390	1670	2910	7340	6140	3510	4230	3470	3300	3930	2440	1510
20	1390	1690	2850	8790	4250	3700	4510	4080	3310	3830	2340	1510
21	1390	12200	2680	10200	3800	3740	3500	4150	3480	3730	2410	1500
22	1400	12200	2730	10700	3350	3840	3230	4390	4350	3630	2390	1330
23	1390	12400	2750	11300	3970	3840	3160	4710	4680	3510	2410	1330
24	e1390	10600	2710	7890	4140	3650	3150	5500	4790	3460	2370	1320
25	e1400	6680	2700	5370	4350	3820	3240	6610	4770	3460	2430	1330
26	e1400	6970	2830	4800	3870	3790	3790	6290	4760	3470	2440	1320
27	e1400	5750	2900	4090	4900	3660	3920	5990	4660	3490	2430	1300
28	e1390	3930	4290	3380	12500	3300	3540	6080	4370	3480	2420	1300
29	e1390	3620	5590	3210	---	3240	3380	6190	3920	3480	2450	1320
30	1390	4430	4640	3040	---	3230	3070	6140	4240	3500	2470	1320
31	1400	---	4490	2960	---	3200	---	6020	---	3260	2500	---
TOTAL	43160	108660	123300	141740	115120	132880	86700	125560	117940	117090	84455	50220
MEAN	1392	3622	3977	4572	4111	4286	2890	4050	3931	3777	2724	1674
MAX	1430	12400	8690	11300	12500	8560	4510	6610	5570	4250	3250	2480
MIN	1300	1300	2680	1780	2050	3200	1910	2780	3180	3260	2340	1300
AC-FT	85610	215500	244600	281100	228300	263600	172000	249000	233900	232200	167500	99610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1999, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1307	2005	3256	3070	2704	2703	2773	3006	2588	2270	2229	1745										
MAX	1931	4925	9909	9857	6045	4645	4520	4658	3939	3777	3092	2200										
(WY)	1983	1985	1997	1997	1982	1989	1996	1996	1994	1999	1984	1983										
MIN	874	928	1274	1232	1080	920	969	1577	1656	1116	1795	1288										
(WY)	1993	1988	1990	1992	1988	1992	1992	1992	1992	1992	1994	1980										

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1978 - 1999

ANNUAL TOTAL	1147330	1246825	
ANNUAL MEAN	3143	3416	2472
HIGHEST ANNUAL MEAN			4012
LOWEST ANNUAL MEAN			1381
HIGHEST DAILY MEAN	15100	Jan 17	23000
LOWEST DAILY MEAN	1300	Oct 1	823
ANNUAL SEVEN-DAY MINIMUM	1330	Sep 27	842
ANNUAL RUNOFF (AC-FT)	2276000	2473000	1791000
10 PERCENT EXCEEDS	5450	5600	4110
50 PERCENT EXCEEDS	2770	3160	2060
90 PERCENT EXCEEDS	1400	1400	1150

e Estimated

ROGUE RIVER BASIN

14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE:

Prior to construction of Lost Creek Dam and Lake: Maximum, 20.0°C July 27, 28, 1975; minimum, 0.0°C Jan. 6-8, 10, 11, 1974, Jan. 6-9, 1977.

After full operation of Lost Creek Dam and Lake: Maximum, 21.0°C July 26-29, 1992; minimum, 0.5°C Feb. 5, 6, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 17.5°C Aug. 16-18; minimum, 3.0°C Dec. 21, 22.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.0	9.0	10.5	8.5	7.0	7.5	8.0	7.5	7.5	5.5	5.0	5.0
2	11.5	9.0	10.0	8.5	7.0	7.5	8.0	7.5	8.0	5.0	4.5	5.0
3	11.0	8.5	10.0	8.0	7.0	7.5	8.0	7.0	7.5	5.0	4.0	4.5
4	11.5	8.5	10.0	9.0	7.5	8.0	7.0	6.5	7.0	5.0	4.0	4.5
5	11.5	8.0	9.5	8.5	7.5	8.0	6.5	6.0	6.5	5.0	4.0	4.5
6	11.5	8.0	9.5	7.5	7.0	7.5	7.0	6.0	6.5	5.0	4.0	4.5
7	11.0	8.0	9.5	8.0	7.0	7.5	6.5	6.0	6.5	5.0	4.0	4.5
8	11.0	9.0	10.0	8.5	7.0	7.5	6.5	6.0	6.0	5.5	3.5	4.5
9	9.5	7.0	8.0	8.0	7.0	7.5	6.5	5.5	6.0	5.0	3.5	4.0
10	10.0	7.0	8.5	7.5	7.0	7.5	6.5	6.0	6.5	5.0	3.5	4.0
11	9.5	7.0	8.5	8.0	7.0	7.5	6.5	6.0	6.5	5.5	3.5	4.5
12	9.5	7.0	8.5	7.5	6.5	7.0	7.5	6.5	7.0	6.0	5.0	5.5
13	10.0	8.0	8.5	8.0	6.5	7.5	7.5	6.5	7.0	6.0	4.5	5.0
14	9.5	7.5	8.5	8.0	6.5	7.5	7.0	6.0	6.5	5.5	4.5	5.0
15	8.5	6.5	7.5	8.0	7.5	7.5	6.0	5.5	6.0	6.0	5.5	5.5
16	9.0	6.5	8.0	8.0	7.5	8.0	6.0	5.5	6.0	5.5	5.0	5.5
17	9.0	6.0	7.5	8.0	7.5	7.5	6.0	5.5	6.0	6.0	5.0	5.5
18	9.5	6.5	8.0	8.0	7.0	7.5	6.0	5.5	5.5	6.0	5.5	6.0
19	9.5	6.0	7.5	7.5	6.5	7.0	5.5	4.5	5.0	6.0	5.5	6.0
20	9.0	6.0	7.5	8.0	7.0	7.5	5.0	4.0	4.5	6.0	5.5	5.5
21	9.0	6.0	7.5	8.5	7.5	8.5	4.5	3.0	4.0	6.0	---	5.5
22	9.0	6.5	8.0	8.5	8.0	8.5	4.5	3.0	4.0	5.5	5.0	5.0
23	9.0	6.5	8.0	8.5	8.5	8.5	4.5	3.5	4.0	5.5	5.0	5.5
24	9.0	7.5	8.0	8.5	8.0	8.0	4.5	4.0	4.5	5.5	4.5	5.0
25	9.5	7.5	8.5	8.5	8.0	8.0	5.0	4.5	5.0	5.0	4.0	4.5
26	9.5	7.0	8.0	8.5	8.0	8.0	5.5	5.0	5.0	5.5	4.5	5.0
27	9.0	6.5	8.0	8.5	7.5	8.0	5.5	5.0	5.0	5.5	4.5	5.0
28	9.0	7.0	8.0	7.5	7.5	7.5	5.5	5.0	5.5	5.5	4.5	5.0
29	8.5	6.0	7.5	7.5	7.0	7.5	6.0	5.5	5.5	5.5	4.0	5.0
30	8.5	5.5	7.0	8.0	7.0	7.5	6.0	5.5	6.0	5.5	4.0	4.5
31	7.0	6.0	6.5	---	---	---	6.0	5.0	5.5	5.5	4.5	5.0
MONTH	12.0	5.5	8.4	9.0	6.5	7.7	8.0	3.0	5.9	6.0	---	5.0

ROGUE RIVER BASIN

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14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	3.5	4.5	7.0	5.5	6.5	8.5	5.0	6.5	10.5	7.5	8.5
2	5.0	4.0	4.5	---	---	---	8.5	4.5	7.0	---	---	---
3	6.0	4.5	5.0	6.0	5.0	5.5	8.5	5.0	6.5	8.5	6.5	7.5
4	6.0	4.5	5.0	6.0	4.5	5.5	7.0	5.0	6.0	8.0	6.5	7.0
5	5.0	4.0	4.5	6.0	4.5	5.0	7.5	4.5	6.0	10.5	6.0	8.0
6	5.5	4.0	4.5	6.0	4.5	5.0	9.5	5.0	7.0	10.0	8.0	9.0
7	6.0	5.0	5.5	6.5	4.0	5.5	8.5	5.5	7.0	10.5	7.0	8.5
8	5.0	4.5	4.5	6.0	5.0	5.5	7.0	6.0	6.5	11.0	8.0	9.5
9	---	---	---	6.5	4.5	5.5	7.0	5.0	6.0	11.5	8.5	9.5
10	5.0	3.5	4.0	6.5	4.0	5.0	7.0	5.0	6.0	10.5	8.5	9.5
11	5.0	3.5	4.0	7.0	4.0	5.5	10.5	6.0	7.5	10.5	9.0	9.5
12	6.0	4.0	4.5	6.0	4.5	5.0	10.0	5.5	7.5	11.5	8.5	10.0
13	5.5	4.5	5.0	6.5	4.5	5.5	11.0	6.5	8.0	10.5	9.0	10.0
14	6.0	5.0	5.5	6.5	5.0	5.5	11.0	6.0	8.5	10.0	9.0	9.5
15	5.5	4.5	5.0	7.5	5.0	6.0	11.5	6.0	8.5	11.5	8.5	10.0
16	5.5	5.0	5.5	7.5	5.5	6.0	12.0	6.5	9.0	13.0	8.5	10.5
17	6.5	5.5	6.0	7.0	4.5	6.0	11.0	6.5	9.0	13.0	9.5	11.0
18	6.0	5.0	6.0	7.0	5.0	6.0	10.0	7.0	8.5	12.0	9.0	10.5
19	6.5	5.0	6.0	8.0	5.5	6.5	9.0	6.5	7.5	---	---	---
20	5.5	4.5	5.0	7.0	5.5	6.5	12.0	5.0	7.5	10.5	9.0	10.0
21	6.0	5.0	5.5	8.0	5.5	6.5	8.5	5.0	7.0	---	---	---
22	6.0	5.0	5.5	7.0	5.5	6.5	10.0	6.5	8.0	---	---	---
23	7.0	5.5	6.0	8.0	5.0	6.5	10.5	6.5	8.0	---	---	---
24	6.5	6.0	6.0	7.0	6.0	6.5	11.0	7.0	8.5	---	---	---
25	6.5	5.5	6.0	8.0	5.5	6.5	11.0	7.5	8.5	---	---	---
26	6.0	5.0	5.5	8.0	5.0	6.5	9.5	7.0	8.0	---	---	---
27	6.5	5.0	5.5	7.5	4.5	6.0	8.0	6.0	7.0	12.0	9.5	10.5
28	7.5	6.5	7.0	8.0	4.5	6.5	8.5	6.0	7.0	12.0	9.0	10.5
29	---	---	---	7.0	4.0	6.0	10.0	6.0	7.5	11.5	9.0	10.5
30	---	---	---	7.0	4.0	5.5	11.0	6.5	8.5	12.0	9.0	10.5
31	---	---	---	7.0	5.0	6.0	---	---	---	12.5	9.0	10.5
MONTH	---	---	---	---	---	---	12.0	4.5	7.5	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	12.0	9.5	10.5	15.0	12.0	13.5	15.5	10.5	13.0	15.5	11.5	13.5
2	11.0	9.0	10.0	14.0	10.5	12.5	15.5	10.5	13.5	15.5	11.5	13.0
3	10.5	9.0	10.0	14.0	11.0	12.5	16.0	11.5	13.5	15.5	11.5	13.0
4	12.0	9.0	10.5	14.5	11.0	12.5	16.5	11.5	14.0	15.5	11.5	13.0
5	12.5	10.0	11.0	15.5	11.0	13.0	15.0	11.5	13.5	15.5	11.5	13.5
6	11.5	10.0	11.0	16.5	12.0	13.5	13.5	11.5	12.5	15.5	12.0	13.5
7	12.5	9.5	10.5	14.5	11.0	13.0	14.0	12.0	13.0	16.0	11.5	13.5
8	12.5	9.0	11.0	15.0	11.0	12.5	15.0	12.0	13.5	15.5	11.5	13.0
9	13.5	10.0	11.5	15.5	11.5	13.0	16.5	12.0	14.0	15.5	11.5	13.5
10	14.5	10.0	12.0	16.0	11.5	13.5	16.0	12.5	14.0	16.0	11.5	13.5
11	15.0	10.5	12.0	15.5	11.5	13.5	15.5	12.5	14.0	16.0	11.5	13.5
12	14.0	10.5	12.0	15.5	11.5	13.5	16.0	12.5	14.0	16.0	11.5	13.5
13	15.0	10.5	12.5	15.5	11.5	13.5	14.5	12.5	13.5	16.0	11.5	13.5
14	15.5	11.5	13.0	15.0	11.5	13.0	16.0	12.5	14.0	16.0	11.5	14.0
15	14.5	11.5	12.5	14.5	11.0	12.5	17.0	12.5	14.0	16.0	11.5	13.5
16	14.0	11.0	12.5	15.0	10.5	12.5	17.5	12.5	14.5	16.0	12.0	14.0
17	15.0	11.0	12.5	14.5	10.5	12.5	17.5	13.0	15.0	14.5	10.5	12.5
18	14.5	11.0	12.5	14.5	10.0	12.0	17.5	13.0	15.0	14.0	9.5	11.5
19	14.5	11.0	12.5	14.5	10.0	12.5	17.0	12.5	15.0	13.5	10.0	11.5
20	13.5	11.0	12.0	14.0	10.0	12.0	17.0	12.5	14.5	14.0	10.0	12.0
21	14.0	11.0	12.0	14.0	10.0	12.0	17.0	12.5	14.5	14.0	10.0	12.0
22	13.5	10.0	11.5	13.5	9.0	11.5	17.0	12.5	14.5	14.0	10.0	12.0
23	14.0	10.0	12.0	13.5	9.0	11.5	16.5	13.0	14.5	14.5	10.5	12.0
24	14.0	9.5	12.0	13.5	9.5	11.5	17.0	12.5	14.5	13.5	10.0	11.5
25	14.0	9.5	12.0	14.0	9.5	11.5	17.0	12.5	14.5	13.0	9.5	11.0
26	14.0	10.5	12.0	14.0	9.5	12.0	16.5	12.5	14.0	12.5	8.5	10.5
27	14.0	10.5	12.0	14.0	10.0	12.0	15.5	12.5	14.0	12.5	8.0	10.0
28	14.0	11.0	12.5	14.5	10.0	12.0	17.0	12.5	14.5	13.0	8.0	10.0
29	15.5	11.5	13.0	14.5	10.0	12.5	16.5	13.0	14.5	13.0	8.5	10.5
30	15.5	11.5	13.5	15.0	10.0	12.5	14.5	12.5	13.5	13.0	9.0	11.0
31	---	---	---	15.0	10.0	13.0	15.5	11.5	13.0	---	---	---
MONTH	15.5	9.0	11.8	16.5	9.0	12.5	17.5	10.5	14.0	16.0	8.0	12.4

ROGUE RIVER BASIN

14354200 BEAR CREEK BELOW ASHLAND CREEK, AT ASHLAND, OR

LOCATION.--Lat 42°12'58", long 122°43'16", in SE 1/4 SE 1/4 sec.32, T.38 S., R.1 E, Jackson County, Hydrologic Unit 17100308, on left bank, 0.1 mi downstream from Ashland Creek, and at mile 21.0.

DRAINAGE AREA.--168 mi².

PERIOD OF RECORD.--July 1990 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,686.64 ft above sea level.

REMARKS.--Records fair. Flow regulated since 1924 by Emigrant Lake. Water is diverted into basin from the Klamath River basin. Many diversions for irrigation and municipal use upstream from station.

AVERAGE DISCHARGE.--9 years (water years 1991-99) 104 ft³/s, 75,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Jan. 1, 1997, gage height 11.00 ft; minimum discharge, 0.33 ft³/s Oct. 18, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,470 ft³/s Feb. 7, gage height, 4.54 ft; minimum daily discharge, 17 ft³/s Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	37	226	65	130	436	151	164	119	66	72	32
2	34	27	245	62	118	486	153	171	130	65	72	30
3	24	29	313	59	116	524	158	164	116	63	76	28
4	21	29	241	55	120	526	150	148	110	64	79	28
5	e19	37	222	54	283	454	150	141	108	63	78	30
6	e17	31	214	52	689	412	156	140	103	60	75	32
7	e18	39	223	50	862	402	165	135	101	64	71	30
8	e18	35	263	49	564	399	185	126	93	70	64	31
9	e19	32	262	48	512	374	201	119	91	75	53	32
10	20	36	307	45	392	323	245	114	93	73	67	31
11	20	32	250	44	237	307	249	127	94	72	77	29
12	20	29	230	47	212	313	268	139	96	76	46	27
13	28	29	242	48	213	377	273	147	94	85	42	29
14	27	30	232	48	255	382	209	161	94	82	41	37
15	25	30	214	69	213	322	299	151	97	67	38	35
16	24	32	207	80	182	245	328	127	103	61	36	37
17	24	48	191	147	196	228	351	120	108	59	57	37
18	23	39	174	184	338	214	363	123	101	58	56	36
19	23	33	167	225	352	194	400	122	102	57	52	35
20	22	48	161	325	403	202	422	140	100	54	54	29
21	21	561	131	360	402	202	373	151	98	51	55	28
22	21	317	106	491	297	188	358	145	93	56	51	32
23	21	749	106	420	232	181	345	133	93	57	56	31
24	23	493	109	390	263	180	336	135	94	60	67	30
25	29	641	114	352	283	179	287	160	89	55	61	29
26	24	718	114	327	248	183	263	175	85	48	56	30
27	25	678	112	276	268	170	253	171	81	49	52	32
28	25	675	116	188	421	164	229	158	78	72	51	36
29	24	593	113	167	---	164	168	150	71	69	49	37
30	23	314	91	146	---	160	163	132	71	70	75	40
31	31	---	70	144	---	154	---	128	---	72	35	---
TOTAL	721	6421	5766	5017	8801	9045	7651	4417	2906	1993	1814	960
MEAN	23.3	214	186	162	314	292	255	142	96.9	64.3	58.5	32.0
MAX	34	749	313	491	862	526	422	175	130	85	79	40
MIN	17	27	70	44	116	154	150	114	71	48	35	27
AC-FT	1430	12740	11440	9950	17460	17940	15180	8760	5760	3950	3600	1900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1999, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	16.5	47.1	165	228	159	145	137	146	78.5
MAX	29.2	214	791	1091	607	343	326	465	197
(WY)	1998	1999	1997	1997	1996	1998	1998	1998	1998
MIN	4.93	9.70	14.4	18.5	16.9	13.6	12.7	22.3	34.8
(WY)	1991	1993	1991	1992	1992	1992	1992	1994	1992

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1991 - 1999

ANNUAL TOTAL	69656	55512	104	1997
ANNUAL MEAN	191	152	226	1992
HIGHEST ANNUAL MEAN			22.0	1992
LOWEST ANNUAL MEAN			6910	Jan 1 1997
HIGHEST DAILY MEAN	1250	May 21	862	Feb 7
LOWEST DAILY MEAN	17	Oct 6	17	Oct 6
ANNUAL SEVEN-DAY MINIMUM	19	Oct 5	19	Oct 5
ANNUAL RUNOFF (AC-FT)	138200	110100	75280	1.4
10 PERCENT EXCEEDS	413	354	254	
50 PERCENT EXCEEDS	117	102	43	
90 PERCENT EXCEEDS	30	29	12	

e Estimated

14357500 BEAR CREEK AT MEDFORD, OR

LOCATION.--Lat 42°19'28", long 122°51'55", in NW 1/4 sec.30, T.37 S., R.1 W., Jackson County, Hydrologic Unit 17100308, on left bank 300 ft upstream from 10th street Bridge, in Medford, and at mile 10.1.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--March 1915 to June 1920 (no low-flow records), October 1920 to September 1981, December 1983 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1044: 1944. WSP 1448: 1916, 1917(M), 1918-20, 1922, 1924, 1927(M), 1928, 1930. WSP 1568: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,343.27 ft above sea level. Prior to Sept. 19, 1991, at site 0.2 mi downstream, at datum 1.29 ft lower, Dec. 31, 1947, to Sept. 23, 1985, at datum 2.00 ft higher. See WSP 1738 for history of changes prior to Dec. 31, 1947.

REMARKS.--Records good. Flow partly regulated since 1924 by Emigrant Lake. Water is diverted into basin from the Klamath River basin. Many diversions for irrigation and municipal use upstream from station. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--77 years (water years 1921-81, 1984-99), 115 ft³/s, 83,570 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s Jan. 1, 1997, gage height, 14.69 ft, present datum; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 2,930 ft³/s Nov. 21, gage height, 6.19 ft; minimum daily discharge, 25 ft³/s Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	77	446	128	256	604	173	235	141	39	58	79
2	103	50	456	118	244	625	174	242	155	38	57	65
3	65	53	724	114	241	679	177	249	132	46	59	54
4	e30	52	463	107	242	629	178	208	125	60	69	52
5	e25	67	409	103	376	569	173	184	123	61	74	53
6	e30	55	414	99	933	513	174	170	126	53	87	54
7	53	91	395	98	1380	490	e210	164	127	49	122	45
8	78	64	436	94	843	478	e230	156	109	45	112	43
9	65	54	402	91	841	474	250	153	104	49	99	43
10	48	57	447	90	676	413	349	151	102	61	79	47
11	46	51	400	87	484	386	343	218	93	69	152	44
12	46	48	378	88	472	382	370	230	93	68	94	44
13	62	48	399	91	449	439	405	231	101	69	79	42
14	64	47	411	96	545	439	303	264	93	61	75	47
15	55	46	358	137	422	394	393	263	78	45	73	46
16	52	47	342	161	376	309	417	212	82	43	58	39
17	48	88	321	449	455	283	444	191	94	42	44	42
18	47	62	285	616	729	272	455	176	90	61	50	45
19	46	51	272	411	618	236	461	171	102	69	42	50
20	44	58	264	595	618	253	480	197	108	52	44	62
21	42	1550	218	833	605	253	424	212	120	58	50	56
22	42	788	179	1360	493	230	435	209	96	86	54	55
23	41	1490	175	947	396	220	420	194	85	58	59	54
24	44	846	177	679	418	223	421	183	81	42	71	48
25	53	876	187	583	459	208	382	192	91	47	58	54
26	46	1130	198	539	428	220	359	221	79	43	51	65
27	48	917	200	478	511	205	360	234	73	33	54	63
28	50	845	201	358	848	192	350	207	80	53	61	59
29	44	788	194	328	---	189	254	181	61	56	58	54
30	43	604	173	282	---	194	245	159	54	55	143	51
31	61	---	137	280	---	184	---	159	---	54	98	---
TOTAL	1592	11000	10061	10440	15358	11185	9809	6216	2998	1665	2284	1555
MEAN	51.4	367	325	337	548	361	327	201	99.9	53.7	73.7	51.8
MAX	103	1550	724	1360	1380	679	480	264	155	86	152	79
MIN	25	46	137	87	241	184	173	151	54	33	42	39
AC-FT	3160	21820	19960	20710	30460	22190	19460	12330	5950	3300	4530	3080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1999, BY WATER YEAR (WY)

	MEAN	32.3	63.9	161	223	217	198	194	140	75.6	33.2	34.0	36.0
MAX	216	367	1137	1365	873	787	686	652	264	95.4	115	91.6	
(WY)	1963	1999	1965	1997	1958	1957	1974	1998	1998	1971	1976	1971	
MIN	4.74	8.23	17.3	13.2	11.5	13.7	4.88	1.46	2.12	.53	.39	.70	
(WY)	1932	1937	1937	1937	1931	1931	1931	1931	1931	1924	1924	1931	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1921 - 1999

ANNUAL TOTAL	101779	84163	115	
ANNUAL MEAN	279	231	304	
HIGHEST ANNUAL MEAN			8.42	1974
LOWEST ANNUAL MEAN				1931
HIGHEST DAILY MEAN	1790	May 20	10900	Jan 1 1997
LOWEST DAILY MEAN	25	Oct 5		Jul 30 1922
ANNUAL SEVEN-DAY MINIMUM	44	Oct 18	.20	Jul 23 1924
ANNUAL RUNOFF (AC-FT)	201900	166900	83570	
10 PERCENT EXCEEDS	634	512	269	
50 PERCENT EXCEEDS	180	132	52	
90 PERCENT EXCEEDS	52	46	12	

e Estimated

ROGUE RIVER BASIN

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR

LOCATION.--Lat 42°26'15", long 122°59'10", in SW 1/4 sec.18, T.36 S., R.2 W., Jackson County, Hydrologic Unit 17100308, on right bank at Raygold, 0.1 mi downstream from Gold Ray Dam, 1.0 mi downstream from Bear Creek, 5.6 mi northwest of Central Point, and at mile 125.8.

DRAINAGE AREA.--2,053 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1905 to current year. Prior to October 1921, published as "near Tolo."

