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WASHINGTON
1986



Water Resources Data Washington Water Year 1986



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-86-1
Prepared in cooperation with the State of Washington
and with other agencies

CALENDAR FOR WATER YEAR 1986

1985

OCTOBER

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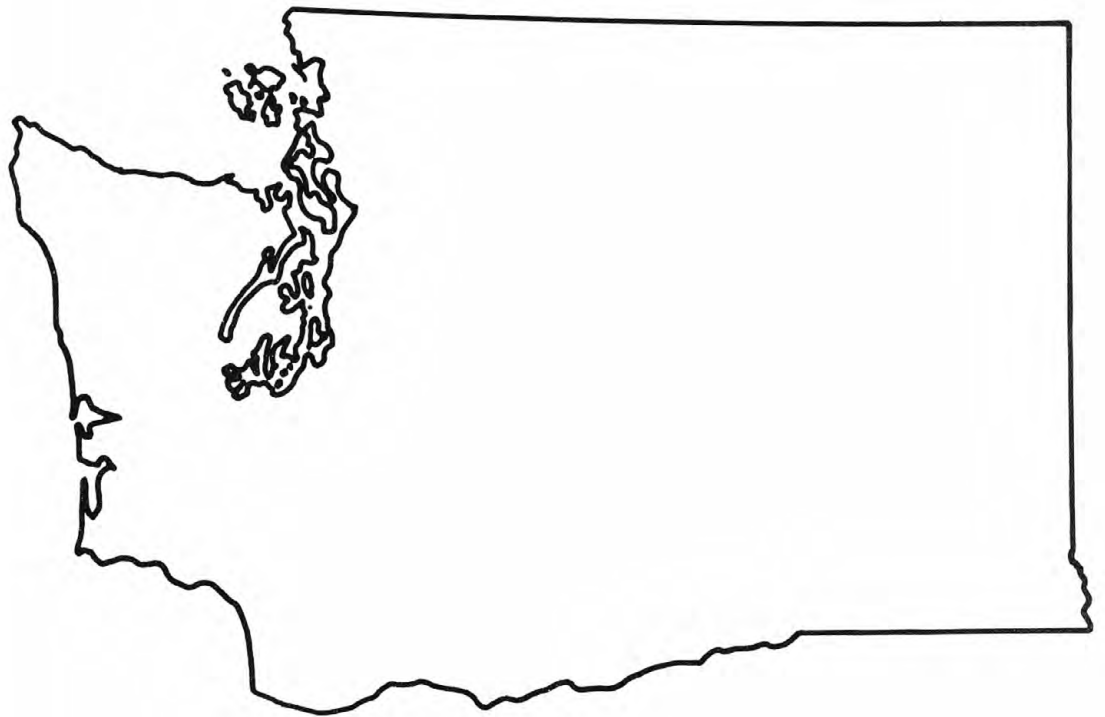
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Water Resources Data Washington Water Year 1986

by E.H. McGavock, W.D. Wiggins, P.R. Boucher, R.L. Blazs, L.L. Reed, and M.L. Smith



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

UNITED STATES DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

GEOLOGICAL SURVEY

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1988

PREFACE

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

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WATER RESOURCES DATA FOR WASHINGTON 1986

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 Washington each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Washington."

This report includes records on both surface and ground water in the State. Specifically, it contains: (1) Discharge records for 215 stream-gaging stations, stage only records for 7 gaging stations, 355 partial-record or miscellaneous streamflow stations, and 15 crest-stage, partial-record streamflow stations; (2) stage and content records for 38 lakes and reservoirs; (3) water-quality records for 38 streamflow-gaging stations, and 9 ungaged streamsites; and (4) water-level records for 75 observation wells. Records included for stream stages and for ground-water levels are only a small fraction of those obtained during the water year.

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

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Washington were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 12, 13, and 14." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA 22304.

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 WA-86-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the Office Chief at the address given on back of title page or by telephone (206) 593-6510.

COOPERATION

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

Washington State Department of Ecology, Andrea Beatty Rinicker, director
 Washington State Department of Fisheries, William R. Wilkerson, director
 Washington State Department of Transportation, Duane Berentson, secretary
 City of Seattle, Department of Lighting, R. W. Hardy, superintendent
 Municipality of Metropolitan Seattle, Alan Gibbs, executive director
 City of Tacoma, Department of Public Utilities, P. J. Nolan, director
 City of Tacoma, Department of Public Works, Fred Thompson, director
 Chelan County, P.U.D. No. 1, Gerald L. Copp, manager
 King County, Department of Public Works, Donald J. LaBelle, director
 Lewis County, Department of Public Works, Verne Wagar, director
 Quinault Business Committee, Joseph B. DeLaCruz, tribal chairman
 Makah Tribal Council, George Bowechop, chairman
 Yakima Tribal Council, Roger Jim, chairman
 Hoh Tribal Council, Yvonne Hudson, chairwoman
 Snohomish County Department of Public Works, Gerald E. Weed, director
 San Juan County Board of Commissioners, Thomas R. Cowan, chairman
 Puyallup Indian Nation, Frank Wright, Jr., chairman
 City of Bellevue, Department of Public Works, Hugh Warren, director
 Skagit County Board of Commissioners, Dave Rohrer, chairman
 Kitsap County Board of Commissioners, John Horsley, chairman
 Board of Cowlitz County Commissioners, Van A. Youngquist, chairman
 Washington State Department of Emergency Services, Hugh Fowler, director
 King County Department of Planning and Community Development, Bill Eckel, acting chief
 City of Pullman, Pete A. Butkus, mayor
 Regional Water Association of South King County, Gary Cline, president
 City of Seattle, Department of Parks and Recreation, Walter R. Hundley, superintendent

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 34 gaging stations; the U.S. Department of Energy, in collecting records for 2 water-quality stations; the Bureau of Reclamation, U.S. Department of Interior, in collecting records for 10 gaging stations; the U.S. Department of State, in collecting records for 15 gaging stations; the Bonneville Power Administration, U.S. Department of Energy, in collecting records for 7 gaging stations; and the Bureau of Indian Affairs, U.S. Department of Interior, in collecting records for 4 gaging stations.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

Washington has a distinctly varied climate resulting from two features: (1) the Cascade Range and (2) the prevailing westerly winds from the Pacific Ocean. The north-south trending Cascades divide the State into the western part with a marine climate characterized by cool, wet winters and warm, relatively dry summers and into the eastern part with a more continental climate of cold winters and hot, dry summers.

Although the average annual precipitation in Washington is about 40 inches, the western part receives about 70 inches and the eastern about 20 inches. Locally, average annual precipitation ranges from only 7 inches in the driest part of eastern Washington to about 150 inches in the Olympic Mountains in western Washington. About two-thirds of the precipitation in Washington occurs in the fall and winter (October through March), either as rain at the lower elevations or as snow at the higher elevations. Heavy snowpack and glaciers in the Olympic Mountains and Cascade Range are major sources of water for many rivers in Washington.

The runoff in Washington is greatly influenced by the varied topography and rainfall and falls into two general categories: (1) the snowmelt-runoff regime of the eastern part of the State; and (2) the rainfall-runoff regime that predominates in western Washington. The Naselle River is typical of the coastal streams whose major runoff occurs during the 4 months November through February; only about 10 percent runs off during the 5 months May through September. The runoff is closely related to precipitation and because of the relatively low elevations, the heavy winter precipitation falls as rain and runs off quickly. Thunder Creek (Skagit River basin) is a glacier-fed stream draining a high elevation where almost all winter precipitation falls as snow. The distribution of runoff is opposite to that of the Naselle, with the maximum runoff occurring in July and the high-runoff period extending from May through September. The period of low flow lasts all winter. The Colville River exhibits a typical runoff pattern for a stream in eastern Washington. Much of the winter precipitation falls as snow which does not melt until the warmer temperatures of spring cause the high-runoff period to occur from April through June. By July the snow has melted and the streamflow becomes low.

Surface-water Conditions

Total precipitation during the 1986 water year was near normal in both eastern and western Washington. The total precipitation for the water year ranged between 80 and 110 percent of normal throughout the State. However, monthly totals were at least 50 percent above or below normal during five months of the year. Precipitation during August was the farthest below normal for a month. It was about 10 percent of normal in western Washington and about 20 percent of normal in eastern Washington. Monthly precipitation was the farthest above normal during October in western Washington, and during September in eastern Washington, when monthly totals exceeded 190 and 260 percent of normal, respectively.

Rainfall in western Washington was less than 75 percent of normal during the months of December, June, and August. It was near normal during November, January, February, March, April, and September and was more than 125 percent of normal during October, May, and July.

In eastern Washington, precipitation was less than 75 percent of normal during the months of December, May, June, and August. It was near normal during October, November, March, April, and July and was more than 125 percent of normal during January, February, and September.

The annual mean runoff in both western and eastern Washington during the 1986 water year was generally below normal. The Chehalis River near Grand Mound and the Skykomish River near Gold Bar are typical of western Washington streams. The annual mean flows for those two streams were 86 percent and 88 percent of normal, respectively, during 1986. In eastern Washington, the Spokane River at Spokane and the Klickitat River near Pitt had flows for 1986 that were 86 percent of normal. The monthly mean discharges are compared with long-term medians at those four gaging stations in figures 3a and 3b. The monthly mean flow was above normal in the Skykomish and Spokane Rivers during October, November, February, and March. The monthly mean flows were above normal in the Chehalis River during October, February, and May. The Klickitat River flow was above normal during February and March.

Floodflows occurred in parts of western Washington twice during the 1986 water year. During January 18-20, peak flows at gaging stations on many streams of coastal and west-central Washington had recurrence intervals ranging from 5 to 20 years. (A peak flow that has a recurrence interval of five years can be expected to be exceeded once in five years on the average.) During February 23-25, peak flows on streams draining the western slopes of the Cascade Range had recurrence intervals ranging from two to five years. The annual peak flows at most gaging stations in eastern Washington had recurrence intervals of one to three years. Peak discharges for some representative gaging stations are shown in Table 1.

Table 1.--Comparison of peak discharge for the 1986 water year with the peak discharge for the period of record at long-term stations

Station number	Station name	Drainage area (mi ²)	Peak discharge 1986 Water year			Peak discharge Period of record	
			Date	ft ³ /s	Recurrence interval (years)	Date	ft ³ /s
12010000	Naselle River near Naselle	54.8	2-23	6,690	4	1-22-35	11,100
12039500	Quinalt River at Quinalt Lake	264	1-18	32,000	4	11- 4-55	50,200
12048000	Dungeness River near Sequim	156	1-18	6,560	19	11-27-49	6,820
12082500	Nisqually River near National	133	2-23	8,180	5	12- 2-77	17,100
12092000	Puyallup River near Electron	92.8	2-23	5,530	3	11-22-59	10,800
12134500	Skykomish River near Gold Bar	535	2-24	47,600	3	12-26-80	90,400
12205000	North Fork Nooksack River below Cascade Creek, near Glacier	105	10-27	7,700	5	11-26-49	10,300
12409000	Colville River at Kettle Falls	1,007	4-10	814	1	1-21-74	3,440
12449950	Methow River near Pateros	1,772	5-31	14,400	3	5-31-72	28,800
12510500	Yakima River at Kiona	5,615	2-28	16,100	2	12-23-33	67,000
13351000	Palouse River at Hooper	2,500	2-24	7,160	2	2- 4-63	33,500
14113000	Klickitat River near Pitt	1,297	2-23	12,100	3	1-15-74	47,400
14232500	Cispus River near Randle	321	2-23	9,120	3	1-15-74	21,700

Usable storage in Lake Merwin in western Washington was near or above the normal usable maximum all year except for the months of November and February when it was 92 percent and 88 percent of the normal usable maximum, respectively. Usable storage in Lake Cushman began the water year at 74 percent of the normal usable maximum, fell to 40 percent by the end of December, rose to 102 percent by May, and was 68 percent at the end of the water year in September. The usable storage in Ross Reservoir, also in western Washington, began the water year at 89 percent of the normal usable maximum, fell steadily to 46 percent by the end of February, rose again to 100 percent by the end of July, and was 92 percent at the end of the water year in September. In eastern Washington, the usable storage in Lake Chelan began the water year at 81 percent of the normal usable maximum, fell steadily to 35 percent by the end of February, rose to 100 percent by June, and ended the year at 94 percent in September. At Franklin D. Roosevelt Lake, also in eastern Washington, the usable storage began the 1986 water year at 94 percent of the normal usable maximum, fell to 63 percent by the end of December, rose to 100 percent by January, fell to 55 percent by the end of April, then rose again to 99 percent by the end of the water year in September.

Surface-Water Quality

The National Stream Quality Accounting Network (NASQAN) and Bench-Mark Programs were established to assess the quality of the nation's water through systematic continuing measurements at specific key locations. Washington operates 18 NASQAN stations in the Pacific Slope, Snake River, and Upper and Lower Columbia River basins and two bench-mark stations, one in the Pacific Slope Basin and one in the Upper Columbia River basin. One surface-water-quality station is operated in the Upper Columbia Basin on the main stem at Richland, Washington, as adjunct to one of the NASQAN stations. The rivers east of the Cascade Mountains are generally more mineralized than those west of the Cascade Mountains.

Specific conductance in the 11 surface-water streams east of the Cascades was less than 100 microsiemens (microsiemens per centimeter at 25°C) about 25 percent of the time, 100 to 200 microsiemens about 50 percent of the time, and 201 to 300 microsiemens and greater than 300 microsiemens about 10 percent of the time each. The bench-mark station, Andrews Creek near Mazama, Washington, was the least mineralized of all the streams measured east of the Cascades. In comparison, in the 10 surface-water streams west of the Cascades, specific conductance was less than 100 microsiemens about 90 percent of the time and between 100 to 200 microsiemens about 10 percent of the time. No specific conductance greater than 200 microsiemens was measured in the western streams. Cowlitz River at Kelso, Washington, which is heavily influenced by Mount St. Helens drainage, is the most mineralized stream measured west of the Cascades.

Dissolved-solids concentration and streamflow generally have an inverse relation. The smallest concentrations of dissolved solids occur during the high flow of late fall, winter, and early spring runoff when rainfall and snowmelt are the major sources of water. Dissolved solids are most concentrated in Washington

during late summer and early fall when base flow from ground-water sources is the dominant component of flow. No streams east of the Cascades had dissolved solids that exceeded 300 mg/L even in the lowest flow periods. Dissolved solids in streams east of the Cascade Mountains were less than 100 mg/L about 60 percent of the time, 100 to 200 mg/L about 30 percent of the time, and 200 to 300 mg/L about 10 percent of the time. In contrast, dissolved solids in all streams west of the Cascades were less than 100 mg/L even during the driest and lowest flow periods.

Concentrations of some toxic metals are found occasionally in a few streams both east and west of the Cascades. Barium and cadmium are found in the Pend Oreille River and barium, cadmium, copper, lead, and zinc are found in the Columbia River below the Canadian Border in concentrations that range from 5 to 10 mg/L and occasionally exceed 10 mg/L.

Surface waters in Washington are generally classified as clear and carry only small amounts of sediment. Water flowing in the Columbia River and streams draining the Olympic Mountains are very low in sediment, less than 10 mg/L, and at times, there is no measurable sediment. The streams east of the Cascades that characteristically carry sediment concentrations greater than 10 mg/L are those that carry return flow from heavily irrigated and farmed lands in the semi-arid region. The Yakima River carries sediment loads that characteristically exceed 10 mg/L but seldom exceed about 50 mg/L. Three major streams that do carry relatively large concentrations of sediment are the Skagit, Puyallup, and Cowlitz Rivers, all located west of the Cascades. The Skagit and Puyallup Rivers, at times, carry sediment that range from 100 to 500 mg/L due to large concentrations of glacier flour from Glacier Peak and Mount Rainier, respectively. The Cowlitz River carries sediment concentrations that range from about 100 to several thousand mg/L as a result of Mount St. Helens debris and ash deposits. The sediment carried by the Cowlitz River is in a decreasing trend as a result of the debris, ash deposits, and fines being depleted as they are eroded and transported to the ocean.

Ground Water

In eastern Washington, water levels in an observation well near Spokane are representative of those in the Spokane River valley. During the 1986 water year, the water level in the Spokane well was generally above average during October through April and below average during May through September. Maximum departure of water level above average was 3.6 feet during March. Maximum departure of water level below average was 4.7 feet in June. The ground-water levels in western Washington are generally not well defined by the existing network of observation wells.

SPECIAL NETWORKS AND PROGRAMS

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.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in national or regional water-quality planning and management. The several hundred sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objective of NASQAN is to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting. The design of the network is intended to provide data for (1) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (2) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (3) a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150 station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gasses. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

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.

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.

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1986 water year that began October 1, 1985, and ended September 30, 1986. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 4a, 4b, 5a, 5b, 6a, 6b, 34a, and 34b. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

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

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an 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 12020000, which appears just to the left of the station name, includes the two-digit Part number "12" plus the six-digit downstream-order number "020000." The Part number designates the major river basin; for example, part "12" refers to the Pacific slope basins in Washington and upper Columbia River basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a one-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In the 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.

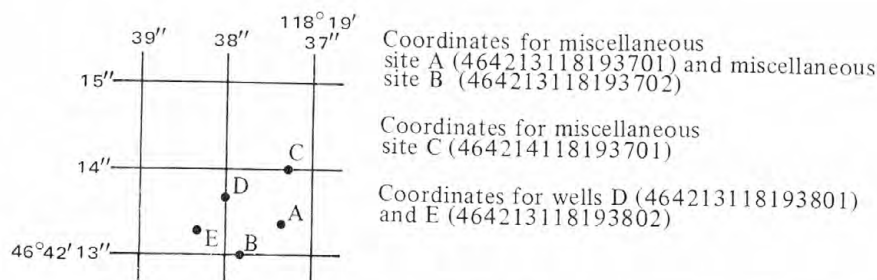


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude).

Local Identifier Well-Numbering System

In addition to the latitude-longitude based site identification number, wells in the State of Washington are assigned local well numbers. These numbers are based on and show locations of wells according to the rectangular system for subdivision of public land, indicating township, range, section, and 40-acre tract within the section. For example, in the well number 25/43E-15M1, the part preceding the hyphen indicates successively the township and range (T.25 N., R.43 E.) north and east of the Willamette base line and meridian. (Because all townships in Washington are north of the Willamette base line, the letter "N", indicating north is omitted; and because most of the State is east of the Willamette meridian, the letter "E" is sometimes omitted for those ranges east of the Willamette meridian, but "W" is always included when the range lies west of the Willamette meridian). The first number following the hyphen indicates the section (sec.15) and the letter (M) given the 40-acre subdivision of the section as shown in figure 2. The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in NW¼SW¼ sec.15, T.25 N., R.43 E., would have the number 25/43-15M1, and the second well would have the number 25/43-15M2 or 25/43E-15M2. See figure 2.

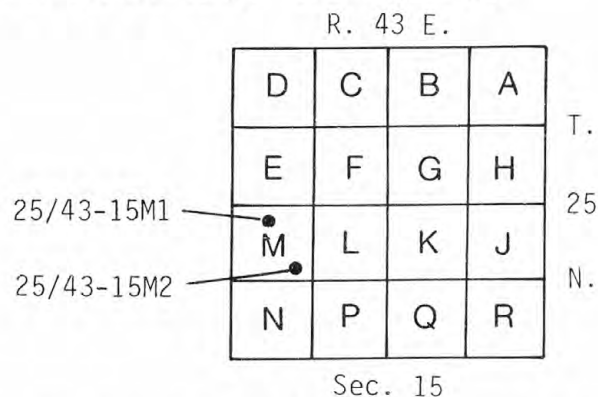


Figure 2. Local identifier well numbering system.

Records of Stage and Water Discharge

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

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 4a and 4b.

Data Collection and Computation

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

Continuous records of stage are obtained with 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 as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A6.

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 stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

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

For some gaging stations there are periods when no gage-height record is obtained, or the validity of the recorded gage height is so questionable that it cannot be used to compute daily discharge or contents. This happens when the 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

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; 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 National Geodetic Vertical Datum of 1929 (see "DEFINITION OF TERMS"), and a condensed history of the types, location, and datums of previous gages are given under this heading.

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

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

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development.

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 Washington office 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.

WATER RESOURCES DATA FOR WASHINGTON 1986

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily 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. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

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

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

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

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; the nearest tenth between 1.0 and 10 ft³/s; whole numbers between 10 and 1,000 ft³/s; and 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely

on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

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

Other Records Available

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

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

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

Records of Surface-Water Quality

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

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A 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. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 6a and 6b.

Arrangement of Records

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

On-site Measurement and Sample Collection

In obtaining water-quality data, it is important that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, treating the samples to prevent changes in quality pending analysis, and shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," (TWRI), Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" in this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey Washington 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, maximum, minimum, and mean temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Washington office.

Sediment

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

During periods of rapidly changing flow or rapidly changing suspended-sediment concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

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 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 in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

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, WATSTORE, 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 greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)

Records of Ground-Water Levels

Only water-level data from a few of the many observation wells in Washington are given in this report. Locations of the observation wells in Washington listed in this report are shown in figures 34a and 34b.

Although, in this report, records of water levels are presented for 75 wells, records are also obtained through cooperative efforts of many Federal, State, and local agencies for several thousand observation wells throughout Washington. These records may be placed in computer storage, published in reports, or kept in files. Information about the availability of ground-water data may be obtained from the District Chief, Pacific Northwest District, U.S. Geological Survey, 1201 Pacific Avenue, Suite 600, Tacoma, Washington 98402.

Data Collection and Computation

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

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

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

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

Data Presentation

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

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

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

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

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

DATUM.--This entry describes the land-surface elevation at the well. The elevation of the land-surface datum is described in feet above (or below) National Geodetic Vertical Datum of 1929 (NGVD of 1929); it is reported with a precision depending on the method of determination.

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

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

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

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

ACCESS TO WATSTORE DATA

The National Water Data STORAGE and RETRIEVAL System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

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.

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.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

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 with 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.

Base flow. See Base runoff.

Base runoff refers to sustained or fair weather runoff. In most streams, base runoff is composed largely of ground-water effluent. (Langbein and others, 1947, p. 6.) The term base flow is often used in the same sense as base runoff. However, the distinction is the same as that between streamflow and runoff. When the concept in the terms base flow and base runoff is that of the natural flow in a stream, base runoff is the logical term.

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

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).

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.

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.

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

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.

Cubic foot per second-day [$(\text{ft}^3/\text{s})/\text{d}$] is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Cubic feet per second per square mile [$(\text{ft}^3/\text{s})/\text{mi}^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

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.

Dissolved refers to that material in a representative water sample which passes through a 0.45-um 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.

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).

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.

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

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

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 (ug/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analysed.

Micrograms per liter (UG/L, ug/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.

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.

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) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in national or regional water-quality planning and management. The several hundred sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey office of Water Data Coordination in consultation with the Water Resources Council. The objective of NASQAN is to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting. The design of the network is intended to provide data for (1) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (2) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics and (3) a nationally consistent data base useful for water-quality assessment and hydrologic research.

National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

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 (m^2), 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 computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE 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:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .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.

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 [(mg C/m²)/time] for periphyton and macrophytes and [(mg C/m³)/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 [(mg O₂/m²)/time] periphyton and macrophytes and [(mg O₂/m³)/time] for phytoplankton are the 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.

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.

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 (ft³/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.

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.

7-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 planimetered. 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.

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.....	<u>Hexagenia</u>
Species.....	<u>Hexagenia limbata</u>

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 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.

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, Books and Open-File Reports Section, Federal Center, Box 25425, 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."

- 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.
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- 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.
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- 3-A5. MEASUREMENT OF PEAK DISCHARGE AT DAMS BY INDIRECT METHODS, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. GENERAL PROCEDURE FOR GAGING STREAMS, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
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- 3-A8. DISCHARGE MEASUREMENTS AT GAGING STATIONS, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. MEASUREMENT OF TIME OF TRAVEL AND DISPERSION IN STREAMS BY DYE TRACING, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 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 MOVING-BOAT METHOD, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
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- 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.
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- 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-C2. FIELD METHODS FOR MEASUREMENT OF FLUVIAL SEDIMENT, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
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- 4-B2. STORAGE ANALYSES FOR WATER SUPPLY, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
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- 5-A5. METHODS FOR DETERMINATION OF RADIOACTIVE SUBSTANCES IN WATER AND FLUVIAL SEDIMENTS, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
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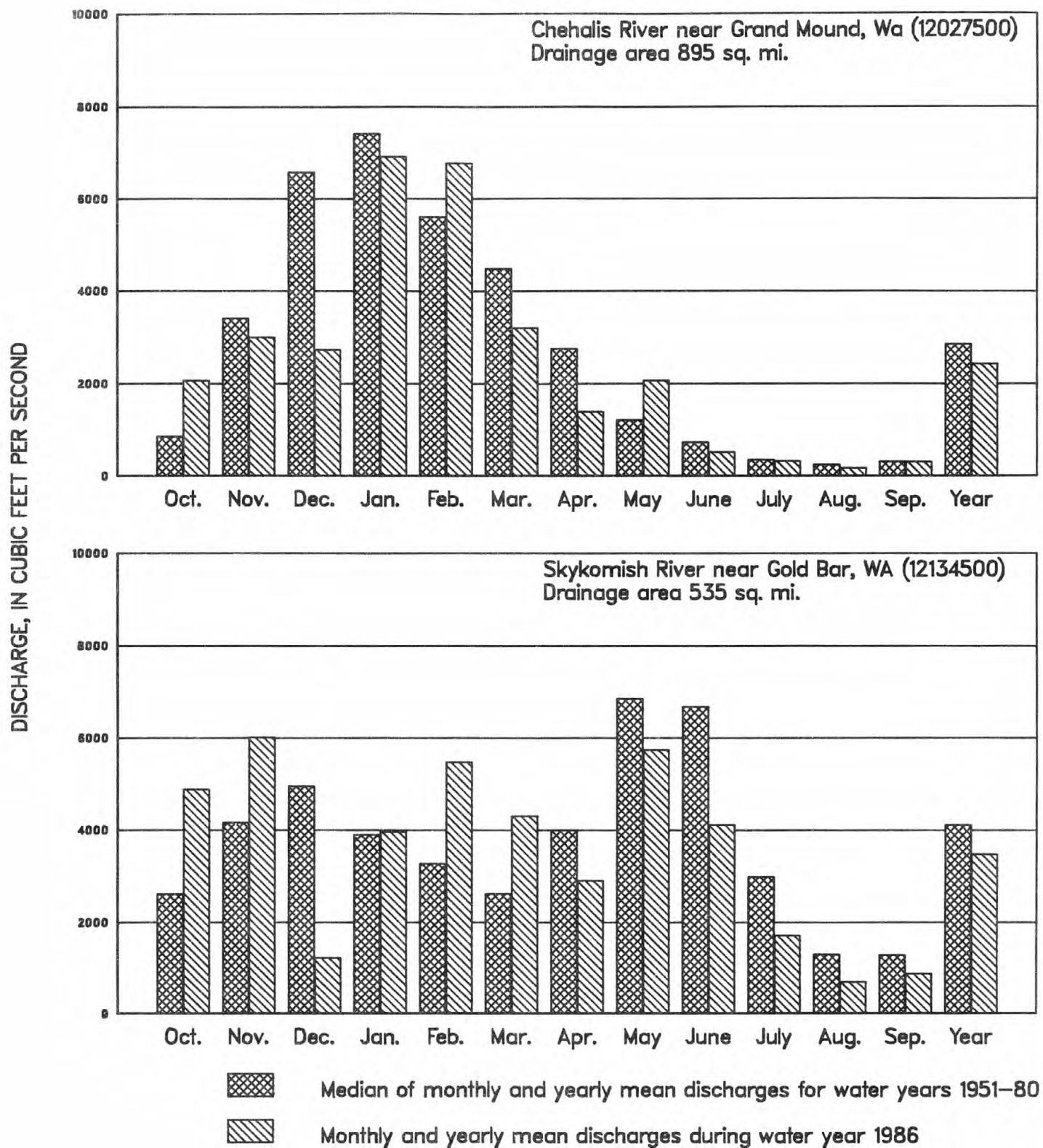


Figure 3a.--Discharge during 1986 water year compared with median discharge for period 1951-80 for two representative gaging stations in Western Washington.

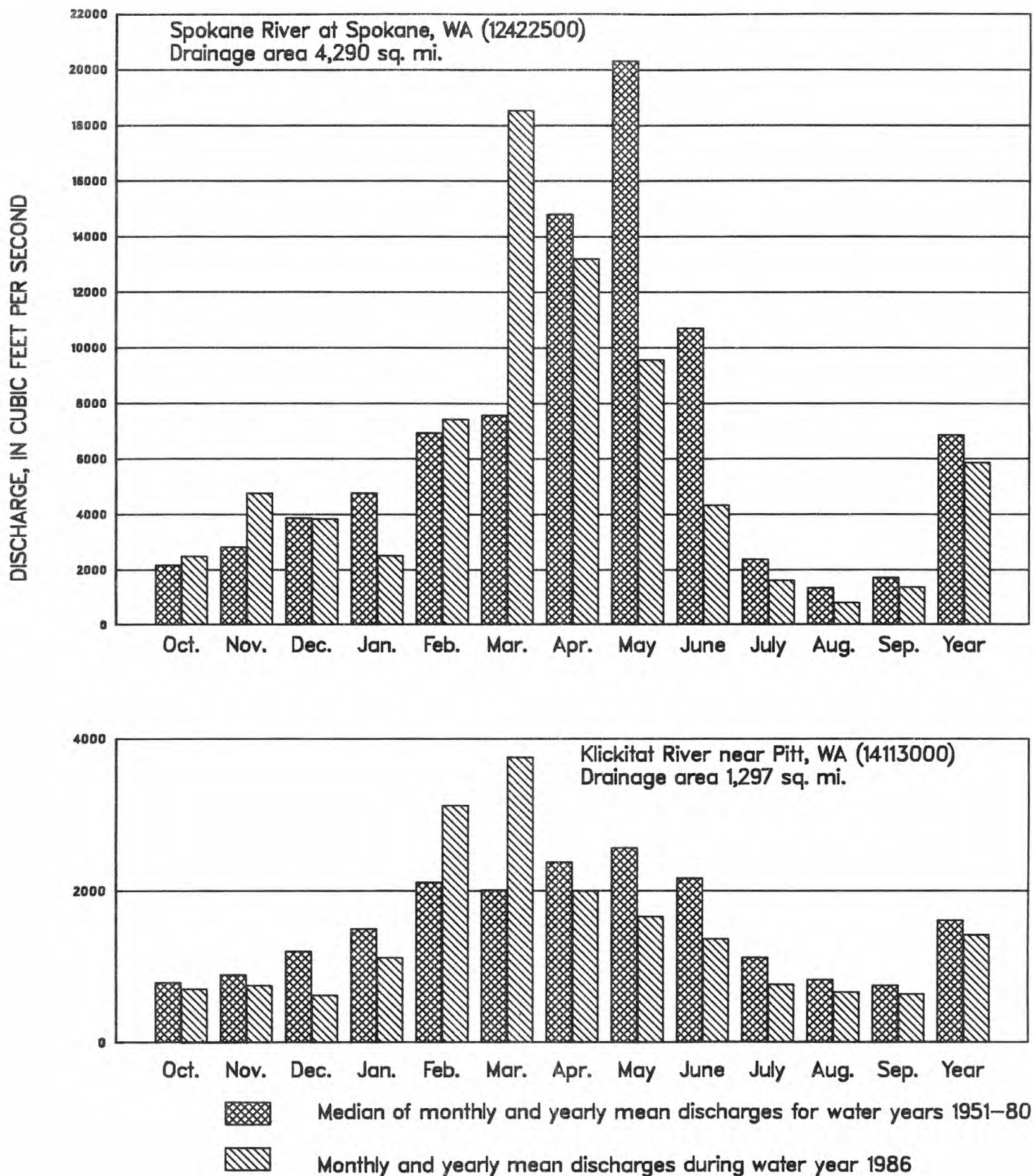


Figure 3b.--Discharge during 1986 water year compared with median discharge for period 1951-80 for two representative gaging stations in Eastern Washington.

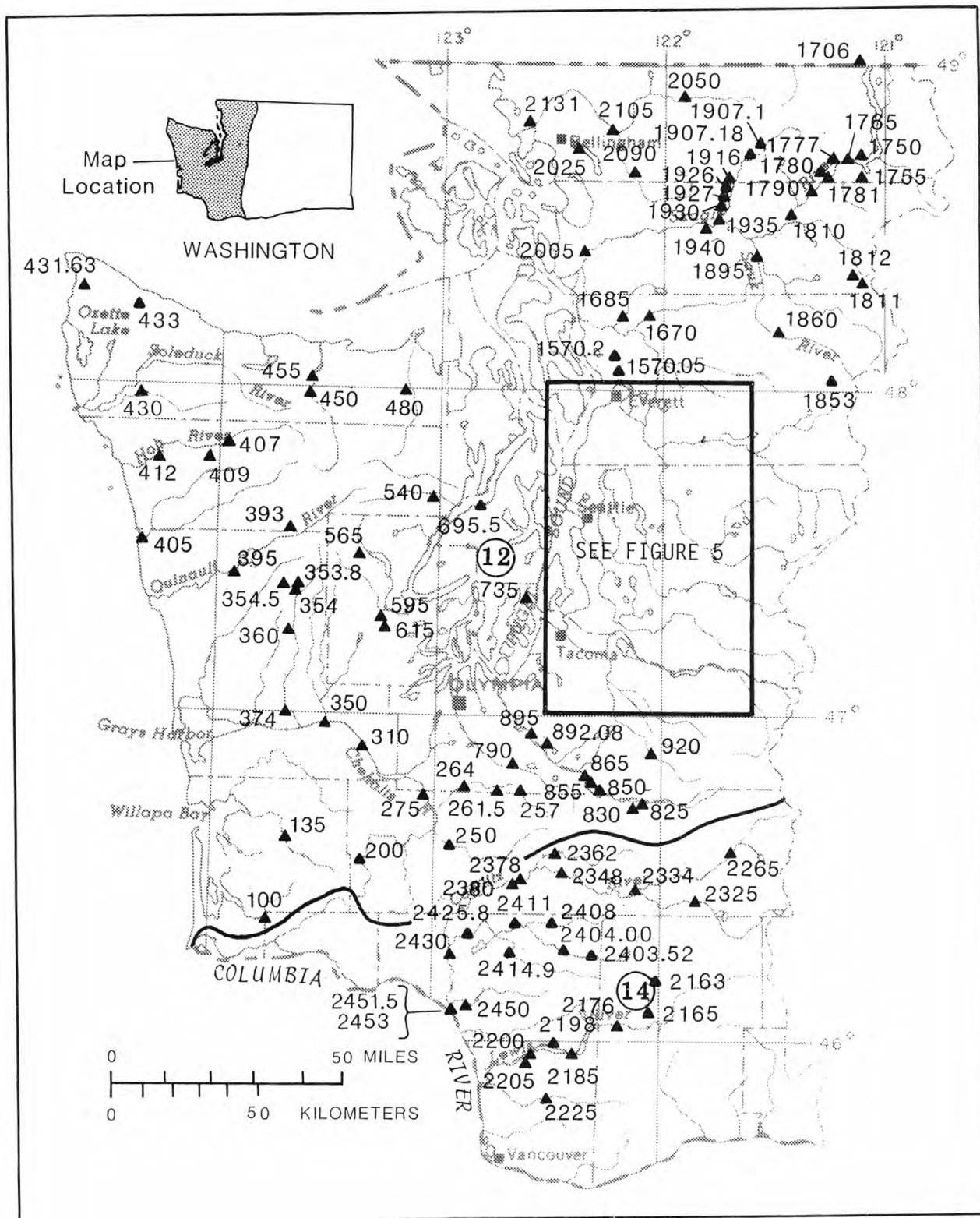


Figure 4a.--Map of Western Washington showing locations of gaging stations. Numbers shown are abbreviated versions of complete station numbers used in text. Part numbers are the large figures.

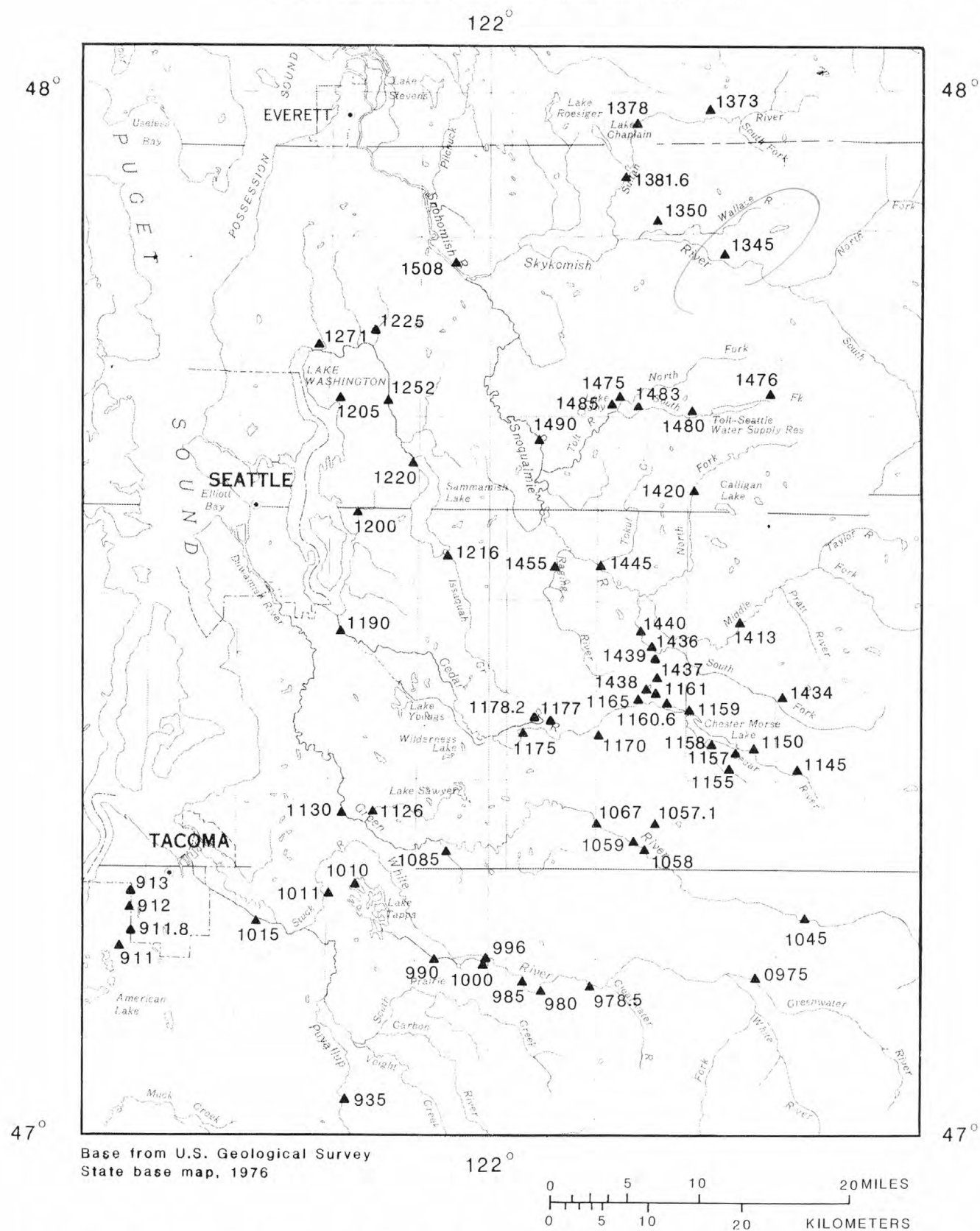
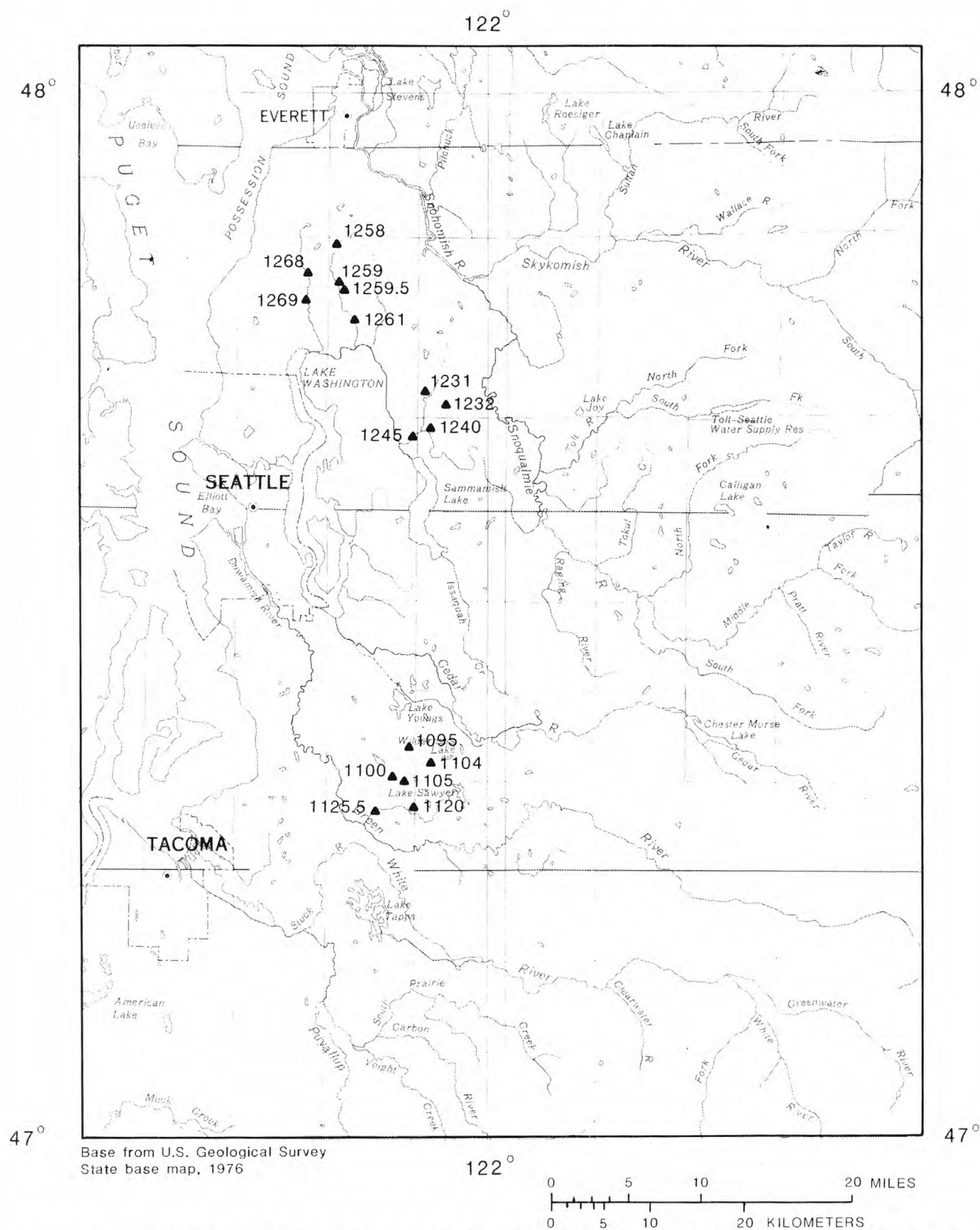


Figure 5a.--Map showing locations of gaging stations in the insert of Figure 4a.



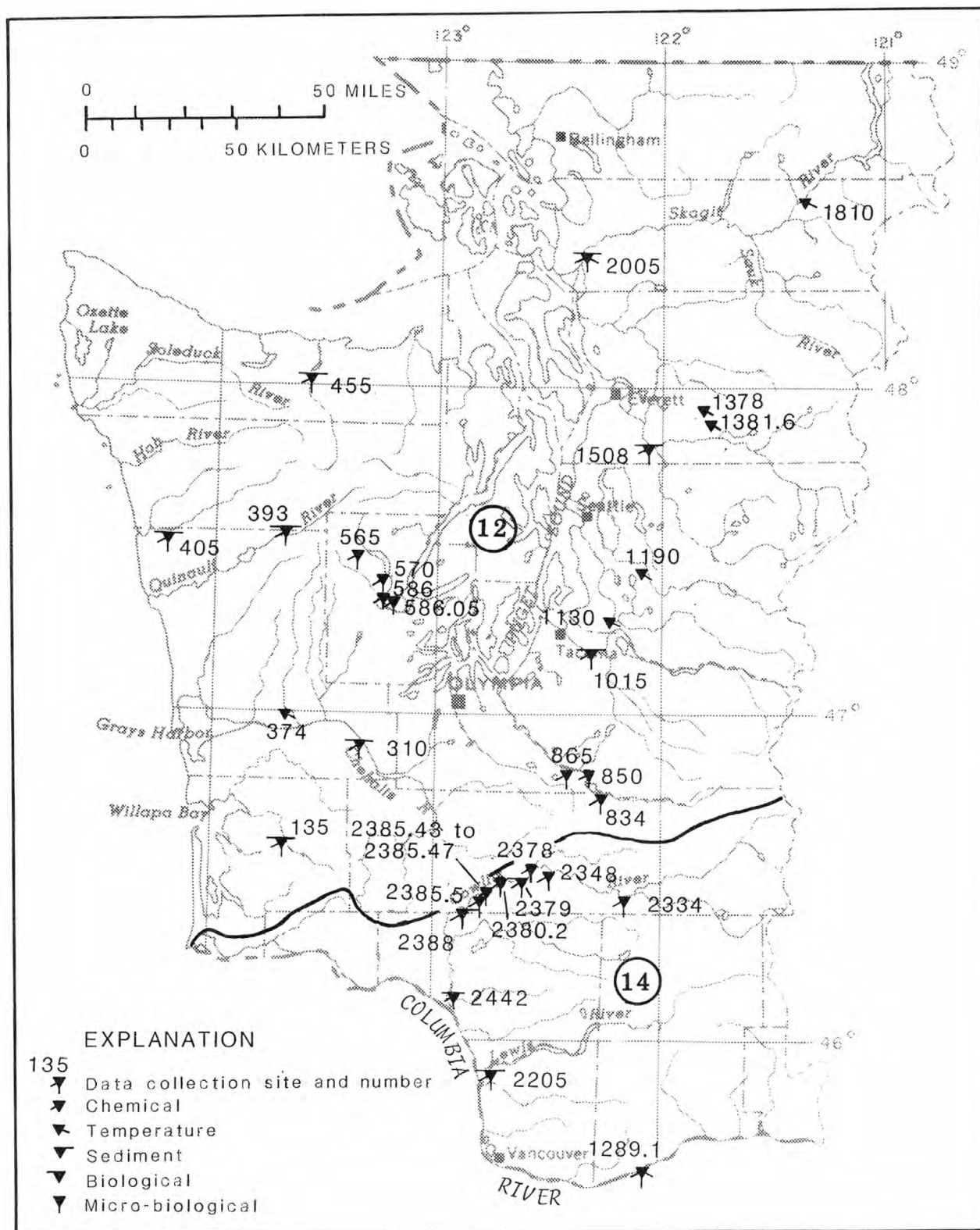


Figure 6a.--Map of Western Washington showing locations of surface-water-quality sampling stations. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

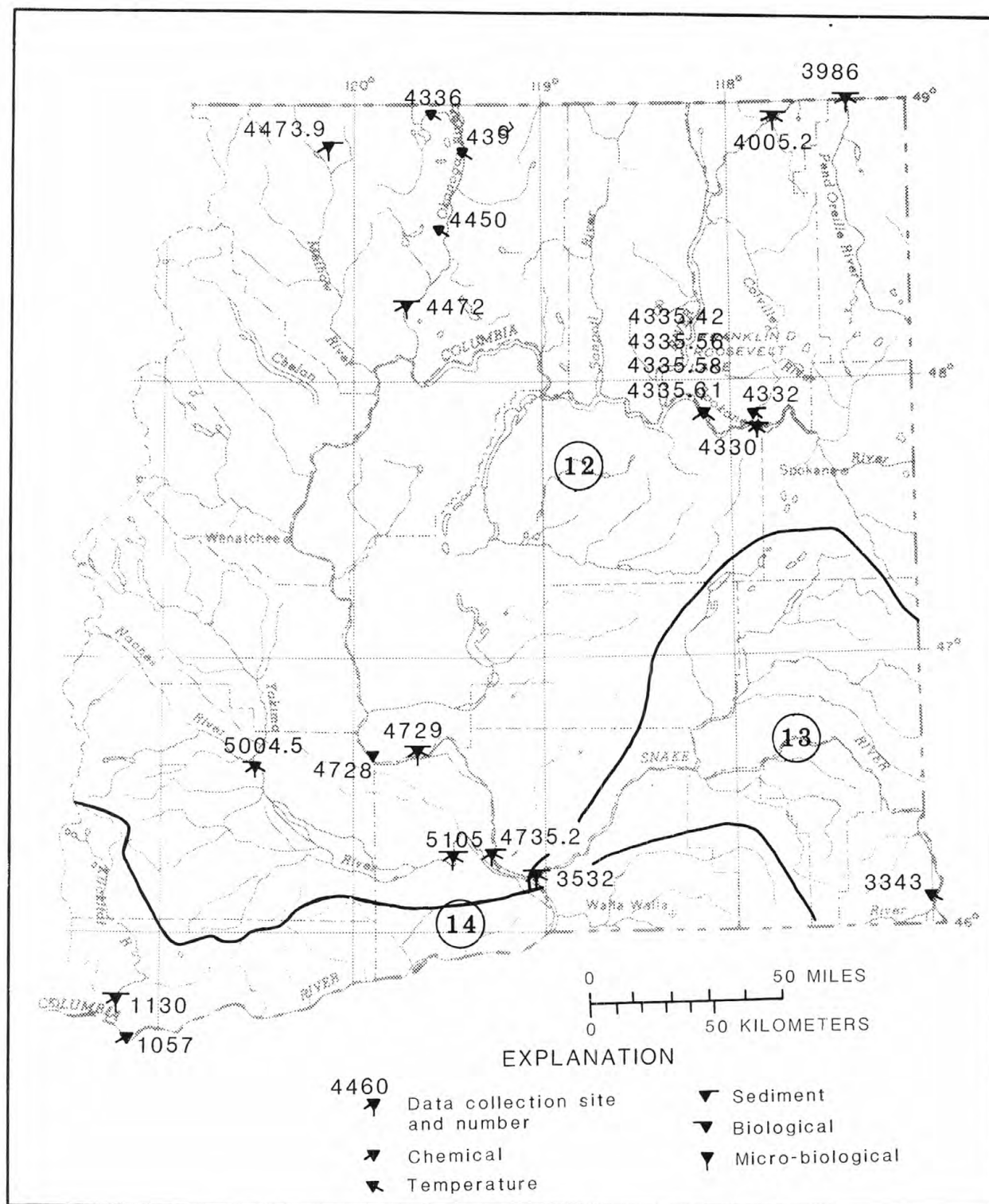


Figure 6b.--Map of Eastern Washington showing locations of surface-water-quality sampling stations. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

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 greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptable range (non-ideal colony count)
*	Laboratory value

GAGING STATION RECORDS

NASELLE RIVER BASIN

12010000 NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°22'27", long 123°44'32", in SW1SW1 sec.1, T.10 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on right bank 0.1 mi upstream from county highway bridge, 2.2 mi upstream from Salmon Creek, 3.4 mi east of Naselle, and at mile 17.4.

DRAINAGE AREA.--54.8 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Chemical analyses October 1965 to September 1970, January to September 1973, November 1975 to June 1980. Water temperatures August 1963 to September 1973.

AVERAGE DISCHARGE.--57 years, 429 ft³/s, 106.31 in/yr, 310,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s Jan. 22, 1935, from flood marks at site then in use, from rating curve extended above 4,000 ft³/s on basis of slope-area measurement at gage height 15.2 ft; maximum gage height, 16.20 ft Dec. 2, 1977; minimum discharge, 18 ft³/s Aug. 30, 31, Sept. 1, 1970, Sept. 3, 1982.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	1400	5,050	12.44	Feb. 23	1900	*6,690	*14.29
Jan. 18	1900	4,290	11.42				

Minimum discharge, 21 ft³/s Sept. 7, 8, 13, gage height, 3.53 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	52	938	177	233	608	634	297	313	128	59	40	27		
2	54	1370	215	238	567	515	272	343	121	67	37	26		
3	55	1240	492	365	604	438	246	319	116	60	36	26		
4	51	980	449	273	691	379	233	202	114	69	36	24		
5	49	867	529	520	802	329	215	337	112	62	36	23		
6	48	1270	852	830	688	304	202	317	111	56	35	22		
7	49	1180	1080	554	585	624	190	293	112	53	34	21		
8	46	1010	991	487	503	694	179	267	103	52	33	22		
9	45	850	757	450	433	638	169	254	98	50	32	23		
10	45	696	599	444	379	589	161	278	93	86	32	24		
11	73	572	493	492	335	626	177	309	88	126	34	24		
12	71	483	415	432	306	748	194	393	85	100	34	22		
13	61	416	356	393	289	744	171	898	81	80	33	22		
14	63	363	313	358	291	666	159	651	85	70	31	24		
15	106	442	278	419	703	570	154	508	94	66	29	23		
16	119	464	250	673	1220	494	207	427	89	67	28	30		
17	100	445	230	1260	793	431	225	362	81	74	27	32		
18	83	404	212	2850	629	421	221	319	95	66	27	64		
19	140	392	198	2770	525	371	201	290	104	60	28	43		
20	469	382	186	1430	451	326	182	303	88	56	27	32		
21	518	349	175	932	441	353	169	251	88	54	26	28		
22	1320	316	164	1120	634	723	158	233	78	53	26	26		
23	764	288	156	1450	4190	381	155	214	71	54	26	109		
24	1080	265	149	1100	3710	502	151	202	69	52	25	165		
25	1960	247	143	842	3130	454	228	195	66	49	24	133		
26	2660	231	137	666	1950	525	318	184	64	49	24	144		
27	4570	223	131	570	1190	485	547	174	62	49	23	101		
28	2690	205	126	478	829	439	452	161	60	47	24	80		
29	1410	194	125	440	---	390	388	151	60	46	27	141		
30	928	185	119	640	---	364	334	143	59	43	30	132		
31	693	---	117	593	---	318	---	134	---	41	29	---		
TOTAL	20372	17272	10614	24302	27476	15075	6955	9515	2675	1916	933	1613		
MEAN	657	576	342	784	981	486	232	307	89.2	61.8	30.1	53.8		
MAX	4570	1370	1080	2850	4190	748	547	898	128	126	40	165		
MIN	45	185	117	233	289	304	151	134	59	41	23	21		
CFSM	12.0	10.5	6.24	14.3	17.9	8.87	4.23	5.60	1.63	1.13	.55	.98		
IN.	13.83	11.72	7.21	16.50	18.65	10.23	4.72	6.46	1.82	1.30	.63	1.09		
AC-FT	40410	34260	21050	48200	54500	29900	13800	18870	5310	3800	1850	3200		
CAL YR 1985	TOTAL	108212	MEAN	296	MAX	4970	MIN	28	CFSM	5.40	IN.	73.46	AC-FT	214600
WTR YR 1986	TOTAL	138718	MEAN	360	MAX	4870	MIN	21	CFSM	6.93	IN.	94.17	AC-FT	275100

WILLAPA RIVER BASIN

49

12013500 WILLAPA RIVER NEAR WILLAPA, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°39'04", long 123°39'05", in SW¼SW¼ sec.35, T.14 N., R.8 W., Pacific County, Hydrologic Unit 17100106, on right bank 2,150 ft downstream from Mill Creek, 1.8 mi southeast of Willapa, and at mile 17.8.

DRAINAGE AREA.--130 mi².

WATER-DISCHARGE RECORDS

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

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

REMARKS.--No estimated daily discharges. Water-discharge records good. Some diversion for domestic use and irrigation upstream from station. No regulation.

AVERAGE DISCHARGE.--31 years (water years 1949-1954, 1962-1986), 645 ft³/s, 67.38 in/yr, 467,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s Feb. 22, 1949, Dec. 13, 1966, from rating curve extended above 7,300 ft³/s; maximum gage height, 24.22 ft Feb. 22, 1949, site and datum then in use; minimum discharge, 13 ft³/s Aug. 20, 1967; minimum gage height, 2.87 ft Aug. 18-21, 23-25, 31, Sept. 1, 1970, site and datum then in use.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	0200	5,730	16.11	Feb. 23	2200	7,740	19.04
Jan. 19	0200	*9,850	*21.81				

Minimum discharge, 18 ft³/s Aug. 28, 29, Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	43	884	264	348	830	994	389	467	179	69	35	27		
2	43	1240	309	404	790	811	362	523	169	77	35	27		
3	43	1120	1080	694	833	684	337	548	158	74	33	27		
4	43	1000	966	517	857	603	329	496	155	85	30	26		
5	42	924	984	671	1040	536	308	517	152	80	30	22		
6	41	1340	1170	1350	918	487	289	537	151	70	31	19		
7	44	1260	1520	938	808	766	274	483	159	63	29	18		
8	43	1150	1490	851	710	1010	261	445	150	60	27	20		
9	40	1070	1120	783	630	864	250	415	137	57	27	21		
10	40	920	889	770	566	786	237	441	127	67	27	27		
11	54	768	730	866	512	797	243	487	118	114	28	27		
12	68	661	623	748	478	997	282	499	111	103	27	22		
13	59	583	548	669	461	1030	245	1030	104	85	27	22		
14	50	520	491	616	489	968	228	829	101	76	27	27		
15	54	544	445	648	1170	843	222	668	115	68	27	36		
16	75	582	408	1010	2610	732	290	571	112	67	27	46		
17	78	620	372	2930	1690	644	344	501	103	71	24	49		
18	61	579	347	5790	1250	588	356	451	114	68	24	80		
19	68	547	325	6880	980	535	308	416	125	61	21	87		
20	342	563	306	2700	811	487	281	454	117	55	22	53		
21	495	519	287	1680	737	513	261	384	116	52	24	42		
22	1260	479	272	1750	912	476	244	353	100	50	24	38		
23	834	432	258	2200	4660	473	230	324	90	51	26	48		
24	1100	406	245	1780	5110	661	225	305	83	53	22	167		
25	2280	381	232	1390	3960	577	345	290	79	52	24	134		
26	2520	357	221	1100	2600	603	468	272	75	48	20	199		
27	4610	354	210	919	1750	555	670	259	73	47	19	145		
28	3100	324	201	767	1280	507	598	236	68	47	19	105		
29	1720	304	198	689	---	465	556	219	68	43	19	103		
30	1190	284	194	911	---	444	498	206	70	38	21	113		
31	892	---	186	838	---	405	---	191	---	36	27	---		
TOTAL	21332	20715	16891	44207	39442	20841	9930	13817	3479	1987	803	1777		
MEAN	688	691	545	1426	1409	672	331	446	116	64.1	25.9	59.2		
MAX	4610	1340	1520	6880	5110	1030	670	1030	179	114	35	199		
MIN	40	284	186	348	461	405	222	191	68	36	19	18		
CFSM	5.29	5.32	4.19	11.0	10.8	5.17	2.55	3.43	.89	.49	.20	.46		
IN.	6.10	5.93	4.83	12.65	11.29	5.96	2.84	3.95	.00	.57	.23	.51		
AC-FT	42310	41090	33500	87680	78230	41340	19700	27410	6900	3940	1590	3520		
CAL YR 1985	TOTAL	146129	MEAN	400	MAX	4610	MIN	25	CFSM	3.08	IN.	41.82	AC-FT	289800
WTR YR 1986	TOTAL	195221	MEAN	535	MAX	6880	MIN	18	CFSM	4.12	IN.	55.86	AC-FT	387200

WILLAPA RIVER BASIN

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966-1973, 1976 to September 1986 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB FLD MG/L AS CAC03
NOV 15...	1015	524	64	7.1	6.0	2.1	11.8	94	130	190	17	1
MAR 06...	0920	491	59	7.5*	9.5	2.5	11.0	96	29	K9	16	2
MAY 29...	1330	218	64	7.9	16.0	1.2	11.0	111	160	22	17	0
AUG 28...	0935	18	87	7.2	20.5	1.5	6.2	69	330	58	24	0
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 15...	4.3	1.4	5.2	40	0.6	0.6	16	19	0	5.9	4.9	<0.10
MAR 06...	4.2	1.4	5.0	39	0.6	0.6	14	17	0	4.4	5.1	<0.10
MAY 29...	4.5	1.4	5.2	39	0.6	0.6	18	22	0	4.6	4.3	<0.10
AUG 28...	6.1	2.2	7.1	37	0.6	1.2	27	33	0	6.9	5.5	<0.10
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 15...	14	38	46	0.05	54	<0.01	0.86	0.04	0.3	0.02	0.01	0.01
MAR 06...	14	38	43	0.05	50	<0.01	0.85	0.04	<0.2	<0.01	<0.01	<0.01
MAY 29...	13	56	44	0.08	33	<0.01	0.41	0.03	<0.2	0.02	<0.01	<0.01
AUG 28...	11	55	57	0.08	2.6	<0.01	0.26	<0.01	0.6	0.04	0.01	<0.01

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 15...	<10	<1	8	<0.5	<1	<1	<3	3	79	<1	<4
MAR 06...	20	<1	12	<0.5	<1	<1	<3	2	71	6	<4
MAY 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	20	<1	9	<0.5	<1	<1	<3	3	300	<5	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
NOV 15...	11	<0.1	<10	1	<1	<1	30	<6	10	5	7.1
MAR 06...	8	0.2	<10	2	<1	<1	30	<6	8	8	11
MAY 29...	--	--	--	--	--	--	--	--	--	4	2.4
AUG 28...	18	0.2	<10	1	<1	<1	41	<6	8	2	0.10

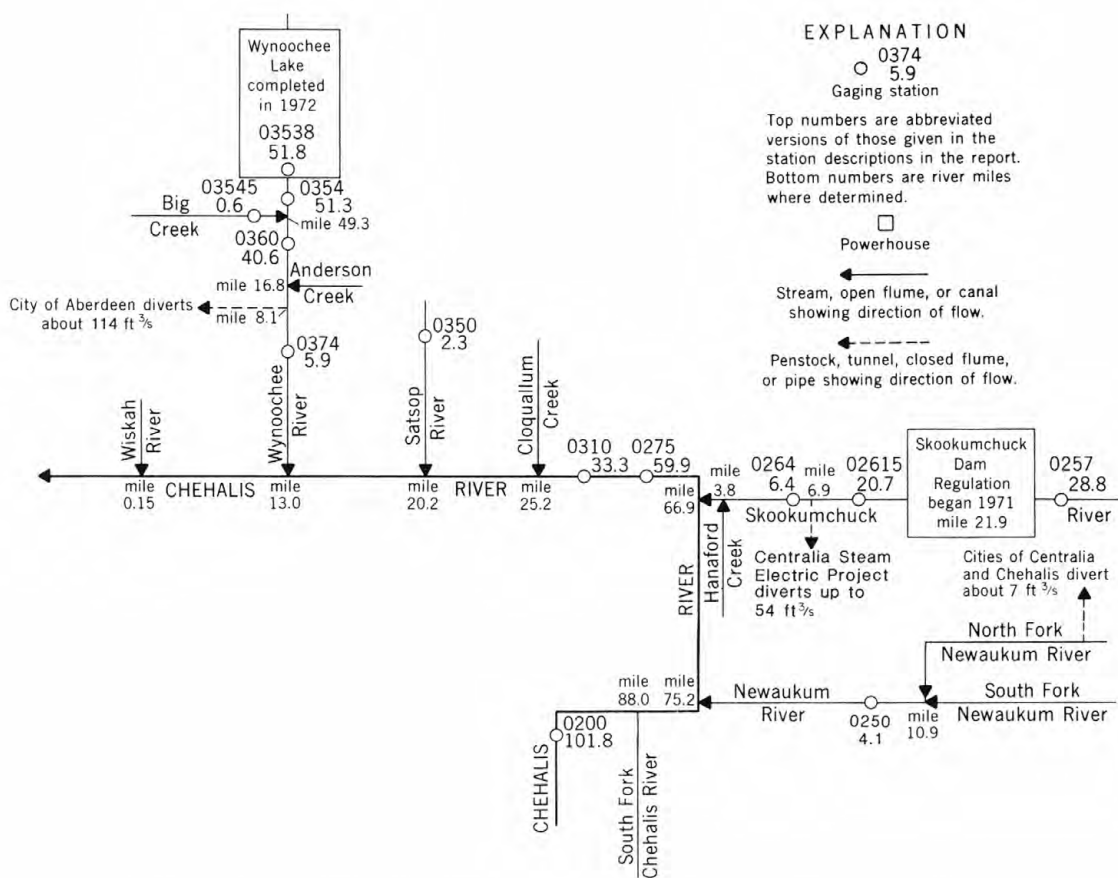


Figure 7.--Gaging stations in Chehalis River basin.

12020000 CHEHALIS RIVER NEAR DOTY, WA

LOCATION.--Lat 46°37'03", long 123°16'35", in NE¼NW¼ sec.14, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, on right bank 1.3 mi south of Doty, 1.6 mi upstream from Elk Creek, 3.4 mi north of Pe Ell, and at mile 101.8.

DRAINAGE AREA.--113 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 302.1 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1961, nonrecording gage and crest-stage gage at site 100 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 8-30, Nov. 10-20. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Chemical analyses July 1959 to September 1970, sediment records October 1961 to December 1964 (partial-record station).

AVERAGE DISCHARGE.--47 years, 573 ft³/s, 68.86 in/yr, 415,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s Jan. 20, 1972, gage height, 18.36 ft, from rating curve extended above 7,400 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 18 ft³/s Oct. 14, 1952, Aug. 25-28, 1958, Sept. 4, 5, 1972; minimum gage height, 0.69 ft Aug. 18, 19, 1977, Aug. 24-27, Sept. 3, 1982.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2100	*18,100	*16.44	Feb. 23	1800	8,000	10.48

Minimum discharge, 22 ft³/s Aug. 22-29, Sept. 7, 8, gage height, 0.90 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	42	675	245	322	814	870	339	414	130	56	32	26		
2	41	961	240	378	721	714	313	510	122	61	31	26		
3	41	1030	912	665	687	607	287	631	117	59	30	26		
4	41	885	898	550	749	533	274	569	115	64	29	25		
5	39	803	1030	635	988	461	254	539	114	59	29	24		
6	40	1240	1520	1410	854	410	236	468	113	54	29	23		
7	42	1080	1950	913	721	722	223	413	115	50	28	22		
8	40	937	1690	764	611	1570	209	372	108	50	27	23		
9	37	852	1170	712	532	1160	198	338	98	49	26	23		
10	36	731	858	767	472	893	185	335	92	56	26	24		
11	44	600	674	792	422	820	183	341	87	87	26	24		
12	54	505	556	672	398	825	205	364	83	82	27	23		
13	51	432	475	572	395	822	182	900	78	65	27	24		
14	44	384	418	504	388	817	170	716	76	58	26	28		
15	47	432	376	510	1210	731	161	564	86	54	25	30		
16	65	501	339	743	2910	640	219	455	80	53	24	41		
17	72	487	312	2330	1590	562	246	382	82	55	23	35		
18	57	436	294	8660	1100	515	259	336	100	54	23	47		
19	61	408	282	6730	834	451	229	309	112	49	23	44		
20	606	391	267	2680	676	404	207	345	99	45	23	35		
21	800	356	252	1640	618	467	189	285	90	43	23	32		
22	1350	326	237	1740	928	457	174	272	80	42	22	29		
23	1220	300	225	2280	5100	471	162	250	72	42	22	36		
24	1570	280	216	1830	4550	739	158	232	67	42	22	97		
25	2600	260	205	1360	3090	694	273	220	64	40	22	109		
26	2140	244	195	1040	2190	644	421	202	62	37	22	175		
27	2760	237	184	840	1510	568	659	193	61	37	22	98		
28	2050	219	176	691	1110	511	660	178	59	37	22	71		
29	1230	205	170	632	---	441	589	161	57	36	23	65		
30	860	192	165	949	---	399	494	149	58	35	25	69		
31	657	---	158	922	---	359	---	139	---	34	27	---		
TOTAL	18737	16389	16689	45233	36168	20277	8358	11582	2677	1585	786	1354		
MEAN	604	546	538	1459	1292	654	279	374	89.2	51.1	25.4	45.1		
MAX	2760	1240	1950	8660	5100	1570	660	900	130	87	32	175		
MIN	36	192	158	322	388	359	158	139	57	34	22	22		
CFSM	5.35	4.83	4.76	12.9	11.4	5.79	2.47	3.31	.79	.45	.22	.40		
IN.	6.17	5.40	5.49	14.89	11.91	6.68	2.75	3.81	.88	.52	.26	.45		
AC-FT	37160	32510	33100	89720	71740	40220	16580	22970	5310	3140	1560	2690		
CAL YR 1985	TOTAL	131121	MEAN	359	MAX	2760	MIN	32	CFSM	3.18	IN.	43.17	AC-FT	260100
WTR YR 1986	TOTAL	179835	MEAN	493	MAX	8660	MIN	22	CFSM	4.36	IN.	59.20	AC-FT	356700

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

LOCATION.--Lat 46°37'13", long 122°56'38", in SW¼SW¼ sec.9, T.13 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on left bank at highway bridge 3.0 mi southeast of Chehalis, and at mile 4.1.

DRAINAGE AREA.--155 mi².

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

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

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

REMARKS.--Estimated daily discharges: Nov. 23-26. Records good. Cities of Chehalis and Centralia divert about 7 ft³/s from North Fork Newaukum River for municipal use. No regulation upstream from station.

AVERAGE DISCHARGE.--45 years (water years, 1930-31, 1943-81, 1983-86), 500 ft³/s, 43.81 in/yr, 362,200 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Dec. 2, 1977, gage height, 12.49 ft; maximum gage height, 13.62 ft Dec. 9, 1953; minimum discharge, 12 ft³/s Sept. 13, 14, 1949, Aug. 29, 1967.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0500	6,320	9.51	Feb. 23	2400	*7,960	*10.81

Minimum discharge, 27 ft³/s Aug. 26-29, Sept. 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	43	529	207	248	752	763	383	409	160	71	46	39		
2	44	1020	315	312	696	656	350	447	154	85	45	36		
3	47	806	864	716	637	579	321	455	144	79	43	35		
4	45	1100	948	585	606	519	311	429	142	90	43	32		
5	43	1090	883	554	705	472	291	729	140	81	43	30		
6	45	1610	1330	1130	630	436	269	770	137	71	43	29		
7	68	1590	1590	830	555	499	251	645	139	67	41	28		
8	59	1240	1250	722	491	951	236	561	133	65	38	28		
9	49	1080	907	814	442	843	223	481	124	63	36	41		
10	46	1070	718	843	403	741	209	518	116	73	35	47		
11	49	822	591	743	366	745	209	583	110	141	37	37		
12	89	660	502	612	339	816	287	573	104	98	41	34		
13	71	547	434	522	334	764	244	979	98	81	41	32		
14	59	464	392	452	391	769	220	937	95	73	38	33		
15	78	505	354	452	1000	650	254	711	102	70	35	34		
16	90	882	323	671	2210	567	311	568	97	75	32	40		
17	105	944	299	943	1490	503	313	475	108	97	31	42		
18	78	827	280	2560	982	502	356	409	162	87	31	53		
19	70	698	266	4580	752	489	303	379	225	75	31	61		
20	226	671	251	1740	617	438	268	611	139	68	31	52		
21	400	571	234	1120	563	457	243	468	121	63	30	45		
22	363	500	220	996	831	473	222	411	107	60	28	43		
23	401	400	212	1840	4260	445	204	350	97	61	29	56		
24	532	350	204	1550	5360	895	196	309	89	63	29	183		
25	1470	320	197	1100	2110	863	229	278	85	60	28	107		
26	1140	295	189	875	1430	818	325	253	80	59	28	115		
27	1450	288	176	758	1100	678	472	244	78	58	27	95		
28	1710	266	167	643	899	579	510	221	74	56	27	94		
29	997	245	164	615	---	504	504	201	77	54	28	137		
30	717	224	164	960	---	467	470	186	76	52	35	157		
31	594	---	157	855	---	415	---	172	---	49	43	---		
TOTAL	11178	21614	14788	31341	30951	19296	8984	14762	3513	2245	1093	1795		
MEAN	361	720	477	1011	1105	622	299	476	117	72.4	35.3	59.8		
MAX	1710	1610	1590	4580	5360	951	510	979	225	141	46	183		
MIN	43	224	157	248	334	415	196	172	74	49	27	28		
CFSM	2.33	4.65	3.08	6.52	7.13	4.01	1.93	3.07	.75	.47	.23	.39		
IN.	2.68	5.19	3.55	7.52	7.43	4.63	2.16	3.54	.84	.54	.26	.43		
AC-FT	22170	42870	29330	62160	61390	38270	17820	29280	6970	4450	2170	3560		
CAL YR 1985	TOTAL	121378	MEAN	333	MAX	1710	MIN	34	CFSM	2.15	IN.	29.13	AC-FT	240800
WTR YR 1986	TOTAL	161560	MEAN	443	MAX	5360	MIN	27	CFSM	2.86	IN.	38.77	AC-FT	320500

CHEHALIS RIVER BASIN

55

12025700 SKOOKUMCHUCK RIVER NEAR VAIL, WA

LOCATION.--Lat 46°46'22", long 122°35'34", in SW¼NW¼ sec.20, T.15 N., R.2 E., Thurston County, Hydrologic Unit 17100103, on right bank about 150 ft downstream from logging bridge, 0.4 mi downstream from Hospital Creek, 5.8 mi southeast of Vail, and at mile 28.8.

DRAINAGE AREA.--40.0 mi².

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

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

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

REMARKS.--Estimated daily discharges: Nov. 28 to Jan. 16, Mar. 23-28. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--19 years, 200 ft³/s, 67.90 in/yr, 144,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft³/s Jan. 20, 1972, gage height, 10.93 ft; minimum discharge, 18 ft³/s part or all of each day Aug. 22-24, 26-31, 1970.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0300	1,290	6.58	Feb. 23	2000	2,240	7.63
Jan. 18	2100	*2,720	*8.12				

Minimum discharge, 19 ft³/s Sept. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	25	398	75	112	304	267	149	189	77	41	28	22		
2	25	621	76	110	282	229	136	237	75	43	28	21		
3	25	452	110	135	269	202	126	234	72	43	28	21		
4	24	535	115	130	281	181	120	216	71	48	28	21		
5	24	538	130	160	308	165	112	243	68	41	28	20		
6	25	659	280	360	267	152	107	251	67	38	27	20		
7	25	531	330	240	233	188	102	232	67	37	27	19		
8	23	429	300	230	205	323	97	207	63	36	26	22		
9	22	359	250	260	185	272	92	189	60	36	25	26		
10	22	299	200	300	167	251	88	174	58	49	25	22		
11	34	247	170	290	153	287	93	178	55	60	26	21		
12	31	211	150	260	143	371	97	198	54	47	26	21		
13	27	182	135	220	138	332	89	487	52	43	25	20		
14	25	162	125	190	135	303	84	377	53	40	25	20		
15	28	197	115	170	324	260	108	286	51	39	24	20		
16	36	242	108	200	649	225	130	233	51	48	24	22		
17	31	221	104	386	407	199	147	198	54	52	24	29		
18	28	190	104	1480	297	193	155	174	95	45	24	43		
19	45	173	112	1600	240	175	134	164	72	41	24	26		
20	165	157	116	748	206	163	120	185	58	38	23	23		
21	184	147	114	486	211	180	111	152	54	37	23	22		
22	261	142	112	460	313	168	103	138	50	36	22	21		
23	231	135	110	819	1360	190	95	128	49	36	22	52		
24	516	120	112	653	1270	340	91	118	47	35	22	76		
25	928	112	112	469	729	310	122	111	46	34	22	46		
26	777	101	110	360	523	300	141	106	45	33	21	54		
27	775	98	100	302	401	260	212	101	43	33	21	44		
28	764	92	95	254	320	222	252	94	43	32	21	48		
29	455	86	88	228	---	197	225	88	43	31	22	58		
30	334	82	84	321	---	179	200	84	41	30	24	53		
31	263	---	78	309	---	158	---	81	---	29	23	---		
TOTAL	6178	7918	4220	12242	10320	7242	3838	5853	1734	1231	758	933		
MEAN	199	264	136	395	369	234	128	189	57.8	39.7	24.5	31.1		
MAX	928	659	330	1600	1360	371	252	487	95	60	28	76		
MIN	22	82	75	110	135	152	84	81	41	29	21	19		
CFSM	4.97	6.60	3.40	9.87	9.22	5.85	3.20	4.72	1.44	.99	.61	.78		
IN.	5.75	7.36	3.92	11.39	9.60	6.74	3.57	5.44	1.61	1.14	.70	.87		
AC-FT	12250	15710	8370	24280	20470	14360	7610	11610	3440	2440	1500	1850		
CAL YR 1985	TOTAL	49440	MEAN	135	MAX	928	MIN	21	CFSM	3.37	IN.	45.98	AC-FT	98060
WTR YR 1986	TOTAL	62467	MEAN	171	MAX	1600	MIN	19	CFSM	4.27	IN.	58.09	AC-FT	123900

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

LOCATION.--Lat 46°47'25", long 122°44'03", in NW¼NW¼ sec.18, T.15 N., R.1 E., Thurston County, Hydrologic Unit 17100103, on right bank 0.7 mi downstream from Bloody Run Creek, 1.2 mi downstream from Skookumchuck Dam, 12 mi northeast of Centralia, and at mile 20.7.

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

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

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

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Skookumchuck Dam since January 1971. No diversions upstream from station.

AVERAGE DISCHARGE.--51 years (water years 1930-33, 1940-86), 252 ft³/s, 182,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft³/s Dec. 9, 1953, gage height, 48.59 ft, site and datum in use; minimum discharge, 12 ft³/s May 28, 1970, caused by pumping during dam construction.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	1130	2,560	9.65	Feb. 24	0145	*3,150	*10.24

Minimum discharge, 79 ft³/s Aug. 20-29, Sept. 2, gage height, 4.75 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	198	250	246	448	387	206	301	96	91	93	80
2	133	219	251	250	434	338	193	307	94	91	93	83
3	133	218	278	258	425	286	181	307	94	91	92	84
4	132	246	287	257	417	261	173	275	93	92	92	84
5	132	262	281	259	412	239	165	283	93	92	93	123
6	132	269	280	277	404	222	156	347	93	91	92	149
7	132	269	287	270	392	231	149	344	93	90	96	149
8	132	273	283	263	379	381	145	311	93	90	97	149
9	132	274	274	264	359	397	140	286	92	90	94	149
10	130	282	270	266	331	356	135	272	90	92	94	150
11	131	278	265	264	282	351	134	271	90	93	89	150
12	130	270	263	262	259	415	140	266	89	93	82	150
13	130	264	261	259	253	427	136	312	89	93	82	150
14	130	262	259	255	253	408	131	452	89	93	82	150
15	130	264	258	255	294	357	142	410	89	93	81	150
16	131	270	257	262	332	310	166	337	89	94	81	150
17	131	276	255	312	303	274	190	289	90	94	80	150
18	130	277	255	432	285	251	206	270	91	93	80	155
19	130	271	255	2030	273	237	191	269	91	93	80	158
20	141	268	253	1450	263	221	173	276	90	93	80	158
21	140	264	253	801	238	224	160	248	90	93	80	157
22	144	262	252	583	237	225	149	194	88	93	80	151
23	143	261	250	1010	1240	226	140	173	89	93	80	159
24	148	258	250	1040	2520	455	135	164	90	93	79	159
25	171	258	250	726	1320	500	147	163	90	93	79	156
26	171	255	248	534	816	454	167	159	91	93	79	156
27	183	255	248	518	613	382	213	151	91	93	79	156
28	199	253	246	509	445	322	315	137	91	92	79	156
29	169	253	245	490	---	276	372	117	91	92	80	156
30	159	252	245	487	---	247	330	105	90	93	80	157
31	164	---	243	465	---	223	---	100	---	93	80	---
TOTAL	4426	7781	8052	15554	14227	9883	5380	7896	2729	2863	2628	4284
MEAN	143	259	260	502	508	319	179	255	91.0	92.4	84.8	143
MAX	199	282	287	2030	2520	500	372	452	96	94	97	159
MIN	130	198	243	246	237	221	131	100	88	90	79	80
AC-FT	8780	15430	15970	30850	28220	19600	10670	15660	5410	5680	5210	8500
CAL YR 1985	TOTAL	64277	MEAN	176	MAX	756	MIN	74	AC-FT	127500		
WTR YR 1986	TOTAL	85703	MEAN	235	MAX	2520	MIN	79	AC-FT	170000		

CHEHALIS RIVER BASIN

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12026400 SKOOKUMCHUCK RIVER NEAR BUCODA, WA

LOCATION.--Lat 46°46'20", long 122°55'23", in SW¼NW¼ sec.22, T.15 N., R.2 W., Thurston County, Hydrologic Unit 17100103, on left bank 100 ft downstream from bridge on State Highway 507, 3.3 mi southwest of Bucoda, and at mile 6.4.

DRAINAGE AREA.--112 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 194.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Feb. 20 to Mar. 21, Mar. 23-27. Records good except for estimated daily discharges, which are poor. Flow regulated by Skookumchuck Dam since January 1971. An average of 30 ft³/s is diverted at point 0.5 mi upstream for consumptive use at Centralia Steam Electric Project. During peak demand months, up to 54 ft³/s may be diverted for periods of one day or less. Other minor diversions for domestic use and irrigation upstream from station. Water temperatures October 1968 to September 1971; sediment records July 1968 to September 1971.

AVERAGE DISCHARGE.--15 years (water years 1972-86), 357 ft³/s, 258,700 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,190 ft³/s Jan. 21, 1972, gage height, 16.82 ft; minimum discharge, 21 ft³/s Aug. 15, 16, 18, 19, 20, 1970, gage height, 3.85 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	1700	3,590	12.53	Feb. 24	unknown	*4,650	*13.88

Minimum discharge, 56 ft³/s Aug. 28, Sept. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	229	264	276	646	550	341	401	103	93	79	66
2	108	284	271	296	616	480	329	400	101	95	78	59
3	109	271	395	372	603	420	310	409	100	95	78	64
4	108	305	457	359	584	380	284	394	100	96	78	63
5	108	350	453	350	565	350	261	391	99	95	78	74
6	109	408	502	476	562	330	232	462	99	94	77	117
7	109	386	547	424	542	340	218	475	99	93	77	119
8	107	381	506	382	514	540	199	446	98	92	76	121
9	107	389	421	383	488	580	183	412	96	92	76	122
10	107	457	375	403	458	480	177	384	95	88	76	123
11	112	420	348	385	411	480	172	391	94	89	76	122
12	117	365	327	366	363	580	182	390	93	93	66	122
13	118	330	314	346	360	600	176	430	92	91	65	121
14	118	309	310	319	364	540	170	555	92	90	65	121
15	118	314	305	325	551	460	169	554	90	93	64	121
16	120	371	297	368	1020	380	207	507	90	96	62	121
17	117	408	291	700	816	330	239	456	95	97	59	122
18	112	425	285	1540	596	310	260	429	99	97	61	127
19	114	377	281	3320	480	300	251	413	99	95	61	135
20	137	358	278	2350	425	270	227	462	96	94	61	146
21	164	337	275	1280	400	282	202	427	95	93	60	155
22	149	327	275	927	400	284	175	300	93	91	60	142
23	148	317	272	1190	2000	270	161	246	92	92	59	140
24	163	308	271	1350	3500	640	147	210	94	92	59	146
25	284	303	272	1020	2100	700	166	197	93	91	59	142
26	250	297	269	778	1300	620	193	187	95	90	59	140
27	327	288	265	695	900	515	256	178	93	89	59	137
28	429	280	262	687	650	449	381	157	94	88	58	139
29	291	287	263	655	---	411	474	131	93	83	58	142
30	237	269	261	702	---	382	466	108	92	80	58	144
31	226	---	259	672	---	373	---	105	---	79	58	---
TOTAL	4931	10150	10171	23696	22214	13626	7208	11007	2864	2836	2060	3613
MEAN	159	338	328	764	793	440	240	355	95.5	91.5	66.5	120
MAX	429	457	547	3320	3500	700	474	555	103	97	79	155
MIN	107	229	259	276	360	270	147	105	90	79	58	59
AC-FT	9780	20130	20170	47000	44060	27030	14300	21830	5680	5630	4090	7170
CAL YR 1985	TOTAL	76341	MEAN	209	MAX	892	MIN	50	AC-FT	151400		
WTR YR 1986	TOTAL	114376	MEAN	313	MAX	3500	MIN	58	AC-FT	226900		

12027500 CHEHALIS RIVER NEAR GRAND MOUND, WA

LOCATION.--Lat 46°46'34", long 123°02'04", in NE¼NE¼ sec.22, T.15 N., R.3 W., Thurston County, Hydrologic Unit 17100103, on left bank at downstream side of highway bridge at Meadows, 1.5 mi southwest of Grand Mound, 7.0 mi downstream from Skookumchuck River, and at mile 59.9.

DRAINAGE AREA.--895 mi².

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

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1929-30(M), 1931, 1932-34(M).

GAGE.--Water-stage recorder. Datum of gage is 123.65 ft above National Geodetic Vertical Datum of 1929, supplementary adjustment of 1947. Prior to Oct. 3, 1934, nonrecording gage at present site at datum 3.0 ft higher.

REMARKS.--No estimated daily discharges. Records good. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 54 ft³/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use upstream from station, including about 7 ft³/s for municipal water supply for Centralia and Chehalis. Water temperatures March 1952 to September 1974.

AVERAGE DISCHARGE.--58 years, 2,820 ft³/s, 42.79 in/yr, 2,043,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,200 ft³/s Jan. 21, 1972, gage height, 18.21 ft; minimum discharge, 82 ft³/s Aug. 30, 1967; minimum gage height, 0.83 ft Aug. 27, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 20	0500	*32,100	*16.49	Feb. 25	0200	25,300	15.40

Minimum discharge, 139 ft³/s Aug. 28, 29, gage height, 1.80 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	307	2830	1130	1090	4900	5580	1810	2220	732	356	242	174		
2	307	3430	1130	1740	4330	4270	1700	2160	693	359	237	179		
3	306	3660	2310	2770	3950	3520	1550	2550	658	374	223	169		
4	308	3730	4710	3250	3640	3050	1460	2540	631	377	214	168		
5	304	4040	4890	2880	3920	2710	1400	2620	625	391	210	164		
6	303	4860	5830	4920	3900	2460	1290	3040	619	366	209	185		
7	333	5810	8260	5390	3500	2480	1220	2880	620	338	208	212		
8	343	5160	9030	4280	3160	4310	1150	2560	619	317	205	217		
9	326	4630	6990	4040	2860	5340	1090	2210	585	312	197	226		
10	307	4560	5130	4090	2610	4500	1040	2080	552	316	191	243		
11	311	3980	3890	3990	2380	4010	998	2090	519	376	190	244		
12	354	3260	3170	3550	2180	3960	1110	2060	488	442	188	238		
13	410	2710	2690	3100	2070	3920	1130	2790	465	409	184	235		
14	383	2310	2360	2740	2150	3890	1030	3930	450	363	185	235		
15	364	2140	2130	2670	3740	3530	987	3260	455	340	180	239		
16	390	2840	1930	3170	10900	3150	1150	2660	476	337	170	261		
17	438	3250	1770	6580	12600	2790	1300	2230	488	351	164	286		
18	448	3560	1650	12700	9070	2520	1410	1920	549	373	162	301		
19	403	3100	1560	23000	6380	2400	1350	1770	696	356	161	339		
20	550	2870	1490	28600	4760	2190	1210	2220	646	327	159	366		
21	2010	2570	1410	18200	3760	2110	1100	2300	580	308	158	341		
22	2180	2320	1340	11400	4420	2290	1020	1940	532	291	154	319		
23	3260	1980	1280	10700	8770	2100	945	1660	479	282	150	300		
24	2730	1690	1240	10900	20600	2910	891	1460	437	284	149	411		
25	6240	1660	1200	8580	23000	3650	979	1320	405	289	147	596		
26	6200	1620	1160	6520	16900	3480	1560	1200	385	283	149	599		
27	9120	1490	1110	5180	11500	3120	2150	1120	373	279	144	670		
28	9560	1420	1070	4310	7730	2710	2670	1040	363	277	140	526		
29	7350	1340	1030	3770	---	2400	2740	938	361	268	144	481		
30	4710	1260	1020	4620	---	2170	2570	852	361	257	147	529		
31	3580	---	1000	5650	---	1980	---	789	---	248	158	---		
TOTAL	64135	90080	84910	214380	189680	99500	42010	64409	15842	10246	5519	9453		
MEAN	2069	3003	2739	6915	6774	3210	1400	2078	528	331	178	315		
MAX	9560	5810	9030	28600	23000	5580	2740	3930	732	442	242	670		
MIN	303	1260	1000	1090	2070	1980	891	789	361	248	140	164		
CFSM	2.31	3.36	3.06	7.73	7.57	3.59	1.56	2.32	.59	.37	.20	.35		
IN.	2.67	3.74	3.53	8.91	7.88	4.14	1.75	2.68	.66	.43	.23	.39		
AC-FT	127200	178700	168400	425200	376200	197400	83330	127800	31420	20320	10950	18750		
CAL YR 1985	TOTAL	631019	MEAN	1729	MAX	9560	MIN	178	CFSM	1.93	IN.	26.23	AC-FT	1252000
WTR YR 1986	TOTAL	890164	MEAN	2439	MAX	28600	MIN	140	CFSM	2.73	IN.	37.00	AC-FT	1766000

CHEHALIS RIVER BASIN

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12031000 CHEHALIS RIVER AT PORTER, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°56'17", long 123°18'45", on north line of NE¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, at downstream end of left bank bridge pier, 30 ft downstream from Porter Creek, 0.1 mi west of Porter, and at mile 33.3.

DRAINAGE AREA.--1,294 mi².

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 23.64 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records poor. Discharge determined by means of a digital model for streamflow routing by convolution methods (WRI Report 83-4160) using the record from Chehalis River near Grand Mound (station 12027500). Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 54 ft³/s of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use upstream from station, including about 7 ft³/s for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--30 years (water years 1935-72, 1976-85), 4,167 ft³/s, 43.73 in/yr, 3,019,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,600 ft³/s Jan. 22, 1972, gage height, 23.88 ft; minimum, 164 ft³/s Oct. 17, 1952, gage height, 2.25 ft.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986 MEAN VALUES

October.....	3,060
November.....	4,670
December.....	4,200
CAL YR 1985.....	2,600
January.....	10,400
February.....	10,300
March.....	5,060
April.....	2,160
May.....	3,240
June.....	830
July.....	510
August.....	280
September.....	460
WTR YR 1986.....	3,730

CHEHALIS RIVER BASIN

12031000 CHEHALIS RIVER AT PORTER, WA

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-73, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: JULY 1959 to September 1960.

pH: July 1959 to September 1960.