REVISED RECORDS.--WSP 1248: 1906, 1914(M), 1915. WSP 1398: 1910(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,121.78 ft above sea level. Prior to Sept. 19, 1914, nonrecording gage and Sept. 19, 1914, to Sept. 30, 1956, water-stage recorder, at site 300 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Slight regulation by Fish Lake and Emigrant Lake. Many diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1906-77), 2,976 ft³/s, 2,156,000 acre-ft/yr.
22 years (water years 1978-99), 2,978 ft³/s, 2,157,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131,000 ft³/s Dec. 23, 1964, gage height, 23.43 ft, from rating curve extended above 63,000 ft³/s on basis of slope-area measurement of 113,000 ft³/s; minimum discharge recorded, 418 ft³/s Sept. 19, 1968, as result of regulation, but may have been lower during periods of no record during water years 1931-34.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35,100 ft³/s Nov. 21, gage height, 11.83 ft; minimum discharge, 1,300 ft³/s Nov. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1470	1840	5900	4800	3520	11200	3700	3720	5540	4170	2830	2440
2	1540	1750	8080	4330	2890	9220	2670	3930	5280	4090	2750	2420
3	1530	1740	12500	3700	3100	9510	2610	4520	4710	3950	2800	2340
4	1620	1710	8200	3130	2990	8440	2580	4930	4220	3830	2840	2300
5	1850	1770	6820	2830	3020	7580	2580	4160	3990	3670	2810	2360
6	1870	1740	6210	2580	5000	6500	2650	3840	3960	3470	2910	2340
7	1850	1990	5190	2560	12700	5920	2570	3820	3910	3440	3060	2210
8	1950	1960	5660	2430	8220	5550	3190	3710	3860	3490	2930	2070
9	1940	1770	4810	2220	7130	5560	3460	3630	3640	3570	2910	1930
10	1920	1730	4220	2170	5700	4920	3680	3550	3550	3580	3090	1870
11	1860	1740	4030	2130	4710	4660	3670	3610	3350	3790	3840	1700
12	1700	1650	4230	2130	4380	4510	3720	3690	3250	3950	3400	1630
13	1640	1500	4630	2180	4340	4640	3780	3650	3230	3860	3240	1530
14	1690	1530	4780	2200	5500	4620	3470	3650	3200	3870	3040	1390
15	1650	1580	4300	3880	4330	4570	3430	3710	3320	3920	2800	1410
16	1640	1670	3980	6320	4580	4420	3560	3550	3400	3940	2760	1420
17	1600	1940	3810	7020	6890	4340	4100	3400	3390	3920	2550	1610
18	1590	2160	3690	12500	9100	4290	4850	3550	3370	3840	2440	1650
19	1570	2080	3560	8600	8590	4310	5340	3940	3320	3750	2310	1470
20	1570	2070	3470	9820	5980	4570	5850	4500	3360	3640	2200	1490
21	1570	17800	3170	14700	5450	4680	4850	4490	3500	3610	2270	1500
22	1580	19100	3150	15900	4730	4620	4510	4570	4250	3520	2260	1410
23	1580	17800	3130	17600	4900	4700	4320	4830	4560	3370	2260	1410
24	1610	14600	3100	10500	5150	4500	4280	5790	4680	3290	2250	1440
25	1630	8860	3130	7100	5530	4660	4290	6430	4710	3290	2220	1410
26	1610	9280	3270	6280	5040	4670	4750	6210	4680	3230	2280	1420
27	1580	8250	3470	5640	6560	4520	4910	5830	4610	3040	2370	1410
28	1630	5650	4240	4650	17100	4100	4570	5960	4500	3060	2390	1390
29	1640	5160	6010	4250	---	4020	4240	6020	3870	3070	2370	1430
30	1660	5950	5100	4020	---	4030	3870	6070	4150	3120	2550	1400
31	1710	---	4900	3910	---	3970	---	5980	---	2930	2530	---
TOTAL	51850	148370	150740	182080	167130	167800	116050	139240	119360	111270	83260	51800
MEAN	1673	4946	4863	5874	5969	5413	3868	4492	3979	3589	2686	1727
MAX	1950	19100	12500	17600	17100	11200	5850	6430	5540	4170	3840	2440
MIN	1470	1500	3100	2130	2890	3970	2570	3400	3200	2930	2200	1390
AC-FT	102800	294300	299000	361200	331500	332800	230200	276200	236800	220700	165100	102700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1999, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	1454	2464	4338	4004	3680	3528	3543	3523	2785	2312	2252	1875										
MAX	2110	6184	14680	13750	8461	6151	5596	5605	4426	3589	3115	2508										
(WY)	1984	1985	1997	1997	1996	1989	1983	1998	1993	1999	1984	1983										
MIN	932	1089	1512	1446	1407	1111	1125	1605	1649	1117	1744	1434										
(WY)	1995	1988	1990	1992	1992	1992	1992	1992	1992	1992	1994	1980										

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1978 - 1999

	1998	1999	1978-1999
ANNUAL TOTAL	1443120	1488950	
ANNUAL MEAN	3954	4079	2978
HIGHEST ANNUAL MEAN			5098
LOWEST ANNUAL MEAN			1491
HIGHEST DAILY MEAN	20900	19100	53900
LOWEST DAILY MEAN	1470	1390	880
ANNUAL SEVEN-DAY MINIMUM	1500	1410	897
ANNUAL RUNOFF (AC-FT)	2862000	2953000	2157000
10 PERCENT EXCEEDS	6930	6300	5260
50 PERCENT EXCEEDS	3270	3640	2250
90 PERCENT EXCEEDS	1720	1630	1310

WATER-QUALITY RECORDS

WATER TEMPERATURE: Maximum recorded, 18.0°C Aug. 3, 4, 16-19, 21-24, but may have been higher during period of missing record; minimum recorded, 1.0°C Dec. 26, but may have been lower during period of missing record.

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	13.5	13.0	13.0		9.5	9.0	9.0		8.0	8.0	8.0		---	---	---
2	13.0	13.0	13.0		10.0	9.5	9.5		8.5	8.0	8.0		---	---	---
3	13.0	12.5	12.5		---	---	---		8.5	7.0	7.5		---	---	---
4	12.5	12.0	12.0		---	---	---		7.0	6.5	6.5		---	---	---
5	12.5	12.0	12.0		9.5	8.5	9.0		6.5	3.0	4.5		---	---	---
6	12.0	12.0	12.0		8.5	7.5	8.0		---	---	---		---	---	---
7	12.0	12.0	12.0		8.5	7.5	8.0		---	---	---		---	---	---
8	12.0	12.0	12.0		8.5	7.5	8.0		---	---	---		---	---	---
9	12.0	11.0	11.5		8.5	7.5	8.0		---	---	---		---	---	---
10	11.0	11.0	11.0		8.0	7.5	7.5		---	---	---		---	---	---
11	11.0	11.0	11.0		8.0	7.5	7.5		---	---	---		---	---	---
12	11.0	10.5	10.5		7.5	7.0	7.5		---	---	---		9.5	4.5	6.0
13	11.0	10.5	11.0		8.0	7.0	7.5		---	---	---		9.0	3.0	5.5
14	11.0	11.0	11.0		8.0	7.5	7.5		---	---	---		7.0	3.0	5.5
15	11.0	10.5	10.5		9.0	8.0	8.5		---	---	---		8.5	5.5	7.0
16	10.5	10.0	10.0		9.0	8.5	8.5		---	---	---		8.0	5.0	6.0
17	10.5	10.0	10.0		8.5	8.5	8.5		---	---	---		6.5	5.0	6.0
18	10.0	10.0	10.0		8.5	7.5	8.0		---	---	---		6.5	6.0	6.0
19	10.5	10.0	10.0		8.0	7.0	7.5		---	---	---		6.5	6.0	6.0
20	10.0	10.0	10.0		8.0	7.0	7.5		---	---	---		6.5	5.5	6.0
21	10.0	10.0	10.0		9.0	8.0	8.5		---	---	---		6.0	5.5	6.0
22	10.0	10.0	10.0		8.5	8.0	8.5		---	---	---		6.0	5.5	5.5
23	10.0	10.0	10.0		9.0	8.5	8.5		---	---	---		6.0	5.5	6.0
24	10.5	10.0	10.0		8.5	8.0	8.0		---	---	---		6.0	5.5	6.0
25	10.5	10.5	10.5		9.0	8.0	8.5		---	---	---		6.0	5.0	5.5
26	10.5	10.5	10.5		---	---	---		5.0	1.0	3.0		5.0	4.5	5.0
27	10.5	10.5	10.5		---	---	---		9.0	3.0	4.5		5.5	4.0	5.0
28	10.5	10.5	10.5		---	---	---		9.0	5.5	6.5		5.5	4.5	5.0
29	10.5	10.0	10.5		8.0	8.0	8.0		7.5	5.5	6.0		5.5	4.5	5.0
30	10.0	9.5	9.5		8.0	8.0	8.0		7.0	3.5	5.5		5.5	4.0	5.0
31	9.5	9.0	9.5		---	---	---		8.5	2.0	5.5		6.0	4.5	5.5
MONTH	13.5	9.0	10.9		---	---	---		---	---	---		---	---	---

ROGUE RIVER BASIN

141359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.5	4.0	4.5	7.5	6.5	7.0	10.0	5.5	7.5	11.5	9.5	11.0
2	5.0	4.5	4.5	7.0	5.5	6.5	11.0	5.5	8.0	10.5	8.5	9.0
3	6.0	5.0	5.5	7.0	6.0	6.5	10.5	7.0	8.5	10.0	8.0	9.0
4	6.0	5.0	5.5	6.5	5.5	6.0	9.5	6.5	8.0	10.0	7.5	8.5
5	6.0	4.5	5.0	6.5	5.0	5.5	10.5	6.5	8.0	11.5	7.5	9.5
6	5.5	4.5	5.0	6.0	5.0	5.5	13.0	6.5	9.0	11.5	9.5	10.5
7	6.0	5.5	5.5	6.5	5.0	6.0	10.0	6.5	8.5	11.5	8.0	10.0
8	5.5	4.5	5.0	6.5	6.0	6.5	9.0	6.5	7.5	11.5	9.0	10.0
9	5.0	4.0	4.5	6.5	6.0	6.5	8.0	5.5	6.5	12.5	9.0	10.5
10	5.5	3.5	4.5	6.5	6.5	6.5	7.5	6.5	7.0	11.5	9.0	10.5
11	6.0	5.0	5.0	6.5	6.0	6.5	10.5	6.5	8.5	11.5	10.0	10.5
12	6.5	4.5	5.0	6.5	6.0	6.5	10.5	7.5	9.5	13.0	10.5	11.5
13	6.0	5.5	5.5	7.0	6.5	6.5	11.5	8.5	10.0	12.5	10.5	11.5
14	6.0	5.5	6.0	7.0	6.5	7.0	11.5	8.0	10.0	11.5	9.5	10.5
15	6.0	5.5	6.0	8.0	7.0	7.0	12.0	8.5	10.5	12.5	9.5	11.0
16	6.0	5.5	6.0	8.5	7.0	8.0	12.0	9.0	10.5	13.5	10.0	11.5
17	6.5	6.0	6.0	8.5	7.0	7.5	12.0	9.5	11.0	14.5	11.5	13.0
18	7.0	6.5	6.5	8.0	7.0	7.5	11.5	9.0	10.0	14.0	11.0	13.0
19	7.0	6.0	6.5	9.0	7.5	8.0	10.5	9.0	9.5	14.0	11.0	12.5
20	6.5	5.0	5.5	9.0	8.0	8.5	10.5	7.5	9.0	13.0	10.5	11.5
21	6.5	5.0	6.0	8.5	8.0	8.0	10.0	8.0	9.0	13.5	9.5	11.5
22	6.5	5.5	6.0	8.5	8.0	8.0	11.0	7.5	9.0	14.5	10.5	12.0
23	7.0	6.5	6.5	8.0	7.5	8.0	11.5	7.5	9.5	14.5	10.5	12.5
24	7.0	7.0	7.0	8.0	8.0	8.0	12.0	8.5	10.5	13.5	10.5	12.0
25	7.0	6.5	7.0	8.0	8.0	8.0	11.5	9.0	10.5	13.5	10.0	11.5
26	7.0	6.0	6.5	8.0	8.0	8.0	11.0	9.0	10.0	13.5	9.5	11.5
27	6.5	6.0	6.0	8.0	7.5	8.0	9.5	7.5	8.5	14.5	10.5	12.5
28	8.0	6.5	7.5	8.5	6.5	7.5	9.5	7.0	8.0	14.0	11.0	12.0
29	---	---	---	9.0	7.0	7.5	11.0	7.0	9.0	13.5	10.5	12.0
30	---	---	---	7.0	6.0	6.5	12.0	8.0	10.0	14.0	10.0	11.5
31	---	---	---	8.5	5.5	6.5	---	---	---	14.5	10.5	12.0
MONTH	8.0	3.5	5.7	9.0	5.0	7.1	13.0	5.5	9.0	14.5	7.5	11.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.0	11.0	12.0	16.5	13.5	15.0	17.0	12.5	15.0	16.0	12.0	14.0
2	12.0	10.5	11.0	15.5	12.5	14.0	17.0	13.0	15.0	16.0	12.5	14.5
3	11.5	10.0	10.5	15.0	12.5	13.5	18.0	14.0	16.0	15.5	12.0	14.0
4	13.0	10.0	11.5	16.0	12.0	14.0	18.0	13.5	16.0	16.0	12.5	14.5
5	14.5	11.0	12.5	16.5	12.5	14.5	17.0	14.0	15.5	16.0	12.5	14.5
6	13.5	11.5	12.5	17.0	13.5	15.0	15.5	13.0	14.0	16.0	13.0	15.0
7	14.0	10.0	12.0	16.0	13.5	14.5	14.5	13.0	14.0	15.5	13.0	14.5
8	14.0	10.0	12.0	16.0	13.0	14.5	16.5	13.0	14.5	15.5	13.5	14.5
9	15.0	10.5	12.5	16.5	13.0	14.5	17.5	13.5	15.5	15.5	13.5	15.0
10	15.5	11.0	13.5	16.5	14.0	15.0	17.0	14.0	16.0	15.5	13.5	15.0
11	16.0	11.5	14.0	17.0	14.0	15.5	17.5	14.5	16.0	15.5	14.0	15.0
12	15.5	12.0	14.0	17.0	14.0	15.0	17.5	14.0	16.0	16.0	14.0	15.0
13	17.0	12.0	14.5	17.0	13.5	15.0	16.5	14.0	15.0	16.0	14.5	15.0
14	17.5	13.0	15.0	16.5	13.0	15.0	16.5	13.5	15.0	16.0	14.5	15.5
15	16.5	13.0	15.0	16.0	12.0	14.0	17.5	13.5	15.0	16.0	15.0	15.5
16	16.0	13.5	14.5	16.0	12.0	14.0	18.0	13.5	16.0	16.0	15.0	15.5
17	16.5	12.5	14.5	16.0	12.5	14.0	18.0	14.5	16.5	15.5	14.5	15.0
18	16.5	12.5	14.5	16.0	12.0	13.5	18.0	15.0	17.0	15.0	13.5	14.0
19	16.0	12.5	14.5	16.0	12.0	14.0	18.0	14.5	16.5	14.5	13.5	14.0
20	15.5	12.0	13.5	16.0	12.0	14.0	---	---	---	14.5	13.5	14.0
21	15.5	12.5	14.0	16.0	12.0	13.5	18.0	14.5	16.5	14.5	13.5	14.0
22	15.5	11.5	13.5	15.5	11.0	13.5	18.0	15.0	16.5	15.0	14.0	14.5
23	16.0	11.5	13.5	15.0	11.5	13.5	18.0	15.5	16.5	15.0	14.0	14.5
24	15.5	12.5	14.0	15.5	11.5	13.5	18.0	15.0	16.5	15.0	14.0	14.5
25	15.0	11.0	13.0	16.0	11.5	13.5	17.5	14.0	16.0	14.5	14.0	14.0
26	15.0	12.0	13.5	16.0	11.5	13.5	17.5	14.0	16.0	14.0	12.5	13.0
27	15.5	12.0	13.5	15.5	12.0	13.5	17.0	14.5	15.5	13.0	12.0	12.0
28	16.0	12.0	14.0	16.0	12.0	14.0	17.5	14.0	16.0	12.0	11.5	12.0
29	17.0	12.5	15.0	16.5	12.0	14.0	17.5	14.5	16.0	12.5	11.5	12.0
30	17.5	13.0	15.0	16.0	12.5	14.0	17.0	14.5	15.0	13.0	12.0	12.5
31	---	---	---	17.0	12.5	14.5	15.5	12.5	14.0	---	---	---
MONTH	17.5	10.0	13.4	17.0	11.0	14.2	---	---	---	16.0	11.5	14.2

14361500 ROGUE RIVER AT GRANTS PASS, OR

LOCATION.--Lat 42°25'50", long 123°19'00", in NW 1/4 sec.20, T.36 S., R.5 W., Josephine County, Hydrologic Unit 17100308, on right bank at city of Grants Pass filter plant, 0.6 mi upstream from bridge on State Highway 99 at Grants Pass, and at mile 101.8. Prior to Sept. 3, 1983, at site 300 ft upstream.

DRAINAGE AREA.--2,459 mi².

PERIOD OF RECORD.--October 1938 to current year. Prior to January 1939 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 884.28 ft above sea level. Prior to Aug. 8, 1957, at site 300 ft upstream at datum 4.00 ft higher and Aug. 8, 1957, to Sept. 2, 1983, at site 300 ft upstream at datum 1.00 ft higher.

REMARKS.--Records good. Flow regulated since February 1977 by Lost Creek Lake (station 14355040), slight regulation by Fish Lake and Emigrant Lake. Large fluctuations at times caused by Savage Rapids Dam 5.5 mi upstream from station. Many diversions from Rogue River and tributaries upstream from station, the largest of which is at Savage Rapids Dam of Grants Pass Irrigation District, 5.5 mi upstream from station. Continuous water-quality records for the period August 1973 to September 1987 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1939-77), 3,543 ft³/s, 2,566,000 acre-ft/yr.
22 years (water years 1978-99), 3,372 ft³/s, 2,443,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 152,000 ft³/s Dec. 23, 1964, gage height, 35.15 ft, present datum, from rating curve extended above 93,000 ft³/s; minimum discharge, 195 ft³/s Jan. 30, 1961; minimum daily, 606 ft³/s Sept. 10, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1861 reached a stage of about 43 ft, present datum (information furnished by Corps of Engineers). Flood in February 1890 reached a stage of about 36 ft, present datum, and that of Feb. 21, 1927, about 32 ft, present datum, according to local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 43,400 ft³/s Nov. 21, gage height, 16.40 ft; minimum discharge, 868 ft³/s Sept. 25, result of regulation at Savage Rapids Dam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	1740	8470	5670	4280	18000	4330	3950	6000	4060	2800	2390
2	1350	1710	10800	5090	3490	13900	3080	4150	5600	3940	2520	2360
3	1350	1650	18200	4350	3470	14200	2920	4660	5060	3880	2550	2300
4	1410	1640	11300	3700	3460	12400	2900	5530	4310	3730	2540	2270
5	1380	1700	8730	3270	3400	10900	2870	4630	4000	3560	2590	2240
6	1370	1810	7790	2960	6610	9180	2980	4100	3940	3290	2620	2220
7	1350	2040	6610	2870	20300	8050	2910	4040	3920	3280	2990	2060
8	1420	2200	7340	2780	13700	7500	3420	3930	3850	3280	2750	1930
9	1560	1880	6430	2500	10600	7400	3910	3820	3600	3390	2750	1690
10	1510	1840	5460	2410	8140	6570	4090	3740	3270	3370	2820	1640
11	1490	1850	5020	2340	6540	6040	4150	3760	3230	3520	3780	1520
12	1480	1780	5170	2330	5700	5710	4160	3900	3170	3810	3330	1380
13	1520	1590	5760	2370	5620	5800	4290	3830	3160	3800	3140	1410
14	1540	1570	5890	2380	6890	5730	3950	e3810	3120	3810	3030	1250
15	1550	1590	5260	3850	6110	5640	3880	3910	3180	3820	2730	1180
16	1550	1690	4820	7330	6820	5390	3920	3730	3290	3860	2640	1170
17	1520	1950	4580	8150	e11200	5230	4400	3560	3300	3850	2420	1270
18	1470	2190	4360	17700	e13000	5120	5380	3660	3290	3780	2210	1380
19	1470	2070	4180	12000	e14500	5100	5720	3990	3210	3680	2230	1400
20	1460	e2070	4040	14100	9980	5330	6800	4560	3240	3560	2030	1420
21	1450	17600	3650	21800	8530	5520	5570	4650	3280	3450	2120	1370
22	1460	26500	3590	21400	7340	5360	5040	4860	4080	3420	2130	1290
23	1450	21400	3540	26800	7400	5510	4780	5330	4570	3280	2140	1230
24	1490	20300	3520	15500	7810	5120	4670	6120	4680	3170	2130	1220
25	1510	11900	3540	10100	8180	5350	4680	7150	4690	3090	2140	1220
26	1510	e12000	3630	8340	7450	5330	5050	7030	4680	3060	2140	1310
27	1480	e11100	3940	7190	9520	5170	5430	6550	4620	3060	2150	1360
28	1520	7300	4400	5810	27300	4700	5030	6480	4500	3070	2160	1270
29	1530	6560	7320	5320	---	4510	4690	6630	3760	3070	2170	1300
30	1560	8260	6100	4890	---	4530	4260	6560	3930	3110	2350	1330
31	1600	---	5690	4650	---	4440	---	6440	---	2990	2460	---
TOTAL	45610	179480	189130	239950	247340	218730	129260	149060	118530	108040	78560	47380
MEAN	1471	5983	6101	7740	8834	7056	4309	4808	3951	3485	2534	1579
MAX	1600	26500	18200	26800	27300	18000	6800	7150	6000	4060	3780	2390
MIN	1300	1570	3520	2330	3400	4440	2870	3560	3120	2990	2030	1170
AC-FT	90470	356000	375100	475900	490600	433900	256400	295700	235100	214300	155800	93980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1999, BY WATER YEAR (WY)

	MEAN	1511	2824	5176	4999	4786	4278	4066	3790	2848	2242	2187	1826
MAX	2282	7669	17620	16600	10960	8119	6843	6428	4572	3485	3080	2642	
(WY)	1984	1985	1997	1997	1983	1983	1998	1993	1999	1998	1984	1983	
MIN	1008	1160	1557	1575	1641	1099	1211	1857	1549	1059	1620	1333	
(WY)	1995	1988	1990	1992	1992	1992	1994	1992	1992	1992	1994	1980	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1978 - 1999
ANNUAL TOTAL	1730960	1751070	
ANNUAL MEAN	4742	4797	3372
HIGHEST ANNUAL MEAN			5840
LOWEST ANNUAL MEAN			1538
HIGHEST DAILY MEAN	29500	27300	69000
LOWEST DAILY MEAN	1280	1170	744
ANNUAL SEVEN-DAY MINIMUM	1320	1270	799
ANNUAL RUNOFF (AC-FT)	3433000	3473000	2443000
10 PERCENT EXCEEDS	9150	8390	6320
50 PERCENT EXCEEDS	3770	3810	2320
90 PERCENT EXCEEDS	1540	1490	1320

e Estimated

ROGUE RIVER BASIN

14361900 APPLEGATE LAKE NEAR COPPER, OR

LOCATION.--Lat 42°03'25", long 123°06'30", in SE 1/4 sec.25, T.40 S., R.4 W., Jackson County, Hydrologic Unit 17100309, in outlet structure of Applegate Dam on Applegate River, 2.5 mi northeast of former town of Copper, 13 mi south of Ruch, and at mile 46.3.

DRAINAGE AREA.--223 mi².