WATER TEMPERATURES: July 1959 to September 1960, October 1961 to July 1972.

SUSPENDED SEDIMENT: October 1961 to September 1971.

REMARKS.--Streamflow data was not collected during the 1986 water year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB MG/L AS CAC03	
NOV 12...	1215	80	7.2	4.5	4.0	11.6	90	--	--	26	6	
JAN 23...	1340	56	7.3	6.5	19	11.1	90	300	1400	19	5	
MAR 24...	1040	74	7.2	8.0	3.0	11.3	95	37	23	25	1	
MAY 30...	1400	87	7.5	18.5	1.1	9.5	101	21	K8	29	0	
JUL 22...	1230	101	7.6	19.0	2.0	8.8	96	56	75	33	0	
SEP 23...	1315	105	7.7	13.0	3.2	9.4	92	350	840	34	0	
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 12...	6.4	2.4	5.2	26	0.5	5.2	20	22	0	9.2	4.2	<0.1
JAN 23...	4.8	1.7	4.1	30	0.4	1.2	14	17	0	6.5	4.1	<0.1
MAR 24...	6.4	2.2	4.8	29	0.4	0.7	24	29	0	6.6	4.1	<0.1
MAY 30...	7.4	2.5	5.4	28	0.5	0.7	30	36	0	5.5	3.8	<0.1
JUL 22...	8.5	2.9	6.7	30	0.5	0.8	37	46	0	5.3	5.7	<0.1
SEP 23...	8.6	3.0	7.7	32	0.6	1.1	37	45	0	6.5	1.6	<0.1
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)		
NOV 12...	16	52	60	0.07	<0.01	0.84	0.05	0.4	0.05	0.02		
JAN 23...	13	46	44	0.06	<0.01	1.1	0.06	0.5	0.07	0.02		
MAR 24...	16	56	56	0.08	0.01	0.69	<0.01	0.3	0.04	0.04		
MAY 30...	16	63	59	0.09	0.01	0.46	0.06	0.3	0.08	0.04		
JUL 22...	16	69	69	0.09	<0.01	0.35	0.05	0.3	0.05	0.05		
SEP 23...	17	66	68	0.09	<0.01	0.42	<0.01	0.4	0.10	0.06		

K - Results based on colony count outside the acceptable range (non-ideal colony count).

CHEHALIS RIVER BASIN

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12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 12...	0.02	50	<1	11	<0.5	<1	<1	<3	2	140	<1	<4
JAN 23...	0.02	--	--	--	--	--	--	--	--	--	--	--
MAR 24...	0.05	40	<1	9	<0.5	<1	<1	<3	4	150	1	<4
MAY 30...	0.02	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	0.03	--	--	--	--	--	--	--	--	--	--	--
SEP 23...	0.05	<10	<1	7	<0.5	<1	1	<3	5	150	<5	<4

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
NOV 12...	16	<0.1	<10	1	<1	<1	44	<6	10	7	--
JAN 23...	--	--	--	--	--	--	--	--	--	43	--
MAR 24...	10	<0.1	<10	6	<1	<1	38	<6	10	9	--
MAY 30...	--	--	--	--	--	--	--	--	--	5	--
JUL 22...	--	--	--	--	--	--	--	--	--	2	--
SEP 23...	14	0.1	<10	1	<1	1	48	<6	17	4	--

CHEHALIS RIVER BASIN

12035000 SATSOP RIVER NEAR SATSOP, WA

LOCATION.--Lat 47°00'03", long 123°29'37", in NE¼SE¼ sec.36, T.18 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, in west pier of bridge on old U.S. Highway 410, 0.6 mi west of Satsop, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--299 mi².

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

REVISED RECORDS.--WSP 1286: 1930-35(M), 1937(M). WSP 1716: Drainage area. WSP 1932: 1945, 1949(M), 1951(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 19, 1938, nonrecording gage at site 60 ft upstream at datum 20.9 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Chemical analyses July 1960 to September 1971, October 1974 to September 1975, October 1976 to June 1980; sediment records November 1961 to June 1965 (partial-record station).

AVERAGE DISCHARGE.--57 years, 2,022 ft³/s, 91.84 in/yr, 1,465,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,600 ft³/s Jan. 22, 1935, elevation, 38.9 ft, from floodmarks, present datum; minimum discharge, 166 ft³/s Sept. 21, 1938; minimum elevation, 21.66 ft, present datum, Sept. 3-6, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of 37.1 ft, from high-water mark, at railroad bridge 300 ft downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Elevation (ft)	Date	Time	Discharge (ft ³ /s)	Elevation (ft)
Oct. 27	1815	19,100	31.60	Feb. 24	0900	19,300	31.65
Jan. 18	2230	*30,300	*34.16	Feb. 25	1145	16,800	30.94

Minimum discharge, 223 ft³/s Sept. 6-13, elevation, 22.13 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	253	3600	774	900	3830	3210	1690	1670	910	458	313	243		
2	250	6320	799	1040	3800	2720	1550	1820	872	538	308	240		
3	250	6340	1180	1260	3570	2380	1450	2060	827	473	302	237		
4	249	4400	1550	1150	3490	2120	1380	1830	796	457	301	232		
5	245	3350	2340	1540	3950	1920	1290	1780	770	435	299	230		
6	246	3660	3390	4060	3340	1780	1220	1760	754	418	295	227		
7	261	3130	3690	2820	2890	2520	1160	1580	724	409	287	224		
8	252	2690	3500	2300	2560	3480	1100	1440	691	404	283	225		
9	239	2460	2670	2360	2330	2780	1060	1330	663	398	280	226		
10	237	2450	2190	2810	2140	2460	1010	1260	640	440	280	230		
11	284	2130	1860	3220	1980	2510	1020	1210	617	509	279	226		
12	330	1890	1630	2540	1860	2820	1060	1360	594	465	275	223		
13	290	1700	1440	2090	1760	2960	983	4180	575	427	273	232		
14	309	1540	1310	1880	1690	2900	937	3100	575	406	269	260		
15	437	2060	1210	2090	2320	2560	912	2380	620	390	266	256		
16	475	3060	1120	2660	4550	2250	1120	2020	608	386	262	257		
17	513	2590	1050	5830	3160	2000	1330	1790	587	388	259	262		
18	576	2150	985	17400	2590	1880	1200	1620	624	381	256	265		
19	785	1870	937	19500	2270	1750	1100	1580	736	373	256	250		
20	1580	1680	889	7510	2060	1610	1030	1910	669	364	256	237		
21	2080	1550	841	5300	1960	1640	986	1730	605	359	253	232		
22	4310	1400	798	4980	2110	1600	945	1520	565	359	249	228		
23	4070	1260	763	6500	4850	1630	900	1390	536	359	246	347		
24	4820	1160	737	5220	15600	2380	879	1310	509	359	245	641		
25	8430	1100	710	4090	14500	2450	1170	1470	495	350	244	453		
26	7200	1030	684	3420	8610	3670	1720	1570	483	345	243	387		
27	14300	992	660	3060	5250	3350	2440	1350	473	340	239	343		
28	8930	921	636	2800	3940	2740	2310	1220	457	335	239	323		
29	4710	873	634	2640	---	2320	2090	1110	451	329	243	365		
30	3510	823	617	3840	---	2070	1860	1040	443	322	250	421		
31	2920	---	596	4330	---	1840	---	971	---	316	247	---		
TOTAL	73341	70179	42190	131140	112960	74300	38902	52361	18869	12292	8297	8522		
MEAN	2366	2339	1361	4230	4034	2397	1297	1689	629	397	268	284		
MAX	14300	6340	3690	19500	15600	3670	2440	4180	910	538	313	641		
MIN	237	823	596	900	1690	1600	879	971	443	316	239	223		
CFSM	7.91	7.82	4.55	14.1	13.5	8.02	4.34	5.65	2.10	1.33	.90	.95		
IN.	9.12	8.73	5.25	16.32	14.05	9.24	4.84	6.51	2.35	1.53	1.03	1.06		
AC-FT	145500	139200	83680	260100	224100	147400	77160	103900	37430	24380	16460	16900		
CAL YR 1985	TOTAL	469796	MEAN	1287	MAX	14300	MIN	225	CFSM	4.30	IN.	58.45	AC-FT	931800
WTR YR 1986	TOTAL	643353	MEAN	1763	MAX	19500	MIN	223	CFSM	5.90	IN.	80.04	AC-FT	1276000

12035380 WYNOOCHEE LAKE NEAR GRIDDALE, WA

LOCATION.--Lat 47°23'08", long 123°36'16", in NE¼NW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, in monolith No. 6, near center line axis of Wynoochee Dam on Wynoochee River, 2.0 mi north of Grisdale, at river mile 51.8.

DRAINAGE AREA.--41.0 mi².

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

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

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

COOPERATION.--Daily elevations at 0800 hours, monthend elevations at 2400 hours, and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 70,078 acre-ft July 13, 1983, elevation, 800.60 ft; minimum contents observed, 12,210 acre-ft Oct. 31, 1972, elevation, 725.7 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 69,383 acre-ft May 25, elevation, 799.98 ft; minimum contents observed, 26,146 acre-ft Jan. 3, elevation, 751.10 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	770.14	40,381	--
Oct. 31.....	755.45	29,148	-11,233
Nov. 30.....	752.96	27,409	-1,739
Dec. 31.....	751.65	26,516	-893
CAL YR 1985.....	--	--	+497
Jan. 31.....	759.86	32,350	+5,834
Feb. 28.....	772.31	42,185	+9,835
Mar. 31.....	793.54	62,348	+20,163
Apr. 30.....	796.07	65,062	+2,714
May 31.....	798.84	68,107	+3,045
June 30.....	793.81	62,634	-5,473
July 31.....	781.80	50,623	-12,011
Aug. 31.....	766.82	37,699	-12,924
Sept. 30.....	755.75	29,360	-8,339
WTR YR 1986.....	--	--	-11,021

12035400 WYNOOCHEE RIVER NEAR GRIDDALE, WA

LOCATION.--Lat 47°22'50", long 123°36'31", in NW¼SW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on right bank 0.5 mi downstream from Wynoochee Dam, 1.7 mi north of Grisdale, 1.7 mi downstream from Scatter Creek, and at mile 51.3.

DRAINAGE AREA.--41.3 mi².

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

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

REMARKS.--No estimated daily discharges. Records excellent. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion upstream from station.

AVERAGE DISCHARGE.--21 years, 531 ft³/s, 174.60 in/yr, 384,700 acre-ft/yr, adjusted for storage in Wynoochee Lake since October 1972.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,150 ft³/s Feb. 25, gage height 6.45 ft; minimum discharge, 183 ft³/s Oct. 7, gage height, 1.26 ft; minimum daily discharge, 197 ft³/s Jan. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	241	1150	295	295	932	275	386	222	268	315	303	275
2	242	1220	295	295	934	275	311	222	268	313	303	272
3	242	1230	295	233	878	250	248	223	268	315	301	271
4	241	1410	295	197	994	228	228	225	268	315	299	235
5	230	1500	483	200	1010	215	228	225	268	315	298	209
6	216	1150	757	202	634	198	228	225	268	314	297	215
7	261	777	770	242	401	202	228	226	269	313	294	215
8	265	533	769	303	307	203	228	227	268	312	291	215
9	245	374	561	731	307	205	228	320	299	311	288	215
10	245	374	299	966	307	205	228	419	324	314	287	214
11	245	374	301	726	307	208	228	419	324	313	287	214
12	245	374	302	727	307	208	228	817	324	312	287	215
13	245	374	303	918	308	210	228	1600	324	312	287	218
14	245	374	302	741	414	211	228	681	324	311	286	218
15	245	478	302	569	902	211	228	483	324	311	283	218
16	245	622	302	849	1720	212	230	415	323	311	283	218
17	243	621	302	1350	1690	212	228	415	322	311	280	212
18	274	445	301	1090	814	212	228	415	323	311	279	207
19	324	326	300	4620	264	212	228	417	320	311	279	207
20	327	324	299	4670	265	208	228	417	319	311	279	208
21	981	325	299	4450	388	206	228	417	319	311	279	208
22	2000	324	299	3190	484	208	228	417	319	311	279	208
23	2220	324	299	1310	408	211	225	417	319	311	279	210
24	2490	324	299	853	2850	361	223	418	319	308	279	208
25	2780	324	299	853	2940	522	222	985	319	307	278	208
26	2710	299	299	766	1560	930	221	1210	318	307	275	208
27	2740	295	299	399	668	1020	222	791	314	307	275	208
28	2290	295	299	362	247	861	222	372	309	303	275	208
29	1660	295	298	307	---	753	222	305	302	303	275	208
30	1110	295	295	810	---	753	222	268	307	303	275	207
31	773	---	295	1050	---	578	---	268	---	303	275	---
TOTAL	26820	17130	11113	34274	23240	10763	7058	14481	9140	9625	8835	6552
MEAN	865	571	358	1106	830	347	235	467	305	310	285	218
MAX	2780	1500	770	4670	2940	1020	386	1600	324	315	303	275
MIN	216	295	295	197	247	198	221	222	268	303	275	207
AC-FT	53200	33980	22040	67980	46100	21350	14000	28720	18130	19090	17520	13000
MEAN†	682	542	344	1200	1007	675	281	516	213	115	75	78
CFSM†	16.5	13.1	8.33	29.1	24.4	16.3	6.80	12.5	5.16	2.78	1.82	1.89
IN.†	19.05	14.64	9.60	33.51	25.40	18.85	7.59	14.42	5.75	3.21	2.09	2.12
AC-FT†	41970	32240	21150	73810	55940	41510	16710	31760	12660	7079	4596	4661

CAL YR 1985 TOTAL 116384 MEAN 319 MAX 2780 MIN 195 AC-FT 230800 MEAN† 319 CFSM† 7.72 IN.† 105.01 AC-FT† 231300
WTR YR 1986 TOTAL 179031 MEAN 490 MAX 4670 MIN 197 AC-FT 355100 MEAN† 475 CFSM† 11.5 IN.† 156.22 AC-FT† 344100

† Adjusted for change in contents in Lake Wynoochee.

CHEHALIS RIVER BASIN

65

12035450 BIG CREEK NEAR GRIDDALE, WA

LOCATION.--Lat 47°22'28", long 123°38'08", in SE¼SE¼ sec.24, T.22 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on left bank 280 ft upstream from road bridge, 1.5 mi northwest of Grisdale, and 0.6 mi upstream from mouth.

DRAINAGE AREA.--9.57 mi².

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

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

REMARKS.--Estimated daily discharges: Jan. 22 to Feb. 5. Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--14 years, 115 ft³/s, 163.19 in/yr, 83,320 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s Dec. 26, 1975, gage height, 8.89 ft, from rating curve extended above 1,500 ft³/s; minimum discharge, 8.1 ft³/s on part or all of each day Aug. 23-30, 1985, gage height, 2.39 ft.

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)
Oct. 27	0900	1,160	6.05	Feb. 24	0200	1,400	6.81
Jan. 18	1000	*1,880	*7.22	Feb. 24	2400	1,200	6.47

Minimum discharge, 10 ft³/s Sept. 10-12, 21-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	17	429	34	47	290	147	71	65	47	26	15	11		
2	16	367	36	45	280	123	63	95	45	26	15	11		
3	16	358	70	44	270	106	58	108	42	24	15	11		
4	16	190	153	43	320	92	53	83	40	23	14	11		
5	16	184	264	294	217	84	49	98	38	22	14	11		
6	16	200	240	312	161	82	46	84	36	21	14	11		
7	16	150	260	124	131	302	43	70	35	21	13	11		
8	15	124	176	120	112	210	40	60	33	20	13	11		
9	14	110	122	161	99	134	38	53	31	20	13	11		
10	15	98	98	231	88	126	36	49	30	24	13	11		
11	31	86	85	234	78	185	36	46	30	26	13	10		
12	24	76	75	140	73	255	35	159	28	24	13	10		
13	21	69	67	111	67	225	32	284	27	23	13	11		
14	38	64	61	107	64	195	31	132	28	21	13	11		
15	43	159	57	138	249	152	31	96	28	21	13	11		
16	54	143	52	233	171	121	51	78	30	21	12	12		
17	55	103	49	462	80	101	59	68	28	20	12	11		
18	64	85	46	1430	60	94	47	64	39	19	12	11		
19	188	74	43	534	49	86	42	76	45	19	12	11		
20	163	68	41	260	44	79	39	112	35	19	12	11		
21	194	61	39	182	40	97	36	84	31	18	12	11		
22	469	57	37	238	59	95	34	69	30	18	12	10		
23	236	51	35	540	577	120	32	61	29	17	12	41		
24	483	49	34	260	925	209	32	59	27	17	12	31		
25	366	46	32	200	737	218	44	151	26	17	12	22		
26	469	43	32	160	323	331	80	104	25	17	11	20		
27	713	41	30	150	242	204	116	81	25	17	11	18		
28	301	40	29	140	185	152	98	69	24	16	11	17		
29	180	37	29	140	---	114	81	61	23	16	11	32		
30	161	35	27	350	---	94	69	56	22	15	11	26		
31	138	---	27	300	---	80	---	51	---	15	11	---		
TOTAL	4548	3597	2380	7730	5991	4613	1522	2726	957	623	390	447		
MEAN	147	120	76.8	249	214	149	50.7	87.9	31.9	20.1	12.6	14.9		
MAX	713	429	264	1430	925	331	116	284	47	26	15	41		
MIN	14	35	27	43	40	79	31	46	22	15	11	10		
CFSM	15.4	12.5	8.03	26.0	22.4	15.6	5.30	9.18	3.33	2.10	1.32	1.56		
IN.	17.68	13.98	9.25	30.05	23.29	17.93	5.92	10.60	3.72	2.42	1.52	1.74		
AC-FT	9020	7130	4720	15330	11880	9150	3020	5410	1900	1240	774	887		
CAL YR 1985	TOTAL	24149.7	MEAN	66.2	MAX	713	MIN	8.1	CFSM	6.92	IN.	93.87	AC-FT	47900
WTR YR 1986	TOTAL	35524	MEAN	97.3	MAX	1430	MIN	10	CFSM	10.2	IN.	138.09	AC-FT	70460

12036000 WYNOOCHEE RIVER ABOVE SAVE CREEK, NEAR ABERDEEN, WA

LOCATION.--Lat 47°17'57", long 123°39'07", in NE¼NE¼ sec.23, T.21 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 0.8 mi upstream from Save Creek, 2.5 mi downstream from Oxbow Dam Site, 11.0 mi downstream from Wynoochee Dam, 23.5 mi northeast of city hall in Aberdeen, and at mile 40.6.

DRAINAGE AREA.--74.1 mi².

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

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

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

REMARKS.--Estimated daily discharges: Feb. 4-6. Records good. Since August 1972, flow regulated by Wynoochee Lake (station 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from August 1969 to September 1972 due to dam construction. No diversions upstream from station.

AVERAGE DISCHARGE.--61 years, 827 ft³/s, 151.56 in/yr, 599,200 acre-ft/yr, adjusted for storage in Wynoochee Lake since October 1972.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,090 ft³/s Feb. 25, gage height, 11.29 ft; minimum discharge, 263 ft³/s Dec. 11, Sept. 18-23, gage height, 5.22 ft; minimum daily discharge, 263 ft³/s Sept. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	304	2120	406	484	1450	763	693	493	450	421	367	329
2	304	2250	423	463	1440	697	599	549	441	411	366	329
3	299	2190	497	412	1350	632	518	579	435	405	366	328
4	299	1920	646	356	1200	568	477	529	429	401	365	306
5	292	2060	1010	724	1100	532	460	556	424	397	361	270
6	282	1760	1330	1010	1000	506	449	529	419	395	361	275
7	304	1280	1370	606	767	948	438	496	413	395	359	275
8	329	958	1210	644	609	866	427	472	409	393	355	275
9	304	732	940	1030	572	691	422	519	424	390	354	275
10	303	694	579	1510	543	663	416	625	447	415	352	275
11	341	649	535	1260	520	764	423	621	441	408	352	274
12	319	618	512	1080	502	863	414	1070	437	398	352	273
13	312	595	493	1160	486	835	405	2480	435	395	350	278
14	355	577	477	1070	545	768	398	1140	440	393	347	276
15	357	888	464	922	1340	678	401	845	440	390	346	273
16	381	1040	453	1320	2190	612	474	703	441	390	343	279
17	381	931	443	2250	1930	567	472	673	433	388	343	273
18	414	743	435	4480	1200	560	438	665	469	385	343	266
19	687	563	428	6010	507	524	423	692	470	383	342	265
20	688	538	422	5250	483	501	414	773	444	380	338	265
21	1260	523	416	4660	541	524	409	705	435	380	338	263
22	2970	505	411	3920	740	518	400	667	430	380	338	263
23	2740	491	406	2560	1870	561	391	644	426	380	337	359
24	3430	481	402	1450	5270	839	393	641	422	378	337	320
25	3580	473	399	1290	5250	1050	469	1290	419	376	334	296
26	3780	445	395	1130	2780	1720	551	1500	415	376	334	286
27	4600	432	391	757	1530	1630	640	1130	409	374	334	280
28	3160	424	388	679	829	1350	591	623	403	371	334	282
29	2190	418	389	632	---	1160	550	534	394	370	334	323
30	1640	411	383	1340	---	1110	512	475	395	369	334	298
31	1180	---	386	1560	---	925	---	462	---	369	329	---
TOTAL	37785	27709	17439	52019	38544	24925	14067	23680	12889	12056	10745	8629
MEAN	1219	924	563	1678	1377	804	469	764	430	389	347	288
MAX	4600	2250	1370	6010	5270	1720	693	2480	470	421	367	359
MIN	282	411	383	356	483	501	391	462	394	369	329	263
AC-FT	74950	54960	34590	103200	76450	49440	27900	46970	25570	23910	21310	17120
MEANT	1036	895	548	1782	1547	1129	513	813	338	193	136	148
CFSMT	14.0	12.1	7.40	24.0	20.9	15.3	6.92	11.0	4.56	2.60	1.84	2.00
IN.†	16.12	13.47	8.53	27.58	21.83	17.61	7.74	12.66	5.09	3.01	2.12	2.22
AC-FT†	63720	53220	33700	109000	86280	69600	30600	50020	20100	11900	8386	8781

CAL YR 1985 TOTAL 194768 MEAN 534 MAX 4600 MIN 282 AC-FT 386300 MEANT 534 CFSMT 7.21 IN.† 97.87 AC-FT† 386800
WTR YR 1986 TOTAL 280487 MEAN 768 MAX 6010 MIN 263 AC-FT 556300 MEANT 753 CFSMT 10.2 IN.† 137.98 AC-FT† 545300

† Adjusted for change in contents in Wynoochee Lake.

CHEHALIS RIVER BASIN

67

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA

LOCATION.--Lat 47°00'42", long 123°39'15", in SE¼SE¼ sec.27, T.18 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on left bank 2,000 ft upstream from Black Creek, 3.5 mi northwest of Montesano, and at mile 5.9.

DRAINAGE AREA.--155 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1932: Drainage area.

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

REMARKS.--Estimated daily discharges: June 1-10. Water-discharge records good except June 1-10, which are fair. City of Aberdeen diverted about 114 ft³/s for municipal supply at intake 2.2 mi upstream. Other small diversions for irrigation and domestic use. Since August 1972, flow regulated by Wynoochee Dam, 45.7 mi upstream, for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction.

AVERAGE DISCHARGE.--30 years, 1,283 ft³/s, 929,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,500 ft³/s Jan. 19, 1968; maximum gage height, 20.54 ft Dec. 10, 1956; minimum discharge, 3.0 ft³/s part or all of each day Aug. 26-30, 1967, gage height, 2.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,900 ft³/s Jan. 18, gage height, 13.34 ft; minimum discharge, 164 ft³/s Sept. 11-13, 21-23, gage height, 2.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	209	2450	475	586	2290	1460	1070	801	515	369	280	225
2	213	4570	499	641	2370	1240	891	836	480	411	277	225
3	211	4040	737	729	2250	1100	766	926	455	370	274	221
4	208	3120	831	582	2110	951	677	846	438	369	272	220
5	205	3000	1130	776	2660	860	620	828	422	350	272	191
6	199	2970	1960	1890	2020	776	581	819	418	341	269	170
7	193	2430	2230	1320	1510	1190	551	737	410	335	266	170
8	223	1840	2080	1120	1190	1580	526	676	405	335	261	169
9	224	1510	1680	1140	1020	1260	499	625	400	339	257	167
10	211	1390	1160	1990	931	1140	479	739	520	405	257	167
11	255	1200	932	1870	861	1220	490	771	454	441	256	166
12	268	1080	831	1600	801	1380	510	943	415	383	253	164
13	241	971	755	1460	752	1450	465	3640	407	360	253	174
14	275	892	702	1600	716	1400	444	2120	412	367	250	204
15	364	1190	659	1360	1380	1230	433	1510	435	350	247	185
16	365	1810	619	1650	3270	1080	547	1150	431	337	244	192
17	361	1590	590	3420	2750	945	609	1010	411	343	241	190
18	380	1370	566	8570	2310	903	546	945	480	328	239	184
19	487	1030	545	9940	1100	853	506	945	511	317	238	172
20	890	907	524	7320	900	777	478	1100	462	310	238	168
21	967	841	504	6150	847	779	461	986	421	308	236	166
22	3250	779	490	5810	1120	767	444	902	399	308	233	164
23	3860	714	475	4430	2990	769	426	849	385	308	233	291
24	4560	675	464	2850	8400	1070	415	823	374	308	230	400
25	6820	648	455	2290	8680	1320	603	1140	366	301	230	299
26	6180	616	445	1980	5920	2090	911	1690	361	298	229	252
27	9160	576	435	1570	3270	2410	1290	1580	359	294	226	224
28	6530	538	423	1290	1820	2010	1150	913	351	294	225	216
29	3850	516	421	1160	---	1650	1010	715	344	289	231	278
30	2840	495	418	1720	---	1520	890	610	336	285	233	275
31	2080	---	408	2670	---	1380	---	554	---	282	228	---
TOTAL	56079	45758	24443	81484	66238	38560	19288	32729	12577	10435	7678	6289
MEAN	1809	1525	788	2629	2366	1244	643	1056	419	337	248	210
MAX	9160	4570	2230	9940	8680	2410	1290	3640	520	441	280	400
MIN	193	495	408	582	716	767	415	554	336	282	225	164
AC-FT	111200	90760	48480	161600	131400	76480	38260	64920	24950	20700	15230	12470
CAL YR 1985	TOTAL	273555	MEAN	749	MAX	9160	MIN	189	AC-FT	542600		
WTR YR 1986	TOTAL	401558	MEAN	1100	MAX	9940	MIN	164	AC-FT	796500		

CHEHALIS RIVER BASIN

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--

SEDIMENT: October 1961 to June 1965.

WATER TEMPERATURES: October 1969 to September 1986 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1969 to September 1986 (discontinued).

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--Daily record of water temperature not available for May 29 to June 10 and June 30 to Aug. 27 due to equipment malfunction. Temperature probe was located 0.2 to 0.6 ft below water surface Aug. 27 to Sept. 30.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.0°C Aug. 10, 1971; minimum, 1.0°C Jan. 9, 10, 1973, Jan. 7-9, 1974, Jan. 29, 1980, Dec. 2, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 21.5°C Sept. 5, 6; minimum recorded, 1.0°C Dec. 2.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.0	11.0	12.0	10.0	8.5	9.0	2.5	1.5	2.0	5.5	4.5	5.0
2	14.0	12.5	13.5	9.5	9.5	9.5	2.5	1.0	2.0	4.5	4.0	4.5
3	15.5	12.0	13.0	9.5	9.0	9.5	4.5	2.5	4.0	5.0	4.0	4.5
4	14.0	10.5	12.5	9.5	8.5	9.0	5.5	4.5	5.0	5.0	4.0	4.5
5	14.0	10.5	12.0	8.5	8.0	8.5	5.5	5.0	5.5	6.0	5.0	5.5
6	13.5	11.5	12.5	9.0	8.5	8.5	5.5	5.0	5.5	5.5	5.0	5.5
7	15.0	11.0	12.5	9.0	8.5	9.0	6.0	5.5	5.5	6.0	5.0	5.5
8	12.0	9.0	10.5	8.5	7.5	8.0	5.5	5.0	5.5	6.5	6.0	6.5
9	12.0	9.0	10.5	8.0	7.0	7.5	5.0	4.5	5.0	6.5	6.0	6.5
10	12.0	10.5	11.0	7.5	7.0	7.0	5.0	4.0	4.5	6.0	5.5	5.5
11	13.5	11.0	12.0	6.5	6.0	6.5	4.0	3.5	4.0	6.0	5.5	6.0
12	13.0	10.0	11.0	6.0	5.0	5.5	3.5	3.0	3.5	5.5	5.0	5.5
13	12.0	10.0	11.0	6.0	5.0	5.5	4.0	3.0	3.5	5.5	5.5	5.5
14	12.5	11.5	12.0	7.0	5.5	6.5	5.0	4.0	4.5	6.0	5.5	5.5
15	13.5	12.0	12.5	7.0	6.5	7.0	5.5	4.5	5.0	6.5	6.0	6.0
16	13.0	11.5	12.0	7.0	6.0	6.5	5.5	4.5	5.0	6.5	6.0	6.5
17	12.0	11.0	11.5	7.0	6.5	6.5	5.0	4.5	4.5	6.5	6.0	6.0
18	13.0	11.0	12.0	6.5	6.0	6.0	5.5	4.5	5.0	7.5	6.0	7.5
19	12.5	11.5	12.0	6.5	6.0	6.0	5.5	5.0	5.5	7.5	6.0	6.5
20	11.5	10.5	11.0	6.0	5.5	5.5	5.0	4.0	5.0	6.0	5.5	5.5
21	10.5	10.0	10.0	5.5	4.0	4.5	4.0	3.5	3.5	6.0	5.5	5.5
22	10.0	9.5	9.5	4.0	3.5	4.0	4.5	3.5	4.0	6.0	5.5	5.5
23	10.0	9.0	9.5	3.0	2.0	2.5	5.0	4.0	4.5	6.5	6.0	6.0
24	10.0	9.5	10.0	2.5	1.5	2.0	5.5	4.5	5.0	6.0	5.5	6.0
25	10.0	9.5	9.5	4.0	2.5	3.0	4.5	4.0	4.0	6.0	5.0	5.5
26	9.5	9.0	9.5	4.5	4.0	4.0	4.5	3.5	4.0	6.0	5.0	5.5
27	10.0	9.5	9.5	4.5	3.0	4.0	4.0	3.5	4.0	6.5	6.0	6.5
28	9.5	8.5	9.0	3.0	3.0	3.0	3.5	3.0	3.5	6.5	6.0	6.5
29	8.5	8.0	8.5	3.5	3.0	3.0	4.5	3.5	4.0	7.0	6.5	6.5
30	9.0	8.5	8.5	3.5	2.5	3.0	5.0	4.5	5.0	7.5	7.0	7.0
31	8.5	8.0	8.0	---	---	---	5.0	4.5	4.5	7.0	6.5	7.0
MONTH	15.5	8.0	11.0	10.0	1.5	6.0	6.0	1.0	4.5	7.5	4.0	6.0

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	6.0	7.0	8.0	7.0	7.5	10.0	8.5	9.0	10.0	8.5	9.5
2	7.0	6.0	6.5	8.5	6.5	7.5	10.0	8.0	9.0	10.0	9.0	9.5
3	7.0	6.5	7.0	7.5	6.5	7.5	9.5	8.0	8.5	11.5	8.5	10.0
4	7.0	6.0	6.5	9.5	7.5	8.5	11.0	8.5	9.5	12.5	9.5	11.0
5	6.5	5.5	6.0	9.0	8.0	8.5	11.5	8.0	9.5	10.5	9.5	10.0
6	5.5	5.0	5.5	8.5	8.5	8.5	12.0	8.5	10.0	11.5	9.0	10.0
7	6.5	5.0	5.5	9.5	8.5	9.0	13.0	9.0	11.0	11.5	9.5	10.5
8	6.0	4.5	5.0	9.5	8.0	8.5	11.5	9.5	11.0	12.5	8.5	11.0
9	5.0	4.5	5.0	9.0	8.0	8.5	11.0	8.0	9.5	12.0	10.0	11.0
10	6.0	4.5	5.0	9.5	8.0	8.5	11.5	8.0	9.5	11.5	9.5	10.0
11	5.5	4.5	5.0	9.0	8.5	8.5	9.0	8.0	8.5	10.5	9.0	9.5
12	5.5	4.0	4.5	9.0	7.5	8.5	10.5	7.5	9.0	10.0	9.0	9.5
13	4.5	4.0	4.0	8.5	7.5	8.0	10.0	9.0	9.5	9.0	8.0	8.5
14	5.0	4.5	5.0	9.0	7.0	8.0	11.0	8.5	9.5	10.5	8.0	9.0
15	6.0	5.0	5.5	8.0	7.0	7.5	12.0	9.0	10.5	11.5	8.5	10.0
16	6.0	5.0	5.5	9.0	7.0	7.5	11.0	9.0	10.0	11.0	9.0	10.0
17	5.5	4.5	5.0	8.5	7.0	8.0	11.0	9.0	10.0	11.5	9.5	10.5
18	5.0	4.0	4.5	9.5	8.0	8.5	9.5	8.5	9.0	11.0	10.5	10.5
19	5.0	3.5	4.5	11.0	8.5	9.5	10.5	8.5	9.5	11.5	10.0	11.0
20	5.0	3.5	4.5	11.0	8.5	9.5	12.5	9.0	11.0	12.5	10.0	11.0
21	5.0	4.5	4.5	11.0	9.0	9.5	12.0	10.5	11.0	12.0	9.5	10.5
22	6.0	4.5	5.0	9.5	7.5	8.5	12.0	9.5	10.5	12.0	9.0	10.5
23	6.5	6.0	6.5	8.0	7.5	8.0	11.5	9.0	10.0	11.5	10.0	11.0
24	7.0	6.5	6.5	10.0	7.0	8.5	9.0	8.0	8.5	12.5	10.5	11.5
25	7.5	6.5	6.5	8.5	7.5	7.5	8.5	7.5	8.0	14.0	10.5	12.0
26	7.5	6.0	6.5	8.5	7.5	8.0	8.0	7.5	8.0	11.0	10.0	10.5
27	8.0	6.5	7.0	8.5	7.5	8.0	10.0	7.5	9.0	12.5	10.0	11.5
28	9.0	8.0	8.0	10.0	8.0	9.0	9.5	8.0	8.5	15.5	11.5	13.5
29	---	---	---	9.0	8.0	8.5	10.0	7.0	8.5	---	---	---
30	---	---	---	10.0	8.0	9.0	9.5	7.5	8.5	---	---	---
31	---	---	---	9.5	7.0	8.5	---	---	---	---	---	---
MONTH	9.0	3.5	5.5	11.0	6.5	8.5	13.0	7.0	9.5	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	---	---	---	---	---	---	18.5	13.5	15.5
2	---	---	---	---	---	---	---	---	---	20.0	15.5	17.0
3	---	---	---	---	---	---	---	---	---	19.5	15.0	17.0
4	---	---	---	---	---	---	---	---	---	20.0	15.0	17.0
5	---	---	---	---	---	---	---	---	---	21.5	15.0	17.5
6	---	---	---	---	---	---	---	---	---	21.5	14.5	17.0
7	---	---	---	---	---	---	---	---	---	19.0	14.0	16.0
8	---	---	---	---	---	---	---	---	---	20.0	14.0	16.0
9	---	---	---	---	---	---	---	---	---	15.0	12.5	14.0
10	---	---	---	---	---	---	---	---	---	19.5	13.5	15.5
11	18.5	14.0	16.5	---	---	---	---	---	---	18.5	11.5	14.5
12	19.0	14.0	16.5	---	---	---	---	---	---	18.5	11.0	14.0
13	19.5	14.5	17.0	---	---	---	---	---	---	17.5	12.5	14.0
14	17.0	14.5	15.5	---	---	---	---	---	---	16.0	12.5	14.0
15	14.0	12.5	13.0	---	---	---	---	---	---	17.0	12.5	14.5
16	15.0	11.5	13.5	---	---	---	---	---	---	16.5	13.0	14.0
17	14.0	13.0	13.5	---	---	---	---	---	---	13.5	12.0	13.0
18	14.5	12.5	13.5	---	---	---	---	---	---	15.5	12.5	13.5
19	14.5	12.0	13.0	---	---	---	---	---	---	18.5	11.5	14.0
20	16.0	12.0	14.0	---	---	---	---	---	---	15.5	13.0	13.5
21	17.0	12.5	14.5	---	---	---	---	---	---	14.5	11.5	13.0
22	18.5	13.5	16.0	---	---	---	---	---	---	16.0	11.0	13.0
23	19.5	15.0	17.5	---	---	---	---	---	---	12.5	12.0	12.0
24	18.5	15.0	16.5	---	---	---	---	---	---	13.0	11.0	11.5
25	18.0	14.5	16.0	---	---	---	---	---	---	12.5	11.0	11.5
26	16.0	14.5	15.0	---	---	---	---	---	---	13.0	11.5	12.0
27	18.5	13.0	15.5	---	---	---	---	---	---	12.0	11.0	11.5
28	17.5	15.5	16.0	---	---	---	17.5	15.5	16.5	12.0	11.0	11.5
29	15.5	14.0	15.0	---	---	---	15.5	14.5	15.0	13.0	11.5	12.5
30	---	---	---	---	---	---	16.0	14.5	15.0	14.0	11.5	12.5
31	---	---	---	---	---	---	16.5	13.5	15.0	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	21.5	11.0	14.0

QUINULT RIVER BASIN

12039300 NORTH FORK QUINULT RIVER NEAR AMANDA PARK, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'46", long 123°37'23", in SW¹/₄ sec.6, T.24 N., R.7 W., Jefferson County, Hydrologic Unit 17100102, Olympic National Park, on right bank 15.5 mi northeast of Amanda Park, and at mile 5.2.

DRAINAGE AREA.--74.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1964 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 620 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 9 to Dec. 16, July 7 to Sept. 30. Water-discharge records fair except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--21 years, 874 ft³/s, 160.17 in/yr, 633,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s Dec. 3, 1982, gage height, 15 ft, from floodmarks, from rating curve extended above 4,000 ft³/s; minimum discharge, 103 ft³/s Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*) from rating curve extended above 4,000 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 24	1600	7,720	11.35	Jan. 18	0600	*26,200	*14.90
Oct. 26	1300	7,400	11.25	Feb. 24	0300	9,220	11.57
Oct. 27	0600	14,700	13.06	Feb. 24	2400	10,200	11.83
Nov. 1	1800	8,310	11.53				

Minimum daily discharge, 105 ft³/s Sept. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	3470	320	376	1770	982	718	677	1520	941	220	130
2	142	2360	330	361	1280	861	657	874	1280	670	220	130
3	141	2190	380	355	1190	800	628	809	1200	543	220	130
4	135	1310	600	348	1050	781	621	738	1080	468	220	120
5	132	1200	1200	1040	969	724	618	742	975	398	210	120
6	140	1270	1200	901	865	739	611	714	949	391	200	120
7	135	1090	1100	470	794	2650	622	705	942	408	200	120
8	126	999	900	1330	741	1340	642	707	941	387	200	120
9	121	920	720	1040	676	979	611	704	955	365	200	110
10	123	800	620	1660	605	892	608	695	989	622	190	110
11	379	700	540	1330	546	1020	600	695	1010	646	180	110
12	234	620	480	760	477	1020	600	1500	978	488	180	110
13	182	560	460	808	435	901	600	1690	908	373	170	120
14	394	500	440	861	415	849	611	936	1040	335	170	120
15	421	860	420	812	1920	774	611	876	921	320	170	110
16	562	840	400	1220	1240	725	609	875	1030	316	170	110
17	412	720	389	1830	822	682	600	882	797	320	160	120
18	380	620	400	15200	694	700	600	1090	1210	310	150	140
19	1920	560	412	3460	558	714	600	1420	999	310	150	120
20	1760	540	409	1720	512	711	661	1600	888	310	150	110
21	1650	500	394	1330	454	973	838	964	811	310	150	105
22	1800	460	391	1290	573	776	749	869	908	310	140	105
23	1110	440	404	1390	3250	850	684	861	1020	300	140	230
24	4260	420	406	1130	6620	947	684	1080	986	280	140	210
25	2150	400	405	1000	4660	844	686	3090	893	270	140	200
26	3340	390	394	940	1820	1440	695	1690	805	270	140	200
27	7510	380	378	1100	1390	1210	700	1270	804	260	130	190
28	1710	360	365	950	1240	1360	637	1180	834	250	130	180
29	1120	340	360	990	---	990	621	1230	682	240	130	190
30	1030	330	352	1410	---	884	621	1480	573	230	130	200
31	835	---	348	1280	---	769	---	1500	---	220	130	---
TOTAL	34494	26149	15917	48692	37566	29887	19343	34143	28928	11861	5230	4190
MEAN	1113	872	513	1571	1342	964	645	1101	964	383	169	140
MAX	7510	3470	1200	15200	6620	2650	838	3090	1520	941	220	230
MIN	121	330	320	348	415	682	600	677	573	220	130	105
CFSM	15.0	11.8	6.92	21.2	18.1	13.0	8.70	14.9	13.0	5.17	2.28	1.89
IN.	17.32	13.13	7.99	24.44	18.86	15.00	9.71	17.14	14.52	5.95	2.63	2.10
AC-FT	68420	51870	31570	96580	74510	59280	38370	67720	57380	23530	10370	8310
CAL YR 1985	TOTAL	214829	MEAN	589	MAX	7510	MIN	121	CFSM	7.95	IN.	107.85
WTR YR 1986	TOTAL	296400	MEAN	812	MAX	15200	MIN	105	CFSM	11.0	IN.	148.80
											AC-FT	426100
											AC-FT	587900

QUINULT RIVER BASIN

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12039300 NORTH FORK QUINULT RIVER NEAR AMANDA PARK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to September 1986 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: March 1965 to September 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)
NOV 14...	1500	485	85	7.4	3.5	0.5	12.8	98	K1	24	40
MAR 05...	1630	712	83	8.0*	5.5	1.0	12.5	101	K3	K6	35
MAY 28...	1455	1140	62	7.8	9.0	1.5	11.4	100	K2	<1	25
AUG 27...	1220	134	104	7.8	13.5	0.3	9.8	98	K1	K1	46

DATE	HARD- NESS NONCARB MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD AS HC03)	CAR- BONATE IT-FLD AS C03)	SULFATE DIS- SOLVED (MG/L AS S04)
NOV 14...	9	15	0.7	1.6	8	0.1	0.1	31	38	0	11
MAR 05...	8	13	0.6	1.5	8	0.1	0.2	27	33	0	10
MAY 28...	6	9.6	0.4	1.1	9	0.1	0.2	19	23	0	7.1
AUG 27...	10	17	0.8	1.9	8	0.1	0.3	36	44	0	15

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
NOV 14...	0.8	<0.1	5.3	50	53	0.07	65	<0.01	<0.10	0.02	<0.2
MAR 05...	0.9	<0.1	5.1	43	48	0.06	83	<0.01	<0.10	0.03	0.3
MAY 28...	0.5	<0.1	3.8	36	34	0.05	111	<0.01	<0.10	0.05	<0.2
AUG 27...	0.9	0.1	5.1	84	63	0.11	30	<0.01	<0.10	<0.01	<0.2

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12039500 QUINULT RIVER AT QUINULT LAKE, WA

LOCATION.--Lat 47°27'28", long 123°53'17", in SW¼NE¼ sec.25, T.23 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at outlet of Quinault Lake, 50 ft downstream from Olympic Highway bridge on U. S. Highway 101, 2.0 mi southwest of Quinault, and at mile 33.4.

DRAINAGE AREA.--264 mi².

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 442: Drainage area. WSP 1286: 1915-16(M), 1934, 1936-39(M). WSP 1316: 1923, 1925, 1933. WSP 1635: 1917.

GAGE.--Water-stage recorder. Datum of gage is 184.60 ft above National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Prior to Sept. 30, 1916, nonrecording gages at sites within 4 mi northeast of present site, at different datum. Oct. 1, 1916, to May 2, 1935, water-stage recorder at site 300 ft downstream from present site at datum 0.36 ft higher than present datum.

REMARKS.--Estimated daily discharges: Jan. 19 to Feb. 7. Records excellent except for estimated daily discharges, which are fair. Flow affected by natural storage in Quinault Lake. No diversions upstream from station.

AVERAGE DISCHARGE.--75 years, 2,847 ft³/s, 146.45 in/yr, 2,063,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,200 ft³/s Nov. 4, 1955, gage height, 20.51 ft; minimum discharge, 276 ft³/s Sept. 12, 1944, gage height, 1.96 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of approximately 22 ft, present datum, discharge, 52,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges 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)
Oct. 25	0800	12,100	9.11	Jan. 18	2200	*32,000	*15.67
Oct. 27	1800	18,200	11.22	Feb. 25	0900	24,100	13.17

Minimum discharge, 330 ft³/s Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	538	6090	1070	1020	4100	4920	2860	1930	3700	1380	695	410		
2	523	10800	1070	1090	4000	4070	2530	2190	3620	1540	681	406		
3	511	11300	1200	1130	3800	3460	2270	2660	3340	1500	671	400		
4	495	8540	1480	1100	3700	3050	2070	2720	3080	1430	661	396		
5	483	6400	2410	1310	4200	2740	1910	2750	2780	1340	651	392		
6	473	6100	3390	2880	3850	2530	1770	2680	2510	1240	640	387		
7	469	5370	3650	2970	3370	3570	1670	2470	2260	1180	628	377		
8	454	4510	3750	3040	2950	5420	1640	2270	2080	1130	617	369		
9	440	3850	3230	3410	2610	4730	1620	2110	1960	1090	607	362		
10	432	3360	2720	3950	2320	4120	1570	2010	1910	1120	595	361		
11	512	2930	2330	5090	2100	3940	1530	1910	1950	1240	585	353		
12	606	2580	2030	4450	1920	4250	1510	2110	1970	1290	567	346		
13	626	2310	1800	3620	1770	4260	1440	4830	1950	1260	557	347		
14	702	2100	1630	3340	1670	4080	1370	4860	1970	1180	545	351		
15	845	2310	1500	3190	2180	3680	1320	4000	2100	1100	534	349		
16	1030	2940	1400	3460	4330	3220	1400	3280	2200	1040	523	352		
17	1180	2810	1320	5510	3850	2820	1600	2780	2150	1010	512	356		
18	1300	2500	1280	19200	3140	2570	1610	2640	2200	991	498	366		
19	1760	2250	1260	25000	2620	2430	1540	2970	2470	965	488	363		
20	3110	2050	1250	15000	2270	2300	1500	3940	2320	937	477	356		
21	5250	1890	1230	6000	2050	2460	1580	3990	2070	915	470	347		
22	7140	1740	1190	5500	1950	2680	1740	3440	1880	904	462	338		
23	7340	1610	1170	7000	3360	2610	1730	2940	1800	895	453	423		
24	7370	1510	1160	5500	16900	3150	1620	2680	1770	871	444	649		
25	11400	1430	1150	4500	22800	3350	1680	4180	1730	850	438	703		
26	9860	1360	1140	3800	15700	3990	1790	5270	1650	823	432	680		
27	15400	1290	1100	3400	9260	4520	1950	4770	1570	802	427	655		
28	14500	1240	1060	3100	6300	4580	2100	4160	1520	776	422	627		
29	9220	1180	1040	2900	---	4260	2120	3750	1470	751	424	686		
30	6570	1130	990	4000	---	3780	2030	3590	1400	732	422	722		
31	5220	---	950	4500	---	3280	---	3670	---	712	417	---		
TOTAL	115759	105480	51950	159960	139070	110820	53070	99550	65380	32994	16543	13229		
MEAN	3734	3516	1676	5160	4967	3575	1769	3211	2179	1064	534	441		
MAX	15400	11300	3750	25000	22800	5420	2860	5270	3700	1540	695	722		
MIN	432	1130	950	1020	1670	2300	1320	1910	1400	712	417	338		
CFSM	14.1	13.3	6.35	19.5	18.8	13.5	6.70	12.2	8.25	4.03	2.02	1.67		
IN.	16.31	14.86	7.32	22.54	19.60	15.62	7.48	14.03	9.21	4.65	2.33	1.86		
AC-FT	229600	209200	103000	317300	275800	219800	105300	197500	129700	65440	32810	26240		
CAL YR 1985	TOTAL	730646	MEAN	2002	MAX	15400	MIN	395	CFSM	7.58	IN.	102.95	AC-FT	1449000
WTR YR 1986	TOTAL	963805	MEAN	2641	MAX	25000	MIN	338	CFSM	10.0	IN.	135.81	AC-FT	1912000

QUEETS RIVER BASIN

12040500 QUEETS RIVER NEAR CLEARWATER, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°32'17", long 124°18'52", in NE¼SW¼ sec.36, T.24 N., R.13 W., Jefferson County, Hydrologic Unit 17100102, Quinalt Indian Reservation, on right bank 2.4 mi downstream from mouth of Clearwater River, 0.8 mi east of Queets, and at mile 4.6.

DRAINAGE AREA.--445 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Water-discharge records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1931-49, 1975-86), 4,257 ft³/s, 129.91 in/yr, 3,084,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,400 ft³/s Jan. 22, 1935, gage height, 27.0 ft, from floodmarks, present datum; minimum discharge, 368 ft³/s Sept. 9, 1944.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 1	2000	44,100	17.68	Feb. 24	0200	61,100	20.00
Jan. 18	1700	*74,300	*21.59	Feb. 25	0300	58,800	19.70

Minimum discharge, 458 ft³/s Sept. 13, gage height, 5.88 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	631	20200	1300	2350	8320	5310	3850	3890	3370	1650	859	553		
2	622	21100	1510	2150	8110	4380	3460	5030	3070	2610	873	545		
3	623	18900	3340	2220	7730	3830	3060	5390	2750	1730	873	552		
4	603	9600	4840	1710	6810	3510	2810	4380	2590	1640	846	554		
5	588	8860	7030	3670	7900	3120	2570	4610	2330	1420	817	545		
6	593	10200	7140	12600	5740	3050	2350	3970	2170	1310	802	534		
7	610	7720	6150	4960	4640	9530	2210	3450	2020	1280	798	526		
8	570	6110	5120	8810	3930	8270	2170	3150	1900	1250	800	513		
9	542	5320	3820	6150	3430	5360	2070	2860	1830	1220	801	497		
10	539	4420	3160	7950	3050	4660	1920	2890	1820	1540	795	498		
11	1240	3730	2710	10600	2760	5720	1920	2740	1880	2260	758	493		
12	1110	3260	2390	5690	2530	8490	2250	9420	1820	2000	727	473		
13	890	2910	2150	4360	2330	6650	1940	17800	1750	1620	714	472		
14	3470	2640	1980	4510	2180	6130	1790	7390	1840	1430	710	495		
15	3660	5250	1850	4750	7230	4830	1880	5120	2210	1320	698	479		
16	3830	5770	1720	6900	9720	4020	2810	4070	2930	1250	672	492		
17	3420	4150	1630	14100	4910	3480	3670	3570	2190	1390	645	503		
18	3660	3380	1580	53300	3780	3520	2950	4610	2400	1430	629	554		
19	8770	2980	1540	37100	3180	3470	2620	6500	2870	1270	620	585		
20	7290	2730	1490	13500	2910	3030	2490	9280	2250	1200	614	522		
21	9100	2470	1410	8620	2790	4960	2630	5880	1940	1200	612	484		
22	16900	2240	1330	7930	3250	4480	2590	4490	1800	1190	611	469		
23	8840	2020	1290	11200	17000	4070	2210	3710	1790	1160	600	2040		
24	14900	1890	1260	8160	48300	7230	2050	3680	1770	1100	586	2430		
25	13900	1800	1230	6050	40100	6040	3990	9670	1680	1060	570	1140		
26	18000	1710	1190	4980	15100	9910	5240	6580	1590	1020	567	895		
27	27800	1640	1140	5220	8970	8420	6000	5240	1510	979	570	788		
28	14200	1540	1080	4740	6740	9100	5400	4250	1500	937	588	789		
29	8390	1470	1070	4480	---	6260	5110	3780	1480	908	607	1810		
30	7800	1390	1050	6350	---	5600	4370	3610	1350	875	593	1380		
31	6090	---	1000	6290	---	4460	---	3510	---	858	569	---		
TOTAL	189181	167400	75500	281400	243440	170890	90380	164520	62400	42107	21524	22610		
MEAN	6103	5580	2435	9077	8694	5513	3013	5307	2080	1358	694	754		
MAX	27800	21100	7140	53300	48300	9910	6000	17800	3370	2610	873	2430		
MIN	539	1390	1000	1710	2180	3030	1790	2740	1350	858	567	469		
CFSM	13.7	12.5	5.47	20.4	19.5	12.4	6.77	11.9	4.67	3.05	1.56	1.69		
IN.	15.81	13.99	6.31	23.52	20.35	14.29	7.56	13.75	5.22	3.52	1.80	1.89		
AC-FT	375200	332000	149800	558200	482900	339000	179300	326300	123800	83520	42690	44850		
CAL YR 1985	TOTAL	1046117	MEAN	2866	MAX	27800	MIN	417	CFSM	6.44	IN.	87.45	AC-FT	2075000
WTR YR 1986	TOTAL	1531352	MEAN	4195	MAX	53300	MIN	469	CFSM	9.43	IN.	128.01	AC-FT	3037000

QUEETS RIVER BASIN

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12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 13...	1430	2890	57	7.9*	5.0	2.6	12.8	99	--	--	24	4
MAR 04...	1800	3410	66	7.2	8.0	6.1	12.0	101	K2	<1	24	2
MAY 27...	1625	4950	54	7.5	11.5	12	11.0	101	K5	<1	19	3
AUG 26...	1245	571	81	7.2	18.5	0.60	9.1	98	K6	K2	32	7
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 13...	7.9	1.0	2.8	20	0.3	0.8	20	25	0	7.5	2.6	<0.10
MAR 04...	8.0	1.0	3.0	21	0.3	0.4	22	27	0	6.6	2.7	<0.10
MAY 27...	6.6	0.7	2.2	19	0.2	0.3	16	19	0	6.0	1.7	<0.10
AUG 26...	11	1.1	3.2	18	0.3	0.5	25	30	0	8.5	2.2	<0.10
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 13...	6.1	37	41	0.05	289	<0.01	0.15	0.03	<0.2	0.02	<0.01	0.01
MAR 04...	6.1	53	41	0.07	488	<0.01	0.12	0.03	<0.2	0.02	<0.01	0.01
MAY 27...	5.1	31	32	0.04	414	<0.01	<0.10	0.04	0.3	0.03	<0.01	<0.01
AUG 26...	5.3	49	47	0.07	76	<0.01	<0.10	<0.01	<0.2	0.01	0.01	<0.01

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

QUEETS RIVER BASIN

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 13...	20	<1	15	<0.5	<1	2	<3	3	38	1	<4
MAR 04...	30	<1	12	<0.5	<1	<1	<3	2	36	<1	<4
MAY 27...	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	10	<1	14	<0.5	<1	6	<3	6	34	<5	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
NOV 13...	3	<0.1	<10	1	<1	<1	65	<6	18	4	31
MAR 04...	4	<0.1	<10	2	<1	<1	66	<6	19	12	110
MAY 27...	--	--	--	--	--	--	--	--	--	26	347
AUG 26...	5	0.3	<10	<1	<1	<1	82	<6	15	2	3.1

HOH RIVER BASIN

77

12040700 HOH RIVER BELOW MOUNT TOM CREEK, NEAR FORKS, WA

LOCATION.--Lat 47°52'07", long 123°53'02", in SE¼SE¼ sec.5, T.27 N., R.9 W., Jefferson County, Hydrologic Unit 17100101, Olympic National Park, on right bank 300 ft below Mount Tom Creek, 2.2 mi northeast of Hoh Ranger Station, and 24 mi southeast of Forks.

DRAINAGE AREA.--97.8 mi².

PERIOD OF RECORD.--May 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 650 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 9, 10. Records good. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft³/s Jan. 18, 1986, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow, gage height, 10.79 ft; minimum discharge, 210 ft³/s Sept. 22, 1986, gage height, 2.29 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	0645	12,100	10.54	Feb. 24	0145	7,340	8.72
Jan. 18	1200	*12,900	*10.79	Feb. 25	0030	6,880	8.63

Minimum discharge, 210 ft³/s Sept. 22, gage height, 2.29 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	250	2810	362	331	1330	1080	657	462	1810	1100	609	501
2	291	2830	402	291	1070	872	595	543	1570	1090	694	583
3	288	2760	477	271	932	776	556	535	1420	866	704	599
4	266	1810	680	259	838	768	528	508	1340	721	637	576
5	296	1540	1040	628	787	681	492	488	1190	649	616	528
6	353	1520	794	772	716	647	469	454	1040	640	635	555
7	293	1350	746	551	667	2230	470	462	954	696	708	511
8	246	1160	663	1250	624	1550	500	448	907	696	791	398
9	222	1030	582	874	589	1070	486	454	906	694	819	369
10	237	920	529	1280	558	889	457	450	984	852	706	399
11	730	834	487	1190	531	865	448	420	1070	933	620	324
12	454	779	456	821	504	819	430	639	1030	820	625	291
13	361	729	428	771	481	740	411	1150	1060	712	659	306
14	642	684	406	785	468	697	388	720	1250	637	669	271
15	759	1030	386	733	1090	640	381	615	1150	565	600	253
16	838	939	368	846	1080	595	385	562	1150	513	504	244
17	680	766	361	1370	753	557	387	601	940	551	491	244
18	621	684	357	9140	650	555	374	1130	1090	571	475	261
19	1980	648	362	4400	580	565	361	1490	860	583	481	248
20	2010	610	363	2150	548	551	433	1850	755	636	513	239
21	1710	578	346	1480	514	706	638	1200	717	715	563	233
22	1760	536	332	1300	532	620	641	930	769	741	535	226
23	1480	510	344	1300	2210	644	501	813	889	719	510	682
24	3310	495	338	1090	5950	775	445	1330	931	673	484	543
25	2940	480	339	952	4530	705	449	3760	867	648	495	355
26	3510	457	331	884	2260	1060	437	2780	808	601	549	309
27	7700	444	314	1060	1570	1080	482	2150	800	548	654	267
28	2760	419	297	924	1400	1310	501	1610	959	534	717	276
29	1750	401	285	865	---	964	472	1450	918	501	638	399
30	1470	381	271	1020	---	847	443	1590	766	477	554	323
31	1180	---	263	1040	---	720	---	1730	---	513	515	---
TOTAL	41387	30134	13709	40628	33762	26578	14217	33324	30900	21195	18770	11313
MEAN	1335	1004	442	1311	1206	857	474	1075	1030	684	605	377
MAX	7700	2830	1040	9140	5950	2230	657	3760	1810	1100	819	682
MIN	222	381	263	259	468	551	361	420	717	477	475	226
CFSM	13.7	10.3	4.52	13.4	12.3	8.76	4.85	11.0	10.5	6.99	6.19	3.85
IN.	15.74	11.46	5.21	15.45	12.84	10.11	5.41	12.68	11.75	8.06	7.14	4.30
AC-FT	82090	59770	27190	80590	66970	52720	28200	66100	61290	42040	37230	22440
WTR YR 1986	TOTAL	315917	MEAN	866	MAX	9140	MIN	222	CFSM	8.85	IN.	120.16
											AC-FT	626600

HOH RIVER BASIN

12040900 SOUTH FORK HOH RIVER NEAR FORKS, WA

LOCATION.--Lat 47°48'25", long 123°59'43", in NW¼NE¼ sec.33, T.27 N., R.10 W., Jefferson County, Hydrologic Unit 17100101, on left bank 400 ft downstream from Gordon Marsh Bridge, 20.5 mi southeast of Forks, and at mile 1.8.

DRAINAGE AREA.--50.4 mi².

PERIOD OF RECORD.--July 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 500 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1-10, Nov. 25 to Dec. 1, July 1-9, Sept. 27, 28. Records good except for estimated daily discharges, and discharges above 6,000 ft³/s, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft³/s Jan. 18, 1986, computed by slope-area measurement of peak flow, gage height, 12.00 ft, from floodmark; minimum discharge, 98 ft³/s Oct. 10, 1985, gage height, 3.18 ft.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	0700	6,790	8.38	Jan. 18	1200	*14,900	*12.00
Nov. 1	1615	4,290	7.30	Feb. 24	0200	7,120	8.51

Minimum discharge, 98 ft³/s Oct. 10, gage height, 3.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	120	2130	176	221	1100	664	469	396	778	427	231	181		
2	120	1720	209	204	947	569	420	527	663	500	262	191		
3	130	1620	367	195	824	504	382	550	606	370	268	202		
4	125	1010	678	179	715	463	358	467	575	320	248	203		
5	120	956	981	558	682	427	332	460	503	275	235	197		
6	135	991	775	840	583	408	309	406	433	260	240	193		
7	140	825	689	479	519	1270	301	379	403	270	256	185		
8	120	678	557	840	469	958	315	360	377	270	281	159		
9	110	584	442	738	420	664	307	345	375	271	291	143		
10	103	501	382	1050	385	567	287	334	402	340	269	150		
11	332	440	333	1020	359	646	275	313	441	391	237	137		
12	227	395	303	657	337	757	270	727	427	368	225	130		
13	181	360	275	564	313	631	258	1350	411	319	232	131		
14	355	335	256	588	297	567	246	763	479	285	239	121		
15	445	787	242	570	1120	489	240	590	496	258	229	114		
16	492	608	228	774	1030	429	276	497	520	233	205	110		
17	442	467	224	1490	628	384	330	471	414	262	199	108		
18	418	393	221	9720	499	372	310	712	541	277	192	116		
19	1140	355	221	3490	419	376	281	930	493	256	189	114		
20	1220	323	221	1490	382	359	310	1160	396	272	195	112		
21	1430	299	214	1030	348	571	410	779	349	298	204	107		
22	1810	272	204	925	393	490	397	634	337	310	201	106		
23	1180	255	201	1110	2140	492	325	545	372	308	194	288		
24	2100	243	201	884	5360	717	292	647	393	280	188	260		
25	1770	231	198	712	3650	689	321	1820	369	267	177	189		
26	1940	221	195	633	1480	1130	349	1260	357	255	192	175		
27	4410	211	185	672	1010	969	447	928	339	234	211	163		
28	1690	201	176	610	818	1010	473	781	372	218	228	155		
29	1030	192	165	600	---	735	428	706	359	213	215	249		
30	907	182	159	819	---	635	385	755	310	204	191	179		
31	735	---	151	783	---	539	---	789	---	206	183	---		
TOTAL	25477	17785	9829	34445	27227	19481	10103	21381	13290	9017	6907	4868		
MEAN	822	593	317	1111	972	628	337	690	443	291	223	162		
MAX	4410	2130	981	9720	5360	1270	473	1820	778	500	291	288		
MIN	103	182	151	179	297	359	240	313	310	204	177	106		
CFSM	16.3	11.8	6.29	22.0	19.3	12.5	6.69	13.7	8.79	5.77	4.42	3.21		
IN.	18.80	13.13	7.25	25.42	20.10	14.38	7.46	15.78	9.81	6.66	5.10	3.59		
AC-FT	50530	35280	19500	68320	54000	38640	20040	42410	26360	17890	13700	9660		
WTR YR 1986	TOTAL	199810	MEAN	547	MAX	9720	MIN	103	CFSM	10.9	IN.	147.48	AC-FT	396300

HOH RIVER BASIN

79

12041200 HOH RIVER AT U.S. HIGHWAY 101, NEAR FORKS, WA

LOCATION.--Lat 47°48'25", long 124°14'59", in NE¼NE¼ sec.33, T.27 N., R.12 W., Jefferson County, Hydrologic Unit 17100101, on left bank 250 ft downstream from U.S. Highway 101, 1.0 mi downstream from Hell Roaring Creek, 11.5 mi southeast of Forks, and at mile 15.4.

DRAINAGE AREA.--253 mi².

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 163.64 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Feb. 20 to Apr. 22. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--26 years, 2,541 ft³/s, 136.39 in/yr, 1,841,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,600 ft³/s Dec. 17, 1979, gage height, 19.08 ft from rating curve extended above 30,100 ft³/s on basis of slope-area measurement at gage height 17.74 ft; minimum discharge, 335 ft³/s Oct. 19, 1983; minimum gage height, 2.40 ft Sept. 27, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height ⁺ (ft)	Date	Time	Discharge (ft ³ /s)	Gage height ⁺ (ft)
Oct. 27	1200	25,500	13.31	Jan. 18	1600	*41,700	*17.09
Nov. 1	2200	16,800	10.83	Feb. 24	unknown	33,500	15.29

Minimum discharge, 379 ft³/s Oct. 10; minimum gage height, 2.55 ft Sept. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	459	8230	864	1130	4180	3100	2100	1800	3240	1670	985	856
2	457	9990	958	979	3760	2500	1900	2210	2960	2270	1120	901
3	498	9420	1740	906	3390	2300	1700	2240	2620	1700	1190	952
4	474	5780	2430	768	3060	2100	1600	1980	2530	1480	1140	967
5	458	5040	3530	1970	3280	1950	1450	1940	2290	1280	1070	904
6	507	5290	3130	4300	2660	1850	1350	1730	2040	1190	1050	892
7	534	4350	2750	2160	2340	5600	1350	1590	1870	1240	1120	900
8	455	3980	2380	4260	2110	4500	1400	1500	1770	1270	1240	771
9	406	3120	1900	3040	1930	3100	1320	1420	1700	1280	1310	663
10	384	2670	1620	4090	1790	2500	1270	1430	1710	1450	1270	684
11	1090	2340	1430	4670	1690	2800	1200	1370	1870	1810	1100	637
12	1040	2100	1300	2850	1590	3200	1200	2960	1840	1670	1040	557
13	777	1920	1180	2360	1490	2900	1160	5760	1810	1430	1080	552
14	1570	1760	1090	2500	1410	2500	1130	3130	2020	1300	1100	534
15	2270	2890	1020	2510	3730	2150	1100	2400	2240	1210	1070	487
16	2400	3200	953	3170	4330	1900	1200	2050	2280	1100	931	473
17	2190	2400	912	6270	2510	1700	1400	1920	1870	1130	868	468
18	2180	2000	891	29200	2030	1650	1330	2740	2130	1180	842	497
19	4510	1810	867	17100	1750	1650	1200	3740	2140	1120	824	491
20	4360	1670	857	7340	1560	1600	1350	5240	1690	1150	841	457
21	5440	1550	830	4820	1450	2500	1750	3410	1510	1250	904	439
22	6680	1410	787	4370	1570	2150	1710	2710	1450	1310	916	426
23	5010	1300	770	5560	8000	2150	1390	2310	1580	1310	883	943
24	7040	1250	763	4180	23000	3100	1230	2570	1700	1230	831	1450
25	8480	1170	755	3290	17000	3000	1850	6930	1630	1180	818	855
26	7930	1110	741	2860	7500	4900	1990	5550	1550	1120	859	715
27	18300	1080	717	3060	5200	4300	2280	4410	1480	1030	975	625
28	9630	1010	680	2850	3700	4500	2390	3410	1610	984	1120	602
29	5630	960	661	2650	---	3600	2230	3010	1730	962	1090	953
30	4690	911	639	3160	---	2850	1900	3020	1490	900	961	839
31	3710	---	612	3190	---	2450	---	3150	---	886	886	---
TOTAL	109559	91311	39757	141563	118010	87050	46430	89630	58350	40092	31434	21490
MEAN	3534	3044	1282	4567	4215	2808	1548	2891	1945	1293	1014	716
MAX	18300	9990	3530	29200	23000	5600	2390	6930	3240	2270	1310	1450
MIN	384	911	612	768	1410	1600	1100	1370	1450	886	818	426
CFSM	14.0	12.0	5.07	18.1	16.7	11.1	6.12	11.4	7.69	5.11	4.01	2.83
IN.	16.11	13.43	5.85	20.81	17.35	12.80	6.83	13.18	8.58	5.89	4.62	3.16
AC-FT	217300	181100	78860	280800	234100	172700	92090	177800	115700	79520	62350	42630
CAL YR 1985	TOTAL	648596	MEAN	1777	MAX	18300	MIN	384	CFSM	7.02	IN.	95.37
WTR YR 1986	TOTAL	874676	MEAN	2396	MAX	29200	MIN	384	CFSM	9.47	IN.	128.61
											AC-FT	1286000
											AC-FT	1735000

QUILLAYUTE RIVER BASIN

12043000 CALAWAH RIVER NEAR FORKS, WA

LOCATION.--Lat 47°57'37", long 124°23'30", in NW¼SW¼ sec.4, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on left bank 30 ft downstream from U.S. Highway 101 bridge, 0.8 mi northwest of Forks, and at mile 6.6.

DRAINAGE AREA.--129 mi².

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

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

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

REMARKS.--Estimated daily discharges: Oct. 1-11, Apr. 13-22. Records good, except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--9 years (water years 1899-1901, 1977-80, 1985-86), 1,000 ft³/s, 105.27 in/yr, 724,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,900 ft³/s Dec. 17, 1979, gage height, 18.98 ft, from rating curve extended above 10,000 ft³/s on basis of step-backwater analysis; minimum discharge, 15 ft³/s Sept. 28, 1899.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 1	1800	10,100	12.09	Feb. 24	0100	22,400	17.00
Jan. 18	1200	*24,900	*17.81	Feb. 24	2400	17,000	15.09

Minimum discharge, 55 ft³/s Sept. 11-13, gage height, 2.60 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	75	4460	292	523	1600	1250	1110	1110	564	291	139	70		
2	74	4620	373	399	1680	1020	967	1290	517	335	134	69		
3	75	4270	623	373	1490	912	831	1170	472	259	129	69		
4	73	2360	1370	334	1370	818	757	1020	442	248	129	66		
5	71	2070	2030	939	1620	726	686	913	412	227	122	62		
6	72	2480	1590	2570	1370	691	629	790	399	213	120	61		
7	74	1940	1420	1200	1140	1770	584	721	375	204	115	58		
8	69	1540	1220	2850	962	2070	547	663	352	198	111	57		
9	66	1270	949	1900	833	1390	511	612	334	193	108	57		
10	66	1020	784	2420	731	1100	474	602	314	240	108	61		
11	208	847	665	2960	663	1180	483	600	299	302	103	58		
12	200	729	579	1640	602	1970	531	1690	284	308	103	55		
13	144	644	525	1230	548	1710	490	3700	271	271	100	57		
14	579	584	486	1110	508	1530	450	1790	279	250	97	67		
15	837	1040	446	1040	2150	1250	470	1230	312	244	95	66		
16	959	1240	415	1660	2640	1040	700	960	432	234	93	93		
17	791	974	390	4880	1420	886	880	832	316	302	88	82		
18	736	801	372	18100	1050	832	720	875	394	317	86	133		
19	2300	713	354	9540	848	771	650	1240	438	276	84	84		
20	1690	634	336	3530	753	710	630	2400	379	248	83	68		
21	1870	579	318	2230	673	1150	650	1590	333	232	82	61		
22	3370	536	304	1900	837	1100	640	1150	305	215	80	57		
23	1910	503	292	2960	7190	1070	542	923	287	204	78	210		
24	2490	468	282	2290	16400	1750	518	878	266	193	77	257		
25	2510	434	269	1630	9600	1830	740	1680	253	182	76	124		
26	2860	393	259	1280	3720	2850	900	1320	242	176	74	96		
27	5450	378	249	1310	2280	2450	1350	1110	233	168	74	87		
28	3580	354	242	1180	1630	2690	1550	919	220	163	72	84		
29	1960	336	242	1120	---	1870	1420	785	216	158	72	149		
30	1840	317	234	1200	---	1640	1230	692	207	151	72	144		
31	1500	---	228	1250	---	1310	---	621	---	143	71	---		
TOTAL	38499	38534	18138	77548	66308	43336	22640	35876	10147	7145	2975	2662		
MEAN	1242	1284	585	2502	2368	1398	755	1157	338	230	96.0	88.7		
MAX	5450	4620	2030	18100	16400	2850	1550	3700	564	335	139	257		
MIN	66	317	228	334	508	691	450	600	207	143	71	55		
CFSM	9.63	9.95	4.53	19.4	18.4	10.8	5.85	8.97	2.62	1.78	.74	.69		
IN.	11.10	11.11	5.23	22.36	19.12	12.50	6.53	10.35	2.93	2.06	.86	.77		
AC-FT	76360	76430	35980	153800	131500	85960	44910	71160	20130	14170	5900	5280		
CAL YR 1985	TOTAL	223257	MEAN	612	MAX	5450	MIN	50	CFSM	4.74	IN.	64.38	AC-FT	442800
WTR YR 1986	TOTAL	363808	MEAN	997	MAX	18100	MIN	55	CFSM	7.73	IN.	104.91	AC-FT	721600

12043163 SOOES RIVER BELOW MILLER CREEK, NEAR OZETTE, WA

LOCATION.--Lat 48°15'58", long 124°37'30", in NE¼NE¼ sec. 21, T.32 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank at downstream side on Crown Zellerback logging road, 0.6 mi downstream from Miller Creek, and 8 mi north of Ozette.

DRAINAGE AREA.--32.0 mi².

PERIOD OF RECORD.--March 1976 to September 1986 (discontinued).

REVISED RECORDS.--WDR WA-77-1: 1976(M). WDR WA-83-1: 1982(M,P).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 70 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 27 to Dec. 1, Jan. 19-23, Apr. 19-24, May 18 to June 18. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--10 years, 202 ft³/s, 85.72 in/yr, 146,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,610 ft³/s, Jan. 23, 1982, gage height, 15.08 ft; minimum discharge, 5.4 ft³/s Aug. 26-30, 1985.

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. 1	1700	3,350	12.38	Feb. 24	2300	3,200	12.18
Jan. 18	1200	3,410	12.45	May 12	2200	2,630	11.38
Feb. 24	0800	*4,820	*14.15				

Minimum discharge, 9.8 ft³/s Sept. 6-10, 12-16, gage height, 4.60 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	18	1580	53	139	340	179	200	173	88	130	24	11		
2	18	975	90	136	289	145	162	159	78	106	23	11		
3	18	636	104	193	269	138	139	160	70	70	22	11		
4	18	389	330	110	334	143	135	140	65	64	21	11		
5	18	530	664	425	396	109	116	141	60	48	21	10		
6	18	498	317	410	239	149	102	129	55	40	20	9.8		
7	18	324	287	183	184	742	91	115	52	36	18	9.8		
8	16	253	218	418	153	366	84	104	49	32	18	9.8		
9	14	234	152	243	134	217	77	90	45	32	17	9.8		
10	14	186	125	540	119	169	70	79	41	78	17	10		
11	58	148	105	499	112	183	78	78	38	148	17	11		
12	44	125	93	220	105	369	126	901	36	106	19	10		
13	36	110	83	163	94	294	89	908	34	73	18	9.8		
14	486	101	79	144	88	289	74	295	36	61	18	9.8		
15	329	312	73	162	882	189	73	191	40	56	16	9.8		
16	463	263	67	325	477	143	77	150	110	51	15	10		
17	421	188	61	638	229	116	101	195	43	97	15	13		
18	240	148	58	2520	170	184	89	500	45	81	14	13		
19	542	136	53	1240	138	190	139	700	50	58	14	11		
20	334	134	51	900	130	142	190	850	111	49	13	11		
21	712	113	48	300	130	472	152	400	57	43	13	11		
22	988	98	46	260	210	232	113	220	44	41	13	11		
23	503	86	43	500	1470	201	91	180	40	38	13	122		
24	465	78	41	317	3500	384	87	165	37	37	13	100		
25	320	74	40	223	1650	291	266	320	34	33	12	52		
26	448	68	39	178	546	654	318	300	32	32	11	31		
27	832	64	38	280	326	1160	361	250	30	30	11	23		
28	518	60	37	227	231	695	279	190	27	29	11	20		
29	253	56	38	219	---	367	302	150	27	27	11	98		
30	534	52	39	347	---	440	231	120	27	26	11	53		
31	266	---	38	274	---	248	---	100	---	25	11	---		
TOTAL	8962	8019	3510	12733	12945	9600	4412	8453	1501	1777	490	732.6		
MEAN	289	267	113	411	462	310	147	273	50.0	57.3	15.8	24.4		
MAX	988	1580	664	2520	3500	1160	361	908	111	148	24	122		
MIN	14	52	37	110	88	109	70	78	27	25	11	9.8		
CFSM	9.03	8.34	3.53	12.8	14.4	9.69	4.59	8.53	1.56	1.79	.49	.76		
IN.	10.42	9.32	4.08	14.80	15.05	11.16	5.13	9.83	1.74	2.07	.57	.85		
AC-FT	17780	15910	6960	25260	25680	19040	8750	16770	2980	3520	972	1450		
CAL YR 1985	TOTAL	46751.2	MEAN	128	MAX	1580	MIN	5.4	CFSM	4.00	IN.	54.35	AC-FT	92730
WTR YR 1986	TOTAL	73134.6	MEAN	200	MAX	3500	MIN	9.8	CFSM	6.25	IN.	85.02	AC-FT	145100

12043300 HOKO RIVER NEAR SEKIU, WA

LOCATION.--Lat 48°14'30", long 124°22'57", in NE¼SW¼ sec.28, T.32 N., R.13 W., Clallam County, Hydrologic Unit 17110021, on right bank 2.2 mi upstream from Little Hoko River, and 4.0 mi southwest of Sekiu.

DRAINAGE AREA.--51.2 mi².

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

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

REMARKS.--Estimated daily discharges: Aug. 11-20. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--12 years (water years 1963-74), 408 ft³/s, 108.22 in/yr, 295,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft³/s Dec. 25, 1972, gage height, 14.17 ft, from rating curve extended above 2,100 ft³/s, on basis of slope-area measurement at gage height, 12.49 ft; minimum discharge, 12 ft³/s Aug. 30, 1967, part or all of each day Aug. 25-30, 1985; minimum gage height, 0.96 ft Aug. 29, 30, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period June to October 1986, 709 ft³/s Oct. 30, gage height, 3.66 ft; minimum discharge, 16 ft³/s several days in September, October, gage height, 1.07 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	183	72	42	19	33
2	163	115	41	19	29
3	147	79	40	19	26
4	135	88	39	19	25
5	125	69	38	18	25
6	117	60	38	18	23
7	110	54	39	17	22
8	104	50	37	16	21
9	94	49	33	16	20
10	87	72	32	18	20
11	80	138	31	18	19
12	75	133	30	16	18
13	72	105	30	18	18
14	73	90	29	19	18
15	83	89	28	19	18
16	97	85	27	23	18
17	87	121	26	23	18
18	96	135	25	21	18
19	92	102	24	20	18
20	95	86	23	18	18
21	81	77	22	18	17
22	71	71	21	17	17
23	66	66	21	66	17
24	61	62	20	96	16
25	57	57	20	47	46
26	54	55	20	34	275
27	51	51	19	28	351
28	48	49	19	26	186
29	47	47	19	49	124
30	45	44	19	43	413
31	---	43	19	---	349
TOTAL	2696	2414	871	798	2236
MEAN	89.9	77.9	28.1	26.6	72.1
MAX	183	138	42	96	413
MIN	45	43	19	16	16
CFSM	1.76	1.52	.55	.52	1.41
IN.	1.96	1.75	.63	.58	1.62
AC-FT	5350	4790	1730	1980	4440

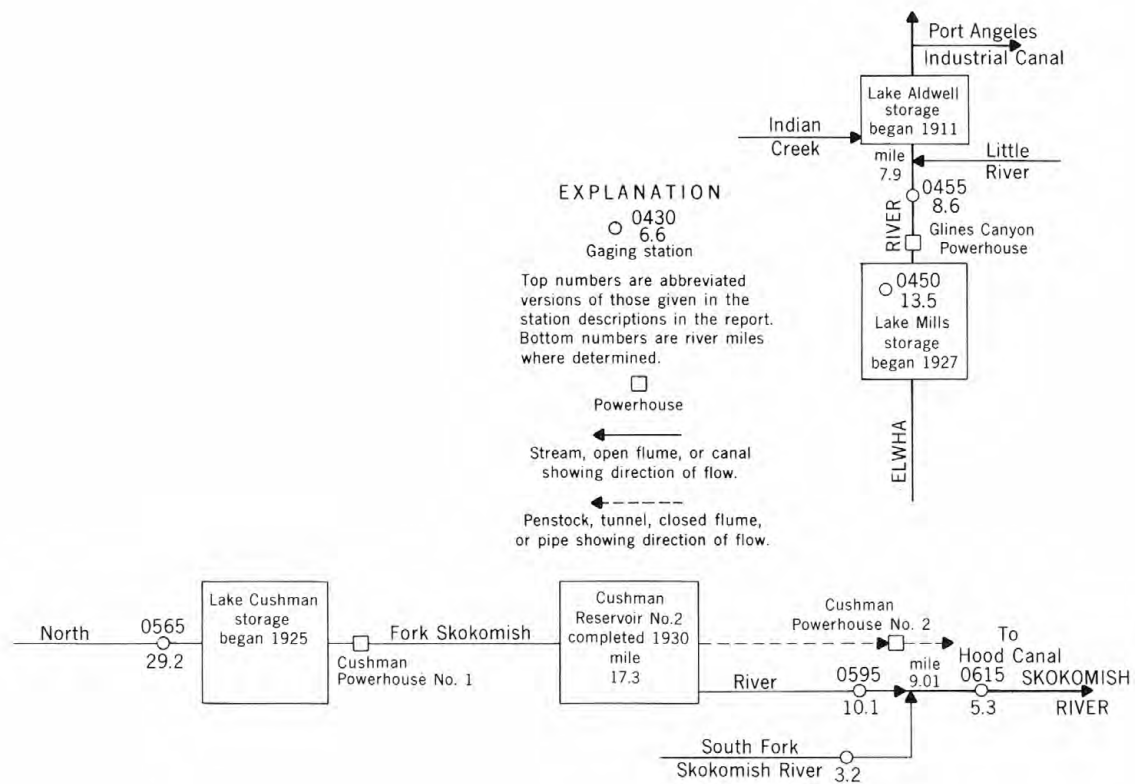


Figure 8.--Gaging stations in Elwha and Skokomish River basins.

ELWHA RIVER BASIN

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

LOCATION.--Lat 48°00'08", long 123°35'55", in SW¼SE¼ sec.17, T.29 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Park, at Glines Canyon Dam on Elwha River, 2 mi upstream from Griff Creek, 4.1 mi south of Elwha, and 11 mi southwest of Port Angeles.

DRAINAGE AREA.--245 mi².

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

GAGE.--Nonrecording gage. Datum of gage is 19.67 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Usable capacity, 7,460 acre-ft between gage heights 592.0 ft, normal minimum operation level, and 610.0 ft, top of spillway gates. Storage below gage height 592.0 ft, 31,190 acre-ft. Figures given herein represent total contents. Water is used for power production by Crown Zellerbach Corp.

COOPERATION.--Gage-height record furnished by Crown Zellerbach Corp.

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

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39,080 acre-ft June 24, gage height, 611.0 ft; minimum contents observed, 36,236 acre-ft Dec. 4, gage height, 604.3 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	606.8	37,286	--
Oct. 31.....	608.4	37,962	+676
Nov. 30.....	606.1	36,992	-970
Dec. 31.....	608.3	37,919	+927
CAL YR 1985.....	--	--	+86
Jan. 31.....	609.3	38,349	+430
Feb. 28.....	609.9	38,607	+258
Mar. 31.....	609.8	38,564	-43
Apr. 30.....	607.9	37,748	-816
May 31.....	609.8	38,564	+816
June 30.....	610.3	38,779	+215
July 31.....	608.3	37,919	-860
Aug. 31.....	608.7	38,091	+172
Sept. 30.....	608.7	38,091	0
WTR YR 1986.....	--	--	+805

ELWHA RIVER BASIN

85

12045500 ELWHA RIVER AT McDONALD BRIDGE, NEAR PORT ANGELES, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°03'18", long 123°34'55", in NE¼NW¼ sec.33, T.30 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Forest, on right bank 300 ft upstream from site of McDonald Bridge (now removed), 0.7 mi upstream from Little River, 4.9 mi below Glines Canyon Dam, 8 mi southwest of Port Angeles, and at mile 8.6.

DRAINAGE AREA.--269 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Water-discharge records good. Water is diverted through Glines Canyon powerhouse and returned to river upstream from gage. Flow partly regulated by Lake Mills 4.9 mi upstream (see sta 12045000).

AVERAGE DISCHARGE.--72 years (water years 1898-1901, 1919-1986), 1,510 ft³/s, 76.23 in/yr, 1,094,000 acre-ft/yr, adjusted for storage since April 1927.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,700 ft³/s Jan. 18, gage height, 22.55 ft; minimum discharge, 186 ft³/s Sept. 15, gage height, 9.26 ft; minimum daily discharge, 321 ft³/s Oct. 10, 13, Sept. 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	329	3570	771	830	2580	2650	1420	855	3370	1290	604	438
2	336	4250	779	756	2280	2410	1400	916	3080	1520	605	419
3	327	3990	829	691	1990	2190	1330	914	2670	1280	606	402
4	327	2900	814	675	1920	2090	1390	667	2600	1240	632	417
5	327	2490	922	688	2030	2020	1260	918	2420	1130	571	426
6	330	2360	940	1310	1690	1890	965	925	2040	868	539	426
7	327	2120	1110	1280	1550	3440	1220	840	2000	959	546	364
8	327	1840	1000	1570	1450	3060	1280	884	1710	1030	622	372
9	328	1650	1000	1630	1290	2310	1090	928	1790	1030	654	374
10	321	1540	906	1700	1340	2160	1250	900	2020	1010	635	362
11	326	1250	863	2410	1100	1920	1170	774	2120	1160	586	345
12	323	1250	855	1790	1240	1880	1080	873	1810	1070	538	341
13	321	1250	852	1470	1180	1730	784	1920	1830	953	539	346
14	424	1250	749	1610	1190	1620	1070	1200	2120	932	558	343
15	632	1380	609	1520	1390	1470	1050	1150	2030	792	555	339
16	615	1450	770	1610	2190	1440	1010	1050	1810	787	536	336
17	591	1250	758	2980	1310	1380	966	1010	1610	787	492	332
18	526	1150	676	16900	1300	1270	1020	1540	1820	787	476	333
19	1080	1080	762	11700	1120	1250	897	1980	1670	787	476	330
20	1500	1040	784	5810	1140	1250	629	2610	1280	741	468	327
21	2090	960	746	4390	1150	1390	992	1870	1140	816	433	335
22	1930	906	649	3450	1210	1430	1150	1570	1280	854	458	332
23	1540	925	788	2980	2280	1230	1080	1410	1460	854	467	397
24	3020	681	756	2320	8510	1590	1060	1380	1620	820	444	605
25	4190	841	716	2310	8740	1380	1110	4090	1590	787	443	367
26	4070	842	783	2120	4950	1700	1020	3670	1460	742	443	321
27	11100	839	735	2210	3080	1830	769	3180	1340	618	442	321
28	5210	864	644	2040	3080	2140	1000	2570	1410	682	444	321
29	2740	855	531	1900	---	1870	946	2420	1480	650	442	321
30	2600	908	730	1790	---	1720	878	2720	1320	628	438	321
31	2240	---	786	2000	---	1650	---	3100	---	604	438	---
TOTAL	50347	47681	24613	86440	64280	57360	32286	50834	55900	28208	16130	11013
MEAN	1624	1589	794	2788	2296	1850	1076	1640	1863	910	520	367
MAX	11100	4250	1110	16900	8740	3440	1420	4090	3370	1520	654	605
MIN	321	681	531	675	1100	1230	629	667	1140	604	433	321
AC-FT	99860	94580	48820	171500	127500	113800	64040	100800	110900	55950	31990	21840
MEAN†	1634	1574	809	2795	2302	1850	1063	1652	1868	896	523	367
CFSM†	6.07	5.85	3.01	10.39	8.56	6.88	3.95	6.14	6.94	3.33	1.94	1.36
IN.†	7.00	6.52	3.47	11.98	8.91	7.93	4.41	7.08	7.74	3.84	2.24	1.52
AC-FT†	100500	93610	49750	171900	127800	113800	63220	101600	111100	55090	32160	21840

CAL YR 1985 TOTAL 409768 MEAN 1123 MAX 11100 MIN 294 AC-FT 812800 MEAN† 1123 CFSM† 4.17 IN.† 56.66 AC-FT† 812900
WTR YR 1986 TOTAL 525092 MEAN 1439 MAX 16900 MIN 321 AC-FT 1042000 MEAN† 1440 CFSM† 5.35 IN.† 72.70 AC-FT† 1043000

† Adjusted for change in contents in Lake Mills.

ELWHA RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962-70, 1972 to September 1986 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1976 to August 1977.

REMARKS.--Prior to 1962 published as Elwha River near Port Angeles. October 1971 to September 1974 published as Elwha River below Little River, near Port Angeles.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV												
22...	1220	906	80	7.6	3.0	3.8	13.2	98	K1	<1	40	5
JAN												
08...	1130	1310	108	7.8	3.5	1.5	13.3	100	34	K2	46	6
MAR												
27...	0925	1900	93	7.2	5.5	3.0	12.5	100	K1	<1	40	0
MAY												
22...	0930	1460	87	7.7	8.0	2.5	11.7	98	K4	K14	37	5
JUL												
24...	1140	820	87	7.9	13.5	1.5	10.1	97	K1	K19	37	3
SEP												
24...	1230	631	102	7.9	13.5	0.6	9.8	97	K1	41	45	7

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV												
22...	14	1.3	1.9	9	0.1	0.2	35	42	0	8.5	0.9	<0.1
JAN												
08...	16	1.5	2.3	10	0.2	0.4	40	48	0	10	1.5	<0.1
MAR												
27...	14	1.3	2.0	10	0.1	0.3	40	49	0	8.8	0.8	0.1
MAY												
22...	13	1.1	1.9	10	0.1	0.3	32	39	0	8.1	0.8	0.1
JUL												
24...	13	1.1	1.9	10	0.1	0.2	34	42	0	10	0.7	<0.1
SEP												
24...	16	1.3	2.2	9	0.1	0.3	38	47	0	10	1.0	<0.1

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV												
22...	6.2	55	54	0.08	135	0.01	<0.10	0.02	<0.2	0.04	<0.01	0.01
JAN												
08...	6.2	60	52	0.08	212	<0.01	<0.10	0.03	0.2	0.01	<0.01	0.01
MAR												
27...	6.4	56	58	0.08	287	<0.01	<0.10	<0.01	0.2	0.01	0.01	0.02
MAY												
22...	5.3	54	50	0.07	213	0.01	<0.10	0.04	<0.2	0.01	0.01	0.01
JUL												
24...	5.1	49	53	0.07	108	<0.01	<0.10	0.03	<0.2	0.01	<0.01	<0.01
SEP												
24...	5.7	68	60	0.09	116	<0.01	<0.10	<0.01	<0.2	<0.01	<0.01	<0.01

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 22...	20	<1	7	<0.5	<1	<1	<3	<1	16	<1	<4
JAN 08...	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	10	<1	8	<0.5	<1	3	<3	3	7	<1	<4
MAY 22...	--	--	--	--	--	--	--	--	--	--	--
JUL 24...	--	--	--	--	--	--	--	--	--	--	--
SEP 24...	<10	<1	4	<0.5	<1	1	<3	3	12	<5	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
NOV 22...	5	<0.1	<10	1	<1	<1	98	<6	14	6	15
JAN 08...	--	--	--	--	--	--	--	--	--	4	14
MAR 27...	3	<0.1	<10	4	<1	<1	98	<6	4	7	36
MAY 22...	--	--	--	--	--	--	--	--	--	4	16
JUL 24...	--	--	--	--	--	--	--	--	--	2	4.4
SEP 24...	2	0.2	<10	1	<1	<1	120	<6	8	1	1.7

DUNGENESS RIVER BASIN

12048000 DUNGENESS RIVER NEAR SEQUIM, WA

LOCATION.--Lat 48°00'52", long 123°07'53", in NW¼NE¼ sec.13, T.29 N., R.4 W., Clallam County, Hydrologic Unit 17110020, on right bank 1.0 mi upstream from Canyon Creek, 4.8 mi southwest of Sequim, and at mile 11.8.