PERIOD OF RECORD.--December 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in October 1980. Storage began Dec. 2, 1980. Total capacity, 82,200 acre-ft between elevations 1,763.0 ft and 1,987.0 ft, maximum pool elevation. Elevation of gated spillway crest, 1,943.7 ft. Usable contents, 75,200 acre-ft between elevations 1,854.0 ft and 1,987.0 ft. Water is used for flood control, recreation, pollution abatement, irrigation, and other purposes. U.S. Army Corps of Engineers satellite telemeter at station.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 82,610 acre-ft May 11, 1997, elevation, 1,987.41 ft; minimum contents since first filling, 7,230 acre-ft Jan. 11, 1991, elevation, 1,855.1 ft, from graph of gage readings furnished by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 81,940 acre-ft June 16, elevation, 1,986.73 ft; minimum contents, 15,480 acre-ft Nov. 20, elevation, 1,884.75 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)

1,840.0	4,400	1,900.0	21,380	1,960.0	58,060
1,860.0	8,330	1,920.0	30,960	1,980.0	75,470
1,880.0	13,890	1,940.0	43,090	1,990.0	85,190

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1927.51	1895.82	1889.28	1889.50	1889.98	1933.00	1945.91	1968.68	1982.78	1985.57	1971.42	1946.68
2	1926.54	1895.12	1893.04	1889.25	1891.74	1931.21	1946.64	1969.64	1982.64	1985.46	1970.74	1945.71
3	1925.56	1894.46	1893.79	1889.14	1893.36	1930.95	1947.36	1970.15	1982.67	1985.30	1970.06	1944.74
4	1924.57	1893.78	1891.26	1889.15	1894.84	1931.55	1948.05	1970.44	1982.80	1985.11	1969.37	1943.75
5	1923.57	1893.19	1889.88	1889.13	1896.17	1932.03	1948.90	1971.08	1983.10	1984.88	1968.67	1942.74
6	1922.56	1892.55	1889.32	1889.16	1899.70	1931.99	1949.72	1972.10	1983.40	1984.62	1968.04	1941.72
7	1921.52	1892.06	1889.37	1889.16	1903.72	1931.89	1950.52	1973.10	1983.62	1984.35	1967.42	1940.68
8	1920.55	1891.50	1889.33	1889.08	1904.44	1931.93	1951.31	1973.48	1983.81	1984.03	1966.76	1939.59
9	1919.44	1890.84	1889.40	1889.09	1905.28	1931.64	1952.02	1973.83	1984.12	1983.68	1966.08	1938.53
10	1918.02	1890.25	1889.50	1889.08	1906.63	1931.42	1952.75	1974.34	1984.55	1983.32	1965.57	1937.43
11	1916.45	1889.61	1889.55	1889.10	1908.18	1931.04	1953.46	1974.98	1985.07	1982.85	1964.86	1936.34
12	1914.85	1888.91	1890.05	1889.16	1909.59	1930.60	1954.21	1975.92	1985.71	1982.43	1964.08	1935.22
13	1913.31	1888.14	1890.22	1888.94	1911.18	1930.50	1955.10	1976.62	1986.25	1982.04	1963.33	1934.10
14	1911.71	1887.39	1889.87	1889.05	1912.64	1930.45	1956.10	1977.01	1986.60	1981.61	1962.54	1932.96
15	1910.09	1886.81	1889.83	1888.93	1914.11	1931.13	1957.30	1977.28	1986.72	1981.16	1961.74	1931.80
16	1908.52	1886.47	1889.85	1888.76	1915.99	1931.90	1958.53	1977.73	1986.70	1980.68	1960.92	1930.64
17	1907.32	1886.08	1890.02	1892.37	1917.88	1932.72	1959.50	1978.59	1986.64	1980.20	1960.10	1929.45
18	1906.40	1885.59	1890.12	1893.71	1919.41	1933.70	1960.36	1979.55	1986.58	1979.69	1959.26	1928.26
19	1905.48	1885.09	1890.06	1891.88	1920.64	1934.75	1960.20	1979.96	1986.50	1979.17	1958.41	1927.06
20	1904.52	1886.00	1889.79	1890.32	1921.77	1935.97	1960.54	1979.88	1986.41	1978.62	1957.55	1925.85
21	1903.56	1899.49	1889.49	1889.32	1922.97	1936.84	1961.70	1979.74	1986.36	1978.06	1956.69	1924.61
22	1902.70	1890.79	1889.43	1891.62	1924.41	1937.46	1962.52	1979.68	1986.32	1977.50	1955.84	1923.44
23	1901.92	1893.08	1889.37	1890.23	1925.71	1938.20	1963.28	1979.86	1986.37	1976.94	1954.96	1922.35
24	1901.38	1891.04	1889.37	1889.31	1926.07	1939.24	1964.39	1980.34	1986.40	1976.39	1954.10	1921.23
25	1900.73	1888.51	1889.38	1889.12	1925.75	1940.32	1965.24	1981.15	1986.35	1975.83	1953.22	1920.10
26	1900.02	1889.08	1889.37	1888.99	1925.70	1941.28	1965.59	1981.58	1986.30	1975.26	1952.30	1918.96
27	1899.28	1887.11	1889.45	1888.99	1927.54	1942.09	1965.84	1982.18	1986.20	1974.66	1951.39	1917.79
28	1898.58	1887.02	1889.41	1888.94	1933.71	1942.86	1966.30	1982.65	1986.06	1974.04	1950.44	1916.61
29	1897.84	1887.37	1889.40	1888.89	---	1943.69	1966.74	1982.78	1985.89	1973.41	1949.49	1915.41
30	1897.10	1889.41	1889.24	1888.80	---	1944.50	1967.44	1982.58	1985.71	1972.77	1948.58	1914.18
31	1896.44	---	1889.40	1888.74	---	1945.21	---	1982.54	---	1972.10	1947.64	---
MAX	1927.51	1899.49	1893.79	1893.71	1933.71	1945.21	1967.44	1982.78	1986.72	1985.57	1971.42	1946.68
MIN	1896.44	1885.09	1889.24	1888.74	1889.98	1930.45	1945.91	1968.68	1982.64	1972.10	1947.64	1914.18
(†)	19890	17150	17150	16910	38950	46730	64220	77870	80940	68280	48490	27940
(‡)	-15860	-2740	0	-240	+22040	+7780	+17490	+13650	+3070	-12660	-19790	-20550

CAL YR 1998 MAX 1987.08 MIN 1885.09 AC-FT† +100

WTR YR 1999 MAX 1986.72 MIN 1885.09 AC-FT† -7810

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

‡ Change in contents, in acre-feet.

ROGUE RIVER BASIN

411

14362000 APPLEGATE RIVER NEAR COPPER, OR

LOCATION.--Lat 42°03'50", long 123°06'37", in SW 1/4 NW 1/4 sec.30, T.40 S., R.3 W., Jackson County, Hydrologic Unit 17100309, U.S. Corps of Engineers land, on left bank 0.1 mi downstream from Brushy Gulch, 0.6 mi downstream from Applegate Dam, 3.1 mi northeast of former town of Copper, and at mile 45.7.

DRAINAGE AREA.--225 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year. Prior to January 1939 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WDR OR-78-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,747.51 ft above sea level. Prior to Oct. 1, 1977, at site 0.6 mi upstream at datum 12.15 ft higher.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Some storage during winter in Squaw Lakes Reservoir, capacity, 1,100 acre-ft on Squaw Creek upstream from station. Diversions upstream from station from Carberry Creek for irrigation in Thompson Creek basin. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--43 years (water years 1939-81), 438 ft³/s, 317,300 acre-ft/yr.
18 years (water years 1982-99), 455 ft³/s, 329,600 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s Jan. 15, 1974, gage height, 25.38 ft, site and datum then in use, from high-water mark in well, from rating curve extended above 12,000 ft³/s on basis of four slope-area measurements of peak flows made in 1950, 1955, 1964, and 1974; minimum discharge, 1.5 ft³/s Dec. 20, 1980, result of regulation at Applegate dam, 0.6 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,930 ft³/s Nov. 21, gage height, 6.77 ft; minimum discharge, 159 ft³/s Jan. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339	216	1500	407	335	3650	359	471	1310	407	376	397
2	338	214	1900	440	195	3210	319	699	1300	375	376	395
3	335	212	2180	393	190	2390	303	791	1000	375	374	392
4	335	212	2000	352	190	1610	276	761	876	374	374	391
5	333	211	1350	344	191	1370	220	533	876	374	373	391
6	333	211	966	322	215	1360	202	476	820	371	373	393
7	334	210	742	322	1130	1220	203	580	731	371	374	393
8	338	210	677	322	1290	1120	203	741	683	379	373	410
9	359	209	578	291	911	1120	204	670	572	380	373	394
10	451	209	536	290	555	1010	204	554	497	380	372	400
11	498	208	537	277	381	993	205	528	475	422	e390	397
12	497	209	545	268	339	973	206	538	477	392	404	396
13	496	212	742	317	255	862	207	614	591	372	403	394
14	493	211	762	273	253	837	207	649	749	373	402	396
15	491	210	622	656	233	570	208	631	894	374	400	395
16	461	210	575	840	290	525	374	505	916	375	400	397
17	351	210	556	839	756	486	826	431	896	374	399	396
18	275	203	559	1940	1380	426	1120	698	820	373	398	395
19	274	187	560	1930	1290	427	1560	1080	768	378	397	393
20	274	224	558	1910	1000	429	1220	1420	726	380	395	392
21	275	2150	511	1660	807	564	730	1430	669	378	395	394
22	250	3670	448	1580	612	629	749	1450	633	376	394	369
23	228	2410	424	2660	819	555	692	1680	568	371	394	343
24	228	2070	394	1730	1350	534	592	1890	527	362	393	345
25	227	1760	380	1230	1740	509	878	1740	525	362	391	344
26	227	2200	381	1040	1320	512	1200	1740	473	361	396	343
27	223	1850	363	871	958	500	1080	1700	466	368	399	342
28	219	911	436	799	3380	469	802	1710	465	368	398	342
29	219	753	438	734	---	428	700	1710	465	367	396	342
30	218	1050	433	687	---	411	556	1680	463	369	395	345
31	217	---	428	637	---	395	---	1460	---	373	393	---
TOTAL	10136	23022	23081	26361	22365	30094	16605	31560	21231	11654	12070	11416
MEAN	327	767	745	850	799	971	554	1018	708	376	389	381
MAX	498	3670	2180	2660	3380	3650	1560	1890	1310	422	404	410
MIN	217	187	363	268	190	395	202	431	463	361	372	342
AC-FT	20100	45660	45780	52290	44360	59690	32940	62600	42110	23120	23940	22640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1999, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	346	413	585	683	594	572	437	652	425	242	229	284						
MAX	506	1033	2374	3542	1685	1481	909	1416	1026	376	389	435						
(WY)	1984	1985	1982	1997	1983	1998	1982	1983	1983	1999	1999	1983						
MIN	204	187	121	115	123	117	118	165	140	109	108	110						
(WY)	1982	1988	1995	1991	1991	1994	1994	1994	1990	1992	1992	1992						

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1982 - 1999
ANNUAL TOTAL	266599	239595	
ANNUAL MEAN	730	656	455
HIGHEST ANNUAL MEAN			829
LOWEST ANNUAL MEAN			157
HIGHEST DAILY MEAN	5660	3670	15500
LOWEST DAILY MEAN	149	187	85
ANNUAL SEVEN-DAY MINIMUM	176	204	91
ANNUAL RUNOFF (AC-FT)	528800	475200	329600
10 PERCENT EXCEEDS	1390	1420	929
50 PERCENT EXCEEDS	467	422	270
90 PERCENT EXCEEDS	227	219	126

e Estimated

ROGUE RIVER BASIN

14362000 APPLEGATE RIVER NEAR COPPER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1980 to September 1987.

pH: September 1980 to September 1987.

WATER TEMPERATURE: January 1977 to current year.

DISSOLVED OXYGEN: September 1980 to September 1987.

INSTRUMENTATION.--Water-quality monitor since September 1980.

REMARKS.--Temperatures are controlled by releases from Applegate Lake.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 188 microsiemens Sept. 13, 1980; minimum, 61 microsiemens Dec. 3, 1980, Dec. 20, 1981, June 19, 20, 1983.

pH: Maximum, 9.0 units Sept. 4, 1980; minimum recorded, 7.1 units Oct. 8-10, 13, 16, 17, 1986.

WATER TEMPERATURE: Maximum, 26.5°C Aug. 7, 1978; minimum, 0.0°C on many days during winter periods prior to filling of Applegate Lake.

DISSOLVED OXYGEN: Maximum, 15.2 mg/L Feb. 17, 18, 1986; minimum, 4.9 mg/L Sept. 28-30, 1981.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 17.0°C July 27; minimum, 4.0°C Dec. 25 to Jan. 18.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	14.0	13.0	13.5	12.0	11.5	11.5	7.0	6.5	6.5	4.0	4.0	4.0
2	14.0	13.0	13.5	11.5	11.5	11.5	7.0	7.0	7.0	4.0	4.0	4.0
3	13.5	13.0	13.0	12.0	11.5	11.5	7.0	7.0	7.0	4.0	4.0	4.0
4	13.5	12.5	13.0	11.5	11.5	11.5	7.0	6.5	6.5	4.0	4.0	4.0
5	13.5	13.0	13.0	11.5	11.5	11.5	6.5	6.0	6.5	4.0	4.0	4.0
6	13.5	13.0	13.0	11.5	11.5	11.5	6.0	5.5	6.0	4.0	4.0	4.0
7	13.5	12.5	13.0	11.5	11.0	11.5	5.5	5.0	5.5	4.0	4.0	4.0
8	13.0	12.5	12.5	11.0	10.5	11.0	5.5	5.0	5.0	4.0	4.0	4.0
9	13.0	12.0	12.5	10.5	10.5	10.5	5.0	5.0	5.0	4.0	4.0	4.0
10	12.5	11.0	12.0	10.5	10.5	10.5	5.0	5.0	5.0	4.0	4.0	4.0
11	11.0	9.0	10.0	10.5	10.0	10.5	5.0	4.5	5.0	4.0	4.0	4.0
12	9.0	8.5	8.5	10.5	10.0	10.0	5.0	5.0	5.0	4.0	4.0	4.0
13	9.0	8.5	8.5	10.5	10.0	10.0	5.5	5.0	5.0	4.0	4.0	4.0
14	8.5	8.5	8.5	10.5	10.0	10.0	5.5	5.0	5.5	4.0	4.0	4.0
15	9.0	8.5	8.5	10.0	10.0	10.0	5.5	5.5	5.5	4.0	4.0	4.0
16	9.0	8.0	8.5	10.0	10.0	10.0	5.5	5.5	5.5	4.0	4.0	4.0
17	8.5	8.0	8.0	10.0	9.5	10.0	5.5	5.0	5.5	4.0	4.0	4.0
18	8.5	8.0	8.0	10.0	9.5	10.0	5.5	5.0	5.0	4.5	4.0	4.5
19	8.5	8.0	8.5	10.0	9.5	9.5	5.0	5.0	5.0	5.0	4.5	5.0
20	9.0	8.5	8.5	10.0	9.5	9.5	5.0	5.0	5.0	5.0	5.0	5.0
21	9.0	8.0	8.5	10.0	8.5	9.5	5.0	5.0	5.0	5.5	5.0	5.0
22	8.5	8.0	8.0	8.5	8.0	8.0	5.0	4.5	4.5	5.5	5.5	5.5
23	8.5	8.0	8.0	8.5	7.5	8.0	4.5	4.5	4.5	5.5	5.5	5.5
24	8.5	8.0	8.5	8.0	7.5	8.0	4.5	4.5	4.5	5.5	5.5	5.5
25	9.0	8.5	8.5	8.0	7.0	7.5	4.5	4.0	4.5	5.5	5.0	5.5
26	9.5	8.5	9.0	---	---	---	4.5	4.0	4.0	5.5	5.0	5.0
27	10.0	9.0	9.5	---	---	---	4.0	4.0	4.0	5.0	5.0	5.0
28	10.5	9.5	10.0	---	---	---	4.0	4.0	4.0	5.0	5.0	5.0
29	11.0	10.5	11.0	7.5	7.0	7.0	4.0	4.0	4.0	5.5	5.0	5.0
30	11.5	11.0	11.5	7.0	6.5	6.5	4.0	4.0	4.0	5.0	5.0	5.0
31	11.5	11.5	11.5	---	---	---	4.0	4.0	4.0	5.0	5.0	5.0
MONTH	14.0	8.0	10.3	---	---	---	7.0	4.0	5.1	5.5	4.0	4.5

ROGUE RIVER BASIN

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14362000 APPLEGATE RIVER NEAR COPPER, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.0	4.5	5.0	6.0	5.5	6.0	6.5	5.5	6.0	9.5	7.5	8.5
2	5.0	4.5	5.0	6.0	6.0	6.0	6.0	5.5	5.5	10.0	8.5	9.0
3	5.0	4.5	5.0	6.0	6.0	6.0	6.0	5.5	5.5	9.0	8.5	9.0
4	5.0	5.0	5.0	6.0	6.0	6.0	6.0	5.5	5.5	9.5	8.0	8.5
5	5.0	4.5	5.0	6.0	6.0	6.0	7.0	5.5	6.5	9.5	8.5	9.0
6	5.0	5.0	5.0	6.0	6.0	6.0	7.5	6.5	7.0	11.5	9.0	10.0
7	5.0	5.0	5.0	6.0	6.0	6.0	7.5	6.5	7.0	10.0	8.5	9.5
8	5.0	5.0	5.0	6.0	6.0	6.0	7.5	6.5	7.0	9.0	8.5	9.0
9	5.0	5.0	5.0	6.0	6.0	6.0	7.5	6.5	7.0	9.0	8.0	9.0
10	5.0	5.0	5.0	6.0	5.5	5.5	7.5	7.0	7.0	9.5	8.5	9.0
11	5.0	5.0	5.0	5.5	5.5	5.5	7.5	7.0	7.0	9.5	9.0	9.0
12	5.0	5.0	5.0	5.5	5.5	5.5	7.5	6.5	7.0	9.5	8.5	9.0
13	5.0	5.0	5.0	5.5	5.5	5.5	7.5	6.5	7.0	9.5	8.5	9.0
14	5.0	4.5	5.0	5.5	5.5	5.5	7.5	6.5	7.0	9.0	8.5	9.0
15	5.0	4.5	4.5	5.5	5.5	5.5	8.0	7.0	7.0	9.0	8.5	8.5
16	5.0	4.5	4.5	5.5	5.5	5.5	9.0	7.0	7.5	10.0	9.0	9.5
17	5.0	4.5	5.0	5.5	5.5	5.5	7.0	6.5	7.0	11.0	9.0	10.0
18	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.5	7.0	11.0	9.0	9.5
19	5.0	5.0	5.0	6.0	5.5	5.5	6.5	6.5	6.5	9.5	8.0	8.5
20	5.0	5.0	5.0	6.0	5.5	5.5	7.5	6.5	7.0	8.5	8.0	8.5
21	5.0	5.0	5.0	6.0	5.5	5.5	7.5	7.0	7.0	9.0	8.5	8.5
22	5.5	5.0	5.0	6.0	5.5	5.5	7.5	7.0	7.0	9.0	8.5	8.5
23	5.5	5.0	5.5	6.0	5.5	5.5	8.0	7.0	7.5	9.0	8.5	8.5
24	5.5	5.5	5.5	6.0	5.5	5.5	8.0	7.0	7.5	8.5	8.0	8.5
25	5.5	5.5	5.5	6.0	5.5	6.0	7.5	7.0	7.0	9.0	8.0	8.5
26	5.5	5.5	5.5	6.0	5.5	6.0	7.0	6.5	7.0	10.5	7.0	8.5
27	5.5	5.5	5.5	6.0	5.5	6.0	7.5	7.0	7.0	9.0	8.5	8.5
28	5.5	5.5	5.5	6.0	6.0	6.0	7.5	7.0	7.0	9.0	8.5	8.5
29	---	---	---	6.0	6.0	6.0	7.5	7.0	7.0	9.0	8.5	8.5
30	---	---	---	6.5	6.0	6.0	8.0	7.0	7.5	9.0	8.5	9.0
31	---	---	---	6.5	6.0	6.5	---	---	---	9.5	8.5	9.0
MONTH	5.5	4.5	5.1	6.5	5.5	5.8	9.0	5.5	6.8	11.5	7.0	8.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	9.5	9.0	9.5	15.0	14.0	14.5	15.5	14.5	15.0	15.5	14.5	15.0
2	9.5	9.0	9.0	15.0	13.5	14.0	15.5	14.0	15.0	15.5	14.5	15.0
3	10.5	9.5	10.0	15.5	14.5	15.0	15.5	14.5	15.0	15.5	15.0	15.0
4	11.0	10.0	10.5	15.5	14.0	15.0	15.5	14.5	15.0	15.5	15.0	15.0
5	11.0	10.0	10.5	15.5	15.0	15.5	16.0	14.5	15.0	15.5	14.5	15.0
6	10.5	10.0	10.0	16.0	13.5	15.0	15.0	14.5	15.0	15.5	14.5	15.0
7	10.5	9.5	10.5	15.5	14.0	15.0	15.0	14.5	15.0	15.5	15.0	15.0
8	11.5	10.0	10.5	15.5	14.5	15.0	15.5	14.5	15.0	15.5	13.0	15.0
9	12.0	10.5	11.5	15.5	15.0	15.5	16.0	15.0	15.5	13.5	11.5	12.5
10	12.0	11.0	11.5	16.0	15.0	15.5	---	---	---	12.0	11.5	12.0
11	12.5	11.5	12.0	16.0	15.0	15.5	---	---	---	12.0	11.5	12.0
12	12.5	12.0	12.0	16.0	14.5	15.5	---	---	---	12.0	11.0	11.5
13	12.0	11.5	12.0	15.5	14.5	15.0	15.5	15.0	---	11.5	11.0	11.0
14	12.5	11.0	12.0	16.0	14.5	15.0	16.0	14.5	15.5	11.5	10.5	11.0
15	12.0	11.5	11.5	16.0	14.5	15.0	16.0	15.0	15.5	11.0	10.0	10.5
16	12.0	11.0	11.5	16.0	14.5	15.5	16.0	14.5	15.5	10.5	9.0	10.0
17	12.5	11.5	12.0	16.0	14.0	15.0	15.5	14.5	15.0	10.0	9.5	9.5
18	12.5	11.5	12.0	16.5	15.5	15.5	15.5	15.0	15.0	10.0	10.0	10.0
19	13.0	11.5	12.0	16.0	15.0	15.5	15.5	13.5	14.5	10.5	10.0	10.5
20	13.0	12.0	12.5	16.0	14.5	15.5	14.5	14.0	14.5	11.0	10.5	11.0
21	13.0	12.0	12.5	15.5	14.5	15.0	15.0	14.0	14.5	12.0	11.0	11.5
22	13.5	12.5	13.0	15.5	15.0	15.5	15.0	14.5	15.0	13.0	12.0	12.5
23	14.0	13.0	13.5	16.0	15.0	15.5	15.5	15.0	15.0	13.5	12.5	13.0
24	15.5	13.5	14.5	15.5	14.5	15.0	16.0	15.0	15.5	13.5	13.0	13.5
25	14.5	13.0	13.5	16.0	15.0	15.5	16.0	13.5	15.0	13.5	12.5	13.5
26	14.5	12.5	13.5	16.5	15.5	16.0	15.0	14.0	14.5	14.0	13.0	13.5
27	14.5	13.0	13.5	17.0	13.5	16.0	15.0	14.5	15.0	14.0	13.0	13.5
28	14.5	13.0	14.0	15.5	13.5	15.0	15.5	14.5	15.0	14.0	13.5	13.5
29	14.5	13.5	14.0	15.5	15.0	15.5	15.0	14.0	14.5	14.0	13.5	13.5
30	15.0	13.5	14.5	16.0	14.5	15.5	15.5	14.5	15.0	14.0	13.5	13.5
31	---	---	---	15.5	14.5	15.0	15.0	14.5	15.0	---	---	---
MONTH	15.5	9.0	12.0	17.0	13.5	15.2	---	---	---	15.5	9.0	12.8

ROGUE RIVER BASIN

14362250 STAR GULCH NEAR RUCH, OR

LOCATION.--Lat 42°09'15", long 123°04'27", in NE 1/4 NE 1/4 sec. 29, T.39 S., R.3 W., Jackson County, Hydrologic Unit 17100309, Bureau of Land Management land, on left bank 1.0 mi downstream from Benson Gulch, 6.0 mi southwest of Ruch, and at mile 1.1.

DRAINAGE AREA.--16.0 mi².