DRAINAGE AREA.--156 mi².

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

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

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

REMARKS.--Estimated daily discharges: Nov. 5 to Dec. 18, Jan. 26 to Feb. 23, Apr. 4-7, 11-15, Apr. 24 to May 15, July 4 to Sept. 17. Records good above 450 ft³/s, fair below, except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--56 years (water years 1924-30, 1938-86), 390 ft³/s, 33.95 in/yr, 282,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s Nov. 27, 1949, gage height, 8.58 ft, from floodmarks, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 65 ft³/s Jan. 31 to Feb. 3, 1979, during period of ice effect.

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)
Oct. 27	1400	3,280	6.44	Feb. 25	0200	2,000	5.49
Jan. 18	2100	*5,560	*8.21				

Minimum discharge, 91 ft³/s Sept. 22, 23, 30, gage height, 2.51 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	97	544	110	125	420	653	346	300	965	405	200	130		
2	97	642	115	122	390	568	325	400	907	440	200	125		
3	97	606	130	118	370	511	313	370	789	394	210	125		
4	95	524	170	114	330	490	300	355	810	365	210	125		
5	95	420	290	159	310	464	290	350	759	335	200	120		
6	112	380	220	220	280	443	280	345	653	320	200	120		
7	106	350	230	167	265	705	290	345	579	315	195	115		
8	99	310	200	274	250	727	313	345	566	315	195	115		
9	95	280	185	242	240	583	322	345	546	310	195	110		
10	95	250	170	270	230	506	316	350	563	320	195	110		
11	117	230	160	310	220	461	300	335	624	330	190	105		
12	106	215	150	260	210	421	285	330	604	320	180	105		
13	100	200	145	239	205	395	270	410	580	300	170	110		
14	97	195	140	236	200	386	255	370	619	275	170	110		
15	101	210	138	218	310	382	255	350	561	260	170	110		
16	121	220	136	222	360	376	302	327	482	250	165	110		
17	115	200	136	332	300	365	290	335	441	250	160	110		
18	110	185	138	4070	280	352	278	396	449	250	155	134		
19	174	175	138	3060	260	342	270	521	406	245	150	116		
20	383	165	143	1260	240	338	283	754	389	245	150	103		
21	525	160	144	850	220	365	360	560	389	250	145	96		
22	312	150	142	670	215	346	453	449	392	250	145	92		
23	267	145	145	555	370	344	395	397	441	245	145	99		
24	452	140	143	469	1420	357	360	425	500	240	140	115		
25	662	135	142	419	1680	333	335	1080	466	230	140	104		
26	752	130	141	370	1090	341	345	1250	429	220	130	102		
27	2480	125	139	380	819	360	365	1010	393	220	130	98		
28	1350	120	136	360	737	376	330	822	426	210	135	94		
29	778	117	131	360	---	378	300	767	422	205	135	95		
30	583	112	127	380	---	373	280	853	398	200	135	93		
31	502	---	124	380	---	357	---	918	---	195	130	---		
TOTAL	11075	7635	4758	17211	12221	13398	9406	16164	16548	8709	5170	3296		
MEAN	357	255	153	555	436	432	314	521	552	281	167	110		
MAX	2480	642	290	4070	1680	727	453	1250	965	440	210	134		
MIN	95	112	110	114	200	333	255	300	389	195	130	92		
CFSM	2.29	1.63	.98	3.56	2.79	2.77	2.01	3.34	3.54	1.80	1.07	.71		
IN.	2.64	1.82	1.13	4.10	2.91	3.19	2.24	3.85	3.95	2.08	1.23	.79		
AC-FT	21970	15140	9440	34140	24240	26570	18660	32060	32820	17270	10250	6540		
CAL YR 1985	TOTAL	97990	MEAN	268	MAX	2480	MIN	95	CFSM	1.72	IN.	23.37	AC-FT	194400
WTR YR 1986	TOTAL	125591	MEAN	344	MAX	4070	MIN	92	CFSM	2.21	IN.	29.95	AC-FT	249100

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW¼SW¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi west of Brinnon, and at mile 4.5.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--August to December 1910 (gage height only), December 1910 to December 1911, June 1938 to current year. Published as "near Duckabush" water years 1910-11.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft above National Geodetic Vertical Datum of 1929. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 2, Sept. 10-13, 15, 21-23. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--48 years (water years 1939-86), 419 ft³/s, 85.56 in/yr, 303,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,960 ft³/s Nov. 26, 1949, gage height, 10.06 ft, from rating curve extended above 4,800 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 45 ft³/s Oct. 26, 28, 29, 1942.

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)
Oct. 20	1900	3,130	5.97	Jan. 18	1700	*6,070	*8.24
Oct. 27	1300	4,380	6.94				

Minimum daily discharge, 58 ft³/s Sept. 12, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	72	846	137	153	1180	561	331	254	891	271	107	70		
2	70	891	141	148	982	488	301	449	774	285	109	69		
3	71	819	149	143	903	445	280	400	698	254	111	69		
4	69	589	279	138	713	438	268	349	631	234	108	68		
5	68	499	656	466	578	411	254	343	527	210	104	67		
6	69	476	470	678	484	395	244	324	467	199	102	66		
7	70	418	530	389	423	1340	251	319	432	201	101	64		
8	67	369	433	555	375	960	288	311	426	200	102	63		
9	65	336	333	486	338	650	302	310	418	192	103	62		
10	64	311	280	666	310	573	283	313	458	198	102	60		
11	92	281	247	792	288	572	264	291	497	210	97	59		
12	82	263	221	523	266	594	251	289	481	192	94	58		
13	72	249	205	454	250	544	237	496	469	177	93	61		
14	70	234	194	496	240	502	222	354	484	166	92	62		
15	79	317	178	481	536	441	222	311	445	159	91	60		
16	97	349	170	644	704	393	258	283	438	152	88	63		
17	87	288	168	978	441	355	252	289	388	147	84	62		
18	102	253	174	4320	358	326	237	415	393	149	82	79		
19	236	237	186	2640	306	314	225	534	352	144	79	70		
20	1460	220	194	1220	281	309	249	684	313	142	78	63		
21	1270	206	195	830	259	366	365	461	297	147	78	60		
22	1080	191	191	734	254	336	457	370	315	148	77	58		
23	680	179	196	713	511	355	370	321	357	145	77	75		
24	1030	175	200	563	1670	420	315	416	378	136	75	104		
25	1230	170	204	474	1760	384	299	1160	357	131	72	87		
26	1170	164	198	422	1030	492	300	999	331	128	71	88		
27	3140	158	188	423	722	487	320	784	304	123	71	85		
28	1500	150	175	408	657	499	292	671	308	117	72	76		
29	850	144	166	412	---	460	261	671	286	113	74	79		
30	656	140	156	699	---	410	239	810	265	109	73	76		
31	524	---	150	758	---	364	---	864	---	107	72	---		
TOTAL	16192	9922	7364	22806	16819	15184	8437	14845	13180	5286	2739	2083		
MEAN	522	331	238	736	601	490	281	479	439	171	88.4	69.4		
MAX	3140	891	656	4320	1760	1340	457	1160	891	285	111	104		
MIN	64	140	137	138	240	309	222	254	265	107	71	58		
CFSM	7.85	4.98	3.58	11.1	9.04	7.37	4.23	7.20	6.60	2.57	1.33	1.04		
IN.	9.06	5.55	4.12	12.76	9.41	8.49	4.72	8.30	7.37	2.96	1.53	1.17		
AC-FT	32120	19680	14610	45240	33360	30120	16730	29450	26140	10480	5430	4130		
CAL YR 1985	TOTAL	104910	MEAN	287	MAX	3140	MIN	64	CFSM	4.32	IN.	58.69	AC-FT	208100
WTR YR 1986	TOTAL	134857	MEAN	369	MAX	4320	MIN	58	CFSM	5.55	IN.	75.44	AC-FT	267500

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

LOCATION.--Lat 47°30'52", long 123°19'43", in NW¼ sec.4, T.23 N., R.5 W., Mason County, Hydrologic Unit 17110017, Olympic National Park, on left bank 1.2 mi upstream from Lake Cushman, 2.8 mi upstream from Dry Creek, 11.3 mi northwest of Hoodsport, and at mile 29.2.

DRAINAGE AREA.--57.2 mi².

PERIOD OF RECORD.--July 1924 to current year.

REVISED RECORDS.--WSP 1286: 1932, 1935, 1937(M), 1942(M), 1947(P), 1948(M). WSP 1636: 1940(M). WSP 1736: 1927. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 762.26 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1934, water-stage recorder, and Nov. 1, 1934, to Nov. 10, 1941, nonrecording gages, on right bank at same datum.

REMARKS.--Estimated daily discharges: Jan. 18, June 11-30. Records good except those above 5,000 ft³/s, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--62 years, 507 ft³/s, 120.37 in/yr, 367,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s Nov. 5, 1934, gage height, 14.4 ft, from high-water mark, from rating curve extended above 9,800 ft³/s on basis of slope-area measurement at gage height 12.2 ft; minimum discharge recorded, 16 ft³/s Sept. 23, 1930, gage height, 1.12 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 20	1745	3,240	5.56	Jan. 18	1300	*16,500	a*11.0
Oct. 27	0930	5,570	7.01	Feb. 25	0030	3,440	5.71

Minimum discharge, 48 ft³/s Sept. 22, 23, gage height, 1.40 ft.

a From high-water mark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	1360	183	215	1650	695	430	332	843	288	106	62
2	80	1360	188	203	1230	596	391	584	712	279	108	61
3	79	1240	210	191	1140	543	365	535	645	253	107	61
4	76	813	379	182	948	527	346	453	588	238	103	59
5	74	716	866	726	792	495	325	468	519	223	99	57
6	79	702	640	854	644	502	315	424	475	212	97	56
7	79	593	694	462	552	1940	329	401	445	210	96	55
8	71	514	540	817	496	1180	364	372	431	206	97	54
9	68	475	425	803	457	786	352	366	423	200	96	54
10	69	439	360	1250	423	717	322	350	448	209	93	53
11	141	396	319	1160	392	826	312	318	464	213	89	52
12	103	366	288	676	364	895	293	493	450	200	85	50
13	85	347	267	637	341	781	272	848	437	182	85	55
14	98	325	250	715	325	678	256	501	445	170	84	56
15	130	499	238	696	842	571	263	427	425	161	83	52
16	144	488	231	934	1050	503	311	381	415	156	79	56
17	122	401	236	1430	577	455	299	383	390	156	75	57
18	125	353	251	9330	471	435	277	471	385	157	73	69
19	516	329	269	3090	412	425	265	573	370	151	72	56
20	1530	309	277	1600	376	425	305	683	355	149	71	52
21	1430	287	271	1070	349	529	402	477	345	150	69	50
22	1580	268	271	909	353	458	417	418	341	147	69	49
23	1020	254	285	943	1010	504	330	376	349	141	68	109
24	1770	245	296	775	2780	580	300	509	349	135	68	106
25	1600	237	303	637	2620	527	300	1550	329	130	66	97
26	1700	228	285	562	1420	819	303	998	305	128	65	110
27	3750	220	263	623	967	791	337	767	290	123	65	84
28	1740	207	241	568	839	739	322	684	290	117	66	71
29	1020	199	227	616	---	606	292	694	270	113	65	81
30	839	192	212	1220	---	528	271	829	257	109	66	69
31	663	---	202	1200	---	469	---	859	---	105	66	---
TOTAL	20863	14362	9967	35094	23820	20525	9666	17524	12790	5411	2531	1953
MEAN	673	479	322	1132	851	662	322	565	426	175	81.6	65.1
MAX	3750	1360	866	9330	2780	1940	430	1550	843	288	108	110
MIN	68	192	183	182	325	425	256	318	257	105	65	49
CFSM	11.8	8.37	5.63	19.8	14.9	11.6	5.63	9.88	7.45	3.06	1.43	1.14
IN.	13.57	9.34	6.48	22.82	15.49	13.35	6.29	11.40	8.32	3.52	1.65	1.27
AC-FT	41380	28490	19770	69610	47250	40710	19170	34760	25370	10730	5020	3870
CAL YR 1985	TOTAL	128722	MEAN	353	MAX	3750	MIN	67	CFSM	6.17	IN.	83.71
WTR YR 1986	TOTAL	174506	MEAN	478	MAX	9330	MIN	49	CFSM	8.36	IN.	113.49
											AC-FT	255300
											AC-FT	346100

SKOKOMISH RIVER BASIN

91

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°19'42", long 123°14'33", in NE¼NW¼ sec.7, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on left bank 1.1 mi upstream from South Fork Skokomish River, 5.4 mi southwest of Potlatch, 7.2 mi downstream from city of Tacoma's Cushman Dam No. 2, and at mile 10.1.

DRAINAGE AREA.--117 mi², includes 99 mi² above Cushman Dam No. 2 which is noncontributing except during spillage.

PERIOD OF RECORD.--March 1944 to November 1949 (destroyed by flood of Nov. 27, 1949), March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 63.49 ft above National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to Nov. 27, 1949, and Mar. 18 to May 9, 1950, water-stage recorder at site 200 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Entire flow of river normally diverted at Cushman Dam No. 2 to supply powerplant which discharges directly into sea (Hood Canal). Main portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No. 2 and may bypass this station. Flow regulated by Lake Cushman (station 12057500) and by pondage in Cushman Reservoir No. 2, from which spill and releases are infrequent.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft³/s Nov. 4, 1955, gage height, 10.45 ft; minimum recorded discharge, 1.3 ft³/s Sept. 5, 14, 16, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,220 ft³/s Jan. 18, gage height, 6.08 ft; minimum discharge, 9.1 ft³/s Oct. 1-3, Sept. 4-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	135	40	54	200	158	90	52	32	19	12	9.7
2	9.1	154	41	49	182	136	83	60	31	20	12	9.7
3	9.5	172	57	52	174	122	77	59	32	18	12	9.7
4	9.7	138	75	51	180	110	73	58	31	19	12	9.6
5	9.7	121	108	112	197	101	69	63	30	18	12	9.1
6	11	116	155	211	173	94	65	59	30	18	12	9.1
7	15	99	182	143	151	145	62	57	29	18	11	9.1
8	12	89	164	120	133	151	58	54	28	18	11	9.4
9	11	82	130	127	124	133	57	51	27	18	11	10
10	11	87	108	152	112	130	56	50	27	18	11	10
11	14	74	94	165	103	132	53	48	26	18	11	9.9
12	12	68	82	135	96	138	53	61	25	17	11	9.7
13	12	64	73	116	90	145	50	103	25	16	11	11
14	11	60	67	102	88	143	48	78	25	16	11	12
15	11	91	61	106	163	132	46	67	26	16	11	12
16	12	109	58	151	217	121	60	60	25	16	10	14
17	12	97	55	342	165	108	55	56	25	16	10	12
18	12	85	52	1640	136	98	49	55	26	16	10	13
19	23	76	50	1010	121	91	46	52	25	15	10	12
20	38	70	48	440	108	86	43	51	24	14	10	12
21	48	66	45	296	101	89	42	46	22	14	9.9	12
22	131	61	43	316	108	82	42	43	21	14	9.7	12
23	81	58	42	373	175	91	40	42	21	14	9.7	18
24	162	56	40	275	414	105	41	41	20	14	9.7	17
25	200	54	39	211	639	113	53	40	20	14	9.7	16
26	260	51	38	176	352	181	57	39	19	14	9.7	16
27	588	49	36	161	240	166	67	37	19	14	9.7	14
28	334	46	36	141	186	138	60	36	19	14	9.7	14
29	199	45	35	135	---	121	58	35	19	13	9.7	14
30	151	42	35	225	---	107	54	35	18	13	9.7	13
31	120	---	35	226	---	96	---	33	---	13	9.7	---
TOTAL	2538.1	2515	2124	7813	5128	3763	1707	1621	747	495	327.9	359.0
MEAN	81.9	83.8	68.5	252	183	121	56.9	52.3	24.9	16.0	10.6	12.0
MAX	588	172	182	1640	639	181	90	103	32	20	12	18
MIN	9.1	42	35	49	88	82	40	33	18	13	9.7	9.1
AC-FT	5030	4990	4210	15500	10170	7460	3390	3220	1480	982	650	712
CAL YR 1985	TOTAL	19268.1	MEAN	52.8	MAX	588	MIN	8.6	AC-FT	38220		
WTR YR 1986	TOTAL	29138.0	MEAN	79.8	MAX	1640	MIN	9.1	AC-FT	57800		

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°18'36", long 123°10'33", in SE¼NW¼ sec.15, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream side of right pier of bridge on U.S. Highway 101, 3.7 mi downstream from confluence of North and South Forks, 4.7 mi southwest of Potlatch, and at mile 5.3.

DRAINAGE AREA.--227 mi², includes 99 mi² above Cushman Dam No. 2 which is normally noncontributing.

PERIOD OF RECORD.--July 1943 to current year.

REVISED RECORDS.--WSP 1716: 1950(M), 1956. WSP 1932: Drainage area. WDR WA-72: 1968(M), 1971(M). WDR WA-75: 1974.

GAGE.--Water-stage recorder. Datum of gage is 10.67 ft above National Geodetic Vertical Datum of 1929. Prior to May 27, 1964, water-stage recorders or nonrecording gage at several sites about 0.6 mi upstream at different datums. Supplementary water-stage recorder on right bank at site 0.6 mi upstream at datum 16.47 ft above National Geodetic Vertical Datum of 1929 used Nov. 16 to Dec. 10, 1964, June 11 to July 7, and Nov. 2-24, 1965.

REMARKS.--No estimated daily discharges. Records good. Flow partly regulated by Lake Cushman and Cushman Reservoir No. 2. In normal years, practically entire flow of North Fork is diverted at Cushman Dam No. 2 and is discharged into Puget Sound through Cushman powerplant No. 2.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s Nov. 3, 1955, gage height, 12.6 ft, site and datum then in use; minimum discharge, 125 ft³/s Sept. 14-17, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1933 reached an elevation of 30.8 ft above National Geodetic Vertical Datum of 1929 at site on left bank 150 ft upstream from old highway bridge, discharge, 18,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,000 ft³/s Jan. 18, gage height, 16.45 ft; minimum discharge, 141 ft³/s Sept. 6, 7, 11-13, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	178	1900	426	494	2540	1680	972	741	606	266	188	155
2	174	2700	432	493	2510	1440	886	967	581	286	185	153
3	173	2900	549	476	2290	1270	828	1210	545	265	183	150
4	169	1960	872	452	2230	1150	789	1060	517	268	181	149
5	169	1590	1690	1030	2280	1060	740	1070	488	257	182	146
6	173	1700	2040	3130	1850	988	704	1050	469	249	181	145
7	188	1400	2130	1550	1550	2110	675	917	448	244	178	145
8	173	1180	1850	1430	1350	2400	651	828	429	238	177	147
9	167	1070	1340	1650	1200	1760	636	763	413	237	174	150
10	164	1020	1070	2230	1090	1620	608	720	399	242	173	145
11	191	890	905	2790	998	1720	595	674	386	252	174	144
12	202	809	800	1740	921	2030	587	783	378	250	174	142
13	187	749	732	1340	855	1990	565	2020	366	242	173	146
14	179	699	674	1260	818	1830	538	1390	372	233	169	150
15	188	949	632	1320	1700	1550	527	1090	404	227	167	148
16	211	1390	591	1940	3090	1330	667	920	590	226	164	161
17	224	1100	570	4590	1720	1170	744	821	392	220	164	158
18	233	924	554	14400	1350	1070	688	769	396	216	163	158
19	473	819	547	12100	1150	985	636	762	453	214	161	154
20	1330	753	540	5180	1030	920	603	865	399	209	160	148
21	2250	705	522	3040	953	1000	595	784	364	205	159	145
22	3990	655	500	2810	1010	976	598	715	346	203	158	144
23	2610	610	491	4080	2140	991	562	665	331	204	156	162
24	3170	581	485	2960	8290	1470	538	655	314	205	155	207
25	4350	550	477	2180	9770	1470	648	976	297	202	155	195
26	3600	519	464	1790	4700	2500	741	966	289	200	155	187
27	7890	505	445	1650	2670	2190	943	816	284	199	154	178
28	4490	479	424	1550	2030	1730	951	735	274	195	152	170
29	2280	461	409	1510	---	1410	867	683	267	193	155	169
30	1800	440	396	2740	---	1210	787	645	261	189	155	174
31	1510	---	386	2920	---	1080	---	633	---	189	155	---
TOTAL	43086	32007	23943	86825	64085	46100	20869	27693	12058	7025	5180	4725
MEAN	1390	1067	772	2801	2289	1487	696	893	402	227	167	158
MAX	7890	2900	2130	14400	9770	2500	972	2020	606	286	188	207
MIN	164	440	386	452	818	920	527	633	261	189	152	142
AC-FT	85460	63490	47490	172200	127100	91440	41390	54930	23920	13930	10270	9370
CAL YR 1985	TOTAL	256223	MEAN	702	MAX	7890	MIN	155	AC-FT	508200		
WTR YR 1986	TOTAL	373596	MEAN	1024	MAX	14400	MIN	142	AC-FT	741000		

BIG BEEF CREEK BASIN

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12069550 BIG BEEF CREEK NEAR SEABECK, WA

LOCATION.--Lat 47°38'27", long 122°47'02", in NW¼ sec. 22, T.25 N., R.1 W., Kitsap County, Hydrologic Unit 17110018, on left bank 1.1 mi upstream from county road bridge across Big Beef Harbor, and 1.9 mi east of Seabeck.

DRAINAGE AREA.--13.8 mi².

PERIOD OF RECORD.--August 1969 to October 1981, June 1983 to current year (seasonal records only).

REVISED RECORDS.--WDR WA-76-1: 1975(M).

GAGE.--Water-stage recorder. Elevation of gage is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 7, 1978, at site 110 ft downstream at datum 2.03 ft lower.

REMARKS.--Estimated daily discharges: June 1-3. Records good. Flow regulated by Lake Symington, 4.6 mi upstream. No diversions upstream from station.

AVERAGE DISCHARGE.--12 years (water years 1970-81), 37.9 ft³/s, 37.30 in/yr, 27,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 757 ft³/s Dec. 7, 1970, gage height, 4.92 ft; maximum gage height, 5.74 ft Jan. 16, 1974, site and datum then in use; minimum discharge, 2.3 ft³/s Aug. 30, 31, 1970, Sept. 2, 1974, but may have been less during period of no gage-height record Sept. 3-30, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge recorded during period June to October 1986, 42 ft³/s Oct. 26, gage height, 2.00 ft; minimum discharge, 3.1 ft³/s July 29 to Aug. 8, gage height, 1.01 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	9.4	5.3	3.2	3.4	3.3
2	8.9	5.1	3.2	3.4	3.3
3	8.0	5.1	3.2	3.4	3.3
4	6.6	5.2	3.2	3.4	3.3
5	6.4	5.0	3.3	3.4	3.3
6	6.4	4.5	3.2	3.4	3.3
7	6.5	4.4	3.3	3.5	3.4
8	6.3	4.3	3.3	3.6	3.4
9	6.1	4.3	3.4	3.5	3.3
10	6.1	4.3	3.6	3.5	3.3
11	6.1	4.1	3.7	3.5	3.3
12	6.1	4.1	3.7	3.4	3.3
13	6.1	4.2	3.7	3.9	3.3
14	6.7	4.1	3.6	4.0	3.3
15	6.1	4.1	3.6	3.4	3.4
16	6.0	4.5	3.7	3.3	3.4
17	6.9	4.2	3.7	3.3	3.5
18	6.7	4.0	3.8	3.9	3.6
19	6.5	3.7	3.9	3.4	3.6
20	6.4	3.7	3.8	3.3	3.7
21	6.0	3.6	3.7	3.3	3.8
22	5.7	3.7	3.7	3.3	3.9
23	5.6	3.8	3.9	3.9	3.9
24	5.6	3.6	4.0	3.5	3.8
25	5.6	3.4	3.7	3.3	7.4
26	5.6	3.4	3.6	3.9	24
27	5.3	3.4	3.7	3.3	8.8
28	5.1	3.4	3.8	3.3	5.5
29	5.3	3.3	3.9	3.3	5.0
30	5.1	3.2	4.0	3.4	12
31	--	3.2	3.7	--	21
TOTAL	189.2	126.2	111.8	104.4	166.7
MEAN	6.31	4.07	3.61	3.48	5.38
MAX	9.4	5.3	4.0	4.0	24
MIN	5.1	3.2	3.2	3.3	3.3
CFSM	.46	.29	.26	.25	.39
IN.	.51	.34	.30	.28	.45
AC-FT	375	250	222	207	331

MINTER RIVER BASIN

12073500 HUGE CREEK NEAR WAUNA, WA

LOCATION.--Lat 47°23'22", long 122°41'52", at north line sec.20, T.22 N., R.1 E., Pierce County, Hydrologic Unit 17110019, on right bank 25 ft upstream from bridge, 0.1 mi upstream from mouth, and 2.5 mi west of Wauna.

DRAINAGE AREA.--6.47 mi².

PERIOD OF RECORD.--July 1947 to September 1969, October 1977 to current year.

REVISED RECORDS.--WSP 1636: 1953-54, 1956, 1957(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 100 ft, from topographic map. Prior to Sept. 27, 1978, at site 50 ft downstream and prior to June 26, 1951, at datum 0.86 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1948-69, 1978-86), 11.3 ft³/s, 23.72 in/yr, 8,190 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 409 ft³/s, Jan. 18, 1986, gage height, 4.62 ft, from rating curve extended above 130 ft³/s; minimum discharge, 2.6 ft³/s Aug. 26, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 70 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2100	*409	*4.62	Feb. 25	0515	70	2.53

Minimum discharge, 3.7 ft³/s Sept. 6-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4.7	6.5	4.4	8.0	23	17	9.1	6.8	5.4	5.3	4.3	4.1		
2	4.7	7.0	5.0	7.4	22	15	8.6	8.2	5.3	5.4	4.3	4.1		
3	4.7	7.7	9.3	8.3	18	13	8.4	8.1	5.3	5.1	4.2	4.1		
4	4.6	6.2	7.8	6.6	17	12	8.4	7.3	5.3	5.3	4.3	4.0		
5	4.7	5.8	8.9	10	20	11	8.0	8.0	5.3	5.0	4.4	3.9		
6	5.2	6.4	11	11	16	11	7.9	7.5	5.3	5.0	4.3	3.9		
7	4.9	5.9	10	7.7	14	13	7.7	7.3	5.5	4.7	4.0	3.7		
8	4.7	5.5	8.7	7.6	13	16	7.7	7.1	5.4	4.8	4.0	3.7		
9	4.8	5.3	7.3	8.6	12	14	7.5	7.0	5.3	4.8	4.2	3.7		
10	4.8	5.1	6.5	8.9	12	13	7.5	7.2	5.3	5.1	4.2	4.0		
11	4.9	4.9	6.0	7.9	11	13	7.8	7.1	5.1	5.2	4.3	4.1		
12	4.5	4.7	5.7	7.1	11	12	7.8	7.4	5.1	4.9	4.3	4.0		
13	3.9	4.7	5.5	6.6	11	12	7.5	8.6	5.1	4.9	4.3	4.4		
14	3.9	4.7	5.3	6.5	11	12	7.3	7.1	5.4	4.9	4.2	4.6		
15	3.9	7.0	5.3	7.9	18	11	7.9	6.8	5.4	4.9	4.1	4.2		
16	4.4	7.0	5.2	12	19	9.8	8.4	6.6	5.3	5.1	4.1	4.1		
17	4.0	5.8	5.3	28	14	9.2	7.6	6.5	6.3	4.9	4.1	4.2		
18	4.0	5.4	5.6	186	12	9.0	7.2	6.5	7.2	4.7	4.1	5.0		
19	4.6	5.1	5.7	210	11	8.8	7.0	6.7	5.8	4.6	4.1	4.4		
20	7.0	5.1	5.6	62	9.9	8.6	6.9	7.5	5.4	4.6	4.1	4.3		
21	6.1	5.1	5.4	39	10	9.5	6.9	6.7	5.3	4.3	4.0	4.2		
22	9.9	4.9	5.3	42	12	8.9	6.9	6.5	5.1	4.4	4.0	4.2		
23	6.6	4.7	5.3	50	20	10	6.8	6.3	5.0	4.5	4.1	5.2		
24	11	4.7	5.2	32	41	12	6.8	6.2	5.0	4.5	4.1	4.7		
25	9.2	4.7	5.1	25	62	12	7.1	6.1	4.8	4.4	4.0	4.5		
26	12	4.6	5.1	20	40	13	7.6	6.3	4.9	4.4	4.0	5.9		
27	12	4.7	5.1	19	28	11	8.3	6.0	4.8	4.4	4.0	4.6		
28	8.0	4.7	5.0	17	21	10	7.3	5.8	4.9	4.4	4.0	4.4		
29	6.0	4.6	5.0	16	---	9.5	7.1	5.6	5.4	4.3	4.1	4.7		
30	5.6	4.5	5.0	25	---	10	6.8	5.6	5.0	4.3	4.2	4.5		
31	5.2	---	5.0	23	---	9.4	---	5.4	---	4.3	4.2	---		
TOTAL	184.5	163.0	190.6	926.1	528.9	355.7	227.8	211.8	159.7	147.4	128.6	129.4		
MEAN	5.95	5.43	6.15	29.9	18.9	11.5	7.59	6.83	5.32	4.75	4.15	4.31		
MAX	12	7.7	11	210	62	17	9.1	8.6	7.2	5.4	4.4	5.9		
MIN	3.9	4.5	4.4	6.5	9.9	8.6	6.8	5.4	4.8	4.3	4.0	3.7		
CFSM	.92	.84	.95	4.62	2.92	1.78	1.17	1.06	.82	.73	.64	.67		
IN.	1.06	.94	1.10	5.32	3.04	2.05	1.31	1.22	.92	.85	.74	.74		
AC-FT	366	323	378	1840	1050	706	452	420	317	292	255	257		
CAL YR 1985	TOTAL	2440.9	MEAN	6.69	MAX	24	MIN	3.9	CFSM	1.03	IN.	14.03	AC-FT	4840
WTR YR 1986	TOTAL	3353.5	MEAN	9.19	MAX	210	MIN	3.7	CFSM	1.42	IN.	19.28	AC-FT	6650

DESCHUTES RIVER BASIN

95

12079000 DESCHUTES RIVER NEAR RAINIER, WA

LOCATION.--Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, Hydrologic Unit 17110016, on right bank 75 ft upstream from county road crossing, 0.4 mi downstream from outlet of Reichel Lake, 2.7 mi southeast of Rainier, and at mile 25.9.

DRAINAGE AREA.--89.8 mi².

PERIOD OF RECORD.--June 1949 to September 1975; water years 1976-79 (annual maximum); June 1980 to July 1982, water years 1983-1986 (June to October seasonal records).

REVISED RECORDS.--WSP 1246: Drainage area. WDR WA-83-1: 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 348.77 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records excellent. Probably some small diversions for irrigation and domestic use upstream from station. No regulation. U.S. Geological Survey satellite telemeter at station. Water temperatures August 1968 to September 1970.

AVERAGE DISCHARGE.--27 years (water years 1950-75, 1981), 269 ft³/s, 40.68 in/yr, 194,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,780 ft³/s Jan. 15, 1974, gage height, 15.68 ft, from high-water mark in well, from rating curve extended above 3,900 ft³/s; minimum discharge, 16 ft³/s Sept. 7, 1963, gage height, 2.60 ft.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge during period June to October 1986, 310 ft³/s Oct. 27, gage height, 4.38 ft; minimum discharge, 24 ft³/s Sept. 7, 8, gage height, 3.06 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	84	50	36	28	41
2	79	54	36	28	39
3	76	54	35	28	38
4	74	59	34	27	36
5	74	57	34	26	35
6	72	51	34	25	35
7	73	48	34	25	34
8	71	48	33	27	33
9	68	47	32	39	33
10	65	50	32	34	32
11	63	59	32	29	32
12	62	56	32	28	30
13	60	52	33	27	31
14	60	50	32	28	30
15	62	48	30	27	30
16	59	50	29	30	29
17	61	61	29	33	29
18	75	55	29	51	29
19	78	49	28	44	29
20	67	47	29	35	29
21	63	45	29	32	30
22	59	43	28	30	29
23	56	42	27	32	29
24	54	42	27	60	29
25	53	41	27	55	35
26	51	41	27	48	78
27	50	40	27	47	246
28	50	40	27	44	194
29	52	39	27	46	125
30	51	38	29	44	129
31	--	38	29	---	267
TOTAL	1922	1494	947	1057	1845
MEAN	64.1	48.2	30.5	35.2	59.5
MAX	84	61	36	60	267
MIN	50	38	27	25	29
CFSM	.71	.54	.34	.39	.66
IN.	.80	.62	.39	.44	.76
AC-FT	3810	2960	1880	2100	3660

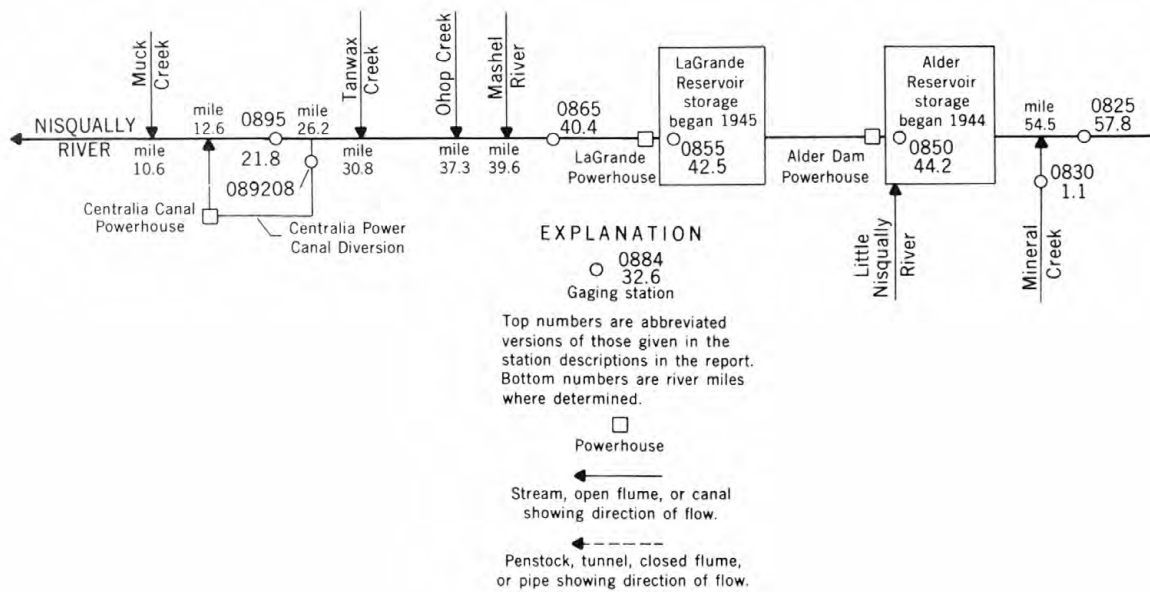


Figure 9.--Gaging stations in Nisqually River basin.

12082500 NISQUALLY RIVER NEAR NATIONAL, WA

LOCATION.--Lat 46°45'10", long 122°04'57", in SW¼SW¼ sec.29, T.15 N., R.6 E., Pierce County, Hydrologic Unit 17110015, on right bank 100 ft downstream from old railroad bridge, 1.2 mi west of National, 3.3 mi upstream from Mineral Creek, and at mile 57.8.

DRAINAGE AREA.--133 mi².

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1716: 1943(M), 1947(P), 1950-51, 1956(M). WDR WA-74-1: 1968(M), 1969(M), 1972(P).

GAGE.--Water-stage recorder. Elevation of gage is 1,450 ft, from river-profile map.

REMARKS.--Estimated daily discharges: Nov. 21 to Dec. 3, Apr. 30 to May 2, Aug. 31 to Sept. 23, Sept. 26. Records good except for estimated daily discharges, Nov. 21 to Dec. 3 and Aug. 31 to Sept. 23, which are fair. Small diversions for domestic use. Slight regulation at low flow by powerplant of Mount Rainier National Park on Paradise River. Water temperatures published October 1951 to September 1982. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--44 years, 775 ft³/s, 79.13 in/yr, 561,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s Dec. 2, 1977, gage height, 11.96 ft, from rating curve extended above 8,000 ft³/s on basis of slope-area measurement at gage height 11.25 ft; minimum discharge, 108 ft³/s Dec. 1, 3, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0515	4,610	8.02	Feb. 23	2200	*8,180	*9.79
Jan. 19	0300	4,200	8.01				

Minimum discharge, 123 ft³/s Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	261	1160	240	371	742	983	549	440	1610	516	476	450		
2	307	1890	250	343	674	830	508	463	1390	570	541	500		
3	295	1750	270	347	604	712	452	504	1100	490	549	530		
4	253	1950	301	318	553	644	428	505	974	406	491	450		
5	294	1510	338	441	514	607	397	515	885	339	448	450		
6	284	1690	461	593	452	558	379	548	811	340	494	470		
7	193	1640	560	469	406	940	388	546	702	400	539	380		
8	153	1330	497	550	372	1180	424	567	644	442	551	310		
9	134	1060	438	621	345	951	410	582	610	449	549	280		
10	141	860	398	709	320	789	383	649	714	557	522	290		
11	239	728	369	758	302	741	390	644	818	689	461	260		
12	191	634	341	671	282	669	381	694	818	527	421	240		
13	153	575	322	620	268	597	363	1290	801	444	469	215		
14	345	515	309	588	279	543	332	1190	801	422	519	200		
15	519	575	298	568	533	480	343	957	640	359	530	195		
16	377	640	289	628	838	433	362	802	566	383	477	200		
17	270	577	282	723	625	395	386	720	548	412	445	190		
18	239	509	287	1940	518	431	384	787	589	349	468	195		
19	329	485	297	3040	449	437	359	875	497	386	483	190		
20	511	454	313	1560	403	429	372	1060	426	475	491	180		
21	396	430	322	1050	390	503	492	918	430	553	496	175		
22	458	395	323	882	516	478	601	764	479	543	491	170		
23	579	365	340	883	3620	497	493	657	560	482	460	300		
24	1370	335	374	732	5560	691	442	650	654	463	440	417		
25	2830	320	406	626	3510	619	438	901	700	460	475	289		
26	1510	305	418	554	2240	655	406	1200	625	428	532	278		
27	1400	290	408	566	1460	638	483	1180	575	388	589	281		
28	1170	275	388	538	1160	634	510	1260	628	392	567	368		
29	825	265	367	520	---	603	469	1240	590	368	462	629		
30	696	250	342	693	---	687	450	1440	509	373	417	472		
31	612	---	325	712	---	601	---	1590	---	410	400	---		
TOTAL	17334	23762	10873	23614	27935	19955	12774	26138	21684	13815	15253	9554		
MEAN	559	792	351	762	998	644	426	843	723	446	492	318		
MAX	2830	1950	560	3040	5560	1180	601	1590	1610	689	589	629		
MIN	134	250	240	318	268	395	332	440	426	339	400	170		
CFSM	4.20	5.95	2.64	5.73	7.50	4.84	3.20	6.34	5.44	3.35	3.70	2.39		
IN.	4.85	6.65	3.04	6.60	7.81	5.58	3.57	7.31	6.06	3.86	4.27	2.67		
AC-FT	34380	47130	21570	46840	55410	39580	25340	51840	43010	27400	30250	18950		
CAL YR 1985	TOTAL	227381	MEAN	623	MAX	4230	MIN	134	CFSM	4.68	IN.	63.60	AC-FT	451000
WTR YR 1986	TOTAL	222691	MEAN	610	MAX	5560	MIN	134	CFSM	4.59	IN.	62.29	AC-FT	441700

NISQUALLY RIVER BASIN

12083000 MINERAL CREEK NEAR MINERAL, WA

LOCATION.--Lat 46°44'15", long 122°08'33", in NE¼SW¼ sec.35, T.15 N., R.5 E., Lewis County, Hydrologic Unit 17110015, on right bank 0.5 mi downstream from railroad bridge, 2.3 mi northeast of Mineral, and at mile 1.1.

DRAINAGE AREA.--75.2 mi².

PERIOD OF RECORD.--June 1942 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WRD WA-74: 1971(P).

GAGE.--Water-stage recorder. Elevation of gage is 1,340 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1-23, July 10-13. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--44 years, 373 ft³/s, 67.36 in/yr, 270,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,740 ft³/s Jan. 20, 1972, gage height, 10.87 ft; minimum discharge, 16 ft³/s Aug. 30, 31, 1970; minimum gage height, 1.40 ft Sept. 22, 23, 1950.

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)
Jan. 19	0130	2,790	7.91	Feb. 23	2215	*3,680	*8.60

Minimum discharge, 25 ft³/s Sept. 7, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	58	598	105	209	576	609	308	287	109	50	41	29		
2	56	906	117	188	520	514	302	318	100	49	39	29		
3	55	884	274	232	483	436	271	324	91	49	37	29		
4	53	1340	254	196	460	396	253	314	87	55	37	27		
5	50	1030	281	338	458	366	241	311	83	51	37	27		
6	49	1050	498	683	403	330	231	322	78	48	37	27		
7	52	897	614	437	363	484	220	329	78	46	37	26		
8	49	728	501	467	328	781	210	345	72	46	36	27		
9	48	595	385	557	298	629	202	338	68	46	36	29		
10	47	490	317	616	274	543	190	335	63	65	36	27		
11	64	407	270	648	252	566	185	332	59	75	36	27		
12	89	348	235	533	229	543	190	355	57	60	37	27		
13	81	301	208	458	216	474	180	720	55	55	36	26		
14	71	266	189	406	215	427	166	657	55	50	35	26		
15	84	318	172	382	471	382	174	519	54	49	35	26		
16	102	431	159	433	941	345	214	424	52	56	35	29		
17	106	373	150	573	589	308	248	375	55	60	33	27		
18	95	320	148	1750	469	301	234	334	58	55	33	32		
19	107	286	148	2270	396	289	211	313	62	51	33	28		
20	200	261	153	1280	347	261	198	347	59	49	32	27		
21	260	240	153	801	343	283	195	305	59	48	32	27		
22	335	220	153	704	527	276	201	271	54	47	31	27		
23	445	183	159	980	2080	310	181	243	52	47	30	32		
24	826	177	167	807	2680	581	170	220	51	46	30	45		
25	1920	165	173	614	1730	513	198	199	50	46	30	36		
26	1370	155	171	515	1330	563	207	185	51	44	30	38		
27	1210	145	161	491	933	499	306	173	49	43	29	36		
28	968	140	148	445	732	439	369	155	50	42	29	41		
29	625	133	136	420	---	404	331	139	50	42	29	44		
30	508	114	128	580	---	377	303	128	49	41	30	40		
31	431	---	117	569	---	327	---	118	---	42	31	---		
TOTAL	10414	13501	6844	19582	18643	13556	6889	9735	1910	1553	1049	918		
MEAN	336	450	221	632	666	437	230	314	63.7	50.1	33.8	30.6		
MAX	1920	1340	614	2270	2680	781	369	720	109	75	41	45		
MIN	47	114	105	188	215	261	166	118	49	41	29	26		
CFSM	4.47	5.98	2.94	8.40	8.86	5.81	3.06	4.18	.85	.67	.45	.41		
IN.	5.15	6.68	3.39	9.69	9.22	6.71	3.41	4.82	.94	.77	.52	.45		
AC-FT	20660	26780	13580	38840	36980	26890	13660	19310	3790	3080	2080	1820		
CAL YR 1985	TOTAL	93762	MEAN	257	MAX	1920	MIN	32	CFSM	3.42	IN.	46.38	AC-FT	186000
WTR YR 1986	TOTAL	104594	MEAN	287	MAX	2680	MIN	26	CFSM	3.82	IN.	51.74	AC-FT	207500

NISQUALLY RIVER BASIN

99

12085000 ALDER RESERVOIR AT ALDER, WA

LOCATION.--Lat 46°48'09", long 122°18'37", in SE¼NW¼ sec.9, T.15 N., R.4 E., Thurston County, Hydrologic Unit 17110015, near left end of Alder Dam on Nisqually River, 1.0 mi west of Alder, 1.7 mi upstream from La Grande Dam, 4.6 mi upstream from Mashel River, and at mile 44.2.

DRAINAGE AREA.--286 mi².

PERIOD OF RECORD.--November 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft above National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to July 8, 1946, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete-arch dam; storage began Nov. 7, 1944; dam completed in 1945. Usable capacity, 179,600 acre-ft between gage heights 1,114 ft, lower limit of operating range, and 1,207 ft, top of spillway gates. Unused storage below gage height 1,114 ft, 52,110 acre-ft. Crest of spillway is at gage height 1,177 ft. Figures given herein represent total contents. Water is used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 233,848 acre-ft Dec. 4, 1975, gage height, 1,207.68 ft; minimum contents since reservoir first filled, 86,710 acre-ft Mar. 26, 1969, gage height, 1,142.77 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 224,740 acre-ft June 5-7, gage height, 1,204.70 ft; minimum contents, 113,158 acre-ft Jan. 5, gage height, 1,158.66 ft.

Capacity table (gage height, in feet, and total contents, in acre-feet)
(Based on project surveys and maps by city of Tacoma in 1944)

1,144	88,510	1,170	135,800	1,200	210,840
1,150	97,910	1,180	158,260	1,207.7	233,910
1,160	115,960	1,190	183,270		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152319	180771	147430	115215	192805	213827	214117	203667	222400	209628	183423	168747
2	151395	185820	143996	114759	193386	214523	213305	204102	223660	208842	183346	167935
3	150590	190462	141885	114265	193597	214552	212319	204566	224230	208056	183040	167260
4	149440	196765	139478	113474	193730	214639	211536	205030	224530	207038	182760	166585
5	148478	199607	137901	114151	193784	215016	210811	205525	224740	205787	182301	165935
6	147589	202391	138136	117172	193307	215074	209948	206194	224740	204508	181868	165215
7	146563	204421	139350	118251	192541	216582	209104	206863	224470	203464	181638	164308
8	145332	205263	139669	119650	191538	218650	208697	207678	224020	202652	181306	163476
9	144175	205146	138988	121600	190279	220000	208260	208522	223360	202014	181000	162410
10	142770	204189	137923	124360	188948	220210	207678	209453	223060	201492	180669	161426
11	141798	202594	136466	127360	187445	220510	207154	210326	222820	201057	180131	160328
12	141035	200477	134698	129438	185872	220420	206601	211420	222730	200071	179491	159247
13	139776	198476	133123	130803	184851	219730	205961	214639	222460	199085	178954	158166
14	139030	196388	132010	131804	184290	218740	205234	216495	222220	198012	178518	156903
15	138519	194266	130742	132772	186104	217030	204769	216408	221590	197084	178109	155664
16	138136	192884	129438	134032	190462	215219	204508	215654	220780	196533	177599	154475
17	137090	191089	128166	136611	192568	213131	204363	214349	220030	195650	177038	153290
18	135925	188948	127762	149417	193439	211246	204189	213189	219370	194481	176400	152181
19	135197	186568	127060	164749	193175	209216	203928	212116	218500	193412	175967	151096
20	135571	184009	126180	171800	191881	206951	203580	212348	217450	192568	175456	150038
21	135426	181358	125220	175788	190879	206136	203435	212435	216292	192013	174970	148934
22	136008	178467	124240	179722	190749	205437	203435	212754	215219	191591	174484	147954
23	137027	175354	123300	184672	201927	205496	203174	212638	214349	190853	173946	147475
24	141580	172030	122420	188297	215712	207329	202739	213044	213740	189966	173306	147521
25	153267	168900	121620	190749	217180	209245	202362	213856	213363	189209	172795	147065
26	160730	165362	120864	192515	214291	211217	201927	215132	212812	188348	172489	146358
27	167260	161978	119948	194025	212145	212551	202014	216118	212145	187523	172081	145811
28	172361	158448	118980	193864	212638	213247	202594	217240	211739	186439	171750	145423
29	175149	154941	117857	192568	---	213769	203058	218140	211188	185438	171163	145811
30	177038	151257	116879	192700	---	214233	203290	219520	210443	184570	170424	145970
31	178237	---	115671	192673	---	214349	---	220900	---	183831	169509	---
MAX	178237	205263	147430	194025	217180	220510	214117	220900	224740	209628	183423	168747
MIN	135197	151257	115671	113474	184290	205437	201927	203667	210443	183831	169509	145423
†	1188.03	1176.99	1159.99	1193.63	1200.62	1201.21	1197.40	1203.42	1199.86	1190.22	1184.61	1174.68
‡	+24924	-26980	-35586	+77002	+19965	+1711	-11059	+17610	-10466	-26603	-14322	-23539

CAL YR 1985.....† -24775
WTR YR 1986.....‡ -7343

† Gage height, in feet, at end of month.
‡ Change in contents, in acre-feet.

NISQUALLY RIVER BASIN

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA

LOCATION.--Lat 46°49'23", long 122°18'13", in SW¼SE¼ sec.33, T.16 N., R.4 E., Thurston County, Hydrologic Unit 17110015, at left end of gate control structure, 1.1 mi southeast of La Grande, 1.7 mi downstream from Alder Dam, and at mile 42.5.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--January 1945 to current year. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Monthend contents January 1945 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft below National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to June 12, 1947, monthend gage heights furnished by city of Tacoma from temporary gages in pool upstream from dam.

REMARKS.--Reservoir is formed by concrete gravity dam completed in 1944; storage began in February 1945. Usable storage, 1,053 acre-ft between gage heights 910 ft, minimum practical head, and 935 ft, normal reservoir level. Dead storage below gage height 910 ft, 1,629 acre-ft. Figures given herein represent total contents. Water used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,760 acre-ft May 14, 1950, gage height, 936.4 ft; minimum contents observed since reservoir first filled, 1,370 acre-ft Aug. 24, 1956, gage height, 900.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,677 acre-ft Oct. 6, gage height, 934.91 ft; minimum contents, 2,115 acre-ft Nov. 7, gage height, 923.55 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	929.89	2,412	--
Oct. 31.....	929.76	2,405	-7
Nov. 30.....	930.41	2,438	+33
Dec. 31.....	930.33	2,434	-4
CAL YR 1985.....	--	--	+31
Jan. 31.....	930.96	2,466	+32
Feb. 28.....	930.50	2,442	-24
Mar. 31.....	930.37	2,436	-6
Apr. 30.....	930.43	2,439	+3
May 31.....	929.89	2,412	-27
June 30.....	930.95	2,466	+54
July 31.....	930.78	2,457	-9
Aug. 31.....	930.65	2,450	-7
Sept. 30.....	929.96	2,415	-35
WTR YR 1986.....	--	--	+3

NISQUALLY RIVER BASIN

101

12086500 NISQUALLY RIVER AT LA GRANDE, WA

LOCATION.--Lat 46°50'25", long 122°19'38", in NW¼SE¼ sec.29, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on right bank 0.4 mi downstream from city of Tacoma powerplant, 0.6 mi northwest of La Grande, 0.8 mi upstream from Mashel River, and at mile 40.4.

DRAINAGE AREA.--292 mi².

PERIOD OF RECORD.--September 1906 to October 1911, November to December 1911 (gage heights only), October 1919 to September 1931, October 1943 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" September 1906 to October 1911, and as "near La Grande" November to December 1911 and October 1919 to September 1931.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50. WRD WA-74: 1956(M), 1959-61(M), 1965.

GAGE.--Water-stage recorder. Elevation of gage is 490 ft, from river-profile map. See WSP 1932 for history of changes prior to Feb. 8, 1945.

REMARKS.--Estimated daily discharges: Jan. 19-30. Records good except those above 5,000 ft³/s, which are fair. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (station 12085000) since November 1944, and by La Grande Reservoir (station 12085500) since February 1945. All diversions returned to river upstream from gage. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1907-11, 1920-31, 1944-86), 1,435 ft³/s, 66.74 in/yr, 1,040,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s Dec. 4, 1975, gage height, 11.90 ft; practically no flow on many occasions at site "near La Grande" (which excluded diversion) as a result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,530 ft³/s Feb. 25, gage height, 7.54 ft; minimum discharge, 460 ft³/s Aug. 2, gage height, 3.04 ft; minimum daily discharge, 574 ft³/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	831	1070	2240	1080	2160	1890	1440	933	1100	1090	804	863
2	827	1070	2250	1110	1670	1850	1570	966	1040	1100	777	860
3	830	1070	2140	1150	1660	1840	1570	988	1040	1090	781	860
4	833	1410	2070	1150	1660	1600	1410	987	1060	1090	808	860
5	830	2080	1860	1150	1660	1400	1310	982	1060	1090	812	861
6	831	2180	1660	1160	1660	1380	1310	944	1060	1090	820	861
7	831	2260	1660	1150	1660	1580	1270	917	1080	1040	841	865
8	832	2240	1650	1130	1660	2050	1140	884	1110	973	826	866
9	836	2240	1660	1020	1660	2080	1090	866	1110	951	814	863
10	838	2240	1650	928	1670	2080	1120	873	1090	1000	816	862
11	831	2240	1660	888	1660	2160	1120	872	1090	1080	824	862
12	835	2240	1670	890	1670	2240	1120	854	1090	1080	843	862
13	837	2070	1470	915	1420	2220	1120	1080	1130	1080	843	862
14	835	1960	1310	974	1160	2210	1080	1590	1130	1050	826	861
15	831	2230	1310	982	1170	2220	1060	2010	1130	988	816	862
16	847	2240	1270	1020	1180	2230	1060	2010	1150	1030	814	861
17	895	2240	1150	971	1170	2230	1060	2010	1160	1080	815	850
18	890	2240	997	983	1280	2230	1030	2010	1160	1110	815	845
19	889	2250	1000	966	1570	2240	1000	1960	1150	1060	797	797
20	890	2250	1080	911	1830	2190	1010	1600	1150	1060	766	748
21	891	2240	1150	889	1830	1750	1050	1420	1180	985	799	750
22	890	2250	1150	884	1840	1530	1060	1190	1180	923	786	706
23	892	2250	1150	893	1950	1530	1060	1180	1160	1020	790	666
24	892	2250	1150	894	3710	1540	1080	864	1120	1040	791	667
25	896	2270	1150	887	6190	1200	1100	855	1060	1010	736	668
26	896	2270	1150	886	6530	1050	1100	982	1060	1000	783	667
27	896	2280	1150	889	4900	1220	1100	1060	1040	1010	801	668
28	903	2270	1150	1600	2850	1310	1060	1070	1010	1030	806	666
29	898	2270	1140	2000	---	1310	1020	1150	1010	1000	839	609
30	896	2220	1140	2150	---	1310	979	1150	1030	965	865	574
31	960	---	1110	2240	---	1310	---	1150	---	915	862	---
TOTAL	26809	62390	44347	34740	61030	54980	34499	37407	32940	32030	25116	23672
MEAN	865	2080	1431	1121	2180	1774	1150	1207	1098	1033	810	789
MAX	960	2280	2250	2240	6530	2240	1570	2010	1180	1110	865	866
MIN	827	1070	997	884	1160	1050	979	854	1010	915	736	574
AC-FT	53180	123800	87960	68910	121100	109100	68430	74200	65340	63530	49820	46950
MEAN†	1270	1628	852	2372	2539	1802	964	1492	923	600	577	393
CFSM†	4.35	5.58	2.92	8.12	8.70	6.17	3.30	5.11	3.16	2.05	1.98	1.35
IN.†	5.01	6.22	3.36	9.37	9.05	7.11	3.68	5.89	3.53	2.37	2.28	1.50
AC-FT†	78100	96850	52370	145900	141000	110800	57370	91780	54930	36920	35490	23380

CAL YR 1985 TOTAL 418834 MEAN 1147 MAX 5410 MIN 631 AC-FT 830800 MEAN† 1113 CFSM† 3.81 IN.† 51.75 AC-FT† 806100
WTR YR 1986 TOTAL 469960 MEAN 1288 MAX 6530 MIN 574 AC-FT 932200 MEAN† 1277 CFSM† 4.37 IN.† 59.39 AC-FT† 924900

† Adjusted for change in contents of Alder and La Grande Reservoirs.

NISQUALLY RIVER BASIN

12089208 CENTRALIA POWER CANAL NEAR MCKENNA, WA

LOCATION.--Lat 46°54'01", long 122°29'50", in NE¼SW¼ sec.1, T.16 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on right bank 500 ft downstream from headworks at dam, and 3.7 mi southeast of McKenna.

PERIOD OF RECORD.--March 1979 to current year.

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

REMARKS.--No estimated daily discharges. Records good. Flow regulated by headworks 500 ft upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 887 ft³/s Dec. 15, 1979, gage height, 7.39 ft; minimum discharge observed, 31 ft³/s Sept. 10-15, 1984, gage height, -0.55 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 799 ft³/s Jan. 18, gage height, 6.94 ft; minimum discharge, 91 ft³/s, Sept. 28-30, gage height, 0.42 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	283	406	399	490	758	744	759	609	633	548	442	401
2	285	416	401	542	740	748	767	602	624	575	414	405
3	281	403	411	636	756	756	764	657	576	574	427	409
4	283	432	430	643	758	751	761	689	571	578	432	407
5	290	428	576	661	758	744	762	688	596	594	448	407
6	290	427	691	727	760	753	762	685	588	598	434	407
7	290	426	720	685	729	766	761	680	590	552	466	406
8	293	419	701	703	620	763	728	666	602	466	463	410
9	289	417	729	728	581	755	619	615	637	435	442	411
10	283	406	744	726	683	756	633	614	627	449	446	404
11	284	391	756	725	761	747	633	656	610	534	441	406
12	286	397	760	647	758	751	639	657	574	604	452	412
13	290	401	751	586	750	757	641	702	604	598	436	414
14	290	401	755	576	690	757	626	761	611	569	438	415
15	283	432	762	584	742	754	601	754	596	486	443	415
16	296	437	769	621	758	758	625	757	587	512	399	416
17	339	429	741	692	734	760	675	758	609	690	400	411
18	350	424	485	762	723	765	720	757	631	717	401	393
19	340	419	448	734	749	757	684	759	645	625	389	394
20	404	410	441	732	759	754	617	729	631	587	369	355
21	431	406	447	734	759	734	608	731	609	543	366	356
22	374	404	455	755	766	744	625	733	613	466	375	327
23	419	402	533	772	750	752	611	745	560	507	369	272
24	456	402	562	766	728	766	573	543	456	577	369	356
25	435	403	561	759	751	734	594	427	483	565	335	349
26	398	404	561	751	747	729	617	473	526	564	332	324
27	404	401	559	711	743	746	644	576	530	553	366	325
28	411	399	536	740	747	756	694	590	495	571	382	186
29	405	400	540	741	---	753	717	596	497	567	385	91
30	413	399	540	765	---	758	691	621	505	519	399	91
31	406	---	521	759	---	754	---	631	---	479	400	---
TOTAL	10581	12341	18285	21453	20558	23322	20151	20461	17416	17202	12660	10775
MEAN	341	411	590	692	734	752	672	660	581	555	408	359
MAX	456	437	769	772	766	766	767	761	645	717	466	416
MIN	281	391	399	490	581	729	573	427	456	435	332	91
AC-FT	20990	24480	36270	42550	40780	46260	39970	40580	34540	34120	25110	21370
CAL YR 1985	TOTAL	197736	MEAN	542	MAX	769	MIN	83	AC-FT	392200		
WTR YR 1986	TOTAL	205205	MEAN	562	MAX	772	MIN	91	AC-FT	407000		

NISQUALLY RIVER BASIN

103

12089500 NISQUALLY RIVER AT MCKENNA, WA

LOCATION.--Lat 46°56'01", long 122°33'35", in SE¼NW¼ sec.28, T.17 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank at downstream side of State Highway 507 bridge at McKenna, and at mile 21.8.

DRAINAGE AREA.--517 mi².

PERIOD OF RECORD.--October 1947 to September 1968, May 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 285.47 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1968, water-stage recorder at site 80 ft downstream at present datum. Prior to Oct. 11, 1985, water-stage recorder at site 20 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Oct. 1-11, June 23-26, Aug. 26 to Sept. 9, Sept. 12-16. Records good except for period June through September, which is fair. Flow regulated by Alder Reservoir (station 12085000) at mile 44.2 and La Grande Reservoir (station 12085500) at mile 42.5. Centralia Power Canal (station 12089208) diverts water 4.4 mi upstream from station, which is returned to river at powerplant 9.2 mi downstream from station. Minor diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--29 years (water years 1948-67, 1978-86), 1,341 ft³/s, 971,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s Jan. 29, 1965, gage height, 13.00 ft at site then in use; minimum discharge, 20 ft³/s Sept. 10, 11, 1965, Aug. 31, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,700 ft³/s Feb. 25, gage height, 7.42 ft; minimum daily discharge, 354 ft³/s Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	565	881	1800	715	1920	1790	926	612	562	516	386	460
2	565	1160	1840	732	1420	1620	1150	625	498	528	370	460
3	570	1040	2210	758	1300	1520	1110	654	517	512	357	450
4	570	1750	2150	703	1250	1280	971	629	542	522	358	460
5	570	2510	1970	739	1240	963	801	614	518	521	363	450
6	570	2570	1680	1140	1200	915	771	636	517	504	368	450
7	565	2550	1900	920	1190	1030	724	645	528	501	361	460
8	560	2390	1750	866	1250	2060	627	639	549	511	354	450
9	570	2300	1440	778	1260	2070	619	613	531	507	361	450
10	570	2180	1280	717	1150	1940	623	632	504	528	358	457
11	565	2110	1200	666	1070	1960	614	638	520	578	371	441
12	572	2020	1150	638	1060	2070	636	608	530	521	390	445
13	570	1880	1000	633	940	1960	639	924	540	504	400	445
14	565	1580	766	670	668	1940	629	1500	526	503	390	445
15	577	1880	740	644	1020	1870	623	1830	528	516	370	445
16	571	2100	697	676	1800	1820	642	1690	557	517	403	440
17	591	2110	638	749	1490	1780	677	1600	560	586	403	439
18	564	2050	659	1220	1260	1820	670	1540	558	520	401	445
19	573	2000	685	2300	1290	1960	608	1560	573	502	403	443
20	596	1990	735	1340	1530	1900	614	1280	568	508	400	420
21	582	1960	809	934	1480	1480	628	1160	593	494	407	420
22	649	1930	798	786	1690	1210	626	799	599	474	407	419
23	676	1860	730	931	3760	1140	616	729	650	482	411	434
24	645	1860	700	957	6560	1840	630	636	680	483	409	472
25	1170	1870	696	778	7040	1420	631	617	580	458	407	435
26	1020	1900	694	679	7070	1030	627	656	540	440	450	439
27	934	1880	685	696	5190	989	650	638	516	449	440	433
28	1240	1860	691	1170	2840	1020	775	605	503	450	430	608
29	994	1850	683	1810	---	941	688	648	501	444	450	773
30	804	1820	682	1920	---	930	655	624	508	446	460	736
31	781	---	680	1970	---	895	---	607	---	444	460	---
TOTAL	20914	57841	34138	30235	60938	47163	21200	27188	16396	15469	12298	14124
MEAN	675	1928	1101	975	2176	1521	707	877	547	499	397	471
MAX	1240	2570	2210	2300	7070	2070	1150	1830	680	586	460	773
MIN	560	881	638	633	668	895	608	605	498	440	354	419
AC-FT	41480	114700	67710	59970	120900	93550	42050	53930	32520	30680	24390	28010
CAL YR 1985	TOTAL	297349	MEAN	815	MAX	5530	MIN	374	AC-FT	589800		
WTR YR 1986	TOTAL	357904	MEAN	981	MAX	7070	MIN	354	AC-FT	709900		

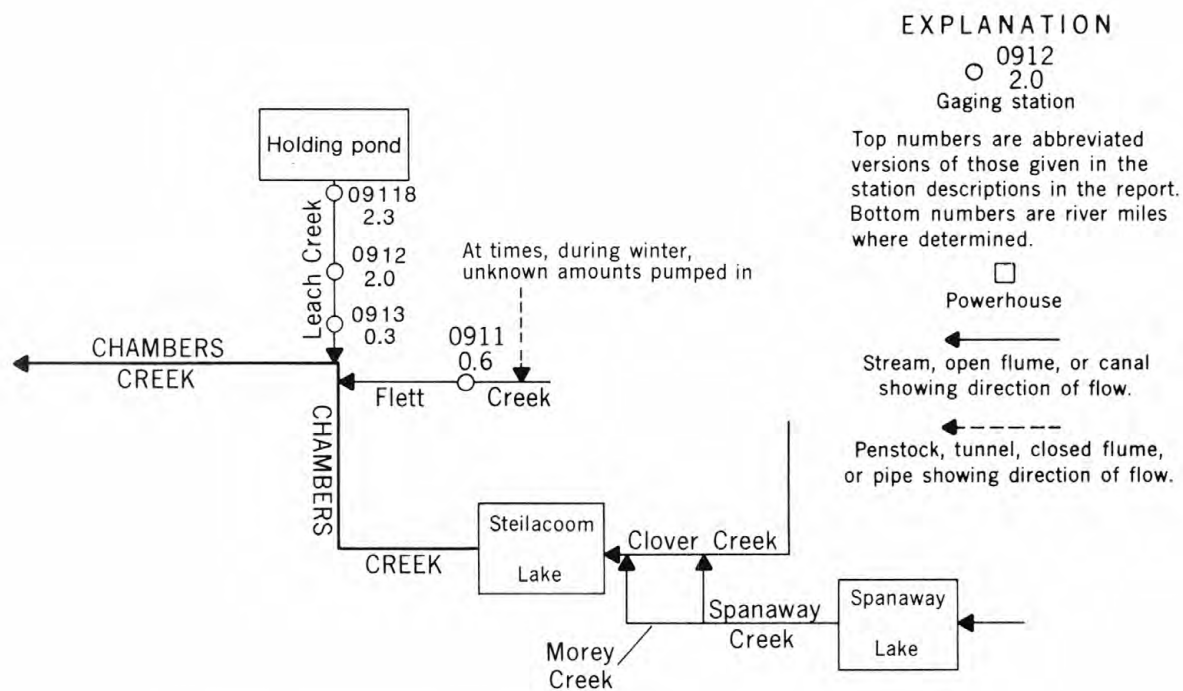


Figure 10.--Gaging stations in Chambers Creek basin.

CHAMBERS CREEK BASIN

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12091100 FLETT CREEK AT TACOMA, WA

LOCATION.--Lat 47°11'23", long 122°31'08", in NE¼SW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at 75th Street, 0.6 mi upstream from mouth and 0.7 mi west of city limits of Tacoma.

DRAINAGE AREA.--7.33 mi², excludes 0.68 mi² storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--June 1959 to September 1985, October 1985 to current year (seasonal records only).

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 200 ft, from topographic map.

REMARKS.--No estimated daily discharges. Records poor. Storm sewer drainage upstream from station. Several diversions for irrigation and industrial use. At times during winter months 1,000 gpm are pumped into creek for short intervals from Mountain View Memorial Park. Since October 1979, Flett Creek flood control retention ponds store and release flood water upstream from station. Chemical analyses October 1964 to September 1965.

AVERAGE DISCHARGE.--26 years (water years 1960-85), 10.0 ft³/s, 7,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132 ft³/s Mar. 5, 1972, gage height, 2.97 ft, from rating curve extended above 45 ft³/s on basis of computation of peak flow over weir at gage height 2.82 ft; minimum discharge, 0.29 ft³/s Aug. 27, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October to April, 60 ft³/s Jan. 19, gage height, 2.71 ft; minimum discharge, 0.33 ft³/s Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO APRIL 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	.98	18	11	24	38	32	20
2	3.7	18	13	23	39	31	18
3	4.6	18	27	28	38	30	15
4	3.7	20	31	26	38	29	13
5	1.1	20	31	27	37	27	13
6	1.1	20	32	27	36	27	14
7	.58	19	33	27	35	27	13
8	.51	18	32	27	34	29	12
9	.44	18	32	26	32	30	13
10	.45	17	32	26	30	30	12
11	7.1	14	32	27	28	30	13
12	7.1	12	31	26	18	30	14
13	4.3	13	29	20	19	30	12
14	1.3	12	23	20	18	30	14
15	1.7	16	21	21	26	24	21
16	3.5	19	18	25	26	19	28
17	2.6	21	16	28	26	17	28
18	2.2	21	19	38	26	17	23
19	3.1	20	27	56	26	15	18
20	8.7	17	20	52	25	14	16
21	10	14	18	47	26	18	13
22	8.9	12	19	47	28	19	15
23	12	11	17	49	33	21	17
24	20	12	18	48	31	24	15
25	21	15	17	46	38	25	18
26	23	11	17	46	38	28	19
27	26	11	18	46	37	28	17
28	27	12	19	45	35	28	18
29	21	13	19	41	---	28	17
30	18	11	20	38	---	28	15
31	18	---	19	38	---	23	---
TOTAL	263.66	473	711	1065	861	788	494
MEAN	8.51	15.8	22.9	34.4	30.8	25.4	16.5
MAX	27	21	33	56	39	32	28
MIN	.44	11	11	20	18	14	12
AC-FT	523	938	1410	2110	1710	1560	980

CAL YR 1985 TOTAL 4166.41 MEAN 11.4 MAX 33 MIN .44 AC-FT 8260

CHAMBERS CREEK BASIN

12091180 LEACH CREEK AT HOLDING POND, AT FIRCREST, WA

LOCATION.--Lat 47°13'29", long 122°30'32", in NE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at holding pond dam, 0.2 mi north of southern city limits of Fircrest, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--4.59 mi², includes 0.68 mi² of storm drainage from Flett Creek basin.

PERIOD OF RECORD.--July 1967 to September 1985, October 1985 to current year (seasonal records only).

REVISED RECORDS.--WDR WA-77-1: 1975(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 200 ft above National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REMARKS.--Estimated daily discharges: Dec. 17-31. Records fair. Drainage into basin influenced by urbanization of area. Flow can be regulated by manually operated gate in flood-control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No known diversion upstream from station.

AVERAGE DISCHARGE.--18 years (water years 1968-85), 4.12 ft³/s, 2,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 132 ft³/s Jan. 18, 1986, by computation of peak flow through culvert, gage height, 12.18 ft; minimum discharge, little or no flow Aug. 8, 9, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October to April, 132 ft³/s Jan. 18, by computation of peak flow through culvert, gage height, 12.18 ft; minimum discharge, 0.70 ft³/s Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1985 TO APRIL 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	1.3	14	1.7	13	8.3	1.8	3.2
2	1.3	6.9	6.4	16	8.0	1.6	2.0
3	1.2	4.3	36	4.3	4.1	1.6	1.8
4	1.2	6.5	8.9	3.0	6.8	1.8	1.7
5	1.2	5.5	8.4	19	4.0	1.8	1.6
6	8.9	2.8	5.8	7.1	1.8	1.8	1.6
7	1.9	2.9	8.3	2.6	1.7	8.6	1.5
8	1.8	3.4	2.5	6.6	1.5	11	1.5
9	2.2	6.0	1.9	9.7	1.4	2.9	1.4
10	2.5	2.0	1.7	5.7	1.4	3.2	1.5
11	5.5	1.8	1.7	2.5	1.4	3.4	2.8
12	2.5	1.7	1.7	2.0	1.3	1.7	1.5
13	2.1	1.7	1.7	2.0	2.9	4.2	1.4
14	2.1	1.7	1.7	2.1	7.7	1.8	1.4
15	2.1	22	1.7	9.7	25	1.6	15
16	7.5	3.9	1.7	14	5.5	1.5	4.5
17	2.5	13	1.5	22	2.9	1.4	2.0
18	2.2	2.7	1.5	79	2.1	3.0	1.8
19	9.5	4.8	1.5	26	1.8	1.5	1.7
20	21	4.8	1.5	6.0	2.1	1.8	1.5
21	7.5	2.2	1.5	4.0	12	6.0	1.6
22	19	1.9	1.5	19	6.8	1.7	2.3
23	12	1.8	1.5	11	37	12	1.3
24	46	1.8	1.5	3.4	11	6.6	1.7
25	18	1.8	1.5	2.7	19	11	9.4
26	35	1.8	1.5	2.6	3.0	3.6	7.3
27	20	1.7	1.5	6.9	2.1	2.3	7.8
28	6.6	1.7	1.5	3.3	1.8	2.6	6.3
29	2.7	1.7	1.5	5.2	---	2.1	3.1
30	4.6	1.7	1.5	23	---	1.8	1.6
31	2.1	---	1.7	4.9	---	1.7	---
TOTAL	254.0	130.5	114.5	338.3	184.4	109.4	93.8
MEAN	8.19	4.35	3.69	10.9	6.59	3.53	3.13
MAX	46	22	36	79	37	12	15
MIN	1.2	1.7	1.5	2.0	1.3	1.4	1.3
AC-FT	504	259	227	671	366	217	186

CAL YR 1985 TOTAL 1263.5 MEAN 3.46 MAX 46 MIN 1.1 AC-FT 2510

CHAMBERS CREEK BASIN

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12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 1.0 mi south of Fircrest, and 2 mi upstream from mouth.

DRAINAGE AREA.--4.73 mi² includes 0.68 mi² storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to September 1985, October 1985 to current year (seasonal records).

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and metal weir control. Prior to Oct. 19, 1979, at site 20 ft downstream at same datum. Elevation of gage is 190 ft, from topographic map.

REMARKS.--Estimated daily discharges: Feb. 27 to Mar. 4. Records fair. Since Oct. 1, 1961, flow may be regulated at dam upstream from station. Storage is not retained and observed annual runoff closely represents natural runoff of basin. Drainage into basin influenced by urbanizing of area. No known diversion upstream from station.

AVERAGE DISCHARGE.--28 years (water years 1958-85), 4.38 ft³/s, 12.58 in/yr, 3,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 198 ft³/s Feb. 28, 1972, gage height, 3.51 ft, from rating curve extended above 60 ft³/s, site and datum then in use; maximum gage height, 4.03 ft, from outside high-water mark Jan. 18, 1986; minimum discharge, 0.1 ft³/s Sept. 22, 1965, gage height, 1.02 ft at site in use; minimum gage height, 0.15 ft June 24, 1980, due to regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October to April, 188 ft³/s Jan. 18, gage height, 3.97 ft, from high-water mark in well; maximum gage height, 4.03 ft, from outside high-water mark Jan. 18; minimum discharge, 1.3 ft³/s Oct. 4, gage height, 0.22 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1985 TO APRIL 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	1.8	14	1.8	14	9.3	2.2	3.8
2	1.8	7.0	7.1	18	8.9	2.1	2.4
3	1.6	4.5	38	3.6	4.5	2.1	2.0
4	1.6	7.0	9.2	2.7	7.9	2.1	2.1
5	1.7	5.7	9.1	21	4.8	2.1	2.0
6	10	2.9	6.2	7.6	2.4	2.1	2.0
7	1.9	2.9	9.3	2.3	2.3	5.8	2.0
8	1.7	3.7	2.7	7.2	2.2	11	2.0
9	1.7	6.2	2.2	12	2.2	11	2.0
10	1.7	2.0	2.0	6.1	2.0	3.8	2.0
11	4.6	1.8	2.0	2.4	2.0	4.3	3.7
12	2.1	1.8	2.1	2.0	2.0	2.4	2.4
13	1.9	1.8	1.9	2.2	3.8	4.7	2.0
14	1.9	1.8	1.9	2.3	9.6	3.3	2.1
15	1.9	23	1.9	12	29	2.2	14
16	6.4	3.2	1.9	16	6.6	2.0	9.0
17	1.9	14	1.8	25	3.1	2.0	2.4
18	1.8	2.3	1.8	97	2.3	3.7	2.1
19	7.3	4.6	1.8	50	2.1	2.1	2.0
20	21	4.6	1.8	6.1	2.5	2.0	2.0
21	6.6	2.3	1.8	3.7	12	7.8	2.1
22	19	2.1	1.7	21	7.1	2.6	3.1
23	11	1.9	1.7	11	42	8.7	2.0
24	52	1.9	1.7	3.3	13	14	2.2
25	19	1.9	1.7	2.7	24	6.1	11
26	39	1.9	1.7	2.5	3.6	9.3	9.0
27	20	2.0	1.7	8.0	2.7	2.4	9.6
28	8.7	1.9	1.7	3.7	2.4	3.0	8.0
29	2.4	1.9	1.7	5.8	---	2.2	4.1
30	3.6	1.8	1.7	25	---	2.4	2.4
31	2.1	---	2.1	5.0	---	2.1	---
TOTAL	259.7	134.4	125.7	401.2	216.3	133.6	117.5
MEAN	8.38	4.48	4.05	12.9	7.72	4.31	3.92
MAX	52	23	38	97	42	14	14
MIN	1.6	1.8	1.7	2.0	2.0	2.0	2.0
CFSM	1.77	.95	.86	2.73	1.63	.91	.83
IN.	2.04	1.06	.99	3.16	1.70	1.05	.92
AC-FT	515	267	249	796	429	265	233

CAL YR 1985 TOTAL 1462.3 MEAN 4.01 MAX 52 MIN 1.4 CFSM .85 IN. 11.50 AC-FT 2900

CHAMBERS CREEK BASIN

12091300 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW¼NW¼ sec. 26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 0.3 mi upstream from mouth, and 4.1 mi northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi², includes 0.68 mi² storm drainage from Flett Creek basin. Area used prior to July 1967, 5.88 mi².

PERIOD OF RECORD.--February 1957 to September 1985, October 1985 to current year (seasonal records only).

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 140 ft, from topographic map. Prior to June 27, 1973, water-stage recorder at site 150 ft upstream at different datum. Supplementary water-stage recorder at site 50 ft downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973, to Mar. 14, 1975, nonrecording gage at site 350 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 18, 19. Records poor. Drainage basin influenced by urbanizing of area. Some pumping for community use upstream from gage. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin.

AVERAGE DISCHARGE.--28 years, 10.4 ft³/s, 7,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 378 ft³/s Jan. 18, 1986, by culvert computation of peak flow through culvert, gage height, 5.21 ft, from outside high-water mark; minimum discharge, 2.0 ft³/s July 3, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge for period October to April, 378 ft³/s Jan. 18, by culvert computation of peak flow through culvert, gage height, 5.21 ft, from outside high-water mark; minimum daily discharge, 4.5 ft³/s Apr. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO APRIL 1986
MEAN VALUES

	DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR		
	1	7.0	22	7.4	24	17	8.1	14		
	2	6.6	16	9.9	23	26	7.5	9.9		
	3	6.3	12	58	19	14	8.9	8.8		
	4	7.0	19	23	9.3	20	9.0	9.8		
	5	7.0	13	17	27	21	7.9	7.7		
	6	18	11	18	27	7.7	7.4	6.5		
	7	6.9	11	19	12	6.8	17	6.1		
	8	6.1	12	11	17	7.1	29	6.1		
	9	6.5	15	9.4	23	10	23	6.1		
	10	6.5	8.7	8.3	17	8.5	11	5.0		
	11	11	8.0	7.6	11	7.4	12	9.2		
	12	7.8	7.4	8.0	9.3	7.4	8.7	7.8		
	13	7.5	7.4	8.4	8.6	11	13	6.2		
	14	7.4	7.1	8.1	8.9	15	9.3	4.5		
	15	7.4	35	7.9	21	74	8.3	36		
	16	15	16	7.9	36	28	7.4	19		
	17	7.5	25	7.9	41	13	7.4	6.8		
	18	7.7	8.9	7.8	180	8.2	11	7.8		
	19	16	11	6.1	120	6.4	8.7	13		
	20	42	12	6.1	35	6.4	8.0	14		
	21	29	8.5	5.8	47	18	17	9.4		
	22	37	8.3	5.7	57	25	7.6	13		
	23	33	7.5	5.7	27	92	25	9.6		
	24	63	7.4	5.7	14	47	39	9.8		
	25	37	7.5	5.9	12	68	27	42		
	26	48	7.5	6.5	11	17	32	25		
	27	33	7.4	6.5	16	13	16	23		
	28	25	7.4	6.5	11	10	15	17		
	29	8.5	7.4	6.5	23	---	11	16		
	30	11	7.4	6.5	57	---	12	29		
	31	7.8	---	6.9	8.0	---	9.8	---		
	TOTAL	539.5	353.8	325.0	952.1	604.9	434.0	398.1		
	MEAN	17.4	11.8	10.5	30.7	21.6	14.0	13.3		
	MAX	63	35	58	180	92	39	42		
	MIN	6.1	7.1	5.7	8.0	6.4	7.4	4.5		
	AC-FT	1070	702	645	1890	1200	861	790		
CAL YR 1985	TOTAL	3578.1	MEAN	9.80	MAX	63	MIN	4.9	AC-FT	7100

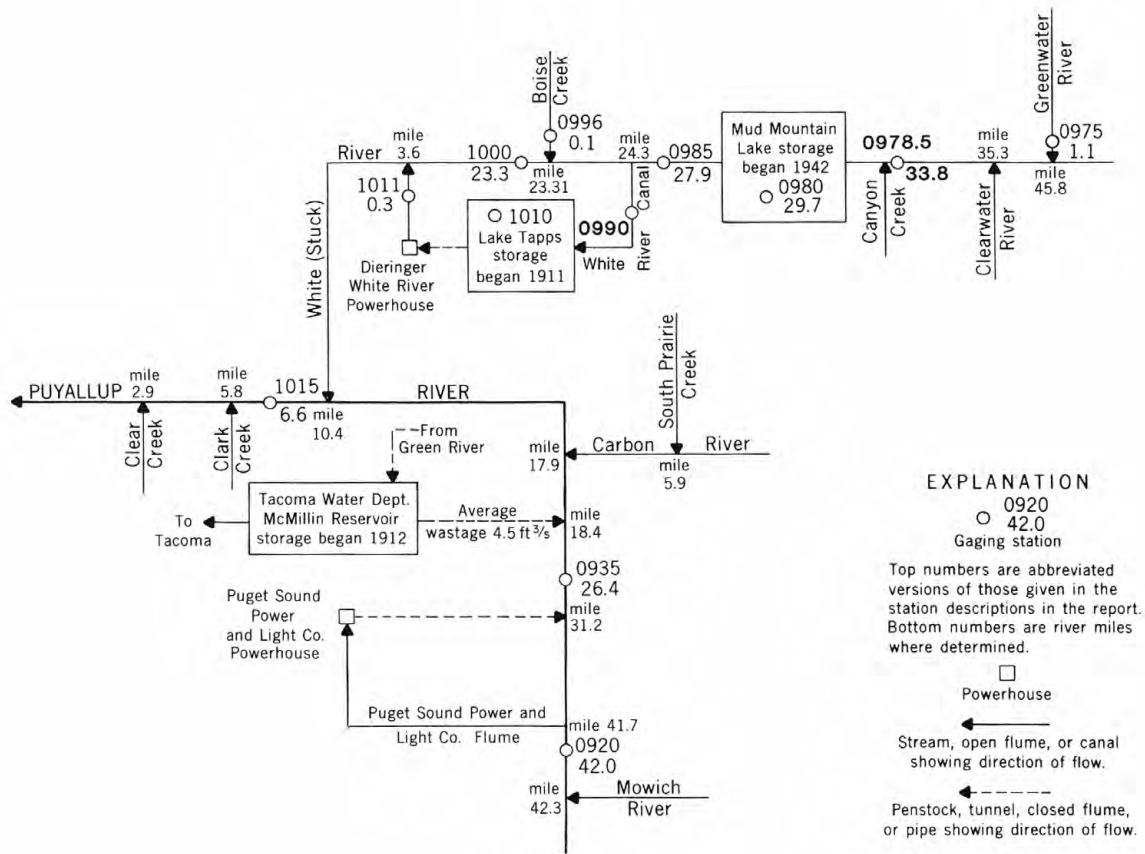


Figure 11.--Gaging stations in Puyallup River basin.

PUYALLUP RIVER BASIN

12092000 PUYALLUP RIVER NEAR ELECTRON, WA

LOCATION.--Lat 46°54'14", long 122°02'02", in SE¼NW¼ sec.3, T.16 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 1,000 ft upstream from Puget Sound Power & Light Co.'s flume headworks, 0.3 mi downstream from Mowich River, 9.8 mi southeast of Electron, and at mile 42.0.

DRAINAGE AREA.--92.8 mi².

PERIOD OF RECORD.--October 1908 to September 1926, October 1944 to September 1949, October 1957 to current year. October 1926 to September 1933 (monthly discharge only) published in State of Washington Water-Supply Bulletin No. 6.

REVISED RECORDS.--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area. WSP 1566: 1945(M), 1947(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,632.7 ft (revised) above National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1913, nonrecording gage, and Jan. 1, 1913, to Sept. 30, 1926, Oct. 1, 1944, to Sept. 30 1949, and Oct. 1, 1957, to Nov. 22, 1959 (gage destroyed by flood), water-stage recorder, at sites near present gage at different datums. Aug. 19, 1960, to Dec. 23, 1980, at site 100 ft downstream at same datum. U.S. Geological Survey satellite telemetry at station.

REMARKS.--Estimated daily discharges: Oct. 8-10, 20-27, Nov. 23 to Dec. 2, Dec. 15-19. Records good except for estimated daily discharges, which are fair, and those above 3,000 ft³/s, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--59 years (water years 1909-33, 1945-49, 1958-86), 526 ft³/s, 76.97 in/yr, 381,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s Nov. 22, 1959, gage height, 11.9 ft, from floodmarks, site and datum then in use, result of slope-area measurement; minimum daily discharge, 100 ft³/s Dec. 13, 14, 1972, Oct. 28-30, 1980.

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)
Oct. 25	0800	2,650	a5.50	Feb. 23	1845	*5,530	*6.71

Minimum discharge, 154 ft³/s Oct. 10, gage height, 1.93 ft.

a From outside high-water mark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	1020	238	262	510	659	400	332	1240	546	586	431
2	305	1480	236	233	441	576	375	389	1030	631	696	497
3	329	1410	351	229	390	513	348	411	801	504	674	538
4	278	1460	341	212	357	474	335	391	727	414	606	488
5	308	1100	366	401	335	446	320	381	658	347	586	440
6	325	1290	447	445	302	420	304	393	597	366	632	468
7	244	1230	517	325	279	687	305	402	585	440	707	401
8	193	947	423	414	257	749	318	445	546	462	696	317
9	168	818	355	435	245	623	311	443	516	478	669	269
10	163	707	306	512	235	533	297	500	593	624	653	304
11	285	596	277	504	225	505	297	478	671	750	566	268
12	247	542	255	414	214	459	293	539	666	578	591	252
13	207	444	238	392	207	419	286	1010	660	498	637	232
14	355	365	228	373	224	397	269	743	684	469	642	203
15	606	480	231	355	515	361	286	590	549	428	601	192
16	528	537	224	387	656	336	286	499	475	486	547	204
17	422	452	222	421	446	317	320	459	526	509	501	191
18	362	393	222	1260	367	362	311	513	561	441	519	204
19	378	369	232	1700	319	368	292	586	442	475	542	193
20	560	340	235	1010	299	357	318	727	376	557	552	190
21	455	310	244	728	297	416	402	627	363	622	562	180
22	445	302	246	636	412	381	466	533	410	631	542	176
23	620	300	264	636	2560	425	386	468	518	599	501	320
24	900	290	287	522	2500	573	344	536	611	548	475	430
25	1800	278	308	449	1600	481	343	740	619	545	552	267
26	1100	266	313	415	1150	512	326	902	570	502	632	233
27	970	258	294	480	866	483	406	888	595	467	713	223
28	702	252	270	442	739	464	395	893	621	477	741	360
29	497	248	252	416	---	432	356	930	596	464	519	601
30	444	242	236	536	---	499	334	1120	530	458	422	494
31	402	---	226	507	---	426	---	1240	---	492	386	---
TOTAL	14825	18726	8884	16051	16947	14653	10029	19099	18336	15808	18248	9566
MEAN	478	624	287	518	605	473	334	616	611	510	589	319
MAX	1800	1480	517	1700	2560	749	466	1240	1240	750	741	601
MIN	163	242	222	212	207	317	269	332	363	347	386	176
CFSM	5.15	6.72	3.09	5.58	6.52	5.10	3.60	6.64	6.58	5.50	6.35	3.44
IN.	5.94	7.51	3.56	6.43	6.79	5.87	4.02	7.66	7.35	6.34	7.31	3.83
AC-FT	29410	37140	17620	31840	33610	29060	19890	37880	36370	31360	36190	18970
CAL YR 1985	TOTAL	172868	MEAN	474	MAX	2950	MIN	149	CFSM	5.11	IN.	69.30
WTR YR 1986	TOTAL	181172	MEAN	496	MAX	2560	MIN	163	CFSM	5.34	IN.	72.62
											AC-FT	342900
											AC-FT	359400

12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW¼SW¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft downstream from highway bridge, 4.0 mi south of Orting, 8.5 mi upstream from Carbon River, and at mile 26.4.

DRAINAGE AREA.--172 mi².

PERIOD OF RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 6, 1946, at site 600 ft upstream at datum 8.93 ft higher. Supplementary water-stage recorder 200 ft upstream at datum 7.1 ft higher than present gage datum, used at times during period in 1942-46. Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft higher.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 2. Records good except for flows above 5,000 ft³/s and estimated daily discharges, which are fair. Up to 400 ft³/s diverted for Electron powerplant of Puget Sound Power and Light Co. which is returned to river 4.8 mi upstream from gage. Minor regulation by Electron powerplant.