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,667.04 ft above sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--16 years (water years 1984-99), 5.43 ft³/s, 3,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s Jan. 1, 1997, gage height, 5.43 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1130	70	2.28	Feb. 18	2230	109	2.61
Jan. 22	1930	135	2.75	Feb. 28	0930	146	2.85
Feb. 7	1330	*168	*2.97	Mar. 6	1300	51	2.11

Minimum discharge, 0.70 ft³/s Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	2.1	33	3.7	13	95	14	8.1	4.8	3.0	1.5	1.3
2	1.4	1.8	24	3.6	12	76	13	8.2	4.8	3.1	1.5	1.2
3	1.4	1.8	23	3.6	11	73	13	8.1	4.9	3.2	1.5	1.2
4	1.4	1.8	19	3.5	11	67	13	7.7	4.8	3.2	1.5	1.1
5	1.4	2.6	15	3.3	10	59	13	7.4	4.6	3.0	1.5	1.0
6	1.3	1.9	12	3.3	57	51	13	7.2	4.5	2.9	2.2	.99
7	1.2	2.9	10	3.2	136	47	13	7.0	4.5	2.8	2.8	1.0
8	1.5	2.8	9.6	3.2	101	43	13	6.9	4.5	2.8	2.4	.98
9	1.5	2.2	8.9	3.2	65	38	13	6.8	4.4	2.7	2.0	.91
10	1.5	2.3	8.3	3.2	45	35	13	6.9	4.3	2.6	1.9	.94
11	1.5	2.3	8.0	3.1	35	32	13	6.9	4.2	2.5	2.0	.99
12	1.4	1.9	8.2	3.1	30	29	12	6.6	4.1	2.4	1.8	.95
13	1.7	1.8	8.6	3.0	27	28	13	6.4	4.0	2.3	1.9	.88
14	1.7	1.8	8.7	3.1	28	28	13	6.4	3.9	2.3	1.8	.83
15	1.6	1.7	8.2	3.9	29	28	13	6.4	3.9	2.3	1.7	.84
16	1.6	1.7	7.7	3.8	30	26	13	6.2	3.9	2.3	1.5	.88
17	1.5	2.1	7.3	9.6	40	25	13	6.1	3.8	2.3	1.4	.96
18	1.5	2.0	6.9	30	74	24	13	6.0	3.7	2.3	1.3	.99
19	1.5	1.8	6.5	21	94	23	12	5.9	3.7	2.2	1.2	.94
20	1.4	2.1	6.1	24	72	24	12	5.8	3.7	2.1	1.2	.91
21	1.4	40	5.4	35	60	23	11	5.7	3.7	2.1	1.2	.89
22	1.3	28	e5.0	74	50	22	11	5.6	3.6	2.0	1.2	.86
23	1.3	38	e4.8	97	45	20	10	5.5	3.5	2.0	1.1	.86
24	1.5	30	e4.7	53	46	20	9.9	5.4	3.4	2.0	1.0	.90
25	1.7	20	e4.6	38	50	20	9.6	5.3	3.5	2.0	.99	.99
26	1.6	28	4.2	30	46	19	9.3	5.2	3.5	1.9	.95	1.1
27	1.5	26	4.3	23	44	17	9.1	5.1	3.4	1.8	.90	1.1
28	1.5	15	4.2	20	119	16	9.0	5.0	3.3	1.7	.91	1.2
29	1.5	11	4.0	18	---	16	8.6	5.0	3.2	1.6	.90	1.1
30	1.5	24	3.9	16	---	15	8.4	4.9	3.1	1.6	1.3	1.0
31	1.9	---	4.0	14	---	15	---	4.8	---	1.5	1.3	---
TOTAL	45.8	301.4	288.1	556.4	1380	1054	353.9	194.5	119.2	72.5	46.35	29.79
MEAN	1.48	10.0	9.29	17.9	49.3	34.0	11.8	6.27	3.97	2.34	1.50	.99
MAX	1.9	40	33	97	136	95	14	8.2	4.9	3.2	2.8	1.3
MIN	1.1	1.7	3.9	3.0	10	15	8.4	4.8	3.1	1.5	.90	.83
AC-FT	91	598	571	1100	2740	2090	702	386	236	144	92	59

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1999, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	.77	3.33	8.53	13.0	13.2	12.1	7.10	3.57	2.00	1.07	.60	.52					
MAX	1.98	18.0	50.7	75.3	49.3	34.0	19.6	9.08	6.07	3.14	2.16	2.00					
(WY)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
MIN	.021	.23	.87	1.13	1.58	.95	1.00	.22	.012	.000	.000	.000					
(WY)	1993	1994	1995	1996	1997	1998	1999										

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1984 - 1999

ANNUAL TOTAL	3377.59	4441.94	5.43
ANNUAL MEAN	9.25	12.2	15.1
HIGHEST ANNUAL MEAN			.60
LOWEST ANNUAL MEAN			621
HIGHEST DAILY MEAN	104	136	.00
LOWEST DAILY MEAN	.90	.83	.00
ANNUAL SEVEN-DAY MINIMUM	1.0	.90	.00
ANNUAL RUNOFF (AC-FT)	6700	8810	3930
10 PERCENT EXCEEDS	22	32	13
50 PERCENT EXCEEDS	6.6	4.2	1.5
90 PERCENT EXCEEDS	1.3	1.2	.07

e Estimated

ROGUE RIVER BASIN

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14366000 APPLEGATE RIVER NEAR APPLEGATE, OR

LOCATION.--Lat 42°14'30", long 123°08'20", in NE 1/4 sec.26, T.38 S., R.4 W., Jackson County, Hydrologic Unit 17100309, on left bank 0.9 mi downstream from Keeler Creek, 1.8 mi southeast of Applegate, and at mile 26.7.

DRAINAGE AREA.--483 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year.

RECORDS.--WSP 1738: Drainage area. WSP 1935: 1953(M). WDR OR-76-1: 1956(M), 1965(M).

GAGE.--Water-stage recorder. Datum of gage is 1,285.33 ft above sea level. Prior to Dec. 23, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Many diversions for irrigation upstream from station. McDonald Creek Canal diverts from McDonald Creek upstream from station for irrigation in Bear Creek basin. Thompson Creek Irrigation Association ditch diverts upstream from station for irrigation in Thompson Creek basin. Fowler-Keeler and Berryman ditches divert upstream from station for irrigation downstream. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1939-80), 548 ft³/s, 397,000 acre-ft/yr.
18 years (water years 1982-99), 568 ft³/s, 411,600 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,200 ft³/s Jan. 15, 1974, gage height, 20.41 ft, from rating curve extended above 18,000 ft³/s on basis of slope-area measurements of flow at gage heights 18.00 ft and 19.57 ft; minimum discharge, 4.6 ft³/s Sept. 22-25, 1979. Minimum since first filling of Applegate Lake, 65 ft³/s Aug. 2, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 20, 1927, reached a stage of 18.7 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,130 ft³/s Feb. 28, gage height, 6.69 ft; minimum discharge, 233 ft³/s Nov. 19-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	351	258	1890	484	623	4640	587	720	1590	523	404	414
2	355	255	2120	515	418	4090	537	880	1580	468	402	413
3	355	250	2520	467	392	3510	509	1050	1290	463	402	405
4	352	249	2340	424	386	2600	487	1030	1070	457	403	404
5	352	251	1690	418	378	2230	427	769	1070	451	403	400
6	352	253	1260	394	937	2140	393	703	1020	444	412	400
7	353	253	963	394	2810	1910	391	768	932	437	421	400
8	365	257	880	391	2740	1750	398	957	867	439	417	419
9	364	254	769	371	2010	1690	393	901	774	430	413	401
10	427	253	700	363	1330	1540	391	771	687	428	410	412
11	493	253	693	357	981	1460	392	729	652	462	e415	409
12	493	251	696	336	856	1420	397	749	652	448	429	405
13	511	250	871	377	753	1290	405	796	716	416	430	404
14	506	250	948	352	775	1230	408	839	872	422	429	407
15	502	250	799	638	736	992	413	835	1040	419	426	410
16	492	250	741	907	780	869	507	709	1060	412	421	409
17	394	251	702	778	1250	839	1040	629	1060	413	416	414
18	312	253	701	2270	2260	750	1360	815	990	414	416	412
19	308	242	691	2150	2650	746	1840	1210	927	414	414	406
20	310	233	685	2180	1970	756	1660	1610	879	417	412	402
21	308	2290	628	2310	1720	842	1040	1630	812	416	412	404
22	302	4040	564	2490	1340	927	1020	1670	793	411	410	388
23	264	3380	521	3940	1370	860	1020	1880	722	411	406	349
24	259	2580	511	2690	1950	824	847	2150	667	404	407	348
25	270	2070	487	1880	2400	787	1100	2040	658	404	402	350
26	269	2450	473	1540	2040	780	1440	2040	614	402	405	350
27	264	2350	457	1260	1530	760	1420	2000	584	402	411	356
28	257	1300	505	1130	4320	717	1090	2030	577	402	408	361
29	256	976	523	1030	---	676	972	2030	566	402	408	361
30	252	1260	521	951	---	648	828	1980	557	402	419	361
31	251	---	502	892	---	634	---	1780	---	402	416	---
TOTAL	10899	27712	28351	34679	41705	44907	23712	38700	26278	13235	12799	11774
MEAN	352	924	915	1119	1489	1449	790	1248	876	427	413	392
MAX	511	4040	2520	3940	4320	4640	1840	2150	1590	523	430	419
MIN	251	233	457	336	378	634	391	629	557	402	402	348
AC-FT	21620	54970	56230	68790	82720	89070	47030	76760	52120	26250	25390	23350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1999, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	348	473	793	924	871	804	609	801	498	237	207	267						
MAX	507	1261	3077	4904	2552	1892	1304	1705	1237	441	413	425						
(WY)	1983	1985	1982	1997	1983	1995	1982	1983	1983	1998	1999	1983						
MIN	218	195	149	142	148	142	139	160	120	86.5	74.5	83.8						
(WY)	1982	1988	1995	1991	1992	1992	1992	1992	1992	1992	1992	1992						

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1982 - 1999
ANNUAL TOTAL	341513	314751	
ANNUAL MEAN	936	862	568
HIGHEST ANNUAL MEAN			1072
LOWEST ANNUAL MEAN			153
HIGHEST DAILY MEAN	7110	4640	24400
LOWEST DAILY MEAN	233	233	67
ANNUAL SEVEN-DAY MINIMUM	247	247	71
ANNUAL RUNOFF (AC-FT)	677400	624300	411600
10 PERCENT EXCEEDS	1910	2000	1230
50 PERCENT EXCEEDS	628	523	298
90 PERCENT EXCEEDS	321	349	143

e Estimated

ROGUE RIVER BASIN

14366000 APPLEGATE RIVER NEAR APPLEGATE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 28.0°C July 29, 30, Aug. 3, 4, 1974; minimum, 0.0°C on several days during winter periods most years. Maximum since full operation of Applegate Lake, 25.5°C July 5, 1984, July 16, 19, 27, 1992; minimum, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.5°C July 12; minimum recorded, 0.0°C Dec. 23.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.5	10.0	12.0	9.0	7.0	8.0	7.5	6.5	7.0	---	---	---
2	13.0	10.5	12.0	9.0	7.0	8.0	8.0	7.0	7.5	---	---	---
3	12.0	9.5	10.5	10.0	7.5	8.5	7.5	6.5	7.0	---	---	---
4	13.0	9.0	10.5	---	---	---	7.0	6.0	6.5	---	---	---
5	12.5	8.0	10.5	---	---	---	6.0	5.5	6.0	---	---	---
6	12.0	8.5	10.5	---	---	---	6.5	5.5	6.0	---	---	---
7	12.5	9.0	11.0	---	---	---	6.5	5.0	5.5	---	---	---
8	12.0	10.0	11.0	---	---	---	6.0	5.0	5.5	---	---	---
9	10.5	8.0	9.5	---	---	---	6.0	5.0	5.5	---	---	---
10	11.5	9.0	10.0	---	---	---	6.0	5.0	5.5	---	---	---
11	10.5	8.0	9.5	---	---	---	6.5	5.0	6.0	---	---	---
12	9.5	6.5	8.0	---	---	---	7.0	5.5	6.5	---	---	---
13	9.0	7.5	8.0	---	---	---	6.5	5.5	6.0	---	---	---
14	9.0	7.0	8.0	---	---	---	6.5	5.0	6.0	---	---	---
15	8.5	6.5	7.5	---	---	---	6.0	4.5	5.0	7.0	4.5	5.5
16	9.0	6.5	7.5	---	---	---	6.0	5.0	5.5	5.0	4.5	4.5
17	8.0	5.0	6.5	---	---	---	6.0	5.0	5.5	5.5	4.5	5.0
18	9.0	5.0	7.0	---	---	---	6.0	5.0	5.5	5.5	4.5	5.0
19	9.0	5.5	7.0	---	---	---	5.0	4.0	4.5	5.5	4.5	5.0
20	9.0	5.0	7.0	---	---	---	4.0	2.5	3.5	5.5	5.0	5.0
21	9.0	5.0	7.0	---	---	---	3.5	2.0	2.5	6.0	5.0	5.5
22	9.0	5.0	7.0	---	---	---	3.0	1.5	2.0	6.0	5.0	5.5
23	8.5	5.0	7.0	---	---	---	3.0	.0	1.5	6.0	5.5	5.5
24	8.0	6.5	7.5	---	---	---	3.0	1.5	2.5	6.0	5.0	5.5
25	8.5	7.0	7.5	8.5	7.5	8.0	4.5	3.0	3.5	5.5	3.0	5.0
26	8.5	5.5	7.0	8.5	7.5	8.0	6.0	3.0	4.0	5.5	5.0	5.0
27	9.0	5.5	7.5	8.5	7.5	8.0	7.5	3.5	5.5	5.5	4.5	5.0
28	9.0	7.5	8.0	8.0	7.5	7.5	7.5	4.5	5.5	6.0	4.5	5.0
29	8.5	6.5	7.5	8.0	7.0	7.5	5.5	4.0	4.5	6.0	4.5	5.0
30	8.0	5.0	6.5	7.5	7.0	7.0	5.5	4.5	5.0	6.0	4.0	5.0
31	7.0	5.5	6.5	---	---	---	5.5	4.0	5.0	6.0	4.5	5.5
MONTH	13.5	5.0	8.5	---	---	---	8.0	.0	5.1	---	---	---

ROGUE RIVER BASIN

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14366000 APPLEGATE RIVER NEAR APPLEGATE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.0	4.5	5.0	7.0	6.0	6.5	9.0	5.0	7.0	12.5	8.5	10.5
2	5.5	4.5	5.0	7.5	5.5	6.5	9.5	4.5	7.0	10.0	8.0	9.0
3	6.5	5.0	6.0	7.0	6.0	6.5	8.0	5.5	6.5	11.5	8.0	9.5
4	6.5	4.5	5.5	7.0	5.5	6.0	7.5	5.0	6.5	11.0	8.0	9.5
5	5.0	3.5	4.5	7.5	5.5	6.0	7.5	5.0	6.5	13.5	7.5	10.0
6	6.0	5.0	5.5	7.0	5.0	6.0	11.0	6.0	8.0	12.5	8.5	10.5
7	6.0	5.0	6.0	7.5	5.0	6.0	10.0	5.5	8.0	12.5	8.0	10.0
8	5.5	5.0	5.5	7.0	5.5	6.0	8.5	6.5	7.5	11.5	8.0	9.5
9	5.5	4.5	5.0	7.5	5.5	6.0	8.5	5.0	6.5	12.5	7.5	9.5
10	6.0	4.5	5.0	7.5	5.0	6.0	9.0	6.0	7.5	10.0	7.5	9.0
11	5.5	4.0	5.0	7.5	4.5	6.0	12.0	5.5	8.5	11.0	8.5	9.5
12	7.0	4.5	5.5	7.0	5.0	6.0	12.0	7.0	9.5	13.5	8.5	11.0
13	6.0	5.0	5.5	8.0	5.5	6.5	13.0	7.5	10.0	11.5	8.0	9.5
14	7.0	5.5	6.0	7.0	6.0	6.5	12.5	7.0	9.5	11.0	8.0	9.5
15	6.0	4.5	5.5	9.0	6.0	7.5	13.0	7.0	10.0	12.5	8.0	9.5
16	6.5	5.5	6.0	9.0	6.0	7.5	13.0	8.0	10.5	13.0	7.0	10.0
17	7.0	5.5	6.0	8.5	5.5	7.0	11.5	8.0	9.5	13.5	9.0	11.5
18	6.5	5.5	6.0	9.0	5.5	7.5	10.0	7.0	8.5	14.0	10.5	12.0
19	7.0	5.0	6.0	9.5	6.0	8.0	9.0	7.0	7.5	13.0	9.0	10.5
20	6.5	5.0	5.5	8.5	6.5	7.5	10.0	6.5	8.0	12.0	8.5	10.0
21	7.0	5.5	6.0	9.0	6.5	7.5	9.0	7.5	8.0	12.5	7.5	9.5
22	7.5	5.5	6.5	8.0	5.5	7.0	11.0	7.0	8.5	13.0	8.0	10.0
23	8.0	6.0	7.0	9.0	6.0	7.5	11.5	6.0	8.5	12.5	8.5	10.5
24	7.0	6.0	6.5	8.0	6.5	7.5	13.0	7.0	9.5	12.5	9.0	10.5
25	6.5	5.5	6.0	8.5	6.5	7.5	10.5	7.5	9.0	12.5	8.5	10.0
26	6.0	5.5	5.5	9.5	6.5	7.5	10.5	7.0	8.5	12.5	8.5	10.0
27	7.5	5.5	6.5	9.0	5.5	7.0	8.5	6.0	7.5	13.0	9.0	10.5
28	7.0	6.5	6.5	9.0	5.0	7.0	9.0	6.5	7.5	12.5	8.5	10.0
29	---	---	---	7.5	6.0	6.5	11.5	6.5	8.5	12.0	9.0	10.0
30	---	---	---	6.5	5.0	6.0	12.0	6.5	9.0	12.0	8.5	10.0
31	---	---	---	8.0	5.0	6.5	---	---	---	13.0	8.5	10.5
MONTH	8.0	3.5	5.7	9.5	4.5	6.7	13.0	4.5	8.2	14.0	7.0	10.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.0	9.5	11.0	20.0	14.0	17.0	20.5	14.5	17.5	18.5	13.0	15.5
2	11.0	9.0	9.5	19.0	13.5	16.0	21.0	15.0	18.0	18.5	13.5	16.0
3	11.0	8.5	10.0	18.0	13.0	15.5	21.0	15.0	18.0	18.5	13.0	16.0
4	14.0	9.5	11.5	19.5	13.5	16.0	21.5	15.5	18.5	19.0	13.5	16.0
5	14.5	10.0	12.0	20.5	13.5	17.0	20.0	16.0	17.5	19.0	14.0	16.5
6	14.0	10.0	11.5	21.0	14.5	17.5	18.0	15.5	16.5	19.0	14.5	17.0
7	14.5	9.5	11.5	20.0	14.0	17.0	16.0	15.0	15.5	19.0	13.0	16.0
8	14.5	9.5	11.5	20.5	13.5	17.0	20.0	15.0	17.0	19.0	14.0	16.5
9	15.5	9.5	12.0	21.5	14.5	18.0	21.0	14.5	18.0	18.0	13.5	15.5
10	16.0	9.5	13.0	22.0	15.5	18.5	20.5	15.5	18.0	17.0	12.0	14.5
11	17.0	10.5	13.5	22.0	15.5	19.0	20.5	16.0	18.0	17.0	11.5	14.0
12	16.5	11.5	14.0	22.5	15.5	19.0	20.5	15.5	17.5	17.0	11.5	14.5
13	17.5	12.0	14.5	22.0	15.5	18.5	18.5	15.5	17.0	16.0	11.5	14.0
14	18.0	12.0	14.5	21.0	15.0	18.0	19.5	14.5	16.5	16.0	11.0	14.0
15	17.0	12.0	14.0	21.0	14.0	17.5	19.5	13.5	16.5	16.0	11.0	13.5
16	17.0	12.5	14.0	20.5	14.0	17.5	20.5	14.5	17.5	15.5	11.0	13.0
17	16.5	12.0	14.0	20.0	14.0	17.0	20.5	14.5	17.5	14.5	10.0	12.5
18	17.0	12.0	14.0	21.0	13.5	17.5	20.5	14.5	17.5	15.0	10.5	12.5
19	17.0	12.0	14.5	21.5	15.5	18.5	20.5	15.0	17.5	15.5	11.0	13.0
20	16.0	12.0	13.5	21.0	15.5	18.0	20.0	14.5	17.5	15.5	11.0	13.5
21	17.0	12.5	14.5	20.5	14.5	17.5	20.0	14.5	17.0	15.5	11.0	13.5
22	18.5	12.5	15.0	21.0	15.0	18.0	20.5	14.5	17.5	16.5	12.0	14.0
23	19.5	12.5	16.0	21.0	15.0	18.0	20.5	15.5	18.0	17.0	12.5	15.0
24	18.0	13.0	15.5	21.0	15.5	18.0	20.5	15.0	18.0	16.5	12.5	14.5
25	18.0	13.5	15.5	21.0	14.5	18.0	21.0	15.5	18.0	16.5	12.5	14.5
26	18.0	12.5	15.0	21.5	15.0	18.5	20.0	14.5	17.5	15.5	11.0	13.5
27	18.5	12.0	15.0	22.0	15.5	19.0	18.0	15.0	16.5	15.5	10.5	13.0
28	19.5	12.5	15.5	21.5	16.0	18.5	20.5	15.5	17.5	15.5	10.5	13.0
29	20.0	13.5	16.5	21.0	15.0	18.0	20.0	15.5	17.5	16.0	11.5	14.0
30	20.5	14.0	17.0	21.0	15.0	18.0	17.5	15.0	16.0	16.5	11.5	14.0
31	---	---	---	21.0	15.0	18.0	18.0	13.5	15.5	---	---	---
MONTH	20.5	8.5	13.6	22.5	13.0	17.7	21.5	13.5	17.3	19.0	10.0	14.4

ROGUE RIVER BASIN

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14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: September 1978 to current year.

INSTRUMENTATION.--Temperature recorder since September 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 29.0°C June 22, 1992; minimum, 0.0°C Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.5°C July 10, 11, 13, Aug. 4; minimum recorded, 0.5°C Dec. 23, but may have been lower during period of missing record Jan. 1-13.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.5	15.0	16.5	10.5	9.0	10.0	8.0	7.5	8.0	---	---	---
2	16.5	15.0	15.5	11.5	10.5	11.0	9.0	8.0	8.5	---	---	---
3	15.5	14.0	14.5	12.0	10.5	11.0	8.5	7.0	7.5	---	---	---
4	15.5	13.0	14.5	12.0	11.0	11.5	7.5	6.5	7.0	---	---	---
5	15.5	13.0	14.5	11.5	10.5	11.0	---	---	---	---	---	---
6	15.0	13.0	14.5	11.0	9.5	10.0	7.0	5.5	6.5	---	---	---
7	15.5	13.0	14.5	10.0	9.5	10.0	7.0	6.0	6.5	---	---	---
8	16.0	14.0	15.0	10.0	9.0	9.5	7.0	6.0	6.5	---	---	---
9	15.5	13.0	13.5	10.0	9.0	9.5	6.5	5.5	6.0	---	---	---
10	15.0	12.5	13.5	9.5	8.5	9.0	7.0	6.0	6.5	---	---	---
11	14.5	13.0	13.5	9.5	9.0	9.0	7.0	6.5	7.0	---	---	---
12	13.5	12.0	13.0	9.5	8.5	9.0	8.5	7.0	7.5	---	---	---
13	13.5	12.5	13.0	9.5	8.5	9.0	8.0	7.0	7.5	---	---	---
14	13.0	12.0	12.5	10.0	9.0	9.5	7.0	6.0	6.5	8.5	3.5	6.5
15	12.5	10.5	11.5	11.0	9.5	10.0	6.0	5.5	5.5	8.0	5.5	6.5
16	12.0	10.5	11.5	10.5	9.5	10.0	6.0	5.5	6.0	6.5	5.5	6.0
17	12.0	10.0	11.0	10.5	9.5	10.0	6.0	6.0	6.0	6.5	5.0	6.0
18	12.5	10.0	11.5	10.0	9.5	9.5	6.0	5.5	6.0	6.5	6.0	6.5
19	12.5	11.0	12.0	9.5	8.0	8.5	5.5	4.0	5.0	6.5	6.0	6.0
20	12.5	10.5	11.5	9.5	8.5	9.0	4.5	2.5	3.5	6.5	6.0	6.0
21	12.0	10.0	11.5	9.5	9.0	9.5	2.5	1.0	2.0	7.0	6.0	6.5
22	12.0	10.0	11.5	9.0	8.5	9.0	2.0	1.0	1.5	6.5	6.0	6.0
23	12.0	10.0	11.5	9.0	8.5	8.5	2.0	.5	1.5	6.5	5.5	6.0
24	13.0	11.5	12.0	9.0	8.0	8.5	3.0	1.5	2.0	6.5	5.5	5.5
25	13.0	11.5	12.0	9.5	8.5	9.0	5.0	2.5	4.0	6.0	5.0	5.5
26	12.0	11.0	11.5	9.0	8.5	9.0	6.0	4.5	5.0	6.0	5.0	5.5
27	12.0	10.5	11.5	9.0	8.0	8.5	8.5	5.0	6.0	6.0	4.5	5.5
28	12.5	11.5	12.0	8.5	7.5	8.0	8.5	6.0	7.0	6.5	5.0	5.5
29	11.5	10.5	11.0	8.5	7.5	8.0	6.5	5.5	6.0	6.5	5.0	6.0
30	10.5	9.0	10.0	8.5	7.5	8.0	6.5	5.0	6.0	6.5	4.5	5.5
31	10.0	8.5	9.0	---	---	---	6.5	5.5	6.0	6.5	5.5	6.0
MONTH	17.5	8.5	12.6	12.0	7.5	9.4	---	---	---	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

ROGUE RIVER BASIN

421

14372300 ROGUE RIVER NEAR AGNESS, OR

LOCATION.--Lat 42°34'50", long 124°03'30", in NE 1/4 NW 1/4 sec.6, T.35 S., R.11 W., Curry County, Hydrologic Unit 17100310, on left bank 0.8 mi upstream from Shasta Costa Creek, 1.5 mi north of Agness, 2.6 mi upstream from Illinois River, and at mile 29.7.

DRAINAGE AREA.--3,939 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 113.81 ft above sea level (levels by U.S. Bureau of Public Roads).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since February 1977 by Lost Creek Lake (station 14335040), since December 1980 by Applegate Lake (station 14361900), slight regulation by Fish Lake and Emigrant Lake. Many diversions for irrigation and mining. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--22 years (water years 1978-99), 5,690 ft³/s, 4,122,000 acre-ft/yr (since operation began at Lost Creek Lake).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 290,000 ft³/s Dec. 23, 1964, from slope-area measurement; maximum gage height, 68.03 ft Dec. 23, 1964, from floodmark (backwater from Illinois River); minimum discharge, 608 ft³/s July 9, 10, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 66,200 ft³/s Feb. 28, gage height, 19.23 ft; minimum discharge, 1,410 ft³/s Sept. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1810	2090	25000	8430	7720	45700	8320	5770	7630	4470	3250	2890
2	1800	2200	29000	7770	6790	28500	7410	5840	7140	4430	3140	2830
3	1870	2130	36400	6980	6310	27600	6650	6670	6830	4340	2870	2800
4	1850	2160	23100	6140	6470	24500	6390	7430	5950	4220	2910	2740
5	1900	2340	16500	5410	6420	20100	6230	7220	5340	4130	2950	2720
6	1860	2580	13800	5000	13300	17100	6130	6210	5120	3950	3020	2680
7	1850	2920	12100	4640	33700	14700	6020	5820	5060	3710	3210	2610
8	1960	3270	12400	4480	33500	13500	6110	5750	4940	3700	3430	2440
9	2010	2900	12000	4230	21600	13200	6640	5690	4790	3750	3240	2290
10	2130	2680	10000	3950	16700	12100	6730	5510	4390	3780	3200	2060
11	2100	2920	9070	3830	13000	10800	7140	5340	4110	3760	3700	2040
12	2160	2670	9230	3730	10900	10100	7190	5380	4030	3970	4090	1890
13	2240	2400	9990	3660	10100	9710	7410	5390	3990	4100	3680	1790
14	2280	2160	10200	4010	10200	9800	7320	5400	4050	4010	3580	1820
15	2270	2230	9290	5340	10800	9510	6960	5430	4130	4060	3430	1640
16	2260	2340	8200	8930	12100	8880	6960	5330	4320	4120	3210	1600
17	2210	2670	7540	12000	19100	8450	7230	5090	4400	4100	3130	1620
18	2080	3090	7090	29600	26200	8130	8170	4970	4380	4080	2790	1730
19	1970	3070	6720	24600	39200	7900	8730	5400	4280	4020	2680	1800
20	1930	4250	6400	26800	23100	7920	9580	6040	4180	3910	2660	1800
21	1910	25200	6010	35800	18900	8110	8910	6600	4190	3800	2450	1810
22	1900	48600	5520	33600	17600	8050	7640	6600	4280	3750	2560	1740
23	1890	29600	5340	50300	22000	7980	7180	6880	5060	3660	2570	1670
24	1920	38900	5200	31400	22000	7980	6850	7420	5210	3590	2570	1590
25	1950	24600	5640	20100	22000	8230	6730	8710	5230	3470	2530	1570
26	1940	22700	5910	15400	20100	8030	7000	8840	5200	3440	2560	1590
27	1930	23300	6410	12700	20600	7840	7620	8520	5150	3380	2570	1660
28	1920	15000	9960	10800	56000	7490	7430	8140	5040	3380	2570	1710
29	1940	12000	10900	9670	---	7670	6760	8200	4780	3400	2570	1620
30	1940	21700	9820	8930	---	8130	6250	8190	4220	3410	2620	1650
31	1970	---	8770	8310	---	8560	---	8010	---	3430	2900	---
TOTAL	61750	314670	353510	416540	526410	396270	215690	201790	147420	119320	92640	60400
MEAN	1992	10490	11400	13440	18800	12780	7190	6509	4914	3849	2988	2013
MAX	2280	48600	36400	50300	56000	45700	9580	8840	7630	4470	4090	2890
MIN	1800	2090	5200	3660	6310	7490	6020	4970	3990	3380	2450	1570
AC-FT	122500	624100	701200	826200	1044000	786000	427800	400300	292400	236700	183800	119800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1999, BY WATER YEAR (WY)

	2018	4944	9860	10240	10490	8330	6758	5311	3611	2515	2331	2124
MEAN	3497	16650	37410	33800	30280	17750	15090	8905	6292	3849	3370	3187
MAX (WY)	1983	1985	1997	1997	1983	1983	1982	1996	1993	1994	1984	1983
MIN (WY)	1421	1386	2124	2839	3071	2048	2083	2124	1821	1212	1671	1346
	1989	1988	1990	1992	1988	1992	1994	1992	1992	1994	1994	1980

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1978 - 1999

ANNUAL TOTAL	3088800	2906410	
ANNUAL MEAN	8462	7963	
HIGHEST ANNUAL MEAN			5690
LOWEST ANNUAL MEAN			10180
HIGHEST DAILY MEAN	48600	Nov 22	56000
LOWEST DAILY MEAN	1760	Sep 24	1570
ANNUAL SEVEN-DAY MINIMUM	1820	Sep 23	1630
ANNUAL RUNOFF (AC-FT)	6127000	5765000	4122000
10 PERCENT EXCEEDS	17800	20100	11700
50 PERCENT EXCEEDS	6720	5340	3190
90 PERCENT EXCEEDS	2110	1950	1720

ROGUE RIVER BASIN

14372300 ROGUE RIVER NEAR AGNESS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to September 1987, January 1995 to current year.

INSTRUMENTATION.--Temperature recorder from October 1960 to September 1987, January 1995 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.5°C on several days in 1962, Aug. 3, 6, 9-11, 1977; minimum, 1.0°C Jan. 22-25, 1962, Dec. 9-16, 1972, Jan. 9, 10, 1977, Jan. 1-3, 1979, Dec. 23, 24, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.0°C Aug. 26; minimum, 1.0°C Dec. 23, 24.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.0	16.0	16.5	10.5	9.5	10.0	9.0	9.0	9.0	7.0	6.5	7.0
2	17.0	15.5	16.5	10.0	9.0	9.5	9.5	9.0	9.5	6.5	6.0	6.5
3	16.5	15.5	16.0	10.0	9.0	9.5	9.5	8.5	9.0	6.0	5.5	5.5
4	16.0	14.5	15.5	11.0	9.5	10.0	8.5	7.5	8.0	5.5	5.0	5.5
5	15.5	14.0	14.5	11.0	10.0	10.5	7.5	6.5	7.0	5.5	5.0	5.0
6	15.0	13.5	14.0	10.5	10.0	10.0	6.5	6.0	6.5	5.5	5.0	5.0
7	15.0	13.0	14.0	10.0	9.5	10.0	7.0	6.5	6.5	5.5	5.0	5.0
8	15.0	13.5	14.0	10.0	9.0	9.5	7.0	7.0	7.0	5.0	4.5	5.0
9	14.5	13.5	14.0	9.5	9.0	9.0	7.0	7.0	7.0	5.0	4.5	5.0
10	15.0	13.5	14.0	9.0	8.5	9.0	7.0	6.5	7.0	5.0	4.5	4.5
11	14.5	13.0	13.5	9.0	8.5	8.5	7.5	7.0	7.0	5.0	4.5	4.5
12	14.0	13.0	13.5	9.0	8.5	8.5	8.5	7.5	8.0	5.5	5.0	5.0
13	14.0	13.0	13.5	9.0	8.5	9.0	8.5	8.0	8.5	6.5	5.5	6.0
14	14.0	13.0	13.5	9.5	8.5	9.0	8.5	7.5	8.0	7.5	6.5	7.0
15	13.5	12.5	13.0	9.5	9.0	9.5	7.5	7.0	7.5	8.0	7.5	7.5
16	13.5	12.0	12.5	10.0	9.0	9.5	7.0	6.5	6.5	7.5	7.0	7.5
17	12.5	11.5	12.0	10.0	9.5	10.0	6.5	6.0	6.5	7.5	7.0	7.5
18	13.0	11.0	12.0	10.0	9.5	9.5	6.5	6.0	6.0	8.0	7.5	7.5
19	12.5	11.0	11.5	10.0	9.5	9.5	6.0	5.0	5.5	8.0	7.5	7.5
20	12.5	11.0	11.5	10.5	9.5	9.5	5.0	4.0	4.5	8.0	7.5	7.5
21	12.0	10.5	11.5	10.5	10.0	10.0	4.0	2.5	3.0	7.5	7.5	7.5
22	12.0	10.5	11.5	10.0	9.5	9.5	3.0	1.5	2.5	7.5	7.0	7.5
23	12.0	10.5	11.0	9.5	9.0	9.5	2.0	1.0	1.5	7.5	6.5	7.0
24	12.0	10.5	11.0	9.5	9.0	9.5	2.0	1.0	1.5	7.0	6.0	6.5
25	12.5	11.0	11.5	10.0	9.0	9.5	4.0	2.0	2.5	6.5	6.0	6.0
26	12.5	11.0	12.0	10.0	10.0	10.0	5.0	4.0	4.5	6.0	6.0	6.0
27	12.0	11.5	11.5	10.0	9.0	9.5	6.5	5.0	5.5	6.0	6.0	6.0
28	12.5	11.5	12.0	9.5	8.5	9.0	8.0	6.5	7.0	6.5	6.0	6.0
29	12.0	11.0	11.0	8.5	8.5	8.5	8.0	7.5	7.5	7.0	6.5	7.0
30	11.5	10.0	10.5	9.0	8.5	8.5	7.5	7.0	7.5	7.0	6.5	7.0
31	10.0	9.5	10.0	---	---	---	7.5	7.0	7.5	7.0	6.5	6.5
MONTH	17.0	9.5	12.9	11.0	8.5	9.4	9.5	1.0	6.3	8.0	4.5	6.3

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	6.5	6.0	6.5	8.5	8.0	8.5	8.5	6.5	7.5	13.0	11.5	12.0
2	6.0	6.0	6.0	8.0	7.5	8.0	9.0	7.5	8.0	12.5	11.5	12.0
3	6.5	5.5	6.0	8.0	7.5	7.5	8.5	7.5	8.0	11.5	10.0	11.0
4	7.0	6.5	6.5	7.5	7.0	7.5	8.5	7.5	8.0	11.0	10.0	10.0
5	7.0	6.5	6.5	7.0	6.5	7.0	8.5	7.5	8.0	11.5	10.0	10.5
6	7.0	6.5	7.0	7.0	6.5	7.0	9.5	7.5	8.5	12.0	10.5	11.5
7	7.5	7.0	7.5	7.0	6.5	7.0	9.0	8.0	8.5	12.5	10.5	11.5
8	7.0	6.5	6.5	7.0	7.0	7.0	9.0	8.0	8.5	12.5	10.5	11.0
9	6.5	6.0	6.0	7.0	7.0	7.0	8.5	7.5	8.5	12.5	10.0	11.0
10	6.0	5.5	6.0	7.5	7.0	7.0	8.0	7.5	7.5	12.0	10.5	11.0
11	6.0	6.0	6.0	7.5	7.0	7.0	9.5	7.5	8.0	12.0	11.0	11.5
12	6.0	5.5	6.0	7.5	7.0	7.0	10.0	8.5	9.5	12.5	11.0	11.5
13	6.5	6.0	6.5	7.5	7.5	7.5	11.5	9.5	10.5	13.0	11.5	12.0
14	7.5	6.5	7.0	8.0	7.5	8.0	12.0	10.0	11.0	13.0	12.0	12.5
15	7.5	7.0	7.0	8.5	8.0	8.0	12.5	10.5	11.5	13.0	11.5	12.0
16	7.5	7.0	7.0	9.0	8.0	8.5	13.0	11.0	12.0	13.5	11.0	12.0
17	7.5	7.0	7.5	9.5	8.5	9.0	13.5	11.5	12.5	13.5	12.0	12.5
18	8.0	7.5	7.5	9.5	8.5	9.0	13.5	12.0	12.5	14.5	12.5	13.5
19	8.0	7.5	7.5	9.0	8.5	9.0	12.5	11.0	12.0	15.5	14.0	14.5
20	7.5	7.0	7.5	9.5	8.5	9.0	11.5	11.0	11.5	15.5	14.0	14.5
21	7.0	7.0	7.0	9.5	8.5	9.0	11.0	10.5	11.0	15.0	13.5	14.0
22	8.0	7.0	7.5	9.5	8.5	9.0	11.5	10.0	10.5	15.0	13.5	14.0
23	8.5	8.0	8.0	9.5	8.5	9.0	11.5	10.0	11.0	16.5	14.0	15.0
24	9.0	8.5	8.5	9.0	8.5	9.0	13.0	11.0	12.0	16.5	15.0	15.5
25	8.5	7.5	8.0	9.0	8.5	9.0	13.0	11.5	12.5	16.0	14.5	15.5
26	8.0	7.0	7.5	9.0	8.5	8.5	13.0	11.0	12.0	15.0	14.0	14.5
27	8.0	7.0	7.5	9.5	8.0	8.5	11.5	10.5	11.0	15.0	14.0	14.5
28	8.5	8.0	8.5	8.5	7.5	8.0	10.5	9.5	10.0	15.5	14.0	15.0
29	---	---	---	8.5	8.0	8.0	10.5	9.0	9.5	15.0	14.5	15.0
30	---	---	---	8.0	7.0	7.5	12.0	9.5	11.0	15.0	14.0	14.5
31	---	---	---	7.0	6.5	6.5	---	---	---	15.0	14.0	14.5
MONTH	9.0	5.5	7.0	9.5	6.5	8.0	13.5	6.5	10.1	16.5	10.0	12.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.5	14.5	15.0	20.5	18.0	19.5	20.0	18.5	19.5	19.0	17.0	18.0
2	15.0	13.0	14.0	19.5	17.5	18.5	21.0	19.0	19.5	18.0	16.5	17.5
3	14.0	13.0	13.5	18.5	16.5	17.5	21.0	19.5	20.0	18.5	16.5	17.5
4	14.5	12.5	13.5	18.0	15.5	16.5	21.5	20.0	20.5	19.0	17.0	18.0
5	15.5	12.5	14.0	19.0	15.5	17.0	21.5	20.0	20.5	19.0	17.5	18.0
6	15.5	13.5	14.5	19.5	17.0	18.0	20.5	19.5	20.0	19.0	17.5	18.0
7	15.5	13.5	14.5	19.5	17.5	19.0	19.5	17.5	19.0	19.0	17.5	18.0
8	15.5	13.5	14.0	20.0	18.0	19.5	19.0	17.5	18.0	19.5	17.5	18.5
9	16.5	13.5	14.5	20.0	18.0	19.5	19.5	17.5	18.5	19.5	18.0	18.5
10	17.0	14.0	15.5	20.5	18.0	19.5	21.0	19.0	19.5	19.0	17.5	18.0
11	17.5	14.5	16.0	21.0	19.0	20.0	20.5	19.5	20.0	19.5	17.5	18.0
12	17.5	16.0	17.0	21.5	19.0	20.5	20.5	19.0	20.0	20.0	17.5	18.5
13	18.5	16.5	17.5	21.5	19.0	20.5	20.0	19.0	19.5	20.0	17.5	18.5
14	19.5	17.5	18.5	21.0	18.5	20.0	20.0	18.5	19.0	20.5	17.5	19.0
15	19.5	18.0	19.0	20.5	18.0	19.5	19.5	17.5	18.5	20.0	17.5	18.5
16	20.0	18.0	19.0	20.0	18.0	19.0	20.0	17.5	19.0	20.0	17.5	18.5
17	20.0	18.0	19.0	19.5	17.0	18.5	20.5	19.0	20.0	19.5	17.5	18.5
18	19.5	17.5	18.5	19.5	16.5	18.5	21.5	20.0	20.5	19.5	17.5	18.5
19	19.5	17.5	18.5	20.0	17.0	18.5	22.0	20.0	21.0	19.5	17.5	18.5
20	19.0	17.0	18.0	19.5	17.0	18.5	22.5	20.5	21.0	20.0	17.5	18.5
21	19.0	17.0	18.0	20.0	17.5	19.0	22.5	20.5	21.0	19.5	17.5	18.5
22	19.5	16.5	18.0	20.0	18.0	19.0	22.5	20.5	21.5	19.5	17.0	18.5
23	20.0	17.0	18.5	20.0	18.0	19.0	22.0	21.0	21.5	19.0	17.0	18.0
24	19.0	17.0	18.0	19.5	18.0	19.0	22.5	20.5	21.5	19.0	17.0	18.0
25	18.5	16.0	17.0	20.0	18.0	19.0	22.5	20.5	21.5	19.0	17.5	18.0
26	18.5	16.0	17.0	20.0	18.0	19.0	23.0	21.0	22.0	18.0	16.5	17.5
27	18.5	15.5	16.5	20.0	18.5	19.5	22.0	21.5	22.0	17.0	16.0	16.5
28	18.5	15.5	17.0	20.0	18.5	19.5	22.5	20.5	21.5	16.5	15.0	15.5
29	19.5	16.0	17.5	20.0	18.5	19.5	21.0	20.0	20.5	16.0	14.0	15.0
30	20.5	17.0	18.5	20.0	18.5	19.5	20.0	19.0	19.5	16.0	14.0	15.0
31	---	---	---	20.0	18.5	19.5	19.5	18.0	18.5	---	---	---
MONTH	20.5	12.5	16.7	21.5	15.5	19.0	23.0	17.5	20.1	20.5	14.0	17.9

YEAR	23.0	1.0	12.2
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14377100 ILLINOIS RIVER NEAR KERBY, OR

LOCATION.--Lat 42°13'55", long 123°39'45", in SE 1/4 SE 1/4 sec.29, T.38 S., R.8 W., Josephine County, Hydrologic Unit 17100311, Siskiyou National Forest, on right bank 1.6 mi upstream from Josephine Creek, 2.5 mi northwest of Kerby, and at mile 50.3.

DRAINAGE AREA.--380 mi².

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,198.8 ft above sea level. Prior to Jan. 28, 1965, water-stage recorder, and Jan. 28 to Sept. 30, 1965, nonrecording gage 700 ft downstream at datum 2.99 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station. Several observations of water temperature were obtained during the year. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1962-99), 1,287 ft³/s, 46.03 in/yr, 932,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 92,200 ft³/s Dec. 22, 1964, gage height, 45.28 ft, from floodmark, site and datum then in use, from rating curve extended above 30,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 12 ft³/s Aug. 24, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 21	1530	*26,900	*26.02	Jan. 22	2000	18,300	21.42
Nov. 23	1200	12,600	17.78	Feb. 7	1000	12,600	17.77
Nov. 26	1230	11,100	16.68	Feb. 18	1530	12,400	17.62
Nov. 30	1400	13,400	18.32	Feb. 23	1230	11,800	17.15
Dec. 2	1330	18,800	21.71	Feb. 28	0830	21,200	23.06
Jan. 17	2330	13,200	18.17				

Minimum discharge, 30 ft³/s Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	139	7120	1380	1590	9310	2200	1220	1120	293	72	49
2	44	145	14500	1180	1450	6160	2010	1390	1010	277	72	49
3	47	138	10000	1030	1390	6920	1930	1950	858	270	74	47
4	49	140	5300	914	1510	5590	1770	1950	760	282	62	46
5	49	227	3770	827	1500	4160	1730	1670	769	260	57	44
6	48	289	3090	764	6220	3390	1640	1530	772	238	64	43
7	51	507	2800	716	10500	2860	1620	1530	704	224	86	44
8	67	744	3670	672	6210	2730	1700	1350	648	211	100	45
9	85	509	2920	636	4550	2730	e1550	1200	608	197	92	44
10	82	493	2390	606	3400	2390	1710	1110	584	171	86	42
11	80	1200	2120	584	2740	2140	1840	1070	579	162	86	41
12	74	622	2700	563	2320	1970	e2000	1150	609	158	86	41
13	87	454	2840	542	2190	2000	e2120	1150	625	144	84	40
14	106	389	2410	567	2300	2390	1990	1090	650	136	84	41
15	90	446	2010	2760	2240	2290	2060	1010	678	135	79	43
16	91	751	1770	2870	3710	2170	2200	919	635	129	72	37
17	87	716	1610	4880	7720	2050	2370	909	607	121	63	34
18	83	694	1490	9420	9010	1920	2480	1160	583	118	58	38
19	82	561	1340	7570	7990	1870	2290	1280	539	108	55	41
20	81	1170	e1180	8340	4790	1870	2060	1280	514	104	52	40
21	79	20400	e1040	9270	4500	1830	1920	1230	493	101	48	34
22	76	12500	e930	10900	4840	1780	1770	1210	468	102	48	34
23	76	10000	e860	10600	9760	1710	1630	1460	447	105	46	34
24	94	9420	829	5640	7250	2060	e1700	1680	432	110	44	32
25	142	6580	856	3910	7390	2450	e1840	1750	414	120	44	37
26	122	8250	1260	3080	5590	2120	e1700	1610	391	105	43	39
27	107	5780	1180	2490	8830	1900	1630	1560	364	95	42	38
28	104	3610	1980	2200	18500	1720	1440	1540	347	84	40	39
29	117	4140	1860	2150	---	2050	1240	1390	333	77	40	38
30	120	9040	1410	1940	---	2450	1150	1220	307	76	49	39
31	119	---	1440	1770	---	2400	---	1090	---	78	50	---
TOTAL	2581	100054	88675	100771	149990	89380	55290	41658	17848	4791	1978	1213
MEAN	83.3	3335	2860	3251	5357	2883	1843	1344	595	155	63.8	40.4
MAX	142	20400	14500	10900	18500	9310	2480	1950	1120	293	100	49
MIN	42	138	829	542	1390	1710	1150	909	307	76	40	32
AC-FT	5120	198500	175900	199900	297500	177300	109700	82630	35400	9500	3920	2410
CFSM	.22	8.78	7.53	8.55	14.1	7.59	4.85	3.54	1.57	.41	.17	.11
IN.	.25	9.79	8.68	9.86	14.68	8.75	5.41	4.08	1.75	.47	.19	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1999, BY WATER YEAR (WY)

	MEAN	227	1503	2662	2970	2625	2382	1624	930	379	101	47.8	64.8
MAX	1771	6344	9242	7184	6686	4867	4518	2439	1214	280	116	358	
(WY)	1963	1974	1965	1970	1986	1983	1982	1963	1993	1983	1976	1978	
MIN	25.0	82.4	115	236	358	508	433	315	82.7	36.5	19.0	15.5	
(WY)	1988	1988	1977	1977	1977	1988	1977	1992	1992	1987	1992	1992	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1962 - 1999
ANNUAL TOTAL	706357	654229	
ANNUAL MEAN	1935	1792	1287
HIGHEST ANNUAL MEAN			2372
LOWEST ANNUAL MEAN			275
HIGHEST DAILY MEAN	20400	20400	64000
LOWEST DAILY MEAN	35	32	13
ANNUAL SEVEN-DAY MINIMUM	37	35	14
ANNUAL RUNOFF (AC-FT)	1401000	1298000	932600
ANNUAL RUNOFF (CFSM)	5.09	4.72	3.39
ANNUAL RUNOFF (INCHES)	69.15	64.05	46.03
10 PERCENT EXCEEDS	5440	4860	3160
50 PERCENT EXCEEDS	1040	909	520
90 PERCENT EXCEEDS	47	47	39

e Estimated

CHEMICAL QUALITY OF PRECIPITATION

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR

LOCATION.--Lat 45°26'55", long 122°08'45", in SE 1/4 SE 1/2 sec.26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.4 mi northeast of town of Bull Run, and approximately 20 mi east of Portland.

PERIOD OF RECORD.--June 1980 to September 1981 (event sampling), September 1981 to November 1981 (weekly composite), July 1982 to current year (weekly composite).

INSTRUMENTATION.--A bulk-type plastic double cylinder with receiving funnel directing deposition to inner cylinder was used for the period of record June 1980 to September 1981. The wet-deposition sample collector is an Aerochem Model 301 wet/dry deposition collector. Refer to WDR OR-92-1 for further description of instrumentation.

REMARKS.--Previously unpublished 1998 water year data are included in the following table. Additional data for the 1999 water year not available at time of publication and will be published in a later report. Inches of precipitation obtained from an on-site recording weighing-bucket gage. The sample collector is located in the restricted access area of the city of Portland's Bull Run River Watershed. Samples are collected by Bull Run Headworks Water Quality Laboratory personnel and analyzed by the Illinois Supply Central Analytical Laboratory.