AVERAGE DISCHARGE.--55 years, 710 ft³/s, 56.06 in/yr, 514,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Nov. 20, 1962, gage height, 11.82 ft, present datum, from rating curve extended above 8,600 ft³/s on basis of slope-area measurement at gage height 12.25 ft, present datum; minimum discharge, 25 ft³/s Nov. 28, 1952; minimum daily, 59 ft³/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	2130	*9,790	*10.04	No other peak greater than base discharge.			
Minimum discharge, 158 ft ³ /s Oct. 9; minimum daily, 181 ft ³ /s Sept. 22.							
a From high-water mark in gage well.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	255	1350	298	376	733	978	550	472	1480	581	622	528		
2	305	2190	295	348	636	835	526	520	1290	707	760	617		
3	346	1810	586	355	553	731	481	605	977	572	759	672		
4	289	2370	587	321	497	668	453	572	857	480	661	598		
5	311	1720	657	479	466	622	431	554	768	385	631	513		
6	341	1850	851	784	415	575	400	586	683	385	676	517		
7	256	1850	1000	545	377	817	395	580	657	466	762	453		
8	205	1570	851	635	349	1100	404	613	623	485	765	373		
9	186	1260	685	654	329	924	393	591	561	503	715	303		
10	186	1010	581	754	311	769	372	704	640	634	713	319		
11	306	815	515	768	306	724	375	709	742	873	604	307		
12	269	697	460	624	284	660	382	737	753	670	597	291		
13	226	610	420	573	278	593	368	1700	731	530	671	285		
14	355	547	394	546	291	577	342	1270	787	510	676	265		
15	775	623	371	506	731	518	364	977	627	454	633	247		
16	594	838	353	524	1260	476	371	796	523	566	565	235		
17	472	704	344	654	844	440	420	702	540	693	497	223		
18	368	616	342	1820	658	503	435	722	666	534	524	217		
19	397	561	345	2750	535	545	387	794	545	527	530	212		
20	635	519	357	1420	474	508	395	1020	422	616	502	205		
21	473	474	363	1000	458	573	476	914	403	694	567	194		
22	464	431	362	852	701	546	559	782	426	692	544	181		
23	583	390	373	898	4370	550	474	673	532	676	513	294		
24	1330	370	391	777	4670	917	418	686	664	602	474	569		
25	2860	350	412	656	2910	760	423	930	689	592	575	335		
26	1850	335	406	593	1970	764	408	1160	618	556	673	291		
27	1690	322	393	648	1400	689	503	1140	654	502	785	265		
28	1640	314	364	623	1160	649	612	1140	682	503	836	427		
29	1100	308	345	574	---	594	541	1170	679	496	665	702		
30	902	300	327	757	---	670	501	1360	581	470	545	645		
31	774	---	309	741	---	590	---	1470	---	509	464	---		
TOTAL	20743	27104	14337	23555	27966	20865	13159	26649	20800	17463	19504	11283		
MEAN	669	903	462	760	999	673	439	860	693	563	629	376		
MAX	2860	2370	1000	2750	4670	1100	612	1700	1480	873	836	702		
MIN	186	300	295	321	278	440	342	472	403	385	464	181		
CFSM	3.89	5.25	2.69	4.42	5.81	3.91	2.55	5.00	4.03	3.27	3.66	2.19		
IN.	4.49	5.86	3.10	5.09	6.05	4.51	2.85	5.76	4.50	3.78	4.22	2.44		
AC-FT	41140	53760	28440	46720	55470	41390	26100	52860	41260	34640	38690	22380		
CAL YR 1985	TOTAL	224128	MEAN	614	MAX	3500	MIN	186	CFSM	3.57	IN.	48.47	AC-FT	444600
WTR YR 1986	TOTAL	243428	MEAN	667	MAX	4670	MIN	181	CFSM	3.88	IN.	52.65	AC-FT	482800

12097500 GREENWATER RIVER AT GREENWATER, WA

LOCATION.--Lat 47°09'13", long 121°38'10", in NE¼NE¼ sec.10, T.19 N., R.9 E., Pierce County, Hydrologic Unit 17110014, on left bank at bridge crossing, 0.7 mi east of Greenwater, and at mile 1.1.

DRAINAGE AREA.--73.5 mi².

PERIOD OF RECORD.--September 1911 to August 1912 (fragmentary), May 1929 to September 1977, water years 1980-85 (June to October seasonal records). Published as "near Enumclaw" 1911-12.

REVISED RECORDS.--WSP 1716: 1947(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft, from river-profile survey. Prior to Aug. 10, 1912, nonrecording gages at sites approximately 500 ft upstream at different datums. May 1, 1929, to Aug. 14, 1934, water-stage recorder at site 1,400 ft upstream at different datum. Aug. 17, 1934, to Sept. 30, 1977, water-stage recorder at site 500 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Oct. 25-31. Records good. No regulation upstream from station.

AVERAGE DISCHARGE.--48 years (water years 1930-77), 211 ft³/s, 38.98 in/yr, 152,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft³/s Nov. 22, 1959, gage height, 7.67 ft site and datum then in use, from rating curve extended above 1,200 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 23 ft³/s Oct. 7, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 2, 1977, reached a stage of 9.8 ft former site and datum, from floodmarks, discharge, about 10,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period June to October 1986, 526 ft³/s June 1, gage height, 4.50 ft; minimum discharge, 30 ft³/s Oct. 23-25.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE 1986 TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	508	101	56	45	58
2	477	99	54	43	53
3	429	98	53	42	52
4	394	110	52	41	50
5	352	100	51	40	48
6	319	91	50	38	46
7	296	87	50	37	45
8	272	85	48	36	44
9	256	84	47	39	43
10	235	86	46	39	42
11	222	85	46	40	41
12	211	82	50	38	40
13	199	79	51	37	39
14	193	77	51	38	38
15	184	76	50	40	37
16	172	87	49	48	36
17	167	89	47	52	36
18	170	79	47	52	35
19	164	75	46	52	34
20	154	74	45	55	33
21	150	73	44	53	32
22	139	73	44	49	31
23	132	70	43	47	30
24	127	67	42	54	30
25	122	64	42	50	33
26	118	63	41	48	41
27	112	62	41	46	52
28	112	61	40	51	57
29	110	59	42	96	47
30	105	57	45	77	48
31	---	57	46	---	54
TOTAL	6601	2450	1459	1423	1305
MEAN	220	79.0	47.1	47.4	42.1
MAX	508	110	56	96	58
MIN	105	57	40	36	30
CFSM	2.99	1.07	.64	.64	.57
IN.	3.34	1.24	.74	.72	.66
AC-FT	13090	4860	2890	2820	2590

12097850 WHITE RIVER BELOW CLEARWATER RIVER, NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'49", long 121°51'32", in NE¼SW¼ sec.12, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 300 ft upstream from Canyon Creek, 1.5 mi downstream from Clearwater River, 6.4 mi east of Buckley, and at mile 33.8.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--June 1974 to September 1976, March 1982 to current year.

REVISED RECORDS.--WDR WA-76-1: 1975(II).

GAGE.--Water-stage recorder. Datum of gage is 1,100.00 ft above National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to March 1982, at datum 47.16 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--5 years (water years 1976, 1983-86), 1,355 ft³/s, 49.07 in/yr, 981,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s Dec. 2, 1975, gage height, 55.16 ft, present datum, from high-water mark in well; minimum discharge, 265 ft³/s Nov. 4-6, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0800	5,860	51.16	Jan. 19	0600	5,540	51.04
Nov. 4	1000	4,480	50.62	Feb. 23	2400	*14,100	*53.67

Minimum discharge, 348 ft³/s Oct. 9, 10; minimum gage height, 47.03 ft Sept. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	385	1560	494	595	1120	2570	1450	1080	3680	1080	773	526		
2	408	2950	521	567	1080	2240	1340	1100	3220	1110	845	667		
3	451	2620	560	561	1030	1990	1250	1220	2700	1060	860	680		
4	430	4110	549	538	978	1820	1190	1200	2450	999	810	660		
5	428	2930	554	548	972	1690	1120	1190	2230	869	771	623		
6	450	2930	653	658	905	1590	1070	1250	2060	833	767	621		
7	430	2800	678	595	849	1880	1040	1260	1890	891	803	596		
8	381	2210	640	641	801	2270	1080	1280	1720	927	823	580		
9	355	1810	594	701	772	2110	1070	1320	1590	916	820	537		
10	351	1420	565	817	739	1900	1040	1430	1640	909	801	516		
11	418	1170	544	870	714	1770	1050	1390	1770	971	767	497		
12	423	1020	533	792	685	1630	1030	1390	1770	902	779	473		
13	392	934	518	744	661	1510	975	2150	1710	844	782	460		
14	409	858	509	709	655	1420	924	1980	1700	843	785	444		
15	580	892	501	689	713	1310	949	1660	1530	793	748	435		
16	617	1110	499	694	1110	1220	954	1450	1390	828	704	448		
17	585	1020	501	781	939	1150	958	1340	1370	836	670	438		
18	497	897	529	1870	828	1190	924	1420	1520	766	680	465		
19	516	840	564	4550	759	1270	890	1610	1310	772	695	455		
20	716	800	592	2510	715	1220	884	1970	1180	843	687	462		
21	639	749	608	1780	726	1280	955	1970	1140	925	692	431		
22	647	714	612	1500	863	1220	1140	1820	1150	932	681	411		
23	1000	646	648	1500	5010	1190	1090	1630	1250	919	667	451		
24	1970	609	686	1370	10000	1430	1020	1570	1330	860	644	704		
25	4110	584	710	1200	7600	1350	1010	1900	1270	848	657	546		
26	2660	625	699	1100	5480	1470	959	2640	1210	811	696	528		
27	2800	609	672	1100	3860	1430	1110	2820	1150	749	738	505		
28	2060	584	642	1100	3060	1420	1350	2950	1180	741	791	611		
29	1390	563	617	1020	---	1380	1220	3090	1150	725	769	837		
30	1160	539	594	1080	---	1630	1130	3570	1080	708	686	733		
31	1010	---	570	1120	---	1540	---	3760	---	724	631	---		
TOTAL	28668	41103	18156	34300	53624	49090	32172	56410	50340	26934	23022	16440		
MEAN	925	1370	586	1106	1915	1584	1072	1820	1678	869	743	548		
MAX	4110	4110	710	4550	10000	2570	1450	3760	3680	1110	860	837		
MIN	351	539	494	538	655	1150	884	1080	1080	708	631	411		
CFSM	2.47	3.65	1.56	2.95	5.11	4.22	2.86	4.85	4.47	2.32	1.98	1.46		
IN.	2.84	4.08	1.80	3.40	5.32	4.87	3.19	5.60	4.99	2.67	2.28	1.63		
AC-FT	56860	81530	36010	68030	106400	97370	63810	111900	99850	53420	45660	32610		
CAL YR 1985	TOTAL	424619	MEAN	1163	MAX	5800	MIN	351	CFSM	3.10	IN.	42.12	AC-FT	842200
WTR YR 1986	TOTAL	430259	MEAN	1179	MAX	10000	MIN	351	CFSM	3.14	IN.	42.68	AC-FT	853400

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'27", long 121°55'48", in NE¼NE¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi southeast of Buckley, 5.6 mi downstream from Clearwater River, and at mile 29.7.

DRAINAGE AREA.--400 mi².

PERIOD OF RECORD.--October 1943 to current year. Monthend contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earthfill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft between elevations 895 ft, invert of outlet tunnel, and 1,215 ft, spillway crest. Storage is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 55,865 acre-ft Aug. 23, 1974, elevation, 1,150.0 ft; no pool at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 18,904 acre-ft June 13, elevation, 1,074.60 ft; minimum observed, 31 acre-ft Feb. 12-15, elevation, 905.0 ft.

Capacity table (elevation, in feet, and total contents, acre-feet)
(Based on area maps by Corps of Engineers in 1939)

905	31	925	141	955	817	1,040	9,682
907	39	930	191	970	1,522	1,070	17,384
910	52	935	266	985	2,511	1,100	29,052
915	77	940	366	1,000	3,828	1,150	55,865
920	107	945	491	1,020	6,255		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1138	89	77	57	483	2222	56	39	5445	2049	1969	1937
2	1424	1234	77	57	754	2138	47	40	6255	2063	2002	1950
3	1660	1619	72	57	992	2104	46	46	5644	2049	2022	1969
4	1792	2166	65	57	772	3672	45	43	4061	2049	2002	1963
5	1829	1976	62	57	172	1096	42	43	2412	2002	1996	1930
6	1841	1873	62	57	51	148	41	41	4177	1983	1983	1930
7	1779	1879	62	57	52	151	41	45	6356	1996	1996	1924
8	1822	1371	62	57	39	4966	121	47	8509	2016	2016	1905
9	1816	96	62	57	39	6284	95	45	10196	2016	2022	1860
10	1786	108	57	62	39	5316	37	53	13148	1989	2016	1854
11	39	100	57	67	1595	2597	37	52	16291	2043	1996	1841
12	39	96	57	63	31	154	37	52	17384	2016	1983	1816
13	39	196	57	62	31	154	36	217	18904	1989	1996	1816
14	39	1561	57	62	31	154	36	371	17513	1989	1996	1804
15	41	884	57	62	31	152	34	68	16382	1983	1983	1798
16	39	362	57	62	45	150	35	59	15307	1963	1969	1804
17	41	117	57	62	43	147	37	53	14904	2016	1950	1804
18	39	103	57	72	43	147	35	53	14180	1976	1943	1810
19	39	85	57	2443	35	153	34	67	11462	1963	1963	1816
20	41	85	57	1773	35	150	33	127	7369	1983	1963	1822
21	41	84	57	584	35	152	35	138	3110	2022	1956	1804
22	39	83	57	103	39	391	40	2316	3316	2029	1956	1792
23	43	77	57	106	67	677	39	1019	428	2036	1963	1779
24	53	77	57	98	5931	1707	37	79	59	2009	1943	1969
25	2302	77	57	94	3137	153	37	71	57	2009	1930	1885
26	1943	77	57	94	2863	113	37	483	56	2002	1963	1879
27	1943	77	57	94	2412	68	37	1123	54	1963	1983	1822
28	1522	77	57	95	2063	65	48	1451	1707	1963	2016	1930
29	111	77	52	93	---	56	43	1866	1873	1956	1996	1930
30	90	77	57	94	---	57	41	2589	1924	1930	1963	2002
31	84	---	57	94	---	63	---	4061	---	1950	1930	---
MAX	2302	2166	77	2443	5931	6284	121	4061	18904	2063	2022	2002
MIN	39	77	52	57	31	56	33	39	54	1930	1930	1779
††	916.7	915.0	911.0	935.7	981.3	911.3	907.2	1009.0	978.0	977.3	976.6	977.0
†	87	77	57	279	2237	58	40	4809	2009	1963	1917	1943
‡	-927	-10	-20	+222	+1958	-2179	-18	+4769	-2800	-46	-46	+26

CAL YR 1985 MAX 9110 MIN 39 AC-FT† -1293
WTP YR 1986 MAX 18904 MIN 31 AC-FT‡ +929

†† Monthend estimated elevation, in feet, at 2400.

† Monthend estimated contents, in acre-feet.

‡ Change in contents, in acre-feet.

12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'55", in SW¼NW¼ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi upstream from Red Creek, 1.7 mi downstream from Mud Mountain Dam, 3.8 mi east of Buckley, 7.4 mi downstream from Clearwater River and at mile 27.9.

DRAINAGE AREA.--401 mi².

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage, and Dec. 9 1928, to Nov. 30, 1933, water-stage recorder at site 3.0 mi upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Mud Mountain Lake (station 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No diversion upstream from station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--53 years (water years 1929-33, 1939-86), 1,442 ft³/s, 48.83 in/yr, 1,045,000 acre-ft/yr, adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 3,500 ft³/s; probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958; Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily discharge, 59 ft³/s June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft, from floodmarks, at former site, discharge, 28,000 ft³/s, from rating curve extended above 3,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,000 ft³/s Feb. 24, elevation, 807.80 ft; minimum discharge, 56.2 ft³/s Mar. 7, due to regulation; minimum daily, 274 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	274	1870	508	629	1080	2800	1540	1100	3640	1080	765	669
2	302	2930	508	585	1040	2420	1430	1140	3830	1160	842	710
3	367	2900	587	580	1020	1770	1300	1320	3350	1100	904	729
4	394	3800	596	538	1260	2210	1230	1270	3120	1060	847	709
5	402	3190	606	554	1040	2370	1150	1250	2230	886	794	662
6	424	2760	777	731	938	1600	1070	1310	1280	815	788	657
7	421	2750	830	640	872	810	1040	1300	1170	878	841	628
8	367	2510	752	711	819	1500	1070	1350	1080	936	873	610
9	340	1890	666	799	786	2280	1070	1370	618	927	878	559
10	764	1390	617	944	538	2770	1040	1520	311	900	860	535
11	439	1200	581	1010	924	2850	1030	1490	862	1010	814	512
12	444	1060	555	911	695	1800	1040	1490	1000	919	791	488
13	402	668	528	837	667	1570	960	2230	2180	829	805	475
14	402	1020	508	782	660	1480	900	2220	2340	829	821	457
15	581	1110	496	757	754	1340	922	1760	2080	778	777	446
16	611	1220	491	754	1140	1230	922	1510	1720	801	738	463
17	609	1100	491	901	917	1160	919	1370	1620	899	694	456
18	509	960	529	1650	810	1210	900	1420	2440	786	697	485
19	521	890	581	3710	736	1340	857	1610	2880	769	715	470
20	742	845	624	2790	695	1260	845	1940	2830	842	710	472
21	666	779	651	2040	712	1280	915	1420	2420	944	710	445
22	665	739	650	1510	888	1230	1140	2160	1400	961	706	428
23	1050	632	693	1560	3700	1060	1080	2020	1290	965	684	445
24	1640	622	755	1410	12300	1740	1000	1600	1400	889	662	772
25	3980	668	802	1240	8700	1490	992	1850	1340	865	670	587
26	2910	656	785	1140	6160	1550	927	2440	1260	840	715	557
27	3520	618	736	1130	4250	1480	1120	2690	899	755	791	511
28	2850	581	684	1150	3260	1460	1390	2770	992	746	882	635
29	2020	547	649	1060	---	1430	1250	2850	1130	735	859	886
30	1580	517	619	1130	---	1710	1160	2990	1030	719	745	817
31	1390	---	587	1110	---	1630	---	3230	---	711	676	---
TOTAL	31586	42422	19442	35293	57361	51830	32209	55990	53742	27334	24054	17275
MEAN	1019	1414	627	1138	2049	1672	1074	1806	1791	882	776	576
MAX	3980	3800	830	3710	12300	2850	1540	3230	3830	1160	904	886
MIN	274	517	491	538	538	810	845	1100	311	711	662	428
AC-FT	62650	84140	38560	70000	113800	102800	63890	111100	106600	54220	47710	34260
MEAN†	1004	1414	627	1142	2086	1636	1074	1885	1745	881	775	576
CFSM†	2.50	3.53	1.56	2.85	5.20	4.08	2.68	4.70	4.35	2.20	1.93	1.44
IN.†	2.89	3.94	1.80	3.29	5.42	4.71	2.99	5.42	4.86	2.54	2.23	1.60
AC-FT†	61720	84130	38540	70220	115800	100600	63870	115900	103800	54170	47660	34290

CAL YR 1985 TOTAL 437711 MEAN 1199 MAX 5900 MIN 203 AC-FT 868200 MEAN† 1197 CFSM† 2.99 IN.† 40.57 AC-FT† 866900
WTR YR 1986 TOTAL 448538 MEAN 1229 MAX 12300 MIN 274 AC-FT 889700 MEAN† 1230 CFSM† 3.07 IN.† 41.68 AC-FT† 890600

† Adjusted for change in contents of Mud Mountain Lake.

PUYALLUP RIVER BASIN

12099000 WHITE RIVER CANAL AT BUCKLEY, WA

LOCATION.--Lat 47°10'21", long 122°03'48", in SW¼SE¼ sec.32, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on right bank 0.3 mi downstream from Dingle Basin, and 1.7 mi northwest of Buckley.

PERIOD OF RECORD.--February 1913 to September 1938 (monthly runoff only, published in WSP 1316), October 1981 to current year. Records for September 1958 to September 1981 available in files of the Geological Survey. Records prior to October 1961, published as White River flume near Buckley, at site 3.5 mi upstream; several stilling basins between the two sites affect runoff.

GAGE.--Water-stage recorder. Elevation of gage is 655 ft, from topographic map.

REMARKS.--No estimated daily discharges. Records excellent except those below 40 ft³/s, which are fair. Flow completely regulated at White River Diversion Dam about 4.0 mi upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,990 ft³/s Dec. 1, 1966; no flow on many days during most years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	677	456	649	1110	203	1510	1090	1610	1020	686	580
2	55	1060	190	617	1080	166	1420	1120	1650	1070	753	619
3	125	1150	81	608	952	118	1300	1330	1650	1030	789	651
4	355	1440	256	570	1310	116	1230	1280	1650	997	6.8	641
5	377	1380	675	578	1040	174	1160	1250	1550	853	.00	585
6	360	1210	798	719	953	107	1080	1300	1210	772	.00	578
7	147	1270	884	670	885	30	1040	1280	1140	244	.00	552
8	180	1150	819	702	826	946	1050	1320	1060	183	.00	530
9	224	985	717	800	795	1430	1060	1300	712	194	.00	477
10	566	792	657	933	605	1510	1030	1450	311	302	.00	441
11	362	677	612	1040	788	1600	1020	1440	652	827	.00	409
12	372	603	587	951	731	1540	1030	1430	767	866	.00	388
13	360	520	560	873	669	1490	963	1560	926	777	.00	375
14	344	1040	536	821	658	1480	905	1590	1650	638	.00	364
15	502	1180	523	797	745	1350	915	1600	1640	616	.00	348
16	559	1320	516	786	1140	1250	932	1510	1580	629	.00	362
17	582	1210	515	930	983	1170	938	1370	1450	740	.00	362
18	482	721	547	1300	844	1190	904	1370	1650	673	.00	388
19	459	708	597	1590	616	1320	859	1520	1650	707	.00	381
20	672	685	644	1610	705	1270	841	415	1680	761	272	381
21	642	679	673	1500	731	1270	892	1200	1680	849	583	350
22	578	807	669	1340	854	1240	1070	1560	1400	872	635	324
23	511	835	703	1660	1500	1090	1070	1600	1220	875	618	332
24	1090	693	763	1520	618	1350	990	1470	1290	825	583	648
25	1630	438	811	1290	5.3	1480	977	1600	1250	803	594	534
26	1230	724	806	1160	50	1540	927	1650	1190	782	636	478
27	1260	853	765	1120	319	1500	1030	1660	926	709	692	426
28	1100	739	715	1160	257	1470	1370	1670	870	687	783	543
29	476	642	673	1060	---	1430	1270	1670	1090	662	786	753
30	137	622	644	1110	---	1570	1170	1660	1010	645	684	830
31	533	---	606	1160	---	1590	---	1650	---	632	612	---
TOTAL	16329	26810	18998	31624	21769.3	33990	31953	43915	38114	22240	9712.80	14630
MEAN	527	894	613	1020	777	1096	1065	1417	1270	717	313	488
MAX	1630	1440	884	1660	1500	1600	1510	1670	1680	1070	789	830
MIN	55	438	81	570	5.3	30	841	415	311	183	.00	324
AC-FT	32390	53180	37680	62730	43180	67420	63380	87110	75600	44110	19270	29020
CAL YR 1985	TOTAL 307837.64		MEAN 843		MAX 1720	MIN .00	AC-FT 610600					
WTR YR 1986	TOTAL 310085.10		MEAN 850		MAX 1680	MIN .00	AC-FT 615100					

PUYALLUP RIVER BASIN

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12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE¼SE¼ sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on left bank at downstream side of county road bridge, 1.0 mi northeast of Buckley, and at mile 0.1.

DRAINAGE AREA.--15.4 mi².

PERIOD OF RECORD.--March 1977 to September 1981, December 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft, from topographic map. Prior to January 25, 1984, at site 25 ft upstream at datum 1.91 ft higher.

REMARKS.--Estimated daily discharges: Nov. 23-25, Nov. 27 to Dec. 1. Records fair. Flow partly regulated by millpond at mile 5.6. Diversions upstream from station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft³/s during low-flow periods enters Boise Creek upstream from millpond. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--8 years (1978-81, 1983-86), 32.7 ft³/s, 23,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 972 ft³/s Jan. 25, 1984, gage height, 5.18 ft from floodmarks; minimum discharge, 1.7 ft³/s Sept. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	1830	329	2.99	Feb. 23	2100	*699	*4.31

Minimum discharge, 2.7 ft³/s Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	54	16	26	42	45	53	37	21	8.5	5.1	5.9
2	4.7	92	56	22	38	38	45	44	19	9.4	6.6	5.3
3	7.5	88	88	25	37	36	40	100	18	8.8	6.9	4.5
4	5.7	142	61	22	36	35	36	76	18	12	6.1	4.3
5	5.3	100	59	30	40	31	32	74	18	9.8	5.3	4.6
6	8.3	78	69	47	34	28	29	70	18	8.7	5.3	5.5
7	6.9	75	71	32	29	35	26	59	19	8.0	5.7	4.9
8	6.2	85	59	31	26	41	24	59	18	8.0	6.0	5.7
9	5.5	72	49	32	24	38	26	56	17	8.2	6.0	5.5
10	5.6	56	40	34	22	34	23	58	16	14	5.4	5.3
11	10	48	35	32	21	37	24	58	15	15	6.2	5.7
12	10	40	29	28	19	34	27	63	15	11	6.5	4.5
13	9.3	35	27	24	18	35	24	113	13	10	5.3	5.5
14	7.1	31	25	21	19	37	22	73	15	9.8	5.2	7.1
15	6.7	40	24	24	64	31	24	58	16	9.9	4.6	5.5
16	21	48	23	27	117	30	24	53	14	22	5.4	5.5
17	17	45	22	48	62	29	24	49	15	20	5.0	6.4
18	12	40	22	151	44	38	22	46	29	14	4.6	8.7
19	13	36	24	180	35	49	21	46	18	12	4.9	7.3
20	22	36	25	113	31	45	20	52	14	11	5.1	8.3
21	17	32	23	73	45	45	20	46	13	9.1	4.9	6.3
22	19	29	24	101	85	42	26	42	12	8.4	3.3	6.0
23	25	26	23	118	294	51	21	33	11	8.2	3.6	8.3
24	64	24	24	80	256	79	19	29	10	7.9	4.3	17
25	141	22	23	61	135	63	19	28	9.0	7.3	4.7	10
26	98	20	21	49	78	63	19	27	8.5	7.0	4.0	11
27	89	19	20	45	51	49	38	27	8.4	6.9	5.3	9.0
28	107	18	18	38	46	47	54	26	8.5	6.6	5.2	14
29	69	17	18	33	---	41	49	24	9.1	6.2	5.1	19
30	59	16	18	56	---	78	44	22	8.8	5.8	6.2	15
31	48	---	17	46	---	63	---	21	---	5.4	6.7	---
TOTAL	924.9	1464	1053	1649	1748	1347	875	1569	444.3	308.9	164.5	231.6
MEAN	29.8	48.8	34.0	53.2	62.4	43.5	29.2	50.6	14.8	9.96	5.31	7.72
MAX	141	142	88	180	294	79	54	113	29	22	6.9	19
MIN	4.7	16	16	21	18	28	19	21	8.4	5.4	3.3	4.3
AC-FT	1830	2900	2090	3270	3470	2670	1740	3110	881	613	326	459
CAL YR 1985	TOTAL	9250.5	MEAN	25.3	MAX	142	MIN	4.7	AC-FT	18350		
WTR YR 1986	TOTAL	11779.2	MEAN	32.3	MAX	294	MIN	3.3	AC-FT	23360		

PUYALLUP RIVER BASIN

12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE&SE# sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 150 ft downstream from railway bridge, 200 ft downstream from Boise Creek, 1.0 mi northeast of Buckley, and at mile 23.3

DRAINAGE AREA.--427 mi².

PERIOD OF RECORD.--July 1910 to November 1911, April 1977 to current year. February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 620 ft, from topographic map. June 8, 1910, to Nov. 30, 1911, nonrecording gage at site 150 ft upstream at different datum, and Jan. 18, 1913, to Sept. 30, 1938, water-stage recorder at site 100 ft upstream at National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power and Light Co.).

REMARKS.--No estimated daily discharges. Records good. Since November 1911, White River Canal (station 12099000) has diverted from left bank 1.0 mi upstream for storage in Lake Tapps (station 12101000). Water is returned to White River 19.7 mi downstream via the Lake Tapps Diversion (station 12101100) after power development at White River powerplant at Dieringer. Since 1942, flow regulated by Mud Mountain Lake (station 12098000) for flood control. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft³/s Dec. 18, 1917, during period of combined flows; minimum, not determined. River, excluding canal, since April 1977, maximum discharge, 14,300 ft³/s Dec. 2, 1977, gage height, 9.11 ft; minimum discharge, 25 ft³/s Nov. 19, 1979, gage height, 2.41 ft; minimum daily discharge, 31 ft³/s July 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,700 ft³/s Feb. 24, gage height, 8.29 ft; minimum discharge, 49 ft³/s July 27, gage height, 2.51 ft; minimum daily discharge, 32 ft³/s July 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	252	1080	244	95	94	2570	138	104	1680	66	62	77
2	281	1650	584	92	92	2240	114	114	1710	67	64	75
3	251	1680	724	96	93	1720	107	169	1660	66	120	61
4	73	2300	562	92	93	1990	101	141	1500	75	843	61
5	58	2010	139	100	91	2190	95	139	770	68	808	60
6	123	1750	156	158	87	1680	94	138	102	87	801	59
7	315	1730	152	97	83	963	95	122	74	672	856	56
8	228	1620	129	98	82	489	98	122	74	761	899	59
9	152	1370	117	96	81	928	97	119	73	743	901	59
10	143	1050	109	112	76	1310	92	133	74	569	882	61
11	125	864	103	96	119	1290	95	126	73	187	839	71
12	88	738	98	91	83	407	99	134	304	76	811	62
13	66	364	94	87	74	173	95	827	1070	92	829	64
14	66	129	94	85	75	134	91	769	658	213	842	63
15	81	112	96	89	124	103	93	283	414	194	800	61
16	83	119	93	93	200	98	93	128	171	194	754	63
17	71	142	92	122	109	94	93	104	136	198	702	62
18	67	486	95	616	99	109	90	103	781	134	702	67
19	76	383	92	2460	249	130	89	223	1200	73	727	62
20	83	360	91	1460	91	121	90	1500	1100	71	353	65
21	70	269	89	912	103	125	91	318	669	68	118	61
22	119	96	93	433	151	118	110	583	96	67	70	61
23	559	97	100	205	1990	128	94	486	70	66	66	66
24	558	309	95	148	12200	446	92	163	69	55	72	105
25	2530	586	92	132	7870	199	93	238	66	54	67	68
26	1840	314	88	124	6120	164	91	766	65	54	72	71
27	1950	111	86	124	3940	130	122	1010	68	52	80	67
28	1690	100	83	118	2980	122	140	1100	74	56	64	75
29	1560	93	86	116	---	113	125	1180	69	59	64	78
30	1360	88	89	133	---	261	114	1330	64	61	64	73
31	898	---	85	109	---	193	---	1540	---	68	64	---
TOTAL	15816	22000	4850	8789	37449	20741	3031	14212	14934	5266	14396	1993
MEAN	510	733	156	284	1337	669	101	458	498	170	464	66.4
MAX	2530	2300	724	2460	12200	2570	140	1540	1710	761	901	105
MIN	58	88	83	85	74	94	89	103	64	52	62	56
AC-FT	31370	43640	9620	17430	74280	41140	6010	28190	29620	10450	28550	3950
CAL YR 1985	TOTAL	151699	MEAN	416	MAX	4460	MIN	58	AC-FT	300900		
WTR YR 1986	TOTAL	163477	MEAN	448	MAX	12200	MIN	52	AC-FT	324300		

12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE¼NE¼ sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi east of Dieringer, and 3.5 mi northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 0.7 ft above National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power & Light Co.).

REMARKS.--Reservoir is formed by a diked natural lake into which a large part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959, put into use Oct. 1, 1958), 46,600 acre-ft between gage heights of 515 ft, normal minimum pool, and 543 ft, normal maximum pool. Dead storage unknown. Figures given herein represent usable contents. Reservoir is used for power development at the White River powerplant at Dieringer.

COOPERATION.--Gage-height record and contents curve furnished by Puget Sound Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft June 30, 1958, gage height, 541.57 ft, capacity table dated Jan. 19, 1920; maximum gage height observed, 543.04 ft June 19, 1967; minimum contents observed, not determined (below normal minimum pool) Apr. 3, 1978, gage height, 514.90 ft; minimum gage height, 505.70 ft June 24, 1912.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 46,554 acre-ft Aug. 3, gage height, 542.96 ft; minimum contents observed, 4,737 acre-ft Feb. 21, gage height, 519.80 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	542.44	45,245	--
Oct. 31.....	541.99	44,113	-1,132
Nov. 30.....	541.55	43,038	-1,075
Dec. 31.....	541.89	43,868	+830
CAL YR 1985.....	--	--	-1,276
Jan. 31.....	534.16	26,346	-17,522
Feb. 28.....	522.64	7,846	-18,500
Mar. 31.....	528.32	15,845	+7,999
Apr. 30.....	534.98	28,040	+12,195
May 31.....	542.56	45,547	+17,507
June 30.....	542.51	45,421	-126
July 31.....	542.54	45,497	+76
Aug. 31.....	542.57	45,572	+75
Sept. 30.....	541.65	43,282	-2,290
WTR YR 1986.....	--	--	-1,963

PUYALLUP RIVER BASIN

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW¼NW¼ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft downstream from White River powerplant at Dieringer, and 1,400 ft upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 60 ft, from topographic map.

REMARKS.--Estimated daily discharges: Feb. 24-26. Records excellent except for estimated daily discharges, which are fair. Flow regulated by White River powerplant.

AVERAGE DISCHARGE.--28 years, 960 ft³/s, 695,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s Jan. 29, 1965, gage height, 6.23 ft; maximum gage height, 7.28 ft Jan. 25, 1984 (backwater from White River); minimum discharge, 7.2 ft³/s Sept. 29, 1967, gage height, 0.20 ft; minimum daily discharge, 10 ft³/s Aug. 21, 22, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,130 ft³/s Jan. 23, 24, gage height, 5.44 ft; maximum gage height, 6.26 ft Feb. 24 (backwater from White River); minimum discharge, 14 ft³/s July 10, gage height, 0.42 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	656	423	606	1580	560	765	1110	1570	985	588	557
2	26	1100	396	604	1630	42	187	1110	1590	1070	358	555
3	124	1170	257	612	1640	282	508	1200	1580	1000	639	593
4	330	1510	126	562	1640	20	277	1210	1590	984	34	611
5	365	1420	150	600	1640	20	297	1010	1560	818	24	541
6	393	1210	423	701	1650	20	28	884	1230	727	20	512
7	158	1280	947	1080	1650	20	893	795	1080	221	17	500
8	183	1220	858	1320	1650	389	823	758	1010	118	17	488
9	166	990	755	1360	1660	767	992	759	686	22	18	428
10	465	765	789	1370	1470	798	982	760	292	229	19	382
11	455	642	829	1320	1660	800	1080	760	565	848	19	362
12	327	555	413	1390	1610	1070	769	761	841	1090	19	353
13	330	546	451	1360	1510	1290	982	767	744	768	19	373
14	310	1070	400	1330	1420	1240	940	769	1600	740	19	325
15	449	1260	425	1310	1360	1200	943	826	1590	727	20	325
16	585	1330	524	1310	1030	1190	946	1160	1550	455	20	334
17	581	1260	488	1340	977	1150	917	1150	1420	629	20	353
18	509	810	505	1570	964	1140	930	421	1660	649	20	392
19	480	769	682	1650	752	1150	767	372	1570	663	19	355
20	602	602	667	1660	759	1370	819	159	1620	676	151	355
21	677	628	619	1600	857	1360	837	1140	1640	740	405	346
22	575	796	620	1610	803	1270	1060	1430	1410	809	535	310
23	469	776	640	2030	1300	1160	1160	1600	1130	841	570	386
24	1170	618	727	2050	487	1330	962	1560	1260	819	543	680
25	1660	786	812	1920	23	1600	1120	1500	1180	651	538	615
26	1550	670	815	1910	23	1540	850	1610	1160	762	589	428
27	1360	687	776	1910	22	1530	1010	1690	840	672	599	408
28	1220	394	716	1830	22	1450	1310	1630	865	650	672	477
29	828	395	684	1620	---	1480	1300	1620	1080	645	742	1110
30	447	395	635	1540	---	1480	1190	1630	968	618	695	1550
31	520	---	606	1630	---	1620	---	1610	---	611	594	---
TOTAL	17340	26310	18158	42705	31789	30338	25644	33761	36881	21237	8542	15004
MEAN	559	877	586	1378	1135	979	855	1089	1229	685	276	500
MAX	1660	1510	947	2050	1660	1620	1310	1690	1660	1090	742	1550
MIN	26	394	126	562	22	20	28	159	292	22	17	310
AC-FT	34390	52190	36020	84710	63050	60180	50860	66960	73150	42120	16940	29760
CAL YR 1985	TOTAL	310524	MEAN	851	MAX	2100	MIN	22	AC-FT	615900		
WTR YR 1986	TOTAL	307709	MEAN	843	MAX	2050	MIN	17	AC-FT	610300		

12101500 PUYALLUP RIVER AT PUYALLUP, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°12'31", long 122°19'33", in SE¼NW¼ sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, on left bank 0.8 mi upstream from bridge at Clark Creek, 2.0 mi northwest of Puyallup City Hall, and at mile 6.6.

DRAINAGE AREA.--948 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1919, at sites 1.2 mi upstream and 900 ft upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft upstream at datum 9.61 ft higher.

REMARKS.--No estimated daily discharges. Water-discharge records good. All diverted water returned to river upstream from gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (station 12101000). Flood flow regulated by Mud Mountain Lake (station 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt upstream from station.

Since 1912 the city of Tacoma pipeline diversion from Green River has released as much as 123 ft³/s daily, and since 1957 an average of about 19 ft³/s per month into Puyallup River 0.5 mi east of McMillin. Monthly mean discharge, in cubic feet per second, for the year is as follows:

October	2.27	January	3.86	April	3.96	July	2.30
November	2.40	February	5.42	May	5.76	August	2.41
December	2.72	March	2.84	June	2.46	September	3.15

AVERAGE DISCHARGE.--72 years, 3,355 ft³/s, 2,431,000 acre-ft/yr, adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s Dec. 10, 1933, elevation, 31.0 ft, present datum; minimum discharge, 306 ft³/s Sept. 25, 1955, elevation, 8.23 ft; minimum daily discharge, 400 ft³/s Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 34,400 ft³/s Feb. 24, elevation, 24.94 ft; minimum discharge, 662 ft³/s Sept. 23; minimum elevation, 8.71 ft Oct. 10; minimum daily discharge, 702 ft³/s Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	775	4120	1090	1480	4060	4810	2840	2640	6080	2290	1710	1560
2	817	7480	1550	1480	3970	4100	1910	2740	5920	2600	1650	1670
3	1040	6740	2530	1470	3870	3810	2110	3270	5350	2420	2000	1780
4	1050	9270	2370	1320	3770	3310	1710	3170	4990	2350	1930	1740
5	1070	6800	1970	1520	3740	3910	1620	2920	4460	1940	1910	1570
6	1190	5750	2640	2660	3590	3240	1180	2770	3140	1710	1930	1500
7	1070	6000	3520	2490	3470	3270	2080	2580	2800	1630	2080	1410
8	942	5330	3180	2750	3360	3460	2140	2620	2680	1880	2190	1320
9	807	4520	2670	2880	3290	4040	2320	2520	2260	1860	2160	1150
10	989	3670	2420	3080	3020	4130	2280	2910	1790	2080	2140	1060
11	1310	3100	2260	3040	3200	4270	2300	2940	2120	3100	1970	1030
12	1160	2700	1620	2800	3130	3670	2080	2900	2880	2870	1860	931
13	1020	2350	1540	2620	2930	3340	2210	5300	3290	2120	1970	920
14	986	2350	1370	2510	2830	3260	2110	5190	4120	1990	2010	839
15	2020	2750	1320	2430	3680	2950	2150	3850	3850	2000	1930	768
16	2050	3310	1410	2420	4750	2810	2210	3390	3390	1910	1790	806
17	1920	3140	1300	2860	3820	2630	2210	3080	2970	2730	1600	898
18	1530	2840	1330	4550	3260	2730	2270	2390	2870	2170	1580	978
19	1440	2660	1540	10900	2800	2930	1870	2600	4440	1960	1690	864
20	2180	2450	1600	7180	2500	3150	1980	4110	4020	2000	1640	833
21	2110	2310	1550	5200	2500	3200	2160	4000	3800	2190	1520	770
22	1880	2160	1540	4410	2970	3150	2720	4040	2940	2300	1630	702
23	2420	1820	1590	4710	9010	2920	2710	4160	2490	2300	1580	840
24	4190	1680	1730	4380	27700	4360	2270	3590	2810	2130	1480	2120
25	11700	2220	1890	3980	17600	4720	2430	3880	2810	1880	1540	1680
26	8080	2050	1870	3880	12000	4440	2200	4760	2670	1950	1730	1230
27	8150	1680	1760	3970	7310	4100	2440	5120	2350	1750	1950	1080
28	7220	1250	1580	3960	5310	3830	3370	5100	2280	1680	2140	1580
29	4920	1180	1470	3740	---	3670	3160	5250	2650	1670	2100	2650
30	3940	1130	1390	4060	---	3940	2880	5630	2350	1590	1850	3340
31	3210	---	1280	4190	---	3960	---	5980	---	1590	1560	---
TOTAL	83186	104810	56880	108920	153440	112110	67920	115400	101570	64640	56820	39529
MEAN	2683	3494	1835	3514	5480	3616	2264	3723	3386	2085	1833	1318
MAX	11700	9270	3520	10900	27700	4810	3370	5980	6080	3100	2190	3340
MIN	775	1130	1090	1320	2500	2630	1180	2390	1790	1590	1480	702
AC-FT	165000	207900	112800	216000	304300	222400	134700	228900	201500	128200	112700	78410
MEAN†	2665	3476	1847	3228	5147	3746	2469	4006	3386	2086	1834	1280
AC-FT†	163900	206800	113600	198500	285800	230400	146900	246400	201400	128300	112800	76120
CAL YR 1985 TOTAL	992092			2718	MAX 14300	MIN 687	AC-FT 1968000	MEAN† 2716	AC-FT† 1967000			
WTR YR 1986 TOTAL	1065225			2918	MAX 27700	MIN 702	AC-FT 2113000	MEAN† 2915	AC-FT† 2111000			

† Adjusted for change in contents of Lake Tapps.

PUYALLUP RIVER BASIN

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at Clark Creek bridge 0.8 mi downstream from gage.

PERIOD OF RECORD.--Water years 1959-68, 1971-72, 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1959 to September 1961, August 1965 to September 1966.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 19...	1550	2580	77	7.4	4.0	3.9	12.9	98	--	780	26	2
FEB 19...	1000	3230	80	7.6	2.0	47	13.2	96	630	K15	30	0
MAY 19...	1045	2660	64	6.9	10.5	3.2	10.9	98	--	--	23	1
AUG 05...	1020	1980	60	7.4	13.5	180	10.1	96	120	260	20	2
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 19...	7.2	1.9	3.7	23	0.3	1.0	24	30	0	8.8	2.5	<0.10
FEB 19...	8.3	2.3	4.4	23	0.4	1.1	30	36	0	8.3	2.9	<0.10
MAY 19...	6.4	1.8	3.5	24	0.3	0.8	22	27	0	6.3	1.8	<0.10
AUG 05...	5.5	1.6	3.2	25	0.3	0.8	18	22	0	8.1	1.7	<0.10
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	
NOV 19...	16	51	58	0.07	355	0.01	0.38	0.08	0.5	0.05	0.02	
FEB 19...	17	66	62	0.09	576	<0.01	0.54	0.07	0.5	0.05	0.02	
MAY 19...	14	44	43	0.06	316	<0.01	0.21	0.05	0.4	<0.01	0.02	
AUG 05...	11	43	43	0.06	230	<0.01	0.12	0.04	0.6	0.27	0.03	

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 19...	0.02	60	<1	8	<0.5	1	<1	<3	3	120	1	<4
FEB 19...	0.01	40	<1	10	<0.5	<1	<1	<3	6	160	10	<4
MAY 19...	0.02	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	0.02	10	<1	7	<0.5	7	<1	6	2	6	<5	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 19...	17	<0.1	<10	2	<1	<1	41	<6	12	306	2130	6
FEB 19...	30	<0.1	<10	2	<1	1	51	<6	12	337	2940	20
MAY 19...	--	--	--	--	--	--	--	--	--	358	2570	12
AUG 05...	16	<0.1	<10	1	<1	<1	27	<6	7	406	2170	96

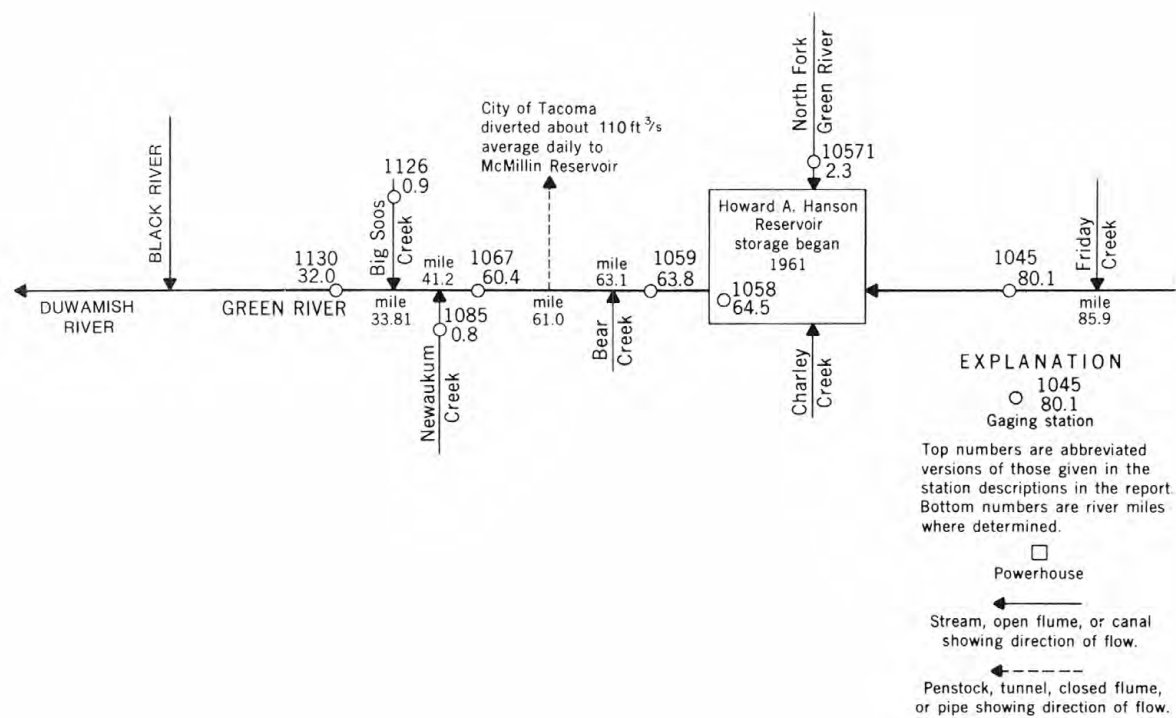


Figure 12.--Gaging stations in Duwamish River basin.

12104500 GREEN RIVER NEAR LESTER, WA

LOCATION.--Lat 47°12'28", long 121°33'07", in NE1SE1 sec.20, T.20 N., R.10 E., King County, Hydrologic Unit 17110013, on left bank 0.4 mi upstream from Champion Creek, 1.2 mi downstream from McCain Creek, 2.9 mi west of Lester, and at mile 80.1.

DRAINAGE AREA.--96.2 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1947(M). WSP 1316: 1948(M). WSP 1932: 1960, drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,480 ft, from river-profile map. Prior to Nov. 22, 1959, water-stage recorder at site 300 ft upstream at different datum (gage destroyed by flood of Nov. 22, 1959), Dec. 28, 1959, to Sept. 21, 1960, nonrecording gage at site 400 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good except those above 1,000 ft³/s, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--41 years, 386 ft³/s, 54.49 in/yr, 279,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s Nov. 22, 1959, gage height, 12.41 ft, from floodmarks, present site and datum, on basis of slope-area measurement of peak flow; minimum discharge, 22 ft³/s Nov. 20, 1952, Sept. 27, 1967, part or all of each day Oct. 18-20, 23-27, 1974.

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)
Feb. 24	0030	*9,280	*7.03	No other peak greater than base discharge.			

Minimum discharge, 24 ft³/s Oct. 11, gage height, 0.95 ft.

DISCHARGE, IN CURIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	35	679	133	118	242	1050	629	392	479	89	54	39		
2	35	1560	126	110	253	943	542	374	426	88	53	37		
3	42	1130	128	108	242	870	476	403	373	87	51	37		
4	40	1240	120	102	234	822	434	420	333	94	50	35		
5	36	1020	115	99	233	815	394	433	298	92	50	34		
6	38	1300	127	111	217	748	380	438	269	84	49	33		
7	40	1210	129	102	202	820	393	454	248	79	47	32		
8	38	902	122	100	188	1050	443	462	231	77	46	33		
9	36	723	117	111	177	945	472	480	212	74	45	35		
10	30	573	111	131	169	820	456	516	201	78	44	35		
11	27	463	108	152	160	733	426	501	190	86	45	36		
12	45	391	103	164	152	668	386	539	178	81	47	34		
13	46	339	101	168	146	602	344	953	169	76	46	33		
14	43	299	99	163	139	537	313	918	162	72	44	34		
15	94	278	98	159	140	472	301	722	155	69	42	41		
16	103	276	96	161	158	426	296	602	147	81	41	57		
17	103	255	100	200	140	389	301	545	143	110	40	53		
18	82	229	118	398	131	379	306	567	144	89	38	58		
19	78	216	129	800	123	510	288	632	146	81	39	55		
20	97	205	130	574	117	580	292	715	132	76	38	57		
21	84	192	124	424	119	683	366	667	127	72	38	47		
22	118	178	120	347	140	647	466	598	119	70	37	43		
23	276	160	125	312	1540	565	437	523	114	67	36	75		
24	552	153	140	289	4800	540	383	482	110	66	36	173		
25	1410	155	149	259	3250	504	358	536	105	63	35	106		
26	1030	162	146	237	2370	535	333	632	101	63	35	82		
27	1030	152	136	223	1500	554	408	625	97	63	35	72		
28	711	138	126	212	1200	613	555	588	98	61	35	105		
29	522	132	131	201	---	671	493	565	101	60	37	159		
30	432	128	124	209	---	755	437	551	93	56	41	173		
31	364	---	118	219	---	724	---	528	---	55	42	---		
TOTAL	7617	14838	3749	6963	18482	20970	12108	17361	5701	2359	1316	1843		
MEAN	246	495	121	225	660	676	404	560	190	76.1	42.5	61.4		
MAX	1410	1560	149	800	4800	1050	629	953	479	110	54	173		
MIN	27	128	96	99	117	379	288	374	93	55	35	32		
CFSM	2.56	5.15	1.26	2.34	6.86	7.03	4.20	5.82	1.98	.79	.44	.64		
IN.	2.95	5.74	1.45	2.69	7.15	8.11	4.68	6.71	2.20	.91	.51	.71		
AC-FT	15110	29430	7440	13810	36660	41590	24020	34440	11310	4680	2610	3660		
CAL YR 1985	TOTAL	107565	MEAN	295	MAX	1560	MIN	27	CFSM	3.07	IN.	41.59	AC-FT	213400
WTR YR 1986	TOTAL	113307	MEAN	310	MAX	4800	MIN	27	CFSM	3.22	IN.	43.82	AC-FT	224700

12105710 NORTH FORK GREEN RIVER NEAR LEMOLO, WA

LOCATION.--Lat 47°18'21", long 121°46'20", near line between SW¼ and SE¼ sec.15, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on left bank 1.8 mi northeast of Lemolo siding, 5.5 mi east of Palmer, and at mile 2.3.

DRAINAGE AREA.--16.7 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,250 ft, from topographic map.

REMARKS.--No estimated daily discharges. Records good. An undetermined amount of water goes underground a short distance above the gage and, at times during dry summers, the streambed at the gage may become completely dry. Streamflow diverted by withdrawal from nearby wells, by the city of Tacoma Water Department, affects low flows.

AVERAGE DISCHARGE.--21 years, 85.5 ft³/s, 69.53 in/yr, 61,940 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft³/s Dec. 2, 1975, gage height, 8.29 ft; no flow Aug. 8, 9, 18, Sept. 5-13, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 28, 1965, reached a stage of 9.50 ft from floodmarks, discharge, 2,370 ft³/s on basis of slope-area measurement.

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)
Oct. 26	1600	698	5.33	Jan. 19	0030	737	5.41
Nov. 2	0900	646	5.22	Feb. 23	2230	*1,450	*6.71
Nov. 6	0200	501	4.89				

Minimum discharge, 2.3 ft³/s Sept. 6-9, gage height, 2.13 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	12	263	40	37	113	171	107	94	45	12	11	4.3		
2	14	494	32	33	99	142	94	95	41	12	10	3.9		
3	21	434	33	33	91	126	86	113	36	12	9.6	3.6		
4	13	396	31	31	86	118	79	102	34	17	9.3	3.2		
5	12	288	32	40	87	102	70	99	32	16	8.4	2.9		
6	12	426	41	59	76	91	64	94	32	12	8.4	2.5		
7	13	338	43	49	69	136	61	91	31	11	7.6	2.3		
8	12	258	40	48	63	148	62	83	30	10	6.9	3.2		
9	11	192	36	53	58	124	65	87	27	9.6	6.4	5.1		
10	10	149	33	67	55	112	57	96	25	17	6.4	4.8		
11	21	123	31	75	51	109	56	96	23	34	6.4	4.6		
12	30	106	30	72	47	98	57	142	21	23	6.4	3.3		
13	28	90	28	70	44	89	52	267	19	18	9.3	3.1		
14	28	80	27	64	43	87	47	199	20	16	13	3.6		
15	68	75	26	62	49	76	52	152	19	14	7.5	3.6		
16	72	109	26	72	74	68	54	126	18	38	5.6	4.5		
17	76	86	26	91	55	66	61	105	18	74	5.1	3.8		
18	52	86	27	331	50	98	60	103	24	43	4.7	8.0		
19	52	62	29	401	45	159	56	99	27	32	4.4	5.4		
20	87	60	31	207	43	129	54	113	22	25	4.2	4.5		
21	69	53	31	152	42	127	57	113	18	23	3.9	3.7		
22	126	49	31	128	69	113	64	102	16	20	3.7	3.4		
23	189	47	33	135	506	108	62	89	15	18	3.6	27		
24	300	41	38	121	856	152	56	83	15	18	3.6	60		
25	510	39	41	106	556	125	60	83	14	17	3.4	23		
26	513	40	40	92	406	129	61	81	13	16	3.2	27		
27	373	37	38	91	269	113	120	72	13	15	3.0	24		
28	262	34	36	86	209	117	146	65	12	14	2.9	77		
29	183	33	34	78	---	109	121	60	13	14	3.6	116		
30	151	31	33	102	---	145	103	56	13	13	5.0	84		
31	128	---	31	111	---	123	---	50	---	12	5.8	---		
TOTAL	3448	4501	1028	3097	4211	3610	2144	3210	686	625.6	192.3	525.3		
MEAN	111	150	33.2	99.9	150	116	71.5	104	22.9	20.2	6.20	17.5		
MAX	513	494	43	401	856	171	146	267	45	74	13	116		
MIN	10	31	26	31	42	66	47	50	12	9.6	2.9	2.3		
CFSM	6.65	8.98	1.99	5.98	8.98	6.95	4.28	6.23	1.37	1.21	.37	1.05		
IN.	7.68	10.03	2.29	6.90	9.38	8.04	4.78	7.15	1.53	1.39	.43	1.17		
AC-FT	6840	8930	2040	6140	8350	7160	4250	6370	1360	1240	381	1040		
CAL YR 1985	TOTAL	27320.0	MEAN	74.8	MAX	513	MIN	6.0	CFSM	4.48	IN.	60.86	AC-FT	54190
WTR YR 1986	TOTAL	27278.2	MEAN	74.7	MAX	856	MIN	2.3	CFSM	4.47	IN.	60.76	AC-FT	54110

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE¼SE¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure, just upstream from Howard A. Hanson Dam on Green River, 1.4 mi upstream from Bear Creek, 5.1 mi southeast of Palmer, and at mile 64.5.

DRAINAGE AREA.--220 mi², approximately.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929, supplementary adjustment of 1947.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity, 105,650 acre-ft between elevations 1,035 ft, invert of outlet tunnel, and 1,206 ft, top of spillway gates. Storage is not retained but is dissipated as soon after a flood as possible without creating damaging flows downstream in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Daily elevations at 0830, monthend elevations at 2400, and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 61,325 acre-ft Dec. 5, 1975, elevation, 1,175.8 ft; minimum contents observed, 34 acre-ft Nov. 2, 1962, elevation, 1,037.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 25,268 acre-ft June 8, 9, elevation, 1,140.5 ft; minimum contents observed, 643 acre-ft Nov. 8, elevation, 1,057.9 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on photogrammetric maps by Fairchild Aerial Surveys in 1961)

1,045	153	1,080	2,800	1,140	24,887
1,050	289	1,090	4,554	1,150	33,301
1,055	493	1,100	6,893	1,160	43,092
1,060	770	1,110	9,715	1,170	54,326
1,065	1,132	1,120	13,386	1,180	66,591
1,070	1,588	1,130	18,362		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 0900

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13473	1166	1451	1268	1376	2577	2012	1413	22884	23794	23722	17856
2	13259	4703	1460	1286	1578	2931	1442	2470	23437	23794	23580	17637
3	13091	6568	1294	1242	1650	2772	1422	3608	24150	23722	23437	17420
4	12923	5210	1083	1312	1242	1312	1451	4811	24592	23722	23229	17204
5	12800	2457	1140	1413	1286	1321	1568	5932	24887	23794	23161	16993
6	12476	2353	1191	1702	1312	1321	1548	7123	25039	23794	23022	16728
7	12277	1898	1394	1330	1225	1734	1470	8258	25192	23794	22815	16470
8	12081	643	1588	1242	1385	2353	1422	9345	25268	23722	22679	16263
9	11851	1413	1670	1277	1578	2844	1413	10393	25268	23722	22477	15313
10	11589	1831	1233	1349	1660	2858	1432	11663	25192	23651	22276	13604
11	11403	1588	1286	1588	1182	1539	1470	12719	25116	23794	22141	11928
12	11331	1588	1303	1865	1216	1242	1548	14503	25039	23865	21812	10228
13	11295	1349	1294	2118	1191	1013	1460	16834	24813	23865	21550	9591
14	11259	1460	1385	1451	1132	1598	1519	21034	24740	23865	21355	9376
15	11367	1286	1432	1339	1199	2340	1489	23299	24666	23865	21227	9164
16	11700	1529	1479	1376	1479	3068	1519	23722	24592	23865	20970	8925
17	11966	1755	1367	1260	1745	3643	1568	23580	24519	24079	20842	8690
18	11737	1798	1303	1479	1798	2417	1539	23092	24445	24371	20653	8458
19	11116	1385	1330	1451	1489	1820	1598	22815	24519	24445	20465	8258
20	10835	1260	1358	2844	1182	1609	1629	22953	24519	24445	20276	8146
21	10528	1174	1460	2564	1174	1339	1660	23161	24519	24519	20090	7924
22	10130	1403	1519	1312	1242	2961	1670	23794	24371	24592	19906	7815
23	10940	1588	1558	1277	1766	3454	1568	24150	24150	24519	19723	7571
24	11259	1588	1339	1321	9224	3917	1588	22815	24079	24445	19479	7951
25	13734	1598	1529	1519	9044	2772	1499	21099	24079	24445	19300	8344
26	10359	1499	1723	1519	4942	1831	1568	19600	23936	24297	19121	8544
27	6793	1157	1251	1413	1876	1286	1660	18250	23936	24297	18884	8573
28	1558	1199	1286	1376	1588	1898	2701	19241	23865	24224	18652	8806
29	1005	1182	1321	1174	---	2001	1766	20339	23865	24079	18420	9255
30	1116	1367	1349	1208	---	2154	1548	21291	23865	24007	18250	10426
31	1013	---	1312	1312	---	2645	---	22208	---	23865	18025	---
MEAN	10267	1900	1377	1490	2099	2212	1592	16307	24451	24041	21017	11449
MAX	13734	6568	1723	2844	9224	3917	2701	24150	25268	24592	23722	17856
MIN	1005	643	1083	1174	1132	1013	1413	1413	22884	23651	18025	7571
††	1063.0	1068.6	1066.6	1066.9	1076.0	1075.6	1068.8	1136.8	1138.6	1138.5	1129.2	1113.6
†	975	1451	1268	1294	2264	2215	1470	22612	23865	23794	17912	10905
‡	-12585	+476	-183	+26	+970	-49	-745	+21142	+1253	-71	-5882	-7007
CAL YR 1985	MEAN	8340	MAX	25649	MIN	573	†	+136				
WTR YR 1986	MEAN	9914	MAX	25268	MIN	643	‡	-2655				

†† Monthend estimated elevation, in feet, at 2400 hours.

† Monthend estimated contents, in acre-feet.

‡ Change in contents, in acre-feet.

NOTE.--Daily contents, in acre-feet, usually at 0900 hours.

12105900 GREEN RIVER BELOW HOWARD A. HANSON RESERVOIR, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE¼NW¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi upstream from Bear Creek, 0.7 mi downstream from Howard A. Hanson Dam, 5.0 mi southeast of Palmer, and at mile 63.8.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 990 ft, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Howard A. Hanson Reservoir (station 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--26 years, 1,016 ft³/s, 62.43 in/yr, 736,100 acre-ft/yr, adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s Feb. 21, 1961, gage height, 14.40 ft; minimum discharge, 87 ft³/s Dec. 29, 1961, gage height, 3.49 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft³/s Feb. 25, gage height, 13.86 ft; minimum discharge, 141 ft³/s July 1, gage height, 3.73 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	256	1590	373	428	882	2040	1780	769	595	234	263	253
2	260	2970	455	427	908	2090	1390	480	491	251	263	255
3	263	4160	549	389	1030	2380	1150	512	438	267	263	258
4	261	5090	490	343	949	2000	1020	540	506	265	263	258
5	260	4380	435	350	830	1630	960	524	506	264	263	258
6	260	4090	446	577	830	1470	955	494	507	264	262	257
7	259	4390	429	603	720	1530	944	495	509	264	262	257
8	258	2730	440	475	570	1780	942	508	509	264	261	360
9	258	1970	575	515	587	1850	1000	497	507	264	261	1050
10	256	1730	509	547	748	2160	963	484	506	265	261	1030
11	257	1500	408	568	651	1890	899	495	506	264	305	1030
12	257	1270	408	590	548	1520	907	507	505	264	309	766
13	256	1110	367	881	544	1140	808	527	462	264	252	255
14	256	992	346	838	497	925	747	776	435	264	247	253
15	256	901	350	643	472	671	744	1290	435	263	246	270
16	347	816	394	740	501	712	747	1520	409	265	246	289
17	510	845	414	840	517	1230	788	1520	393	264	246	289
18	644	934	411	1500	605	1540	776	1510	393	264	246	295
19	688	903	429	3210	638	1480	735	1410	392	264	246	269
20	683	783	426	1920	522	1530	737	1360	392	264	245	251
21	678	621	412	2020	468	1080	822	1220	391	264	246	249
22	677	522	415	1530	538	883	1000	1080	390	264	246	248
23	892	532	517	1210	2780	1180	952	1490	357	264	246	249
24	1850	534	480	1090	9140	1700	860	2040	333	264	245	251
25	4690	598	421	949	9460	1920	837	2010	318	263	245	252
26	6320	633	623	949	7570	1740	779	1990	305	263	252	253
27	5900	567	555	930	4210	1310	803	1160	296	263	256	254
28	3330	466	429	877	2530	1280	1620	579	291	263	256	254
29	1730	407	431	786	---	1460	1640	584	291	263	256	258
30	1410	370	432	841	---	1510	1260	587	291	263	256	262
31	1260	---	429	946	---	1810	---	591	---	263	255	---
TOTAL	35482	48404	13798	28512	50245	47441	29565	29549	12659	8139	7969	10733
MEAN	1145	1613	445	920	1794	1530	986	953	422	263	257	358
MAX	6320	5090	623	3210	9460	2380	1780	2040	595	267	309	1050
MIN	256	370	346	343	468	671	735	480	291	234	245	248
AC-FT	70380	96010	27370	56550	99660	94100	58640	58610	25110	16140	15810	21290
MEAN†	940	1622	442	920	1812	1529	973	1297	443	261	161	240
CFSM†	4.25	7.34	2.00	4.16	8.20	6.92	4.40	5.87	2.00	1.18	0.73	1.09
IN.†	4.90	8.18	2.31	4.80	8.53	7.98	4.91	6.76	2.24	1.36	0.84	1.21
AC-FT†	57800	96490	27190	56580	100600	94050	57900	79750	26360	16070	9930	14280

CAL YR 1985 TOTAL 308341 MEAN 845 MAX 6320 MIN 248 AC-FT 611600 MEAN† 845 CFSM† 3.82 IN.† 51.87 AC-FT† 611700
WTR YR 1986 TOTAL 322496 MEAN 884 MAX 9460 MIN 234 AC-FT 639700 MEAN† 880 CFSM† 3.98 IN.† 54.02 AC-FT† 637000

† Adjusted for change in contents in Howard A. Hanson Reservoir.

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE¼SE¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at city of Tacoma purification plant, 0.6 mi downstream from diversion dam, 2 mi southeast of Palmer, and at mile 60.4.

DRAINAGE AREA.--231 mi².

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 859.53 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 11 to Dec. 11, Dec. 16 to Feb. 4, May 4 to June 11. Records good except for estimated daily discharges, which are fair. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 4.1 mi upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 110 ft³/s upstream from station for municipal supply. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--23 years, 982 ft³/s, 711,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s Feb. 12, 1981, gage height, 12.05 ft; minimum discharge, 20 ft³/s part or all of each day Oct. 26, 27, Nov. 3, 6, 1974, gage height, 3.90 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, had a discharge of 27,800 ft³/s, on basis of slope-area measurement at site 0.6 mi downstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,800 ft³/s Feb. 25, gage height, 12.37 ft; minimum discharge, 100 ft³/s July 1, 2, gage height, 5.19 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	1600	311	364	836	2120	1760	733	518	178	147	138
2	160	3040	383	353	857	2110	1380	398	413	188	147	138
3	162	4210	484	318	978	2430	1130	443	358	159	144	138
4	160	5150	422	269	898	2040	991	492	429	153	144	138
5	160	4430	368	297	800	1640	906	476	423	153	144	138
6	160	4150	384	529	797	1450	898	444	427	153	144	138
7	160	4420	373	541	686	1520	866	441	429	153	144	138
8	159	2730	379	415	495	1830	856	451	428	153	142	203
9	157	1960	509	453	510	1870	920	450	425	150	138	936
10	157	1700	439	486	680	2180	902	432	423	157	138	916
11	162	1450	336	508	598	1890	808	444	422	166	191	908
12	160	1220	330	524	477	1510	822	473	406	161	197	680
13	156	1060	284	813	468	1150	730	589	363	158	130	136
14	158	937	256	768	423	883	644	768	325	157	127	133
15	160	847	256	573	398	592	651	1260	325	157	127	143
16	264	775	315	675	482	630	660	1480	306	166	127	160
17	420	795	335	793	466	1110	705	1470	287	176	127	160
18	550	879	333	1570	552	1510	705	1460	284	169	127	172
19	606	846	353	3330	587	1470	651	1360	282	162	127	153
20	618	724	351	1930	460	1510	651	1310	282	159	127	128
21	597	560	337	2000	394	1100	729	1180	282	156	127	127
22	636	458	340	1510	487	852	920	1030	281	153	126	127
23	843	466	444	1210	3480	1160	895	1430	251	153	121	139
24	1910	466	408	1070	10100	1680	768	1980	224	153	121	151
25	4770	528	349	916	10100	1920	754	1950	212	153	121	138
26	6390	564	549	906	8060	1730	692	1920	197	153	128	137
27	5940	499	479	885	4590	1320	770	1100	189	151	134	136
28	3330	397	352	827	2710	1230	1600	509	182	150	132	150
29	1690	336	353	732	---	1420	1640	512	180	148	134	180
30	1370	298	353	798	---	1510	1220	514	180	152	135	176
31	1210	---	349	899	---	1790	---	516	---	147	137	---
TOTAL	33532	47495	11514	27262	52369	47157	27624	28015	9733	4897	4255	7255
MEAN	1082	1583	371	879	1870	1521	921	904	324	158	137	242
MAX	6390	5150	549	3330	10100	2430	1760	1980	518	188	197	936
MIN	156	298	256	269	394	592	644	398	180	147	121	127
AC-FT	66510	94210	22840	54070	103900	93540	54790	55570	19310	9710	8440	14390

CAL YR 1985	TOTAL	291123	MEAN	798	MAX	6390	MIN	153	AC-FT	577400
WTR YR 1986	TOTAL	301108	MEAN	825	MAX	10100	MIN	121	AC-FT	597200

DUWAMISH RIVER BASIN

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW¼SW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi downstream from West Whitney Hill bridge, 0.8 mi upstream from mouth, and 3.5 mi southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi².

PERIOD OF RECORD.--July 1944 to November 1950, water years 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WDR WA-74-1: 1973(M). WDR WA-76-1: 1975.

GAGE.--Water-stage recorder. Elevation of gage is 310 ft, from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 1. Records good except for estimated daily discharges, which are fair. Many small diversions upstream from station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--40 years (water years 1945-50, 1953-86), 60.9 ft³/s, 30.18 in/yr, 44,120 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft³/s probably Feb. 17, 1949, gage height, 3.54 ft from recorded range in stage, from rating curve extended above 600 ft³/s; minimum discharge, 8.0 ft³/s Oct. 13, 14, 1952; minimum gage height, 0.62 ft Aug. 26, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2345	*592	*2.83	Feb. 23	1215	463	2.62

Minimum discharge, 13 ft³/s Sept. 6, gage height, 0.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	14	49	30	55	79	79	79	53	36	22	18	15		
2	14	86	34	50	72	73	70	59	35	24	18	15		
3	14	82	98	59	72	67	65	123	35	23	18	15		
4	14	142	142	48	69	65	62	80	34	26	17	14		
5	14	107	147	62	77	62	59	76	34	23	17	14		
6	16	82	160	115	68	59	54	84	34	22	17	14		
7	16	74	146	71	61	67	52	68	34	21	17	14		
8	14	99	110	68	56	91	52	64	34	21	16	15		
9	14	97	82	69	53	86	51	60	32	21	16	16		
10	14	68	69	71	53	70	50	67	32	25	16	15		
11	18	54	62	66	51	70	50	66	31	26	16	15		
12	18	46	55	56	49	66	52	73	31	23	16	15		
13	16	41	50	51	47	63	47	147	30	22	16	15		
14	15	38	47	49	48	73	45	85	31	21	16	17		
15	15	52	45	52	108	62	49	68	31	21	16	15		
16	24	71	44	67	159	56	48	60	30	31	16	15		
17	20	61	43	112	102	52	47	54	31	30	16	15		
18	17	59	42	296	79	65	43	53	38	24	16	19		
19	18	55	41	325	69	69	42	54	33	22	16	17		
20	23	58	39	126	63	61	41	69	28	21	16	19		
21	20	55	38	91	75	72	40	62	27	20	15	15		
22	24	49	38	114	98	73	51	67	26	20	15	15		
23	33	47	36	167	239	89	48	54	24	20	15	19		
24	62	44	36	105	316	183	43	48	24	20	15	22		
25	115	41	36	85	218	102	43	45	24	20	15	17		
26	79	39	35	76	138	114	43	44	24	20	15	21		
27	80	37	33	76	108	83	63	45	23	20	15	17		
28	114	35	32	69	89	76	81	42	22	20	15	19		
29	62	33	32	65	---	70	81	40	22	19	15	21		
30	49	32	33	93	---	118	62	39	22	18	16	18		
31	42	---	33	88	---	94	---	38	---	18	16	---		
TOTAL	1008	1833	1868	2897	2716	2430	1613	1987	892	684	497	493		
MEAN	32.5	61.1	60.3	93.5	97.0	78.4	53.8	64.1	29.7	22.1	16.0	16.4		
MAX	115	142	160	325	316	183	81	147	38	31	18	22		
MIN	14	32	30	48	47	52	40	38	22	18	15	14		
CFSM	1.19	2.23	2.20	3.41	3.54	2.86	1.96	2.34	1.08	.81	.58	.60		
IN.	1.37	2.49	2.54	3.93	3.69	3.30	2.19	2.70	1.21	.93	.67	.67		
AC-FT	2000	3640	3710	5750	5390	4820	3200	3940	1770	1360	986	978		
CAL YR 1985	TOTAL	14171	MEAN	38.8	MAX	174	MIN	12	CFSM	1.42	IN.	19.24	AC-FT	28110
WTR YR 1986	TOTAL	18918	MEAN	51.8	MAX	325	MIN	14	CFSM	1.89	IN.	25.68	AC-FT	37520

DUWAMISH RIVER BASIN

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12109500 LITTLE SOOS CREEK NEAR KENT, WA

LOCATION.--Lat 47°22'22", long 122°06'46", in SE¼SW¼ sec.24, T.22 N., R.5 E., King County, Hydrologic Unit 17110013, on right bank 20 ft downstream from 256th Street SE, 5.5 mi east of Kent, and 1.8 mi upstream from mouth.

DRAINAGE AREA.--2.85 mi², excludes 3.67 mi² in vicinity of Youngs Lake which has been diverted to Cedar River since about 1935.

PERIOD OF RECORD.--July 1945 to September 1946, October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 397.4 ft above National Geodetic Vertical Datum of 1929. Prior to 1984, 0.3 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 29 to Feb. 5, 1985; Nov. 22 to Dec. 2, 1985, Feb. 8-14, 19-22, 1986, Mar. 3-7, 10-19, 1986, Sept. 30, 1986. Records fair. City of Seattle diverts about 2.0 ft³/s from Youngs Lake to Little Soos Creek during low flows.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103 ft³/s Jan. 18, 1986, gage height, 2.47 ft; minimum discharge, 0.5 ft³/s Sept. 23, 24, 1946.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 24 ft³/s Dec. 30, gage height, 1.96 ft; minimum discharge, 1.6 ft³/s July 25-30.

WATER YEAR 1986.--Maximum discharge, 103 ft³/s Jan. 18, gage height, 2.47 ft; minimum discharge, 1.4 ft³/s Sept. 16-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.0	4.7	7.6	11	3.3	4.4	5.5	4.2	2.6	2.0	2.0	2.0		
2	2.0	8.8	5.7	8.1	3.3	4.2	5.0	4.0	2.6	2.1	1.9	2.0		
3	2.0	9.1	4.6	6.6	3.0	4.1	6.5	4.3	2.6	2.0	1.9	2.2		
4	2.3	8.9	4.3	5.9	2.8	6.4	5.6	3.7	2.7	2.0	1.9	2.3		
5	2.3	5.2	3.9	5.6	2.5	5.7	4.9	3.4	2.6	2.1	1.9	2.4		
6	2.2	3.8	3.7	5.3	3.1	5.2	4.4	3.2	3.4	2.1	1.9	2.9		
7	2.2	3.3	5.2	4.9	3.7	4.8	4.2	3.1	6.6	2.1	2.4	3.4		
8	2.2	2.9	16	4.5	3.6	4.3	3.9	3.0	4.7	2.1	2.4	3.1		
9	2.3	2.7	16	4.2	3.6	4.0	3.8	3.0	3.4	2.0	2.3	3.4		
10	3.5	4.7	12	3.9	6.2	3.7	3.5	2.8	2.9	2.0	2.6	3.2		
11	3.3	7.4	8.3	3.7	17	3.6	3.6	2.7	2.7	2.0	2.3	3.0		
12	3.7	5.0	9.6	3.6	18	3.4	3.5	2.6	2.5	2.0	2.2	2.8		
13	3.8	6.3	7.6	3.4	12	3.3	3.4	2.7	2.4	1.9	2.1	3.0		
14	3.0	5.0	9.8	3.6	10	3.2	3.3	2.8	2.7	1.9	2.1	3.1		
15	2.8	4.0	11	3.7	9.2	3.2	3.2	2.7	2.6	1.9	2.0	3.0		
16	2.6	3.4	8.6	3.5	7.8	3.0	3.2	2.6	2.4	1.9	1.9	3.4		
17	2.6	3.2	7.0	3.4	6.7	3.0	3.0	2.6	2.3	1.9	2.0	4.1		
18	2.5	3.6	5.6	3.2	5.9	3.0	3.3	2.4	2.2	1.9	2.0	3.3		
19	2.5	3.7	5.0	4.0	6.0	3.0	3.1	2.4	2.1	1.8	2.0	2.9		
20	2.5	5.1	4.4	6.1	5.9	3.1	3.0	2.4	2.0	1.8	1.9	2.7		
21	2.2	4.2	4.7	5.4	5.6	3.2	3.0	2.4	2.0	1.8	1.9	2.5		
22	2.1	3.8	8.1	4.8	5.4	3.9	3.1	2.4	2.0	1.8	1.9	2.4		
23	2.1	6.7	6.9	4.2	5.2	5.8	3.4	2.3	2.0	1.8	1.9	2.2		
24	2.2	6.5	5.8	3.9	5.1	6.1	3.5	2.3	2.0	1.8	1.9	2.0		
25	2.4	5.1	5.3	3.9	5.0	5.4	4.0	2.3	2.0	1.8	1.9	1.9		
26	2.5	4.2	5.0	3.7	4.9	4.8	4.4	2.4	2.0	1.7	1.9	1.9		
27	2.5	9.3	7.3	3.5	4.5	5.1	5.1	2.4	2.0	1.7	1.9	1.9		
28	2.5	14	6.5	3.4	4.3	4.5	5.3	2.5	2.0	1.7	1.9	1.9		
29	2.4	14	9.3	3.4	---	4.3	5.6	2.8	2.0	1.7	1.9	1.9		
30	2.5	13	22	3.2	---	6.4	4.3	2.9	2.0	1.7	2.0	1.9		
31	2.9	---	17	3.2	---	6.4	---	2.6	---	1.9	2.0	---		
TOTAL	78.6	181.6	253.8	140.8	173.6	134.5	121.6	87.9	78.0	58.9	62.8	78.7		
MEAN	2.54	6.05	8.19	4.54	6.20	4.34	4.05	2.84	2.60	1.90	2.03	2.62		
MAX	3.8	14	22	11	18	6.4	6.5	4.3	6.6	2.1	2.6	4.1		
MIN	2.0	2.7	3.7	3.2	2.5	3.0	3.0	2.3	2.0	1.7	1.9	1.9		
CFSM	.42	.00	1.35	.75	1.02	.71	.67	.47	.43	.31	.33	.43		
IN.	.48	1.11	1.55	.86	1.06	.82	.74	.54	.48	.36	.38	.48		
AC-FT	156	360	503	279	344	267	241	174	155	117	125	156		
WTR YR 1985	TOTAL	1450.8	MEAN	3.97	MAX	22	MIN	1.7	CFSM	.65	IN.	8.88	AC-FT	2880

DUWAMISH RIVER BASIN

12109500 LITTLE SOOS CREEK NEAR KENT, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.9	4.5	3.5	4.4	9.2	8.5	6.0	3.1	2.4	2.2	2.2	1.7		
2	2.0	5.5	3.4	4.9	8.1	7.2	5.4	3.5	2.3	2.2	2.2	1.6		
3	2.0	5.6	6.3	5.8	7.7	6.5	4.9	4.3	2.2	2.2	2.2	1.5		
4	2.0	7.4	14	5.3	8.1	6.0	4.7	3.6	2.5	2.2	2.2	1.5		
5	2.0	6.4	19	6.6	9.4	5.8	4.6	3.9	2.3	2.2	2.2	1.5		
6	2.2	5.7	25	7.8	7.6	5.6	4.4	3.8	2.2	2.3	2.2	1.5		
7	2.1	5.9	24	6.5	6.8	6.4	4.1	3.5	2.4	2.2	2.2	1.5		
8	2.0	7.2	17	6.1	6.4	8.2	4.0	3.3	2.4	2.2	2.2	1.5		
9	2.0	7.6	11	6.0	5.9	7.1	4.0	3.6	2.4	2.2	2.1	1.5		
10	2.0	6.3	7.6	5.9	5.5	6.5	3.8	3.6	2.4	2.7	2.0	1.5		
11	2.3	5.2	6.2	5.5	5.2	6.2	4.1	3.6	2.4	2.5	2.0	1.5		
12	2.0	4.5	5.3	5.1	4.8	6.1	4.1	4.4	2.4	2.3	2.0	1.5		
13	2.0	4.2	4.6	4.6	4.7	5.9	3.8	5.8	2.4	2.2	2.0	1.5		
14	2.0	4.0	4.3	4.3	5.5	5.7	3.7	4.0	2.3	2.2	2.0	1.5		
15	1.9	5.7	4.0	4.4	9.5	5.3	3.6	3.2	2.4	2.2	2.0	1.5		
16	2.6	7.1	3.8	5.1	11	4.9	3.3	2.8	2.4	2.9	2.0	1.4		
17	2.0	7.3	3.5	9.1	9.1	4.7	3.0	2.8	2.5	2.5	2.0	1.5		
18	1.9	6.9	3.4	44	7.4	4.6	2.8	2.8	2.8	2.4	2.0	1.6		
19	2.3	6.4	3.4	70	6.2	4.5	3.0	3.4	2.5	2.4	2.0	3.0		
20	2.9	6.3	3.2	36	5.8	4.3	3.0	4.6	2.6	2.4	2.0	1.8		
21	2.7	5.9	3.2	23	5.8	5.1	2.8	3.9	2.5	2.3	2.0	1.5		
22	4.5	5.7	3.2	21	6.8	4.9	3.0	3.5	2.3	2.2	2.0	1.5		
23	4.0	5.4	3.0	24	17	6.5	3.0	3.2	2.4	2.2	2.0	1.8		
24	7.2	5.1	3.0	18	27	9.8	2.8	3.1	2.4	2.2	2.0	1.8		
25	7.0	4.7	3.0	13	28	8.7	3.0	2.9	2.3	2.2	2.0	1.7		
26	6.6	4.4	3.0	11	21	9.7	3.0	2.9	2.2	2.2	1.8	1.7		
27	8.7	4.2	3.0	10	15	7.7	3.2	3.0	2.2	2.2	1.7	1.7		
28	8.2	4.0	3.0	8.4	11	6.9	3.4	2.8	2.2	2.2	1.7	1.7		
29	4.7	3.8	2.8	7.3	---	6.2	3.6	2.7	2.2	2.2	1.7	1.7		
30	4.2	3.6	2.8	10	---	7.6	3.3	2.6	2.2	2.2	1.7	1.7		
31	4.0	---	2.8	9.8	---	7.1	---	2.5	---	2.2	1.7	---		
TOTAL	103.9	166.5	205.3	402.9	275.5	200.2	111.4	106.7	71.1	70.9	62.0	48.9		
MEAN	3.35	5.55	6.62	13.0	9.84	6.46	3.71	3.44	2.37	2.29	2.00	1.63		
MAX	8.7	7.6	25	70	28	9.8	6.0	5.8	2.8	2.9	2.2	3.0		
MIN	1.9	3.6	2.8	4.3	4.7	4.3	2.8	2.5	2.2	2.2	1.7	1.4		
CFSM	.55	.91	1.09	2.14	1.62	1.06	.61	.57	.39	.38	.33	.27		
IN.	.64	1.02	1.26	2.47	1.69	1.22	.68	.65	.44	.43	.38	.30		
AC-FT	206	330	407	799	546	397	221	212	141	141	123	97		
CAL YR 1985	TOTAL	1412.5	MEAN	3.87	MAX	25	MIN	1.7	CFSM	.64	IN.	8.64	AC-FT	2800
WTR YR 1986	TOTAL	1825.3	MEAN	5.00	MAX	70	MIN	1.4	CFSM	.82	IN.	11.17	AC-FT	3620

DUWAMISH RIVER BASIN

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12110000 BIG SOOS CREEK ABOVE JENKINS CREEK, NEAR AUBURN, WA

LOCATION.--Lat 47°20'38", long 122°08'00", in NE1/4 sec.2, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, attached to center of bridge at Kent-Black Diamond Road, 0.5 mi upstream from Jenkins Creek, 5 mi northeast of Auburn, and 4.8 mi upstream from mouth.

DRAINAGE AREA.--18.6 mi², excludes 3.67 mi² in vicinity of Youngs Lake which has been diverted to Cedar River since about 1935.

PERIOD OF RECORD.--July to October 1944, July to September 1945, October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 298.9 ft above National Geodetic Vertical Datum of 1929. Prior to 1984, downstream at different sites and datum.

REMARKS.--Estimated daily discharges: Oct. 1-29, 1984; Nov. 22 to Dec. 2, 1985. Records fair. City of Seattle diverts about 2.0 ft³/s from Youngs Lake into Little Soos Creek, a tributary, during low flows.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 525 ft³/s Jan. 19, 1986, gage height, 4.85 ft; minimum discharge, 4.3 ft³/s July 14, 1945.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 105 ft³/s Dec. 30, gage height, 2.70 ft; minimum discharge, 4.4 ft³/s July 26-28.

WATER YEAR 1986.--Maximum discharge, 525 ft³/s Jan. 19, gage height, 4.85 ft; minimum discharge, 4.5 ft³/s Aug. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	7.0	15	54	60	17	24	32	16	9.8	6.9	5.9	5.8		
2	7.0	43	39	45	17	24	27	15	9.7	6.5	5.7	5.5		
3	7.0	56	32	39	16	22	30	17	9.6	6.3	5.5	5.4		
4	8.0	57	27	34	14	32	30	16	10	6.1	5.4	5.4		
5	8.0	46	24	33	15	34	27	14	9.6	5.9	4.9	5.5		
6	7.6	31	21	31	16	32	24	14	10	5.8	4.9	5.8		
7	8.0	23	23	29	20	29	22	13	34	6.0	5.1	7.1		
8	8.0	19	67	27	21	25	21	12	40	5.8	6.7	8.1		
9	9.0	19	91	25	20	24	20	12	24	5.5	5.6	8.8		
10	12	22	71	24	29	22	19	12	15	5.4	6.3	9.5		
11	12	43	53	22	72	21	19	13	12	5.4	6.2	9.0		
12	13	45	53	21	92	20	20	11	10	5.4	5.7	7.7		
13	13	41	51	20	60	19	19	11	9.8	5.4	5.5	7.0		
14	11	39	47	21	45	19	18	13	11	5.4	5.5	6.9		
15	10	31	61	23	45	19	17	12	13	5.3	5.5	7.8		
16	9.5	25	53	23	38	18	17	11	11	5.2	4.9	7.8		
17	9.0	20	45	21	33	18	17	10	9.4	5.3	4.7	10		
18	8.8	20	39	20	30	18	16	9.8	8.6	5.4	4.6	11		
19	8.6	21	33	20	29	18	16	9.4	8.3	5.0	4.7	9.2		
20	8.6	25	29	34	32	17	15	9.3	7.7	4.9	5.0	8.2		
21	7.8	28	29	35	30	19	14	9.2	7.3	4.8	4.9	7.9		
22	7.8	23	45	29	29	23	17	9.0	7.3	4.8	4.9	7.7		
23	7.8	26	46	25	28	32	18	8.7	7.3	4.9	4.9	7.2		
24	8.4	38	39	23	27	43	17	8.6	7.1	4.9	5.0	7.2		
25	9.0	32	34	21	28	40	19	8.6	7.1	4.9	4.6	7.1		
26	9.0	26	32	19	26	35	21	8.6	6.9	4.7	4.6	7.1		
27	9.2	35	39	19	25	33	24	8.4	6.7	4.5	4.9	7.1		
28	9.0	74	46	19	24	31	25	8.4	6.7	4.5	4.7	6.6		
29	8.5	69	45	18	---	26	20	10	6.5	4.5	4.8	6.4		
30	9.0	70	88	17	---	31	18	14	6.8	4.6	4.8	6.3		
31	9.4	---	90	16	---	39	---	11	---	5.0	5.5	---		
TOTAL	280.0	1063	1446	813	878	807	619	355.0	342.2	165.0	161.9	222.1		
MEAN	9.03	35.4	46.6	26.2	31.4	26.0	20.6	11.5	11.4	5.32	5.22	7.40		
MAX	13	74	91	60	92	43	32	17	40	6.9	6.7	11		
MIN	7.0	15	21	16	14	17	14	8.4	6.5	4.5	4.6	5.4		
CFSM	.43	1.69	2.23	1.25	1.50	1.24	.99	.55	.55	.25	.25	.35		
IN.	.50	1.89	2.57	1.45	1.56	1.44	1.10	.63	.61	.29	.29	.40		
AC-FT	555	2110	2870	1610	1740	1600	1230	704	679	327	321	441		
WTR YR 1985	TOTAL	7152.2	MEAN	19.6	MAX	92	MIN	4.5	CFSM	.94	IN.	12.73	AC-FT	14190

12110000 BIG SOOS CREEK ABOVE JENKINS CREEK, NEAR AUBURN, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.3	17	15	25	58	50	35	20	11	7.6	7.0	6.0		
2	6.4	20	15	34	53	43	31	21	10	9.1	6.7	5.6		
3	7.3	24	39	41	50	38	27	29	10	9.0	6.5	5.4		
4	6.7	30	95	40	49	36	26	27	9.9	9.1	6.3	5.2		
5	6.7	33	120	36	55	35	25	24	10	9.0	6.2	5.2		
6	6.7	28	135	49	51	32	23	26	10	8.5	6.2	5.1		
7	7.1	23	128	45	44	34	22	24	10	8.2	6.1	4.8		
8	7.0	30	108	38	39	48	21	22	10	7.8	5.8	4.8		
9	6.9	32	74	37	35	47	21	21	9.8	7.8	5.8	5.0		
10	6.9	28	52	37	33	39	21	24	9.0	9.0	5.6	5.2		
11	7.5	23	41	36	32	37	21	23	8.3	12	5.6	5.4		
12	7.5	19	35	32	30	36	23	26	8.0	9.7	5.8	5.4		
13	7.3	16	30	29	29	34	21	40	8.0	8.7	6.2	5.5		
14	7.3	15	28	26	29	35	20	38	7.9	8.3	6.3	6.3		
15	7.2	18	26	26	48	32	22	27	8.9	8.0	6.3	6.0		
16	8.4	33	25	30	73	29	26	22	8.8	10	5.6	5.6		
17	9.4	35	24	56	62	27	25	20	8.9	14	5.2	5.7		
18	8.6	34	23	150	48	27	23	19	11	11	5.2	7.9		
19	8.3	33	22	451	40	28	21	19	10	9.3	5.2	7.8		
20	12	31	21	265	34	26	20	24	9.4	8.5	5.2	8.8		
21	15	30	20	139	33	27	19	23	9.1	8.2	5.2	7.1		
22	15	26	20	105	41	28	19	20	8.4	8.1	4.9	6.6		
23	26	23	19	136	71	28	20	18	8.0	8.2	4.7	8.2		
24	31	21	19	119	145	51	19	17	7.9	8.3	4.6	12		
25	45	20	19	84	152	46	19	16	7.5	8.1	4.6	11		
26	38	19	18	64	119	46	20	15	7.6	8.2	4.6	11		
27	43	18	17	58	81	41	21	14	7.8	8.3	4.6	9.8		
28	56	17	16	58	61	35	24	14	7.5	8.2	4.6	9.1		
29	40	16	16	51	---	34	24	13	7.9	7.6	4.8	9.5		
30	27	16	16	56	---	35	22	12	7.8	7.3	5.5	11		
31	20	---	17	65	---	41	---	12	---	7.1	6.2	---		
TOTAL	507.5	728	1253	2418	1595	1125	681	670	268.4	272.2	173.1	212.0		
MEAN	16.4	24.3	40.4	78.0	57.0	36.3	22.7	21.6	8.95	8.78	5.58	7.07		
MAX	56	35	135	451	152	51	35	40	11	14	7.0	12		
MIN	6.3	15	15	25	29	26	19	12	7.5	7.1	4.6	4.8		
CFSM	.78	1.16	1.93	3.73	2.73	1.74	1.09	1.03	.43	.42	.27	.34		
IN.	.90	1.30	2.23	4.30	2.84	2.00	1.21	1.19	.48	.48	.31	.38		
AC-FT	1010	1440	2490	4800	3160	2230	1350	1330	532	540	343	421		
CAL YR 1985	TOTAL	6851.7	MEAN	18.8	MAX	135	MIN	4.5	CFSM	.90	IN.	12.20	AC-FT	13590
WTR YR 1986	TOTAL	9903.2	MEAN	27.1	MAX	451	MIN	4.6	CFSM	1.30	IN.	17.63	AC-FT	19640

DUWAMISH RIVER BASIN

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12110400 SOUTH FORK JENKINS CREEK NEAR COVINGTON, WA

LOCATION.--Lat 47°21'22", long 122°05'02", in NE¼NE¼ sec.31, T.22 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank at pipeline crossing, 1.5 mi east of Covington, and 1.0 mi upstream from mouth.

DRAINAGE AREA.--3.51 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 410.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-19, 23-25, 1984; July 1-22, 1985; Nov. 26 to Dec. 1, 1985; May 31 to June 8, 1986. Records fair. Some small diversions for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30 ft³/s Jan. 19, 1986, gage height, 3.06 ft; minimum discharge, 1.6 ft³/s Aug. 29, 1985.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge 17 ft³/s Dec. 30, Feb. 11; maximum gage height, 2.91 ft June 7; minimum discharge, 1.6 ft³/s Aug. 29.

WATER YEAR 1986.--Maximum discharge, 30 ft³/s Jan. 19, gage height, 3.06 ft; minimum discharge, 3.0 ft³/s Aug. 26-29, Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	3.1	7.1	15	8.9	8.6	9.1	7.3	5.4	3.2	2.7	2.2
2	2.4	6.4	6.6	14	8.6	8.6	8.7	7.2	5.0	3.2	2.7	3.0
3	2.5	6.8	6.4	14	8.6	8.7	9.8	7.2	5.0	3.2	2.8	2.9
4	2.5	8.0	6.1	14	8.3	11	9.5	6.9	4.7	3.1	2.9	2.6
5	2.5	6.1	6.1	13	8.9	10	8.7	6.9	4.7	3.0	2.6	2.8
6	2.4	4.9	5.8	13	8.9	9.8	8.6	6.7	4.7	3.0	2.3	3.0
7	2.6	4.4	6.3	13	9.2	9.4	8.2	6.5	11	3.0	2.3	3.5
8	2.5	4.1	11	13	9.3	9.1	8.2	6.5	9.1	3.0	2.8	4.0
9	2.7	4.4	10	12	9.4	9.1	8.2	6.1	6.9	3.0	2.5	4.6
10	3.1	5.0	9.8	12	10	9.1	8.2	6.3	5.7	2.8	3.3	4.1
11	2.9	6.8	9.1	12	15	8.6	8.2	6.4	5.4	2.8	2.6	3.8
12	3.0	6.1	11	12	14	8.6	8.2	6.1	5.0	2.8	2.3	3.3
13	3.5	6.6	10	11	12	8.6	8.2	6.1	5.4	2.8	2.3	3.2
14	3.1	6.1	11	11	11	8.6	8.1	6.1	5.4	2.8	2.3	3.5
15	3.1	5.1	12	11	12	8.6	7.6	6.1	5.4	2.9	2.1	3.8
16	2.9	4.6	11	11	11	8.6	7.4	5.7	5.4	2.8	2.1	4.1
17	2.8	4.4	11	10	10	8.4	7.3	5.9	5.0	2.8	2.1	4.6
18	2.8	4.6	10	10	9.7	8.2	7.7	5.8	5.0	2.8	2.1	4.4
19	2.9	4.7	9.9	10	10	8.2	7.4	5.1	5.0	2.7	2.4	4.1
20	3.0	6.1	10	12	11	8.0	7.3	5.0	4.7	2.6	2.3	4.3
21	2.7	5.5	10	11	11	7.7	7.3	5.0	4.1	2.5	2.2	4.6
22	2.7	4.8	13	10	11	8.4	7.3	4.8	4.1	2.5	2.4	5.2
23	2.8	6.3	12	9.9	11	10	7.6	4.7	4.4	2.5	2.3	5.1
24	3.0	6.8	11	9.6	11	10	7.7	4.5	3.8	2.5	2.3	4.7
25	3.0	5.8	11	9.6	11	9.6	8.5	4.4	3.8	2.5	2.3	4.0
26	2.8	5.4	11	9.3	9.6	8.6	7.8	4.4	3.8	2.4	2.3	3.5
27	3.0	7.3	13	9.1	9.3	8.6	8.2	4.4	3.8	2.6	1.8	4.0
28	3.1	8.8	12	9.1	9.1	8.4	8.5	4.4	4.1	2.7	1.7	3.3
29	2.9	10	14	9.3	---	8.1	7.8	5.7	3.8	2.7	1.7	3.4
30	2.7	9.6	17	9.1	---	9.5	7.7	6.5	3.5	2.3	1.7	3.5
31	2.7	---	15	9.0	---	9.9	---	6.1	---	2.3	2.0	---
TOTAL	87.1	178.6	319.2	348.0	288.8	276.6	243.0	180.8	153.1	85.8	72.2	113.1
MEAN	2.81	5.95	10.3	11.2	10.3	8.92	8.10	5.83	5.10	2.77	2.33	3.77
MAX	3.5	10	17	15	15	11	9.8	7.3	11	3.2	3.3	5.2
MIN	2.4	3.1	5.8	9.0	8.3	7.7	7.3	4.4	3.5	2.5	1.7	2.2
CFSM	.81	1.71	2.97	3.23	2.97	2.57	2.33	1.68	1.47	.80	.67	1.09
IN.	.93	1.91	3.42	3.73	3.10	2.97	2.61	1.94	1.64	.92	.77	1.21
AC-FT	173	354	633	690	573	549	482	359	304	170	143	224
WTR YR 1985	TOTAL	2346.3	MEAN	6.43	MAX	17	MIN	1.7	CFSM	1.85	IN.	25.15
									AC-FT			4650

DUWAMISH RIVER BASIN

12110400 SOUTH FORK JENKINS CREEK NEAR COVINGTON, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	3.5	9.9	10	15	19	21	19	14	12	7.7	5.6	3.6		
2	3.8	11	11	15	19	20	18	13	12	7.7	5.3	4.0		
3	3.9	12	15	15	19	20	17	15	11	7.7	5.2	4.1		
4	3.8	13	16	14	18	20	17	15	11	8.0	5.0	4.1		
5	3.8	13	16	15	19	19	17	15	11	8.2	5.0	4.1		
6	4.0	13	17	16	17	18	17	15	11	8.0	4.9	4.0		
7	4.1	12	19	15	17	19	17	15	10	7.3	4.7	3.9		
8	4.1	13	19	14	17	20	16	15	10	7.2	4.3	3.8		
9	4.1	13	18	14	16	19	15	14	9.9	6.3	4.4	3.8		
10	4.1	12	17	14	16	18	15	15	9.6	7.3	4.4	3.9		
11	4.6	12	17	14	15	18	15	15	9.4	7.5	4.4	4.1		
12	4.7	11	17	12	15	17	15	14	8.9	7.5	4.1	4.1		
13	4.4	11	17	12	15	18	15	17	8.4	7.7	4.1	4.5		
14	4.4	12	16	11	15	19	15	16	8.3	7.7	4.1	4.6		
15	4.4	13	16	12	17	18	15	15	7.7	7.7	4.1	4.4		
16	5.0	15	16	11	18	17	15	15	7.7	8.6	4.1	4.5		
17	4.7	14	15	11	17	17	15	14	7.8	8.9	4.1	4.8		
18	4.7	16	15	18	15	17	15	14	8.2	8.2	4.1	5.7		
19	4.9	16	15	28	15	17	15	14	8.2	7.8	4.1	5.5		
20	5.3	15	15	26	15	17	14	15	8.2	7.7	3.9	5.7		
21	4.9	14	15	25	15	17	14	14	8.2	7.5	3.7	5.7		
22	5.0	12	15	25	16	17	14	14	8.2	7.3	3.5	5.6		
23	6.0	12	15	26	21	17	14	13	8.2	7.1	3.2	5.7		
24	4.0	12	14	24	25	20	13	13	8.9	6.9	3.2	6.3		
25	12	12	14	21	25	18	13	13	9.1	6.9	3.2	5.7		
26	11	11	15	20	24	19	13	13	8.5	6.5	3.2	6.1		
27	13	11	17	20	22	19	15	13	8.1	6.1	3.0	5.7		
28	15	11	15	20	22	19	15	13	7.7	6.1	3.0	5.7		
29	12	11	13	19	---	18	15	13	7.6	6.1	3.0	5.6		
30	11	10	13	19	---	20	14	12	7.4	6.0	3.4	6.0		
31	9.9	---	13	19	---	20	---	12	---	5.7	3.5	---		
TOTAL	194.0	372.8	468	540	504	573	457	438	272.2	227.5	125.8	145.7		
MEAN	6.26	12.4	15.1	17.4	18.0	18.5	15.2	14.1	9.07	7.34	4.06	4.86		
MAX	15	16	19	28	25	31	19	17	12	8.9	5.6	6.3		
MIN	3.5	9.9	10	11	15	17	13	12	7.4	5.7	3.0	3.6		
CFSM	1.80	3.57	4.75	5.01	5.19	5.33	4.38	4.06	2.61	2.12	1.17	1.40		
IN.	2.08	4.00	5.02	5.79	5.40	6.14	4.90	4.70	2.92	2.44	1.35	1.56		
AC-FT	385	740	928	1070	1000	1140	906	869	540	451	250	289		
CAL YP 1985	TOTAL	2796.3	MEAN	7.66	MAX	19	MIN	1.7	CFSM	2.21	IN.	29.98	AC-FT	5550
WTR YP 1986	TOTAL	4318.1	MEAN	11.8	MAX	23	MIN	3.0	CFSM	3.40	IN.	46.29	AC-FT	8560

DUWAMISH RIVER BASIN

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12110500 JENKINS CREEK NEAR AUBURN, WA

LOCATION.--Lat 47°20'24", long 122°07'42", in SW¼NE¼ sec.2, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on right bank at Kent-Black Diamond Road, 5 mi northeast of Auburn, and 0.4 mi upstream from mouth.

DRAINAGE AREA.--16.0 mi².

PERIOD OF RECORD.--July to October 1944, July to September 1945, October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 305.6 ft above National Geodetic Vertical Datum of 1929. Prior to 1984, at site about 2,000 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 25-30, 1985. Records good. Some small diversions for domestic use. No regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162 ft³/s Jan. 19, 1986, gage height, 3.44 ft; minimum discharge, 8.3 ft³/s Aug. 30, 1985.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 68 ft³/s Dec. 30, gage height, 3.04 ft; minimum discharge, 8.3 ft³/s Aug. 30.

WATER YEAR 1986.--Maximum discharge, 162 ft³/s Jan. 19, gage height, 3.44 ft; minimum discharge, 9.0 ft³/s Aug. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	12	17	45	57	31	35	43	29	21	15	11	9.1		
2	12	35	41	54	31	35	40	28	21	14	11	9.7		
3	12	33	37	52	30	34	44	29	20	14	11	9.8		
4	12	37	35	50	30	41	40	29	21	13	11	9.6		
5	12	29	34	48	30	39	38	29	20	13	11	9.9		
6	12	25	33	46	29	37	35	28	21	14	9.8	11		
7	13	24	34	45	29	34	35	28	38	14	10	11		
8	12	23	51	43	31	31	35	28	31	13	11	12		
9	13	24	52	41	31	31	33	26	25	13	11	14		
10	15	26	50	40	37	31	31	27	24	12	12	13		
11	15	30	47	39	55	29	33	26	22	12	11	11		
12	14	27	52	38	50	29	33	25	22	12	11	12		
13	16	30	49	36	49	29	32	25	21	12	9.9	12		
14	15	29	51	37	50	30	30	27	22	12	9.6	12		
15	15	28	55	36	52	29	29	25	23	13	9.5	12		
16	14	27	52	35	49	29	28	25	22	12	9.2	13		
17	13	26	49	33	47	27	27	24	20	12	8.6	15		
18	13	26	46	33	45	27	29	23	20	12	9.1	14		
19	14	26	42	35	44	26	29	23	19	12	9.9	13		
20	14	30	41	39	45	27	29	23	18	11	10	13		
21	14	28	42	36	43	28	28	23	18	11	9.9	13		
22	14	26	50	35	41	29	28	22	18	11	9.9	13		
23	13	33	48	34	39	37	29	22	17	11	9.7	13		
24	13	33	45	33	39	40	28	22	17	11	9.2	13		
25	14	30	43	32	38	40	31	22	17	11	9.0	13		
26	14	30	41	31	37	38	30	21	17	9.6	9.3	13		
27	14	38	47	31	36	38	33	21	17	9.4	9.3	12		
28	14	46	46	31	35	37	35	20	16	9.7	8.7	13		
29	14	47	50	32	---	34	32	22	15	9.7	8.6	13		
30	14	50	62	31	---	42	30	24	15	9.5	8.5	13		
31	14	---	60	31	---	46	---	22	---	9.9	8.9	---		
TOTAL	420	913	1430	1194	1103	1039	977	768	618	367.8	307.6	365.1		
MEAN	13.5	30.4	46.1	38.5	39.4	33.5	32.6	24.8	20.6	11.9	9.92	12.2		
MAX	16	50	62	57	55	46	44	29	38	15	12	15		
MIN	12	17	33	31	29	26	27	20	15	9.4	8.5	9.1		
CFSM	.00	2.25	3.41	2.85	2.92	2.48	2.41	1.84	1.53	.88	.73	.90		
IN.	1.16	2.52	3.94	3.29	3.04	2.86	2.69	2.12	1.70	1.01	.85	1.01		
AC-FT	833	1810	2840	2370	2190	2060	1940	1520	1230	730	610	724		
WTR YR 1985	TOTAL	9502.5	MEAN	26.0	MAX	62	MIN	8.5	CFSM	1.93	IN.	26.18	AC-FT	18850

DUWAMISH RIVER BASIN

12110500 JENKINS CREEK NEAR AUBURN, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	13	27	29	38	73	73	51	35	29	18	15	11		
2	12	30	30	38	69	68	49	36	28	19	14	11		
3	12	29	41	41	67	63	47	39	27	18	14	11		
4	12	36	47	39	65	60	46	38	27	19	13	11		
5	12	35	54	40	67	58	45	39	26	19	13	11		
6	13	33	63	46	60	56	43	39	27	19	13	11		
7	13	33	69	43	57	57	42	38	26	18	13	9.8		
8	13	36	70	44	55	61	41	37	26	18	12	9.9		
9	13	36	64	44	54	59	41	36	25	18	12	10		
10	13	35	59	46	53	56	39	37	25	19	12	11		
11	14	33	56	44	51	56	40	36	25	20	12	10		
12	14	31	52	42	49	54	40	38	23	19	12	10		
13	14	30	50	41	48	53	39	46	22	18	13	11		
14	14	29	48	40	48	55	38	43	22	18	12	12		
15	14	33	47	40	57	51	39	40	22	18	11	11		
16	16	37	45	42	61	49	39	38	22	21	11	11		
17	15	38	43	51	57	47	38	38	22	21	11	11		
18	14	38	41	75	54	48	37	37	22	20	11	14		
19	15	38	40	122	51	47	36	37	22	18	11	13		
20	17	38	40	124	49	46	35	38	23	18	11	15		
21	16	36	39	111	49	47	34	37	22	18	11	14		
22	18	34	38	103	52	46	35	36	21	17	11	13		
23	20	37	37	109	65	47	34	35	21	18	10	16		
24	26	32	36	104	87	58	34	34	20	17	9.8	18		
25	33	31	35	95	95	54	34	34	19	17	9.8	17		
26	28	30	34	86	91	56	35	33	19	17	9.8	18		
27	36	30	34	82	84	54	37	33	19	17	9.6	17		
28	44	29	33	77	79	52	39	32	18	17	9.5	17		
29	32	29	33	73	---	50	38	31	18	17	9.8	17		
30	29	29	32	77	---	53	36	31	18	16	11	17		
31	27	---	32	76	---	53	---	29	---	16	11	---		
TOTAL	582	988	1371	2033	1747	1687	1181	1130	686	563	358.3	388.7		
MEAN	18.8	32.9	44.2	65.6	62.4	54.4	39.4	36.5	22.9	18.2	11.6	13.0		
MAX	44	38	70	124	95	73	51	46	29	21	15	18		
MIN	12	27	29	38	48	46	34	29	18	16	9.5	9.8		
CFSM	1.39	2.44	3.27	4.86	4.62	4.03	2.92	2.70	1.70	1.35	.86	.96		
IN.	1.60	2.72	3.78	5.60	4.81	4.65	3.25	3.11	1.89	1.55	.99	1.07		
AC-FT	1150	1960	2720	4030	3470	3350	2340	2240	1360	1120	711	771		
CAL YR 1985	TOTAL	9680.5	MEAN	26.5	MAX	70	MIN	8.5	CFSM	1.96	IN.	26.68	AC-FT	19200
WTR YR 1986	TOTAL	12715.0	MEAN	34.8	MAX	124	MIN	9.5	CFSM	2.58	IN.	35.04	AC-FT	25220

12112000 COVINGTON CREEK NEAR AUBURN, WA

LOCATION.--Lat 47°18'51", long 122°06'32", in NW¼NE¼ sec.13, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on right bank at 272nd Street SE, 0.7 mi downstream from Auburn-Black Diamond Road, 4 mi northeast of Auburn, and 1.2 mi upstream from mouth.

DRAINAGE AREA.--20.6 mi².

PERIOD OF RECORD.--July to September 1944, July to September 1945, October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 333.6 ft above National Geodetic Vertical Datum of 1929. Prior to 1984, at site about 0.4 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Oct. 1-30, 1984, Nov. 26 to Dec. 1, 1985. Records good. Some small diversions for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132 ft³/s Feb. 26, 1986, gage height, 2.73 ft; minimum discharge, 1.6 ft³/s Sept. 1-6, 1985, Sept. 17, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 52 ft³/s Dec. 30, gage height, 2.29 ft; minimum discharge, 1.6 ft³/s Sept. 1-6.

WATER YEAR 1986.--Maximum discharge, 132 ft³/s Feb. 26, gage height, 2.73 ft; minimum discharge, 1.6 ft³/s Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.0	5.4	30	48	20	30	30	19	10	4.3	2.6	1.6		
2	2.0	13	30	47	20	30	28	19	9.9	4.2	2.6	1.6		
3	2.0	12	29	45	19	29	30	19	9.3	4.0	2.5	1.6		
4	2.2	13	27	42	18	37	30	19	9.7	3.8	2.3	1.6		
5	2.2	9.7	25	40	17	35	29	18	9.3	3.7	2.3	1.6		
6	2.1	8.6	24	38	17	33	27	17	10	3.5	2.2	1.8		
7	2.1	8.2	24	36	18	31	26	17	23	3.4	2.6	1.9		
8	2.1	7.6	33	34	17	30	26	16	25	3.3	3.3	2.1		
9	2.3	7.8	34	32	17	29	25	16	24	3.1	2.5	2.3		
10	3.3	9.1	36	30	19	28	24	15	21	3.0	4.1	2.3		
11	3.2	11	35	29	27	28	24	15	19	2.9	2.7	2.1		
12	3.5	10	39	28	30	26	24	14	17	2.9	2.4	1.9		
13	3.5	12	38	27	31	25	22	14	16	2.7	2.3	2.0		
14	2.8	11	41	27	33	25	22	15	17	2.7	2.1	2.1		
15	2.6	9.9	43	27	36	24	21	14	16	2.7	2.0	2.1		
16	2.5	9.0	42	25	35	23	21	13	14	2.5	1.9	2.3		
17	2.5	8.6	42	25	34	22	20	12	13	2.5	1.9	2.5		
18	2.3	9.1	40	24	34	22	21	12	12	2.5	1.9	2.4		
19	2.3	8.8	37	24	34	22	19	11	10	2.4	1.9	2.2		
20	2.3	11	36	29	35	22	19	10	9.0	2.3	1.9	2.1		
21	2.1	7.9	35	27	33	22	18	9.5	8.1	2.3	1.9	2.1		
22	2.1	7.1	40	25	33	22	19	9.5	7.5	2.3	1.9	2.1		
23	2.1	9.8	40	25	32	27	20	9.0	6.8	2.4	1.8	2.1		
24	2.2	15	40	23	32	28	19	8.2	6.2	2.5	1.8	2.0		
25	2.5	19	39	22	32	28	21	8.1	5.9	2.4	1.8	1.9		
26	2.5	19	38	22	31	26	21	8.1	5.4	2.3	1.8	1.9		
27	2.5	24	41	21	30	26	22	7.8	5.0	2.3	1.8	1.9		
28	2.5	27	40	21	30	25	23	7.4	4.7	2.2	1.8	1.9		
29	2.3	27	43	20	---	24	22	9.3	4.4	2.1	1.8	1.9		
30	2.3	30	49	19	---	28	21	12	4.4	2.1	1.8	3.6		
31	2.5	---	48	19	---	30	---	11	---	2.4	1.8	---		
TOTAL	75.4	380.6	1138	901	764	837	694	404.9	352.6	87.7	68.0	61.5		
MEAN	2.43	12.7	36.7	29.1	27.3	27.0	23.1	13.1	11.8	2.83	2.19	2.05		
MAX	3.5	30	49	48	36	37	30	19	25	4.3	4.1	3.6		
MIN	2.0	5.4	24	19	17	22	18	7.4	4.4	2.1	1.8	1.6		
CFSM	.11	.59	1.70	1.35	1.26	1.25	1.07	.61	.55	.13	.10	.09		
IN.	.13	.66	1.96	1.55	1.32	1.44	1.20	.70	.61	.15	.12	.11		
AC-FT	150	755	2260	1790	1520	1660	1380	803	699	174	135	122		
WTR YR 1985	TOTAL	5764.7	MEAN	15.8	MAX	49	MIN	1.6	CFSM	.73	IN.	9.93	AC-FT	11430

DUWAMISH RIVER BASIN

12112000 COVINGTON CREEK NEAR AUBURN, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.4	5.9	15	21	68	94	54	29	20	5.3	3.1	2.2		
2	1.9	6.5	17	22	69	84	52	30	19	5.6	3.1	2.2		
3	1.9	6.3	24	25	66	77	49	35	17	5.4	3.1	2.1		
4	1.9	8.9	25	23	64	70	47	34	16	5.6	2.9	1.9		
5	1.9	7.8	29	25	63	63	45	35	16	5.4	2.9	1.9		
6	2.0	7.3	37	29	59	59	43	36	15	5.1	2.9	1.8		
7	2.1	7.3	42	28	56	59	41	36	15	4.8	2.8	1.8		
8	2.1	7.9	43	28	53	62	39	35	14	4.5	2.7	1.8		
9	2.1	12	43	29	51	60	38	36	14	4.3	2.6	1.8		
10	2.1	18	41	30	48	57	36	38	13	4.9	2.5	1.8		
11	2.3	19	39	29	47	56	36	37	13	6.2	2.7	1.8		
12	2.3	19	37	27	44	55	36	38	12	6.3	2.7	1.8		
13	2.3	17	34	26	42	53	34	45	11	5.7	2.6	1.8		
14	2.3	16	32	26	42	54	33	43	11	5.0	2.5	1.9		
15	2.3	18	30	26	50	52	33	42	11	4.8	2.4	1.8		
16	2.8	20	29	28	55	49	34	40	9.8	6.1	2.3	1.8		
17	2.8	22	27	32	54	47	32	39	9.6	6.6	2.4	1.7		
18	2.5	24	25	51	52	47	30	38	11	6.0	2.3	2.4		
19	2.6	22	25	85	49	47	29	38	11	5.3	2.3	1.9		
20	3.6	23	23	100	47	45	27	41	10	4.8	2.3	1.9		
21	3.6	22	22	101	47	45	27	39	9.5	4.4	2.1	1.9		
22	3.7	24	22	106	51	44	28	36	8.9	4.0	2.1	1.9		
23	2.7	22	21	110	66	45	27	34	8.5	4.0	2.1	2.3		
24	5.5	20	20	101	86	55	25	31	7.8	4.0	2.1	2.6		
25	7.7	19	19	92	113	55	25	30	7.2	3.8	2.1	2.3		
26	6.3	18	19	84	125	58	26	28	6.6	3.8	2.1	2.8		
27	8.2	17	18	80	121	56	30	28	6.3	3.7	2.1	2.3		
28	9.8	17	17	76	106	55	33	26	5.9	3.5	2.1	2.3		
29	6.8	16	17	72	---	53	33	25	5.8	3.5	2.1	2.4		
30	6.4	16	17	74	---	56	31	23	5.4	3.3	2.4	2.4		
31	5.8	---	16	71	---	56	---	22	---	3.3	2.3	---		
TOTAL	112.7	478.9	825	1657	1794	1768	1053	1067	340.3	149.0	76.7	61.3		
MEAN	3.64	16.0	26.6	53.5	64.1	57.0	35.1	34.4	11.3	4.81	2.47	2.04		
MAX	9.8	24	43	110	125	94	54	45	20	6.6	3.1	2.8		
MIN	1.9	5.9	15	21	42	44	25	22	5.4	3.3	2.1	1.7		
CFSM	.17	.74	1.23	2.48	2.97	2.64	1.62	1.59	.52	.22	.11	.09		
IN.	.19	.82	1.42	2.85	3.09	3.04	1.81	1.84	.59	.26	.13	.11		
AC-FT	224	950	1640	3290	3560	3510	2090	2120	675	296	152	122		
CAL YR 1985	TOTAL	5587.3	MEAN	15.3	MAX	48	MIN	1.6	CFSM	.71	IN.	9.62	AC-FT	11080
WTR YR 1986	TOTAL	9382.9	MEAN	25.7	MAX	125	MIN	1.7	CFSM	1.19	IN.	16.16	AC-FT	18610

DUWAMISH RIVER BASIN

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12112550 SOOSETTE CREEK NEAR AUBURN, WA

LOCATION.--Lat 47°19'03", long 122°09'30", in SW1SW1 sec.10, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 25 ft downstream from Burlington Northern Railroad crossing, 3 mi east of Auburn, and 0.1 mi upstream from mouth.

DRAINAGE AREA.--5.44 mi².

PERIOD OF RECORD.--October 1984 to February 1985, October 1985 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 93.2 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-11, 1984; Oct. 1-23, 1985, Nov. 23 to Dec. 2, 1985. Records poor. Some small diversions for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 149 ft³/s Jan. 19, 1986, gage height, 2.37 ft; minimum discharge, 0.52 ft³/s Aug. 3, 9-11, 15-28, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum recorded discharge during period October to February, 24 ft³/s Dec. 8, gage height, 2.17 ft; minimum daily discharge, 4.8 ft³/s Oct. 1.

WATER YEAR 1986.--Maximum discharge, 149 ft³/s Jan. 19, gage height, 2.37 ft; minimum discharge, 0.52 ft³/s Aug. 3, 9-11, 15-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO FEBRUARY 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	8.6	11	10	5.2							
2	4.8	16	10	9.1	5.3							
3	4.9	13	9.2	8.1	5.2							
4	5.3	13	8.6	7.5	5.6							
5	5.5	9.9	8.1	7.1	5.1							
6	5.3	8.9	8.1	6.8	5.2							
7	5.2	8.7	9.7	6.6	6.4							
8	5.4	8.3	20	6.3	6.0							
9	6.0	9.1	15	6.0	6.0							
10	8.4	11	14	5.8	9.7							
11	8.1	14	12	5.7	17							
12	7.5	12	13	5.6	17							
13	8.5	13	11	5.6	13							
14	6.9	11	12	6.0	13							
15	6.3	9.7	12	6.1	12							
16	6.2	9.2	10	5.7	11							
17	6.2	8.8	9.2	5.5	10							
18	6.0	9.8	7.9	5.4	9.3							
19	6.0	9.7	7.1	5.8	9.5							
20	5.8	12	6.8	9.1	9.2							
21	5.8	10	7.5	7.1	8.4							
22	5.8	9.2	11	6.4	8.2							
23	6.3	13	9.5	6.1	8.1							
24	7.8	12	8.6	5.7	8.1							
25	6.6	10	7.9	5.5	8.1							
26	6.7	9.5	7.5	5.3	8.1							
27	6.9	15	11	5.2	8.1							
28	6.8	17	9.0	5.2	8.1							
29	6.8	14	12	5.1	---							
30	6.7	14	17	5.1	---							
31	6.5	---	13	5.1	---							
TOTAL	195.8	339.4	328.7	195.6	245.9							
MEAN	6.32	11.3	10.6	6.31	8.78							
MAX	8.5	17	20	10	17							
MIN	4.8	8.3	6.8	5.1	5.1							
CFSM	1.16	2.08	1.95	1.16	1.61							
IN.	1.34	2.32	2.25	1.34	1.68							
AC-FT	388	673	652	388	488							

DUWAMISH RIVER BASIN

12112550 SOOSETTE CREEK NEAR AUBURN, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.0	4.6	2.2	8.2	17	9.4	7.1	3.5	2.5	.77	.58	.57		
2	1.0	8.2	2.2	7.7	14	8.9	6.2	5.4	2.7	.84	.55	.55		
3	1.1	7.1	35	10	14	9.1	5.7	8.2	2.6	.80	.54	.55		
4	1.0	14	32	6.7	14	8.9	5.3	5.9	2.4	.92	.56	.55		
5	1.0	7.5	33	11	17	7.9	4.7	7.2	2.4	.83	.58	.55		
6	1.0	5.2	36	13	11	7.3	4.3	6.4	2.4	.73	.59	.55		
7	1.1	4.8	30	8.3	9.4	8.1	3.8	5.3	2.5	.69	.55	.55		
8	1.1	7.4	20	8.1	11	12	3.6	4.7	2.4	.69	.55	.58		
9	1.1	5.7	13	8.7	9.8	9.0	3.8	5.1	2.1	.69	.54	.60		
10	1.1	4.1	9.5	9.0	8.9	8.0	3.6	5.9	1.9	.87	.52	.62		
11	1.1	3.1	7.8	7.8	8.2	7.7	4.0	5.2	1.7	1.1	.53	.63		
12	1.1	2.7	6.6	6.5	7.6	8.2	4.4	6.4	1.5	.80	.55	.60		
13	1.1	2.4	5.8	5.8	7.5	7.9	3.4	14	1.3	.73	.55	.68		
14	1.1	2.2	5.2	5.4	8.6	8.1	3.2	8.2	1.1	.69	.55	.69		
15	1.1	6.4	5.0	6.3	28	7.3	5.2	6.4	1.2	.77	.54	.64		
16	1.3	11	4.7	9.1	26	6.4	4.9	5.4	.95	1.5	.52	.66		
17	1.4	9.2	4.5	22	18	6.0	3.8	4.6	1.0	1.3	.52	.68		
18	1.3	9.3	4.4	59	13	7.3	3.2	4.4	1.4	.82	.52	1.0		
19	1.3	7.8	4.3	109	13	6.2	3.1	5.0	1.2	.67	.52	.71		
20	2.0	8.9	4.0	45	12	5.6	3.0	7.3	.97	.64	.52	.69		
21	2.3	6.1	3.8	25	12	7.4	2.8	5.3	.91	.63	.53	.66		
22	2.3	5.2	3.7	33	14	6.4	3.4	4.7	.85	.62	.54	.64		
23	4.5	4.6	3.6	48	47	9.8	3.1	4.2	.78	.63	.52	1.1		
24	16	4.0	3.5	27	58	15	2.7	3.8	.75	.60	.52	1.0		
25	11	3.5	3.5	22	57	11	3.3	3.5	.75	.60	.52	.87		
26	12	3.0	3.3	14	29	11	3.6	3.3	.75	.60	.52	1.4		
27	22	2.8	3.3	17	16	8.0	4.6	3.3	.75	.60	.52	.88		
28	19	2.6	3.1	12	11	7.9	4.8	3.0	.77	.60	.54	.73		
29	6.1	2.4	2.9	11	---	7.9	5.6	2.7	.79	.60	.55	.78		
30	5.0	2.3	3.1	23	---	7.6	4.3	2.5	.75	.60	.62	.80		
31	4.0	---	3.1	21	---	8.0	---	2.3	---	.59	.62	---		
TOTAL	127.5	168.1	302.1	619.6	512.0	259.3	124.5	163.1	44.07	23.52	16.88	21.51		
MEAN	4.11	5.60	9.75	20.0	18.3	8.36	4.15	5.26	1.47	.76	.54	.72		
MAX	22	14	36	109	58	15	7.1	14	2.7	1.5	.62	1.4		
MIN	1.0	2.2	2.2	5.4	7.5	5.6	2.7	2.3	.75	.59	.52	.55		
CFSM	.76	1.03	1.79	3.68	3.36	1.54	.76	.97	.27	.14	.10	.13		
IN.	.87	1.15	2.07	4.24	3.50	1.77	.85	1.12	.30	.16	.12	.15		
AC-FT	253	333	599	1230	1020	514	247	324	87	47	33	43		
WTR YR 1986	TOTAL	2382.18	MEAN	6.53	MAX	109	MIN	.52	CFSM	1.20	IN.	16.29	AC-FT	4730

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW¼ sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi upstream from fish hatchery, 2.7 mi east of Auburn, and at mile 0.9.

DRAINAGE AREA.--66.7 mi², excludes 3.67 mi² in vicinity of Youngs Lake (flow from which has been diverted to Cedar River since about 1935).

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 77.2 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 2, Aug. 20-29. Records good except for estimated daily discharges, which are fair. City of Seattle diverts probably less than 2 ft³/s from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966, fish hatchery 0.5 mi upstream from station diverted up to 19 ft³/s which was returned downstream from the station.

AVERAGE DISCHARGE.--20 years (water years 1967-86), 126 ft³/s, 25.65 in/yr, 91,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,090 ft³/s Feb. 28, 1972, gage height, 6.17 ft; minimum discharge, 11 ft³/s Sept. 5, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 440 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0930	*888	*5.51	Feb. 25	0830	468	4.20

Minimum daily discharge, 20 ft³/s Aug. 27, 28, Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	28	68	70	116	240	256	166	101	70	41	32	22		
2	28	78	74	127	228	231	155	107	67	42	31	22		
3	29	81	134	142	219	213	147	130	64	41	30	22		
4	28	98	185	134	213	201	141	122	63	43	29	22		
5	28	95	228	138	226	189	136	122	63	42	29	22		
6	30	85	269	160	209	179	130	123	62	41	29	21		
7	30	81	278	148	189	185	125	117	62	40	28	20		
8	30	92	252	142	176	217	121	112	61	39	27	21		
9	29	94	216	143	168	207	120	112	59	39	27	22		
10	29	92	190	144	161	187	116	120	57	42	27	22		
11	32	86	171	141	155	182	116	115	55	46	27	22		
12	31	80	158	132	146	176	120	123	53	43	28	22		
13	30	76	148	124	142	169	113	164	51	41	28	23		
14	30	73	140	120	143	173	108	148	51	40	27	25		
15	30	84	135	121	210	161	115	127	52	40	27	23		
16	35	105	128	134	240	152	121	117	50	47	26	22		
17	34	109	123	181	215	145	115	111	50	50	25	23		
18	32	110	119	349	188	147	108	108	55	45	25	30		
19	34	105	116	799	169	145	103	107	54	40	25	28		
20	43	105	113	571	157	138	99	121	52	39	25	32		
21	45	99	110	417	156	142	96	113	50	38	24	28		
22	47	94	105	378	177	139	100	105	48	38	23	27		
23	61	88	103	437	272	147	99	99	46	37	22	34		
24	84	84	101	385	404	203	94	94	45	37	22	39		
25	110	80	99	324	447	192	96	90	43	37	21	36		
26	97	78	97	284	382	202	99	87	43	37	21	39		
27	117	76	95	271	323	183	109	87	42	37	20	34		
28	139	74	93	253	284	172	117	83	41	36	20	33		
29	99	72	91	232	---	165	117	79	42	35	21	35		
30	81	71	91	257	---	174	108	76	41	34	23	35		
31	71	---	91	258	---	179	---	73	---	33	23	---		
TOTAL	1571	2613	4323	7562	6239	5551	3510	3393	1592	1240	792	806		
MEAN	50.7	87.1	139	244	223	179	117	109	53.1	40.0	25.5	26.9		
MAX	139	110	278	799	447	256	166	164	70	50	32	39		
MIN	28	68	70	116	142	138	94	73	41	33	20	20		
CFSM	.76	1.31	2.08	3.66	3.34	2.68	1.75	1.63	.80	.60	.38	.40		
IN.	.88	1.46	2.41	4.22	3.48	3.10	1.96	1.89	.89	.69	.44	.45		
AC-FT	3120	5180	8570	15000	12380	11010	6960	6730	3160	2460	1570	1600		
CAL YR 1985	TOTAL	27063	MEAN	74.1	MAX	278	MIN	21	CFSM	1.11	IN.	15.09	AC-FT	53680
WTR YR 1986	TOTAL	39192	MEAN	107	MAX	799	MIN	20	CFSM	1.60	IN.	21.86	AC-FT	77740

DUWAMISH RIVER BASIN

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW¼NW¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi east of Auburn, 1.8 mi downstream from Big Soos Creek, and at mile 32.0.

DRAINAGE AREA.--399 mi², excludes 3.67 mi² in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (station 12105800), 32.5 mi upstream from station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 110 ft³/s from river at headworks near Palmer, 29 mi upstream from station, for municipal use. Minor diversions on upstream tributaries for domestic use. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--50 years, 1,346 ft³/s, 975,200 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s Nov. 23, 1959, elevation, 69.75 ft; minimum discharge, 81 ft³/s Sept. 23, 1952; minimum elevation, 53.00 ft Aug. 25-27, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	2200	7,030	60.31	Jan. 19	0815	6,340	59.80
Nov. 4	2000	6,490	59.91	Feb. 25	2030	*11,000	*62.89

Minimum discharge, 223 ft³/s Aug. 25-27, elevation, 53.00 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	259	1700	567	684	1390	2680	2210	1360	781	359	285	248
2	256	2980	596	694	1380	2630	1890	823	760	370	282	244
3	269	4400	896	718	1420	2690	1580	951	582	343	278	245
4	267	5240	1030	620	1490	2710	1430	917	664	345	276	244
5	264	5280	1000	641	1310	2120	1300	917	669	333	276	240
6	274	4220	1100	835	1280	1990	1280	888	666	325	275	236
7	269	4830	1090	1040	1220	1860	1250	835	662	319	271	233
8	264	3540	1040	819	979	2260	1230	830	660	314	268	237
9	260	2490	981	824	964	2320	1250	833	655	311	265	708
10	260	2070	1030	883	999	2420	1270	839	645	332	264	987
11	278	1900	801	903	1100	2480	1170	834	636	360	271	989
12	272	1570	765	885	884	1960	1190	887	630	334	403	996
13	268	1490	729	984	870	1770	1130	1200	615	323	294	413
14	264	1250	651	1210	853	1530	1010	1140	557	317	253	285
15	264	1260	637	931	964	1090	1030	1470	557	318	246	258
16	306	1170	634	989	1140	1080	1030	1810	544	351	242	277
17	487	1200	678	1290	1050	1230	1050	1800	511	378	240	282
18	633	1220	669	1800	994	1870	1070	1790	536	342	238	308
19	730	1290	668	4990	1040	1810	990	1740	526	327	238	295
20	784	1140	697	2860	962	1830	981	1670	503	318	237	273
21	773	1020	654	2650	859	1770	1000	1620	495	310	233	248
22	791	838	647	2460	949	1180	1170	1390	487	307	232	242
23	960	808	664	2120	1890	1570	1280	1410	476	307	231	265
24	1730	795	771	1950	9530	2050	1060	2180	429	304	231	309
25	4050	837	638	1600	10400	2390	1110	2180	415	302	230	277
26	6630	816	689	1530	9670	2260	1020	2150	389	299	228	289
27	6380	894	878	1490	5800	1960	1090	1820	381	298	237	268
28	4710	714	635	1420	3620	1570	1570	866	364	295	241	280
29	2330	685	625	1300	---	1830	2180	820	362	294	246	295
30	1760	591	624	1350	---	1960	1610	801	357	296	258	327
31	1560	---	617	1510	---	2130	---	789	---	298	256	---
TOTAL	38602	58238	23701	43980	65007	61000	38431	39560	16514	10029	8025	10798
MEAN	1245	1941	765	1419	2322	1968	1281	1276	550	324	259	360
MAX	6630	5280	1100	4990	10400	2710	2210	2180	781	378	403	996
MIN	256	591	567	620	853	1080	981	789	357	294	228	233
AC-FT	76570	115500	47010	87230	128900	121000	76230	78470	32760	19890	15920	21420
CAL YR 1985	TOTAL	381506	MEAN	1045	MAX	6630	MIN	256	AC-FT	756700		
WTR YR 1986	TOTAL	413885	MEAN	1134	MAX	10400	MIN	228	AC-FT	820900		

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: March 1952 to September 1986 (discontinued).

INSTRUMENTATION.--Temperature recorder since March 1952.

REMARKS.--Daily record of water temperature for May 13 to June 17 was not available due to equipment malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.0°C July 28, 1958; minimum, 0.0°C on Jan. 29, 30, 1980, Feb. 4, Nov. 23-25, Dec. 1, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 22.0°C Aug. 8, 9; minimum, 0.0°C Nov. 23-25, Dec. 1.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.5	11.0	11.5	8.5	7.5	8.0	1.0	.0	.5	4.5	4.0	4.0
2	13.0	12.0	12.5	8.5	8.5	8.5	2.5	1.0	1.5	4.0	3.0	3.5
3	14.5	12.5	13.0	9.0	8.5	8.5	2.5	2.0	2.5	4.5	3.5	4.0
4	13.0	11.0	12.0	8.5	8.0	8.5	3.5	2.5	3.0	4.0	3.0	3.5
5	13.0	11.0	12.0	7.5	7.0	7.0	4.0	3.0	3.5	5.0	4.0	4.5
6	13.0	12.0	12.5	7.5	7.0	7.5	4.5	4.0	4.0	5.0	4.0	4.5
7	12.5	10.5	11.5	7.5	7.0	7.5	5.0	4.0	4.5	4.5	3.5	4.0
8	11.0	8.5	9.5	7.0	6.5	7.0	4.5	3.5	4.0	5.5	4.5	5.0
9	10.0	7.5	9.0	6.5	6.0	6.0	3.5	3.0	3.0	6.0	5.5	5.5
10	11.0	9.5	10.0	6.0	4.5	5.5	3.0	2.5	3.0	6.0	5.5	6.0
11	12.0	10.5	11.5	4.5	4.0	4.5	3.5	2.5	3.0	6.0	5.0	5.5
12	11.5	10.0	11.0	4.0	3.5	3.5	3.0	2.5	2.5	5.0	4.5	5.0
13	11.0	9.0	10.0	4.5	3.0	4.0	3.0	2.5	3.0	5.5	4.5	5.0
14	11.5	10.5	11.0	4.5	3.5	4.0	3.5	2.5	3.0	5.5	4.5	5.0
15	12.5	11.5	11.5	5.5	4.5	5.0	4.5	3.5	4.0	5.5	5.5	5.5
16	13.0	12.0	12.5	6.0	5.5	5.5	4.5	3.5	4.0	6.0	5.5	5.5
17	12.0	10.5	11.5	5.5	4.0	4.5	4.0	3.5	4.0	6.0	5.5	5.5
18	12.5	11.0	11.5	4.5	4.0	4.0	4.0	3.5	4.0	7.0	5.5	6.5
19	11.5	11.0	11.0	4.5	4.0	4.0	4.0	3.5	4.0	6.5	5.5	6.0
20	11.5	10.5	11.0	4.0	2.5	3.5	3.5	3.5	3.5	5.5	5.5	5.5
21	11.5	10.5	11.0	2.5	1.5	2.5	3.5	2.5	3.0	5.5	5.0	5.0
22	10.5	10.0	10.5	2.0	1.0	1.5	3.5	3.5	3.5	5.5	5.0	5.0
23	10.5	9.5	10.0	1.0	.0	.5	3.5	3.0	3.5	6.0	5.0	5.5
24	10.5	10.0	10.0	.5	.0	.0	3.5	3.0	3.0	6.0	5.0	5.5
25	10.0	9.0	9.5	1.5	.0	.5	3.5	3.0	3.0	5.5	4.5	5.0
26	9.0	8.5	9.0	3.0	1.5	2.5	3.5	3.0	3.0	5.5	4.0	5.0
27	8.5	8.0	8.0	2.5	1.5	2.0	3.0	2.5	2.5	6.5	5.5	6.0
28	8.5	7.5	8.0	2.5	1.5	2.0	2.5	1.5	2.0	6.0	5.5	6.0
29	7.5	7.0	7.0	2.0	1.5	2.0	3.5	2.5	3.0	7.0	6.0	6.5
30	8.0	7.0	7.5	2.0	1.0	1.5	3.5	3.5	3.5	7.5	6.5	7.0
31	7.5	7.0	7.0	---	---	---	4.0	3.5	3.5	7.0	6.5	7.0
MONTH	14.5	7.0	10.5	9.0	.0	4.5	5.0	.0	3.0	7.5	3.0	5.5

DUWAMISH RIVER BASIN

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	6.5	7.0	8.5	6.5	7.0	8.5	7.0	7.5	9.0	8.0	8.5
2	7.0	5.5	6.5	8.0	6.0	7.0	8.5	7.0	7.5	10.5	9.0	9.5
3	7.0	6.0	6.5	7.5	6.0	7.0	8.5	7.0	7.5	12.5	9.5	11.0
4	7.0	6.5	6.5	8.5	7.0	7.5	9.5	7.5	8.5	11.5	9.5	10.5
5	7.0	6.5	6.5	8.0	7.0	7.5	10.5	7.0	8.5	10.0	9.5	9.5
6	6.5	5.5	6.0	8.0	6.5	7.5	11.0	7.0	9.0	9.5	9.0	9.0
7	6.0	4.5	5.0	9.0	7.5	8.0	12.0	7.5	10.0	10.0	9.0	9.5
8	5.0	3.5	4.5	8.5	7.5	8.0	10.5	9.0	10.0	11.5	9.5	10.5
9	4.5	3.5	4.0	8.0	7.0	7.5	9.5	8.5	9.0	10.5	9.5	10.0
10	5.0	3.5	4.5	8.0	6.5	7.5	10.0	7.5	8.5	9.5	9.0	9.5
11	5.5	4.0	4.5	8.0	6.5	7.5	8.5	7.5	8.0	10.5	9.0	9.5
12	4.5	3.5	4.0	8.5	7.0	7.5	9.0	7.0	8.0	9.5	9.5	9.5
13	4.0	3.0	3.5	7.5	6.5	7.0	8.5	7.5	8.0	---	---	---
14	4.0	3.5	3.5	8.5	6.0	7.0	9.0	6.5	8.0	---	---	---
15	6.0	4.0	5.0	8.0	5.5	6.5	9.5	8.5	8.5	---	---	---
16	6.0	4.0	5.0	8.0	6.0	7.0	10.0	8.0	9.0	---	---	---
17	4.5	4.0	4.0	7.5	6.5	7.0	10.0	8.5	9.0	---	---	---
18	4.5	3.5	4.0	7.0	6.5	6.5	9.0	8.5	8.5	---	---	---
19	4.0	2.5	3.5	9.5	7.0	8.0	9.5	8.0	9.0	---	---	---
20	4.5	3.0	3.5	10.0	7.5	8.5	12.0	8.5	10.0	---	---	---
21	5.0	4.0	4.5	9.5	8.0	8.5	10.5	10.5	10.5	---	---	---
22	6.0	5.0	5.5	9.0	7.0	8.0	10.5	9.5	10.0	---	---	---
23	7.0	5.0	6.0	7.5	6.5	7.5	10.5	8.0	9.0	---	---	---
24	5.0	4.5	4.5	8.5	7.0	7.5	8.5	7.5	7.5	---	---	---
25	6.5	5.5	6.0	7.5	6.5	7.0	8.0	7.5	8.0	---	---	---
26	6.5	6.0	6.0	8.5	7.0	7.5	8.5	7.5	8.0	---	---	---
27	7.0	6.0	6.5	10.0	7.5	8.5	9.0	8.5	8.5	---	---	---
28	7.5	6.5	7.0	10.5	8.5	9.5	8.5	7.5	8.0	---	---	---
29	---	---	---	9.0	7.5	8.5	7.5	7.0	7.5	---	---	---
30	---	---	---	9.5	8.0	8.5	8.5	7.0	7.5	---	---	---
31	---	---	---	9.0	7.0	8.0	---	---	---	---	---	---
MONTH	8.0	2.5	5.0	10.5	5.5	7.5	12.0	6.5	8.5	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	17.5	15.5	16.0	20.5	16.0	18.0	17.5	15.0	16.0
2	---	---	---	16.0	14.5	15.0	21.5	17.0	19.0	17.5	16.0	17.0
3	---	---	---	16.5	14.0	15.0	21.5	17.5	19.5	19.0	15.5	17.0
4	---	---	---	15.0	13.0	14.0	20.0	16.5	18.5	19.5	15.5	17.5
5	---	---	---	17.0	13.0	15.0	19.5	16.0	18.0	19.5	16.0	17.5
6	---	---	---	19.0	13.5	16.0	20.5	16.0	18.5	19.0	16.5	17.5
7	---	---	---	19.0	15.0	17.0	21.5	17.5	19.5	18.0	15.5	17.0
8	---	---	---	19.5	16.0	17.5	22.0	18.0	20.0	16.5	15.5	16.0
9	---	---	---	18.5	16.0	17.0	22.0	18.0	20.0	17.0	14.5	16.0
10	---	---	---	16.5	15.0	15.5	20.5	17.0	18.0	18.0	16.5	17.0
11	---	---	---	17.0	14.5	16.0	17.5	16.0	16.5	17.5	15.0	16.5
12	---	---	---	17.5	14.5	16.0	17.0	15.5	16.5	17.5	14.5	16.0
13	---	---	---	17.5	14.5	16.0	19.5	15.0	17.0	16.5	14.5	15.0
14	---	---	---	16.5	14.5	15.0	20.5	16.5	18.5	16.0	13.0	14.5
15	---	---	---	15.0	14.0	14.5	20.0	16.5	18.5	15.0	13.0	14.0
16	---	---	---	14.0	13.0	13.0	19.5	15.5	17.5	16.0	13.5	15.0
17	15.0	14.5	15.0	15.0	12.5	13.5	20.0	15.5	18.0	15.0	13.0	14.0
18	15.5	13.0	14.5	18.0	13.0	15.5	19.5	15.5	17.5	16.0	13.5	14.5
19	16.0	12.0	14.0	19.5	15.0	17.0	18.5	15.5	17.0	15.0	13.0	14.0
20	17.0	13.5	15.0	20.0	15.5	18.0	19.5	15.5	17.5	14.5	13.0	13.5
21	19.0	13.0	16.0	20.5	16.0	18.5	20.0	16.0	18.0	14.5	13.0	14.0
22	19.5	14.0	17.0	19.0	16.0	17.0	20.0	16.5	18.5	14.0	12.5	13.5
23	20.5	15.0	18.0	17.5	15.0	16.0	19.5	17.0	18.5	14.0	12.5	13.0
24	20.0	15.5	18.0	18.0	14.5	16.0	18.5	16.5	17.5	14.0	12.0	13.0
25	20.0	15.0	17.5	17.0	15.0	15.5	19.5	15.5	17.5	13.0	11.5	12.5
26	18.5	14.5	16.0	16.0	14.5	15.5	20.5	16.5	18.5	13.5	12.0	13.0
27	19.0	14.0	16.5	17.5	14.0	15.5	20.0	17.5	19.0	12.5	12.0	12.5
28	18.0	15.5	16.0	17.0	14.5	15.5	19.0	18.0	18.5	13.0	12.0	12.5
29	16.5	14.5	15.5	18.0	14.5	16.5	18.0	16.5	17.0	13.0	12.5	12.5
30	18.5	14.0	16.0	18.5	14.5	16.5	16.5	15.5	15.5	13.0	12.0	12.5
31	---	---	---	19.5	14.5	17.0	17.0	15.0	16.0	---	---	---
MONTH	---	---	---	20.5	12.5	16.0	22.0	15.0	18.0	19.5	11.5	15.0

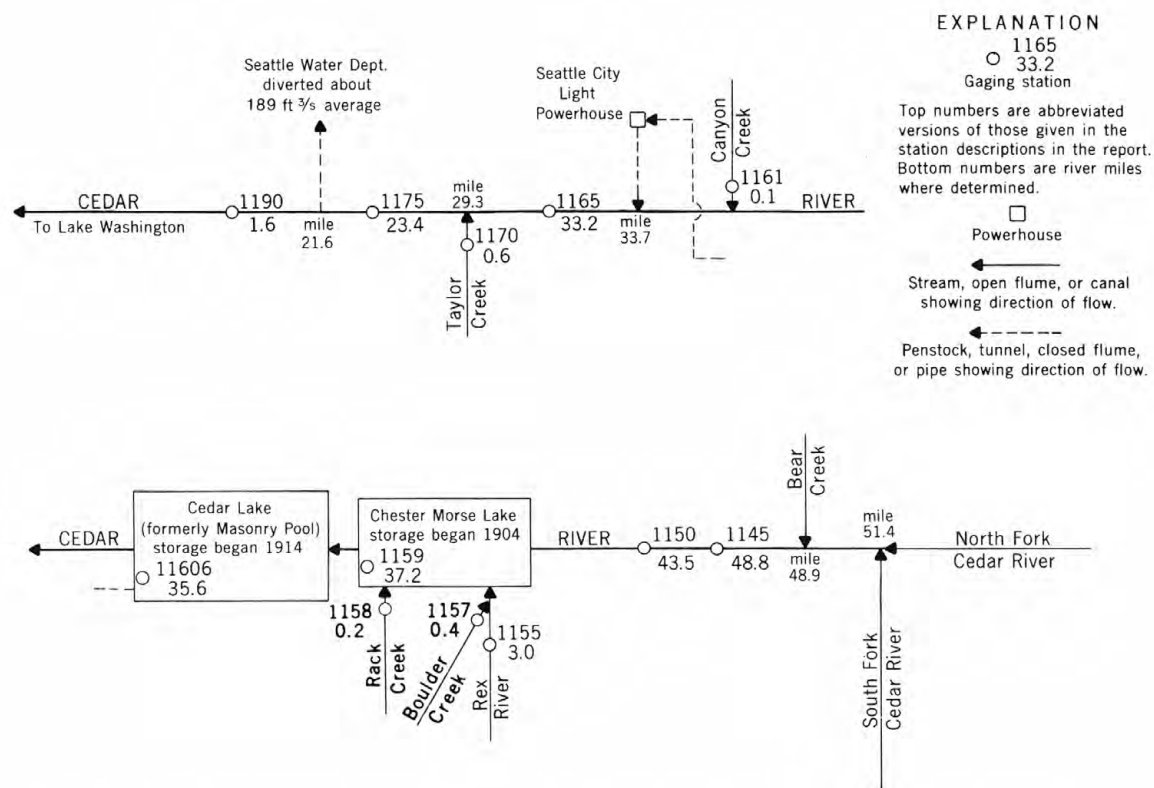


Figure 13.--Gaging stations in Lake Washington basin (Cedar River).

12114500 CEDAR RIVER BELOW BEAR CREEK, NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°20'32", long 121°32'52", in SE¼SE¼ sec.32, T.22 N., R.10 E., King County, Hydrologic Unit 17110012, on right bank 500 ft downstream from Bear Creek, and 12.2 mi southeast of town of Cedar Falls.

DRAINAGE AREA.--25.4 mi².

PERIOD OF RECORD.--October 1945 to December 1963, October 1975 to current year.

REVISED RECORDS.--WSP 1716: 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,880 ft, from topographic map. Prior to Sept. 16, 1960, at site 90 ft upstream at datum 2.35 ft higher.

REMARKS.--Estimated daily discharges: Nov. 20 to Dec. 4. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--29 years (water years 1946-63, 1976-86), 169 ft³/s, 90.36 in/yr, 122,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,620 ft³/s Nov. 22, 1959, gage height, 6.98 ft site and datum then in use, from rating curve extended above 890 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 12 ft³/s Nov. 27, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*), from rating curve extended above 910 ft³/s on basis of slope-area measurement at gage height 9.37 ft:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0100	1,340	5.06	Nov. 1	2100	1,230	4.91
Oct. 26	1800	888	4.40	Feb. 24	0400	*1,440	*5.18

Minimum discharge, 19 ft³/s Sept. 6-8, 12-15, 22, 23, gage height, 1.69 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	25	665	45	46	118	347	222	159	301	48	37	23		
2	29	975	48	43	117	303	195	157	246	47	36	22		
3	33	820	51	42	112	279	174	174	210	47	35	22		
4	26	702	54	41	109	272	159	178	187	50	34	21		
5	25	538	52	41	108	262	146	178	165	47	33	21		
6	26	632	54	44	99	247	139	172	148	43	32	20		
7	25	572	52	40	92	338	141	165	136	41	31	19		
8	24	415	49	40	87	400	155	162	128	40	30	20		
9	23	304	47	43	82	330	169	169	119	39	30	21		
10	23	237	46	49	78	281	160	174	117	48	29	22		
11	34	195	44	55	75	256	152	171	114	59	29	21		
12	52	169	43	55	71	229	140	214	105	56	29	20		
13	43	147	41	55	66	202	127	479	99	49	29	20		
14	103	131	40	54	63	182	116	362	95	47	28	20		
15	182	122	40	54	65	162	115	276	87	45	26	23		
16	175	128	39	58	80	145	113	232	81	67	26	24		
17	139	111	39	82	65	136	123	212	78	119	25	21		
18	107	100	39	213	62	149	122	245	82	83	25	28		
19	120	95	39	366	58	189	116	318	88	71	25	23		
20	136	90	39	234	56	203	122	360	76	64	24	22		
21	117	85	38	177	55	247	157	287	75	59	24	21		
22	185	77	38	150	74	230	192	238	70	56	23	19		
23	266	70	41	142	434	208	172	206	67	52	23	53		
24	727	66	45	127	1170	207	153	208	64	50	23	72		
25	1050	64	48	111	993	186	149	298	60	48	23	42		
26	751	62	48	100	759	188	142	365	57	47	22	36		
27	644	59	47	98	525	185	201	330	54	45	22	42		
28	428	56	55	92	409	214	225	322	54	43	22	108		
29	293	53	53	87	---	233	196	335	53	41	23	162		
30	248	49	46	98	---	286	175	364	50	40	24	168		
31	207	---	45	104	---	257	---	342	---	39	24	---		
TOTAL	6266	7789	1405	2941	6082	7353	4668	7852	3266	1630	846	1156		
MEAN	202	260	45.3	94.9	217	237	156	253	109	52.6	27.3	38.5		
MAX	1050	975	55	366	1170	400	225	479	301	119	37	168		
MIN	23	49	38	40	55	136	113	157	50	39	22	19		
CFSM	7.95	10.2	1.78	3.74	8.54	9.33	6.14	9.96	4.29	2.07	1.07	1.52		
IN.	9.18	11.41	2.06	4.31	8.91	10.77	6.84	11.50	4.78	2.39	1.24	1.69		
AC-FT	12430	15450	2790	5830	12060	14580	9260	15570	6480	3230	1680	2290		
CAL YR 1985	TOTAL	57082	MEAN	156	MAX	1050	MIN	19	CFSM	6.14	IN.	83.60	AC-FT	113200
WTR YR 1986	TOTAL	51254	MEAN	140	MAX	1170	MIN	19	CFSM	5.51	IN.	75.06	AC-FT	101700

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°22'13", long 121°37'26", in SE¼SW¼ sec.23, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 1.4 mi upstream from Chester Morse Lake, 8.3 mi southeast of town of Cedar Falls, and at mile 43.5.

DRAINAGE AREA.--40.7 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P), 1955(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,560 ft, from topographic map. Prior to Oct. 26, 1957, at site 80 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 22-30, Dec. 1-9, 12, 13. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--41 years, 264 ft³/s, 88.09 in/yr, 191,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,490 ft³/s Nov. 22, 1959, gage height, 11.34 ft, from high-water mark in well, from rating curve extended above 4,300 ft³/s, on basis of slope-area measurements at gage heights 10.16 ft and 11.34 ft; maximum gage height, 11.4 ft Feb. 11, 1951, backwater from Chester Morse Lake; minimum discharge, 20 ft³/s Nov. 30 to Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0300	2,300	7.44	Nov. 1	2300	1,820	6.87
Oct. 26	1800	1,370	6.24	Feb. 24	0400	*2,620	*7.79

Minimum discharge, 31 ft³/s Sept. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	40	884	72	78	191	519	345	270	396	72	59	38		
2	43	1470	77	74	189	453	305	261	332	72	57	37		
3	53	1190	83	73	183	412	270	288	286	71	55	36		
4	43	1020	88	68	177	395	246	292	256	76	54	35		
5	41	764	87	69	180	379	223	296	224	71	53	34		
6	42	883	90	80	164	354	209	284	204	66	52	32		
7	43	818	87	71	152	471	207	270	189	64	50	32		
8	41	613	83	72	142	586	225	263	179	62	49	32		
9	40	469	80	79	134	483	243	272	164	60	48	34		
10	39	370	77	98	126	412	233	285	161	72	47	37		
11	53	303	74	115	120	376	227	283	156	91	48	37		
12	80	256	72	113	114	337	215	355	146	88	48	33		
13	72	223	70	112	108	302	195	814	137	79	47	33		
14	104	197	68	107	103	275	177	611	135	74	45	34		
15	237	184	67	106	108	241	177	461	124	71	44	36		
16	240	197	65	113	151	216	176	379	116	89	43	40		
17	212	174	65	180	118	205	195	340	111	170	42	37		
18	169	156	66	412	108	225	198	367	117	135	41	46		
19	179	147	67	723	101	305	188	450	125	116	40	40		
20	225	140	67	436	97	317	190	525	111	105	40	39		
21	198	130	66	314	95	372	230	452	108	96	39	36		
22	297	118	66	258	128	347	295	388	101	90	38	34		
23	460	110	69	245	679	313	272	336	97	85	38	56		
24	1130	100	77	220	2010	328	238	323	93	81	37	124		
25	1800	98	82	190	1640	291	239	403	89	76	37	84		
26	1120	95	83	170	1160	298	231	504	85	73	36	67		
27	969	93	81	164	766	287	337	474	81	71	35	62		
28	656	88	77	153	605	320	418	449	80	68	35	138		
29	469	83	84	143	---	346	352	448	79	66	38	218		
30	402	77	79	159	---	422	304	471	75	63	40	263		
31	340	---	75	172	---	395	---	444	---	61	40	---		
TOTAL	9837	11450	2344	5367	9849	10982	7360	12058	4557	2534	1375	1804		
MEAN	317	382	75.6	173	352	354	245	389	152	81.7	44.4	60.1		
MAX	1800	1470	90	723	2010	586	418	814	396	170	59	263		
MIN	39	77	65	68	95	205	176	261	75	60	35	32		
CFSM	7.79	9.39	1.86	4.25	8.65	8.70	6.02	9.56	3.73	2.01	1.09	1.48		
IN.	8.99	10.47	2.14	4.91	9.00	10.04	6.73	11.02	4.17	2.32	1.26	1.65		
AC-FT	19510	22710	4650	10650	19540	21780	14600	23920	9040	5030	2730	3580		
CAL YR 1985	TOTAL	83217	MEAN	228	MAX	1800	MIN	30	CFSM	5.60	IN.	76.06	AC-FT	165100
WTR YR 1986	TOTAL	79517	MEAN	218	MAX	2010	MIN	32	CFSM	5.36	IN.	72.68	AC-FT	157700

12115500 REX RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'03", long 121°39'43", in NE¼NW¼ sec.33, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 3.0 mi upstream from mouth and Chester Morse Lake, and 7.5 mi southeast of town of Cedar Falls.

DRAINAGE AREA.--13.4 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M). WSP 1932: Drainage area. WDR WA-74-1: 1973.

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

REMARKS.--Estimated daily discharges: Nov. 20 to Dec. 6, May 27 to June 19. Records fair except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--41 years, 103 ft³/s, 104.38 in/yr, 74,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft³/s Nov. 22, 1959, gage height, 8.20 ft, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement at gage height 7.19 ft and slope-area measurement at gage height 8.20 ft; maximum gage height, Nov. 19, 1962, backwater from debris; minimum discharge, 3.0 ft³/s Sept. 6-8, 1986, gage height, 3.23 ft.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0300	1,380	6.21	Jan. 19	0100	744	5.47
Oct. 26	1500	894	5.67	Feb. 23	2300	*2,540	*7.17
Nov. 1	2000	1,280	6.11	Feb. 25	0800	855	5.62
Nov. 3	0400	855	5.62				

Minimum discharge, 3.0 ft³/s Sept. 6-8, gage height, 3.23 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	16	646	25	31	138	181	139	105	63	16	12	4.8		
2	22	785	25	28	113	151	115	125	58	17	11	4.7		
3	23	607	28	26	97	135	97	156	52	17	11	4.0		
4	16	470	26	25	93	134	87	144	47	22	9.9	3.7		
5	15	340	28	32	91	117	77	135	44	19	9.6	3.7		
6	17	554	33	48	74	112	70	120	39	17	8.8	3.3		
7	16	397	37	37	64	228	73	115	36	16	8.4	3.1		
8	15	251	32	39	57	236	78	110	33	15	8.1	3.8		
9	14	176	30	47	52	179	85	121	31	14	7.7	4.8		
10	13	133	29	63	47	147	70	119	30	35	7.5	7.4		
11	33	105	26	79	43	145	69	127	29	52	7.6	4.9		
12	51	84	25	72	39	121	64	233	28	36	7.6	3.8		
13	33	71	23	68	35	104	59	465	26	29	7.2	4.1		
14	71	61	22	62	36	90	55	258	24	26	6.8	4.4		
15	135	68	21	62	45	77	61	175	23	25	6.2	5.6		
16	157	104	20	79	85	66	60	136	21	80	5.7	5.9		
17	110	74	21	110	53	63	77	120	20	133	5.6	4.9		
18	79	63	22	382	47	120	72	134	25	70	5.3	11		
19	108	59	25	456	44	153	66	157	29	53	5.2	5.4		
20	145	55	26	220	41	147	70	171	25	42	5.1	4.8		
21	107	50	26	145	39	157	85	162	22	35	4.9	3.9		
22	256	44	27	114	89	126	92	144	22	29	4.8	3.7		
23	308	40	32	118	968	128	79	123	20	26	4.7	64		
24	694	38	38	100	1180	165	69	122	19	23	4.7	100		
25	885	36	41	81	711	130	71	134	19	20	4.3	30		
26	589	33	40	68	439	146	71	131	17	19	4.0	30		
27	395	31	38	77	297	129	195	120	17	17	3.9	60		
28	268	29	35	72	225	155	192	105	17	16	3.9	140		
29	180	28	34	64	---	138	139	92	17	15	5.3	235		
30	168	26	31	107	---	226	111	80	17	14	6.0	135		
31	149	---	29	125	---	167	---	72	---	13	5.7	---		
TOTAL	5088	5458	895	3037	5242	4373	2648	4511	870	961	208.5	899.7		
MEAN	164	182	28.9	98.0	187	141	88.3	146	29.0	31.0	6.73	30.0		
MAX	885	785	41	456	1180	236	195	465	63	133	12	235		
MIN	13	26	20	25	35	63	55	72	17	13	3.9	3.1		
CFSM	12.2	13.6	2.16	7.31	14.0	10.5	6.59	10.9	2.16	2.31	.50	2.24		
IN.	14.12	15.15	2.48	8.43	14.55	12.14	7.35	12.52	2.42	2.67	.58	2.50		
AC-FT	10090	10830	1780	6020	10400	8670	5250	8950	1730	1910	414	1780		
CAL YR 1985	TOTAL	34588.8	MEAN	94.8	MAX	885	MIN	6.2	CFSM	7.07	IN.	96.02	AC-FT	68610
WTR YR 1986	TOTAL	34191.2	MEAN	93.7	MAX	1180	MIN	3.1	CFSM	6.99	IN.	94.92	AC-FT	67820

LAKE WASHINGTON BASIN

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12115700 BOULDER CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'59", long 121°41'30", in NW¼NW¼ sec.29, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 5.8 mi southeast of Cedar Falls, and at mile 0.4.

DRAINAGE AREA.--4.64 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 1,610 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 6, Feb. 19, May 30 to June 19. Records good except those for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 637 ft³/s Jan. 24, 1984, gage height, 4.25 ft; minimum discharge, no flow for many days during August, September, and October 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 310 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 24	2330	327	3.48	Feb. 23	2030	*613	*3.99
Jan. 18	1830	313	3.45	Feb. 24	0430	373	3.79

Minimum discharge, 0.45 ft³/s Sept. 7, gage height, 2.40 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.0	131	5.9	6.1	41	42	37	33	11	2.0	3.1	.87		
2	3.5	190	5.8	5.3	34	31	31	41	10	2.2	2.9	.82		
3	4.1	167	6.3	5.2	28	30	26	54	9.3	2.3	2.6	.75		
4	2.5	149	5.6	4.8	26	31	22	48	8.5	3.4	2.5	.67		
5	2.1	112	6.5	6.9	25	28	18	44	7.7	2.9	2.4	.61		
6	2.4	168	7.1	11	20	28	16	39	7.3	2.1	2.2	.56		
7	2.2	129	7.9	8.5	17	65	15	35	6.8	1.7	2.0	.54		
8	2.0	83	7.1	9.4	15	70	13	32	6.4	1.6	1.8	.58		
9	1.8	57	6.4	11	13	53	13	35	6.0	1.6	1.7	.69		
10	1.7	43	5.9	15	11	42	11	37	5.7	6.6	1.7	1.2		
11	5.4	32	5.4	21	9.7	42	14	39	5.4	13	1.8	.91		
12	7.2	25	5.1	18	8.4	36	14	70	5.1	7.7	1.7	.67		
13	4.9	20	4.8	16	7.3	31	11	143	4.8	5.5	1.6	.67		
14	8.1	17	4.5	15	7.2	27	9.6	87	4.7	4.6	1.4	.74		
15	16	19	4.3	15	9.8	22	12	58	4.6	4.3	1.3	.77		
16	29	29	4.3	19	19	19	13	43	4.3	18	1.2	.90		
17	24	21	4.4	31	11	19	19	36	4.0	35	1.1	.82		
18	17	18	4.9	149	9.9	40	17	36	5.2	19	.99	2.4		
19	23	17	5.2	180	9.3	63	15	37	4.8	14	.95	1.3		
20	43	15	5.3	79	8.2	53	16	36	4.2	11	.91	1.1		
21	31	13	5.3	45	7.4	52	18	39	3.6	9.4	.85	.80		
22	64	12	5.4	33	20	41	20	34	3.1	8.1	.80	.70		
23	78	11	6.6	29	206	41	18	30	2.8	7.1	.79	16		
24	178	10	7.6	24	276	58	15	28	2.6	6.4	.80	27		
25	209	9.2	7.7	19	227	47	16	28	2.5	5.7	.78	9.3		
26	170	8.4	7.4	16	145	48	18	26	2.4	5.2	.72	9.6		
27	129	7.7	7.0	18	93	42	63	21	2.1	4.9	.67	14		
28	92	7.1	6.4	17	63	46	72	19	2.1	4.5	.67	38		
29	58	6.5	6.2	15	---	40	48	16	2.3	4.0	.88	64		
30	50	6.1	5.8	27	---	51	36	14	2.0	3.6	1.2	44		
31	41	---	5.3	35	---	42	---	13	---	3.4	1.2	---		
TOTAL	1301.9	1533.0	183.4	904.2	1367.2	1280	666.6	1251	151.3	220.8	45.21	240.97		
MEAN	42.0	51.1	5.92	29.2	48.8	41.3	22.2	40.4	5.04	7.12	1.46	8.03		
MAX	209	190	7.9	180	276	70	72	143	11	35	3.1	64		
MIN	1.7	6.1	4.3	4.8	7.2	19	9.6	13	2.0	1.6	.67	.54		
CFSM	15.8	19.3	2.23	11.0	18.4	15.6	8.38	15.2	1.90	2.69	.55	3.03		
IN.	18.28	21.52	2.57	12.69	19.19	17.97	9.36	17.56	2.12	3.10	.63	3.38		
AC-FT	2580	3040	364	1790	2710	2540	1320	2480	300	438	90	478		
CAL YR 1985	TOTAL	8862.41	MEAN	24.3	MAX	209	MIN	.37	CFSM	9.17	IN.	124.41	AC-FT	17580
WTR YR 1986	TOTAL	9145.58	MEAN	25.1	MAX	276	MIN	.54	CFSM	9.47	IN.	128.38	AC-FT	18140

12115800 RACK CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°23'29", long 121°43'17", in NW¼SE¼ sec.13, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 3.7 mi southeast of Cedar Falls, and at mile 0.2.

DRAINAGE AREA.--2.14 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 1,590 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 23-25, Dec. 1, 2. Records good. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 192 ft³/s Jan. 24, 1984, gage height, 2.85 ft; minimum discharge, no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 85 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0245	97	2.11	Feb. 24	0145	*134	*2.40
Jan. 18	1815	103	2.16				

Minimum discharge, no flow for many days during October, August, and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	29	2.5	3.2	13	22	19	14	3.7	.14	.24	.00		
2	.27	62	2.4	2.7	11	19	16	15	3.3	.16	.22	.00		
3	.22	62	3.1	2.8	9.2	17	14	17	2.9	.15	.20	.00		
4	.00	61	2.7	2.6	8.3	15	13	17	2.6	.23	.19	.00		
5	.00	44	3.2	3.6	8.7	14	11	16	2.2	.18	.17	.00		
6	.00	61	5.2	6.0	7.4	13	9.8	16	2.0	.12	.16	.00		
7	.00	49	5.3	4.9	6.1	17	8.9	15	2.0	.09	.14	.00		
8	.00	30	4.7	5.5	5.1	22	8.4	13	1.8	.06	.12	.00		
9	.00	21	3.8	6.2	4.7	21	8.6	14	1.5	.05	.10	.00		
10	.00	16	3.0	7.6	4.2	18	7.8	16	1.3	2.3	.09	.00		
11	.68	12	2.6	9.3	3.7	16	8.0	18	1.1	4.4	.08	.00		
12	1.8	8.7	2.4	7.7	3.3	15	8.1	27	.93	2.9	.07	.00		
13	1.3	7.3	2.1	6.8	2.9	15	7.9	60	.79	1.8	.04	.00		
14	2.3	6.2	1.9	6.0	2.6	14	7.6	36	.85	1.4	.01	.00		
15	5.5	6.9	1.8	5.7	4.0	12	8.2	24	.69	1.0	.00	.00		
16	13	13	1.8	6.8	8.0	11	8.6	18	.57	7.9	.00	.00		
17	12	9.8	2.1	10	5.3	11	10	13	.52	19	.00	.00		
18	7.9	8.0	2.7	56	4.5	20	11	11	1.3	11	.00	.00		
19	7.9	7.6	3.3	74	3.9	31	9.7	10	.83	7.6	.00	.00		
20	14	7.0	4.0	30	3.5	24	8.8	10	.53	5.6	.00	.00		
21	11	5.9	4.0	18	3.1	21	8.3	13	.41	4.1	.00	.00		
22	19	5.2	4.4	14	6.7	18	8.6	12	.26	3.1	.00	.00		
23	28	4.8	5.0	14	55	17	8.5	11	.23	2.3	.00	2.2		
24	56	4.5	5.3	12	108	21	8.2	9.5	.22	1.8	.00	8.8		
25	85	4.2	5.3	8.2	85	19	9.0	8.6	.20	1.5	.00	2.2		
26	66	4.0	5.1	6.7	58	18	10	7.7	.19	1.3	.00	1.0		
27	59	3.6	4.9	7.0	37	16	24	7.1	.17	1.0	.00	3.1		
28	41	3.1	4.4	6.7	27	17	28	6.6	.17	.83	.00	19		
29	25	2.8	4.1	5.9	---	16	20	5.9	.18	.63	.00	27		
30	21	2.6	3.3	8.6	---	20	15	5.2	.15	.44	.00	26		
31	17	---	2.8	11	---	21	---	4.4	---	.31	.00	---		
TOTAL	494.87	562.2	109.2	369.5	499.2	551	344.0	471.0	33.59	83.39	1.83	89.30		
MEAN	16.0	18.7	3.52	11.9	17.8	17.8	11.5	15.2	1.12	2.69	.06	2.98		
MAX	85	62	5.3	74	108	31	28	60	3.7	19	.24	27		
MIN	.00	2.6	1.8	2.6	2.6	11	7.6	4.4	.15	.05	.00	.00		
CFSM	7.48	8.74	1.64	5.56	8.32	8.32	5.37	7.10	.52	1.26	.03	1.39		
IN.	8.60	9.77	1.90	6.42	8.68	9.58	5.98	8.19	.58	1.45	.03	1.55		
AC-FT	982	1120	217	733	990	1090	682	934	67	165	3.6	177		
CAL YR 1985	TOTAL	3239.38	MEAN	8.88	MAX	85	MIN	.00	CFSM	4.15	IN.	56.31	AC-FT	6430
WTR YR 1986	TOTAL	3609.08	MEAN	9.89	MAX	108	MIN	.00	CFSM	4.62	IN.	62.74	AC-FT	7160

LAKE WASHINGTON BASIN

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12115900 CHESTER MORSE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°24'34", long 121°43'22", in SW¼ sec.12, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, 100 ft upstream of Crib Dam, 3.1 mi southeast of town of Cedar Falls, and at mile 37.2.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Nonrecording gage. Datum of gage is 7.39 ft above National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Reservoir is formed by wood crib dam. Usable capacity, 37,186 acre-ft between gage heights 1,532 ft, minimum operation level, and 1,555 ft, spillway crest. Unused storage below gage height 1,532 ft is 38,137 acre-ft. Occasionally, elevation of downstream Cedar Lake exceeds 1,555 ft and wood crib dam is submerged. Chester Morse Lake is then controlled by masonry gravity dam at Cedar Lake. Water is used by city of Seattle for municipal water supply and power production. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Gage-height record furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1,566.82 ft Dec. 3, 1977; minimum observed, 1,535.60 ft Oct. 16, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,560.42 ft May 21; minimum observed, 1,540.70 ft Jan. 5, 8.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1542.10	1552.80	---	1541.02	1545.77	1556.23	1553.97	1555.75	1559.52	1550.53	1546.24	1542.71
2	1542.25	1555.10	---	1540.95	1545.78	1555.98	1554.02	1556.15	1559.38	1550.23	1546.02	1542.80
3	1541.80	1557.11	1544.80	1540.88	1545.82	1555.71	1554.06	1556.36	1559.20	1549.87	1545.78	1542.72
4	1541.84	1558.02	1544.50	1540.80	1545.86	1555.47	1553.94	1556.59	1559.02	1549.51	1545.52	1542.98
5	1541.81	1558.02	1544.05	1540.70	1545.90	1555.07	1553.98	1556.91	1558.76	1549.23	1545.34	1542.92
6	1541.88	1557.94	1544.08	1540.72	1545.93	1554.74	1554.02	1557.12	1558.42	1549.11	1545.13	1542.84
7	1541.92	1558.04	1544.00	1540.75	1545.87	1554.35	1554.00	1557.29	1558.11	1548.99	1544.85	1542.74
8	1541.98	1557.63	1543.82	1540.70	1545.82	1554.61	1554.04	1557.39	1557.83	1548.70	1544.62	1542.61
9	1541.92	1556.83	1543.68	1540.75	1545.78	1554.62	1554.07	1557.50	1557.58	1548.54	1544.36	1542.50
10	1541.80	1556.48	1543.54	1540.76	1545.68	1554.50	1554.09	1557.69	1557.26	1548.28	1544.05	1542.43
11	1541.70	1556.06	1543.32	1540.90	1545.62	1554.25	1554.10	1557.86	1556.95	1548.15	1543.80	1542.50
12	1541.71	1555.43	1543.21	1540.95	1545.59	1554.06	1554.11	1558.12	1556.61	1548.06	1543.52	1542.40
13	1541.67	1554.60	1542.99	1541.10	1545.28	1553.65	1554.11	1558.95	1556.26	1547.92	1543.25	1542.31
14	1541.54	1554.28	1542.84	1541.19	1545.32	1553.28	1554.18	1560.06	1555.87	1547.80	1543.00	1542.02
15	1541.74	1553.78	1542.80	1541.20	1545.25	1553.06	1554.05	1560.40	1555.55	1547.65	1542.74	1541.85
16	1541.99	1553.38	1542.54	1541.32	1545.20	1552.91	1554.04	1560.37	1555.18	1547.60	1542.43	1541.70
17	1542.32	1552.82	1542.40	1541.64	1545.29	1552.81	1554.02	1560.30	1554.82	1547.82	1542.20	1541.65
18	1542.37	1552.31	1542.35	1542.08	1545.22	1552.70	1554.04	1560.19	1554.43	1547.97	1541.90	1541.54
19	1542.32	1551.84	1542.15	1544.79	1545.18	1552.26	1554.06	1560.19	1554.16	1548.00	1541.88	1541.34
20	1542.61	1551.17	1542.05	1546.08	1545.21	1552.70	1554.07	1560.29	1554.16	1547.98	1541.95	1541.26
21	1542.74	1550.51	1541.96	1546.26	1545.00	1552.76	1554.09	1560.42	1553.83	1547.95	1541.89	1541.00
22	1542.90	1549.71	1541.78	1546.10	1545.06	1552.92	1554.16	1560.20	1553.54	1547.89	1542.08	1540.89
23	1543.80	1549.00	1541.64	1546.00	1545.38	1552.98	1554.26	1559.75	1553.30	1547.81	1542.12	1540.77
24	1544.80	1548.24	1541.60	1545.94	1550.07	1553.10	1554.30	1559.58	1552.94	1547.69	1542.20	1540.97
25	1548.30	1547.46	1541.52	1545.96	1553.40	1553.15	1554.46	1559.56	1552.64	1547.52	1542.24	1541.00
26	1550.86	1546.76	1541.52	1545.83	1555.56	1553.25	1554.52	1559.62	1552.33	1547.42	1542.32	1541.00
27	1552.64	1546.21	1541.43	1545.64	1556.25	1553.24	1554.60	1559.68	1551.96	1547.27	1542.40	1541.04
28	1553.48	1545.69	1541.30	1545.62	1556.34	1553.22	1555.16	1559.80	1551.60	1547.17	1542.45	1541.10
29	1553.48	---	1541.20	1545.51	---	1553.34	1555.65	1559.71	1551.15	1547.03	1542.50	1541.50
30	1553.18	---	1541.12	1545.48	---	1553.47	1556.06	1559.66	1550.86	1546.90	1542.60	1541.73
31	1552.85	---	1541.02	1545.60	---	1553.80	---	1559.61	---	1546.62	1542.64	---
MAX	1553.48	---	---	1546.26	1556.34	1556.23	1556.06	1560.42	1559.52	1550.53	1546.24	1542.98
MIN	1541.54	---	---	1540.70	1545.00	1552.26	1553.94	1555.75	1550.86	1546.62	1541.88	1540.77

LAKE WASHINGTON BASIN

12116060 CEDAR LAKE (MASONRY POOL) NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°24'43", long 121°45'04", in NE¼NW¼ sec.11, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, at Masonry Dam, 1.6 mi southeast of town of Cedar Falls, and at mile 35.6.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.39 ft above National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Reservoir is formed by masonry gravity dam. Usable capacity, 40,285 acre-ft between gage heights 1,530.0 ft, normal minimum regulating pool, and 1,554.6 ft, normal maximum regulating pool. Unused storage below gage height 1,530.0 ft, 36,000 acre-ft. Water is used by city of Seattle for municipal water supply and power production.

COOPERATION.--Gage-height record furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1,566.82 ft Dec. 3, 1977; minimum not determined (during period Aug. 2 to Sept. 19, 1978, while the pool was drained for maintenance).

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,560.42 ft May 21; minimum observed, 1,496.07 ft Sept. 4.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1524.45	1552.80	1537.36	1535.80	1540.31	1556.23	1553.97	1555.75	1559.52	1550.53	1546.20	1496.63
2	1519.49	1555.10	1540.53	1535.70	1541.57	1555.98	1554.02	1556.15	1559.38	1550.23	1545.74	1496.49
3	1518.90	1557.11	1542.28	1535.57	1542.03	1555.71	1554.06	1556.36	1559.20	1549.87	1545.12	1496.28
4	1519.48	1558.02	1539.87	1535.49	1542.76	1555.47	1553.94	1556.59	1559.02	1549.51	1544.42	1496.07
5	1514.38	1558.02	1537.61	1535.48	1543.34	1555.07	1553.98	1556.91	1558.76	1549.23	1543.70	1502.55
6	1506.77	1557.94	1536.56	1535.45	1543.69	1554.74	1554.02	1557.12	1558.42	1549.11	1543.17	1506.45
7	1503.40	1558.04	1536.28	1535.52	1543.87	1554.35	1554.00	1557.29	1558.11	1548.99	1542.38	1508.44
8	1503.39	1557.63	1537.14	1535.89	1543.78	1554.61	1554.04	1557.39	1557.83	1548.70	1541.75	1510.05
9	1503.67	1556.83	1537.68	1535.94	1543.55	1554.62	1554.07	1557.50	1557.58	1548.54	1541.24	1511.67
10	1508.20	1556.48	1537.10	1535.95	1543.22	1554.50	1554.09	1557.69	1557.26	1548.28	1540.59	1512.98
11	1514.53	1556.06	1536.73	1535.88	1542.54	1554.25	1554.10	1557.86	1556.95	1548.15	1539.97	1514.89
12	1518.96	1555.43	1537.38	1535.90	1541.69	1554.06	1554.11	1558.12	1556.61	1548.06	1539.46	1514.90
13	1522.19	1554.60	1537.61	1535.53	1541.10	1553.65	1554.11	1558.95	1556.26	1547.92	1538.90	1515.02
14	1524.86	1554.28	1537.63	1535.46	1540.28	1553.28	1554.18	1560.06	1555.87	1547.80	1538.40	1514.32
15	1526.90	1553.78	1537.62	1536.12	1540.60	1553.06	1554.05	1560.40	1555.55	1547.65	1537.94	1514.24
16	1529.77	1553.38	1537.55	1536.61	1540.90	1552.91	1554.04	1560.37	1555.18	1547.60	1537.31	1514.12
17	1531.14	1552.82	1537.35	1537.06	1540.99	1552.81	1554.02	1560.30	1554.82	1547.82	1536.92	1514.01
18	1531.40	1552.31	1537.24	1537.36	1540.89	1552.70	1554.04	1560.19	1554.43	1547.97	1536.40	1513.06
19	1531.24	1551.84	1537.10	1534.75	1540.58	1552.26	1554.06	1560.19	1554.16	1548.00	1532.50	1513.35
20	1531.10	1551.17	1537.02	1534.42	1540.42	1552.70	1554.07	1560.29	1554.16	1547.98	1527.30	1513.69
21	1531.10	1550.51	1536.90	1534.29	1540.26	1552.76	1554.09	1560.42	1553.83	1547.95	1521.08	1513.90
22	1531.44	1549.71	1536.82	1533.62	1540.98	1552.92	1554.16	1560.20	1553.54	1547.89	1512.80	1514.10
23	1532.43	1549.00	1536.74	1532.22	1541.38	1552.98	1554.26	1559.75	1553.30	1547.81	1505.25	1514.29
24	1533.38	1548.24	1536.65	1535.47	1550.07	1553.10	1554.30	1559.58	1552.94	1547.69	1499.42	1514.48
25	1544.65	1547.35	1537.56	1538.17	1553.40	1553.15	1554.46	1559.56	1552.64	1547.52	1498.70	1514.28
26	1550.80	1545.84	1536.40	1539.18	1555.56	1553.25	1554.52	1559.62	1552.33	1547.42	1498.25	1514.03
27	1552.64	1542.94	1536.33	1539.31	1556.25	1553.24	1554.60	1559.68	1551.96	1547.27	1497.77	1513.42
28	1553.48	1539.23	1536.29	1538.99	1556.34	1553.22	1555.16	1559.80	1551.60	1547.17	1497.24	1513.11
29	1553.48	1537.30	1536.10	1538.78	---	1553.34	1555.65	1559.71	1551.15	1547.03	1497.18	1513.02
30	1553.18	1534.67	1536.06	1538.33	---	1553.47	1556.06	1559.66	1550.86	1546.90	1497.02	1515.58
31	1552.85	---	1535.95	1539.36	---	1553.80	---	1559.61	---	1546.62	1496.85	---
MAX	1553.48	1558.04	1542.28	1539.36	1556.34	1556.23	1556.06	1560.42	1559.52	1550.53	1546.20	1515.58
MIN	1503.39	1534.67	1535.95	1532.22	1540.26	1552.26	1553.94	1555.75	1550.86	1546.62	1496.85	1496.07
CAL YR 1985	MAX	1560.05	MIN	1503.39								
WTR YR 1986	MAX	1560.42	MIN	1496.07								

LAKE WASHINGTON BASIN

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12116100 CANYON CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'11", long 121°45'55", in NW¼SE¼ sec.3, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 400 ft upstream from mouth, and 0.8 mi east of town of Cedar Falls.