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	PH FIELD ATM DEP WET T (UNITS) (83106)	PH LAB ATM DEP WET T (UNITS) (83107)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)
APR 1998							
07-14	1.74	5.9	6.4	5.2	5.2	.05	.037
APR 14-21	.80	11.2	12.2	4.9	4.8	.08	.022
APR 21-28	1.60	11.7	11.4	5.0	4.8	.10	.033
APR 28- MAY 05	.34	--	--	--	--	--	--
MAY 05-12	1.09	17.2	16.8	4.5	4.6	.06	.031
MAY 12-19	3.84	7.3	7.1	5.0	5.0	.02	.023
MAY 19-26	3.32	6.2	5.5	5.0	5.1	.04	.013
MAY 26- JUN 02	2.18	6.0	6.3	5.1	5.0	.03	.019
JUN 02-09	.02	--	35.9	--	4.4	.23	.055
JUN 09-16	1.65	6.8	7.6	5.1	5.0	.05	.031
JUN 16-23	.48	8.7	9.3	5.0	4.8	.07	.021
JUN 23-30	2.36	3.3	3.0	5.5	5.5	.02	.008
JUN 30- JUL 07	.32	--	--	--	--	--	--
JUL 07-14	.21	--	--	--	--	--	--
JUL 14-21	.00	--	--	--	--	--	--
JUL 21-28	.00	--	--	--	--	--	--
JUL 28- AUG 04	.14	--	21.5	4.9	4.9	.21	.059
AUG 04-11	<.01	--	--	--	--	--	--
AUG 11-18	.00	--	--	--	--	--	--
AUG 18-25	.04	--	--	--	--	--	--
AUG 25- SEP 01	<.01	--	--	--	--	--	--
SEP 01-08	.00	--	--	--	--	--	--
SEP 08-15	.00	--	--	--	--	--	--
SEP 15-22	2.40	4.9	6.2	5.1	5.2	.02	.026
SEP 22-29	1.26	7.8	8.3	5.0	5.0	.04	.013
SEP 29- OCT 06	1.68	6.2	6.2	5.0	5.2	.02	.035
OCT 06-13	1.37	4.8	4.1	5.1	5.3	.03	.018
OCT 13-20	.75	9.3	9.6	5.2	5.0	.05	.066
OCT 20-27	.25	20.9	17.5	4.6	4.8	.10	.122
OCT 27- NOV 03	1.80	7.2	7.4	4.9	5.0	.03	.038
NOV 03-10	2.11	4.5	4.3	5.1	5.2	.01	.016
NOV 10-17	.85	5.4	6.1	5.1	5.2	.03	.031
NOV 17-24	4.85	6.8	7.0	5.0	5.3	.03	.059
NOV 24- DEC 01	3.78	4.2	3.9	5.7	5.3	.01	.026
DEC 01-08	4.44	7.3	8.3	5.8	5.3	.04	.095

E Estimated.

CHEMICAL QUALITY OF PRECIPITATION

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SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR--Continued

WATER-QUALITY DATA

DATE	SODIUM ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM ATM DEP WET DIS (MG/L) (83120)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L) (83071)
APR 1998						
07-14	.285	.020	.41	.51	.13	.44
APR 14-21	.131	.032	.95	.22	.49	1.59
APR 21-28	.200	.021	.71	.35	.26	1.25
APR 28- MAY 05	--	--	--	--	--	--
MAY 05-12	.226	.022	1.09	.40	.23	.05
MAY 12-19	.173	.012	.40	.30	.09	.54
MAY 19-26	.080	.012	.32	.13	.13	.53
MAY 26- JUN 02	.136	.012	.33	.21	.08	.55
JUN 02-09	.019	.009	.45	.08	.17	.76
JUN 09-16	.242	.018	.46	.41	.09	.50
JUN 16-23	.130	.016	.83	.21	.19	.62
JUN 23-30	.059	.011	.21	.11	.09	.19
JUN 30- JUL 07	--	--	--	--	--	--
JUL 07-14	--	--	--	--	--	--
JUL 14-21	--	--	--	--	--	--
JUL 21-28	--	--	--	--	--	--
JUL 28- AUG 04	.269	.142	2.23	.45	1.30	3.46
AUG 04-11	--	--	--	--	--	--
AUG 11-18	--	--	--	--	--	--
AUG 18-25	--	--	--	--	--	--
AUG 25- SEP 01	--	--	--	--	--	--
SEP 01-08	--	--	--	--	--	--
SEP 08-15	--	--	--	--	--	--
SEP 15-22	.209	.015	.41	.36	.11	.27
SEP 22-29	.096	.024	.59	.15	.25	.85
SEP 29- OCT 06	.293	.039	.33	.53	.05	.23
OCT 06-13	.144	.013	.19	.25	.03	.17
OCT 13-20	.544	.041	.50	.96	.11	.51
OCT 20-27	1.20	.064	.94	1.78	.28	1.22
OCT 27- NOV 03	.326	.023	.30	.57	.06	.47
NOV 03-10	.141	.010	.18	.24	.02	.21
NOV 10-17	.274	.013	.22	.51	<.02	.19
NOV 17-24	.506	.023	.29	.94	.04	.17
NOV 24- DEC 01	.227	.008	.12	.40	<.02	.15
DEC 01-08	.824	.035	.31	1.45	.02	.15

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)
DEC 1998	
08-15	2.88
DEC 15-22	<.01
DEC 22-29	4.72
DEC 29 1998- JAN 05 1999	1.95

CHEMICAL QUALITY OF PRECIPITATION

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR

LOCATION.--Lat 43°07'01", Long 121°04'00", in NE 1/4 SW 1/4 sec.21, T.28 S., R.14 E., Lake County, Hydrologic Unit 17120005, at Silver Lake Ranger Station, 0.5 mi south of State Highway 31, and 1 mi southwest of town of Silver Lake.

PERIOD OF RECORD.--August 1983 to current year (weekly composite).

INSTRUMENTATION.--The wet-deposition sample collector is an Aerochem Metrics Model 301 wet/dry deposition collector. Refer to WDR OR-92-1 for further description of instrumentation.

REMARKS.--Previously unpublished 1998 water year data are included in the following table. Additional data for the 1999 water year not available at time of publication and will be published in a later report. Inches of precipitation obtained from an on-site recording weighing-bucket gage. Samples are collected by Silver Lake Ranger Station personnel and analyzed by the Illinois State Water Survey Central Analytical Laboratory.

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	PH FIELD ATM DEP WET T (UNITS) (83106)	PH LAB ATM DEP WET T (UNITS) (83107)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)
APR 1998							
07-14	.23	4.8	3.7	5.1	5.3	.08	.013
APR 14-21	.21	5.9	5.7	4.8	4.9	.02	.004
APR 21-28	.07	16.9	17.1	5.1	5.0	.19	.031
APR 28-							
MAY 05	.66	6.2	4.0	5.0	5.3	.10	.012
MAY 05-12	1.31	6.3	4.8	4.9	5.2	.08	.012
MAY 12-19	.38	4.4	3.3	5.1	5.3	.03	.004
MAY 19-26	.83	7.9	5.9	4.8	5.1	.06	.010
MAY 26-							
JUN 02	1.58	4.8	3.6	5.2	5.3	.07	.008
JUN 02-09	.12	8.1	7.8	5.2	5.3	.18	.033
JUN 09-16	1.33	9.3	2.8	5.1	5.2	.02	.003
JUN 16-23	.11	13.7	6.6	4.6	5.4	.10	.057
JUN 23-30	.22	3.3	2.1	5.2	5.5	.03	.005
JUN 30-							
JUL 07	.14	14.5	12.0	4.6	4.7	.12	.032
JUL 07-14	.00	--	--	--	--	--	--
JUL 14-21	.00	--	--	--	--	--	--
JUL 21-28	.11	33.6	32.9	4.3	4.2	.35	.071
JUL 28-							
AUG 04	.20	14.3	15.4	4.6	4.7	.21	.030
AUG 04-11	<.01	--	--	--	--	--	--
AUG 11-18	<.01	--	--	--	--	--	--
AUG 18-							
SEP 01	.08	13.2	15.1	4.7	4.8	.25	.052
SEP 01-08	.00	--	--	--	--	--	--
SEP 08-15	.19	10.5	10.3	4.8	5.0	.20	.039
SEP 15-22	<.01	--	--	--	--	--	--
SEP 22-29	.34	3.8	2.6	5.2	5.4	.01	<.003
SEP 29-							
OCT 06	.02	--	3.0	--	5.4	.02	.004
OCT 06-14	<.01	--	--	--	--	--	--
OCT 14-20	<.01	--	--	--	--	--	--
OCT 20-27	.05	--	7.6	--	5.2	.03	.005
OCT 27-							
NOV 03	.39	3.8	2.9	5.1	5.3	.02	.007
NOV 03-10	.27	3.8	2.7	5.1	5.4	.01	<.003
NOV 10-17	.14	4.5	4.0	4.9	5.2	.02	.004
NOV 17-24	1.88	2.9	2.2	5.3	5.4	<.01	<.003
NOV 24-							
DEC 01	.55	E3.4	2.8	E5.0	5.2	.01	<.003
DEC 01-08	.38	3.3	2.4	5.1	5.4	.01	<.003
DEC 08-15	<.01	--	3.7	--	5.4	--	--

E Estimated.

CHEMICAL QUALITY OF PRECIPITATION

429

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER-QUALITY DATA

		SODIUM		POTAS-	SULFATE	CHLO-	NI-	NI-				
		ATM DEP		SIUM	ATM DEP	RIDE	TROGEN	TROGEN				
		WET DIS		ATM DEP	ATM DEP	ATM DEP	AMMON.	NITRATE				
DATE		(MG/L)		(MG/L)	AS SO4	WET DIS	WET DIS	ATM DEP	WET DIS	AS NO3		
		(83138)		(83120)	(83160)	(82944)	(83047)	(83071)				
APR 1998												
07-14		.025	.010	.19	.04	.04	.31					
APR 14-21												
		.010	<.003	.26	.03	.02	.49					
APR 21-28												
		.085	.017	1.37	.13	1.23	3.64					
APR 28-MAY 05												
		.034	.005	.22	.04	.06	.38					
MAY 05-12												
		.021	.012	.33	.04	.11	.45					
MAY 12-19												
		.008	.005	.13	<.03	<.02	.17					
MAY 19-26												
		.022	.014	.38	.05	.15	.56					
MAY 26-JUN 02												
		.032	.007	.18	.04	.08	.42					
JUN 02-09												
		.043	.048	.67	.06	.33	1.05					
JUN 09-16												
		.004	.006	.09	<.03	<.02	.14					
JUN 16-23												
		.070	.815	.55	.10	<.02	<.03					
JUN 23-30												
		.006	.024	.04	<.03	<.02	<.03					
JUN 30-JUL 07												
		.043	.196	.52	.11	<.02	1.00					
JUL 07-14												
		--	--	--	--	--	--					
JUL 14-21												
		--	--	--	--	--	--					
JUL 21-28												
		.107	.155	1.46	.23	.16	3.71					
JUL 28-AUG 04												
		.097	.070	.68	.18	.16	1.90					
AUG 04-11												
		--	--	--	--	--	--					
AUG 11-18												
		--	--	--	--	--	--					
AUG 18-SEP 01												
		.212	.090	1.04	.21	.31	2.09					
SEP 01-08												
		--	--	--	--	--	--					
SEP 08-15												
		.053	.086	.79	.12	.29	1.43					
SEP 15-22												
		--	--	--	--	--	--					
SEP 22-29												
		<.003	<.003	.11	.03	<.02	.05					
SEP 29-OCT 06												
		.008	.018	<.03	.05	<.02	<.03					
OCT 06-14												
		--	--	--	--	--	--					
OCT 14-20												
		--	--	--	--	--	--					
OCT 20-27												
		.013	.013	.09	.06	.06	.38					
OCT 27-NOV 03												
		.005	.008	.13	<.03	<.02	.17					
NOV 03-10												
		.005	.005	.04	<.03	.03	.19					
NOV 10-17												
		.016	.014	.04	.04	<.02	.47					
NOV 17-24												
		.005	<.003	<.03	<.03	<.02	.04					
NOV 24-DEC 01												
		.011	<.003	.04	.04	<.02	.19					
DEC 01-08												
		.017	.007	.05	.04	<.02	.13					
DEC 08-15												
		--	--	--	--	--	--					
DATE		TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	PH LAB ATM DEP WET T (UNITS) (83107)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)	SODIUM ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM ATM DEP WET DIS (MG/L) (83120)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L) (83071)
DEC 1998												
15-22		<.04	5.5	5.1	--	--	--	--	--	--	--	--
DEC 22-30		.00	--	--	--	--	--	--	--	--	--	--
DEC 30 1998- JAN 05 1999		.02	4.0	5.4	<.01	<.003	<.003	<.003	.04	.04	<.02	.06

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 floodflow 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.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at low-flow partial-record sites and 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 1999

Station name and number	Location and drainage area	Period of record	Date	Water year 1999 maximum		Period of record maximum		
				Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
NESTUCCA RIVER BASIN								
Walker Creek near Fairdale (14302850)	Lat 45°18'12", long 123°24'51", in SW 1/4 SW 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, at culvert, 5.3 mi southwest of Fairdale, and at mile 0.5. Drainage area is 2.72 mi ² .	1992-99	11-29-98	unknown	390	2-08-96	unknown	450

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Discharge measurements made at miscellaneous sites during water year 1999.

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
KLAMATH RIVER BASIN						
Keno Power Canal	Link River	Lat 42°13'16", long 121°47'35", in SW 1/4 NW 1/4 sec.32 T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010204, 600 ft downstream from Link River gage, and 1,200 ft upstream from Main Street Bridge	3,810	1961-98	11-17-98	261
					1-20-99	258
					3-23-99	260
					5-19-99	246
					7-30-99	255
OWYHEE RIVER BASIN						
13181800	Snake River	Lat 43°03'55", long 117°41'22", in SW 1/4 NE 1/4, sec.40 T.29 S., R.41 E., Malheur County, Hydrologic Unit 17050110.	---	---	9- 1-99	282
13181900	do.....	Lat 43°13'20", long 117°30'40", in SW 1/4 SW 1/4 sec.7, T.27 S., R.43 E., Malheur County, Hydrologic Unit 17050110.	---	---	8-31-99	302
GRANDE RONDE RIVER BASIN						
13324280	Grande Ronde River	Lat 45°44'05", long 117°51'48", in SE 1/4 SW 1/4 sec.18, T.3 N., R.40 E., Union County, Hydrologic Unit 17060104, on right bank, 150 ft downstream from intake to Looking Glass Fish Hatchery, 1,300 ft upstream from gaging station (13324300), 2.5 mi northwest of Looking Glass, and at mile 2.5.	---	---	8-17-99	6.3
					8-20-99	22
					8-20-99	2.5
UMATILLA RIVER BASIN						
14020760	Umatilla River	Lat 45°39'38", long 118°33'52", in SW 1/4 SW 1/4 sec.8 T.2 N., R.34 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank, on downstream side of county road crossing, 4.5 mi west of Mission, and at mile 1.3.	4.01	1992-1997‡	1-22-98	a8.9
					4- 6-98	a1.5
					1-22-99	12
					3-30-99	2.8
					5-20-99	1.5
					7-16-99	no flow
COLUMBIA RIVER MAIN STEM						
14128910	Pacific Ocean	Lat 45°36'45", long 122°01'35", in NE 1/4 SE 1/4 sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, 10.1 mi downstream from Tumult Creek, 1.0 mi west of Warrendale, 5.1 mi downstream from Bonneville Dam, and at mile 141.0.	240,000 (approx)	1998	4-28-99	343,000
SANDY RIVER BASIN						
14131400	Sandy River	Lat 45°18'32", long 121°51'31", in NE 1/4 SE 1/4 sec.18, T.3 S. R.8 E., Clackamas County, Hydrologic Unit 17080001, in Mt. Hood National Forest, at bridge, 0.5 mi upstream from Devil Canyon Creek, 1.2 mi downstream from Lady Creek, and 2.8 mi southeast of Rhododendron.	14.8	---	10-29-98	55
					4- 2-99	70
					9- 24-99	55
14133400	do.....	Lat 45°20'25", long 121°55'48", in SW 1/4 NE 1/4 sec.3, T.3 S., R.7 E., Clackamas County, Hydrologic Unit 17080001, on right bank upstream from bridge, 1.0 mi upstream from Salmon River, and 1.3 mi west of Rhododendron.	0.36	---	12-11-98	5.8
					12-30-98	18
					1-15-99	4.7
					2-11-99	2.5
					3-17-99	1.6
					3-25-99	1.0
					4- 2-99	1.4
14138700	do.....	Lat 45°28'05", long 121°51'16", in SE 1/4 NW 1/4 sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 0.67 mi downstream from outlet structure, at Bull Run Lake, and 9.9 mi northeast of Brightwood.	---	1992-98	10-20-98	4.3
					12-15-98	14
					3-23-99	14
					6-11-99	28
					8-17-99	8.6
					9- 9-99	7.1
Bull Run River 450 ft downstream from Lower Flume	do.....	Lat 45°28'19", long 121°51'54", in NE 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 450 ft downstream from Lower Flume, 1.23 mi downstream from outlet structure, at Bull Run Lake, and 9.7 mi northeast of Brightwood. Location updated through use of Global Positioning System (GPS), formerly referred to as 1,000 ft downstream from Lower Flume.	---	1994, 1996-98	9- 9-99	20

‡ Operated as a continuous record gaging station.

a Not previously measured.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1999--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
Drift Creek	Pudding River	Lat 44°57'28", long 122°47'10", Marion County, Hydrologic Unit 17090009, at Endresen Lane, and at mile 3.2.	---	---	6-23-99 9-15-99	9.3 0.66
Unnamed tributary to Drift Creek at mile 2.8	Drift Creek	Lat 44°57'46", long 122°47'19", Marion County, Hydrologic Unit 17090009, at Endresen Road, at mouth.	---	---	6-23-99 9-15-99	0.28 0.03
Drift Creek	Pudding River	Lat 44°58'35", long 122°49'43", Marion County, Hydrologic Unit 17090009, at Hibbard Road, and at mile 0.6.	---	---	6-23-99 9-15-99	9.4 0.64
Pudding River	Molalla River	Lat 44°59'39", long 122°50'39", Marion County, Hydrologic Unit 17090009, southwest of Stayton at Highway 213, and at mile 49.7.	---	1996	9-16-99	0.13
Silver Creek	Pudding River	Lat 45°00'24", long 122°49'26", Marion County, Hydrologic Unit 17090009, west of Silverton at Brush Creek Drive, and at mile 1.3.	---	1996	9-17-99	16
Abiqua Creek	Pudding River	Lat 45°02'20", long 122°49'27", Marion County, Hydrologic Unit 17090009, southwest of Mount Angel, at Nusum Road, and at mile 0.4.	---	---	9-17-99	7.7
Pudding River	Molalla River	Lat 45°02'18", long 122°49'59", Marion County, Hydrologic Unit 17090009, southwest of Mount Angel, at Nusum Road, and at mile 45.5.	---	1993,1996	9-17-99	25
14201000 Pudding River	Molalla River	Lat 45°03'47", long 122°49'44", Marion County, Hydrologic Unit 17090009, west of Mount Angel, at Saratoga Road, and at mile 40.7.	204	1939-66, 1996	9-20-99	15
Little Pudding River	Pudding River	Lat 45°04'20", long 122°51'25", Marion County, Hydrologic Unit 17090009, west of Mount Angel, below Parkersville Dam, and at mile 0.3.	---	---	9-20-99	6.8
Pudding River	Molalla River	Lat 45°07'34", long 122°49'09", Marion County, Hydrologic Unit 17090009, southeast of Woodburn, at Highway 214, and at mile 26.8.	---	1993,1996	9-20-99	27
Butte Creek	Pudding River	Lat 45°03'34", long 122°42'15", Clackamas-Marion County, Hydrologic Unit 17090009, at Highway 213, 2.1 mi northwest of Scotts Mills, and at mile 10.3.	---	---	6-30-99 9-15-99 9-16-99	56 6.6 5.9
14201500 Butte Creek	do.....	Lat 45°06'06", long 122°44'42", Clackamas-Marion County, Hydrologic Unit 17090009, at Monitor, and at mile 5.9.	58.7	1936,1940-52, 1966-85	6-30-99 9-16-99	47 3.9
Butte Creek	do.....	Lat 45°08'52", long 122°46'44", Clackamas-Marion County Hydrologic Unit 17090009, at Highway 211, 3.0 mi east of Woodburn, and at mile 1.0.	---	1993,1996	6-30-99 9-16-99 9-21-99	53 1.7 3.8
Pudding River	Molalla River	Lat 45°10'49", long 122°45'13", Clackamas County, Hydrologic Unit 17090009, east of Hubbard, at Whiskey Hill Road, and at mile 17.5.	---	1996	9-21-99	35
Bear Creek	Rock Creek	Lat 45°11'38", long 122°43'16", Clackamas County, Hydrologic Unit 17090009, at Barlow Road, east of Hubbard..	---	1993	9-22-99	0.91
Rock Creek	Pudding River	Lat 45°09'56", long 122°44'02", Clackamas County, Hydrologic Unit 17090009, at Miller Road, east of Hubbard.	---	1993	9-22-99	0.76
14202000 Pudding River	Molalla River	Lat 45°14'00", long 122°44'56", Clackamas-Marion County, Hydrologic Unit 17090009, at Aurora, and at mile 8.1.	479	1928-64, 1993-97	9-22-99	42
Mill Creek	Pudding River	Lat 45°14'01", long 122°45'21", Marion County, Hydrologic Unit 17090009, at Ehlen Road, at Aurora.	---	1993	9-22-99	5.2
Pudding River	Molalla River	Lat 45°15'37", long 122°44'30", Clackamas-Marion County, Hydrologic Unit 17090009, at Arndt Road, and at mile 5.1.	---	---	9-22-99	48
14206925 Fanno Creek at Scholls Ferry Road	Tualatin River	Lat 45°28'16", long 122°46'25", in SE 1/4 NW 1/4, sec.23,T.1 S., R.1 W., Washington County, Hydrologic Unit 17090010, on right bank, under Scholls Ferry Road Bridge, near Allen Blvd.	---	---	11-30-98	417

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1999--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
14206950 Fanno Creek at Durham	Tualatin River	Lat 45°24'13", long 122°45'13", in NE 1/4 NW 1/4, sec.13, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, on left bank, under Durham Road Bridge, at Durham.	31.5	1994-96	11-30-98	240
14208000 Clackamas River at Big Bottom	Willamette River	Lat 45°01'00", long 121°55'10", in NW 1/4 SE 1/4 sec.26, T.6 S., R.7 E., Clackamas County, Mount Hood National Forest, on right bank at lower end of Big Bottom, 0.5 mi downstream from Pot Creek, 28 mi southeast of Estacada, and at mile 65.1.	136	1920-70, 1997-98	12-15-98 3-30-99 9-27-99	891 642 279
Clackamas River	do.....	Lat 45°09'31", long 122°09'00", Clackamas County, Hydrologic Unit 17090011, at Fish Creek Road, Bridge, southeast of Estacada, and at mile 41.7.	---	---	1-12-99 3-30-99 9-27-99	2,850 2,820 1,140
Clackamas River	do.....	Lat 45°10'01", long 122°09'17", Clackamas County, Hydrologic Unit 17090011, at Carter Bridge, southeast of Estacada, and at mile 40.7.	---	---	1-12-99	3,250
Clackamas River upstream from NF Reservoir	do.....	Lat 45°11'51", long 122°13'02", Clackamas County, Hydrologic Unit 17090011, at powerlines upstream from North Fork Reservoir, at Memaloose Bridge.	---	1998	6-15-99 7-13-99 8-24-99	5,200 1,840 1,030
Clackamas River at Carver	Willamette River	Lat 45°23'35", long 122°29'45", Clackamas County, Hydrologic Unit 17090011, at Carver Bridge, at Carver.	---	1998	6-15-99 8-24-99	6,120 1,420
Johnson Creek	do.....	Lat 45°28'23", long 122°24'06", Multnomah County, Hydrologic Unit 17090012, at Palmblad Road, 2.1 mi southeast of Gresham, and at mile 17.2.	---	1987-88 1998	8- 4-99	0.86
Johnson Creek	do.....	Lat 45°29'44", long 122°26'00", Multnomah County, Hydrologic Unit 17090012, at Walters Road, in Gresham, and at mile 14.5.	---	1987-88 1998	8- 4-99	1.2
Johnson Creek	do.....	Lat 45°29'19", long 122°28'01", Multnomah County, Hydrologic Unit 17090012, at 190th Ave., 2.0 mi west of Gresham, and at mile 12.6.	---	1987-88 1998	8- 4-99	1.6
Kelley Creek	Johnson Creek	Lat 45°28'38", long 122°29'49", Multnomah County, Hydrologic Unit 17090012, at southeast 159th Place in Portland, and at mile 0.1.	---	1998	8- 4-99	0.33
Johnson Creek	Willamette River	Lat 45°28'35", long 122°32'42", Multnomah County, Hydrologic Unit 17090012, at Foster Road and Brookside Park, in Portland, and at mile 7.8.	---	1987-88 1998	9- 3-99	1.9
Johnson Creek	do.....	Lat 45°27'48", long 122°34'41", Multnomah County, Hydrologic Unit 17090012, at 82nd Avenue, and at mile 5.5.	---	1987-90 1997-98	9- 3-99	2.0
Johnson Creek	do.....	Lat 45°27'43", long 122°36'54", Multnomah County, Hydrologic Unit 17090012, at 45th Avenue, and at mile 3.2.	---	1988, 1997-98	9- 3-99	3.5
Errol Spring	Johnson Creek	Lat 45°27'49", long 122°37'00", Multnomah County, Hydrologic Unit 17090012, at 44th Avenue in Portland, at mouth.	---	1988	12- 4-98 9- 4-99	0.97 1.2
Storm Sewer Tributary	Johnson Creek	Lat 45°27'49", long 122°37'00", Multnomah County, Hydrologic Unit 17090012, at 44th Avenue in Portland, at mouth.	---	1988	9- 4-99	0.98
Johnson Creek	Willamette River	Lat 45°27'54", long 122°37'48", Multnomah County, Hydrologic Unit 17090012, at Berkeley Place, in Portland, and at mile 2.2.	---	1988,1993 1998	9- 3-99 9- 4-99	5.5 5.9
Johnson Creek	do.....	Lat 45°27'40", long 122°38'27", Multnomah County, Hydrologic Unit 17090012, at Johnson Creek Park, upstream from mouth of Crystal Springs Creek, in Portland, at at mile 1.2.	---	1998	9- 4-99	5.5