DRAINAGE AREA.--0.19 mi².

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder and wooden control. Elevation of gage is 1,040 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1-29. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--41 years, 15.4 ft³/s, 11,160 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131 ft³/s Dec. 7, 1975, gage height, 2.22 ft; minimum discharge, 0.3 ft³/s for many days during 1953-55, 1958 and 1961 water years, Oct. 28, 29, 1966, Nov. 27, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 42 ft³/s May 23, 24, gage height, 1.46 ft; minimum discharge, 0.87 ft³/s Sept. 26-30, gage height, 0.65 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	3.3	14	3.8	2.8	6.9	19	20	35	19	10	3.2
2	3.5	4.4	13	3.6	2.8	8.3	19	21	35	18	9.9	3.0
3	3.4	5.5	11	3.6	2.8	10	19	22	35	18	9.7	2.8
4	3.3	6.8	11	3.6	2.8	11	19	22	35	18	9.7	2.6
5	3.3	8.2	9.8	3.5	2.8	13	19	22	34	17	9.7	2.5
6	3.2	12	9.6	3.4	2.8	14	20	23	34	17	9.2	2.3
7	3.1	13	9.2	3.4	2.9	15	20	24	33	16	9.2	2.1
8	3.1	17	8.7	3.3	3.0	16	20	24	33	16	8.6	2.0
9	3.0	19	8.2	3.2	3.0	17	20	25	32	15	8.3	1.8
10	2.9	23	7.9	3.2	3.2	17	20	26	31	15	8.3	1.7
11	2.8	24	7.6	3.2	3.2	18	20	27	31	15	8.1	1.5
12	2.7	26	7.2	3.1	3.4	19	20	27	31	14	7.9	1.4
13	2.7	26	6.6	3.0	3.4	20	20	28	30	14	7.7	1.4
14	2.6	27	6.4	3.0	3.6	20	20	29	29	13	7.5	1.4
15	2.6	27	6.2	3.0	3.7	20	20	30	28	13	7.2	1.2
16	2.5	27	5.9	3.0	3.8	20	20	31	27	13	7.1	1.2
17	2.5	27	5.8	3.0	3.8	20	20	33	27	13	6.7	1.2
18	2.4	27	5.5	3.3	3.8	20	20	35	26	12	6.7	1.1
19	2.4	26	5.4	3.4	3.8	20	20	38	25	12	6.4	1.1
20	2.3	24	5.2	3.0	3.8	20	20	40	25	12	6.2	1.1
21	2.3	23	5.0	3.0	3.8	20	20	40	24	12	6.1	1.1
22	2.3	22	4.9	3.0	4.1	19	20	41	24	12	5.8	1.0
23	2.4	21	4.9	3.1	4.3	19	19	41	23	11	5.6	1.0
24	2.8	20	4.9	3.0	5.2	20	19	41	22	11	5.5	1.0
25	3.1	20	4.7	2.9	4.5	19	20	41	22	11	5.5	.96
26	2.7	18	4.2	2.8	4.3	19	20	40	22	11	4.8	.94
27	2.3	16	4.1	2.8	4.7	19	20	39	21	11	4.3	.87
28	2.0	15	4.1	2.8	5.8	19	20	37	20	11	4.1	.87
29	1.9	14	3.9	2.8	---	19	20	36	20	11	3.9	.92
30	2.1	14	3.8	2.8	---	19	20	36	19	10	3.6	.91
31	2.1	---	3.8	2.8	---	19	---	37	---	10	3.4	---
TOTAL	83.8	556.2	212.5	97.4	101.9	536.2	593	976	833	421	216.7	46.17
MEAN	2.70	18.5	6.85	3.14	3.64	17.3	19.8	31.5	27.8	13.6	6.99	1.54
MAX	3.5	27	14	3.8	5.8	20	20	41	35	19	10	3.2
MIN	1.9	3.3	3.8	2.8	2.8	6.9	19	20	19	10	3.4	.87
AC-FT	166	1100	421	193	202	1060	1180	1940	1650	835	430	92
CAL YR 1985	TOTAL	4947.6	MEAN	13.6	MAX	40	MIN	1.9	AC-FT	9810		
WTR YR 1986	TOTAL	4673.87	MEAN	12.8	MAX	41	MIN	.87	AC-FT	9270		

LAKE WASHINGTON BASIN

12116500 CEDAR RIVER AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'02", long 121°47'27", in SW¼ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 0.5 mi downstream from Seattle municipal powerplant at town of Cedar Falls, 4.0 mi downstream from Chester Morse Lake, and at mile 33.2.

DRAINAGE AREA.--84.2 mi².

PERIOD OF RECORD.--April 1914 to current year.

REVISED RECORDS.--WSP 722: 1930. WSP 1286: 1934(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 902.1 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: May 14-19. Records good. All diversions are returned to river upstream from station. Flow regulated by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060).

AVERAGE DISCHARGE.--72 years, 321 ft³/s, 232,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,860 ft³/s Dec. 3, 1975, gage height, 11.68 ft; no flow for part of Nov. 25, 1917, Aug. 18, 1923; minimum daily discharge, 0.5 ft³/s Oct. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,980 ft³/s Nov. 4, gage height, 8.37 ft; minimum discharge, 1.8 ft³/s Sept. 4, 5, gage height, 4.16 ft; minimum daily discharge, 2.1 ft³/s Sept. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	178	671	87	146	179	830	415	137	400	254	137	3.8
2	266	795	33	147	176	795	409	137	398	226	138	3.2
3	197	1010	135	148	166	762	406	129	397	190	156	2.6
4	102	1450	368	144	161	734	307	132	225	182	161	2.1
5	203	1800	375	148	169	728	163	131	374	147	158	6.8
6	112	1680	299	144	168	727	160	128	372	123	170	15
7	59	1740	204	119	166	733	157	122	337	118	183	25
8	74	1720	182	126	174	737	165	126	312	118	183	27
9	58	1250	217	127	171	736	166	132	317	117	181	31
10	53	894	257	135	166	734	166	133	323	118	183	31
11	55	815	148	149	226	738	175	134	321	121	185	56
12	52	757	146	150	259	738	179	144	320	112	185	96
13	52	735	145	153	270	737	178	304	318	101	184	109
14	52	733	144	122	183	598	176	517	318	76	183	111
15	69	660	139	100	178	461	177	567	320	58	183	109
16	118	743	141	104	182	409	178	526	318	61	183	109
17	169	740	139	119	179	408	171	500	317	67	181	120
18	223	733	138	339	161	413	136	471	300	66	181	132
19	246	739	138	505	218	423	112	437	280	58	181	131
20	253	746	137	581	237	421	110	453	273	54	178	131
21	252	746	136	703	134	420	135	626	253	53	190	130
22	264	749	134	703	136	416	166	820	246	55	174	130
23	258	750	135	540	175	416	173	637	256	60	102	136
24	280	747	134	310	705	420	165	416	260	71	29	146
25	395	745	136	299	791	416	164	415	257	86	18	148
26	427	740	138	296	784	415	174	412	257	86	13	149
27	427	735	137	299	853	412	157	407	254	86	10	153
28	474	723	141	298	855	413	158	406	257	85	9.1	156
29	734	515	144	300	---	411	155	404	257	82	6.5	170
30	731	291	140	252	---	420	143	402	257	113	5.4	171
31	591	---	142	181	---	418	---	402	---	137	4.6	---
TOTAL	7424	27152	5089	7887	8222	17439	5696	10707	9094	3281	4035.6	2740.5
MEAN	239	905	164	254	294	563	190	345	303	106	130	91.3
MAX	734	1800	375	703	855	830	415	820	400	254	190	171
MIN	52	291	33	100	134	408	110	122	225	53	4.6	2.1
AC-FT	14730	53860	10090	15640	16310	34590	11300	21240	18040	6510	8000	5440
CAL YR 1985	TOTAL	113402	MEAN	311	MAX	1800	MIN	33	AC-FT	224900		
WTR YR 1986	TOTAL	108767.1	MEAN	298	MAX	1800	MIN	2.1	AC-FT	215700		

12117000 TAYLOR CREEK NEAR SELLECK, WA

LOCATION.--Lat 47°23'12", long 121°50'42", in NW¼NW¼ sec.19, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 0.6 mi upstream from mouth, and 1.3 mi northeast of Selleck.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--June to October 1945, August 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 940 ft, from topographic map. June to October 1945 on right bank 350 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Apr. 7-16. Records good except for the period Feb. 23 to Apr. 6 and estimated daily discharges Apr. 7-16, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--30 years, 98.5 ft³/s, 77.77 in/yr, 71,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft³/s Jan. 29, 1965, gage height, 5.78 ft from rating curve extended above 1,100 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 15 ft³/s Oct. 3, 4, 7-14, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0130	551	3.78	Jan. 19	0015	610	3.87
Oct. 26	1145	489	3.68	Feb. 23	2400	*1,420	*4.53

Minimum discharge, 17 ft³/s Oct. 9, 10, Sept. 21-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	18	189	60	80	110	133	105	99	59	33	26	20		
2	19	302	60	63	101	119	99	103	56	35	25	19		
3	21	264	71	67	100	110	93	122	55	34	25	19		
4	19	294	67	61	100	105	88	108	54	37	25	19		
5	18	269	70	80	102	98	83	109	53	35	25	19		
6	19	300	82	106	94	94	79	105	53	32	24	18		
7	19	233	93	82	90	115	76	99	52	31	24	18		
8	19	185	83	86	87	119	76	93	52	30	23	18		
9	18	152	75	83	83	109	78	96	49	30	23	19		
10	17	128	69	85	79	100	76	101	47	44	23	21		
11	28	111	65	85	77	104	77	102	46	48	23	19		
12	24	101	61	77	73	99	78	133	44	39	23	18		
13	21	94	59	73	72	97	76	298	43	35	23	18		
14	22	89	57	68	70	97	73	178	44	33	22	19		
15	26	91	56	69	97	88	77	143	43	32	22	19		
16	49	113	54	77	149	84	80	122	42	54	21	19		
17	36	99	54	109	102	85	78	108	42	68	21	19		
18	29	90	56	311	92	105	72	104	50	47	21	27		
19	45	86	59	388	85	139	69	98	45	40	21	19		
20	72	83	62	201	81	115	66	101	42	37	21	19		
21	45	79	61	148	81	115	64	113	41	34	21	18		
22	112	74	61	152	117	103	70	103	39	33	20	17		
23	100	70	63	194	517	108	76	94	38	33	20	51		
24	289	67	64	156	684	129	70	88	37	32	20	54		
25	332	64	65	132	413	112	77	83	36	31	20	26		
26	321	66	62	117	263	116	80	79	35	30	20	30		
27	254	67	60	112	189	104	156	76	35	29	19	26		
28	181	64	57	103	153	106	159	71	34	29	19	46		
29	122	63	55	97	---	99	127	68	35	28	20	72		
30	115	61	54	115	---	121	107	65	34	27	22	57		
31	96	---	52	108	---	112	---	62	---	26	22	---		
TOTAL	2506	3948	1967	3685	4261	3340	2585	3324	1335	1106	684	783		
MEAN	80.8	132	63.5	119	152	108	86.2	107	44.5	35.7	22.1	26.1		
MAX	332	302	93	388	684	139	159	298	59	68	26	72		
MIN	17	61	52	61	70	84	64	62	34	26	19	17		
CFSM	4.70	7.67	3.69	6.92	8.84	6.28	5.01	6.22	2.59	2.08	1.28	1.52		
IN.	5.42	8.54	4.25	7.97	9.22	7.22	5.59	7.19	2.89	2.39	1.48	1.69		
AC-FT	4970	7830	3900	7310	8450	6620	5130	6590	2650	2190	1360	1550		
CAL YR 1985	TOTAL	26665	MEAN	73.1	MAX	332	MIN	17	CFSM	4.25	IN.	57.67	AC-FT	52890
WTR YR 1986	TOTAL	29524	MEAN	80.9	MAX	684	MIN	17	CFSM	4.70	IN.	63.85	AC-FT	58560

LAKE WASHINGTON BASIN

12117500 CEDAR RIVER NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'38", long 121°57'12", on west line NW¼SW¼ sec.17, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 1.8 mi upstream from intake of Seattle water-supply system near Landsburg, 4.0 mi east of Maple Valley, 5.9 mi downstream from Taylor Creek, and at mile 23.4.

DRAINAGE AREA.--121 mi², excludes Walsh Lake diversion which enters Cedar River at mile 19.5, and excludes 1.9 mi² of Walsh Lake drainage in Cedar River basin which is normally diverted into Issaquah Creek.

PERIOD OF RECORD.--July 1895 to current year (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

REVISED RECORDS.--WSP 313: 1895-98, 1902-09. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M). WSP 1736: 1960. WSP 1932: 1947, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.9 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1898, nonrecording gage at site 2.2 mi downstream at different datum. Mar. 24, 1901, to May 15, 1913, nonrecording gage at site 2 mi downstream at datum 535.84 ft above National Geodetic Vertical Datum of 1929 (levels by city of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder 0.2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. All diversions except Rock Creek returned to river upstream from station. Rock Creek, a tributary which entered naturally just upstream from station prior to 1932, is diverted during summer months to enter river at a point about 3.9 mi downstream from station. Some regulation by Chester Morse Lake (station 12115900) and Cedar Lake (station 12116060), 12.2 mi upstream. Water temperatures published August 1953 to September 1985. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--91 years, 694 ft³/s, 502,800 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s Nov. 19, 1911, gage height, 10.0 ft, from graph based on gage readings, site and datum then in use, by computation of peak flow over dam, peak caused by failure of flashboards at Chester Morse Lake; minimum discharge observed, 83 ft³/s Sept. 19, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,390 ft³/s Nov. 4, gage height, 3.95 ft; minimum discharge, 237 ft³/s Oct. 4, Sept. 5, 6; minimum gage height, 0.87 ft Sept. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	376	1090	431	509	573	1270	865	546	766	556	398	245
2	427	1330	357	480	556	1230	851	557	761	537	399	244
3	459	1480	440	489	546	1190	836	588	756	498	411	242
4	281	1950	689	473	533	1150	763	562	596	490	420	240
5	397	2240	714	492	551	1130	579	572	716	460	419	239
6	341	2260	676	545	533	1130	562	566	725	420	423	241
7	281	2210	610	483	517	1160	551	543	690	411	440	247
8	268	2140	565	487	516	1170	549	536	661	406	437	247
9	279	1700	576	484	509	1150	561	544	656	402	437	251
10	261	1330	615	489	498	1150	547	564	659	431	437	257
11	276	1230	497	501	554	1150	560	561	653	443	438	267
12	266	1160	486	492	582	1150	571	608	649	418	438	302
13	260	1120	481	486	584	1140	558	937	643	394	437	324
14	256	1110	476	462	498	1040	552	987	644	375	435	328
15	267	1050	467	423	516	850	556	946	643	349	433	325
16	346	1170	467	439	617	803	559	920	639	382	433	326
17	370	1140	467	504	538	789	558	891	639	414	432	332
18	408	1120	466	861	513	825	516	876	645	380	428	369
19	448	1110	468	1310	504	889	480	868	615	357	428	349
20	504	1100	470	1100	560	851	471	890	601	346	426	347
21	467	1090	467	1170	458	854	484	1040	578	340	431	342
22	549	1080	462	1170	503	832	532	1230	564	335	427	340
23	578	1070	465	1140	850	834	558	1080	569	341	369	385
24	760	1060	467	811	1730	900	539	829	574	343	288	423
25	1090	1060	467	762	1560	854	538	815	567	358	268	376
26	1010	1060	463	728	1380	864	560	809	565	358	258	382
27	991	1060	457	719	1360	839	629	803	561	357	251	376
28	977	1050	455	698	1320	844	646	795	561	355	248	417
29	1140	862	457	685	---	835	606	786	561	351	247	459
30	1110	633	451	683	---	903	569	777	558	367	248	449
31	947	---	451	586	---	887	---	771	---	401	248	---
TOTAL	16390	39065	15480	20661	19959	30663	17706	23797	19015	12375	11832	9671
MEAN	529	1302	499	666	713	989	590	768	634	399	382	322
MAX	1140	2260	714	1310	1730	1270	865	1230	766	556	440	459
MIN	256	633	357	423	458	789	471	536	558	335	247	239
AC-FT	32510	77490	30700	40980	39590	60820	35120	47200	37720	24550	23470	19180
CAL YR 1985	TOTAL	230259	MEAN	631	MAX	2260	MIN	256	AC-FT	456700		
WTR YR 1986	TOTAL	236614	MEAN	648	MAX	2260	MIN	239	AC-FT	469300		

LAKE WASHINGTON BASIN

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12117700 ROCK CREEK ABOVE WALSH LAKE DITCH, NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'56", long 121°55'12", in NW¼NE¼ sec.16, T.22 N., R.7E., King County, Hydrologic Unit 17110012, on left bank 1.6 mi upstream from mouth, and 3.9 mi northeast of Landsburg.

DRAINAGE AREA.--4.91 mi².

PERIOD OF RECORD.--October 1985 to September 1986.

GAGE.--Water-stage recorder. Elevation of gage is 730 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 1. Records good. Overflow may occur 0.25 mi upstream during high flows. No regulation upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 209 ft³/s Feb. 24, gage height, 5.11 ft; minimum discharge, 2.9 ft³/s Aug. 22, 23, 26-28, gage height, 3.27 ft.

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)
Oct. 24	2300	133	4.53	Jan. 18	2345	197	5.01
Nov. 4	0730	146	4.62	Feb. 24	0215	*209	*5.11

Minimum discharge, 2.9 ft³/s Aug. 22, 23, 26-28, gage height, 3.27 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	3.9	29	11	23	18	22	24	16	9.0	4.5	4.0	4.0		
2	4.2	60	13	18	16	19	22	20	8.3	5.8	3.8	3.7		
3	4.5	63	18	22	17	17	19	30	7.8	5.2	3.7	3.7		
4	4.2	98	19	18	17	16	17	22	7.6	6.0	3.6	3.5		
5	3.9	62	22	22	20	15	16	26	7.6	5.4	3.6	3.2		
6	5.0	72	29	26	17	14	15	25	8.0	4.9	3.6	3.2		
7	4.7	55	31	20	16	18	14	22	7.7	4.3	3.6	3.2		
8	4.4	48	24	20	15	21	13	20	7.9	4.0	3.5	3.6		
9	4.4	39	20	20	14	18	15	20	7.3	4.1	3.5	3.7		
10	4.4	28	18	19	14	16	13	24	6.4	10	3.5	6.8		
11	8.0	23	16	18	13	17	15	22	6.0	11	3.7	5.3		
12	5.8	19	15	16	12	16	15	28	5.6	7.8	3.8	4.1		
13	5.2	17	14	15	12	16	13	49	5.3	5.8	3.8	4.5		
14	5.6	16	14	14	12	17	12	32	5.7	5.4	3.8	5.9		
15	5.7	20	13	15	20	15	14	25	5.7	5.5	3.7	4.8		
16	16	29	13	17	25	14	14	20	5.3	15	3.6	4.7		
17	10	24	13	25	17	14	14	18	5.8	14	3.6	5.4		
18	7.5	21	14	88	15	20	13	17	10	9.1	3.3	14		
19	9.6	19	15	111	14	24	12	17	8.0	7.0	3.4	7.4		
20	16	19	16	46	14	19	12	20	6.7	5.8	3.4	5.8		
21	12	17	15	31	15	21	11	18	6.3	5.3	3.3	5.3		
22	27	16	15	33	19	18	14	17	5.4	5.3	3.2	5.2		
23	21	15	15	46	70	23	17	15	5.3	5.3	3.1	16		
24	64	14	14	33	142	32	13	14	5.0	5.2	3.2	18		
25	73	14	14	26	91	23	14	13	4.9	5.2	3.2	10		
26	58	13	13	22	50	23	15	12	4.8	5.2	3.1	14		
27	62	14	12	21	34	19	23	12	4.5	5.0	3.1	11		
28	62	13	11	19	26	20	22	12	4.4	4.6	3.2	20		
29	32	12	12	17	---	18	20	11	4.8	4.5	3.5	27		
30	25	11	12	21	---	36	17	9.8	4.4	4.2	5.3	21		
31	20	---	11	19	---	30	---	9.5	---	4.0	5.4	---		
TOTAL	589.0	900	492	861	765	611	468	616.3	191.5	194.4	112.1	248.0		
MEAN	19.0	30.0	15.9	27.8	27.3	19.7	15.6	19.9	6.38	6.27	3.62	8.27		
MAX	73	98	31	111	142	36	24	49	10	15	5.4	27		
MIN	3.9	11	11	14	12	14	11	9.5	4.4	4.0	3.1	3.2		
CFSM	3.87	6.11	3.24	5.66	5.56	4.01	3.18	4.05	1.30	1.28	.74	1.68		
IN.	4.46	6.82	3.73	6.52	5.80	4.63	3.55	4.67	1.45	1.47	.85	1.88		
AC-FT	1170	1790	976	1710	1520	1210	928	1220	380	386	222	492		
WTR YR 1986	TOTAL	6048.3	MEAN	16.6	MAX	142	MIN	3.1	CFSM	3.38	IN.	45.82	AC-FT	12000

LAKE WASHINGTON BASIN

12117820 WALSH LAKE DITCH NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'57", long 121°55'13", in NW¼NE¼ sec.16, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 3.7 mi upstream from mouth, and 3.9 mi northeast of Landsburg.

DRAINAGE AREA.--9.42 mi².

PERIOD OF RECORD.--October 1985 to September 1986.

GAGE.--Water-stage recorder. Elevation of gage is 730 ft, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Overflow from Rock Creek may occur 0.25 mi upstream during high flows. No regulation upstream from station.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 45 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0445	50	5.99	Jan. 19	0315	*74	*6.38
Nov. 4	1100	49	5.98	Feb. 24	0630	67	6.28

Minimum discharge, 1.0 ft³/s Oct. 9, 10, Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.1	17	5.6	13	14	17	14	9.5	2.1	2.3	1.8	1.4		
2	1.1	27	6.2	12	13	15	13	11	2.1	2.6	1.8	1.4		
3	1.3	34	9.8	14	13	14	12	15	2.3	2.3	1.7	1.3		
4	1.2	45	9.5	11	13	13	11	13	2.4	2.6	1.6	1.4		
5	1.2	38	11	13	14	12	10	15	2.5	2.5	1.6	1.3		
6	1.3	38	15	17	13	11	9.8	16	2.7	2.4	1.5	1.2		
7	1.4	33	17	14	12	12	9.2	14	2.8	2.2	1.5	1.1		
8	1.1	29	16	13	11	14	8.6	13	2.7	2.0	1.5	1.1		
9	1.1	24	13	14	11	13	9.3	12	3.0	2.0	1.5	1.2		
10	1.1	19	12	13	11	12	8.5	14	3.1	3.4	1.4	1.6		
11	1.6	15	10	12	9.8	12	9.1	13	3.1	4.7	1.4	1.8		
12	1.5	12	9.6	11	9.5	11	9.6	15	2.9	3.6	1.4	1.6		
13	1.4	10	8.8	9.6	9.4	11	8.4	24	2.6	2.8	1.4	1.6		
14	1.4	9.0	8.3	9.2	9.5	11	7.7	20	2.4	2.6	1.4	1.9		
15	1.4	10	7.9	9.3	12	10	8.5	16	2.4	2.5	1.4	1.7		
16	3.4	15	7.6	10	16	9.6	9.0	14	2.2	5.2	1.3	1.7		
17	3.2	17	7.4	15	13	9.4	8.5	12	2.3	7.4	1.3	1.9		
18	2.5	13	7.4	33	11	11	7.7	11	4.1	4.6	1.3	4.6		
19	2.8	13	7.4	67	10	13	7.4	11	3.7	3.3	1.3	2.8		
20	4.6	13	7.5	44	9.9	12	7.1	13	3.3	2.8	1.3	2.2		
21	4.2	12	7.7	27	10	13	7.0	12	3.2	2.6	1.3	2.0		
22	7.1	11	7.7	24	12	12	7.9	12	2.8	2.3	1.2	1.8		
23	11	9.3	7.7	33	24	12	10	11	2.4	2.3	1.2	3.3		
24	20	8.3	7.7	27	62	19	8.1	27	2.2	2.2	1.1	6.0		
25	44	7.7	7.7	22	54	15	8.1	21	2.1	2.2	1.1	4.1		
26	32	7.4	7.8	19	38	15	8.7	15	2.1	2.1	1.1	4.5		
27	34	8.5	7.4	17	26	13	11	8.0	2.1	2.1	1.1	3.8		
28	37	7.5	6.9	15	21	12	12	3.1	2.2	2.0	1.1	5.1		
29	26	6.6	6.8	14	---	12	11	6.5	2.1	2.0	1.0	7.4		
30	20	5.9	7.2	16	---	18	10	2.1	2.0	1.9	1.2	7.7		
31	16	---	6.8	15	---	17	---	2.0	---	1.8	1.5	---		
TOTAL	287.0	515.2	278.4	583.1	482.1	401.0	282.2	401.2	77.9	87.3	42.3	80.5		
MEAN	9.26	17.2	8.98	18.8	17.2	12.9	9.41	12.9	2.60	2.82	1.36	2.68		
MAX	44	45	17	67	62	19	14	27	4.1	7.4	1.8	7.7		
MIN	1.1	5.9	5.6	9.2	9.4	9.4	7.0	2.0	2.0	1.8	1.0	1.1		
CFSM	.98	1.83	.95	2.00	1.83	1.37	.00	1.37	.28	.30	.14	.28		
IN.	1.13	2.03	1.10	2.30	1.90	1.58	1.11	1.58	.31	.34	.17	.32		
AC-FT	569	1020	552	1160	956	795	560	796	155	173	84	160		
WTR YR 1986	TOTAL	3518.2	MEAN	9.64	MAX	67	MIN	1.0	CFSM	1.02	IN.	13.89	AC-FT	6980

LAKE WASHINGTON BASIN

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12119000 CEDAR RIVER AT RENTON, WA

LOCATION.--Lat 47°28'58", long 122°12'08", in SW¼NW¼ sec.17, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 125 ft downstream from bridge on Mill Avenue at Renton, and at mile 1.6.

DRAINAGE AREA.--184 mi², includes 3.67 mi² in vicinity of Youngs Lake in Big Soos Creek basin, excludes 1.9 mi² from upper Rock Creek, Cedar River basin, normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to current year.

REVISED RECORD.--WSP 1316: 1901-02. WSP 1932: Drainage area. WDR WA-75-1: 1972-74.

GAGE.--Water-stage recorder. Datum of gage is 15.20 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1908, nonrecording gages within 1 mi of present site, at datum 10.67 ft above National Vertical Datum of 1929. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft upstream at datum 20.13 ft above National Geodetic Vertical Datum of 1929, and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow partly regulated by Chester Morse Lake and Masonry Dam for operation of powerplant at Cedar Falls 32.1 mi upstream from gage. An average daily discharge of about 193 ft³/s was diverted during the year at Landsburg by the city of Seattle for municipal use, computed from data furnished by Seattle Water Department. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1946-86), 681 ft³/s, 493,400 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft³/s Dec. 4, 1975, gage height, 14.14 ft from outside high-water mark; minimum daily discharge, 30 ft³/s July 1, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,480 ft³/s Nov. 6, gage height, 10.78 ft; minimum discharge, 110 ft³/s Sept. 3-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	201	814	403	469	656	1270	887	459	567	280	120	118
2	208	1260	365	509	629	1210	846	476	560	278	131	117
3	301	1500	446	498	618	1150	789	557	619	253	121	115
4	214	1900	739	464	612	1110	753	515	644	250	120	113
5	216	2370	684	492	630	1080	533	501	542	250	126	113
6	210	2410	695	598	598	1050	483	510	465	229	123	113
7	205	2380	658	515	559	1090	489	472	427	212	124	122
8	202	2330	551	491	552	1150	442	454	387	206	123	125
9	202	2040	491	519	528	1110	456	447	381	196	121	128
10	199	1330	551	513	507	1120	538	470	391	196	120	133
11	213	1110	505	501	540	1170	435	469	386	220	128	131
12	202	1030	452	492	552	1170	446	495	380	199	129	145
13	205	990	440	479	509	1140	433	871	385	167	129	167
14	208	936	422	470	545	1140	416	1060	400	156	124	172
15	209	955	423	448	581	848	436	943	401	145	119	170
16	244	1170	411	453	684	806	436	818	386	159	124	190
17	250	1130	400	579	572	779	512	788	393	229	126	195
18	260	1080	394	1130	541	807	468	758	409	239	122	211
19	291	1080	408	2000	514	880	428	753	397	214	116	195
20	336	1060	419	1470	549	838	410	787	388	147	116	203
21	290	1060	408	1310	490	844	402	824	390	131	113	204
22	341	1050	408	1260	502	835	417	1130	367	122	124	204
23	546	1050	390	1450	730	862	427	1060	364	122	135	225
24	570	1040	372	991	1980	963	410	742	360	119	166	298
25	1200	1030	370	880	1920	862	407	713	342	118	127	229
26	988	1060	368	822	1690	899	423	671	334	119	113	230
27	1120	1050	360	808	1510	876	465	637	319	119	113	220
28	973	934	362	777	1420	864	571	635	318	116	118	229
29	982	781	378	756	---	851	524	590	314	116	123	241
30	937	662	373	806	---	933	483	578	297	114	131	266
31	820	---	353	692	---	926	---	572	---	132	120	---
TOTAL	13343	38592	13999	23642	21718	30633	15165	20755	12313	5553	3845	5322
MEAN	430	1286	452	763	776	988	506	670	410	179	124	177
MAX	1200	2410	739	2000	1980	1270	887	1130	644	280	166	298
MIN	199	662	353	448	490	779	402	447	297	114	113	113
AC-FT	26470	76550	27770	46890	43080	60760	30080	41170	24420	11010	7630	10560
CAL YR 1985	TOTAL	196026	MEAN	537	MAX	2410	MIN	112	AC-FT	388800		
WTR YR 1986	TOTAL	204880	MEAN	561	MAX	2410	MIN	113	AC-FT	406400		

LAKE WASHINGTON BASIN

12119000 CEDAR RIVER AT RENTON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-71, March 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: August 1965 to February 1967, March 1978 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Daily record of water temperature not available for Apr. 11 to May 16 due to equipment failure.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.0°C Aug. 8, 1978; minimum, 0.0°C Dec. 30, 1978 to Jan. 1, 1979, Jan. 29, 1980.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 21.5°C Aug. 7-9; minimum recorded, 0.5°C Dec. 1.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.5	10.5	11.5	9.5	8.5	9.0	2.0	.5	1.5	5.5	5.0	5.5
2	12.5	11.5	12.0	9.5	9.0	9.5	4.0	2.0	3.0	5.0	4.0	4.5
3	13.0	11.0	12.0	9.5	9.0	9.5	5.5	4.0	5.0	5.5	5.0	5.5
4	12.5	9.5	11.5	9.0	8.5	9.0	5.5	4.5	5.0	5.0	3.5	4.5
5	12.5	10.0	11.5	8.5	8.0	8.5	5.0	4.5	5.0	6.0	5.0	5.5
6	12.0	11.0	11.5	8.5	8.5	8.5	5.5	4.5	5.0	6.0	5.0	5.5
7	11.5	9.5	10.5	8.5	7.5	8.0	6.0	5.0	5.0	5.5	5.0	5.5
8	10.0	7.5	9.0	8.0	7.5	7.5	5.5	4.5	5.0	7.0	5.5	6.5
9	10.0	7.0	8.5	7.5	6.5	7.5	4.5	3.5	4.0	7.0	6.5	6.5
10	9.5	9.0	9.0	7.0	5.5	6.5	4.0	3.0	3.5	7.0	6.0	6.5
11	11.5	10.0	11.0	6.0	5.0	5.5	4.5	3.5	3.5	6.5	5.5	6.5
12	11.5	10.0	10.5	6.0	5.0	5.5	4.0	3.0	3.5	6.5	5.0	5.5
13	10.0	8.5	9.5	6.0	5.0	5.5	4.0	3.5	3.5	7.0	6.0	6.5
14	11.0	10.0	10.5	6.0	5.0	6.0	4.5	3.5	4.0	6.5	5.5	6.0
15	12.5	11.0	11.5	7.0	6.0	6.5	5.5	4.5	5.0	7.0	6.5	7.0
16	12.0	11.0	11.5	6.5	6.5	6.5	5.0	4.0	4.5	7.0	6.5	7.0
17	12.0	10.0	10.5	6.0	5.0	5.5	5.0	4.0	4.5	7.0	6.5	6.5
18	12.5	10.5	11.0	5.5	5.0	5.5	5.0	4.5	4.5	8.5	6.5	7.5
19	11.5	10.5	11.0	5.5	5.0	5.0	5.0	4.5	4.5	7.0	6.0	6.5
20	11.0	10.5	10.5	5.0	4.5	5.0	4.5	4.0	4.5	6.0	5.5	5.5
21	11.0	10.0	10.5	4.5	3.0	4.0	4.5	3.5	4.0	5.5	5.0	5.5
22	10.0	9.5	10.0	4.0	2.5	3.0	4.5	4.0	4.5	5.0	5.0	5.0
23	10.5	9.0	9.5	3.0	2.0	2.5	4.5	4.0	4.5	5.5	5.0	5.0
24	10.5	9.5	10.0	3.0	1.5	2.5	5.0	4.5	4.5	6.0	5.0	5.5
25	10.0	9.0	9.5	3.5	2.0	2.5	4.5	3.5	4.0	6.0	4.5	5.0
26	9.5	8.5	9.0	4.0	3.5	3.5	4.5	3.0	4.0	6.0	4.5	5.5
27	10.0	9.5	9.5	3.0	2.5	3.0	4.0	3.5	4.0	6.5	6.0	6.0
28	9.5	8.5	9.0	3.5	3.0	3.0	4.0	2.5	3.0	6.0	5.5	6.0
29	8.5	7.0	8.0	3.5	2.5	3.0	5.0	4.0	4.5	7.0	6.0	6.5
30	9.5	8.5	8.5	3.0	1.0	2.5	5.5	5.0	5.0	7.0	6.5	7.0
31	8.5	8.0	8.0	---	---	---	5.0	4.5	5.0	7.5	6.5	7.0
MONTH	13.0	7.0	10.0	9.5	1.0	5.5	6.0	.5	4.0	8.5	3.5	6.0

12119000 CEDAR RIVER AT RENTON, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	6.0	7.0	7.5	5.5	6.5	8.5	7.5	8.0	---	---	---
2	7.5	5.5	6.5	7.0	5.0	6.0	9.5	7.5	8.0	---	---	---
3	7.5	6.5	7.0	7.0	5.0	6.0	9.0	7.0	8.0	---	---	---
4	7.0	6.5	7.0	8.0	6.5	7.0	9.5	8.0	8.5	---	---	---
5	7.5	6.5	7.0	6.5	6.0	6.5	11.0	7.0	9.0	---	---	---
6	7.0	5.5	6.0	7.5	6.0	7.0	11.5	7.5	9.5	---	---	---
7	6.5	5.0	5.5	8.0	7.0	7.0	12.5	8.0	10.0	---	---	---
8	5.5	4.0	4.5	7.5	6.0	7.0	10.0	9.5	10.0	---	---	---
9	5.5	3.5	4.5	7.5	6.5	7.0	9.5	3.0	9.0	---	---	---
10	5.5	4.0	5.0	8.0	6.5	7.0	10.0	7.5	8.5	---	---	---
11	6.0	4.5	5.0	8.0	6.5	7.0	---	---	---	---	---	---
12	5.5	3.5	4.0	7.5	6.5	7.0	---	---	---	---	---	---
13	4.5	3.0	4.0	7.5	5.5	6.5	---	---	---	---	---	---
14	5.5	3.5	4.5	7.5	6.0	6.5	---	---	---	---	---	---
15	6.5	4.5	5.5	7.5	5.0	6.5	---	---	---	---	---	---
16	6.0	4.5	5.5	8.5	5.5	6.5	---	---	---	---	---	---
17	5.0	4.0	4.5	7.5	6.5	7.0	---	---	---	11.0	9.0	10.0
18	5.0	3.5	4.5	7.5	6.5	7.0	---	---	---	11.0	10.0	10.5
19	4.5	2.5	3.5	10.0	7.0	8.0	---	---	---	13.5	9.5	11.5
20	5.5	2.5	4.0	10.0	7.0	8.5	---	---	---	11.5	10.0	10.5
21	5.5	4.5	5.0	9.0	8.0	8.5	---	---	---	11.0	9.0	10.0
22	6.5	5.5	6.0	9.0	6.5	7.5	---	---	---	11.5	8.5	10.0
23	7.5	6.0	6.5	8.0	7.0	7.5	---	---	---	12.0	8.5	10.0
24	7.0	6.0	6.0	8.5	7.0	8.0	---	---	---	12.5	10.5	11.5
25	6.5	6.0	6.0	8.0	6.5	7.5	---	---	---	15.5	11.0	13.0
26	7.0	6.0	6.0	9.5	7.5	8.5	---	---	---	13.5	11.5	12.5
27	7.5	5.5	6.5	10.5	7.5	9.0	---	---	---	14.0	11.0	12.0
28	6.5	6.0	6.0	9.5	8.5	9.0	---	---	---	15.0	11.0	13.0
29	---	---	---	9.5	7.5	8.5	---	---	---	16.0	11.0	13.5
30	---	---	---	9.0	8.0	8.5	---	---	---	16.5	11.5	14.0
31	---	---	---	10.0	7.0	8.5	---	---	---	16.5	12.0	14.0
MONTH	8.0	2.5	5.5	10.5	5.0	7.5	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16.5	12.5	14.5	16.0	14.0	14.5	20.0	14.0	17.5	16.0	12.5	14.5
2	13.5	11.5	12.5	15.5	13.5	14.0	21.0	15.0	18.0	16.5	14.0	15.5
3	16.0	12.0	14.0	15.5	12.5	14.0	20.5	15.5	18.0	17.5	13.5	15.5
4	14.0	12.0	13.0	14.0	12.0	13.0	19.0	15.0	17.0	18.0	13.5	17.5
5	13.5	11.5	12.5	16.5	12.0	14.0	19.5	14.5	17.0	18.0	13.5	16.0
6	13.5	12.0	12.5	18.5	12.0	15.5	20.5	14.5	17.5	17.5	14.0	15.5
7	12.5	12.0	12.0	18.5	13.5	16.0	21.5	16.0	18.5	16.5	13.0	15.0
8	13.5	11.0	12.0	18.5	14.0	16.5	21.5	16.0	19.0	15.5	13.5	14.5
9	16.5	10.5	13.5	16.5	14.5	15.5	21.5	16.0	19.0	14.5	12.5	13.5
10	17.5	12.0	15.0	15.5	13.5	14.0	18.5	15.0	16.0	15.0	13.0	14.0
11	18.0	13.0	15.5	17.0	13.5	15.0	16.5	14.5	15.0	14.5	11.0	13.0
12	18.0	12.5	15.0	17.0	13.0	14.5	17.0	14.5	15.5	14.5	10.5	12.5
13	18.5	12.5	15.5	18.0	12.5	15.5	19.5	14.0	17.0	13.0	11.0	12.0
14	15.5	13.5	14.0	15.5	13.5	14.0	20.0	15.0	17.5	14.5	11.0	12.5
15	16.0	12.0	14.0	13.5	12.0	13.0	19.0	15.0	17.0	13.5	11.0	12.0
16	15.5	12.5	14.0	12.5	11.5	12.0	19.0	13.5	16.5	14.5	11.5	13.0
17	14.0	12.0	13.0	14.5	11.0	12.5	19.0	14.0	17.0	12.5	11.0	12.0
18	14.5	12.5	13.5	17.0	11.0	16.0	19.0	14.0	16.5	14.5	11.5	13.0
19	15.0	11.5	13.0	18.5	13.0	15.5	18.0	14.0	16.0	14.0	11.0	12.5
20	15.5	12.5	14.0	19.5	13.5	16.5	19.5	14.0	17.0	13.0	11.0	12.0
21	17.5	12.0	14.5	20.0	14.0	17.5	19.5	14.5	17.0	13.5	11.5	12.5
22	18.0	13.0	15.5	17.0	14.5	15.5	19.5	14.5	17.0	13.5	10.5	12.0
23	19.0	14.0	16.5	16.5	13.5	15.0	19.0	15.0	17.0	12.5	11.5	12.0
24	18.5	14.0	16.5	18.0	13.0	15.5	17.0	15.0	16.0	12.5	11.0	11.5
25	18.5	13.0	15.5	16.0	13.5	15.0	19.0	13.5	16.5	12.5	10.0	11.0
26	15.5	13.0	14.5	16.0	13.5	14.5	20.0	14.5	17.5	12.5	11.0	11.5
27	18.5	12.5	15.5	18.0	12.5	15.0	19.5	16.0	17.5	12.0	11.0	11.5
28	16.0	14.0	14.5	16.5	13.0	14.5	17.5	16.0	16.5	12.5	11.0	11.5
29	16.0	13.0	14.0	17.5	13.0	15.5	15.5	14.5	15.0	12.0	11.5	11.5
30	18.0	12.5	15.0	18.5	12.5	15.5	14.5	13.5	14.0	12.0	11.0	11.5
31	---	---	---	19.0	13.0	16.0	15.5	13.0	14.0	---	---	---
MONTH	19.0	10.5	14.0	20.0	11.0	15.0	21.5	13.0	17.0	18.0	10.0	13.0

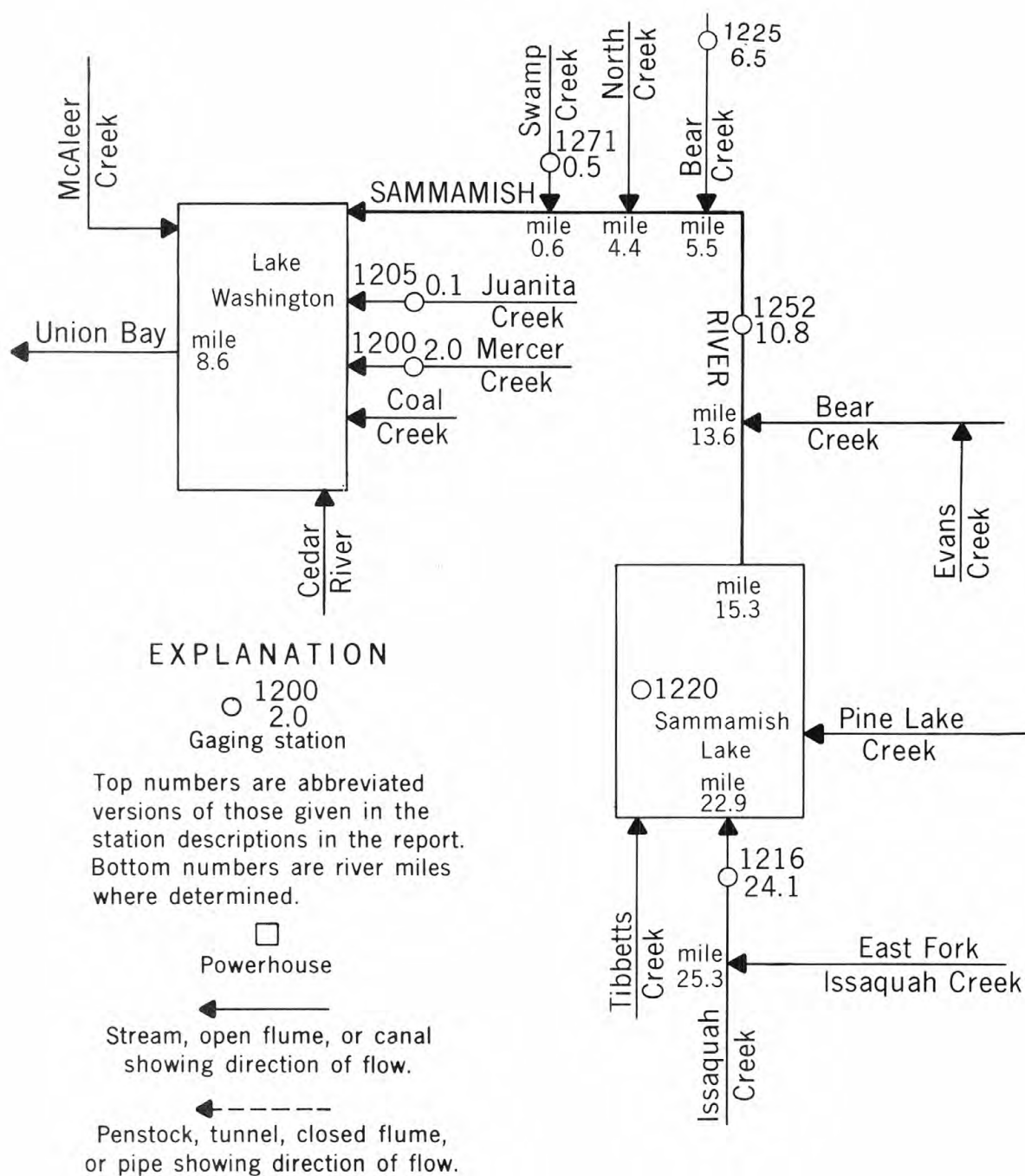


Figure 14.--Gaging stations in Lake Washington basin (below Cedar River).

LAKE WASHINGTON BASIN

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12120000 MERCER CREEK NEAR BELLEVUE, WA

LOCATION.--Lat 47°36'11", long 122°10'47", in NW¼NW¼ sec.4, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 40 ft upstream from Burlington Northern Railroad trestle, 1.2 mi southeast of Bellevue, and 2.0 mi upstream from mouth.

DRAINAGE AREA.--12.0 mi².

PERIOD OF RECORD.--June to October 1945, June 1955 to current year.

REVISED RECORDS.--WSP 1446: Drainage area. WDR WA-83-1: 1977-79(P).

GAGE.--Water-stage recorder. Datum of gage is 17.11 ft above National Geodetic Vertical Datum of 1929 (levels by Municipality of Metropolitan Seattle engineers). Prior to June 5, 1959, at site 600 ft downstream at different datums.

REMARKS.--Estimated daily discharges: Dec. 4-9. Records good. Natural flow affected by urbanization and construction of flood-control catchments.

AVERAGE DISCHARGE.--31 years, 22.6 ft³/s, 25.58 in/yr, 16,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 832 ft³/s Jan. 18, 1986, gage height, 6.50 ft; maximum gage height, 8.68 ft Mar. 6, 1972 caused by backwater from plugged culvert; minimum discharge, 1.9 ft³/s Aug. 6, 1958.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2230	*832	*6.50	No other peak greater than base discharge.			
Minimum discharge, 6.3 ft ³ /s Aug. 17.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.5	20	13	40	34	17	19	13	9.7	11	7.9	8.2		
2	8.5	40	20	34	28	16	14	23	9.5	14	8.1	8.2		
3	9.0	27	107	46	31	16	14	28	9.4	10	8.4	8.1		
4	8.9	54	72	21	37	15	15	20	9.5	13	8.6	7.9		
5	8.8	31	52	54	43	15	13	28	9.3	9.7	7.8	7.7		
6	14	28	46	36	25	15	12	19	9.5	9.3	7.9	7.5		
7	8.9	20	43	21	22	33	13	15	9.9	9.2	7.9	7.5		
8	8.4	24	24	26	20	31	13	13	10	9.1	7.7	7.6		
9	8.2	22	19	23	19	18	12	23	9.7	9.0	7.6	7.9		
10	8.2	17	17	26	18	17	12	50	9.2	20	7.9	14		
11	17	15	17	20	18	25	16	19	9.0	12	8.5	9.3		
12	19	15	17	17	17	19	14	17	8.9	10	8.5	8.1		
13	8.5	14	15	17	18	21	12	25	9.0	9.8	8.3	9.0		
14	8.6	14	14	15	18	19	12	14	13	9.5	7.9	9.0		
15	8.5	50	14	26	85	15	31	13	11	11	7.6	8.1		
16	22	44	14	41	42	14	29	12	10	34	7.4	7.9		
17	9.9	41	14	70	22	14	36	12	14	16	7.5	8.3		
18	8.7	23	14	407	18	19	50	13	12	10	7.6	35		
19	14	32	14	285	17	15	18	15	11	9.3	7.6	10		
20	34	23	14	71	17	14	16	31	10	8.8	7.6	9.3		
21	17	18	13	37	28	29	15	27	9.8	8.9	7.4	8.7		
22	75	17	13	59	27	16	23	22	9.4	8.7	7.6	8.5		
23	31	15	13	70	48	33	19	14	9.5	8.8	7.6	42		
24	62	14	13	31	52	50	14	12	9.2	8.7	7.9	15		
25	84	14	13	26	47	26	15	12	9.2	8.7	7.4	10		
26	85	14	12	23	24	28	15	11	9.3	8.8	7.6	18		
27	113	15	12	36	21	18	16	12	9.2	8.5	7.8	10		
28	71	14	12	23	19	20	14	11	9.6	8.5	8.3	9.9		
29	26	14	12	22	---	18	13	11	9.6	8.4	8.6	26		
30	28	14	12	61	---	34	12	10	9.4	8.1	12	19		
31	38	---	14	36	---	17	---	10	---	7.9	8.8	---		
TOTAL	871.6	703	699	1720	815	657	527	555	297.8	338.7	249.3	365.7		
MEAN	28.1	23.4	22.5	55.5	29.1	21.2	17.6	17.9	9.93	10.9	8.04	12.2		
MAX	113	54	107	407	85	50	50	50	14	34	12	42		
MIN	8.2	14	12	15	17	14	12	10	8.9	7.9	7.4	7.5		
CFSM	2.34	1.95	1.87	4.62	2.42	1.77	1.47	1.49	.83	.91	.67	1.02		
IN.	2.70	2.18	2.17	5.33	2.53	2.04	1.63	1.72	.92	1.05	.77	1.13		
AC-FT	1730	1390	1390	3410	1620	1300	1050	1100	591	672	494	725		
CAL YR 1985	TOTAL	6622.5	MEAN	18.1	MAX	242	MIN	7.7	CFSM	1.51	IN.	20.53	AC-FT	13140
WTR YR 1986	TOTAL	7799.1	MEAN	21.4	MAX	407	MIN	7.4	CFSM	1.78	IN.	24.18	AC-FT	15470

LAKE WASHINGTON BASIN

12120500 JUANITA CREEK NEAR KIRKLAND, WA

LOCATION.--Lat 47°42'20", long 122°12'56", in SWSE¼ sec.30, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 0.1 mi upstream from mouth and Lake Washington, and 1.7 mi north of Kirkland.

DRAINAGE AREA.--6.69 mi². Prior to May 3, 1972, 6.43 mi².

PERIOD OF RECORD.--June to October 1945, September 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 20 ft, from topographic map. Prior to Oct. 2, 1945, water-stage recorder at site 1,500 ft upstream at different datum. Sept. 1, 1963, to May 2, 1972, water-stage recorder and concrete control at site 1,000 ft upstream at different datum. May 3, 1972, to Oct. 27, 1972, nonrecording gage at present site and different datum.

REMARKS.--Estimated daily discharges: Oct. 24-29, Jan. 1 to Feb. 10, Mar. 14 to Apr. 7, Aug. 17-29. Records fair except for estimated daily discharges, which are poor. Retention ponds in basin may cause minor regulation. Probably several small diversions upstream from station for domestic use.

AVERAGE DISCHARGE.--21 years (water years 1964-72, 1975-86), 11.2 ft³/s, 22.73 in/yr, 8,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 740 ft³/s Jan. 18, 1986, by computation of peak flow through culvert, gage height, 10.15 ft, from floodmark; minimum discharge, 0.58 ft³/s Sept. 13, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 740 ft³/s Jan. 18, by computation of peak flow through culvert, gage height, 10.15 ft, from floodmark; minimum discharge, 2.0 ft³/s Sept. 3-6, gage height, 0.40 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	3.2	7.5	4.5	19	26	9.1	8.7	6.8	3.6	6.1	3.8	2.5		
2	3.1	16	5.7	16	18	8.8	7.4	8.9	3.6	6.2	3.8	2.4		
3	3.2	14	45	15	21	8.2	6.7	9.7	3.8	4.0	3.8	2.2		
4	3.2	25	31	6.4	26	7.6	7.3	9.8	4.2	4.0	3.8	2.2		
5	3.2	13	22	29	22	7.3	6.4	11	4.2	3.6	3.8	2.1		
6	5.6	10	18	15	15	7.3	6.1	9.0	4.2	3.3	3.5	2.2		
7	3.4	8.5	17	7.8	12	15	6.6	7.7	4.6	3.2	3.4	2.7		
8	3.2	9.5	11	12	11	11	6.1	7.1	4.4	3.2	3.3	3.0		
9	3.2	8.7	7.7	9.5	10	11	5.9	7.5	4.1	3.2	3.3	2.7		
10	3.2	6.6	6.6	11	9.5	9.5	5.7	16	4.1	9.7	3.3	6.7		
11	9.9	5.8	6.0	7.4	9.5	11	7.9	8.2	4.1	5.1	3.4	2.6		
12	5.5	6.7	5.7	6.2	8.5	8.6	6.9	6.7	4.0	3.9	3.4	2.6		
13	4.1	5.7	5.6	6.2	8.1	8.7	5.7	6.0	4.1	3.6	3.4	3.7		
14	4.1	5.1	5.4	5.7	8.5	9.3	5.5	4.4	8.1	3.4	3.3	3.2		
15	3.0	25	5.3	9.5	43	9.0	23	4.1	5.4	3.8	3.3	3.3		
16	19	26	5.3	17	20	7.5	22	3.8	5.0	26	3.2	3.6		
17	5.2	20	5.0	25	13	7.4	9.8	3.7	8.7	9.8	3.2	4.7		
18	4.2	10	5.0	361	12	8.7	14	4.0	12	6.1	3.1	12		
19	6.1	12	5.0	270	11	8.0	8.4	7.2	6.5	4.9	3.1	5.0		
20	33	11	5.0	74	11	7.4	7.0	13	5.0	4.3	3.1	4.4		
21	15	7.5	4.8	38	15	11	6.8	16	4.3	4.1	3.0	3.9		
22	35	6.6	4.7	46	13	7.6	9.8	11	3.8	4.2	3.0	3.8		
23	15	5.9	4.7	36	21	21	7.6	7.1	3.7	4.1	2.9	27		
24	39	5.5	4.7	21	20	22	6.5	5.9	3.3	4.0	3.1	15		
25	44	5.4	4.7	16	22	11	6.9	5.0	3.3	3.8	2.7	7.5		
26	67	5.2	4.5	14	13	12	6.0	4.6	3.3	3.8	2.6	20		
27	81	5.3	4.4	18	11	8.0	6.5	4.3	3.2	4.7	2.7	10		
28	33	5.3	4.4	13	9.3	8.6	6.2	4.2	3.2	3.9	2.8	8.6		
29	13	5.0	4.4	12	---	7.6	9.5	4.0	3.3	3.8	3.2	11		
30	10	4.8	4.4	36	---	12	7.7	3.8	3.2	3.7	3.9	8.4		
31	8.3	---	7.0	22	---	8.0	---	3.8	---	4.0	3.3	---		
TOTAL	489.7	502.6	274.5	1194.7	439.4	308.2	250.6	224.3	138.3	161.5	101.5	189.0		
MEAN	15.8	10.1	8.85	38.5	15.7	9.94	8.35	7.24	4.61	5.21	3.27	6.30		
MAX	81	26	45	361	43	22	23	16	12	26	3.9	27		
MIN	3.1	4.8	4.4	5.7	8.1	7.3	5.5	3.7	3.2	3.2	2.6	2.1		
CFSM	2.36	1.51	1.32	5.75	2.35	1.49	1.25	1.08	.69	.78	.49	.94		
IN.	2.72	1.68	1.53	6.64	2.44	1.71	1.39	1.25	.77	.90	.56	1.05		
AC-FT	971	600	544	2370	872	611	497	445	274	320	201	375		
CAL YR 1985	TOTAL	3114.0	MEAN	8.53	MAX	102	MIN	2.8	CFSM	1.28	IN.	17.32	AC-FT	6180
WTR YR 1986	TOTAL	4074.3	MEAN	11.2	MAX	361	MIN	2.1	CFSM	1.67	IN.	22.66	AC-FT	8080

LAKE WASHINGTON BASIN

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12121600 ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WA

LOCATION.--Lat 47°33'09", long 122°02'48", in SE¼NW¼ sec.21, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 30 ft downstream from S.E. 56th Street bridge, 0.7 mi downstream from North Fork, 1.2 mi upstream from mouth, and 1.6 mi northwest of Issaquah.

DRAINAGE AREA.--56.6 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 35.99 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 2, Dec. 22-28. Records fair. Many minor diversions for irrigation and domestic use upstream from station.

AVERAGE DISCHARGE.--23 years, 139 ft³/s, 33.35 in/yr, 100,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,870 ft³/s Dec. 3, 1975, gage height, 11.46 ft; maximum gage height, 11.79 ft Jan. 25, 1984; minimum discharge, 10 ft³/s Aug. 12, 1984.

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)
Jan. 19	0245	*2,300	*11.52	No other peak greater than base discharge.			
Minimum discharge, 15 ft ³ /s Aug. 27.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	22	108	88	138	173	175	146	89	55	33	26	23		
2	23	208	95	130	162	153	132	97	51	36	25	22		
3	25	254	190	162	160	135	122	125	49	34	24	21		
4	24	336	192	138	161	123	113	107	50	38	24	21		
5	23	259	258	155	193	116	104	130	52	36	24	21		
6	25	254	320	186	162	112	98	140	53	33	23	21		
7	25	220	335	153	148	133	92	122	53	32	23	19		
8	24	207	273	149	136	164	87	111	53	31	23	21		
9	23	192	211	136	127	135	88	109	51	31	23	21		
10	22	157	174	134	122	123	84	131	48	40	22	28		
11	24	136	152	126	114	118	89	127	46	48	24	28		
12	23	122	134	118	108	124	94	149	44	39	24	24		
13	24	108	122	116	105	126	84	251	42	35	22	25		
14	25	98	112	108	105	139	80	193	44	32	20	26		
15	23	122	104	110	191	122	90	158	45	30	22	23		
16	38	202	99	131	230	114	90	133	43	45	22	24		
17	33	183	97	218	175	108	87	118	43	54	21	24		
18	33	154	97	810	152	114	83	110	49	38	20	40		
19	34	145	98	1500	136	125	79	100	46	34	20	31		
20	46	134	98	608	129	115	77	124	43	31	21	28		
21	37	124	96	385	132	123	76	118	43	30	21	25		
22	87	117	90	364	164	121	80	112	41	29	22	24		
23	88	111	86	445	272	124	98	100	37	30	21	35		
24	141	107	84	328	600	192	84	92	36	30	21	49		
25	262	103	82	265	486	153	84	84	35	29	20	36		
26	202	100	78	223	339	163	90	79	35	31	19	45		
27	262	97	74	209	254	141	106	77	35	29	19	36		
28	290	94	70	179	206	136	108	73	35	27	20	41		
29	160	91	69	165	---	132	103	70	35	27	22	63		
30	125	89	71	196	---	169	95	66	33	27	26	74		
31	104	---	73	183	---	161	---	58	---	27	27	---		
TOTAL	2297	4632	4122	8268	5442	4189	2843	3553	1325	1046	691	919		
MEAN	74.1	154	133	267	194	135	94.8	115	44.2	33.7	22.3	30.6		
MAX	290	336	335	1500	600	192	146	251	55	54	27	74		
MIN	22	89	69	108	105	108	76	58	33	27	19	19		
CFSM	1.31	2.72	2.35	4.72	3.43	2.39	1.67	2.03	.78	.60	.39	.54		
IN.	1.51	3.04	2.71	5.43	3.58	2.75	1.87	2.34	.87	.69	.45	.60		
AC-FT	4560	9190	8180	16400	10790	8310	5640	7050	2630	2070	1370	1820		
CAL YR 1985	TOTAL	33447	MEAN	91.6	MAX	341	MIN	22	CFSM	1.62	IN.	21.98	AC-FT	66340
WTR YR 1986	TOTAL	39327	MEAN	108	MAX	1500	MIN	19	CFSM	1.91	IN.	25.85	AC-FT	78010

LAKE WASHINGTON BASIN

12122000 SAMMAMISH LAKE NEAR REDMOND, WA

LOCATION.--Lat 47°34'47", long 122°06'38", in NE¼SW¼ sec.12, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on west shore 5.6 mi above lake outlet, and 6.5 mi south of Redmond.

DRAINAGE AREA.--99.6 mi²; includes 1.9 mi² of Cedar River drainage from upper Rock Creek, which normally is diverted into Issaquah Creek.

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

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 24.04 ft above National Geodetic Vertical Datum of 1929. Prior to June 22, 1942, nonrecording gage at different site at datum 1.00 ft higher. June 22, 1942, to Aug. 22, 1951, nonrecording gage at different site at datum 1.00 ft higher and Aug. 23, 1951, to Apr. 29, 1955, at present datum.

REMARKS.--Minor regulation on tributaries. Many small diversions from tributaries for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.40 ft Feb. 12, 1951 (present datum); minimum observed, 1.69 ft Aug. 25-27, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 10.83 ft, present datum, was observed on Dec. 22, 1933, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.06 ft Jan. 23; minimum, 1.28 ft Sept. 10.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.42	2.50	2.33	2.22	3.31	3.04	2.52	2.25	2.24	1.72	1.58	1.34
2	1.42	---	2.32	2.24	3.24	2.99	2.51	2.27	2.21	1.73	1.58	1.34
3	1.42	---	---	2.31	3.19	2.92	2.49	2.30	2.16	1.71	1.57	1.34
4	1.42	---	---	2.32	3.14	2.85	2.48	2.32	2.13	1.71	1.56	1.33
5	1.41	---	---	2.36	3.12	2.79	2.46	2.34	2.10	1.70	1.55	1.33
6	1.43	---	---	2.43	3.08	2.74	2.44	2.37	2.07	1.70	1.54	1.33
7	1.43	---	---	2.45	3.02	2.71	2.41	2.38	2.05	1.69	1.53	1.31
8	1.42	---	---	2.46	2.97	2.72	2.39	2.37	2.03	1.67	1.53	1.31
9	1.41	---	---	2.47	2.91	2.70	2.37	2.37	2.02	1.66	1.52	1.30
10	1.41	---	2.80	2.46	2.85	2.67	2.35	2.41	2.00	1.67	1.50	1.30
11	1.42	---	2.79	2.48	2.80	2.66	2.33	2.42	1.98	1.68	1.49	1.30
12	1.46	2.72	2.76	2.46	2.74	2.63	2.33	2.43	1.96	1.68	1.48	1.30
13	1.45	2.71	2.72	2.44	2.69	2.60	2.31	2.48	1.95	1.66	1.47	1.30
14	1.45	2.66	2.68	2.41	2.65	2.59	2.28	2.53	1.93	1.66	1.47	1.31
15	1.45	2.66	2.64	2.41	2.71	2.55	2.29	2.54	1.92	1.65	1.45	1.30
16	1.48	2.71	2.60	2.44	2.77	2.53	2.32	2.53	1.90	1.68	1.44	1.30
17	1.49	---	2.56	2.54	2.77	2.47	2.32	2.52	1.89	1.71	1.43	1.30
18	1.49	---	2.52	2.87	2.76	2.42	2.37	2.50	1.88	1.71	1.42	1.37
19	1.49	---	2.48	3.76	2.73	2.40	2.34	2.48	1.87	1.71	1.41	1.38
20	1.56	---	2.45	4.02	2.69	2.38	2.32	2.49	1.85	1.70	1.40	1.38
21	1.56	---	2.42	4.03	2.68	2.39	2.31	2.49	1.85	1.70	1.39	1.38
22	1.62	---	2.39	3.99	2.68	2.39	2.30	2.51	1.84	1.68	1.39	1.38
23	1.70	---	2.36	4.02	2.72	2.38	2.29	2.48	1.83	1.67	1.38	1.42
24	1.78	2.64	2.32	3.97	2.89	2.45	2.28	2.45	1.82	1.66	1.37	1.45
25	---	2.57	2.29	3.87	3.05	2.47	2.26	2.43	1.80	1.65	1.36	1.45
26	---	2.53	2.27	3.77	3.11	2.50	2.26	2.40	1.79	1.64	1.36	1.48
27	---	2.50	2.24	3.68	3.11	2.49	2.27	2.38	1.78	1.63	1.35	1.48
28	2.45	2.47	2.22	3.58	3.08	2.49	2.27	2.35	1.76	1.62	1.35	1.48
29	2.47	2.42	2.20	3.48	---	2.49	2.27	2.32	1.74	1.61	1.34	1.51
30	2.50	2.38	2.18	3.42	---	2.51	2.26	2.29	1.73	1.60	1.34	1.57
31	2.50	---	2.16	3.38	---	2.52	---	2.26	---	1.59	1.34	---
MEAN	---	---	---	2.99	2.91	2.59	2.35	2.41	1.94	1.67	1.45	1.37
MAX	---	---	---	4.03	3.31	3.04	2.52	2.54	2.24	1.73	1.58	1.57
MIN	---	---	---	2.22	2.65	2.38	2.26	2.25	1.73	1.59	1.34	1.30

LAKE WASHINGTON BASIN

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12122500 BEAR CREEK NEAR REDMOND, WA

LOCATION.--Lat 47°43'04", long 122°04'34", in NW¼NW¼ sec.29, T.26 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank, 1.0 mi upstream from Cottage Lake Creek and 3.5 mi northeast of Redmond, and at mile 6.5.

DRAINAGE AREA.--13.9 mi².

PERIOD OF RECORD.--June 1945 to October 1949, May 1979 to September 1981, October 1981 to September 1984 (seasonal records only), October 1984 to current year.

REVISED RECORD.--WDR WA-79-1: Drainage area. WDR WA-84: Datum.

GAGE.--Water-stage recorder. Datum of gage is 111.0 ft above National Geodetic Vertical Datum of 1929. June 1945 to October 1949 at different datum.

REMARKS.--Estimated daily discharges: Oct. 28, 29, Jan. 25, 26, Nov. 23 to Dec. 3, May 31 to June 17, June 23 to July 15, July 22, 23. Records good below 40 ft³/s, fair above. No known diversion or regulation.

AVERAGE DISCHARGE.--8 years (water years 1946-49, 1980-81, 1985-86), 26.5 ft³/s, 25.89 in/yr, 19,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 420 ft³/s Jan. 18, 1986, gage height, 4.54 ft; minimum discharge, 3.1 ft³/s Aug. 22, 1946, gage height, 1.34 ft at datum then in use; minimum gage height, 0.48 ft July 26-31, Aug. 13, 14, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 420 ft³/s Jan. 18, gage height, 4.54 ft; minimum discharge, 5.2 ft³/s Oct. 5, gage height, 0.91 ft; minimum gage height, 0.48 ft July 26-31, Aug. 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	7.0	20	15	28	41	29	26	17	9.5	7.2	5.2	7.3		
2	6.5	27	16	26	38	26	24	19	9.0	7.4	6.4	6.9		
3	6.3	34	30	35	37	23	22	25	9.0	7.5	16	6.9		
4	6.1	49	43	27	36	22	22	21	8.8	7.5	12	7.0		
5	6.1	39	49	35	46	20	20	22	8.8	7.5	9.1	6.7		
6	8.3	36	52	45	39	19	18	22	8.8	7.4	7.3	7.1		
7	9.7	34	56	35	34	24	17	20	8.8	7.2	6.5	6.3		
8	7.9	34	49	32	30	25	16	18	9.2	7.0	6.0	6.4		
9	7.6	31	38	28	28	23	16	18	8.8	6.8	5.9	6.7		
10	7.3	27	31	29	25	22	15	22	8.4	8.0	6.1	7.2		
11	9.7	22	26	25	23	25	16	21	8.2	7.7	6.5	7.0		
12	12	19	23	23	21	24	18	19	8.0	7.5	6.2	7.0		
13	9.6	18	21	20	20	23	16	20	7.8	7.4	5.9	7.1		
14	9.9	18	20	20	20	23	14	18	8.0	7.4	6.1	7.8		
15	9.8	23	19	21	49	20	20	17	8.4	8.0	6.1	7.7		
16	17	43	18	28	53	19	28	15	8.2	14	5.8	7.5		
17	14	35	18	43	42	17	25	14	10	18	6.2	7.1		
18	12	32	18	214	35	20	28	14	14	13	6.2	9.1		
19	11	28	18	340	30	25	24	14	26	11	6.0	8.4		
20	15	26	18	215	27	21	21	17	14	22	6.3	8.3		
21	14	24	17	127	30	23	20	18	9.5	11	6.3	8.0		
22	18	23	17	97	32	24	19	19	8.7	8.0	6.3	8.0		
23	16	21	16	110	43	25	20	15	8.0	7.2	6.0	18		
24	19	20	16	80	46	40	17	14	7.5	6.7	6.3	17		
25	43	19	16	61	48	32	17	13	7.2	6.0	6.3	12		
26	44	18	15	50	41	33	18	12	7.4	5.8	6.1	12		
27	82	17	15	47	37	28	21	12	7.2	5.9	6.7	11		
28	72	16	15	41	33	27	20	11	7.0	5.8	6.5	12		
29	50	16	15	36	---	25	21	11	7.0	6.1	6.8	12		
30	32	15	14	44	---	32	19	11	7.0	6.0	6.9	11		
31	25	---	14	44	---	29	---	10	---	6.0	7.4	---		
TOTAL	607.4	784	748	2005	984	768	598	519	278.2	264.0	214.4	266.5		
MEAN	19.6	26.1	24.1	64.7	35.1	24.8	19.9	16.7	9.27	8.52	6.92	8.88		
MAX	82	49	56	340	53	40	28	25	26	22	16	18		
MIN	6.1	15	14	20	20	17	14	10	7.0	5.8	5.8	6.3		
CFSM	1.41	1.88	1.73	4.65	2.53	1.78	1.43	1.20	.67	.61	.50	.64		
IN.	1.63	2.10	2.00	5.37	2.63	2.06	1.60	1.39	.74	.71	.57	.71		
AC=FT	1200	1560	1480	3980	1950	1520	1190	1030	552	524	425	529		
CAL YR 1985	TOTAL	7008.3	MEAN	19.2	MAX	127	MIN	5.5	CFSM	1.38	IN.	18.76	AC=FT	13900
WTR YR 1986	TOTAL	8036.5	MEAN	22.0	MAX	340	MIN	5.8	CFSM	1.58	IN.	21.51	AC=FT	15940

12123100 COTTAGE LAKE CREEK ABOVE BEAR CREEK, NEAR REDMOND, WA

LOCATION.--Lat 47°43'03", long 122°05'07", in NW¼NE¼ sec.30, T.26 N., R.6 E., King County, Hydrologic Unit 17110012, on left bank at 132nd Street NE, 3.0 mi northeast of Redmond, and 0.6 mi upstream from mouth.

DRAINAGE AREA.--12.6 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 102.2 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 2, 1985, Sept. 26-30, 1986. Records fair. Some small diversions for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 245 ft³/s Jan. 18, 1986, gage height, 4.49 ft; minimum discharge, 2.7 ft³/s Sept. 26-30, 1985, Oct. 1, 2, 1985.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 95 ft³/s Dec. 14, gage height, 3.29 ft; minimum discharge, 2.7 ft³/s Sept. 26-30.

WATER YEAR 1986.--Maximum discharge, 245 ft³/s Jan. 18, gage height, 4.49 ft; minimum discharge, 2.7 ft³/s Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4.9	17	50	31	13	17	16	15	11	7.8	7.4	6.3		
2	5.2	43	42	28	13	16	15	14	11	7.8	7.4	6.1		
3	5.5	29	34	25	12	15	16	14	11	7.7	7.4	6.1		
4	6.0	23	29	23	12	19	16	13	11	7.3	7.1	6.1		
5	5.9	19	25	21	12	20	15	16	10	7.1	7.0	6.8		
6	5.7	17	22	21	12	19	14	14	12	7.1	6.8	8.0		
7	5.8	14	25	20	14	17	14	13	75	7.1	6.8	7.7		
8	6.0	13	60	19	14	16	14	12	61	7.1	6.8	8.2		
9	6.6	14	46	18	14	16	13	11	42	7.0	7.0	8.1		
10	13	24	45	17	15	15	12	11	32	6.8	7.9	5.1		
11	13	31	38	16	28	14	12	12	24	6.8	7.6	4.1		
12	11	24	65	16	25	14	12	11	20	6.7	7.3	3.9		
13	10	35	67	16	21	13	12	11	17	6.4	7.0	3.8		
14	11	35	72	16	20	13	12	17	17	6.4	6.6	3.8		
15	9.4	25	85	16	19	13	11	14	15	6.4	6.3	3.8		
16	8.4	21	86	16	18	12	11	13	14	6.5	6.0	4.3		
17	7.2	19	75	15	17	12	11	12	12	6.7	5.8	6.6		
18	6.8	19	60	15	16	12	11	11	11	6.8	5.8	5.5		
19	6.8	19	48	16	17	12	14	10	9.9	6.6	5.8	5.0		
20	6.4	21	40	20	18	12	17	9.7	9.4	6.4	5.8	4.6		
21	6.1	19	34	18	19	12	15	9.5	9.1	6.4	5.9	4.3		
22	6.1	17	39	16	23	12	14	9.4	8.7	6.4	5.8	4.0		
23	9.8	37	39	15	22	17	15	9.2	8.5	6.4	5.8	3.7		
24	14	43	33	15	24	17	16	9.3	9.1	6.4	5.8	3.2		
25	15	34	30	15	22	16	18	10	8.8	6.4	5.8	3.2		
26	16	29	29	14	20	15	18	9.9	8.7	6.4	5.8	2.8		
27	14	48	37	14	19	16	22	9.5	8.4	6.4	5.8	2.7		
28	13	60	34	13	17	15	22	9.4	8.3	6.0	5.7	2.7		
29	15	73	37	13	---	18	19	11	8.1	6.1	5.7	2.7		
30	13	62	47	13	---	19	17	15	8.0	6.1	6.0	2.7		
31	12	---	37	12	---	18	---	13	---	6.3	6.4	---		
TOTAL	288.6	884	1410	543	496	472	444	368.9	511.0	207.8	200.1	145.9		
MEAN	9.31	29.5	45.5	17.5	17.7	15.2	14.8	11.9	17.0	6.70	6.45	4.86		
MAX	16	73	86	31	28	20	22	17	75	7.8	7.9	8.2		
MIN	4.9	13	22	12	12	12	11	9.2	8.0	6.0	5.7	2.7		
CFSM	.76	2.42	3.73	1.43	1.45	1.25	1.21	.98	1.39	.55	.53	.40		
IN.	.88	2.70	4.30	1.66	1.51	1.44	1.35	1.12	1.56	.63	.61	.44		
AC-FT	572	1750	2800	1080	984	936	881	732	1010	412	397	289		
WTR YR 1985	TOTAL	5971.3	MEAN	16.4	MAX	86	MIN	2.7	CFSM	1.34	IN.	18.21	AC-FT	11840

12123100 COTTAGE LAKE CREEK ABOVE BEAR CREEK, NEAR REDMOND, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.7	13	9.0	16	28	21	16	13	9.2	7.4	5.8	6.1		
2	2.8	18	11	15	26	19	15	14	9.1	7.8	5.8	6.3		
3	3.0	20	27	18	27	18	14	15	8.7	7.4	5.7	6.3		
4	3.0	33	32	14	29	17	14	14	8.4	7.5	5.6	6.1		
5	3.0	27	33	20	33	16	14	14	8.4	7.4	5.6	6.1		
6	4.0	25	33	24	28	15	14	14	8.4	7.3	5.5	6.2		
7	3.8	23	33	20	26	17	13	13	8.4	7.1	5.5	6.1		
8	3.8	23	29	19	24	18	13	13	8.8	7.1	5.5	6.3		
9	3.8	22	24	18	23	17	12	13	8.8	6.9	5.4	6.4		
10	3.8	19	21	17	22	16	13	14	8.6	7.4	5.5	6.8		
11	5.2	17	19	16	21	18	13	14	8.4	7.4	5.5	6.8		
12	5.4	15	17	15	19	16	13	13	8.3	7.1	5.7	6.7		
13	4.6	13	15	14	17	16	13	13	8.1	7.1	5.8	6.5		
14	5.0	12	14	14	17	16	12	13	8.2	7.1	5.5	6.8		
15	5.3	15	14	14	38	15	14	12	8.3	7.1	5.5	6.8		
16	13	32	13	16	34	14	17	12	8.2	9.8	5.5	6.8		
17	8.4	27	12	20	27	14	16	11	8.6	10	5.5	6.9		
18	7.0	24	11	139	23	14	17	12	10	8.6	5.5	7.9		
19	6.9	21	11	214	21	15	16	12	10	7.9	5.5	7.4		
20	12	20	11	170	20	14	15	13	9.1	7.3	5.5	7.4		
21	10	17	11	132	22	16	14	13	8.8	7.0	5.5	7.4		
22	13	16	11	109	22	15	14	13	8.4	6.7	5.5	7.1		
23	11	15	11	102	30	17	14	12	8.0	6.5	5.5	11		
24	16	14	11	72	31	23	14	11	7.6	6.3	5.5	9.5		
25	32	13	11	52	34	19	13	11	7.4	6.1	5.5	8.5		
26	30	12	10	38	28	20	13	11	7.4	6.1	5.7	9.0		
27	45	11	10	32	25	17	14	11	7.4	6.1	5.8	9.5		
28	39	10	10	25	22	17	13	11	7.4	6.1	5.8	9.5		
29	20	9.5	9.9	21	---	16	15	10	7.4	6.1	5.8	10		
30	18	9.0	9.9	30	---	18	14	9.8	7.4	6.0	6.0	10		
31	16	---	9.6	29	---	17	---	9.4	---	6.0	6.1	---		
TOTAL	356.5	545.5	503.4	1455	717	521	422	384.2	251.2	221.7	174.1	224.2		
MEAN	11.5	18.2	16.2	46.9	25.6	16.8	14.1	12.4	8.37	7.15	5.62	7.47		
MAX	45	33	33	214	38	23	17	15	10	10	6.1	11		
MIN	2.7	9.0	9.0	14	17	14	12	9.4	7.4	6.0	5.4	6.1		
CFSM	.94	1.49	1.33	3.84	2.10	1.38	1.16	1.02	.69	.59	.46	.61		
IN.	1.09	1.66	1.53	4.44	2.19	1.59	1.29	1.17	.77	.68	.53	.68		
AC-FT	707	1080	998	2890	1420	1030	837	762	498	440	345	445		
CAL YR 1985	TOTAL	4794.1	MEAN	13.1	MAX	75	MIN	2.7	CFSM	1.07	IN.	14.62	AC-FT	9510
WTR YR 1986	TOTAL	5775.8	MEAN	15.8	MAX	214	MIN	2.7	CFSM	1.30	IN.	17.61	AC-FT	11460

LAKE WASHINGTON BASIN

12123200 BEAR CREEK TRIBUTARY NEAR REDMOND, WA

LOCATION.--Lat 47°42'02", long 122°04'08", in NE¼NW¼ sec.32, T.26 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 10 ft downstream from Redmond Road NE, 3 mi northeast of Redmond, and 1.3 mi upstream from mouth.

DRAINAGE AREA.--1.28 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 210.0 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 11, 1984, May 16-28, 1985, May 31 to June 5, 1985, July 3-31, 1985, Aug. 2-8, 1985, Aug. 11 to Sept. 4, 1985, Sept. 25-30, 1985; Nov. 22 to Dec. 1, 1985, Sept. 27-30, 1986. Records fair except for estimated daily discharges, which are poor. No known diversion or regulation upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32 ft³/s Jan. 18, 1986, gage height, 2.14 ft; minimum discharge, 0.27 ft³/s Sept. 3, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum recorded discharge, 14 ft³/s June 7, gage height, 1.87 ft; minimum daily discharge, 0.43 ft³/s Aug. 20-22, 24.

WATER YEAR 1986.--Maximum discharge, 32 ft³/s Jan. 18, gage height, 2.14 ft; minimum discharge, 0.27 ft³/s Sept. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.55	1.0	1.8	1.5	.80	1.0	1.0	1.1	.80	.50	.51	.48		
2	.60	3.0	1.5	1.3	.78	.97	.95	1.0	.76	.49	.48	.47		
3	.58	3.5	1.4	1.2	.74	.99	1.0	1.0	.74	.48	.47	.47		
4	.60	2.0	1.3	1.2	.70	1.7	1.0	1.0	.72	.48	.47	.48		
5	.60	1.5	1.3	1.2	.78	1.3	.94	1.0	.80	.47	.48	.55		
6	.60	1.2	1.2	1.1	.85	1.1	.88	.94	.86	.47	.47	.59		
7	.60	1.0	1.9	1.1	1.1	1.0	.87	.88	7.8	.48	.47	.58		
8	.65	1.0	4.3	.99	.94	.97	.88	.77	1.9	.47	.48	.79		
9	.70	1.1	2.1	.94	.92	.94	.87	.70	1.1	.47	.50	.95		
10	.90	1.9	1.9	.87	1.3	.90	.84	.73	.91	.48	.56	.74		
11	.80	2.9	2.4	.81	3.1	.87	.95	.81	.80	.48	.48	.60		
12	.77	2.3	4.0	.82	1.6	.86	.89	.72	.74	.48	.47	.55		
13	.75	3.7	2.7	.81	1.2	.85	.83	.88	.70	.48	.46	.57		
14	.73	2.3	4.1	.88	1.2	.76	.80	1.4	.77	.47	.45	.56		
15	.70	1.4	3.1	.89	1.1	.74	.78	.84	.72	.47	.45	.53		
16	.68	1.3	2.6	.82	1.1	.71	.71	.81	.66	.47	.45	.67		
17	.66	1.3	2.1	.79	1.0	.70	.69	.77	.63	.48	.45	1.1		
18	.64	1.3	1.9	.81	1.0	.70	.86	.74	.60	.48	.45	.73		
19	.62	1.4	1.7	.95	1.3	.61	1.8	.72	.58	.47	.44	.66		
20	.62	2.0	1.6	1.4	1.3	.69	1.6	.70	.58	.47	.43	.62		
21	.63	1.8	1.6	1.0	1.6	.75	1.2	.70	.58	.47	.43	.61		
22	.64	1.6	2.7	.96	1.8	.82	1.2	.66	.57	.46	.43	.60		
23	.65	3.4	2.2	.91	1.3	1.4	1.2	.65	.57	.45	.44	.57		
24	.67	1.9	1.8	.91	1.9	1.0	1.6	.70	.58	.45	.43	.53		
25	.73	1.5	1.6	.87	1.3	.92	1.5	.73	.57	.45	.44	.48		
26	.82	1.3	1.6	.84	1.1	.89	1.6	.70	.53	.45	.44	.48		
27	.85	2.4	2.4	.83	1.1	1.0	1.8	.68	.53	.45	.45	.47		
28	.80	3.6	1.8	.79	1.0	.94	1.6	.75	.52	.46	.46	.46		
29	.75	3.2	2.6	.75	---	1.7	1.3	.95	.51	.46	.46	.46		
30	.75	2.1	3.3	.75	---	1.7	1.2	1.1	.51	.47	.47	.48		
31	.85	---	1.8	.76	---	1.2	---	.82	---	.48	.47	---		
TOTAL	21.49	59.9	68.3	29.75	33.91	30.68	33.34	25.95	28.64	14.59	14.34	17.83		
MEAN	.69	2.00	2.20	.96	1.21	.99	1.11	.84	.95	.47	.46	.59		
MAX	.90	3.7	4.3	1.5	3.1	1.7	1.8	1.4	7.8	.50	.56	1.1		
MIN	.55	1.0	1.2	.75	.70	.61	.69	.65	.51	.45	.43	.46		
CFSM	.49	1.43	1.57	.69	.86	.71	.79	.60	.68	.34	.33	.42		
IN.	.57	1.59	1.81	.79	.90	.82	.89	.69	.76	.39	.38	.47		
AC-FT	43	119	135	59	67	61	66	51	57	29	28	35		
WTR YR 1985	TOTAL	378.72	MEAN	1.04	MAX	7.8	MIN	.43	CFSM	.74	IN.	10.06	AC-FT	751

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.49	1.1	.65	1.4	1.3	1.2	.99	.87	.43	.41	.46	.40
2	.50	1.8	.88	1.2	1.3	1.1	.96	1.2	.45	.44	.45	.39
3	.53	1.8	2.7	1.6	1.3	1.1	.98	1.4	.54	.39	.44	.35
4	.49	2.6	2.7	1.1	1.5	1.1	.97	1.5	.51	.45	.44	.37
5	.49	1.6	2.3	1.6	1.6	1.1	.91	1.6	.47	.39	.37	.37
6	.69	1.5	2.0	1.4	1.2	1.1	.86	1.1	.43	.36	.36	.36
7	.62	1.3	1.8	1.1	1.1	1.5	.88	.88	.46	.34	.37	.36
8	.61	1.2	1.2	1.1	1.0	1.4	.86	.80	.47	.34	.38	.41
9	.61	1.2	1.0	1.1	.95	1.2	.82	.97	.44	.33	.34	.42
10	.61	1.0	.95	1.2	1.0	1.2	.81	1.4	.45	.49	.35	.50
11	.84	1.0	.92	1.1	1.0	1.4	.86	.99	.40	.42	.40	.47
12	.89	.90	.90	1.1	.98	1.4	.83	.97	.39	.40	.42	.45
13	.78	.86	.89	1.0	.96	1.3	.82	1.2	.39	.40	.41	.42
14	.76	.90	.89	1.0	1.0	1.3	.83	1.0	.59	.41	.44	.45
15	.72	1.6	.92	1.2	2.7	1.1	1.1	.88	.59	.48	.46	.39
16	1.2	2.0	.88	1.6	1.9	1.0	1.2	.70	.68	1.1	.42	.37
17	.86	1.4	.84	1.7	1.2	1.1	1.2	.70	.75	.80	.41	.40
18	.76	1.2	.84	12	1.1	1.4	1.4	.78	1.0	.54	.42	.58
19	.80	1.3	.84	10	1.1	1.3	.98	.75	.95	.46	.43	.51
20	1.1	1.2	.82	5.9	1.1	1.0	.95	1.0	.59	.41	.43	.50
21	.93	1.1	.77	2.9	1.4	1.3	.91	.92	.48	.37	.41	.46
22	1.8	1.0	.76	2.6	1.5	1.0	.91	1.1	.46	.42	.40	.43
23	1.2	.95	.75	2.7	1.8	1.4	.89	1.5	.46	.38	.35	.89
24	2.0	.90	.74	1.8	1.8	1.4	.86	.96	.45	.35	.36	.61
25	2.4	.86	.70	1.7	1.8	1.2	.98	.88	.42	.35	.33	.56
26	3.5	.83	.68	1.6	1.4	1.3	1.1	.81	.38	.41	.32	.73
27	1.8	.80	.69	1.7	1.2	.99	1.0	.68	.37	.46	.31	.70
28	1.5	.76	.68	1.5	1.2	1.0	1.0	.59	.38	.45	.33	.70
29	1.2	.73	.71	1.3	---	.97	.94	.63	.36	.43	.34	.70
30	1.2	.70	.76	1.7	---	1.1	.82	.71	.36	.36	.39	.70
31	1.1	---	.81	1.4	---	.94	---	.46	---	.43	.41	---
TOTAL	32.98	36.09	32.97	70.3	37.39	36.90	28.62	29.93	15.10	13.77	12.15	14.95
MEAN	1.06	1.20	1.06	2.27	1.34	1.19	.95	.97	.50	.44	.39	.50
MAX	3.5	2.6	2.7	12	2.7	1.5	1.4	1.6	1.0	1.1	.46	.89
MIN	.49	.70	.65	1.0	.95	.94	.81	.46	.36	.33	.31	.35
CFSM	.76	.86	.76	1.62	.96	.85	.68	.69	.36	.31	.28	.36
IN.	.88	.96	.88	1.87	.99	.98	.76	.80	.40	.37	.32	.40
AC-FT	65	72	65	139	74	73	57	59	30	27	24	30
CAL YR 1985	TOTAL	331.07	MEAN	.91	MAX	7.8	MIN	.43	CFSM	.65	IN.	8.80
WTR YR 1986	TOTAL	361.15	MEAN	.99	MAX	12	MIN	.31	CFSM	.71	IN.	9.60

LAKE WASHINGTON BASIN

12124000 EVANS CREEK ABOVE MOUTH, NEAR REDMOND, WA

LOCATION.--Lat 47°40'32", long 122°04'48", in SE¼SE¼ sec.6, T.25 N., R.6 E., King County, Hydrologic Unit 17110012, on left bank at 80th Street NE, 2 mi east of Redmond, and 0.8 mi upstream from mouth.

DRAINAGE AREA.--14.8 mi².

PERIOD OF RECORD.--June 1955 to June 1973, October 1973 to April 1974, October 1974 to September 1976, October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 52.4 ft above National Geodetic Vertical Datum of 1929. Prior to 1984, at different datum.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 1, 1985. Records good. Some small diversions for irrigation and domestic use upstream from gage.

AVERAGE DISCHARGE.--21 years (water years, 1956-72, 1975-76, 1985-86), 22.6 ft³/s, 23.61 in/yr, 16,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 222 ft³/s Dec. 5, 1975, gage height, 3.96 ft, datum then in use; minimum discharge, 3.9 ft³/s Aug. 23, 24, 1970.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 128 ft³/s June 8, gage height, 3.16 ft; minimum discharge, 4.4 ft³/s Aug. 18-30.

WATER YEAR 1986.--Maximum discharge, 196 ft³/s Jan. 19, gage height, 3.67 ft; minimum discharge, 4.8 ft³/s Aug. 21-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.4	13	59	50	13	19	22	21	10	6.6	5.4	4.8		
2	6.4	37	41	39	13	18	20	18	9.7	6.3	5.4	4.8		
3	6.5	45	28	32	12	17	21	17	9.1	6.1	5.3	4.7		
4	7.1	39	23	27	12	21	20	15	9.7	6.1	5.0	5.1		
5	6.9	19	19	25	12	22	19	16	8.9	6.1	5.0	5.5		
6	7.0	14	17	24	12	20	17	15	10	5.9	5.5	6.0		
7	7.2	12	19	23	15	18	17	14	65	5.8	5.0	5.4		
8	8.8	11	51	22	14	17	16	13	115	5.8	5.0	6.8		
9	8.8	13	71	20	14	16	15	13	116	5.6	5.1	8.1		
10	14	18	67	18	17	15	15	12	74	5.6	5.8	7.1		
11	13	36	53	17	35	15	16	13	37	5.5	5.3	6.6		
12	9.8	28	52	16	48	15	16	13	20	5.3	5.1	6.1		
13	9.9	34	61	16	36	15	15	16	16	5.3	4.9	6.1		
14	8.6	68	69	16	28	16	14	20	17	5.3	4.8	6.4		
15	8.3	62	82	17	26	15	14	14	15	5.3	4.8	5.9		
16	8.1	35	87	16	23	14	14	12	13	5.3	4.6	6.6		
17	8.0	23	77	15	20	12	14	11	11	5.3	4.6	13		
18	7.7	21	64	15	19	12	20	11	10	5.3	4.4	8.7		
19	7.7	17	52	15	19	12	22	9.9	9.5	5.3	4.4	7.3		
20	7.7	24	38	24	23	12	26	9.5	8.9	5.1	4.4	6.9		
21	7.7	24	34	22	21	13	21	9.1	8.7	5.1	4.5	6.6		
22	7.7	19	43	18	24	13	18	8.8	8.3	4.9	4.4	6.6		
23	7.8	29	54	17	23	19	21	8.4	8.1	4.7	4.5	6.5		
24	8.0	43	52	16	26	20	19	8.3	8.1	4.8	4.4	6.5		
25	8.6	31	45	15	28	17	24	9.4	7.9	4.7	4.4	6.4		
26	11	22	38	14	24	15	23	9.0	7.6	4.7	4.4	6.3		
27	13	29	39	14	21	17	25	8.5	7.4	4.6	4.4	6.4		
28	10	42	39	14	19	16	33	8.9	7.3	4.7	4.5	6.3		
29	9.8	55	39	13	---	26	23	13	7.1	4.6	4.6	6.0		
30	10	64	58	13	---	29	20	17	6.9	4.6	4.8	6.2		
31	12	---	63	12	---	26	---	12	---	4.9	5.3	---		
TOTAL	273.5	927	1534	615	597	532	580	395.8	662.2	165.2	150.0	195.7		
MEAN	8.82	30.9	49.5	19.8	21.3	17.2	19.3	12.8	22.1	5.33	4.84	6.52		
MAX	14	68	87	50	48	29	33	21	116	6.6	5.8	13		
MIN	6.4	11	17	12	12	12	14	8.3	6.9	4.6	4.4	4.7		
CFSM	.68	2.38	3.81	1.52	1.64	1.32	1.48	.98	1.70	.41	.37	.50		
IN.	.78	2.65	4.39	1.76	1.71	1.52	1.66	1.13	1.89	.47	.43	.56		
AC-FT	542	1840	3040	1220	1180	1060	1150	785	1310	328	298	388		
WTR YR 1985	TOTAL	6627.4	MEAN	18.2	MAX	116	MIN	4.4	CFSM	1.40	IN.	18.96	AC-FT	13150

LAKE WASHINGTON BASIN

12124000 EVANS CREEK ABOVE MOUTH, NEAR REDMOND, WA--Continued

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DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.4	18	11	17	36	24	20	14	11	6.9	6.1	5.3		
2	6.8	20	12	17	32	22	19	15	10	7.5	6.1	5.3		
3	7.2	30	28	25	30	21	17	20	9.9	7.2	5.8	5.3		
4	7.2	36	35	21	28	20	17	19	9.6	7.6	5.8	5.3		
5	7.2	41	38	22	34	19	16	22	9.7	7.3	5.8	5.1		
6	7.8	41	43	28	31	18	15	22	9.5	6.7	5.8	5.1		
7	7.8	32	44	26	27	21	15	22	9.3	6.6	5.8	5.1		
8	7.3	24	43	22	24	24	15	18	9.6	6.6	5.8	5.1		
9	7.2	22	35	20	22	22	15	18	9.2	6.3	5.7	5.1		
10	7.2	18	26	20	21	20	14	27	8.8	7.5	5.6	5.7		
11	8.2	16	21	20	20	20	14	29	8.6	7.4	5.6	6.0		
12	11	14	18	17	19	20	15	22	8.3	6.9	5.6	5.6		
13	8.3	13	16	16	19	19	14	23	8.3	6.4	5.6	5.6		
14	7.4	13	15	15	18	19	13	27	8.5	6.3	5.6	6.2		
15	7.5	16	15	16	30	18	15	24	8.8	6.6	5.6	5.9		
16	10	30	14	19	39	17	19	20	8.4	9.6	5.6	5.8		
17	9.0	33	14	29	34	17	19	17	8.4	10	5.6	5.8		
18	8.1	31	13	77	28	18	27	17	9.1	7.9	5.6	7.4		
19	8.3	25	13	184	25	19	22	16	9.2	7.1	5.6	6.5		
20	11	24	13	154	22	18	18	17	8.6	6.8	5.4	6.1		
21	9.9	19	12	108	23	20	17	17	8.2	6.3	4.9	5.9		
22	14	17	12	83	26	21	17	19	7.8	6.3	4.8	5.8		
23	20	16	12	80	28	21	17	18	7.6	6.3	4.8	8.8		
24	18	15	11	74	34	30	15	16	7.4	6.1	4.8	8.9		
25	37	14	11	60	38	26	15	15	7.2	6.1	4.8	7.0		
26	44	13	11	49	36	25	15	14	7.2	6.1	4.8	7.9		
27	65	13	13	42	31	23	16	13	7.2	6.1	4.8	7.4		
28	76	12	12	38	27	21	18	12	7.2	6.1	4.8	8.2		
29	56	12	13	33	---	20	16	12	6.9	6.1	5.1	8.2		
30	28	11	12	35	---	24	15	11	6.9	6.1	5.3	8.6		
31	21	---	11	39	---	21	---	11	---	6.1	5.3	---		
TOTAL	549.8	639	597	1406	782	648	500	567	256.4	212.9	168.3	190.0		
MEAN	17.7	21.3	19.3	45.4	27.9	20.9	16.7	18.3	8.55	6.87	5.43	6.33		
MAX	76	41	44	184	39	30	27	29	11	10	6.1	8.9		
MIN	6.4	11	11	15	18	17	13	11	6.9	6.1	4.8	5.1		
CFSM	1.36	1.64	1.48	3.49	2.15	1.61	1.28	1.41	.66	.53	.42	.49		
IN.	1.57	1.83	1.71	4.02	2.24	1.85	1.43	1.62	.73	.61	.48	.54		
AC-FT	1090	1270	1180	2790	1550	1290	992	1120	509	422	334	377		
CAL YR 1985	TOTAL	5678.7	MEAN	15.6	MAX	116	MIN	4.4	CFSM	1.20	IN.	16.25	AC-FT	11260
WTP YR 1986	TOTAL	6516.4	MEAN	17.9	MAX	184	MIN	4.8	CFSM	1.38	IN.	18.65	AC-FT	12930

LAKE WASHINGTON BASIN

12124500 BEAR CREEK AT REDMOND, WA

LOCATION.--Lat 47°40'29", long 122°06'25", in NW¼NE¼ sec.12, T.25 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank at 80th Street NE, 0.5 mi east of Redmond, and 0.3 mi upstream from mouth.

DRAINAGE AREA.--50.5 mi².

PERIOD OF RECORD.--June 1945 to November 1950, June 1955 to October 1958, October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 34.1 ft above National Geodetic Vertical Datum of 1929. Prior to 1984, at site about 2,000 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 2, 1985. Records good. Some small diversions for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--10 years (water years 1946-50, 1956-58, 1985-86), 78.5 ft³/s, 22.13 in/yr, 56,890 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,550 ft³/s Jan. 19, 1986, gage height, 9.31 ft; minimum discharge, 13 ft³/s Aug. 26, 1947.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 306 ft³/s June 8, gage height, 7.26 ft; minimum discharge, 16 ft³/s Aug. 10, 20.

WATER YEAR 1986.--Maximum discharge, 1,550 ft³/s Jan. 19, gage height, 9.31 ft; minimum discharge, 20 ft³/s Oct. 1-5, Aug. 21-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	20	52	159	125	49	72	77	66	40	25	22	20		
2	21	150	129	109	50	68	69	59	38	24	22	20		
3	21	131	106	98	47	64	71	58	36	23	22	19		
4	22	103	92	90	47	89	71	51	38	23	21	19		
5	21	74	81	86	46	89	65	60	35	21	20	22		
6	21	60	73	83	47	81	60	51	40	22	22	25		
7	23	53	81	79	63	71	57	46	246	22	20	25		
8	23	47	194	74	60	65	56	43	247	26	20	28		
9	25	55	184	70	56	61	53	41	183	24	21	34		
10	49	81	168	65	70	58	50	40	135	23	24	30		
11	54	127	140	61	136	55	51	45	95	22	22	26		
12	39	103	193	59	130	52	50	41	70	21	20	24		
13	35	122	209	58	106	51	47	45	60	22	20	23		
14	34	155	206	60	94	51	45	77	60	21	19	23		
15	31	120	237	64	89	50	44	56	55	20	18	24		
16	29	93	225	61	80	47	43	47	46	21	18	26		
17	26	76	194	59	73	44	41	41	41	21	18	46		
18	25	73	161	58	67	43	51	39	38	21	18	34		
19	25	67	135	58	71	42	68	37	35	21	18	27		
20	24	88	118	91	84	42	86	36	33	20	18	25		
21	24	83	108	79	82	45	67	35	31	20	17	24		
22	25	69	133	70	106	48	61	33	30	20	24	23		
23	27	117	144	65	98	74	72	31	29	20	20	23		
24	32	155	132	61	108	77	70	32	31	19	19	22		
25	39	124	119	58	105	63	89	40	30	19	18	22		
26	52	99	112	55	91	57	84	35	28	18	17	21		
27	50	137	134	54	82	66	96	33	27	19	17	21		
28	40	178	126	53	76	62	105	33	27	18	18	21		
29	49	223	129	51	---	86	82	46	26	18	18	21		
30	40	200	172	48	---	97	70	75	25	18	19	21		
31	43	---	145	47	---	87	---	50	---	20	21	---		
TOTAL	989	3215	4539	2149	2213	1957	1951	1422	1855	652	611	739		
MEAN	31.9	107	146	69.3	79.0	63.1	65.0	45.9	61.8	21.0	19.7	24.6		
MAX	54	223	237	125	136	97	105	77	247	26	24	46		
MIN	20	47	73	47	46	42	41	31	25	18	17	19		
CFSM	.66	2.22	3.03	1.44	1.64	1.31	1.35	.95	1.28	.44	.41	.51		
IN.	.76	2.48	3.50	1.66	1.71	1.51	1.51	1.10	1.43	.50	.47	.57		
AC-FT	1960	6380	9000	4260	4390	3680	3870	2820	3680	1290	1210	1470		
WTR YR 1985	TOTAL	22292	MEAN	61.1	MAX	247	MIN	17	CFSM	1.27	IN.	17.20	AC-FT	44220

12124500 BEAR CREEK AT REDMOND, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	20	65	42	83	124	90	78	53	31	24	22	23		
2	20	78	45	78	115	82	74	59	30	26	22	22		
3	20	106	128	110	115	76	67	76	30	25	28	22		
4	20	136	138	85	112	72	67	69	29	25	26	22		
5	20	118	134	100	131	69	62	76	29	25	24	22		
6	24	114	136	124	114	66	58	75	29	24	22	22		
7	24	101	138	103	102	78	56	69	29	24	22	21		
8	23	95	128	95	94	84	53	61	30	23	21	21		
9	22	89	109	86	87	77	52	61	29	22	21	22		
10	22	77	91	87	82	74	51	81	28	27	21	23		
11	27	64	78	82	77	79	53	79	27	27	22	23		
12	36	58	68	72	73	77	58	69	26	25	22	22		
13	29	53	61	66	70	73	52	73	25	25	22	22		
14	28	49	56	61	70	74	48	75	27	25	21	25		
15	28	67	54	65	133	68	61	67	28	25	21	23		
16	52	127	52	86	145	64	83	57	27	41	21	23		
17	43	112	49	125	120	60	76	52	29	48	21	22		
18	35	102	48	462	105	67	94	53	41	37	21	28		
19	34	87	47	1040	94	78	77	51	54	32	21	25		
20	51	83	46	480	86	68	67	58	35	40	21	25		
21	47	71	44	287	94	77	63	58	29	31	21	24		
22	63	66	42	224	101	79	63	66	26	26	21	24		
23	69	60	40	233	120	80	62	57	25	26	21	44		
24	73	56	40	194	130	122	56	49	24	25	21	42		
25	126	53	39	164	135	99	55	46	23	24	21	32		
26	120	49	37	143	122	101	55	44	24	24	21	33		
27	190	47	39	136	109	88	62	42	23	24	21	31		
28	179	45	37	124	99	83	63	39	23	23	21	32		
29	136	44	38	113	---	78	63	37	23	24	22	33		
30	95	43	37	130	---	94	57	35	23	23	22	33		
31	75	---	37	132	---	84	---	33	---	22	23	---		
TOTAL	1751	2315	2078	5370	2959	2461	1886	1820	856	842	677	786		
MEAN	56.5	77.2	67.0	173	106	79.4	62.9	58.7	28.5	27.2	21.8	26.2		
MAX	190	136	138	1040	145	122	94	81	54	48	28	44		
MIN	20	43	37	61	70	60	48	33	23	22	21	21		
CFSM	1.17	1.60	1.39	3.59	2.20	1.65	1.30	1.22	.59	.56	.45	.54		
IN.	1.35	1.79	1.60	4.14	2.28	1.90	1.46	1.40	.66	.65	.52	.61		
AC-FT	3470	4590	4120	10650	5870	4880	3740	3610	1700	1670	1340	1560		
CAL YR 1985	TOTAL	19693	MEAN	54.0	MAX	247	MIN	17	CFSM	1.12	IN.	15.20	AC-FT	39060
WTR YR 1986	TOTAL	23801	MEAN	65.2	MAX	1040	MIN	20	CFSM	1.35	IN.	18.37	AC-FT	47210

LAKE WASHINGTON BASIN

12125200 SAMMAMISH RIVER NEAR WOODINVILLE, WA

LOCATION.--Lat 47°42'15", long 122°08'29", in SW¼SW¼ sec.26, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 3.9 mi upstream from Bear Creek, 3.6 mi southeast of Woodinville, and at mile 10.8.

DRAINAGE AREA.--159 mi², includes 1.9 mi² of Cedar River drainage from upper Rock Creek which is normally diverted into Issaquah Creek.

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to July 7, 1970, auxiliary water-stage recorder 2 mi downstream from base gage at same datum.

REMARKS.--No estimated daily discharges. Records fair. Some regulation at Sammamish Lake. Many small diversions for irrigation and domestic use.

AVERAGE DISCHARGE.--21 years, 322 ft³/s, 27.50 in/yr, 233,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s Mar. 6, 1972, elevation, 25.83 ft; minimum daily discharge, 25 ft³/s Aug. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,320 ft³/s Jan. 19, elevation, 25.28 ft; minimum daily discharge, 55 ft³/s Sept. 5-7, 9, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	62	256	201	216	641	499	334	216	196	99	76	60		
2	61	288	210	219	598	472	325	230	184	101	75	58		
3	61	345	356	263	579	446	312	253	179	99	76	58		
4	62	426	377	236	562	424	304	258	173	99	76	57		
5	62	418	382	281	595	405	290	271	164	97	74	55		
6	66	418	404	329	543	386	278	275	159	94	72	55		
7	66	399	436	289	506	401	267	266	151	92	71	55		
8	63	394	440	284	476	408	258	259	149	91	69	56		
9	62	384	415	271	449	392	249	261	143	90	68	55		
10	63	362	387	279	425	375	240	309	138	96	68	56		
11	72	336	362	271	402	377	242	300	132	95	68	56		
12	79	315	339	253	382	367	244	287	128	90	67	56		
13	71	296	319	240	365	357	229	312	124	90	66	56		
14	69	277	300	232	354	351	219	322	126	88	65	55		
15	68	320	282	239	482	333	242	313	124	87	64	56		
16	103	426	266	275	516	317	275	302	120	111	63	57		
17	91	410	251	383	461	302	267	289	120	119	62	57		
18	80	388	240	1110	431	305	300	287	135	99	62	66		
19	80	366	233	2080	406	314	270	286	146	94	62	60		
20	111	356	227	1580	386	295	251	313	120	95	60	60		
21	103	333	221	1270	394	314	243	312	114	92	60	60		
22	132	317	214	1120	402	308	246	326	110	90	60	60		
23	137	282	208	1150	446	318	241	302	107	88	59	85		
24	157	267	203	1010	509	392	229	286	106	86	59	84		
25	258	256	197	903	562	360	228	270	104	85	59	72		
26	276	243	191	820	561	369	225	266	103	84	58	77		
27	491	239	188	775	548	347	235	259	102	83	56	74		
28	484	232	182	713	526	341	239	247	101	81	57	75		
29	370	224	178	662	---	332	235	232	101	80	59	77		
30	310	216	173	687	---	360	224	219	98	79	60	79		
31	279	---	170	670	---	344	---	208	---	77	60	---		
TOTAL	4449	9789	8552	19110	13507	11311	7741	8536	3957	2851	2011	1887		
MEAN	144	326	276	616	482	365	258	275	132	92.0	64.9	62.9		
MAX	491	426	440	2080	641	499	334	326	196	119	76	85		
MIN	61	216	170	216	354	295	219	208	98	77	56	55		
CFSM	.91	2.05	1.74	3.87	3.03	2.30	1.62	1.73	.83	.58	.41	.40		
IN.	1.04	2.29	2.00	4.47	3.16	2.65	1.81	2.00	.93	.67	.47	.44		
AC-FT	8820	19420	16960	37900	26790	22440	15350	16930	7850	5650	3990	3740		
CAL YR 1985	TOTAL	82238	MEAN	225	MAX	754	MIN	60	CFSM	1.42	IN.	19.24	AC-FT	163100
WTP YR 1986	TOTAL	93701	MEAN	257	MAX	2080	MIN	55	CFSM	1.62	IN.	21.92	AC-FT	185900

LAKE WASHINGTON BASIN

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12125800 PENNY CREEK NEAR EVERETT, WA

LOCATION.--Lat 47°51'15", long 122°12'41", in SE¼SE¼ sec.6, T.27 N., R.5 E., Snohomish County, Hydrologic Unit 1711C012, on left bank 500 ft upstream from reservoir, 10 mi south of Everett, and 0.7 mi upstream from mouth.

DRAINAGE AREA.--5.60 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 297.8 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 1, 1984, Apr. 11-29, 1985; Nov. 22 to Dec. 2, 1985, June 24 to July 8, 1986, July 12-15, 1986, July 19 to Sept. 22, 1986, Sept. 25-30, 1986. Records fair except for estimated daily discharges, which are poor. No known diversions upstream. Some regulation from man-made detention ponds.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67 ft³/s Jan. 18, 1986, gage height, 3.86 ft; minimum daily discharge, 0.75 ft³/s Aug. 16-28, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 53 ft³/s Dec. 14, gage height, 3.59 ft; minimum discharge, 0.86 ft³/s Aug. 27-30, Sept. 1-5.

WATER YEAR 1986.--Maximum discharge, 67 ft³/s Jan. 18, gage height, 3.86 ft; minimum daily discharge, 0.75 ft³/s Aug. 16-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.0	8.0	21	11	4.0	6.5	6.7	4.2	3.3	1.5	1.4	.96		
2	1.0	13	19	10	3.9	5.7	6.4	4.5	3.3	1.4	1.0	.92		
3	1.0	6.1	16	9.3	3.7	5.2	6.9	4.5	3.5	1.3	.99	.92		
4	1.1	6.1	14	8.6	3.4	6.6	6.4	4.5	3.6	1.2	.98	.92		
5	1.0	5.5	12	8.4	3.3	6.0	6.2	4.4	3.2	1.1	.97	1.1		
6	1.1	5.4	11	7.9	3.6	6.2	5.8	4.3	4.1	1.1	.92	3.1		
7	1.2	5.4	10	7.6	4.8	5.7	5.6	4.3	19	1.2	2.0	1.2		
8	1.2	5.5	16	7.3	3.8	5.4	5.4	4.2	13	1.1	1.9	1.2		
9	2.0	6.6	14	6.9	3.8	5.4	5.0	3.9	11	1.2	1.2	1.8		
10	5.0	10	14	6.5	4.8	5.3	4.5	2.9	9.7	1.1	1.1	1.3		
11	4.5	9.4	14	6.1	12	5.1	4.5	2.7	8.7	1.1	1.1	1.2		
12	4.0	8.1	19	5.7	8.8	5.0	4.5	2.1	8.2	1.1	1.1	1.1		
13	3.5	9.9	22	5.5	8.6	5.1	4.0	3.2	8.0	1.0	1.0	1.1		
14	3.0	10	31	5.7	8.5	5.1	3.5	5.8	7.7	1.0	1.0	2.8		
15	2.5	9.2	31	5.6	7.8	5.1	3.2	4.4	7.1	.98	1.0	2.9		
16	2.2	8.9	31	5.4	7.1	4.7	3.0	4.3	6.4	1.0	1.0	2.3		
17	2.1	8.6	27	5.3	6.5	4.3	2.6	4.3	5.9	1.0	1.0	3.4		
18	2.0	8.3	23	5.1	6.1	3.9	3.0	4.0	5.2	1.0	1.0	1.3		
19	1.9	8.2	19	5.6	6.4	3.7	4.5	3.2	4.3	.99	1.0	1.3		
20	1.8	8.2	17	7.7	7.4	3.5	5.4	3.1	3.6	1.0	1.0	1.3		
21	1.7	8.3	15	6.4	8.1	3.8	5.0	3.1	3.1	.97	1.0	1.2		
22	1.7	8.1	14	6.3	10	4.3	4.5	3.1	2.8	.96	1.0	1.2		
23	1.8	15	15	6.1	10	7.0	4.7	3.0	2.9	1.0	1.0	1.2		
24	1.9	17	13	5.8	11	6.0	4.5	3.0	3.1	.98	1.0	1.2		
25	3.0	16	13	5.6	9.7	5.4	5.0	2.8	3.0	.94	1.0	1.2		
26	3.0	15	13	5.2	8.9	5.0	5.8	2.6	2.7	.93	1.0	1.2		
27	2.8	19	14	4.9	8.0	6.2	6.0	2.1	2.4	.94	.94	1.2		
28	2.5	20	13	4.6	7.2	5.8	5.0	2.1	2.0	.95	.89	1.2		
29	2.3	20	14	4.3	---	6.0	4.5	4.7	1.8	.95	.86	1.2		
30	2.1	21	15	4.1	---	6.7	4.1	5.7	1.7	.98	1.1	1.2		
31	2.1	---	12	4.0	---	7.1	---	3.5	---	1.1	1.1	---		
TOTAL	68.0	319.8	532	198.5	191.2	166.8	146.2	114.5	164.3	33.07	33.55	44.12		
MEAN	2.19	10.7	17.2	6.40	6.83	5.78	4.87	3.69	5.48	1.07	1.08	1.47		
MAX	5.0	21	31	11	12	7.1	6.9	5.8	19	1.5	2.0	3.4		
MIN	1.0	5.4	10	4.0	3.3	3.5	2.6	2.1	1.7	.93	.86	.92		
CFSM	.60	2.92	4.69	1.74	1.86	1.47	1.33	1.01	1.49	.29	.29	.40		
IN.	.69	3.24	5.39	2.01	1.94	1.69	1.48	1.16	1.67	.34	.34	.45		
AC-FT	135	634	1060	394	379	331	290	227	326	66	67	88		
WTR YR 1985	TOTAL	2012.04	MEAN	5.51	MAX	31	MIN	.86	CFSM	1.50	IN.	20.39	AC-FT	3990

LAKE WASHINGTON BASIN

12125800 PENNY CREEK NEAR EVERETT, WA-Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.2	6.4	1.8	4.8	15	8.6	3.2	5.5	3.1	1.5	1.3	.95		
2	1.2	7.9	1.7	3.8	13	8.2	3.0	6.9	2.8	1.6	1.2	.95		
3	1.2	7.7	6.2	4.0	13	7.5	2.9	7.0	2.6	1.7	1.2	.95		
4	1.2	8.8	6.1	3.5	13	6.9	3.1	6.5	2.5	1.6	1.1	.90		
5	1.2	7.6	5.8	7.8	13	6.4	2.8	6.8	2.2	1.5	1.1	.90		
6	2.0	7.3	6.8	6.6	11	6.1	2.7	6.8	2.0	1.4	1.1	.90		
7	1.2	7.5	8.2	5.6	11	7.1	2.6	6.1	2.1	1.4	1.0	1.2		
8	1.1	9.1	8.7	7.3	9.4	6.0	2.5	5.3	2.0	1.4	1.0	1.5		
9	1.0	8.7	8.9	6.8	8.7	5.3	2.4	5.3	1.9	1.8	.95	1.4		
10	1.0	8.8	8.7	7.3	8.1	4.8	2.6	12	1.9	2.2	1.0	1.4		
11	1.4	7.9	8.4	7.4	7.6	4.5	3.5	8.1	1.8	1.8	1.0	1.3		
12	1.2	6.7	7.7	7.1	7.0	3.8	2.9	8.3	1.8	1.6	.90	1.3		
13	1.1	5.6	6.8	6.7	6.5	3.5	2.6	12	1.8	1.6	.85	1.3		
14	1.1	4.8	6.6	6.4	6.3	3.3	2.5	10	2.1	1.4	.80	1.4		
15	1.1	5.9	6.0	7.2	12	3.1	3.7	10	2.0	1.5	.80	1.3		
16	4.2	6.2	5.6	11	10	2.8	3.9	10	1.9	6.8	.75	1.3		
17	1.3	5.3	5.3	15	10	2.7	2.8	9.6	2.5	5.1	.75	1.3		
18	1.2	4.3	5.0	45	10	2.7	2.7	9.2	2.3	2.3	.75	1.8		
19	1.3	4.1	4.7	38	9.8	2.5	2.7	8.8	2.2	2.0	.75	1.5		
20	3.7	4.0	4.5	38	9.4	2.5	2.7	9.6	2.0	1.7	.75	1.5		
21	2.1	3.7	4.2	31	9.6	2.4	2.6	8.6	2.0	1.6	.75	1.5		
22	2.5	3.6	3.9	28	9.4	2.4	2.6	8.9	1.9	1.6	.75	1.5		
23	1.6	3.3	3.7	26	12	4.1	2.5	8.7	1.8	1.6	.75	5.7		
24	4.4	3.0	3.3	23	13	5.0	2.4	8.1	1.6	1.5	.75	2.4		
25	8.4	2.8	3.1	20	12	4.0	2.4	7.3	1.5	1.5	.75	2.0		
26	7.5	2.6	2.9	18	11	4.2	2.4	6.2	1.3	1.5	.75	2.5		
27	13	2.4	2.8	16	10	3.5	2.4	5.3	1.3	1.5	.75	2.0		
28	9.8	2.3	2.5	14	9.4	3.6	2.4	4.8	1.3	1.5	.75	2.4		
29	6.6	2.1	2.5	13	---	3.5	4.2	4.0	1.4	1.5	.80	2.3		
30	6.3	2.0	2.5	14	---	4.4	6.6	3.5	1.4	1.4	.90	2.2		
31	6.3	---	2.4	13	---	3.5	---	3.3	---	1.3	1.0	---		
TOTAL	98.4	162.4	157.3	455.3	290.2	138.9	88.3	232.5	59.0	58.4	27.75	49.55		
MEAN	3.17	5.41	5.07	14.7	10.4	4.48	2.94	7.50	1.97	1.88	.90	1.65		
MAX	13	9.1	8.9	45	15	8.6	6.6	12	3.1	6.8	1.3	5.7		
MIN	1.0	2.0	1.7	3.5	6.3	2.4	2.4	3.3	1.3	1.3	.75	.90		
CFSM	.86	1.47	1.38	4.01	2.83	1.22	.80	2.04	.54	.51	.25	.45		
IN.	.00	1.65	1.59	4.62	2.94	1.41	.90	2.36	.60	.59	.28	.50		
AC-FT	195	322	312	903	576	276	175	461	117	116	55	98		
CAL YR 1985	TOTAL	1510.34	MEAN	4.14	MAX	19	MIN	.86	CFSM	1.13	IN.	15.31	AC-FT	3000
WTR YR 1986	TOTAL	1818.00	MEAN	4.98	MAX	45	MIN	.75	CFSM	1.36	IN.	18.43	AC-FT	3610

LAKE WASHINGTON BASIN

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12125900 NORTH CREEK BELOW PENNY CREEK, NEAR BOTHELL, WA

LOCATION.--Lat 47°49'13", long 122°12'42", in SW¼SE¼ sec.18, T.27 N., R.5 E., Snohomish County, Hydrologic Unit 17110012, on left bank at 196th Street SE, 4.0 mi north of Bothell, and 6.4 mi upstream from mouth.

DRAINAGE AREA.--14.2 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 166.0 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 1, 1985, June 4-6, 10-13, 1986, June 21 to July 1, 1986, July 6-9, 12-15, 1986, July 21 to Sept. 30, 1986. Records fair except for estimated daily discharges, which are poor. No known diversions upstream. Small amount of regulation due to man-made detention ponds.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 435 ft³/s Jan. 18, 1986, gage height, 4.97 ft; minimum discharge, 4.9 ft³/s Sept. 27-30, 1985, Oct. 1, 3, 4, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 247 ft³/s Dec. 14, gage height, 3.83 ft; minimum discharge, 4.9 ft³/s Sept. 27-30.

WATER YEAR 1986.--Maximum discharge, 435 ft³/s Jan. 18, gage height, 4.97 ft; minimum recorded discharge, 4.9 ft³/s Oct. 1, 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.5	33	56	30	14	21	22	18	12	6.3	14	6.8		
2	6.5	82	45	27	15	19	19	19	11	6.2	11	6.6		
3	6.5	30	38	25	13	18	26	22	11	6.0	11	6.6		
4	6.8	24	33	24	15	32	24	27	12	5.8	9.7	6.8		
5	6.6	18	28	25	13	25	22	23	11	5.7	9.5	8.3		
6	6.6	17	25	24	15	22	19	18	16	5.9	9.2	21		
7	7.6	15	29	23	28	19	18	16	105	6.0	15	8.2		
8	7.4	15	89	22	19	18	18	15	73	5.7	22	7.6		
9	7.9	24	50	20	17	17	16	13	33	5.7	10	12		
10	30	44	47	19	23	17	15	15	24	5.6	8.8	8.7		
11	19	41	40	18	72	15	18	17	20	5.7	7.7	6.9		
12	14	33	77	17	43	15	16	13	18	5.5	7.3	6.0		
13	10	41	83	17	31	15	14	17	17	5.5	7.0	6.5		
14	11	35	119	20	29	15	13	35	17	5.5	6.7	9.4		
15	9.1	23	142	21	28	14	13	18	14	5.4	6.5	16		
16	8.5	20	91	19	24	14	13	15	13	6.8	6.3	13		
17	8.2	20	69	18	21	13	12	14	12	7.0	6.2	23		
18	8.0	25	54	18	19	13	15	13	11	6.9	6.2	9.0		
19	7.8	20	44	20	24	12	27	12	9.5	7.1	6.4	6.7		
20	7.8	27	39	38	34	12	28	11	8.7	8.2	6.6	6.0		
21	8.2	23	36	25	35	16	18	11	8.2	8.1	6.6	5.8		
22	7.7	18	38	22	50	19	19	10	7.8	8.7	6.4	5.7		
23	8.5	101	45	20	36	39	25	10	7.9	9.2	6.3	5.4		
24	8.7	83	40	19	39	27	24	9.5	8.5	9.3	6.3	5.3		
25	16	44	35	18	31	20	24	10	8.0	9.2	6.2	5.3		
26	16	36	38	17	27	18	31	9.6	7.6	8.9	6.1	5.2		
27	13	126	49	16	24	28	34	8.8	7.4	8.8	6.2	5.1		
28	11	109	40	15	22	20	27	8.5	7.0	8.8	6.2	5.0		
29	11	95	47	15	---	19	21	21	6.8	8.7	6.2	5.0		
30	13	72	53	14	---	23	19	35	6.5	9.1	7.5	5.0		
31	12	---	36	14	---	28	---	14	---	10	7.8	---		
TOTAL	320.9	1294	1655	640	761	603	610	498.4	523.9	221.3	258.9	247.9		
MEAN	10.4	43.1	53.4	20.6	27.2	19.5	20.3	16.1	17.5	7.14	8.35	8.26		
MAX	30	126	142	38	72	39	34	35	105	10	22	23		
MIN	6.5	15	25	14	13	12	12	8.5	6.5	5.4	6.1	5.0		
CFSM	1.14	4.73	5.86	2.26	2.98	2.14	2.23	1.77	1.92	.78	.92	.91		
IN.	1.31	5.28	6.75	2.61	3.10	2.46	2.49	2.03	2.14	.90	1.06	1.01		
AC-FT	637	2570	3280	1270	1510	1200	1210	989	1040	439	514	492		
WTR YR 1985	TOTAL	7634.3	MEAN	20.9	MAX	142	MIN	5.0	CFSM	2.29	IN.	31.14	AC-FT	15140

LAKE WASHINGTON BASIN

12125900 NORTH CREEK BELOW PENNY CREEK, NEAR BOTHELL, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	5.1	18	9.5	25	51	22	15	17	9.4	8.5	7.5	7.0		
2	5.2	25	10	20	38	20	13	23	9.1	9.3	7.5	6.5		
3	5.2	28	34	22	40	19	12	20	8.9	10	6.8	6.5		
4	5.1	31	32	15	40	18	15	16	8.6	9.9	6.8	6.2		
5	5.2	23	27	37	44	17	13	16	8.6	9.0	6.8	6.2		
6	11	21	26	35	32	16	12	16	8.6	8.0	6.8	6.0		
7	6.9	23	27	22	28	24	11	14	8.8	7.5	6.8	6.0		
8	6.4	38	22	28	25	19	10	13	8.8	7.5	6.8	7.5		
9	7.0	27	20	22	23	16	11	14	8.8	8.5	6.2	8.2		
10	7.2	21	19	23	22	16	11	65	8.5	12	6.8	7.5		
11	10	18	18	23	21	17	17	29	8.0	9.8	7.2	7.0		
12	9.7	16	17	18	19	15	15	22	7.5	8.5	7.5	6.5		
13	8.2	14	15	17	18	14	12	47	7.5	8.5	6.5	7.0		
14	8.2	13	15	17	18	14	11	28	9.4	7.5	6.2	7.5		
15	8.2	21	15	20	63	13	20	22	8.8	8.8	6.0	7.0		
16	26	26	14	43	42	12	24	20	9.0	35	6.0	7.0		
17	11	21	14	74	34	12	15	18	12	33	6.0	6.5		
18	8.8	16	13	266	30	13	13	19	13	13	6.0	9.0		
19	9.4	14	13	231	27	13	12	18	16	9.6	6.0	7.0		
20	24	15	13	112	27	12	11	33	9.7	9.1	6.0	7.0		
21	17	13	12	76	33	12	11	21	8.6	8.5	6.0	7.0		
22	18	12	12	72	31	11	15	20	8.2	8.5	6.0	7.0		
23	11	12	12	79	48	20	14	18	8.0	8.5	6.0	30		
24	25	11	11	54	45	29	12	17	7.5	8.0	6.0	15		
25	54	11	11	44	38	19	12	16	7.5	8.0	6.0	9.0		
26	37	10	11	38	30	21	11	15	7.0	8.0	6.0	12		
27	82	10	11	38	27	16	12	13	7.0	8.0	6.0	9.0		
28	52	9.8	10	33	24	16	14	14	7.5	8.0	6.5	12		
29	25	9.6	10	30	---	15	21	11	8.0	8.0	6.5	12		
30	20	9.5	10	47	---	22	29	10	7.5	7.5	7.0	11		
31	18	---	10	36	---	16	---	9.7	---	7.5	7.5	---		
TOTAL	546.8	536.9	493.5	1617	918	519	424	634.7	265.8	321.5	201.7	263.1		
MEAN	17.6	17.9	15.9	52.2	32.8	16.7	14.1	20.5	8.86	10.4	6.51	8.77		
MAX	82	38	34	266	63	29	29	65	16	35	7.5	30		
MIN	5.1	9.5	9.5	15	18	11	10	9.7	7.0	7.5	6.0	6.0		
CFSM	1.93	1.96	1.74	5.72	3.60	1.83	1.55	2.25	.97	1.14	.71	.96		
IN.	2.23	2.19	2.01	6.60	3.74	2.12	1.73	2.59	1.08	1.31	.82	1.07		
AC-FT	1080	1060	979	3210	1820	1030	841	1260	527	638	400	522		
CAL YR 1985	TOTAL	5941.6	MEAN	16.3	MAX	105	MIN	5.0	CFSM	1.79	IN.	24.24	AC-FT	11790
WTR YR 1986	TOTAL	6742.0	MEAN	18.5	MAX	266	MIN	5.1	CFSM	2.03	IN.	27.50	AC-FT	13370

LAKE WASHINGTON BASIN

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12125950 NORTH CREEK TRIBUTARY NEAR WOODINVILLE, WA

LOCATION.--Lat 47°49'07", long 122°12'24", in NE¼NE¼ sec.19, T.27 N., R.5 E., Snohomish County, Hydrologic Unit 17110012, on left bank 400 ft downstream from State Highway 527 crossing, 7.0 mi northwest of Woodinville, and 0.3 mi upstream from mouth.

DRAINAGE AREA.--4.10 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 36.8 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1, 1984 to Jan. 13, 1985, Jan. 16-30, 1985, Mar. 17-21, 1985, Mar. 24 to Apr. 2, 1985. Records fair except for estimated daily discharges, which are poor. No known regulation or diversion upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153 ft³/s Jan. 18, 1986, gage height, 4.93 ft; minimum discharge, 0.14 ft³/s Aug. 18, 26-28, Sept. 5-7, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum recorded discharge, 51 ft³/s June 7, gage height, 3.01 ft; minimum discharge, 0.15 ft³/s Aug. 15-20.

WATER YEAR 1986.--Maximum discharge, 153 ft³/s Jan. 18, gage height, 4.93 ft; minimum discharge, 0.14 ft³/s Aug. 18, 26-28, Sept. 5-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.20	8.0	16	6.0	1.5	2.8	4.5	2.5	1.2	.22	.52	.17		
2	.20	24	13	5.0	1.8	2.2	3.1	2.7	1.1	.26	.25	.18		
3	.20	7.0	9.5	4.5	1.6	2.1	8.2	3.1	.97	.25	.23	.17		
4	.21	5.0	7.5	4.2	1.2	7.5	4.3	2.8	1.1	.22	.20	.17		
5	.20	3.5	5.5	4.0	1.1	4.9	3.2	2.1	.82	.22	.18	.26		
6	.20	2.8	4.5	3.7	2.1	3.8	2.5	1.6	3.8	.21	.17	3.9		
7	.25	2.5	5.0	3.3	5.8	2.8	2.2	1.4	35	.21	1.8	.54		
8	.25	2.5	26	3.0	3.2	2.2	2.0	1.2	15	.21	1.0	.66		
9	.30	5.0	12	2.7	2.7	2.0	1.7	1.1	5.9	.20	.31	1.9		
10	3.5	9.5	10	2.5	4.9	1.8	1.4	1.7	3.0	.20	.26	.85		
11	2.7	7.5	8.8	2.3	20	1.6	2.2	1.7	1.9	.20	.21	.44		
12	2.0	6.0	20	2.2	12	1.4	1.4	1.1	1.3	.21	.19	.38		
13	1.0	9.0	22	2.2	6.9	1.3	1.1	3.2	1.1	.19	.18	.50		
14	.45	6.0	35	3.0	6.1	1.3	1.1	6.3	1.0	.18	.18	1.5		
15	.40	4.5	42	2.8	5.0	1.2	1.1	2.2	.78	.18	.16	2.7		
16	.35	4.0	30	2.7	3.9	1.2	1.0	1.3	.62	.18	.15	2.8		
17	.30	4.0	20	2.5	3.2	1.2	.91	1.1	.54	.19	.15	4.0		
18	.28	5.0	15	2.5	2.7	1.1	2.4	.89	.48	.19	.15	.70		
19	.25	4.0	11	3.5	4.3	1.1	4.2	.82	.43	.18	.15	.43		
20	.25	5.4	9.0	8.0	5.6	1.1	4.4	.78	.37	.17	.16	.36		
21	.28	4.5	8.0	5.0	7.2	1.6	2.2	.75	.36	.18	.19	.33		
22	.24	3.5	8.6	3.5	11	3.1	3.0	.69	.32	.18	.17	.32		
23	.30	29	9.2	3.0	8.0	8.3	3.6	.67	.33	.18	.17	.29		
24	.30	16	8.0	2.5	8.6	6.2	8.7	.98	.40	.18	.17	.26		
25	1.9	8.0	7.0	2.0	5.9	4.5	6.3	1.1	.32	.17	.17	.25		
26	2.0	6.5	7.5	1.8	4.4	3.2	7.7	.80	.29	.17	.18	.25		
27	1.4	37	10	1.7	3.5	6.2	10	.68	.27	.16	.17	.24		
28	.90	33	8.0	1.6	3.1	3.8	7.1	.60	.29	.16	.16	.22		
29	1.0	30	10	1.5	---	3.5	4.1	4.6	.26	.17	.16	.20		
30	1.2	21	11	1.4	---	5.0	3.0	7.9	.24	.18	.59	.20		
31	1.2	---	8.0	1.3	---	6.2	---	2.1	---	.22	.34	---		
TOTAL	24.21	113.7	417.1	95.9	147.3	96.2	108.61	60.46	79.49	6.02	9.07	25.17		
MEAN	.78	10.5	13.5	3.09	5.26	3.10	3.62	1.95	2.65	.19	.29	.84		
MAX	3.5	37	42	8.0	20	8.3	10	7.9	35	.26	1.8	4.0		
MIN	.20	2.5	4.5	1.3	1.1	1.1	.91	.60	.24	.16	.15	.17		
CFSM	.19	2.50	3.21	.74	1.25	.74	.86	.46	.63	.05	.07	.20		
IN.	.21	2.78	3.69	.85	1.30	.85	.96	.54	.70	.05	.08	.22		
AC-FT	.48	6.22	8.27	1.90	2.92	1.91	2.15	1.20	1.58	.12	.18	.50		
WTR YR 1985	TOTAL	1383.23	MEAN	3.79	MAX	42	MIN	.15	CFSM	.90	IN.	12.25	AC-FT	2740

LAKE WASHINGTON BASIN

12125950 NORTH CREEK TRIBUTARY NEAR WOODINVILLE, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.20	3.4	1.4	6.3	14	4.3	2.8	2.2	.42	.62	.26	.22		
2	.21	5.2	1.6	4.8	11	3.7	2.4	3.9	.39	.53	.25	.21		
3	.25	6.2	11	4.8	11	3.2	2.1	3.1	.38	.79	.22	.18		
4	.25	8.4	9.3	2.9	11	3.0	2.7	1.8	.39	.60	.22	.18		
5	.25	5.6	7.6	11	12	2.8	2.2	2.0	.39	.39	.24	.15		
6	1.3	4.6	6.7	9.0	8.4	2.8	1.8	2.0	.37	.31	.24	.15		
7	.32	4.3	6.2	5.4	6.8	5.4	1.6	1.6	.45	.26	.22	.14		
8	.26	5.2	4.6	6.9	5.5	3.7	1.5	1.4	.46	.26	.21	.93		
9	.25	4.0	3.5	5.2	4.7	2.9	1.7	2.1	.42	.26	.21	.28		
10	.26	3.1	2.8	5.4	4.2	3.0	1.5	7.6	.35	1.6	.21	.32		
11	.85	2.6	2.5	4.7	3.8	3.6	3.4	3.7	.31	.48	.22	.22		
12	.42	2.2	2.2	3.6	3.2	2.8	2.7	2.3	.31	.41	.22	.18		
13	.30	2.0	1.9	3.1	3.0	2.7	1.9	5.4	.28	.34	.22	.27		
14	.33	1.9	1.7	2.8	3.1	2.6	1.6	2.5	.98	.32	.20	.26		
15	.32	5.9	1.7	4.3	18	2.2	5.0	1.8	.51	.33	.18	.20		
16	6.9	7.6	1.7	15	12	2.0	6.1	1.5	.58	9.9	.17	.19		
17	.98	7.0	1.6	20	8.5	1.8	3.2	1.3	1.3	7.6	.18	.18		
18	.52	4.2	1.6	101	6.8	2.4	3.0	1.7	4.6	1.4	.15	.73		
19	.77	3.5	1.5	73	6.0	2.3	2.3	2.6	2.0	.81	.17	.27		
20	5.2	3.4	1.5	42	5.9	1.9	1.9	4.8	.73	.56	.16	.27		
21	2.1	2.8	1.5	21	7.7	2.4	1.9	2.1	.54	.47	.18	.25		
22	2.9	2.5	1.4	20	7.5	1.9	2.3	1.6	.45	.44	.17	.22		
23	1.0	2.3	1.4	21	12	5.5	1.9	1.3	.41	.42	.20	8.5		
24	10	2.2	1.4	14	12	7.4	1.7	1.1	.37	.36	.20	1.0		
25	18	1.9	1.4	10	9.8	4.7	1.7	.96	.33	.35	.18	.44		
26	17	1.6	1.3	8.2	7.1	4.7	1.6	.90	.32	.35	.17	2.2		
27	30	1.6	1.2	8.2	5.8	3.2	1.7	.83	.31	.36	.17	.59		
28	17	1.5	1.1	7.0	5.0	3.6	1.6	.68	.29	.32	.17	2.1		
29	7.8	1.5	1.1	6.4	---	3.5	2.9	.59	.29	.31	.25	1.4		
30	5.1	1.4	1.1	12	---	6.3	2.3	.50	.33	.30	.25	1.1		
31	3.6	---	1.2	9.8	---	3.6	---	.47	---	.28	.37	---		
TOTAL	134.64	109.6	86.7	468.8	225.8	105.9	71.0	66.33	19.26	31.73	6.46	23.33		
MEAN	4.34	3.65	2.80	15.1	8.06	3.42	2.37	2.14	.64	1.02	.21	.78		
MAX	30	8.4	11	101	18	7.4	6.1	7.6	4.6	9.9	.37	8.5		
MIN	.20	1.4	1.1	2.8	3.0	1.8	1.5	.47	.28	.26	.15	.14		
CFSM	1.03	.87	.67	3.60	1.92	.81	.56	.51	.15	.24	.05	.19		
IN.	1.19	.97	.77	4.15	2.00	.94	.63	.59	.17	.28	.06	.21		
AC-FT	267	217	172	930	448	210	141	132	38	63	13	46		
CAL YR 1985	TOTAL	959.16	MEAN	2.63	MAX	35	MIN	.15	CFSM	.63	IN.	8.50	AC-FT	1900
WTR YR 1986	TOTAL	1349.55	MEAN	3.70	MAX	101	MIN	.14	CFSM	.88	IN.	11.95	AC-FT	2680

LAKE WASHINGTON BASIN

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12126100 NORTH CREEK NEAR WOODINVILLE, WA

LOCATION.--Lat 47°46'48", long 122°11'13", in SE1/4 sec.32, T.27 N., R.5 E., Snohomish County, Hydrologic Unit 17110012, on right bank at 240th Street SE, 2 mi northwest of Woodinville, and 1.5 mi upstream from mouth.

DRAINAGE AREA.--27.6 mi².

PERIOD OF RECORD.--October 1984 to September 1985 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 36.8 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 6 to Dec. 28, 1984, Feb. 23 to Mar. 26, 1985; Nov. 22 to Dec. 2, 1985. Records good except for estimated daily discharges, which are fair. No known diversions upstream. Some small regulation due to man-made detention ponds.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 914 ft³/s Jan. 18, 1986, gage height, 6.77 ft; minimum discharge, 6.7 ft³/s Oct. 1-6, 1984.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum recorded discharge, 314 ft³/s June 7, gage height, 4.19 ft; minimum discharge, 6.7 ft³/s Oct. 1-6.

WATER YEAR 1986.--Maximum discharge, 914 ft³/s Jan. 18, 1986, gage height, 6.77 ft; minimum discharge, 10 ft³/s Aug. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.9	80	105	52	29	34	40	32	22	14	17	11		
2	6.8	185	80	47	31	32	36	32	21	14	14	10		
3	7.0	61	70	44	28	30	46	36	21	13	13	11		
4	7.9	60	60	41	27	58	44	38	22	13	11	11		
5	7.0	36	55	42	26	45	39	36	19	12	11	14		
6	7.3	35	50	42	29	40	34	29	29	13	10	44		
7	9.0	34	90	40	55	35	33	26	226	13	15	17		
8	8.9	33	180	38	40	30	32	24	140	12	28	16		
9	12	55	140	36	36	28	29	22	56	12	15	27		
10	50	90	120	34	48	26	28	24	41	12	14	19		
11	27	85	110	32	141	24	32	29	34	12	12	15		
12	19	70	170	31	78	23	29	21	29	12	11	14		
13	15	80	175	31	55	22	26	30	28	12	10	15		
14	14	70	200	36	51	22	24	57	28	11	10	17		
15	11	45	300	37	48	22	24	31	25	11	9.7	32		
16	10	40	220	35	41	21	24	26	23	11	9.4	36		
17	9.7	40	150	33	37	21	23	23	22	12	9.3	51		
18	9.2	50	100	32	35	20	27	21	20	11	9.3	20		
19	8.9	40	80	35	41	20	49	20	18	11	9.6	16		
20	8.5	43	70	66	54	21	45	19	17	10	10	14		
21	8.8	40	65	43	56	25	33	18	16	10	11	14		
22	8.3	37	68	38	78	40	33	18	16	10	9.9	14		
23	10	200	70	36	60	85	43	17	16	11	9.6	13		
24	10	215	67	34	64	60	57	17	18	12	9.5	13		
25	25	140	65	32	50	40	50	19	17	11	9.4	12		
26	25	90	70	31	42	32	56	17	16	10	9.3	12		
27	18	200	80	30	38	51	66	16	16	9.6	9.4	12		
28	18	230	70	30	36	38	51	16	15	9.7	9.6	11		
29	18	200	86	29	---	40	38	34	14	9.5	9.7	11		
30	21	170	102	27	---	45	34	64	14	10	13	11		
31	19	---	63	27	---	50	---	28	---	12	14	---		
TOTAL	436.2	2754	3331	1141	1354	1080	1125	840	999	355.8	362.7	533		
MEAN	14.1	91.8	107	36.8	48.4	34.8	37.5	27.1	33.3	11.5	11.7	17.8		
MAX	50	230	300	66	141	85	66	64	226	14	28	51		
MIN	6.8	33	50	27	26	20	23	16	14	9.5	9.3	10		
CFSM	.52	3.40	3.96	1.36	1.79	1.29	1.39	1.00	1.23	.43	.43	.66		
IN.	.60	3.79	4.59	1.57	1.87	1.49	1.55	1.16	1.38	.49	.50	.73		
AC-FT	865	5460	6610	2260	2690	2140	2230	1670	1980	706	719	1060		
WTR YR 1985	TOTAL	14311.7	MEAN	39.2	MAX	300	MIN	6.8	CFSM	1.45	IN.	19.72	AC-FT	28390

LAKE WASHINGTON BASIN

12126100 NORTH CREEK NEAR WOODINVILLE, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	12	37	17	61	113	41	32	32	16	15	13	13		
2	12	51	19	44	86	38	30	44	15	17	13	13		
3	13	64	93	52	85	35	27	38	15	17	12	13		
4	12	77	86	33	85	34	32	30	15	17	12	12		
5	12	52	68	91	99	33	29	30	15	14	12	12		
6	21	47	64	84	68	31	26	32	15	13	12	11		
7	15	47	62	49	57	50	25	28	16	13	12	11		
8	13	72	49	63	50	38	24	26	16	13	12	16		
9	12	52	42	48	45	33	24	30	16	12	11	14		
10	12	40	37	52	42	33	24	93	15	22	12	14		
11	19	33	34	50	40	36	34	50	14	17	13	13		
12	17	29	31	39	37	32	33	38	13	15	13	12		
13	14	26	28	36	36	30	26	74	13	15	12	13		
14	14	24	28	34	36	29	24	46	17	13	12	14		
15	14	48	27	43	136	27	44	36	16	14	11	13		
16	64	69	26	102	97	26	55	32	16	66	11	13		
17	25	53	25	162	71	24	34	30	23	74	11	12		
18	18	37	24	613	61	29	34	33	26	26	11	17		
19	20	32	24	526	53	28	28	33	30	18	11	13		
20	56	33	24	233	51	26	26	64	18	16	11	13		
21	35	29	23	141	70	27	26	39	16	15	11	13		
22	40	26	22	138	64	25	31	33	15	15	11	13		
23	25	24	21	168	97	44	29	30	14	15	11	56		
24	66	23	21	108	94	69	26	27	13	14	11	31		
25	173	21	21	86	81	41	26	25	13	14	11	17		
26	113	20	19	74	62	46	24	23	13	14	11	27		
27	231	19	19	75	52	34	25	22	13	14	11	18		
28	146	19	18	63	45	35	27	22	13	14	12	23		
29	62	18	18	58	---	33	37	20	14	14	12	23		
30	46	17	19	102	---	54	49	18	13	13	13	21		
31	38	---	20	80	---	36	---	17	---	13	15	---		
TOTAL	1370	1139	1029	3508	1913	1097	911	1095	477	582	366	504		
MEAN	44.2	38.0	33.2	113	68.3	35.4	30.4	35.3	15.9	18.8	11.8	16.8		
MAX	231	77	93	613	136	69	55	93	30	74	15	56		
MIN	12	17	17	33	36	24	24	17	13	12	11	11		
CFSM	1.64	1.41	1.23	4.19	2.53	1.31	1.13	1.31	.59	.70	.44	.62		
IN.	1.89	1.57	1.42	4.83	2.64	1.51	1.26	1.51	.66	.80	.50	.69		
AC-FT	2720	2260	2040	6960	3790	2180	1810	2170	946	1150	726	1000		
CAL YR 1985	TOTAL	11328.5	MEAN	31.0	MAX	231	MIN	9.3	CFSM	1.15	IN.	15.61	AC-FT	22470
WTR YR 1986	TOTAL	13991	MEAN	38.3	MAX	613	MIN	11	CFSM	1.42	IN.	19.28	AC-FT	27750

LAKE WASHINGTON BASIN

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12126800 SWAMP CREEK NEAR ALDERWOOD MANOR, WA

LOCATION.--Lat 47°49'32", long 122°15'15", in NE¼SE¼ sec.14, T.27 N., R.4 E., Snohomish County, Hydrologic Unit 17110012, on right bank at Magnolia Road, 1.5 mi northeast of Alderwood Manor, and 6.8 mi upstream from mouth.

DRAINAGE AREA.--8.90 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 300.8 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 2, 1985, June 11-17, 1986, June 21 to July 1, 1986, Aug. 12-28, 1986, Sept. 4-17, 1986. Records good except for estimated daily discharges, which are fair. No known diversions or regulation upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 439 ft³/s Jan. 18, 1986, gage height, 4.61 ft; minimum discharge, 0.98 ft³/s Aug. 24-26, 1985.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 229 ft³/s Dec. 14, gage height, 3.56 ft; minimum discharge, 0.98 ft³/s Aug. 24-26.

WATER YEAR 1986.--Maximum discharge, 439 ft³/s Jan. 18, gage height, 4.61 ft; minimum daily discharge, 1.0 ft³/s Aug. 22-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.7	19	46	18	5.3	9.6	10	9.7	5.7	1.3	1.8	1.3		
2	1.7	51	31	14	5.7	8.4	9.1	8.9	4.9	1.3	1.3	1.3		
3	1.7	21	22	12	5.6	7.6	14	10	4.1	1.3	1.2	1.3		
4	1.8	15	16	11	5.7	15	14	11	3.8	1.2	1.2	1.3		
5	1.7	9.7	12	11	5.4	11	13	12	3.0	1.2	1.2	1.6		
6	1.7	8.5	10	11	5.7	10	11	9.6	6.0	1.3	1.1	3.7		
7	1.9	7.0	12	11	13	9.0	11	7.7	68	1.3	3.7	1.5		
8	1.9	6.8	66	10	9.7	7.4	9.6	6.5	69	1.3	3.3	1.5		
9	2.3	9.9	48	9.5	9.0	6.8	8.2	5.4	39	1.2	1.3	3.6		
10	12	23	38	8.4	11	6.3	7.4	5.7	20	1.2	1.2	2.0		
11	7.2	24	30	7.6	47	5.8	8.8	6.5	13	1.2	1.2	1.5		
12	4.0	21	70	7.0	39	5.3	7.2	4.8	8.3	1.2	1.2	1.4		
13	4.2	24	77	6.7	28	5.0	6.5	7.1	6.3	1.2	1.1	1.6		
14	4.5	25	123	8.1	23	4.8	6.0	16	5.2	1.2	1.1	3.1		
15	3.3	16	114	8.3	18	4.4	5.6	9.1	3.9	1.2	1.1	1.7		
16	2.9	11	76	8.2	16	4.3	5.3	7.0	3.0	1.2	1.1	3.0		
17	2.6	11	51	7.9	14	4.1	4.7	5.4	2.4	1.2	1.1	7.1		
18	2.5	13	35	7.8	12	4.0	6.0	4.5	2.0	1.2	1.1	1.9		
19	2.3	9.9	27	8.6	13	3.8	15	3.9	1.9	1.2	1.1	1.8		
20	2.1	11	20	17	16	3.6	16	3.3	1.7	1.2	1.1	1.6		
21	2.0	11	18	14	18	5.0	14	3.0	1.6	1.2	1.1	1.6		
22	2.0	9.3	18	12	27	7.6	13	2.5	1.5	1.2	1.1	1.6		
23	2.4	66	20	10	24	22	16	2.3	1.4	1.2	1.1	1.6		
24	2.4	79	20	9.0	25	15	17	2.1	1.4	1.2	.99	1.6		
25	6.5	48	19	7.8	19	11	16	2.4	1.4	1.2	.98	1.6		
26	6.5	30	20	6.9	15	9.4	19	2.1	1.3	1.1	1.0	1.5		
27	5.1	89	26	6.7	12	14	21	2.0	1.3	1.1	1.2	1.5		
28	3.6	108	23	6.2	10	9.7	18	1.9	1.3	1.1	1.2	1.5		
29	4.0	98	26	5.8	---	8.8	14	6.0	1.3	1.1	1.2	1.5		
30	5.9	74	31	5.2	---	11	11	15	1.3	1.1	1.4	1.5		
31	4.9	---	21	5.0	---	13	---	7.5	---	1.3	1.5	---		
TOTAL	109.3	949.1	1166	291.7	452.1	262.7	347.4	200.9	285.0	37.4	41.27	59.3		
MEAN	3.53	31.6	37.6	9.41	16.1	8.47	11.6	6.48	9.50	1.21	1.33	1.98		
MAX	12	108	123	18	47	22	21	16	69	1.3	3.7	7.1		
MIN	1.7	6.8	10	5.0	5.3	3.6	4.7	1.9	1.3	1.1	.98	1.3		
CFSM	.37	3.31	3.94	.99	1.69	.89	1.21	.68	.99	.13	.14	.21		
IN.	.43	3.70	4.54	1.14	1.76	1.02	1.35	.78	1.11	.15	.16	.23		
AC-FT	217	1880	2310	579	897	521	689	398	565	74	82	118		
WTR YR 1985	TOTAL	4202.17	MEAN	11.5	MAX	123	MIN	.98	CFSM	1.20	IN.	16.37	AC-FT	8340

LAKE WASHINGTON BASIN

12126800 SWAMP CREEK NEAR ALDERWOOD MANOR, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.5	10	3.6	10	23	11	7.1	10	2.6	2.0	1.6	1.5		
2	1.5	11	3.7	8.8	20	9.9	7.1	12	2.4	2.2	1.6	1.5		
3	1.5	13	20	13	20	9.1	6.0	11	2.2	2.9	1.5	1.4		
4	1.5	16	19	8.7	19	8.2	7.6	8.9	2.2	3.1	1.4	1.3		
5	1.4	12	19	29	23	7.6	6.7	8.4	2.2	2.1	1.4	1.2		
6	3.5	11	19	31	17	7.1	6.1	8.4	2.2	1.6	1.4	1.2		
7	1.7	9.3	19	19	15	10	5.6	7.1	2.2	1.6	1.4	1.2		
8	1.5	15	15	22	13	8.3	5.2	6.3	2.2	1.4	1.5	1.6		
9	1.5	16	11	16	11	7.3	5.1	6.9	2.2	1.1	1.5	1.5		
10	1.6	13	9.5	16	9.9	7.2	4.7	27	2.2	4.1	1.6	1.4		
11	3.4	11	7.8	15	9.3	8.1	6.2	24	2.0	1.7	1.9	1.4		
12	2.5	8.6	7.2	10	8.5	6.5	6.1	17	1.8	1.5	1.5	1.4		
13	2.0	7.2	6.4	9.0	7.7	6.2	5.0	21	1.8	1.3	1.3	1.5		
14	2.1	6.4	5.8	8.3	7.6	6.2	4.8	19	2.0	1.2	1.2	1.7		
15	2.1	11	5.3	10	29	5.7	8.2	15	1.9	1.4	1.1	1.5		
16	11	14	5.0	30	26	5.6	11	11	1.8	15	1.1	1.3		
17	2.0	12	4.7	66	20	5.2	8.1	9.4	2.3	14	1.1	1.3		
18	1.4	9.4	4.3	259	17	5.7	7.4	8.9	3.2	5.3	1.1	2.6		
19	1.6	8.5	4.3	276	15	5.4	6.4	8.1	3.0	4.0	1.1	1.4		
20	9.6	8.6	4.3	103	14	5.0	5.9	15	2.2	3.1	1.1	1.3		
21	5.1	8.2	3.8	51	16	6.9	5.8	13	1.9	2.7	1.1	1.3		
22	7.0	7.0	3.6	39	17	9.6	8.3	11	1.8	4.3	1.0	1.2		
23	2.4	6.5	3.6	42	24	11	6.8	9.0	1.7	2.8	1.0	11		
24	14	5.8	3.6	27	26	13	6.4	7.2	1.6	2.5	1.0	3.4		
25	38	5.2	3.5	21	22	9.4	6.5	6.2	1.5	2.3	1.0	1.5		
26	30	4.8	3.2	17	18	11	5.7	5.2	1.5	2.3	1.0	4.5		
27	79	4.5	3.1	16	15	8.8	5.6	4.5	1.5	2.3	1.2	1.8		
28	47	4.3	2.9	14	13	8.3	6.4	3.9	1.6	1.9	1.3	5.5		
29	24	4.0	2.8	13	---	7.4	8.2	3.6	1.7	1.9	1.5	3.9		
30	16	3.8	2.8	19	---	10	11	3.1	1.7	1.6	1.7	2.8		
31	12	---	2.9	17	---	7.6	---	2.8	---	1.6	2.2	---		
TOTAL	329.4	277.1	229.7	1235.8	476.0	248.3	201.0	323.9	61.1	96.8	41.4	66.1		
MEAN	10.6	9.24	7.41	39.9	17.0	8.01	6.70	10.4	2.04	3.12	1.34	2.20		
MAX	79	16	20	276	29	13	11	27	3.2	15	2.2	11		
MIN	1.4	3.8	2.8	8.3	7.6	5.0	4.7	2.8	1.5	1.1	1.0	1.2		
CFSM	1.11	.97	.78	4.18	1.78	.84	.70	1.09	.21	.33	.14	.23		
IN.	1.28	1.08	.89	4.81	1.85	.97	.78	1.26	.24	.38	.16	.26		
AC-FT	653	550	456	2450	944	493	399	642	121	192	82	131		
CAL YR 1985	TOTAL	2813.97	MEAN	7.71	MAX	79	MIN	.98	CFSM	.81	IN.	10.96	AC-FT	5580
WTR YR 1986	TOTAL	3586.6	MEAN	9.83	MAX	276	MIN	1.0	CFSM	1.03	IN.	13.97	AC-FT	7110

LAKE WASHINGTON BASIN

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12126900 SCRIBER CREEK NEAR MOUNTLAKE TERRACE, WA

LOCATION.--Lat 47°47'58", long 122°15'27", in SE1/4 sec.26, T.27 N., R.4 E., Snohomish County, Hydrologic Unit 17110012, on right bank 3 mi downstream from Scriber Lake, 2.5 mi northeast of Mountlake Terrace, and 0.1 mi upstream from mouth.

DRAINAGE AREA.--6.98 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 186.0 ft above National Vertical Datum of 1929. Prior to Jan. 25, 1986, at site 40 ft upstream at datum 13.35 ft higher.

REMARKS.--Estimated daily discharges: Oct. 1-17, 1984; Nov. 22 to Dec. 1, 1985, Jan. 16-24, 1986. Records fair except for periods of estimated daily discharges, which are poor. No known diversions upstream. Small amount of regulation due to man-made detention ponds.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 350 ft³/s Jan. 19, 1986; minimum discharge, 0.60 ft³/s Sept. 6, 7, 1986.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 266 ft³/s Nov. 23, gage height, 3.17 ft; minimum discharge, 0.66 ft³/s Aug. 24-30.

WATER YEAR 1986.--Maximum daily discharge, 350 ft³/s Jan. 19; minimum discharge, 0.60 ft³/s Sept. 6, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.1	40	15	9.1	5.1	6.0	6.5	4.6	2.8	1.3	3.1	1.1		
2	1.1	67	10	7.7	6.1	5.5	5.1	6.1	2.4	1.4	2.0	.94		
3	1.1	16	7.7	7.1	4.9	5.6	14	9.4	2.2	1.3	1.4	.85		
4	1.2	14	6.4	6.5	4.0	21	10	6.6	2.8	1.1	1.1	.86		
5	1.1	6.1	5.2	7.1	4.0	10	6.7	6.4	2.1	1.1	.97	1.5		
6	1.1	5.5	4.7	7.0	7.6	7.9	5.2	4.0	12	.98	.86	6.3		
7	1.2	4.0	9.9	6.7	16	6.3	6.2	3.2	109	.98	4.7	2.2		
8	1.2	4.5	63	6.4	7.8	5.5	6.1	2.9	45	.98	9.0	1.8		
9	2.0	10	22	5.8	7.9	5.3	4.5	2.8	9.7	.96	2.5	6.4		
10	13	32	18	5.3	12	5.1	4.0	4.1	5.8	.86	1.6	4.3		
11	5.0	25	15	4.8	62	5.0	7.1	4.4	4.1	.86	1.2	2.2		
12	3.0	19	61	4.7	23	4.7	4.8	2.9	3.3	.86	1.1	1.6		
13	3.5	26	37	4.7	12	4.5	3.8	8.6	2.9	.86	.96	2.1		
14	4.0	17	61	7.5	11	4.4	3.2	22	3.0	.86	.86	7.0		
15	2.5	8.2	65	6.8	9.2	4.4	3.2	5.3	2.5	.86	.86	3.1		
16	1.7	5.7	37	5.6	7.5	4.4	3.3	3.3	2.1	.86	.86	6.4		
17	1.3	7.5	21	5.1	6.7	4.2	2.8	2.7	1.9	.86	.76	15		
18	1.3	12	13	5.0	6.2	4.2	4.0	2.5	1.7	.86	.76	3.1		
19	1.2	7.7	10	7.2	11	4.1	19	2.3	1.5	.83	.76	1.9		
20	1.2	8.0	9.0	18	12	4.1	8.1	2.2	1.5	.76	.78	1.5		
21	1.1	5.3	8.5	8.3	14	8.3	4.7	1.9	1.4	.76	.86	1.4		
22	1.1	4.2	12	6.4	17	12	6.5	1.9	1.4	.76	.81	1.3		
23	1.8	110	12	5.6	10	50	12	1.8	1.7	.80	.82	1.1		
24	1.8	58	9.9	5.2	13	17	28	1.8	2.1	.86	.84	1.1		
25	6.7	16	8.4	4.9	8.8	6.7	17	2.0	1.7	.84	.66	1.1		
26	7.0	9.9	13	4.6	7.1	5.4	18	2.0	1.5	.76	.66	1.1		
27	3.4	92	26	4.4	6.4	19	26	1.8	1.4	.76	.66	1.1		
28	2.8	63	15	4.4	6.4	7.0	15	1.7	1.4	.76	.66	.86		
29	3.9	58	23	4.4	---	8.7	7.2	11	1.4	.76	.66	.86		
30	4.1	34	29	4.0	---	12	5.4	29	1.5	.76	1.6	.92		
31	3.2	---	12	3.9	---	11	---	4.9	---	1.2	1.9	---		
TOTAL	85.7	785.6	659.7	194.2	318.7	279.3	267.4	166.1	233.8	28.45	46.26	80.99		
MEAN	2.76	26.2	21.3	6.26	11.4	9.01	8.91	5.36	7.79	.92	1.49	2.70		
MAX	13	110	65	18	62	50	28	29	109	1.4	9.0	15		
MIN	1.1	4.0	4.7	3.9	4.0	4.1	2.8	1.7	1.4	.76	.66	.85		
CFSM	.45	4.27	3.47	1.02	1.86	1.47	1.45	.87	1.27	.15	.24	.44		
IN.	.52	4.76	4.00	1.18	1.93	1.69	1.62	1.01	1.42	.17	.28	.49		
AC-FT	170	1560	1310	385	632	554	530	329	464	56	92	161		
WTR YR 1985	TOTAL	3146.20	MEAN	8.62	MAX	110	MIN	.66	CFSM	1.40	IN.	19.06	AC-FT	6240

LAKE WASHINGTON BASIN

12126900 SCRIBER CREEK NEAR MOUNTLAKE TERRACE, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1.1	5.3	2.0	19	30	7.2	4.7	3.4	1.6	2.2	1.0	1.1		
2	1.3	11	2.2	12	17	6.4	4.0	8.0	1.6	2.2	.98	1.0		
3	1.3	17	47	24	18	5.4	3.7	5.9	1.5	2.8	.87	.92		
4	1.3	22	33	10	22	5.2	5.9	3.4	1.5	2.4	.87	.72		
5	1.3	11	19	13	21	4.8	4.6	4.5	1.5	1.6	.87	.72		
6	5.0	8.2	16	51	10	4.8	3.7	4.8	1.5	1.5	.87	.70		
7	2.5	5.6	17	18	8.3	12	3.4	3.9	1.5	1.4	.87	.66		
8	1.6	9.4	10	10	7.0	6.7	3.4	3.5	1.9	1.2	.87	1.6		
9	1.4	8.6	7.2	19	6.4	5.1	4.2	4.8	1.6	1.2	.87	1.2		
10	1.3	6.2	5.6	11	6.0	5.0	3.3	19	1.4	6.5	.87	1.1		
11	5.4	4.2	4.8	12	5.6	6.2	5.2	6.2	1.2	3.2	.95	.98		
12	3.8	3.5	4.3	11	5.3	5.1	4.4	3.8	1.2	2.7	.98	.79		
13	2.2	3.1	3.8	7.3	5.3	5.8	3.4	11	1.2	1.7	.87	1.7		
14	1.9	2.8	3.5	6.2	5.5	6.5	3.1	4.9	2.0	1.6	.88	1.8		
15	1.8	15	3.4	6.8	61	4.6	8.9	3.4	1.7	1.6	.85	1.2		
16	41	25	3.5	20	26	4.2	16	3.0	1.6	21	.72	.89		
17	6.7	9.4	3.3	45	13	4.0	5.5	2.8	3.2	20	.74	.75		
18	3.2	6.0	3.2	150	11	5.1	5.1	3.8	4.8	4.1	.79	3.2		
19	3.9	5.9	3.1	350	11	4.6	3.9	4.6	4.0	2.5	.87	1.6		
20	31	8.8	2.9	100	12	4.1	3.4	16	1.9	2.0	.87	1.1		
21	14	5.4	2.9	40	16	5.2	3.9	8.7	1.6	1.6	.88	1.0		
22	17	4.5	2.8	25	14	3.9	7.8	4.4	1.4	1.5	.83	.95		
23	5.4	4.0	2.8	30	26	15	5.4	3.2	1.2	1.6	.72	22		
24	38	3.5	2.9	20	27	20	3.8	2.8	1.2	1.5	.72	5.2		
25	97	3.0	2.9	11	18	8.7	4.6	2.5	1.2	1.2	.79	2.0		
26	55	2.7	2.9	9.5	11	8.7	3.5	2.3	1.1	1.2	.77	7.1		
27	125	2.4	2.8	12	9.2	5.4	3.5	2.2	1.2	1.2	.82	2.6		
28	60	2.3	2.6	9.1	8.1	5.8	4.2	2.0	1.3	1.1	.79	2.1		
29	12	2.2	2.5	8.9	---	5.1	5.3	1.8	1.5	1.1	1.0	2.8		
30	7.9	2.1	2.5	27	---	11	3.9	1.6	1.3	1.0	1.4	2.1		
31	5.7	---	2.5	14	---	5.6	---	1.6	---	1.0	2.2	---		
TOTAL	556.0	220.1	224.9	1101.8	430.7	207.2	145.7	153.8	51.4	97.4	28.38	71.58		
MEAN	17.9	7.34	7.25	35.5	15.4	6.68	4.86	4.96	1.71	3.14	.92	2.39		
MAX	125	25	47	350	61	20	16	19	4.8	21	2.2	22		
MIN	1.1	2.1	2.0	6.2	5.3	3.9	3.1	1.6	1.1	1.0	.72	.66		
CFSM	2.92	1.20	1.18	5.78	2.51	1.09	.79	.81	.28	.51	.15	.39		
IN.	3.37	1.33	1.36	6.68	2.61	1.26	.88	.93	.31	.59	.17	.43		
AC-FT	1100	437	446	2190	854	411	289	305	102	193	56	142		
CAL YR 1985	TOTAL	2616.20	MEAN	7.17	MAX	125	MIN	.66	CFSM	1.17	IN.	15.85	AC-FT	5190
WTR YR 1986	TOTAL	3288.96	MEAN	9.01	MAX	350	MIN	.66	CFSM	1.47	IN.	19.93	AC-FT	6520

12127100 SWAMP CREEK AT KENMORE, WA

LOCATION.--Lat 47°45'22", long 122°13'57", in NE1/4 sec.12, T.26 N., R.4 E., King County, Hydrologic Unit 17110012, on right bank on upstream side of Bothell Way bridge (State Highway 522) at Kenmore, and at mile 0.5.

DRAINAGE AREA.--23.1 mi².

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WDR WA-84-1: 1983(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 14.46 ft above National Geodetic Vertical Datum of 1929 (Washington State Highway Department). Apr. 27 to Sept. 7, 1967, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 2, Aug. 21-25. Records good except for period of estimated discharge Nov. 23 to Dec. 2, which is fair. Some minor diversion for domestic use upstream from station. Peak flows are affected by flood control storage and urbanization.

AVERAGE DISCHARGE.--21 years (water years 1964-72, 1975-86), 34.5 ft³/s, 20.28 in/yr, 25,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,090 ft³/s, Jan. 18, 1986, gage height, 7.73 ft; minimum discharge, 2.3 ft³/s Aug. 12, 1977; minimum gage height, 1.71 ft July 31, Aug. 1, 2, 1965, Aug. 12, 1977.

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)
Oct. 27	0245	269	4.28	Jan. 18	2115	*1,090	*7.73

Minimum discharge, 4.1 ft³/s Aug. 9, 21, 25, 26, gage height, 1.85 ft.

REVISIONS.--Some peak discharges and the annual maximum (*) reported for some water years have been revised, as shown in the following table. They supersede figures published in the reports for 1967-69, 1971, 1972, 1974, 1975, 1979, 1980, 1982, and 1983.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Water Year 1967				Water Year 1975			
Dec. 13	0100	474	5.36	Jan. 13	unknown	*528	*5.61
Jan. 20	unknown	*515	*5.55	Water Year 1979			
Water Year 1968				Nov. 4	0515	*470	*5.34
Dec. 25	1930	*493	*5.45	Water Year 1980			
Water Year 1969				Dec. 17	2330	446	5.22
Feb. 8	2345	*466	*5.32	Jan. 12	1415	*608	*5.95
Water Year 1971				Water Year 1982			
Jan. 15	2215	*541	*5.67	Oct. 6	2330	*546	*5.69
Water Year 1972				Water Year 1983			
Mar. 6	0030	*628	*6.03	Dec. 3	2000	596	5.90
Water Year 1974				Jan. 5	1445	*651	*6.12
Jan. 16	2030	*517	*5.56				

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DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.6	26	13	45	94	31	21	20	8.0	7.5	5.6	6.5		
2	6.8	34	14	34	71	27	19	31	7.6	9.1	5.4	6.4		
3	6.9	44	73	44	71	25	18	26	7.6	8.6	5.1	6.0		
4	6.7	54	65	26	68	24	23	19	7.6	9.1	5.0	5.6		
5	6.9	37	53	79	87	22	20	19	7.7	7.3	5.0	5.4		
6	13	31	48	82	55	21	17	22	7.4	6.4	5.0	5.2		
7	9.2	26	47	47	47	37	16	17	7.9	5.9	4.9	5.1		
8	7.4	35	37	59	40	27	15	16	8.6	5.9	4.8	6.9		
9	7.2	36	29	44	36	22	16	19	7.9	5.9	4.7	6.6		
10	7.1	29	25	47	33	21	15	57	7.2	15	4.8	6.3		
11	13	23	22	44	30	24	19	49	6.8	10	5.4	6.2		
12	12	20	20	34	28	20	19	34	6.5	8.4	5.5	5.8		
13	8.1	18	18	30	27	20	15	48	6.4	7.1	5.3	6.6		
14	7.6	17	18	29	27	22	14	38	8.2	6.8	5.1	7.5		
15	7.6	38	18	36	121	18	29	27	7.8	7.1	4.8	6.3		
16	49	51	17	86	93	17	46	21	7.1	43	4.7	6.3		
17	17	35	16	166	60	15	24	19	11	51	4.7	6.6		
18	11	25	16	672	51	18	25	20	12	15	4.7	12		
19	11	24	16	667	43	18	19	18	15	10	4.8	8.2		
20	42	27	16	252	39	16	17	49	8.3	8.3	4.8	7.0		
21	30	22	15	134	55	20	17	38	7.6	7.6	4.5	6.7		
22	32	19	15	121	56	21	26	25	7.0	7.9	4.6	6.5		
23	17	18	15	145	80	36	21	19	6.6	7.3	4.6	39		
24	46	17	15	85	88	62	17	16	6.4	6.8	4.8	18		
25	144	16	14	66	73	31	18	14	6.1	6.6	4.4	9.0		
26	86	15	14	55	53	37	15	13	6.2	6.6	4.5	20		
27	210	15	14	56	43	25	15	12	6.2	6.5	4.7	11		
28	141	15	14	48	36	25	16	11	6.1	6.3	4.9	11		
29	54	14	14	44	---	22	21	10	6.6	6.1	5.5	11		
30	40	14	14	82	---	36	22	9.5	6.4	5.8	6.1	9.4		
31	31	---	14	64	---	24	---	8.9	---	5.7	8.7	---		
TOTAL	1087.1	795	739	3423	1605	784	595	745.4	231.8	320.6	157.4	274.1		
MEAN	35.1	26.5	23.8	110	57.3	25.3	19.8	24.0	7.73	10.3	5.08	9.14		
MAX	210	54	73	672	121	62	46	57	15	51	8.7	39		
MIN	6.6	14	13	26	27	15	14	8.9	6.1	5.7	4.4	5.1		
CFSM	1.52	1.15	1.03	4.76	2.48	1.10	.86	1.04	.33	.45	.22	.40		
IN.	1.75	1.28	1.19	5.51	2.58	1.26	.96	1.20	.37	.52	.25	.44		
AC-FT	2160	1580	1470	6790	3180	1560	1180	1480	460	636	312	544		
CAL YR 1985	TOTAL	8533.4	MEAN	23.4	MAX	210	MIN	5.3	CFSM	1.01	IN.	13.74	AC-FT	16930
WTR YR 1986	TOTAL	10757.4	MEAN	29.5	MAX	672	MIN	4.4	CFSM	1.28	IN.	17.32	AC-FT	21340

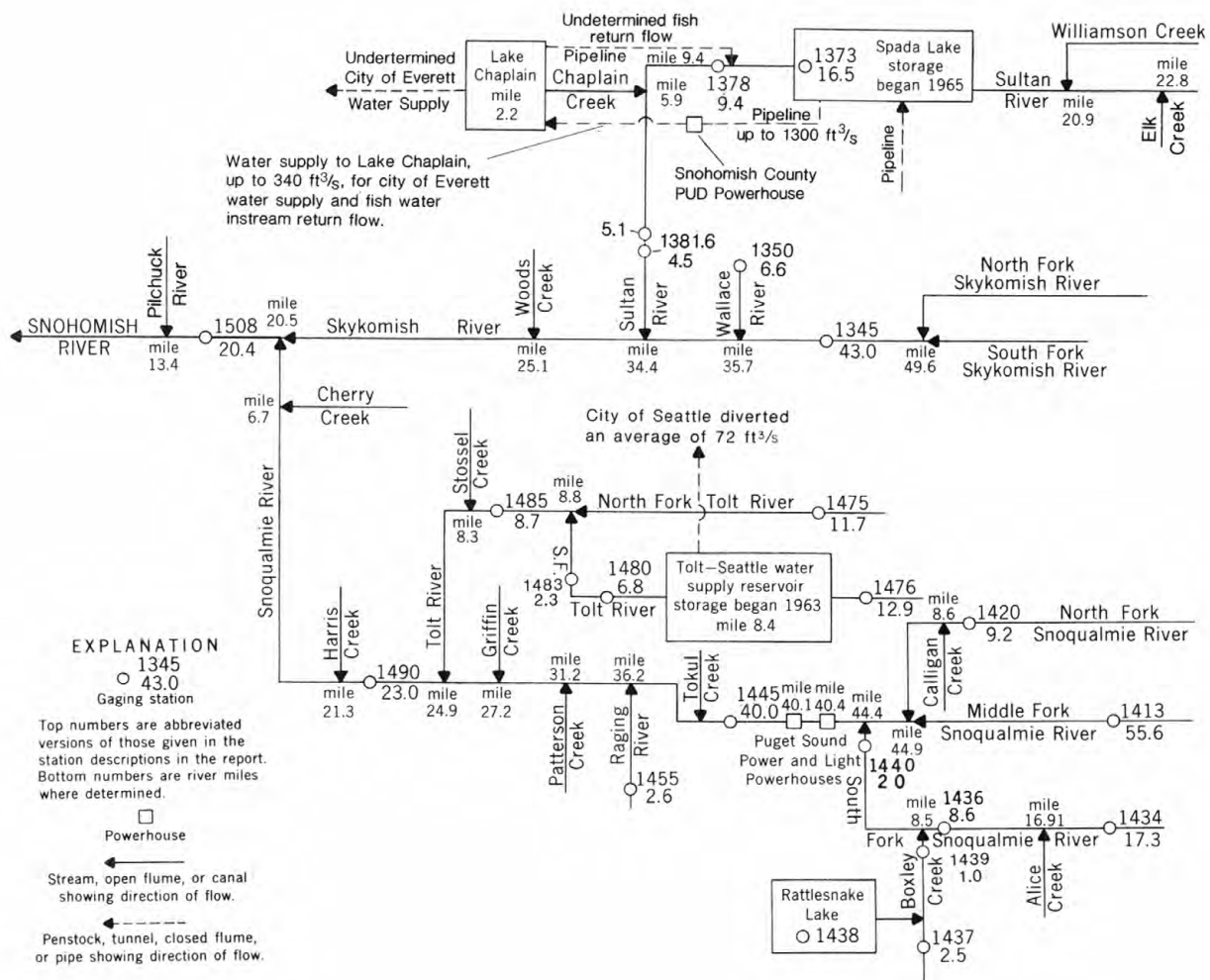


Figure 15.--Gaging stations in Snohomish River basin.

SNOHOMISH RIVER BASIN

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12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA

LOCATION.--Lat 47°50'15", long 121°39'56", in SW¼SW¼ sec.9, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 2.0 mi southeast of Gold Bar, 7.3 mi upstream from Wallace River, and at mile 43.0.

DRAINAGE AREA.--535 mi².

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

REVISED RECORDS.--WSP 1316: 1932-35(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 209.26 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No regulation. Several small diversions upstream from station. Chemical analyses July 1959 to September 1970, October 1977 to June 1980.

AVERAGE DISCHARGE.--58 years, 3,945 ft³/s, 100.14 in/yr, 2,858,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,400 ft³/s Dec. 26, 1980, gage height, 21.38 ft, from rating curve extended above 53,000 ft³/s; minimum discharge, 315 ft³/s Nov. 29, 1952; minimum gage height, 2.73 ft Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 19,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0230	39,500	14.96	Jan. 19	0100	42,300	15.43
Oct. 26	2230	30,600	13.46	Feb. 24	0400	*47,600	*16.23
Nov. 1	2200	41,000	15.21	Feb. 25	1130	34,500	14.13
Nov. 3	0530	35,900	14.36				

Minimum discharge, 425 ft³/s Sept. 23, 24, gage height, 3.32 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	685	20200	1130	1460	3440	6590	4040	2840	10500	1980	931	563		
2	661	28300	1180	1410	3390	5580	3480	2910	9000	2060	930	543		
3	637	27300	1210	1310	2900	4850	3090	3430	7860	1990	937	544		
4	623	15000	1190	1190	2630	4580	2850	3410	7050	2010	920	539		
5	679	10100	1180	1290	2710	4470	2660	3240	5900	1870	887	521		
6	753	9880	1370	2050	2410	4130	2530	2970	5280	1680	871	494		
7	671	9970	1430	1770	2180	6420	2610	2920	4580	1610	845	486		
8	639	7370	1330	1820	1980	8680	3130	2920	4150	1610	828	479		
9	768	5550	1220	1930	1850	6570	3170	2880	3680	1510	813	475		
10	806	4350	1140	1960	1730	5280	3030	2810	4080	1530	809	475		
11	691	3550	1090	3200	1620	4530	2810	2670	4360	2280	788	489		
12	643	3080	1040	2710	1510	4110	2690	3680	4200	2510	762	463		
13	702	2750	998	2340	1420	3650	2460	12000	3740	2020	752	455		
14	1990	2480	968	2180	1350	3370	2230	7200	3790	1720	727	464		
15	1700	2600	944	2020	1580	3000	2200	5190	3560	1550	699	459		
16	1440	3480	927	2200	2720	2730	2250	4200	3010	1630	673	519		
17	5220	2860	939	3200	2070	2520	2330	3940	2710	3540	647	480		
18	6290	2470	1020	16900	1790	2370	2450	5090	3090	2480	620	466		
19	5270	2240	1100	25400	1580	2660	2230	6980	3960	1980	604	471		
20	3170	2060	1160	9220	1500	2770	2240	9050	3100	1780	595	459		
21	2430	1900	1190	5820	1480	3690	3190	6790	2800	1660	585	443		
22	3400	1720	1230	4440	1650	3850	4300	5420	2720	1560	580	429		
23	4790	1560	1360	4020	7950	3380	3410	4480	2960	1480	572	1060		
24	15200	1500	1540	3590	36900	3790	2870	4210	3030	1390	566	2910		
25	26000	1480	1670	3010	29300	3340	2770	6460	2780	1310	563	1420		
26	17400	1460	1650	2640	16700	3250	2620	9600	2540	1250	551	1080		
27	18900	1420	1570	2640	9450	3370	3240	9060	2200	1180	559	1040		
28	11200	1310	1460	2880	7500	4200	4070	9160	2300	1110	571	2190		
29	7220	1250	1370	2570	---	4730	3420	9940	2420	1050	578	3270		
30	5840	1180	1310	2630	---	6100	3050	11400	2090	993	582	2900		
31	4960	---	1250	3090	---	4910	---	11200	---	957	584	---		
TOTAL	151378	180370	38166	122890	153290	133470	87420	178050	123440	53280	21929	26586		
MEAN	4883	6012	1231	3964	5475	4305	2914	5744	4115	1719	707	886		
MAX	26000	28300	1670	25400	36900	8680	4300	12000	10500	3540	937	3270		
MIN	623	1180	927	1190	1350	2370	2200	2670	2090	957	551	429		
CFSM	9.13	11.2	2.30	7.41	10.2	8.05	5.45	10.7	7.69	3.21	1.32	1.66		
IN.	10.53	12.54	2.65	8.54	10.66	9.28	6.08	12.38	8.58	3.70	1.52	1.85		
AC-FT	300300	357800	75700	243800	304100	264700	173400	353200	244800	105700	43500	52730		
CAL YR 1985	TOTAL	1294812	MEAN	3547	MAX	28300	MIN	581	CFSM	6.63	IN.	90.03	AC-FT	2568000
WTR YR 1986	TOTAL	1270269	MEAN	3480	MAX	36900	MIN	429	CFSM	6.50	IN.	88.33	AC-FT	2520000

SNOHOMISH RIVER BASIN

12135000 WALLACE RIVER AT GOLD BAR, WA

LOCATION.--Lat 47°51'51", long 122°40'53", in NE¼NW¼ sec.5, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank at downstream side of highway bridge, 1.0 mi north of Gold Bar, 2.1 mi upstream from Olney Creek, and at mile 6.6.

DRAINAGE AREA.--18.6 mi².

PERIOD OF RECORD.--October 1928 to September 1933, July 1946 to November 1976, August 1977 to June 1978, July 1980 to current year (seasonal records only). Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1316: 1930(M), 1932-33(M). WSP 1932: Drainage area. WDR WA-74-1: 1971-73(P). WDR WA-80-1: Drainage area. WDR WA-83-1: 1980.

GAGE.--Water-stage recorder. Datum of gage is 203.00 ft above National Geodetic Vertical Datum of 1929. December 1928 to Sept. 20, 1933, nonrecording gage 0.8 mi downstream at different datum. July 25, 1946, to June 30, 1978, water-stage recorder 0.8 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow affected by natural storage in Wallace Lake. No diversions upstream from station. Water temperatures July 1955 to September 1972.