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1999--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements										
					Date	Discharge (ft ³ /s)									
WILLAMETTE RIVER BASIN--Continued															
Crystal Springs Creek	Johnson Creek	Lat 45°28'56", long 122°38'00", Multnomah County, Hydrologic Unit 17090012, on Reed College Campus, 0.1 mi downstream from Reed Lake, and at mile 1.8.	---	1997-98	10-29-98	4.3									
					12- 4-98	4.2									
					1- 8-99	7.2									
					2-12-99	4.8									
					3-11-99	4.2									
					4-15-99	11									
					4-16-99	4.8									
					5-12-99	5.9									
					6-11-99	5.2									
					7- 9-99	5.9									
14211546 Crystal Springs Creek	Johnson Creek	Lat 45°27'39", long 122°38'30", Multnomah County, Hydrologic Unit 17090012, at mouth.	---	1987-90 1997-98	10-29-98	17									
					12- 4-98	18									
					1- 8-99	19									
					2-12-99	19									
					3-11-99	17									
					4-15-99	18									
					5-12-99	19									
					6-11-99	18									
					7- 9-99	18									
					8-12-99	18									
					9- 8-99	17									
					NESTUCCA RIVER BASIN										
					14302850 Walker Creek	Nestucca River	Lat 45°18'12", long 123°24'51", in SW 1/4 SW 1/4 sec.15, T.3S., R.6 W., Yamhill County, Hydrologic Unit 17100203 5.3 mi southwest of Fairdale, and at mile 0.5.	2.72	1991-98	12- 3-98	79				
										3-30-99	27				
										5- 4-99	21				
										7- 21-99	0.92				
					UMPUQA RIVER BASIN										
					Little River at White Creek Campground	North Umpqua River	Lat 43°13'40", long 122°51'37", in SW 1/4 SE 1/4 sec.7 T.27 S., R.1 W., Douglas County, Hydrologic Unit 17100301, at White Creek Campground.	---	1998	8-18-99	16				
										Little River at Coolwater Campground					
										do.....	Lat 43°13'50", long 122°52'14", sec.12, T.27, R.2 W., Douglas County, Hydrologic Unit 17100301, at Coolwater Campground.	---	---	11-10-98	120
Negro Creek near mouth	Little River	Lat 43°13'55", long 122°52'24", sec.12, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, near mouth.	---	---						11-10-98 8-18-99	18 4.6				
Little River at USFS road 2701	North Umpqua River	Lat 43°14'53", long 122°55'33", in NW 1/4 SW 1/4 sec.3, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Job Corps work camp, and at US Forest Service road 2701.	---	1998						8-17-99	26				
										Little River upstream from Wolf Creek					
										do.....	Lat 43°14'02", long 122°56'59", in NW 1/4 SW 1/4 sec.9, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Wolf Creek.	---	1998	11- 9-98 8-16-99	133 21
										Unnamed Tributary to WF Wolf Creek at 32.0 Road	Wolf Creek	Lat 43°10'56", long 122°57'34", sec.32,T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301.	---	---	8-18-99
West Fork Wolf Creek at 16.0 Road	do.....	Lat 43°12'09", long 122°57'19", in NW 1/4 SE 1/4 sec.20, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301.	---	1998						11- 9-98 8-17-99	4.0 0.44				
										Unnamed Tributary to WF Wolf Creek at 16.0 Road					
					do.....	Lat 43°12'10", long 122°57'24", in NW 1/4 SE 1/4 sec.20., T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301.	---	1998	11-10-98 8-17-99	6.2 0.07					
					Unnamed Tributary to WF Wolf Creek at 16.0 Road	do.....	Lat 43°12'12", long 122°57'09", sec.20,T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301.	---	---	8-17-99	0.01				
					Wolf Creek at BLM Road 14.1	Little River	Lat 43°12'14", long 122°56'43", Douglas County, Hydrologic Unit 17100301.	---	---	8-18-99	0.35				

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1999--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
UMPQUA RIVER BASIN--Continued						
Wolf Creek upstream from Egglestrom Creek	Little River	Lat 43°13'27", long 122°56'46", in SW 1/4 NW 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Egglestrom Creek.	---	1998	8-16-99	1.5
Unnamed Tributary to Wolf Creek (west bank)	Wolf Creek	Lat 43°13'14", long 122°56'50", in NW 1/4 SW 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301 on west bank upstream from Egglestrom Creek.	---	1998	11- 9-98 8-16-99	0.31 no flow
Unnamed Tributary to Wolf Creek (west bank)	do.....	Lat 43°13'37", long 122°56'50", sec.16, T.27S., R.2 W., Douglas County, Hydrologic Unit 17100301, on west bank downstream from Wolf Creek Falls.	---	---	8-16-99	0.02
Egglestrom Creek at mouth	do.....	Lat 43°13'41", long 122°56'48", in NW 1/4 NW 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, at mouth.	---	1998	11- 9-98 8-16-99	3.7 0.81
Wolf Creek at mouth	Little River	Lat 43°13'58", long 122°57'00", in NW 1/4 SW 1/4 sec.9, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, at mouth.	---	1998	11- 9-98 8-17-99	18 1.9
Little River downstream from Wolf Creek	North Umpqua River	Lat 43°13'58", long 122°57'04", Douglas County, Hydrologic Unit 17100301.	---	---	8-17-99	24
ROGUE RIVER BASIN						
Rogue River at McLeod	Pacific Ocean	Lat 42°39'31", long 122°41'05", in SW 1/4 NW 1/4 sec.34, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, at Highway 62 bridge, 1.75 mi downstream from Lost Creek Dam.	---	---	5-17-99	2200
Water Return from Cole M Rivers Fish Hatchery	Rogue	Lat 42°39'58", long 122°41'05", in SW 1/4 SE 1/4 sec.27, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, at Cole M Rivers Fish Hatchery, 0.7 mi downstream from Lost Creek Dam.	---	---	5-17-99	34

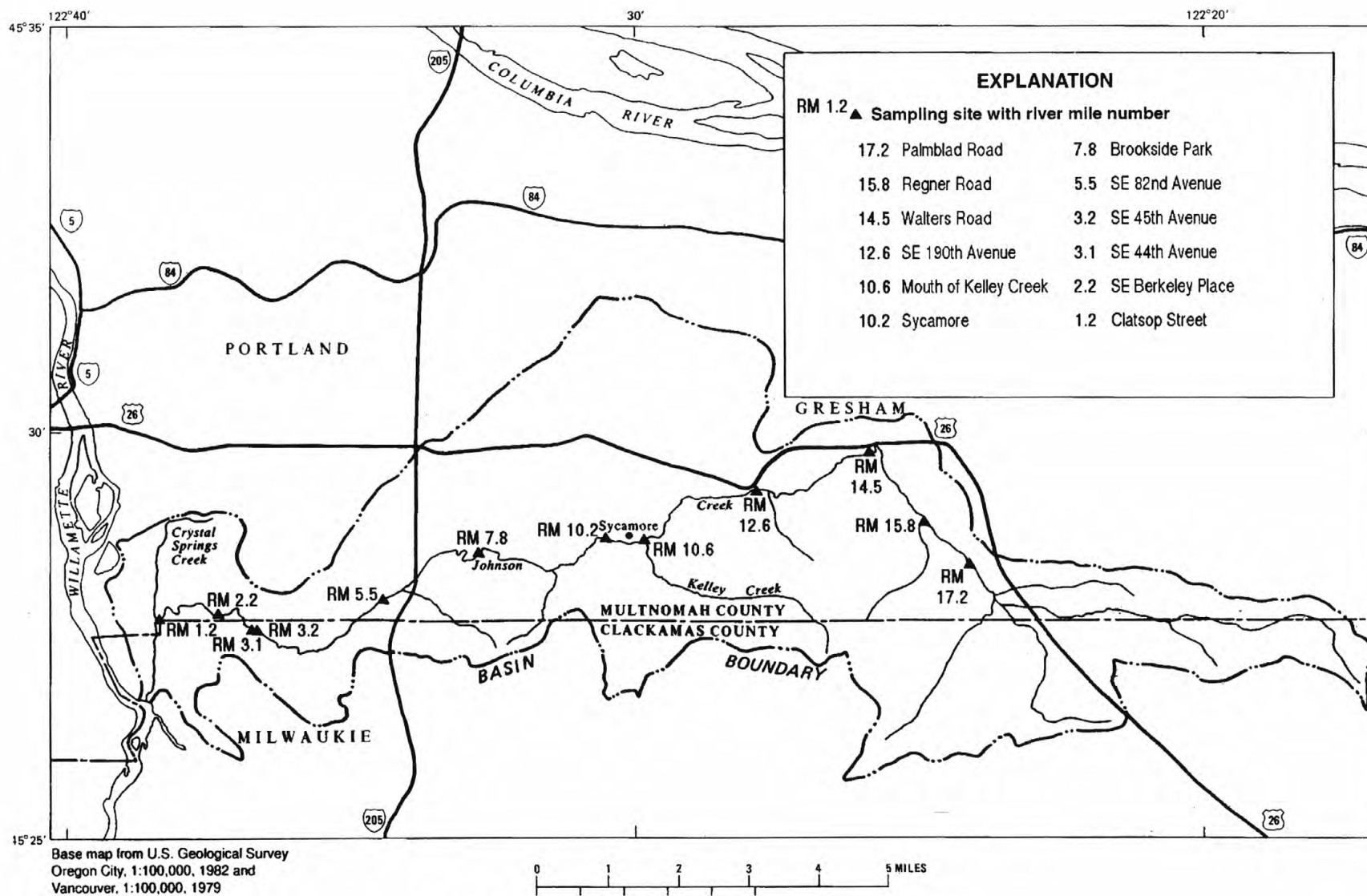


Figure 36. Johnson Creek Seepage Investigation.

MISCELLANEOUS INVESTIGATIONS

Johnson Creek Seepage Investigation
Portland, OR

Discharge measurements were made on Aug. 4, 1999 and September 3-4, 1999 on Johnson Creek and tributaries to study channel gains and losses due to ground-water discharge and recharge. The reach studied is 16.0 miles in length and extends from river mile (RM) 17.2 at Palmblad Rd. in Gresham to RM 1.2 upstream of the confluence with Crystal Springs Creek. The measurements were made during a period of base flow. Tributary flow was considered a contribution and not a gain.

Johnson Creek mile	Stream	Location	Date	Measured discharge, in cubic feet per second (ft ³ /s)	Gain or loss, in ft ³ /s
17.2	Johnson Creek	Palmblad Road	8/4/99	0.86	--
15.8	do	Gaging station at Regner Road (14211400)	8/4/99	1.02	+0.16
14.5	do	Walters Road	8/4/99	1.24	+0.22
12.6	do	SE 190 Th. Avenue	8/4/99	1.62	+0.38
10.6	Kelley Creek	mouth	8/4/99	0.33	--
10.2	Johnson Creek	Gaging station at Sycamore (14211500)	8/4/99	2.25	+0.30
10.2	do	Gaging station at Sycamore (14211500)	9/3/99	1.97	--
7.8	do	Brookside Park	9/3/99	1.87	-0.10
5.5	do	SE 82 nd Avenue	9/3/99	2.02	+0.15
3.2	do	SE 45 Th. Avenue	9/3/99	3.50	+1.48
3.1	Errol Spring	SE 44 Th. Avenue	9/4/99	1.22	--
3.1	storm sewer	SE 44 Th. Avenue	9/4/99	0.98	--
2.2	do	SE Berkeley Place	9/4/99	5.90	+0.20
1.2	do	Clatsop Street	9/4/99	5.55	-0.35

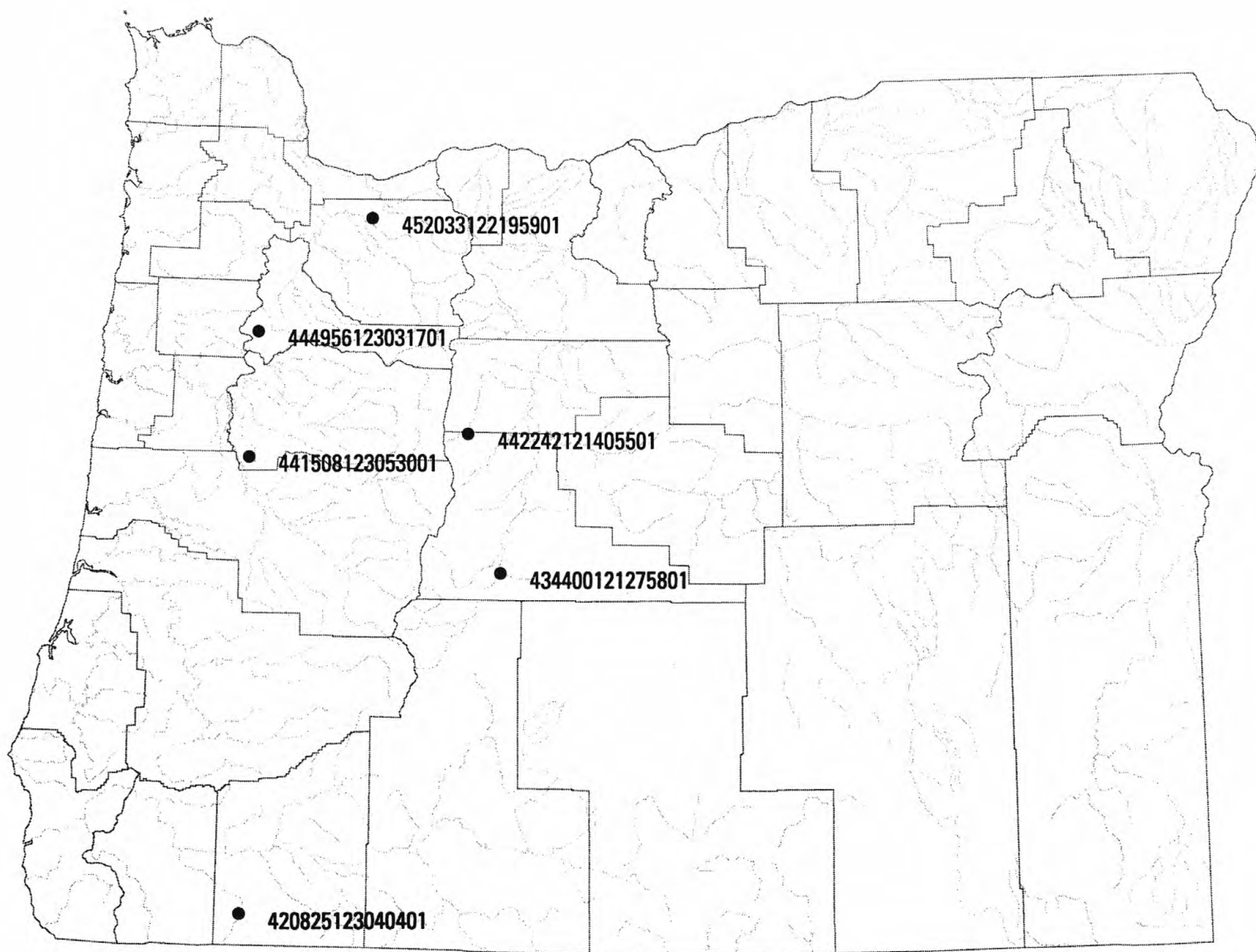


Figure 37. Location of observation wells in Oregon.

GROUND WATER LEVELS

CLACKAMAS COUNTY

452033122195901. Local number, 02S/04E-29DAD

LOCATION.--Lat 45°21'56", long 122°20'00", Hydrologic Unit 17090011, 5 mi north of Estacada.

Owner: Polly and Michael Lohrey.

AQUIFER.--Sandy River Mudstone/Troutdale Gravel Aquifer. Tertiary.

WELL CHARACTERISTICS.--Drilled irrigation well, 6 inch casing to 176.3 ft, completed depth of 190 ft, perforated 95 to 110 ft, 129 to 149 ft.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since Feb. 1998; periodic measurements using electric sounder tape and chalked steel tape by Oregon Water Resources Department personnel from Mar. 1962 to Jan. 1998.

DATUM.--Elevation of land surface is 710 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: westside bottom of pump base, 0.4 ft above land-surface datum.

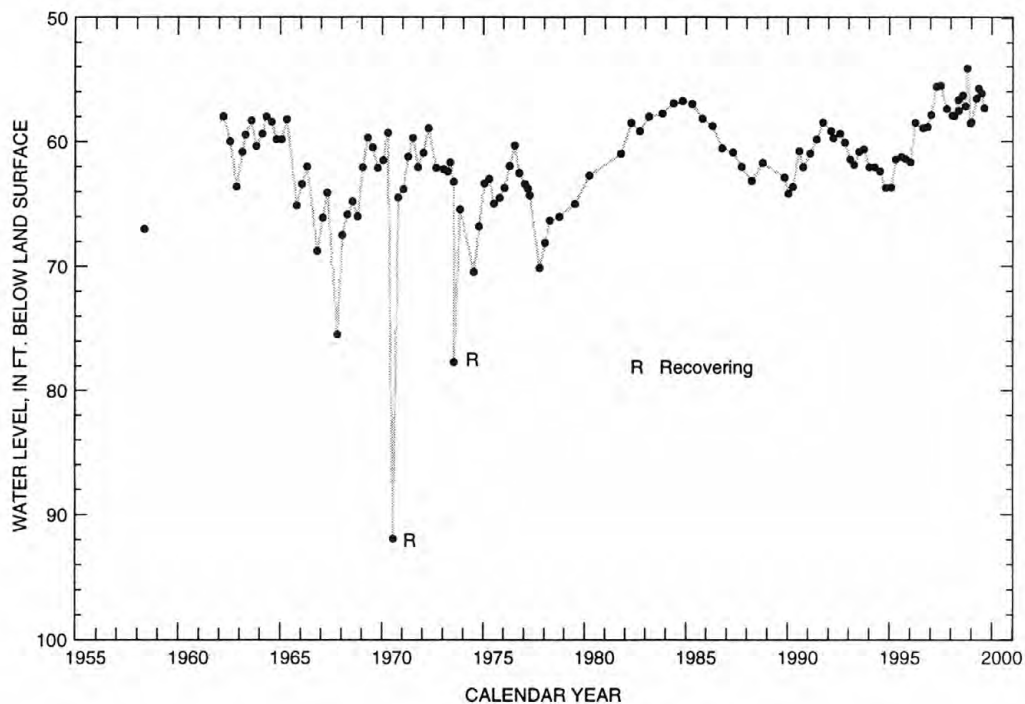
REMARKS.--Unused. State observation well number 37. State well identification CLAC 6389.

PERIOD OF RECORD.--May 1958, March 1962 to current year. Entire record from May 1958 to September 1998 published in Water-Data Report OR-98-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 54.17 ft below land-surface datum, October 27, 1998; lowest measurement, 91.96 ft below land-surface datum, July 20, 1970 (recovering).

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27, 1998	54.17	JAN 05, 1999	58.48	MAY 17	55.79	AUG 19	57.35
DEC 16	58.58	APR 06	56.58	JUL 06	56.17		



GROUND WATER LEVELS

DESCHUTES COUNTY

434400121275801. Local number, 21S/11E-19CCC. Formerly 21S/10E-25A1.

LOCATION.--Lat 43°44'01", long 121°27'57", Hydrologic Unit 17070302, 4.7 mi north of La Pine.

Owner: Luis Arena; formerly J.R. Kellems.

AQUIFER.--Valley-fill deposits. Quaternary.

WELL CHARACTERISTICS.--Drilled domestic well deepened from 37 to 100 ft in 1964, 6 inch casing 0 to 69.5 ft, completed depth of 100 ft, sounded depth of 92.5 ft on Feb. 26, 1998.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since May 1998; periodic measurements using electric sounder tape and chalked steel tape by Oregon Water Resources Department personnel from October 1964 to March 1998; electronic data logger 120 minute interval May 14, 1999 to current year.

DATUM.--Elevation of land surface is 4220 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: top of recorder shelf, 2.42 ft above land surface datum.

REMARKS.--Unused. State observation well number 118. State well identification DESC 7620. Historical record prior to deepening available in USGS WSP 1845, pg. 77 and depicted on a hydrograph in USGS OFR 97-197, pg. 24, Figure 8. Entire historical record post-deepening available in USGS Water-Data Report OR-98-1. The following tables provide both the intermittent measurements prior to the installation of an electronic data logger and then its subsequent daily mean values for the current water year.

PERIOD OF RECORD.--October 1964 to current year. Records between October 1964 and October 1965 are published in USGS WSP 1845, pg. 77; records between February 1966 and October 1970 are published in USGS WSP 1980, pg. 81; and records between January 1971 and October 1974 are published in USGS WSP 2161. Records between October 1964 and October 1997 are depicted on a hydrograph in USGS OFR 97-197, pg. 24, Fig. 8. Record for October 1985 is published in same OFR, pg. 65, Table 1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.98 ft below land-surface datum, Oct. 24, 1984; lowest measurement, 41.63 ft below land-surface datum, Oct. 23, 1964.

EXTREMES FOR MAY TO SEPTEMBER.--Highest water level measured, 14.69 ft below land-surface datum, Aug. 5, 1999; lowest measurement, 18.10 ft below land-surface datum, May 15, 1999.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

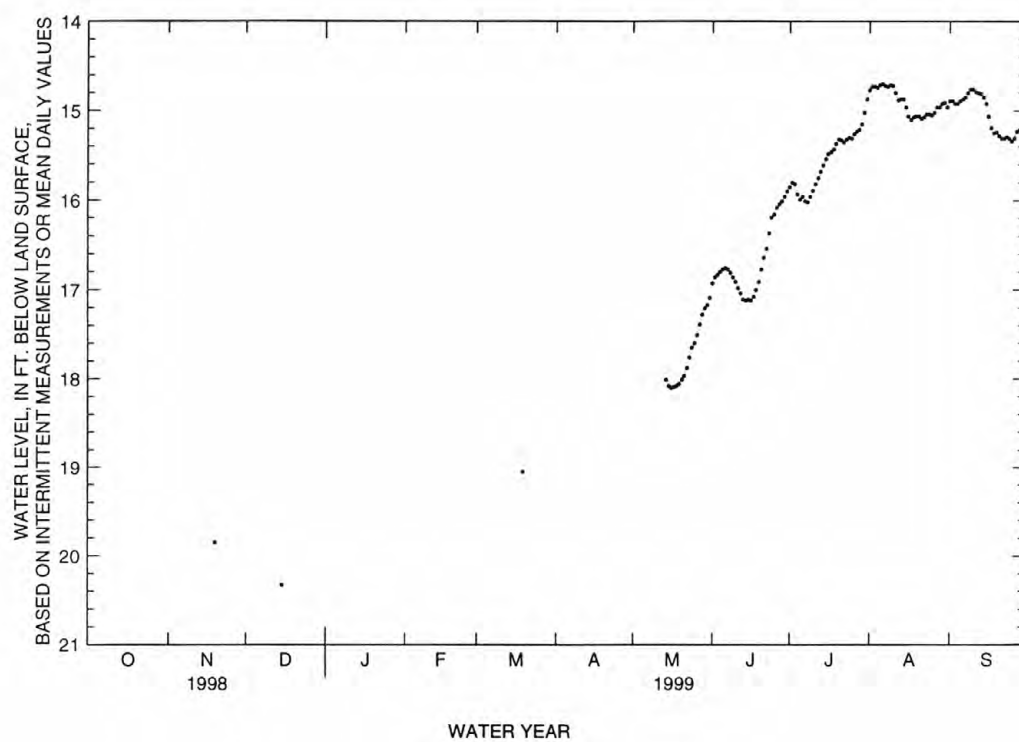
Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 19, 1998	19.85	DEC 15, 1998	20.33	MAR 19, 1999	19.05	May 14, 1999	18.01

WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM,
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	16.93	15.85	14.77	14.89
2	---	---	---	---	---	---	---	---	16.86	15.80	14.73	14.89
3	---	---	---	---	---	---	---	---	16.83	15.82	14.73	14.92
4	---	---	---	---	---	---	---	---	16.80	15.93	14.74	14.92
5	---	---	---	---	---	---	---	---	16.77	15.99	14.71	14.89
6	---	---	---	---	---	---	---	---	16.76	15.96	14.70	14.87
7	---	---	---	---	---	---	---	---	16.77	16.01	14.72	14.85
8	---	---	---	---	---	---	---	---	16.81	16.02	14.73	14.80
9	---	---	---	---	---	---	---	---	16.86	15.96	14.71	14.76
10	---	---	---	---	---	---	---	---	16.91	15.89	14.72	14.76
11	---	---	---	---	---	---	---	---	16.98	15.82	14.80	14.79
12	---	---	---	---	---	---	---	---	17.04	15.75	14.88	14.80
13	---	---	---	---	---	---	---	---	17.11	15.68	14.87	14.81
14	---	---	---	---	---	---	---	---	17.12	15.61	14.87	14.85
15	---	---	---	---	---	---	---	18.08	17.11	15.54	14.96	14.92
16	---	---	---	---	---	---	---	18.10	17.12	15.48	15.06	15.06
17	---	---	---	---	---	---	---	18.09	17.08	15.46	15.10	15.19
18	---	---	---	---	---	---	---	18.08	17.00	15.43	15.07	15.25
19	---	---	---	---	---	---	---	18.06	16.91	15.37	15.06	15.24
20	---	---	---	---	---	---	---	18.01	16.77	15.32	15.06	15.28
21	---	---	---	---	---	---	---	17.97	16.64	15.33	15.09	15.31
22	---	---	---	---	---	---	---	17.88	16.54	15.35	15.07	15.31
23	---	---	---	---	---	---	---	17.76	16.37	15.32	15.04	15.29
24	---	---	---	---	---	---	---	17.65	16.19	15.30	15.04	15.31
25	---	---	---	---	---	---	---	17.60	16.16	15.31	15.05	15.34
26	---	---	---	---	---	---	---	17.51	16.08	15.26	15.02	15.31
27	---	---	---	---	---	---	---	17.39	16.04	15.23	14.96	15.23
28	---	---	---	---	---	---	---	17.28	16.01	15.21	14.96	15.21
29	---	---	---	---	---	---	---	17.21	15.96	15.15	14.92	15.17
30	---	---	---	---	---	---	---	17.17	15.90	15.02	14.91	15.10
31	---	---	---	---	---	---	---	17.09	---	14.87	14.96	---
MEAN	---	---	---	---	---	---	---	---	16.68	15.55	14.90	15.04
MAX	---	---	---	---	---	---	---	---	17.12	16.02	15.10	15.34
MIN	---	---	---	---	---	---	---	---	15.90	14.87	14.70	14.76

GROUND WATER LEVELS
DESCHUTES COUNTY--Continued

Well identifier continued: 434400121275801. Local number, 21S/11E-19CCC. Formerly 21S/10E-25A1.



GROUND WATER LEVELS

DESCHUTES COUNTY

44224212140550. Local number, 14S/09E-08ABA

LOCATION.--Lat 44°22'42", long 121°40'59", Hydrologic Unit 17070301, .3 mi southwest of the peak of Black Butte.

Owner: Kiewit Pacific Company.

AQUIFER.--Volcanic rock. Quarternary.

WELL CHARACTERISTICS.--Drilled industrial well, 6 inch casing to 335 ft, completed depth of 403 ft.

INSTRUMENTATION.--Periodic measurements using electric sounder tape by Oregon Water Resources Department personnel from August 1993 to May 1999; electronic data logger 120 minute interval record Nov. 23, 1993 to Dec. 16, 1993, fifteen-minute interval Dec. 16, 1993 to Feb. 2, 1994, 120-minute interval Feb. 2, 1994 to current year.

DATUM.--Elevation of land surface is 3380 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: top of casing 1.65 ft above land-surface datum.

REMARKS.--Unused. State well identification DESC 1804. Minimum water level not available due to missing record but is expected to have occurred between Dec. 1, 1998, 1200 and Jan. 20, 1999, 1400. Record also missing April 14, 1999, 1800 to April 30, 1999, 0800. Water levels prior to Oct. 1, 1998 subject to variation of up to 0.32ft. due to differences in measurement method. Entire historical record available in USGS Water-Data Report OR-98-1.

PERIOD OF RECORD.--May 1985, August 1993 to current year. Hydrograph in USGS OFR 97-197, pg. 10, Figure 6 depicts record between November 1993 and December 1996. Measurement August 1993 published in same OFR, pg. 35, Table 1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 284.20 ft below land-surface datum, Oct. 8, 1997, lowest measurement, 304.17 ft below land-surface datum, Feb. 1, 1995.

EXTREMES FOR CURRENT YEAR.--Highest water level measured, 286.14 ft below land-surface datum, Sep. 23, 1999, lowest measurement, 287.44 ft below land-surface datum, Jan. 21, 1999.

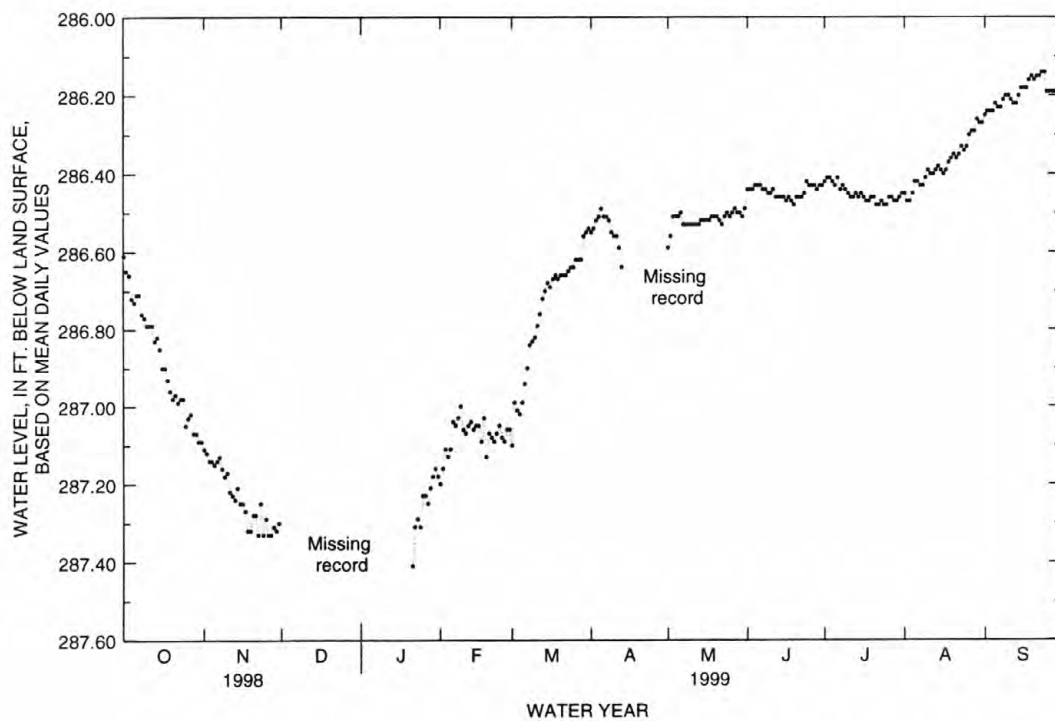
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM,
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	286.62	287.12	---	---	287.21	287.11	286.56	286.60	286.45	286.43	286.46	286.26
2	286.66	287.13	---	---	287.17	287.00	286.55	286.57	286.45	286.41	286.47	286.25
3	286.68	287.15	---	---	287.12	287.02	286.53	286.52	286.45	286.42	286.47	286.25
4	286.73	287.15	---	---	287.14	287.03	286.52	286.52	286.44	286.43	286.45	286.25
5	286.74	287.16	---	---	287.12	287.00	286.50	286.52	286.44	286.43	286.43	286.23
6	286.72	287.15	---	---	287.05	286.95	286.52	286.51	286.44	286.42	286.42	286.24
7	286.72	287.14	---	---	287.06	286.91	286.52	286.54	286.45	286.44	286.43	286.24
8	286.77	287.17	---	---	287.04	286.85	286.53	286.54	286.45	286.44	286.44	286.22
9	286.78	287.19	---	---	287.01	286.84	286.56	286.54	286.45	286.44	286.41	286.21
10	286.80	287.18	---	---	287.07	286.83	286.57	286.54	286.46	286.46	286.39	286.21
11	286.80	287.23	---	---	287.08	286.80	286.57	286.54	286.45	286.47	286.40	286.22
12	286.80	287.24	---	---	287.06	286.77	286.60	286.54	286.47	286.46	286.40	286.23
13	286.84	287.25	---	---	287.05	286.73	286.65	286.54	286.47	286.46	286.39	286.23
14	286.84	287.22	---	---	287.07	286.71	---	286.53	286.47	286.46	286.38	286.21
15	286.86	287.26	---	---	287.06	286.69	---	286.53	286.47	286.46	286.39	286.19
16	286.91	287.26	---	---	287.06	286.70	---	286.53	286.48	286.46	286.40	286.19
17	286.91	287.28	---	---	287.10	286.68	---	286.53	286.47	286.47	286.39	286.19
18	286.94	287.33	---	---	287.04	286.67	---	286.52	286.48	286.47	286.38	286.17
19	286.97	287.33	---	---	287.14	286.68	---	286.52	286.49	286.47	286.37	286.16
20	286.99	287.29	---	---	287.08	286.67	---	286.52	286.47	286.47	286.36	286.17
21	286.98	287.29	---	287.42	287.09	286.67	---	286.53	286.46	286.48	286.37	286.16
22	287.00	287.34	---	287.32	287.10	286.67	---	286.54	286.47	286.48	286.36	286.16
23	286.99	287.26	---	287.30	287.08	286.66	---	286.52	286.45	286.47	286.34	286.15
24	286.99	287.35	---	287.32	287.06	286.65	---	286.51	286.43	286.48	286.35	286.15
25	287.06	287.30	---	287.24	287.09	286.65	---	286.52	286.43	286.48	286.34	286.20
26	287.04	287.34	---	287.24	287.10	286.63	---	286.51	286.44	286.46	286.31	286.20
27	287.03	287.34	---	287.26	287.07	286.64	---	286.50	286.44	286.47	286.30	286.20
28	287.08	287.32	---	287.22	287.07	286.63	---	286.51	286.44	286.47	286.30	286.20
29	287.08	287.33	---	287.19	---	286.57	---	286.51	286.44	286.47	286.27	286.19
30	287.10	287.31	---	287.17	---	286.56	---	286.52	286.43	286.46	286.28	286.17
31	287.10	---	---	287.19	---	286.55	---	286.50	---	286.45	286.28	---
MEAN	286.89	287.25	---	---	287.09	286.76	---	286.53	286.45	286.46	286.38	286.20
MAX	287.10	287.35	---	---	287.21	287.11	---	286.60	286.49	286.48	286.47	286.26
MIN	286.62	287.12	---	---	287.01	286.55	---	286.50	286.43	286.41	286.27	286.15

GROUND WATER LEVELS

DESCHUTES COUNTY--Continued

Well identifier continued: 442242121405501. Local number, 14S/09E-08ABA



GROUND WATER LEVELS

JACKSON COUNTY

420825123040401. Local number, 39S/03E-33BBA1.

LOCATION.--Lat 42°08'25", long 123°04'04", Hydrologic Unit 17100309, 1 mi north of McKee Bridge.

Owner: Jackson County Fire District.

AQUIFER.--Triassic and Permian volcanic and metavolcanic, rocks.

WELL CHARACTERISTICS.--Drilled domestic well, 6 inch casing 0 to 30 ft, completed depth of 260 ft.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS personnel since April 1999; periodic measurements with chalked steel tape by USGS personnel from June 1989 to August 1995.

DATUM.--Elevation of land surface is 1650 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: top of south bolt hole in cap, 1.10 ft above land surface datum.

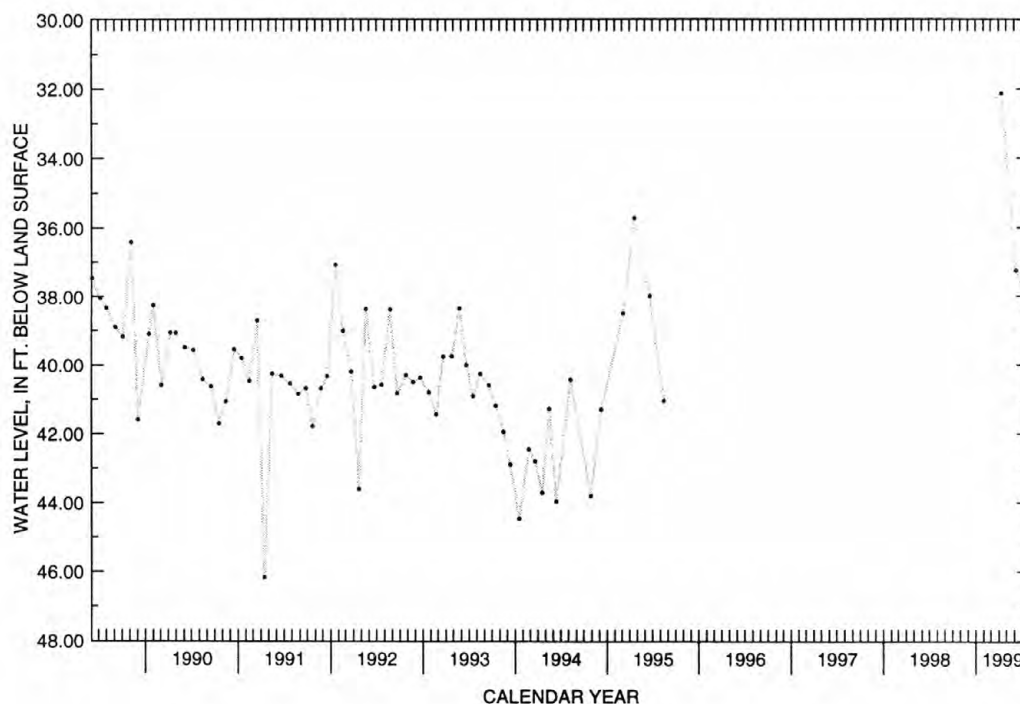
REMARKS.--Used. State well identification JACK 18427.

PERIOD OF RECORD.--June 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.12 ft below land-surface datum, Apr.13, 1999; lowest measurement, 46.16 ft below land-surface datum, Apr. 15, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
JUN 27, 1987	39.00	NOV 14, 1990	41.06	MAY 20, 1992	38.37	NOV 17, 1993	41.94
JUN 07, 1989	37.46	DEC 17	39.54	JUN 22	40.65	DEC 13	42.90
JUL 09	38.05	JAN 15, 1991	39.79	JUL 21	40.58	JAN 18, 1994	44.46
AUG 02	38.33	FEB 15	40.47	AUG 24	38.38	FEB 25	42.45
SEP 06	38.90	MAR 18	38.72	SEP 22	40.83	MAR 22	42.80
OCT 06	39.19	APR 15	46.16	OCT 26	40.30	APR 19	43.72
NOV 06	36.40	MAY 16	40.26	NOV 23	40.50	MAY 17	41.28
DEC 04	41.59	JUN 21	40.32	DEC 21	40.38	JUN 14	43.96
JAN 16, 1990	39.10	JUL 25	40.54	JAN 25, 1993	40.80	AUG 10	40.43
FEB 01	38.25	AUG 26	40.85	FEB 23	41.45	OCT 28	43.81
MAR 05	40.59	SEP 25	40.68	MAR 22	39.76	DEC 09	41.30
APR 10	39.06	OCT 22	41.79	APR 26	39.75	MAR 06, 1995	38.50
MAY 01	39.07	NOV 24	40.68	MAY 26	38.35	APR 20	35.72
JUN 05	39.49	DEC 18	40.33	JUN 22	40.00	JUN 21	37.98
JUL 09	39.56	JAN 21, 1992	37.07	JUL 19	40.91	AUG 15	41.05
AUG 15	40.42	FEB 21	39.01	AUG 16	40.27	APR 13, 1999	32.12
SEP 17	40.63	MAR 23	40.20	SEP 20	40.60	JUN 09	37.25
OCT 18	41.71	APR 23	43.61	OCT 18	41.19	JUL 27	38.22



GROUND WATER LEVELS

LINN COUNTY

441508123053001. Local number, 15S/03W-19ACD

LOCATION.--Lat 44°15'08", long 123°05'34", Hydrologic Unit 17090003, 4 mi east of Harrisburg.

Owner: Roy Grimes.

AQUIFER.--Valley-fill deposits. Quarternary.

WELL CHARACTERISTICS.--Drilled irrigation well, 10 inch casing to 69 ft, completed depth of 98 ft, sounded depth of 82 ft on Sept. 23, 1998, perforated 21 to 29 ft, 34 to 65 ft.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since Feb. 1998; periodic measurements using electric sounder tape and steel tape by Oregon Water Resources Department personnel from June 1962 to January 1998.

DATUM.--Elevation of land surface is 327 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: southside top of casing 1.27 ft above land-surface datum.

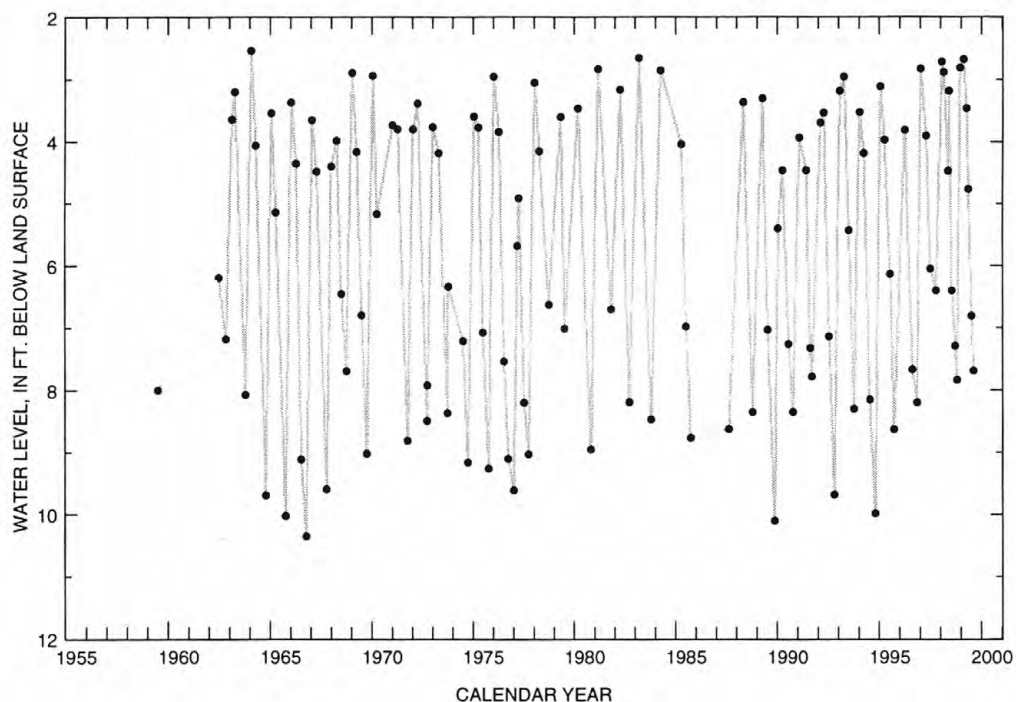
REMARKS.--Unused. State observation well number 510. State well identification LINN 14047.

PERIOD OF RECORD.--July 1959, June 1962 to October 1985, August 1987 to current year. Entire record from July 1959 to September 1998 published in Water Data Report OR-98-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.53 ft below land-surface datum, Jan. 21, 1964; lowest measurement, 10.35 ft below land-surface datum, Oct. 11, 1966.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 26, 1998	7.84	FEB 17, 1999	2.67	MAY 14	4.76	AUG 18	7.69
DEC 15	2.81	APR 12	3.46	JUL 13	6.81		



GROUND WATER LEVELS

MARION COUNTY

444956123031701. Local number, 08S/03W-33DAB

LOCATION.--Lat 44°49'55", long 123°03'16", Hydrologic Unit 17090007, 1 mile east of the summit of Bunker Hill.

Owner: Carma Elmore.

AQUIFER.--Columbia River Basalt. Tertiary.

WELL CHARACTERISTICS.--Drilled domestic well, 8 inch casing to 83 ft, completed depth of 125 ft, sounded depth of 125 ft on Feb. 26, 1998.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since Feb. 26, 1998; periodic measurements using electric sounder tape and steel tape by Oregon Water Resources Department personnel from Sept. 1962 to Jan. 1998.

DATUM.--Elevation of land surface is 615 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: eastside access porthole in steel cap atop casing, 0.6 ft above land-surface datum.

REMARKS.--Used for domestic supply year round. State observation well number 622. State well identification MARI 12958.

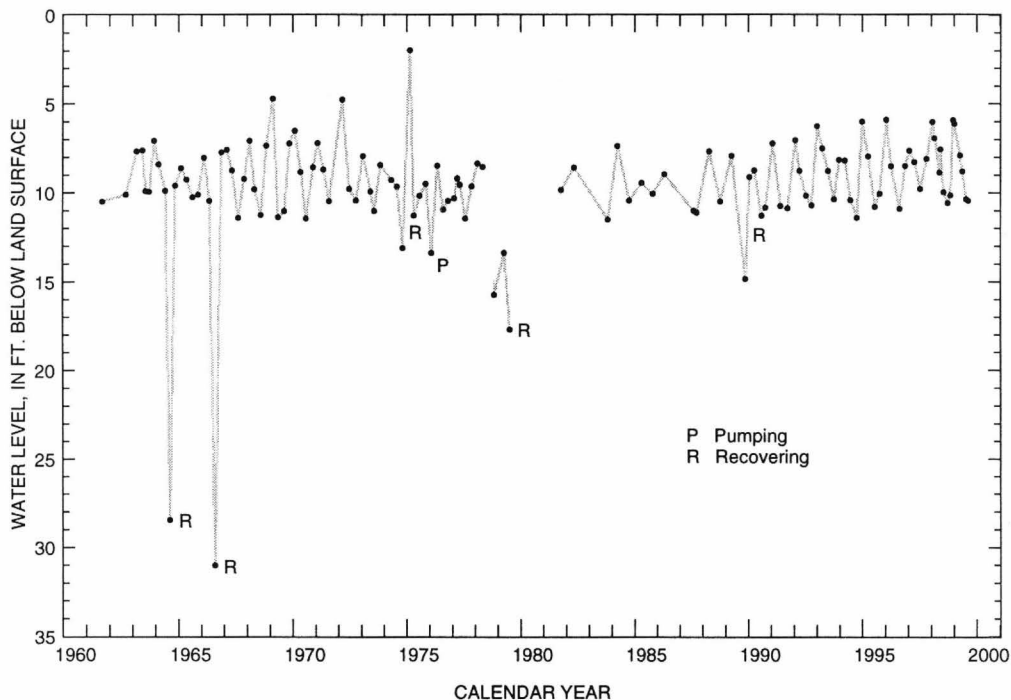
PERIOD OF RECORD.--September 1961 to July 1979, October 1981 to current year. Entire record from September 1961 to September 1998 published in Water-Data Report

OR-98-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.98 ft below land-surface datum, Feb. 20, 1975; lowest measurement, 31.02 ft below land-surface datum, Aug. 5, 1966 (recovering).

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
NOV 04	10.13	JAN 04, 1999	6.13	MAY 14	8.79	AUG 18	10.45
DEC 15	5.91	APR 05	7.90	JUL 12	10.36		



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CALENDAR FOR WATER YEAR 1999

1998

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	1	2	4	4	5	6	7			1	2	3	4	5
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	15	17	18	19
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
25	26	27	28	29	30	31	29	30						27	28	29	30	31		

1999

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		1	2	3	4	5	6		1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27
24	25	26	27	28	29	30	28							28	29	30	31			
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							1			1	2	3	4	5
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19
18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
25	26	27	28	29	30		23	24	25	26	27	28	29	27	28	29	30			
							30	31												
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	1	2	3	4	5	6	7				1	2	3	4
4	5	6	7	8	9	10	9	9	10	11	12	13	14	5	6	7	8	9	10	11
11	12	13	14	15	16	17	15	16	17	18	19	20	21	12	13	14	15	16	17	18
18	19	20	21	22	23	24	22	23	24	25	26	27	28	19	20	21	22	23	24	25
25	26	27	28	29	30	31	29	30	31					26	27	28	29	30		

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