AVERAGE DISCHARGE.--35 years (water years 1929-33, 1947-76), 165 ft³/s, 117.93 in/yr, 119,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft³/s Jan. 5, 1969, gage height, 8.37 ft, site and datum then in use; minimum discharge, 5.8 ft³/s Aug. 25, 29, 30, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge for period June to October 1986, 872 ft³/s Oct. 26, gage height, 4.12 ft; minimum discharge, 15 ft³/s Aug. 26-29, Sept. 5-8.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	186	38	30	19	166
2	146	57	28	18	114
3	127	46	27	18	87
4	106	63	26	17	70
5	88	97	25	16	60
6	79	56	25	15	53
7	86	46	23	15	48
8	98	41	22	15	43
9	76	38	22	17	40
10	79	85	21	20	38
11	76	99	21	24	35
12	67	74	21	19	34
13	60	59	21	18	32
14	63	48	20	20	31
15	60	46	19	18	30
16	49	117	19	17	29
17	46	450	18	17	28
18	115	182	18	17	27
19	184	112	17	18	27
20	89	87	17	24	26
21	74	73	17	19	25
22	64	64	17	17	25
23	62	57	16	239	24
24	56	51	16	216	24
25	49	46	16	83	27
26	46	45	16	62	279
27	42	43	15	81	345
28	42	40	15	302	148
29	46	36	16	467	86
30	40	34	18	250	194
31	---	32	21	---	243
TOTAL	2401	2362	623	2098	2438
MEAN	80.0	76.2	20.1	69.9	78.6
MAX	186	450	30	467	345
MIN	40	32	15	15	24
CFSM	4.21	4.01	1.06	3.68	4.14
IN.	4.70	4.62	1.22	4.11	4.77
AC-FT	4760	4690	1240	4160	4840

12137300 SPADA LAKE NEAR STARTUP, WA

LOCATION.--Lat 47°58'28", long 121°41'10", in NW¼ sec.29, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, Snoqualmie National Forest, on right bank at Culmback Dam on Sultan River, 1.7 mi downstream from South Fork, 7.8 mi north of Startup, and at mile 16.5.

DRAINAGE AREA.--68.3 mi².

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

REVISED RECORDS.--WDR WA-79-1: 1975-76(M).

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Snohomish County P.U.D. No. 1).

REMARKS.--Reservoir is formed by earthfill dam originally completed to elevation 1,408 ft in 1965. Storage began April 5, 1965 for water supply for the city of Everett. During 1983 the dam was raised to elevation 1,470 ft with storage beginning November 1983. Capacity was increased to 153,260 acre-feet at elevation 1,450 ft, crest of spillway. Normal operating pool is between elevations 1,420 ft and 1,460 ft. Figures given herein represent total contents. Spada Lake is used to provide water for the city of Everett, and since June 1, 1984, power generation for Snohomish County Public Utility District No. 1.

COOPERATION.--Elevation at 1200 and 2400 hours and capacity table furnished by Snohomish County Public Utility District No. 1.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 161,276 acre-ft Nov. 3, 1985, elevation, 1,454.1 ft; minimum contents observed since reservoir was first filled, 4,250 acre-ft Sept. 30, 1967, elevation, 1,301.28 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 161,276 acre-ft Nov. 3, elevation, 1,454.1 ft; minimum contents observed, 108,699 acre-ft Dec. 18, elevation, 1,424.1 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,437.3	130,437	--
Oct. 31.....	1,449.5	152,360	+21,923
Nov. 30.....	1,427.0	113,278	-39,082
Dec. 31.....	1,424.8	109,804	-3,474
CAL YEAR 1985.....	--	--	-7,106
Jan. 31.....	1,432.8	122,780	+12,976
Feb. 28.....	1,445.5	145,057	+22,277
Mar. 31.....	1,436.9	129,756	-15,301
Apr. 30.....	1,438.1	131,798	+2,042
May 31.....	1,445.2	144,510	+12,712
June 30.....	1,441.8	138,311	-6,199
July 31.....	1,443.1	140,681	+2,370
Aug. 31.....	1,435.2	126,863	-13,818
Sept. 30.....	1,435.2	126,863	0
WTR YR 1986.....	--	--	-3,574

SNOHOMISH RIVER BASIN

12137800 SULTAN RIVER BELOW DIVERSION DAM, NEAR SULTAN, WA

LOCATION.--Lat 47°57'34", long 121°47'46", in SE¼NE¼ sec.32, T.29 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank 300 ft downstream from city of Everett diversion dam on Sultan River, 6.8 mi north of Sultan, and at mile 9.4.

DRAINAGE AREA.--77.1 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 660 ft from topographic map.

REMARKS.--No estimated daily discharges. Records good. During water years 1983 to 1984, the city of Everett diverted about 91 ft³/s daily into Lake Chaplain for municipal use. Flow regulated at Spada Lake (station 12137300) since Apr. 5, 1965, unadjusted for storage. Since May 1984, water is diverted at Spada Lake through a 10-ft diameter pipeline for power generation at the Jackson Project. Since July 1984, undetermined flows are returned to river at diversion dam by pipeline from Lake Chaplain for maintenance of instream flow requirements.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,990 ft³/s Nov. 3, 1985, gage height, 10.60 ft; maximum gage height, 11.30 ft Nov. 3, 1985, from crest-stage gage; minimum daily discharge, 35 ft³/s Aug. 23-25, 1983.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 8,990 ft³/s Nov. 3, gage height, 10.60 ft; maximum gage height, 11.30 ft Nov. 3, from crest-stage gage; minimum discharge, 91 ft³/s Dec. 4; minimum daily, 126 ft³/s July 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	184	2580	136	212	218	204	213	212	213	132	158	149
2	186	7050	151	188	211	203	209	213	215	130	152	150
3	183	6830	144	146	212	207	209	216	210	128	151	150
4	226	2770	145	140	216	210	210	212	209	126	152	150
5	327	1150	152	160	244	208	208	214	207	129	152	150
6	330	970	154	284	199	202	208	209	205	128	152	147
7	331	1230	145	143	204	215	207	210	208	130	152	149
8	329	665	142	151	203	209	205	209	210	132	151	152
9	328	251	141	144	201	211	205	213	207	134	154	150
10	326	158	140	140	205	206	205	213	207	136	152	150
11	358	137	136	144	204	213	205	212	209	131	152	146
12	324	132	132	141	202	231	205	272	207	129	151	147
13	313	132	174	143	201	220	204	443	207	130	151	147
14	385	130	132	143	208	206	202	213	210	131	220	152
15	372	144	154	179	214	205	210	210	209	129	151	187
16	390	157	151	221	205	207	204	209	166	150	150	206
17	342	131	150	251	199	209	206	212	127	369	149	208
18	330	136	145	826	198	215	203	212	141	154	148	207
19	332	146	137	469	203	209	205	215	151	151	147	208
20	343	140	140	227	200	209	205	216	135	151	149	205
21	353	146	142	202	201	213	207	215	133	158	149	208
22	390	131	143	220	203	208	211	210	138	152	148	213
23	445	132	142	268	497	213	210	211	135	150	150	260
24	857	132	142	242	423	214	212	215	131	152	149	215
25	4410	135	141	213	250	205	215	210	132	217	150	214
26	2990	142	140	197	187	211	211	214	132	216	151	217
27	3800	149	141	209	185	209	216	214	131	215	151	219
28	1860	142	145	211	197	212	209	214	129	179	151	217
29	680	141	148	207	---	211	219	215	128	151	151	310
30	263	139	151	218	---	246	216	216	127	150	152	193
31	231	---	150	217	---	210	---	214	---	148	151	---
TOTAL	22518	26428	4486	6856	6290	6551	6254	6883	5169	4818	4747	5576
MEAN	726	881	145	221	225	211	208	222	172	155	153	186
MAX	4410	7050	174	826	497	246	219	443	215	369	220	310
MIN	183	130	132	140	185	202	202	209	127	126	147	146
AC-FT	44660	52420	8900	13600	12480	12990	12400	13650	10250	9560	9420	11060
CAL YR 1985	TOTAL	101966	MEAN	279	MAX	7050	MIN	101	AC-FT	202200		
WTR YR 1986	TOTAL	106576	MEAN	292	MAX	7050	MIN	126	AC-FT	211400		

SNOHOMISH RIVER BASIN

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12137800 SULTAN RIVER BELOW DIVERSION DAM, NEAR SULTAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1984 to current year.

INSTRUMENTATION.--Temperature recorder since July 1984.

REMARKS.--Daily record of water temperature for June 2 to Aug. 19 and Aug. 26 to Sept. 30 not published due to clock stoppage.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 16.0°C July 3, 1985; minimum, 1.5°C Dec. 20, 1984, Jan. 3, 4, Feb. 21, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 13.0°C Aug. 23, 24; minimum recorded, 2.0°C Dec. 12, 13, Feb. 20.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.5	7.5	8.0	9.0	8.0	8.5	3.0	3.0	3.0	3.0	2.5	3.0
2	8.0	7.5	8.0	9.0	8.5	9.0	3.0	2.5	3.0	3.0	2.5	3.0
3	8.5	7.5	8.0	9.0	9.0	9.0	3.0	2.5	3.0	3.0	3.0	3.0
4	8.0	7.0	7.5	9.0	8.5	9.0	3.5	3.0	3.5	3.0	2.5	3.0
5	8.0	7.5	8.0	8.5	8.0	8.0	3.5	3.0	3.0	3.5	3.0	3.0
6	8.0	7.5	8.0	8.0	8.0	8.0	3.5	3.0	3.0	3.5	3.0	3.5
7	8.0	7.0	7.5	8.0	8.0	8.0	3.5	3.0	3.5	3.5	3.5	3.5
8	7.5	7.0	7.0	8.0	7.5	7.5	3.5	3.0	3.0	4.0	3.5	4.0
9	9.0	7.0	7.5	7.5	7.0	7.0	3.0	2.5	3.0	4.0	4.0	4.0
10	8.0	7.5	8.0	7.0	6.0	6.5	2.5	2.5	2.5	4.0	3.5	4.0
11	8.0	7.5	8.0	6.0	5.5	5.5	2.5	2.5	2.5	4.0	3.5	4.0
12	8.0	7.5	8.0	5.5	5.0	5.5	2.5	2.0	2.5	4.0	3.5	3.5
13	8.0	7.5	8.0	5.5	5.0	5.5	2.5	2.0	2.5	4.0	3.5	3.5
14	8.5	8.0	8.0	5.5	5.5	5.5	2.5	2.5	2.5	3.5	3.5	3.5
15	8.5	8.5	8.5	6.0	5.0	6.0	3.0	2.5	2.5	3.5	3.5	3.5
16	8.5	8.0	8.5	5.5	5.0	5.0	3.0	2.5	2.5	3.5	3.5	3.5
17	8.0	8.0	8.0	5.5	4.5	5.0	3.0	2.5	2.5	4.0	3.5	3.5
18	8.5	8.0	8.5	5.5	5.0	5.0	2.5	2.5	2.5	6.5	4.0	5.0
19	8.5	8.0	8.5	5.0	4.5	5.0	2.5	2.5	2.5	6.0	4.0	5.0
20	8.5	8.0	8.5	5.0	4.0	4.5	2.5	2.5	2.5	4.5	4.0	4.5
21	8.5	8.0	8.0	5.0	4.5	4.5	2.5	2.5	2.5	4.0	4.0	4.0
22	8.5	8.0	8.0	4.5	4.0	4.0	2.5	2.5	2.5	4.0	4.0	4.0
23	8.5	8.0	8.0	4.0	3.5	4.0	2.5	2.5	2.5	4.0	4.0	4.0
24	10.0	8.0	8.5	4.0	3.5	3.5	2.5	2.5	2.5	4.0	3.5	4.0
25	10.5	10.0	10.5	4.0	3.5	4.0	2.5	2.5	2.5	3.5	3.5	3.5
26	10.5	10.5	10.5	4.5	4.0	4.0	2.5	2.5	2.5	4.0	3.5	3.5
27	10.5	10.0	10.5	4.0	4.0	4.0	2.5	2.5	2.5	4.0	4.0	4.0
28	9.5	9.0	9.5	4.0	3.5	4.0	2.5	2.5	2.5	4.0	4.0	4.0
29	9.5	9.0	9.5	3.5	3.5	3.5	3.0	2.5	2.5	4.0	4.0	4.0
30	9.0	8.0	8.5	3.5	3.0	3.5	3.0	3.0	3.0	4.5	4.0	4.0
31	8.5	8.0	8.0	---	---	---	3.0	3.0	3.0	4.5	4.0	4.0
MONTH	10.5	7.0	8.5	9.0	3.0	5.5	3.5	2.0	2.5	6.5	2.5	4.0

12137800 SULTAN RIVER BELOW DIVERSION DAM, NEAR SULTAN, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	4.5	4.0	4.5	4.5	4.0	4.0	6.0	5.5	5.5	7.0	6.5	6.5
2	4.0	4.0	4.0	4.0	4.0	4.0	6.0	5.5	5.5	7.0	7.0	7.0
3	4.0	4.0	4.0	4.0	3.5	4.0	6.0	5.5	5.5	7.5	6.5	7.0
4	4.0	4.0	4.0	4.5	4.0	4.0	6.0	5.5	6.0	7.0	6.5	6.5
5	4.5	3.5	4.0	4.0	4.0	4.0	6.0	5.5	5.5	7.0	6.5	7.0
6	4.0	3.5	3.5	4.5	4.0	4.0	6.0	5.5	5.5	6.5	6.0	6.5
7	3.5	3.5	3.5	4.5	4.5	4.5	6.5	5.5	6.5	6.5	6.5	6.5
8	3.5	3.0	3.0	5.0	4.5	4.5	6.0	6.0	6.0	7.0	6.5	6.5
9	3.0	3.0	3.0	5.0	4.5	4.5	6.0	5.5	6.0	7.0	6.5	7.0
10	3.5	3.0	3.5	4.5	4.5	4.5	6.0	5.0	5.5	7.0	6.5	6.5
11	3.5	3.5	3.5	4.5	4.5	4.5	5.5	5.5	5.5	7.0	6.5	6.5
12	3.5	3.0	3.0	5.0	4.5	4.5	6.0	5.5	6.0	6.5	6.5	6.5
13	3.0	3.0	3.0	4.5	4.5	4.5	5.5	5.5	5.5	6.5	5.5	6.0
14	3.5	3.0	3.0	5.0	4.5	5.0	6.5	5.5	6.0	7.0	6.0	6.5
15	3.5	3.0	3.0	4.5	4.5	4.5	6.5	6.0	6.5	7.0	6.5	6.5
16	3.5	2.5	3.0	5.0	4.5	4.5	6.5	6.0	6.5	7.5	6.5	7.0
17	3.0	2.5	3.0	5.0	4.5	4.5	6.5	6.0	6.0	7.5	7.0	7.0
18	3.0	3.0	3.0	5.0	4.5	4.5	6.5	6.0	6.0	7.5	7.5	7.5
19	3.0	2.5	2.5	5.5	5.0	5.0	6.5	6.0	6.5	8.5	7.5	8.0
20	2.5	2.0	2.5	5.5	4.5	5.0	7.0	6.5	7.0	8.5	7.5	7.5
21	3.0	2.5	2.5	5.5	5.0	5.5	7.0	6.5	7.0	7.5	7.0	7.5
22	3.0	2.5	3.0	5.5	5.0	5.0	6.5	5.5	6.0	8.0	6.5	7.0
23	4.0	2.5	3.0	5.0	5.0	5.0	6.0	5.5	6.0	9.0	7.5	8.5
24	5.0	4.0	5.0	5.5	5.0	5.5	6.5	6.0	6.0	9.0	7.5	8.0
25	6.0	4.5	5.5	5.5	5.0	5.0	6.0	5.5	6.0	9.0	8.0	8.5
26	6.0	4.5	5.0	5.5	5.5	5.5	6.5	5.5	6.0	9.0	8.0	8.5
27	5.0	4.0	4.5	6.0	5.5	6.0	6.5	6.0	6.5	9.0	8.0	8.5
28	4.5	4.0	4.5	6.0	5.5	6.0	6.0	5.5	6.0	10.0	8.5	9.0
29	---	---	---	6.0	5.5	5.5	6.0	5.5	6.0	10.0	8.0	9.0
30	---	---	---	6.0	5.5	6.0	6.5	5.0	6.0	10.0	8.5	9.0
31	---	---	---	6.0	5.0	5.5	---	---	---	10.0	9.0	9.5
MONTH	6.0	2.0	3.5	6.0	3.5	5.0	7.0	5.0	6.0	10.0	5.5	7.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.0	9.0	9.5				---	---	---			
2	---	---	---				---	---	---			
3	---	---	---				---	---	---			
4	---	---	---				---	---	---			
5	---	---	---				---	---	---			
6	---	---	---				---	---	---			
7	---	---	---				---	---	---			
8	---	---	---				---	---	---			
9	---	---	---				---	---	---			
10	---	---	---				---	---	---			
11	---	---	---				---	---	---			
12	---	---	---				---	---	---			
13	---	---	---				---	---	---			
14	---	---	---				---	---	---			
15	---	---	---				---	---	---			
16	---	---	---				---	---	---			
17	---	---	---				---	---	---			
18	---	---	---				---	---	---			
19	---	---	---				---	---	---			
20	---	---	---				10.0	8.5	9.5			
21	---	---	---				12.0	9.0	10.0			
22	---	---	---				12.5	11.5	12.0			
23	---	---	---				13.0	12.0	12.0			
24	---	---	---				13.0	11.5	12.0			
25	---	---	---				12.0	11.5	12.0			
26	---	---	---				---	---	---			
27	---	---	---				---	---	---			
28	---	---	---				---	---	---			
29	---	---	---				---	---	---			
30	---	---	---				---	---	---			
31	---	---	---				---	---	---			
MONTH	---	---	---				---	---	---			

SNOHOMISH RIVER BASIN

199

12138160 SULTAN RIVER BELOW POWERPLANT NEAR SULTAN, WA

LOCATION.--Lat 47°54'27", long 121°48'51", in SW¼SW¼ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank, 100 ft downstream from Henry M. Jackson powerplant, 3.2 mi north of Sultan, and at mile 4.5.

DRAINAGE AREA.--94.2 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 267.0 ft above National Geodetic Vertical Datum of 1929 (levels by Snohomish County Public Utility District).

REMARKS.--No estimated daily discharges. Records good. City of Everett diverts about 91 ft³/s daily into Lake Chaplain for municipal use. Flow regulated at Spada Lake (station 12137300) since April 5, 1965; unadjusted for storage. Since May 1984, water is diverted from Spada Lake through a 10-ft diameter, 4-mi long pipeline for power production and returned to the river upstream from the station. Since July 1984, an undetermined flow was returned to river at upstream diversion dam by pipeline from Lake Chaplain for instream flow requirement.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,710 ft³/s Nov. 3, 1985, gage height, 11.53 ft; minimum discharge, 139 ft³/s Dec. 14, 1985, gage height, 4.52 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,710 ft³/s Nov. 3, gage height, 11.53 ft; minimum discharge, 139 ft³/s Dec. 14, gage height, 4.52 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	3250	1120	271	1380	1340	1090	479	966	471	191	170
2	187	7780	813	266	1370	1330	994	460	969	204	185	170
3	186	7930	277	219	1370	1310	766	489	715	194	185	170
4	216	4190	268	207	851	1300	752	465	505	190	183	170
5	316	2500	253	230	615	1110	584	475	442	192	183	170
6	323	2240	254	400	578	1310	566	630	436	192	185	168
7	320	2670	257	247	755	1320	539	730	444	190	184	168
8	313	2050	253	257	770	1320	424	730	445	193	181	169
9	313	1580	229	269	538	1310	424	736	439	191	181	170
10	313	1430	326	463	752	1310	546	742	351	192	179	170
11	368	1400	197	542	793	1260	329	653	259	187	182	166
12	325	1400	193	656	794	1240	325	773	202	182	183	168
13	301	1390	215	1240	595	1230	329	1580	202	183	183	168
14	396	1390	184	765	377	1220	317	1540	205	183	241	171
15	404	1360	205	508	392	1170	332	1490	207	181	181	193
16	438	1380	200	358	397	729	332	1430	208	207	181	215
17	375	1340	199	790	385	725	344	846	196	514	181	216
18	347	1330	197	2230	397	733	336	627	213	246	181	218
19	343	1360	188	1980	673	633	325	617	326	207	178	217
20	360	1180	189	1450	526	754	325	781	284	198	178	219
21	368	1320	190	1410	394	685	415	1180	310	199	173	217
22	417	1300	186	1410	398	334	336	1370	301	444	168	220
23	504	1260	189	1480	692	329	420	984	304	582	170	272
24	1020	1110	187	1460	1310	639	424	704	519	444	170	260
25	5500	1090	185	1410	1540	764	325	600	534	200	170	239
26	3640	1090	185	1380	1460	605	329	581	530	192	169	239
27	5150	1170	185	1370	1420	549	344	581	533	191	168	243
28	3240	1120	188	1360	1400	311	340	581	529	192	168	285
29	2020	1120	191	1350	---	260	460	618	529	184	169	434
30	1560	1120	194	1360	---	330	415	695	529	184	172	296
31	1500	---	193	1380	---	584	---	844	---	183	172	---
TOTAL	31246	60850	8090	28718	22922	28044	13787	25011	12632	7492	5575	6351
MEAN	1008	2028	261	926	819	905	460	807	421	242	180	212
MAX	5500	7930	1120	2230	1540	1340	1090	1580	969	582	241	434
MIN	183	1090	184	207	377	260	317	460	196	181	168	166
AC-FT	61980	120700	16050	56960	45470	55630	27350	49610	25060	14860	11060	12600
CAL YR 1985	TOTAL	248141	MEAN	680	MAX	7930	MIN	157	AC-FT	492200		
WTR YR 1986	TOTAL	250718	MEAN	687	MAX	7930	MIN	166	AC-FT	497300		

12138160 SULTAN RIVER BELOW POWERPLANT, NEAR SULTAN, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

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

SNOHOMISH RIVER BASIN

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA

LOCATION.--Lat 47°29'10", long 121°38'48", in SW¼SE¼ sec.10, T.23 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.7 mi downstream from Granite Creek, 6.4 mi east of North Bend, and at mile 55.6.

DRAINAGE AREA.--154 mi².

PERIOD OF RECORD.--February 1961 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 780 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 24-26. Records good. No regulation or diversion upstream from station. Water temperatures June 1979 to September 1980.

AVERAGE DISCHARGE.--25 years, 1,251 ft³/s, 110.32 in/yr, 906,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft³/s Dec. 2, 1977, gage height, 14.93 ft; minimum discharge, 111 ft³/s Oct. 13, 14, 1979, gage height, 1.00 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, reached a stage of 18.7 ft from floodmarks, discharge, 49,000 ft³/s by slope-area measurement at site 6 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0100	15,700	11.02	Nov. 3	0515	11,800	9.73
Oct. 26	2015	9,620	8.94	Jan. 18	2345	12,600	10.01
Nov. 1	2045	*17,900	11.71	Feb. 24	0045	17,300	11.53
Nov. 1	2045	(a)	*12.89	Feb. 25	0830	10,700	9.35

Minimum discharge, 129 ft³/s Sept. 13, gage height, 0.95 ft.

(a) From crest-stage gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	168	8610	368	473	1180	1690	1120	830	2620	520	305	174		
2	187	10200	396	449	1040	1370	989	892	2160	539	306	163		
3	344	8490	415	425	875	1190	876	1140	1800	539	311	164		
4	258	5040	404	405	786	1200	808	1090	1630	607	306	160		
5	218	3150	428	448	912	1150	740	1180	1360	541	292	151		
6	207	3640	566	777	760	1060	690	1010	1260	466	283	142		
7	229	3230	604	598	665	1950	702	919	1090	437	274	136		
8	219	2230	529	627	598	2410	841	902	1050	443	264	133		
9	199	1630	448	643	552	1700	872	899	934	429	257	133		
10	187	1240	402	740	511	1320	816	990	1020	522	254	152		
11	519	1010	373	992	478	1210	746	970	1100	1030	246	163		
12	1230	872	351	767	434	1110	736	1700	1080	1050	242	138		
13	811	772	330	686	409	967	671	4900	948	753	235	132		
14	1570	693	314	634	397	915	606	2380	969	599	223	136		
15	4230	785	307	595	495	798	632	1610	884	533	214	147		
16	2710	1480	305	706	1310	713	676	1260	769	751	204	166		
17	1610	1040	324	1020	767	671	807	1180	693	2250	192	146		
18	1090	833	379	5520	615	851	971	1550	839	1110	182	173		
19	1080	738	413	6790	517	1250	764	2240	938	810	175	166		
20	1880	672	441	2330	484	1050	788	2990	775	692	173	164		
21	1300	606	472	1470	479	1260	1110	1970	721	622	170	148		
22	1970	544	468	1170	661	1160	1360	1700	698	574	169	135		
23	2390	488	544	1300	6550	1000	1020	1370	766	544	167	474		
24	6940	474	587	1160	11900	1320	819	1280	796	497	163	1260		
25	9880	456	631	917	8700	1030	807	2030	736	455	159	625		
26	5860	442	603	784	4590	1050	801	2840	659	431	159	496		
27	5310	429	540	802	2500	1030	1380	2480	571	404	161	518		
28	3240	399	476	843	1970	1210	1510	2460	568	371	168	1320		
29	1860	375	439	733	---	1300	1080	2640	618	349	176	2580		
30	1550	349	418	866	---	1990	905	3040	560	332	184	2050		
31	1400	---	390	1080	---	1420	---	2900	---	316	187	---		
TOTAL	60646	60917	13665	36750	51135	38345	26643	55342	30612	19516	6801	12645		
MEAN	1956	2031	441	1185	1826	1237	888	1785	1020	630	219	422		
MAX	9880	10200	631	6790	11900	2410	1510	4900	2620	2250	311	2580		
MIN	168	349	305	405	397	671	606	830	560	316	159	132		
CFSM	12.7	13.2	2.86	7.69	11.9	8.03	5.77	11.6	6.62	4.09	1.42	2.74		
IN.	14.65	14.72	3.30	8.88	12.35	9.26	6.44	13.37	7.39	4.71	1.64	3.05		
AC-FT	120300	120800	27100	72890	101400	76060	52850	109800	60720	38710	13490	25080		
CAL YR 1985	TOTAL	427113	MEAN	1170	MAX	10200	MIN	152	CFSM	7.60	IN.	103.17	AC-FT	847200
WTR YR 1986	TOTAL	413017	MEAN	1132	MAX	11900	MIN	132	CFSM	7.35	IN.	99.77	AC-FT	819200

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA

LOCATION.--Lat 47°36'54", long 121°42'44", in NW¼NW¼ sec.31, T.25 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi upstream from Calligan Creek, 7.0 mi northeast of town of Snoqualmie Falls, and at mile 9.2.

DRAINAGE AREA.--64.0 mi².

PERIOD OF RECORD.--August 1929 to October 1949, water years 1950-60 (annual maximum), February 1961 to current year.

REVISED RECORDS.--WSP 1346: 1930-31(M), 1932, 1935, 1936-37(M), 1938, 1939-42(M), 1944, 1945-46(P), 1947, 1948(P), 1949(M).
WSP 1736: 1932-34(M), 1935, 1938(M), 1943-45(M), 1947(M), drainage area. WSP 1932: 1950-54(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,130 ft, from topographic map. Prior to Oct. 19, 1949, water-stage recorder, and October 1949 to February 1961, crest-stage gage, at site 1,500 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Daily water temperatures June 1979 to August 1980.

AVERAGE DISCHARGE.--45 years (water years 1930-49, 1962-86), 499 ft³/s, 105.88 in/yr, 361,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 2,200 ft³/s on basis of slope-area measurement at gage height 16.47 ft; minimum discharge observed, 30 ft³/s Sept. 17-19, 1929.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0230	6,890	9.50	Jan. 18	2345	6,200	9.08
Oct. 26	1830	5,360	8.53	Feb. 24	0145	*8,000	*10.13
Nov. 1	2045	7,410	9.80	Feb. 25	0815	4,730	8.09
Nov. 3	0430	5,430	8.58	May 13	0530	4,090	7.67

Minimum discharge, 46 ft³/s Sept. 7-10, gage height, 1.75 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	78	3640	130	203	539	578	438	329	733	151	102	59		
2	88	3720	157	199	439	471	391	401	597	171	98	56		
3	150	3550	192	194	362	404	351	537	530	154	94	54		
4	108	1760	130	178	326	409	320	465	478	170	89	52		
5	96	1100	206	222	398	385	297	479	391	157	86	50		
6	93	1400	280	471	322	344	273	399	362	143	82	48		
7	100	1290	333	315	280	752	265	359	340	133	79	47		
8	94	854	295	373	250	849	304	354	345	127	76	46		
9	85	633	241	372	229	568	314	353	297	120	73	46		
10	81	495	211	410	211	443	288	411	329	161	69	52		
11	238	405	194	544	199	414	267	388	338	319	69	57		
12	371	348	181	379	184	412	287	863	319	315	69	54		
13	309	308	168	347	172	357	271	2530	284	233	69	54		
14	724	279	160	337	168	332	243	1150	296	184	67	55		
15	1520	408	153	301	222	293	273	797	300	165	65	55		
16	1090	1030	149	394	688	263	307	618	246	226	62	58		
17	602	537	151	497	355	249	327	576	217	994	60	57		
18	398	398	169	2810	273	327	465	743	297	425	59	55		
19	375	346	183	2850	229	592	360	900	360	289	57	56		
20	736	308	213	857	213	448	375	1210	279	234	56	58		
21	484	275	238	563	210	566	539	798	247	202	55	57		
22	825	245	223	470	231	546	549	775	229	181	53	52		
23	895	216	254	566	2420	452	398	697	241	166	52	380		
24	2700	205	272	472	4810	667	324	642	236	154	51	696		
25	3990	203	294	369	3250	466	322	804	209	143	51	306		
26	2700	194	269	319	1380	461	335	945	188	136	51	342		
27	2140	187	233	336	803	437	549	779	169	130	50	314		
28	1250	176	204	373	674	523	581	746	168	123	49	919		
29	729	167	190	308	---	540	415	787	174	118	50	1500		
30	610	153	183	412	---	881	350	862	162	111	55	864		
31	555	---	170	528	---	577	---	824	---	106	60	---		
TOTAL	24214	24830	6476	16969	19837	15006	10778	22521	9361	6441	2058	6499		
MEAN	781	828	209	547	708	484	359	726	312	208	66.4	217		
MAX	3990	3720	333	2850	4810	881	581	2530	733	994	102	1500		
MIN	78	153	130	178	168	249	243	329	162	106	49	46		
CFSM	12.2	12.9	3.27	8.55	11.1	7.56	5.61	11.3	4.87	3.25	1.04	3.39		
IN.	14.07	14.43	3.76	9.86	11.53	8.72	6.26	13.09	5.44	3.74	1.20	3.78		
AC-FT	48030	49250	12850	33660	39350	29760	21380	44670	18570	12780	4080	12890		
CAL YR 1985	TOTAL	169860	MEAN	465	MAX	3990	MIN	53	CFSM	7.27	IN.	98.73	AC-FT	336900
WTR YR 1986	TOTAL	164990	MEAN	452	MAX	4810	MIN	46	CFSM	7.06	IN.	95.90	AC-FT	327300

SNOHOMISH RIVER BASIN

12143400 SOUTH FORK SNOQUALMIE RIVER ABOVE ALICE CREEK, NEAR GARCIA, WA

LOCATION.--Lat 47°24'55", long 121°35'10", in SW¼SW¼ sec.6, T.22 N., R.10 E., King County, Hydrologic Unit 17110010, Snoqualmie National Forest, on left bank 0.4 mi upstream from Alice Creek, 1.5 mi southeast of Garcia, 11 mi southeast of North Bend, and at mile 17.3.

DRAINAGE AREA.--41.6 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR WA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,447.67 ft above Washington Highway Department datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 3. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--26 years, 301 ft³/s, 98.26 in/yr, 218,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,090 ft³/s Nov. 19, 1962, gage height, 11.96 ft; minimum discharge, 25 ft³/s Oct. 25, 26, 27, 1974, gage height, 0.99 ft; minimum gage height, 0.06 ft all or part of each day Oct. 10-14, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in November and December 1959 reached stages of 14.7 ft and 13.4 ft respectively, from flood marks, discharges not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0045	3,570	5.06	Jan. 19	0245	1,840	3.42
Oct. 26	1815	2,010	3.60	Feb. 24	0330	4,200	5.56
Nov. 1	2130	*4,780	*5.99	Feb. 25	0745	2,590	4.19
Nov. 3	0615	2,540	4.14	May 13	0615	1,580	3.12

Minimum discharge, 26 ft³/s Sept. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	36	2010	79	75	233	562	346	233	635	91	60	31		
2	41	2270	84	64	226	484	297	249	499	92	58	30		
3	66	1940	92	63	211	435	263	334	438	89	57	29		
4	47	1390	95	60	200	431	245	342	387	102	54	28		
5	42	917	88	60	211	425	230	344	338	87	54	27		
6	44	1100	95	67	185	403	232	299	301	80	52	27		
7	47	926	92	61	165	758	266	283	262	77	50	26		
8	43	660	85	62	151	826	326	290	244	75	48	27		
9	40	509	80	68	139	567	334	305	232	72	47	27		
10	39	399	77	83	131	457	290	316	248	97	47	32		
11	101	326	74	106	124	422	260	291	251	169	47	32		
12	189	275	71	99	114	376	236	431	228	157	44	27		
13	141	241	69	95	107	330	210	1140	206	118	42	27		
14	292	212	67	91	105	295	188	599	201	100	41	28		
15	520	205	67	92	112	255	195	442	175	90	39	32		
16	409	256	66	105	162	227	198	383	159	139	39	38		
17	277	212	68	203	124	212	224	382	146	366	37	32		
18	196	182	71	650	109	237	220	516	169	193	36	50		
19	240	167	69	1250	99	344	195	682	174	148	36	42		
20	338	156	66	544	98	356	232	765	148	125	34	39		
21	240	144	61	360	97	426	383	509	158	110	33	32		
22	394	132	66	288	141	355	425	419	147	99	32	29		
23	494	120	71	284	1100	310	302	347	148	92	31	128		
24	1890	109	73	255	2940	337	241	376	140	86	31	255		
25	2160	107	72	211	2130	284	237	617	125	81	31	123		
26	1330	105	86	185	1280	300	223	769	114	78	29	86		
27	1150	102	118	179	794	308	374	685	100	75	29	88		
28	719	97	98	169	625	403	382	684	106	70	29	305		
29	453	91	76	157	---	425	298	708	105	68	31	487		
30	396	85	69	184	---	535	253	773	93	64	34	427		
31	333	---	65	200	---	424	---	695	---	62	33	---		
TOTAL	12707	15445	2410	6370	12113	12509	8105	15208	6677	3352	1265	2591		
MEAN	410	515	77.7	205	433	404	270	491	223	108	40.8	86.4		
MAX	2160	2270	118	1250	2940	826	425	1140	635	366	60	487		
MIN	36	85	61	60	97	212	188	233	93	62	29	26		
CFSM	9.86	12.4	1.87	4.93	10.4	9.71	6.49	11.8	5.36	2.60	.98	2.08		
IN.	11.36	13.81	2.16	5.70	10.83	11.19	7.25	13.60	5.97	3.00	1.13	2.32		
AC-FT	25200	30640	4780	12630	24030	24810	16080	30170	13240	6650	2510	5140		
CAL YR 1985	TOTAL	104294	MEAN	286	MAX	2270	MIN	29	CFSM	6.87	IN.	93.26	AC-FT	206900
WTR YR 1986	TOTAL	98752	MEAN	271	MAX	2940	MIN	26	CFSM	6.51	IN.	88.31	AC-FT	195900

205

LOCATION.--Lat 47°27'10", long 121°43'00", in NE¼NE¼ sec.25, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank at upstream side of highway bridge in Edgewick, 3 mi downstream from Change Creek, and at mile 8.6.

PERIOD OF RECORD.--July to October 1962, March 1963 to September 1965, October 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 571.24 ft above National Geodetic Vertical Datum of 1929. Prior to August 3, 1983, gage at site 45 ft downstream at elevation 5.90 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--5 years (water years 1964-65, 1984-86), 447 ft³/s, 92.11 in/yr, 323,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,420 ft³/s Jan. 24, 1984, gage height, 12.96 ft, from high-water mark; minimum discharge, 58 ft³/s Oct. 10, 11, 1963, Sept. 4, 5, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 24	2215	4,590	11.16	Feb. 24	0500	*5,400	*11.59
Oct. 26	1900	2,960	10.16	Feb. 25	0845	3,540	10.55
Nov. 1	2300	5,190	11.48	May 13	0745	2,400	9.75
Jan. 19	0215	2,900	10.12				

Minimum discharge, 63 ft³/s Oct. 1, 2; minimum gage height, 6.59 ft Sept 5-10, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	63	2270	129	129	411	824	509	312	934	136	104	76		
2	65	3070	149	125	394	700	425	323	747	138	102	75		
3	84	2650	168	124	348	608	365	458	639	133	99	73		
4	73	2040	170	120	317	583	330	484	565	148	97	72		
5	68	1400	162	127	347	578	301	519	476	136	95	72		
6	68	1650	173	148	300	529	297	448	428	126	94	70		
7	69	1490	181	134	269	977	320	396	363	121	92	70		
8	68	1090	165	138	244	1200	411	391	337	119	91	70		
9	65	836	151	149	229	845	422	404	310	116	89	70		
10	64	649	142	186	216	669	371	439	327	132	87	76		
11	108	515	137	232	204	606	327	397	329	231	87	79		
12	198	426	131	218	191	540	300	574	307	225	89	73		
13	171	365	127	207	181	462	264	1830	273	181	87	71		
14	265	315	124	192	176	412	236	1070	271	154	84	72		
15	697	304	122	189	189	344	242	760	241	141	82	75		
16	546	439	121	213	292	300	250	628	220	182	81	81		
17	375	362	120	405	221	281	278	599	203	593	81	77		
18	248	298	124	1200	197	311	289	759	223	314	79	95		
19	272	272	127	2110	178	516	254	1020	238	231	79	87		
20	507	253	127	971	170	513	272	1200	207	195	78	85		
21	337	234	121	626	175	610	458	840	216	174	78	78		
22	627	214	122	500	224	515	576	695	202	159	76	74		
23	925	191	134	497	1450	436	399	568	201	148	76	172		
24	2370	178	141	444	4050	517	302	569	195	139	76	424		
25	3200	174	135	353	3010	419	294	891	178	132	75	209		
26	2060	170	127	301	1950	443	282	1150	166	127	75	152		
27	1920	167	124	286	1200	436	518	1020	151	122	73	142		
28	1270	158	132	276	933	551	622	1010	150	117	73	496		
29	821	149	145	258	---	611	445	1020	156	114	75	792		
30	710	139	136	299	---	759	356	1110	143	108	77	763		
31	592	---	124	358	---	649	---	1030	---	106	78	---		
TOTAL	18906	22468	4291	11515	18066	17744	10715	22914	9396	5198	2609	4821		
MEAN	610	749	138	371	645	572	357	739	313	168	84.2	161		
MAX	3200	3070	181	2110	4050	1200	622	1830	934	593	104	792		
MIN	63	139	120	120	170	281	236	312	143	106	73	70		
CFSM	9.26	11.4	2.09	5.63	9.79	8.68	5.42	11.2	4.75	2.55	1.28	2.44		
IN.	10.67	12.68	2.42	6.50	10.20	10.02	6.05	12.93	5.30	2.93	1.47	2.72		
AC-FT	37500	44570	8510	22840	35830	35200	21250	45450	18640	10310	5170	9560		
CAL YR 1985	TOTAL	150286	MEAN	412	MAX	3200	MIN	59	CFSM	6.25	IN.	84.84	AC-FT	298100
WTR YR 1986	TOTAL	148643	MEAN	407	MAX	4050	MIN	63	CFSM	6.18	IN.	83.91	AC-FT	294800

SNOHOMISH RIVER BASIN

12143700 BOXLEY CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'58", long 121°45'04", in NE1SW¼ sec.35, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on left bank 1.7 mi northeast of town of Cedar Falls, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--1.57 mi².

PERIOD OF RECORD.--August 1945 to current year. Prior to October 1960 published in WSP 1932.

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

REMARKS.--Estimated daily discharges: Dec. 13 to Feb. 11. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--41 years, 24.1 ft³/s, 17,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189 ft³/s Dec. 19, 1977, gage height, 2.88 ft, maximum gage height, 3.13 ft Feb. 28, 1982; no flow part or all of each day Oct. 28 to Nov. 9, 1966, Nov. 5-8, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 68 ft³/s several days in May and June, gage height, 2.99 ft; minimum discharge, 1.2 ft³/s Oct. 31, Nov. 1-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	1.2	32	4.0	2.5	4.0	29	30	68	34	16	7.4
2	5.3	1.3	30	3.8	2.5	4.0	29	30	68	33	16	7.0
3	5.0	1.3	29	3.7	2.5	4.0	29	30	66	32	16	6.6
4	5.0	1.4	27	3.7	2.5	4.2	29	30	64	31	16	6.2
5	4.8	1.5	25	3.6	2.5	4.5	29	31	64	30	16	5.9
6	4.4	1.6	23	3.4	2.5	4.9	30	31	64	29	15	5.8
7	4.4	1.5	22	3.4	2.5	5.6	30	32	63	28	15	5.6
8	4.2	1.7	20	3.2	2.5	6.6	29	34	63	28	15	5.3
9	4.0	2.0	18	3.1	2.5	7.9	29	35	61	27	15	4.9
10	3.6	2.6	17	3.1	2.5	9.4	30	35	61	27	15	4.8
11	3.6	3.7	16	3.1	2.5	11	30	36	61	26	14	4.5
12	3.6	5.5	15	3.0	2.5	13	30	37	60	25	14	4.3
13	3.4	6.9	14	2.9	2.5	15	30	41	59	24	14	4.1
14	3.2	9.5	12	2.9	2.5	17	31	42	58	23	13	3.9
15	3.2	13	11	2.9	2.7	19	31	43	55	23	13	3.6
16	2.8	16	9.9	2.9	2.8	21	31	44	53	22	13	3.4
17	2.7	20	9.2	2.9	2.7	22	30	48	52	22	13	3.2
18	2.3	24	8.5	3.0	2.8	24	30	50	51	21	12	3.1
19	2.3	27	8.1	3.1	2.8	25	30	52	48	21	12	2.8
20	2.2	31	7.5	2.8	2.8	26	30	56	47	20	11	2.7
21	2.0	34	6.9	2.8	2.9	28	30	60	45	20	11	2.4
22	2.0	35	6.6	2.8	3.0	28	30	62	45	19	10	2.2
23	2.0	37	6.0	2.9	3.5	28	30	66	43	19	10	2.2
24	2.2	37	5.8	2.8	4.0	28	30	66	42	19	9.9	2.1
25	2.8	37	5.0	2.7	4.2	29	30	67	41	18	9.8	1.9
26	2.7	37	4.8	2.6	4.0	29	30	66	39	18	9.4	1.8
27	2.0	36	4.6	2.5	4.0	29	30	67	38	17	9.0	1.8
28	1.8	36	4.4	2.5	4.0	29	30	68	37	17	8.7	1.6
29	1.6	35	4.4	2.5	---	29	30	68	36	17	8.5	1.6
30	1.5	33	4.2	2.5	---	29	30	67	35	17	8.1	1.4
31	1.3	---	4.0	2.5	---	29	---	67	---	17	7.7	---
TOTAL	97.2	529.7	410.9	93.6	81.2	563.1	896	1491	1587	724	386.1	114.1
MEAN	3.14	17.7	13.3	3.02	2.90	18.2	29.9	48.1	52.9	23.4	12.5	3.80
MAX	5.3	37	32	4.0	4.2	29	31	68	68	34	16	7.4
MIN	1.3	1.2	4.0	2.5	2.5	4.0	29	30	35	17	7.7	1.4
AC-FT	193	1050	815	186	161	1120	1780	2960	3150	1440	766	226
CAL YR 1985	TOTAL	7186.3	MEAN	19.7	MAX	63	MIN	1.2	AC-FT	14250		
WTR YR 1986	TOTAL	6973.9	MEAN	19.1	MAX	68	MIN	1.2	AC-FT	13830		

SNOHOMISH RIVER BASIN

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12143800 RATTLESNAKE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'39", long 121°46'29", in SW¼SW¼ sec.34, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on southeast shore, and 0.6 mi northeast of town of Cedar Falls.

DRAINAGE AREA.--1.86 mi².

PERIOD OF RECORD.--November to December 1945 (fragmentary), January 1953 to current year. Extremes prior to October 1960 published in WSP 1932 and daily gage heights are available in files of the Geological Survey.

GAGE.--Nonrecording gage. Datum of gage is 7.25 ft above National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--No diversions. Inflow is mostly seepage from Chester Morse Lake. Most outflow from lake is seepage; however, when the lake level exceeds 906 ft gage height, surface-water discharge flows through Rattlesnake Ditch toward Boxley Creek.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 911.80 ft Nov. 25, 26, 1959; minimum observed, 852.80 ft Jan. 9, 1953, but may have been less during Dec. 13, 1965, to Jan. 3, 1966, and Nov. 10 to Dec. 23, 1970, when water was below gage.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 906.00 ft May 31 to June 2; minimum observed, 889.17 ft Sept. 30.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 0730

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	894.90	889.48	---	899.26	895.80	894.30	901.66	903.92	906.00	904.92	901.18	897.00
2	894.71	889.72	---	899.20	895.56	894.48	901.94	903.98	906.00	904.88	901.06	896.83
3	894.52	889.74	---	898.80	895.50	894.64	902.20	904.05	905.98	904.82	900.94	896.50
4	894.31	889.84	899.80	898.60	895.14	894.72	902.42	904.13	905.98	904.74	900.90	896.18
5	894.12	889.96	899.80	898.20	894.97	894.85	902.62	904.14	905.96	904.64	900.66	895.92
6	893.93	890.44	899.80	898.40	894.72	894.85	902.78	904.18	905.94	904.56	900.52	895.67
7	893.72	890.80	900.34	898.22	894.49	894.92	902.90	904.18	905.92	904.44	900.40	895.40
8	893.46	891.22	900.54	897.84	894.26	895.01	903.00	904.24	905.92	904.30	900.30	895.13
9	893.22	891.56	900.74	897.86	894.08	895.12	903.10	904.26	905.90	904.18	900.18	894.75
10	892.96	891.84	900.90	897.70	893.82	895.22	903.16	904.30	905.88	904.10	900.04	894.52
11	892.80	891.95	900.94	897.54	893.60	895.36	903.22	904.38	905.86	904.08	899.94	894.41
12	892.61	892.00	900.99	897.39	893.39	895.45	903.34	904.44	905.82	904.01	899.84	894.12
13	892.43	892.04	901.18	897.16	893.14	895.70	903.34	904.52	905.80	903.86	899.72	893.89
14	892.04	892.10	901.18	896.92	892.96	895.98	903.40	904.68	905.76	903.70	899.60	893.62
15	891.80	892.16	901.22	896.74	892.78	896.22	903.44	904.86	905.76	903.62	899.50	893.32
16	891.59	892.46	901.20	896.56	892.64	896.41	903.46	905.02	905.72	903.48	899.38	893.09
17	891.32	892.74	901.24	896.42	892.66	896.74	903.48	905.07	905.68	903.42	899.24	892.80
18	891.11	893.06	901.18	896.30	892.48	897.04	903.54	905.26	905.64	903.27	899.12	892.60
19	890.84	893.46	901.12	896.18	892.30	897.32	903.52	905.36	905.64	903.14	899.00	892.28
20	890.60	893.94	901.00	896.34	892.11	897.80	903.52	905.44	905.62	903.00	898.88	892.01
21	890.40	894.44	900.92	896.40	891.93	898.10	903.52	905.54	905.60	902.92	898.76	891.74
22	890.24	894.96	900.78	896.42	892.02	898.40	903.54	905.62	905.54	902.68	898.60	891.48
23	890.07	895.40	900.64	896.47	892.10	898.80	903.56	905.68	905.56	902.56	898.50	891.22
24	889.89	895.89	900.52	896.70	892.24	899.20	903.54	905.74	905.42	902.38	898.34	890.98
25	889.94	896.42	900.38	896.70	892.60	899.54	903.56	905.80	905.35	902.22	898.20	890.65
26	889.80	896.90	900.24	896.60	893.12	899.89	903.58	905.88	905.28	902.08	898.02	890.36
27	890.86	897.40	900.08	896.54	893.54	900.20	903.59	905.92	905.22	901.92	897.82	890.09
28	889.80	897.94	899.90	896.46	894.02	900.48	903.70	905.96	905.16	901.76	897.62	889.80
29	889.70	898.18	899.82	896.30	---	900.86	903.76	905.98	905.08	901.64	897.44	889.48
30	889.62	898.39	---	896.14	---	901.12	903.84	905.98	905.02	901.46	897.26	889.17
31	889.57	---	899.36	895.96	---	901.40	---	906.00	---	901.32	897.06	---
MAX	894.90	898.39	---	899.26	895.80	901.40	903.84	906.00	906.00	904.92	901.18	897.00
MIN	889.57	889.48	---	895.96	891.93	894.30	901.66	903.92	905.02	901.32	897.06	889.17

SNOHOMISH RIVER BASIN

12143900 BOXLEY CREEK NEAR EDGEWICK, WA

LOCATION.--Lat 47°26'56", long 121°43'50", in SW¼SE¼NW¼ sec.25, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 4.0 mi southeast of North Bend, and at mile 0.9.

DRAINAGE AREA.--3.64 mi².

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 650 ft, from topographic map.

REMARKS.--Estimated daily discharges: Apr. 21-29. Records fair. Many small diversions for domestic use upstream from station. No regulation; flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--5 years (water years 1982-86), 37.0 ft³/s, 26,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 173 ft³/s Feb. 24, 1982, gage height, 5.07 ft; minimum daily discharge, 11 ft³/s Nov. 13-15, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 85.1 ft³/s May 23, gage height, 4.77 ft; minimum discharge, 15 ft³/s Sept. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	23	43	25	22	25	41	39	70	32	28	22
2	17	27	44	22	22	25	41	40	70	37	29	22
3	17	26	41	23	22	24	40	40	68	37	29	21
4	17	29	40	22	22	24	41	42	70	37	29	20
5	16	29	39	25	22	24	41	39	70	36	29	20
6	16	30	38	24	22	25	41	39	68	35	28	20
7	16	29	40	23	22	26	40	38	68	34	29	19
8	16	26	37	24	21	28	41	40	70	33	30	19
9	16	24	35	22	21	29	41	48	70	34	31	19
10	16	22	33	22	21	30	40	43	68	35	31	19
11	17	22	32	22	20	30	41	48	67	34	31	18
12	18	22	31	21	20	30	43	42	64	35	31	18
13	19	24	31	21	20	32	40	42	63	36	31	18
14	19	28	30	21	20	34	40	42	62	36	31	18
15	19	31	30	21	23	35	40	42	63	36	30	18
16	20	34	30	22	22	35	41	42	64	36	29	17
17	20	37	30	23	22	37	40	61	48	35	28	17
18	20	39	30	32	22	38	42	62	44	34	28	18
19	21	43	29	31	22	38	41	64	41	33	27	17
20	20	45	28	28	22	38	40	64	41	33	26	16
21	19	46	28	25	22	38	40	66	42	32	25	16
22	23	44	27	27	22	38	40	68	42	32	25	16
23	21	45	26	30	30	39	38	70	41	31	25	18
24	24	45	26	29	34	41	38	72	40	31	25	17
25	27	46	25	26	33	41	40	74	40	31	25	16
26	29	45	24	24	31	41	40	74	39	30	24	16
27	28	45	23	23	28	40	40	76	37	30	24	17
28	26	45	23	22	26	41	42	76	35	29	23	17
29	22	44	23	22	---	41	42	76	31	29	23	18
30	23	44	22	22	---	41	40	72	31	28	22	18
31	23	---	22	22	---	42	---	70	---	28	22	---
TOTAL	622	1039	960	746	656	1050	1215	1711	1627	1029	848	545
MEAN	20.1	34.6	31.0	24.1	23.4	33.9	40.5	55.2	54.2	33.2	27.4	18.2
MAX	29	46	44	32	34	42	43	76	70	37	31	22
MIN	16	22	22	21	20	24	38	38	31	28	22	16
AC-FT	1230	2060	1900	1480	1300	2080	2410	3390	3230	2040	1680	1080
CAL YR 1985	TOTAL	12661	MEAN	34.7	MAX	79	MIN	16	AC-FT	25110		
WTR YR 1986	TOTAL	12048	MEAN	33.0	MAX	76	MIN	16	AC-FT	23900		

12144000 SOUTH FORK SNOQUALMIE RIVER AT NORTH BEND, WA

LOCATION.--Lat 47°29'35", long 121°47'20", in SW¼NE¼ sec.9, T.23 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank on upstream side of Bendigo Street crossing at North Bend, and at mile 2.0.

DRAINAGE AREA.--81.7 mi².

PERIOD OF RECORD.--July 1907 to September 1926, February 1929 to September 1938, June 1945 to April 1950, October 1960 to August 1974, February 1984 to current year.

REVISED RECORDS.--WSP 1316: 1918-19(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.33 ft above National Geodetic Vertical Datum of 1929. Prior to April 11, 1950, nonrecording gage or water-stage recorder at several sites within 0.5 mi upstream from present site at various datums. October 1, 1960 to March 10, 1965, at site 0.46 mi upstream at datum 1.86 ft lower. March 10, 1965 to August 31, 1974, at site 0.46 mi upstream at datum 6.86 ft lower.

REMARKS.--No estimated daily discharges. Records good. City of North Bend diverts about 0.8 ft³/s daily from Clough Creek for municipal use. No regulation.

AVERAGE DISCHARGE.--47 years (1907-26, 1929-38, 1945-49, 1960-73, 1985-86), 546 ft³/s, 90.75 in/yr, 395,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 9,280 ft³/s Nov. 20, 1962, gage height, 13.09 ft, site and datum then in use, from rating curve extended above 1,600 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 15.2 ft, from high-water mark, site and datum then in use, Oct. 25, 1934; minimum discharge, 63 ft³/s Oct. 22, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 22, 1959, reached a stage of 14.49 ft, site and datum then in use, from floodmarks, discharge, 13,000 ft³/s, slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0345	4,530	13.75	Jan. 19	0415	2,690	11.64
Oct. 26	2030	2,800	11.79	Feb. 24	0715	*5,400	*14.67
Nov. 1	2315	4,990	14.24	May 13	0900	2,270	11.12

Minimum discharge, 108 ft³/s Sept. 6, 12, 13; minimum gage height, 7.41 ft Oct. 1-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	2070	228	203	414	994	700	506	981	210	159	122
2	135	3060	224	205	424	880	616	491	832	210	155	121
3	144	2580	237	205	420	800	555	603	732	205	153	120
4	147	1920	242	203	394	758	522	652	671	219	146	115
5	141	1350	242	203	388	728	486	705	589	207	145	113
6	138	1520	242	214	384	698	474	649	540	196	144	111
7	137	1450	256	214	356	962	478	591	491	188	145	110
8	137	1120	262	214	330	1270	572	574	465	186	143	110
9	137	903	258	214	310	981	570	586	431	183	140	110
10	137	736	252	223	297	831	544	615	442	193	136	116
11	158	618	242	263	284	770	505	592	442	274	136	120
12	228	536	236	271	270	710	482	703	422	285	136	110
13	241	475	228	268	258	657	430	1770	378	247	137	109
14	267	426	223	262	252	598	392	1170	377	218	135	111
15	724	408	220	255	255	536	392	874	347	206	133	111
16	584	509	216	258	358	480	408	748	318	220	132	112
17	480	486	211	435	317	463	431	709	299	584	131	112
18	340	428	211	1010	289	474	451	803	317	389	129	124
19	314	402	211	2070	265	674	409	1010	333	299	129	123
20	523	379	211	1030	256	680	416	1200	299	258	127	123
21	439	358	204	713	255	794	576	930	303	235	124	120
22	584	335	200	593	278	704	708	814	289	216	124	113
23	917	310	199	584	1200	604	578	701	283	207	123	163
24	2060	290	201	550	4190	728	475	673	277	199	122	432
25	3320	286	202	465	3120	633	462	890	262	191	122	252
26	1930	286	205	408	2140	651	453	1140	248	186	122	193
27	1920	286	197	387	1380	633	638	1040	228	180	121	176
28	1270	278	200	370	1130	680	809	1040	226	175	121	448
29	853	265	202	352	---	771	649	1040	229	171	122	727
30	728	257	202	357	---	882	552	1110	218	164	122	808
31	644	---	199	383	---	832	---	1060	---	161	122	---
TOTAL	19912	24327	6863	13382	20214	22856	15733	25989	12269	7062	4136	5735
MEAN	642	811	221	432	722	737	524	838	409	228	133	191
MAX	3320	3060	262	2070	4190	1270	809	1770	981	584	159	808
MIN	135	257	197	203	252	463	392	491	218	161	121	109
CFSM	7.86	9.93	2.71	5.29	8.84	9.02	6.41	10.3	5.01	2.79	1.63	2.34
IN.	9.07	11.08	3.12	6.09	9.20	10.41	7.16	11.83	5.59	3.22	1.88	2.61
AC-FT	39500	48250	13610	26540	40090	45330	31210	51550	24340	14010	8200	11380
CAL YR 1985	TOTAL	182041	MEAN	499	MAX	3320	MIN	125	CFSM	6.11	IN.	82.89
WTR YR 1986	TOTAL	178478	MEAN	489	MAX	4190	MIN	109	CFSM	5.99	IN.	81.27
									AC-FT			354000

12144500 SNOQUALMIE RIVER NEAR SNOQUALMIE, WA

LOCATION.--Lat 47°32'43", long 121°50'28", in SW¼SW¼ sec.19, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank 0.3 mi downstream from Snoqualmie Falls, 0.4 mi upstream from Tokul Creek, 1.5 mi northwest of Snoqualmie, and at mile 40.0.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--May 1898 to July 1899; August to September 1899 (monthly discharge only); January to July 1900, September 1902 to July 1904; August to September 1904 (monthly discharge only); October 1904 to September 1905 and November to December 1906 (gage heights only); August 1907 to May 1926 (monthly discharge only); June 1926 to September 1927; October 1927 to September 1932 (monthly discharge only); August 1958 to current year. Published as "near Snoqualmie Falls" 1904-06.

GAUGE.--Water-stage recorder. Elevation of gage is 120 ft, from river-profile map. Prior to Nov. 3, 1902, and Nov. 1 to Dec. 31, 1906, nonrecording gages upstream and downstream from Snoqualmie Falls at different datum. Nov. 3, 1902, to Sept. 30, 1905, nonrecording gage at site 4 mi upstream and 300 ft downstream from South Fork, at different datum.

REMARKS.--Estimated daily discharges: Nov. 24 to Jan. 8, Jan. 21 to Feb. 15. Records good except for estimated daily discharges, which are fair. Medium and low flows affected by powerplant 0.1 mi upstream from station.

AVERAGE DISCHARGE.--56 years (water years 1899, 1903-04, 1908-32, 1959-86), 2,591 ft³/s, 93.83 in/yr, 1,877,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,000 ft³/s Nov. 23, 1959, gage height, 19.78 ft; minimum discharge, 9.7 ft³/s Aug. 14, 27, 1958, gage height, -0.53 ft; minimum daily discharge, 88 ft³/s Aug. 8, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32,500 ft³/s Feb. 24, gage height, 15.61 ft; minimum discharge, 275 ft³/s Oct. 2; minimum daily, 388 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	388	10400	940	1080	2600	3830	2720	1960	4590	977	703	499		
2	396	19500	960	1180	2500	3190	2420	2080	3970	1020	692	475		
3	664	16200	1170	1220	2300	2770	2170	2620	3330	988	686	465		
4	578	9950	1310	1170	1980	2670	1990	2580	3020	1100	673	465		
5	489	6470	1420	1190	2240	2640	1850	2770	2610	1010	662	449		
6	469	7420	1750	1940	2000	2400	1730	2490	2420	916	648	430		
7	496	6960	2020	1780	1800	3520	1700	2230	2160	857	631	417		
8	480	5060	1980	1600	1630	5240	1940	2180	2100	846	618	408		
9	446	3940	1640	1780	1490	3760	2030	2140	1900	822	602	415		
10	412	3060	1410	1800	1390	3010	1930	2410	1960	902	594	447		
11	809	2540	1300	2180	1300	2730	1770	2290	2050	1740	592	479		
12	1950	2200	1210	1820	1190	2630	1780	3190	2050	1870	589	437		
13	1670	1970	1130	1630	1100	2330	1640	9350	1810	1450	584	430		
14	2010	1770	1070	1550	1040	2200	1490	5630	1800	1150	559	438		
15	6710	1820	1020	1440	1190	1950	1500	4010	1750	1030	549	442		
16	4850	3600	990	1650	2770	1760	1680	3160	1520	1120	540	481		
17	3280	2640	970	2380	1910	1670	1760	2850	1380	4180	517	463		
18	2220	2150	1010	7170	1540	1820	2240	3300	1530	2440	511	509		
19	1880	1920	1040	15000	1330	2940	1870	4510	1870	1720	499	493		
20	3480	1760	1080	5500	1230	2610	1820	5810	1550	1420	496	484		
21	2620	1600	1110	5200	1230	2880	2400	4340	1450	1250	482	462		
22	3380	1450	1110	3600	1420	2880	2960	3830	1370	1130	479	440		
23	4780	1360	1130	3800	6510	2450	2400	3300	1420	1050	472	675		
24	9010	1300	1200	3550	25400	3190	1950	2910	1450	975	467	2790		
25	20000	1240	1250	2920	15400	2610	1880	3840	1350	904	471	1580		
26	10200	1210	1230	2390	9650	2550	1890	5190	1230	867	458	1190		
27	11100	1190	1060	2100	5570	2470	2540	4660	1100	842	455	1100		
28	6870	1120	1090	2200	4400	2690	3470	4510	1060	807	457	2700		
29	4330	1040	1000	1950	---	3070	2550	4630	1130	767	473	4780		
30	3530	990	990	2000	---	4040	2150	5110	1070	745	497	4440		
31	3120	---	950	2600	---	3460	---	5080	---	720	510	---		
TOTAL	112617	123830	37540	87370	104110	87960	62220	114960	58000	37615	17166	29281		
MEAN	3633	4128	1211	2818	3718	2837	2074	3708	1933	1213	554	976		
MAX	20000	19500	2020	15000	25400	5240	3470	9350	4590	4180	703	4780		
MIN	388	990	940	1080	1040	1670	1490	1960	1060	720	455	408		
CFSM	9.69	11.0	3.23	7.51	9.91	7.57	5.53	9.89	5.15	3.23	1.48	2.60		
IN.	11.17	12.28	3.72	8.67	10.33	8.73	6.17	11.40	5.75	3.73	1.70	2.90		
AC-FT	223400	245600	74460	173300	206500	174500	123400	228000	115000	74610	34050	58080		
CAL YR 1985	TOTAL	877821	MEAN	2405	MAX	20000	MIN	333	CFSM	6.41	IN.	87.08	AC-FT	1741000
WTR YR 1986	TOTAL	872669	MEAN	2391	MAX	25400	MIN	388	CFSM	6.38	IN.	86.57	AC-FT	1731000

12145500 RAGING RIVER NEAR FALL CITY, WA

LOCATION.--Lat 47°32'24", long 121°54'28", on west line sec.27, T.24 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank at highway bridge 2.0 mi southwest of Fall City, and 2.6 mi upstream from mouth.

DRAINAGE AREA.--30.6 mi².

PERIOD OF RECORD.--July 1945 to September 1950, water years 1951, and 1953-63 (annual maximum), December 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 250 ft, from topographic map. Prior to Oct. 1, 1950, water-stage recorder on left bank at present site and datum. August 1951 and January 1953 to February 1963, crest-stage gage only on left bank at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 3. Records good. Some small diversions for irrigation and domestic use upstream from station. No regulation.

AVERAGE DISCHARGE.--25 years (water years 1946-50, 1965-72, 1975-86), 136 ft³/s, 60.36 in/yr, 98,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,960 ft³/s Jan. 24, 1984, gage height, 5.74 ft; maximum gage height, 6.75 ft Feb. 9, 1951; minimum daily discharge, 4.4 ft³/s Aug. 21, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2300	*1,900	*4.64	Feb. 24	0100	1,550	4.35

Minimum discharge, 8.5 ft³/s on Sept. 6, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	11	263	69	154	127	157	165	120	39	15	13	11		
2	11	529	68	124	115	129	140	127	36	18	13	11		
3	14	549	108	179	122	109	120	176	33	16	12	11		
4	12	525	151	143	126	98	107	173	32	18	12	9.9		
5	11	413	217	175	167	87	94	242	31	17	12	9.7		
6	13	454	283	248	139	77	83	219	30	15	12	9.1		
7	14	766	320	175	119	104	75	170	29	14	11	8.5		
8	13	302	254	158	104	151	68	141	33	14	11	9.3		
9	12	253	186	143	94	115	84	132	30	13	11	9.7		
10	12	196	144	132	84	103	70	151	27	31	11	15		
11	20	153	118	113	78	114	80	159	25	44	11	15		
12	20	125	101	103	71	118	99	227	24	27	12	11		
13	17	106	87	93	65	114	77	416	22	21	12	11		
14	16	92	77	86	62	132	68	286	22	18	11	12		
15	20	121	71	85	121	104	78	217	23	18	10	11		
16	65	275	67	109	193	91	87	162	21	43	10	11		
17	45	213	66	276	133	97	85	129	21	67	10	11		
18	29	162	68	850	110	133	77	112	27	36	9.8	22		
19	31	139	73	949	96	157	68	101	25	27	9.8	14		
20	67	118	77	412	87	126	63	120	21	22	9.9	12		
21	48	104	72	272	94	153	60	131	21	20	9.7	11		
22	148	94	68	277	175	139	68	130	18	18	9.6	11		
23	155	89	65	431	497	144	86	105	18	18	9.6	44		
24	412	85	64	303	938	262	75	89	17	17	9.7	74		
25	580	83	62	229	564	192	97	77	16	16	9.7	30		
26	435	81	59	182	370	188	124	69	15	16	9.4	34		
27	447	78	55	160	263	147	187	65	15	16	9.4	27		
28	512	74	51	133	197	141	201	61	15	15	9.4	72		
29	260	72	48	114	---	127	165	52	15	15	9.8	139		
30	214	70	50	142	---	221	132	47	15	14	12	143		
31	170	---	48	131	---	204	---	43	---	13	13	---		
TOTAL	3834	6184	3247	7086	5311	4234	2983	4449	716	672	334.8	819.2		
MEAN	124	206	105	229	190	137	99.4	144	23.9	21.7	10.8	27.3		
MAX	580	549	320	949	938	262	201	416	39	67	13	143		
MIN	11	70	48	85	62	77	60	43	15	13	9.4	8.5		
CFSM	4.05	6.73	3.43	7.48	6.21	4.48	3.25	4.71	.78	.71	.35	.89		
IN.	4.66	7.52	3.95	8.61	6.46	5.15	3.63	5.41	.87	.82	.41	.00		
AC-FT	7600	12270	6440	14060	10530	8400	5920	8820	1420	1330	664	1620		
CAL YR 1985	TOTAL	34486.4	MEAN	94.5	MAX	580	MIN	9.2	CFSM	3.09	IN.	41.92	AC-FT	68400
WTR YR 1986	TOTAL	39870.0	MEAN	109	MAX	949	MIN	8.5	CFSM	3.56	IN.	48.47	AC-FT	79080

SNOHOMISH RIVER BASIN

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°42'45", long 121°47'15", in SW¼NE¼ sec.28, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi upstream from confluence with South Fork, 7.4 mi northeast of Carnation, and at mile 11.7.

DRAINAGE AREA.--39.9 mi².

PERIOD OF RECORD.--October 1952 to December 1963, November 1967 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 600 ft, from river-profile map.

REMARKS.--Estimated daily discharges: Aug. 9 to Sept. 9. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--29 years (water years 1953-63, 1969-86), 360 ft³/s, 122.53 in/yr, 260,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,560 ft³/s Dec. 15, 1959, gage height, 13.15 ft, from rating curve extended above 2,800 ft³/s; minimum discharge, 31 ft³/s Sept. 22, 23, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0100	3,930	9.56	Jan. 18	1900	4,010	9.63
Nov. 1	1900	*4,810	*10.30	Feb. 23	2400	4,220	9.81
Nov. 2	2100	3,240	8.92	May 13	0500	3,080	8.76

Minimum discharge, 31 ft³/s Sept. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	55	2470	157	219	370	365	330	307	270	111	78	58		
2	61	2320	163	187	306	329	311	397	240	127	74	56		
3	82	1920	197	171	273	302	287	536	222	116	71	52		
4	66	1160	188	159	268	295	273	391	209	117	69	50		
5	59	830	258	239	321	282	256	395	189	113	67	47		
6	58	1080	357	430	256	266	241	331	181	107	66	44		
7	59	1180	345	259	229	436	233	302	190	102	65	41		
8	57	705	282	328	210	555	244	299	199	98	65	39		
9	53	527	228	310	199	388	246	304	174	95	66	39		
10	51	430	199	351	188	324	231	327	173	170	66	41		
11	184	369	186	494	177	328	230	345	168	240	68	41		
12	177	332	174	308	167	340	250	880	159	203	70	38		
13	121	305	165	283	159	306	236	1710	149	160	68	36		
14	420	282	159	271	155	293	219	606	150	130	66	38		
15	899	463	151	243	262	264	262	423	147	118	65	36		
16	794	752	147	300	519	244	266	351	135	278	64	35		
17	332	403	147	363	263	234	288	332	130	965	62	35		
18	236	321	157	2350	214	337	326	408	195	296	62	35		
19	231	293	168	1460	189	436	270	458	364	194	62	34		
20	381	275	184	516	180	325	283	624	194	158	61	35		
21	271	259	189	377	173	409	356	422	163	137	59	33		
22	491	243	181	357	223	410	337	388	150	126	59	31		
23	445	226	194	479	1470	363	265	347	146	117	57	301		
24	1400	217	204	358	2150	508	233	321	140	109	56	383		
25	1950	209	213	296	1570	351	251	366	129	103	55	155		
26	1390	198	194	268	713	350	286	384	124	99	53	162		
27	1210	192	174	292	471	324	512	331	117	97	52	176		
28	835	184	156	292	413	378	472	313	115	92	52	628		
29	487	178	147	254	---	350	353	312	116	88	54	950		
30	426	169	144	351	---	643	311	319	113	84	57	434		
31	409	---	136	364	---	397	---	296	---	81	58	---		
TOTAL	13690	18492	5944	12929	12088	11132	8658	13525	5151	5031	1947	4083		
MEAN	442	616	192	417	432	359	289	436	172	162	62.8	136		
MAX	1950	2470	357	2350	2150	643	512	1710	364	965	78	950		
MIN	51	169	136	159	155	234	219	296	113	81	52	31		
CFSM	11.1	15.4	4.81	10.5	10.8	9.00	7.24	10.9	4.31	4.06	1.57	3.41		
IN.	12.76	17.24	5.54	12.05	11.27	10.38	8.07	12.61	4.80	4.69	1.82	3.81		
AC-FT	27150	36680	11790	25640	23980	22080	17170	26830	10220	9980	3860	8100		
CAL YR 1985	TOTAL	117147	MEAN	321	MAX	2470	MIN	51	CFSM	8.05	IN.	109.22	AC-FT	232400
WTR YR 1986	TOTAL	112670	MEAN	309	MAX	2470	MIN	31	CFSM	7.74	IN.	105.05	AC-FT	223500

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA

LOCATION.--Lat 47°42'25", long 121°35'56", in NE¼SW¼ sec.25, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi upstream from Phelps Creek, 8.1 mi south of Index, and at mile 12.9.

DRAINAGE AREA.--5.34 mi².

PERIOD OF RECORD.--December 1959 to December 1963, November 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,850 ft, from topographic map. Prior to Oct. 1, 1961, at datum 0.85 ft higher.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 3. Records fair except those for period of no gage-height record Nov. 23 to Dec. 3, and flows above 500 ft³/s, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--21 years (water years 1961-63, 1969-86), 55.4 ft³/s, 140.89 in/yr, 40,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,190 ft³/s Jan. 23, 1982; maximum gage height, 7.13 ft, present datum, Dec. 14, 1959; minimum daily discharge, 2.3 ft³/s Aug. 28-30, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 550 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 24	2345	1,030	3.95	Feb. 24	0400	1,310	4.31
Nov. 1	1830	*1,630	*4.65	May 13	0300	712	3.47
Jan. 18	2200	983	3.89				

Minimum discharge, 3.2 ft³/s Sept. 6-10, gage height, 0.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	7.3	683	11	23	88	58	44	30	66	11	7.4	5.0		
2	11	488	11	18	61	46	39	44	52	14	7.1	4.4		
3	17	426	11	15	44	40	33	68	46	12	6.8	4.1		
4	11	203	16	13	43	41	30	57	40	14	6.6	3.9		
5	9.1	125	19	21	54	38	26	60	31	13	6.2	3.6		
6	9.9	163	35	44	37	37	24	43	27	12	5.9	3.4		
7	11	179	34	25	30	97	25	39	34	10	5.7	3.2		
8	9.2	89	22	44	24	107	31	39	36	9.7	5.5	3.3		
9	8.1	57	17	43	22	65	38	42	26	8.9	5.3	3.3		
10	7.7	42	14	60	19	46	31	44	28	21	5.2	3.9		
11	62	33	13	93	17	45	28	46	28	43	5.3	4.9		
12	49	28	12	52	15	43	28	215	25	34	5.4	4.1		
13	32	25	11	41	14	36	25	358	21	23	5.2	3.9		
14	172	22	11	38	14	32	21	100	23	17	4.9	4.2		
15	292	61	11	33	37	25	30	63	22	14	4.6	4.3		
16	176	137	11	54	88	22	32	47	17	48	4.3	4.5		
17	70	56	12	65	36	20	39	45	15	159	4.2	4.1		
18	40	38	16	496	25	31	44	81	40	49	4.2	4.2		
19	51	30	21	319	22	64	33	113	74	29	4.1	4.0		
20	82	26	26	88	18	48	40	172	33	21	3.9	3.8		
21	53	22	25	54	16	72	65	88	25	16	3.8	3.6		
22	152	20	24	42	34	58	65	68	21	14	3.7	3.5		
23	113	19	31	55	455	56	41	54	20	13	3.6	102		
24	493	17	37	45	630	79	31	51	19	12	3.7	93		
25	426	16	39	33	484	46	34	82	16	11	3.6	30		
26	394	15	33	27	156	51	33	96	14	11	3.5	33		
27	261	15	26	38	76	47	98	74	13	10	3.4	49		
28	129	14	21	40	64	81	70	71	12	9.6	3.4	162		
29	65	13	19	31	---	68	43	77	13	8.8	3.7	211		
30	60	12	17	78	---	128	33	85	12	8.2	5.1	103		
31	57	---	15	83	---	62	---	79	---	7.8	5.8	---		
TOTAL	3330.3	3074	621	2111	2623	1689	1154	2531	849	684.0	151.1	870.2		
MEAN	107	102	20.0	68.1	93.7	54.5	38.5	81.6	28.3	22.1	4.87	29.0		
MAX	493	683	39	496	630	128	98	358	74	159	7.4	211		
MIN	7.3	12	11	13	14	20	21	30	12	7.8	3.4	3.2		
CFSM	20.0	19.1	3.75	12.8	17.5	10.2	7.21	15.3	5.30	4.14	.91	5.43		
IN.	23.20	21.41	4.33	14.71	18.27	11.77	8.04	17.63	5.91	4.76	1.05	6.06		
AC-FT	6610	6100	1230	4190	5200	3350	2290	5020	1680	1360	300	1730		
CAL YR 1985	TOTAL	20427.6	MEAN	56.0	MAX	683	MIN	4.0	CFSM	10.5	IN.	142.30	AC-FT	40520
WTR YR 1986	TOTAL	19687.6	MEAN	53.9	MAX	683	MIN	3.2	CFSM	10.1	IN.	137.15	AC-FT	39050

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'22", long 121°42'44", in SW¼SW¼ sec.31, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.1 mi upstream from private road bridge, 1.6 mi downstream from South Fork Tolt Reservoir, 9.8 mi northeast of Carnation, and at mile 6.8.

DRAINAGE AREA.--19.7 mi².

PERIOD OF RECORD.--October 1952 to December 1963, June 1969 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,300 ft, from river-profile map.

REMARKS.--No estimated daily discharges. Records good. Regulation by South Fork Tolt Reservoir since September 1963, capacity, 57,830 acre-ft. During the current water year the Seattle Water Department diverted an average daily discharge of about 72 ft³/s upstream from the station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--11 years (water years 1953-63), 198 ft³/s, 143,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft³/s Dec. 15, 1959, gage height, 7.45 ft, from rating curve extended above 2,700 ft³/s; maximum gage height, 7.62 ft Nov. 20, 1958, backwater from debris; minimum discharge, 8.4 ft³/s Sept. 12, 1963, minimum gage height, 0.81 ft Aug. 23-27, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 776 ft³/s Nov. 7, gage height, 4.04 ft; minimum discharge, 18 ft³/s Oct. 21, gage height, 1.85 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	121	71	64	69	335	68	69	84	57	59	60
2	50	125	71	61	67	339	66	74	63	56	59	60
3	50	121	70	60	66	178	66	77	58	56	59	60
4	49	117	70	60	67	66	65	74	58	56	59	59
5	49	395	73	65	68	65	65	63	57	56	58	59
6	50	696	74	86	65	65	63	53	56	56	60	57
7	49	754	74	60	65	70	63	57	56	56	60	58
8	49	737	71	61	65	73	63	58	56	56	60	59
9	56	709	69	60	63	69	63	61	56	55	60	59
10	62	691	69	61	63	68	62	58	58	54	60	60
11	65	428	69	61	63	69	64	58	58	50	60	59
12	65	103	66	60	63	69	65	66	57	49	60	59
13	63	101	62	60	62	68	63	434	56	49	60	59
14	68	100	62	60	62	67	62	490	56	50	59	59
15	71	105	62	61	68	65	65	319	55	51	59	59
16	76	109	62	63	68	65	63	224	55	59	59	59
17	64	103	62	66	64	65	65	167	58	73	59	59
18	63	90	61	105	63	72	66	159	64	63	59	59
19	63	72	60	88	62	75	63	180	62	62	59	59
20	66	72	60	73	62	68	63	257	60	60	59	59
21	64	71	60	69	62	72	63	249	60	60	59	59
22	75	71	60	73	65	71	63	218	60	60	58	59
23	70	72	60	75	90	72	63	179	59	60	58	67
24	90	72	60	69	95	74	63	139	57	60	58	67
25	107	72	60	68	86	70	68	127	55	60	58	62
26	99	72	59	67	76	70	67	140	55	60	58	66
27	96	71	59	66	200	68	73	141	55	60	59	65
28	102	71	59	66	332	67	74	119	55	60	60	73
29	99	71	59	66	---	67	72	111	53	59	60	77
30	96	71	59	69	---	75	74	107	54	59	61	70
31	96	---	59	68	---	69	---	102	---	59	60	---
TOTAL	2171	6463	1992	2091	2301	2786	1963	4630	1746	1781	1836	1846
MEAN	70.0	215	64.3	67.5	82.2	89.9	65.4	149	58.2	57.5	59.2	61.5
MAX	107	754	74	105	332	339	74	490	84	73	61	77
MIN	49	71	59	60	62	65	62	53	53	49	58	57
AC-FT	4310	12820	3950	4150	4560	5530	3890	9180	3460	3530	3640	3660
CAL YR 1985	TOTAL	32607	MEAN	89.3	MAX	872	MIN	40	AC-FT	64680		
WTR YR 1986	TOTAL	31606	MEAN	86.6	MAX	754	MIN	49	AC-FT	62690		

SNOHOMISH RIVER BASIN

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12148300 SOUTH FORK TOLT RIVER BELOW REGULATING BASIN, NEAR CARNATION, WA

LOCATION.--Lat 47°41'49", long 121°47'10", in SW¼NE¼ sec.33, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.3 mi upstream from mouth and 6.5 mi northeast of Carnation.

DRAINAGE AREA.--29.6 mi².

PERIOD OF RECORD.--March 1982 to current year. Published as "South Fork Tolt River below regulating pond, near Carnation" March 1982 through September 1983.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 670 ft, from topographic map.

REMARKS.--Estimated daily discharges: Aug. 8-21, Sept. 28-30. Records good except for estimated daily discharges, which are fair. Flow regulated by South Fork Tolt Reservoir 6.1 mi upstream, capacity, 57,830 acre-ft. During the 1986 water year the Seattle Water Department diverted an average daily discharge of about 65 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,230 ft³/s Jan. 25, 1984, gage height, 6.30 ft; minimum discharge, 36 ft³/s Aug. 28, 29, 1982, gage height, 2.75 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 910 ft³/s Nov. 6, gage height, 5.80 ft; minimum discharge, 40 ft³/s Sept. 9, gage height, 2.77 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	348	90	83	101	455	115	116	115	69	68	66
2	68	413	89	84	100	446	115	126	91	73	66	64
3	68	446	89	84	99	274	109	153	85	70	64	64
4	68	436	89	84	98	110	106	134	84	69	64	64
5	68	596	90	86	98	106	100	128	81	69	62	64
6	68	908	94	132	98	104	98	109	79	69	58	64
7	68	894	105	100	97	107	98	107	79	69	59	64
8	68	892	111	99	95	130	98	106	79	68	62	64
9	69	889	108	99	93	123	97	113	78	66	62	62
10	72	868	106	98	94	106	91	108	78	70	62	64
11	82	635	105	98	91	108	95	107	78	66	62	61
12	84	250	102	95	91	109	100	121	75	64	62	64
13	84	241	93	92	90	109	96	577	75	63	62	63
14	89	225	89	91	90	109	92	693	74	61	61	65
15	116	220	89	90	102	104	97	490	74	62	61	63
16	143	256	89	90	120	98	97	363	73	82	61	63
17	104	240	88	100	106	98	97	275	75	141	61	63
18	92	183	86	232	97	108	111	258	85	92	61	63
19	90	118	85	294	94	146	104	264	110	85	61	60
20	93	118	85	187	94	122	101	364	85	78	61	60
21	94	116	85	151	95	124	101	379	80	76	61	61
22	112	105	85	134	99	135	101	331	80	74	61	61
23	121	102	84	148	154	125	101	275	76	73	61	69
24	165	97	84	129	263	140	99	221	74	73	61	77
25	393	94	83	120	225	122	106	196	72	73	61	69
26	359	94	83	109	179	126	111	204	71	70	61	67
27	376	94	81	109	277	120	119	218	71	69	61	67
28	372	94	80	104	462	115	138	174	70	69	61	75
29	332	93	80	101	---	108	130	167	69	69	64	88
30	300	91	79	101	---	132	161	145	69	69	66	76
31	277	---	79	101	---	123	---	136	---	68	66	---
TOTAL	4563	10156	2785	3625	3702	4442	3184	7158	2385	2269	1924	1975
MEAN	147	339	89.8	117	132	143	106	231	79.5	73.2	62.1	65.8
MAX	393	908	111	294	462	455	161	693	115	141	68	88
MIN	68	91	79	83	90	98	91	106	69	61	58	60
AC-FT	9050	20140	5520	7190	7340	8810	6320	14200	4730	4500	3820	3920
CAL YR 1985	TOTAL	50462	MEAN	138	MAX	1120	MIN	53	AC-FT	100100		
WTR YR 1986	TOTAL	48168	MEAN	132	MAX	908	MIN	58	AC-FT	95540		

12148500 TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'45", long 121°49'22", in SE¼NE¼ sec.31, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 500 ft downstream from the forks, 0.4 mi upstream from Stossel Creek, 5.5 mi northeast of Carnation, and at mile 8.7.

DRAINAGE AREA.--81.4 mi².

PERIOD OF RECORD.--August 1928 to January 1932, September 1937 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1951(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 348 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 31, 1928, nonrecording gage, and Oct. 31, 1928 to Jan. 3, 1932, water-stage recorder at site 350 ft upstream at datum 7.1 ft higher (river-profile survey). Sept. 1 to Oct. 6, 1937, nonrecording gage at present site at datum 1.64 ft higher.

REMARKS.--No estimated daily discharges. Records good. Some regulation by South Fork Reservoir, capacity, 57,830 acre-ft. During the current water year city of Seattle Water Department diverted an average daily discharge of about 72 ft³/s upstream from station for municipal use. Chemical analyses July 1960 to September 1970.

AVERAGE DISCHARGE.--52 years (water years 1929-31, 1938-86), 588 ft³/s, 426,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft³/s Dec. 15, 1959, gage height, 13.04 ft; minimum discharge, 53 ft³/s Sept. 22, 23, 1951, gage height, 3.84 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0045	4,170	8.96	Nov. 2	2045	3,730	8.72
Oct. 26	2115	3,520	8.58	Jan. 18	2345	4,710	9.23
Nov. 1	1915	*5,070	*9.41	Feb. 24	0030	4,470	9.11

Minimum discharge, 112 ft³/s Sept. 22, 23, gage height, 4.32 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	2660	272	326	525	784	480	441	400	196	163	127
2	131	2660	279	296	452	733	453	538	347	238	160	125
3	149	2300	311	296	411	567	421	735	321	205	156	122
4	133	1610	301	278	401	416	397	562	307	203	154	119
5	127	1460	383	358	477	393	377	567	296	197	152	117
6	129	2050	513	605	394	369	351	478	282	190	150	115
7	128	2150	521	407	359	549	338	440	282	184	148	115
8	126	1680	452	466	334	700	343	429	296	179	145	115
9	127	1470	378	450	316	517	340	433	268	177	143	115
10	132	1320	340	482	302	441	326	464	265	248	142	124
11	255	1030	317	623	290	446	326	482	260	327	142	124
12	255	625	299	438	277	463	352	1030	251	279	146	119
13	199	579	286	406	266	424	328	2190	238	237	141	118
14	483	538	275	394	260	411	305	1310	241	206	139	119
15	996	691	266	364	379	373	357	938	249	197	136	117
16	934	1060	259	426	707	346	367	750	229	311	134	115
17	454	706	255	511	407	339	386	635	225	1150	132	115
18	332	571	261	2510	347	460	453	690	289	436	130	118
19	318	481	268	2000	316	618	378	750	503	304	130	117
20	491	443	281	840	304	480	383	976	295	260	128	116
21	371	411	285	624	302	572	468	792	258	237	127	114
22	600	383	275	579	356	589	453	735	243	221	125	113
23	588	360	286	749	1600	544	372	642	236	212	124	363
24	1490	353	294	582	2450	720	331	563	227	203	124	478
25	2340	348	298	490	1800	537	359	592	214	196	123	236
26	1740	332	285	441	941	530	404	614	209	191	121	244
27	1610	307	265	454	777	494	647	553	207	187	121	250
28	1200	297	252	448	843	530	658	502	199	182	121	722
29	804	290	241	393	---	500	519	485	200	176	124	1050
30	705	275	238	501	---	812	462	482	194	171	130	568
31	659	---	231	519	---	556	---	451	---	166	131	---
TOTAL	18129	29440	9467	18256	16593	16213	12134	21249	8031	7866	4242	6510
MEAN	585	981	305	589	593	523	404	685	268	254	137	217
MAX	2340	2660	521	2510	2450	812	658	2190	503	1150	163	1050
MIN	123	275	231	278	260	339	305	429	194	166	121	113
AC-FT	35960	58390	18780	36210	32910	32160	24070	42150	15930	15600	8410	12910
CAL YR 1985	TOTAL	172391	MEAN	472	MAX	2660	MIN	106	AC-FT	341900		
WTR YR 1986	TOTAL	168130	MEAN	461	MAX	2660	MIN	113	AC-FT	333500		

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°39'58", long 121°55'27", in NW¼SW¼ sec.9, T.25 N., R.7 E., King County, Hydrologic Unit 17110010, on left bank 40 ft downstream from highway bridge, 1.3 mi northwest of Carnation, 1.9 mi downstream from Tolt River, and at mile 23.0.

DRAINAGE AREA.--603 mi².

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1316: 1932-33(M). WSP 1446: 1934(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1933, nonrecording gage on old bridge, 100 ft upstream and Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site, at datum 42.96 ft higher.

REMARKS.--Estimated daily discharges: Aug. 23-26. Records good. During the 1986 water year, Seattle Water Department diverted an average daily discharge of 72 ft³/s upstream from station for municipal use. Several small diversions for irrigation and domestic use upstream from station. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to river upstream from station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant.

AVERAGE DISCHARGE.--58 years, 3,761 ft³/s, 84.70 in/yr, 2,725,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft³/s Feb. 27, 1932, elevation, 59.88 ft, from graph based on gage readings; maximum elevation observed, 59.93 ft Nov. 13, 1932; minimum discharge, 239 ft³/s Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum daily, 396 ft³/s Sept. 24, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Elevation (ft)	Date	Time	Discharge (ft ³ /s)	Elevation (ft)
Oct. 25	2100	23,300	54.64	Jan. 19	1600	23,200	54.61
Oct. 27	0800	17,600	52.88	Feb. 24	2200	*28,800	*56.11
Nov. 2	2200	24,600	55.01				

Minimum discharge, 482 ft³/s Sept. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	729	8530	1310	1590	3450	5350	3810	2740	5340	1310	946	635		
2	722	21800	1350	1670	3420	4640	3370	2870	4740	1390	924	616		
3	925	24000	1740	1720	2900	4000	3040	3760	4000	1340	915	598		
4	977	16500	1830	1630	2640	3550	2770	3600	3630	1400	906	583		
5	847	9630	2030	1650	3000	3510	2610	3940	3190	1380	895	573		
6	816	9740	2480	2740	2700	3180	2440	3600	2920	1270	878	550		
7	829	9740	2800	2450	2400	3780	2350	3160	2650	1180	866	528		
8	836	7840	2720	2210	2180	6480	2480	3030	2590	1160	845	529		
9	791	6430	2260	2420	2020	4870	2620	2920	2400	1150	829	528		
10	764	5370	1990	2410	1900	4060	2590	3290	2370	1190	815	548		
11	986	4450	1800	2990	1790	3580	2380	3210	2450	2020	809	619		
12	2210	3410	1670	2630	1680	3560	2480	4300	2460	2280	809	574		
13	2190	3010	1560	2310	1590	3210	2310	10700	2230	1910	804	544		
14	1940	2700	1480	2210	1530	3050	2130	8000	2170	1530	777	563		
15	7170	2670	1420	2060	1770	2740	2090	5870	2180	1380	741	550		
16	6050	5010	1380	2220	3760	2490	2360	4710	1930	1430	720	591		
17	4430	4210	1350	3230	2860	2370	2360	4120	1780	5050	709	584		
18	2900	3380	1390	7030	2280	2440	2970	4280	1860	3370	696	622		
19	2330	2880	1440	20800	1980	3900	2610	5510	2520	2290	679	642		
20	3890	2640	1500	10700	1830	3590	2450	6870	2060	1870	688	604		
21	3480	2390	1550	5840	1810	3700	2960	5780	1880	1650	676	587		
22	3520	2210	1530	4610	2000	4130	3710	5190	1760	1500	689	557		
23	6040	2000	1570	5030	4590	3460	3200	4650	1770	1420	682	711		
24	7300	1860	1690	4620	22600	4490	2640	4040	1790	1330	646	3230		
25	19500	1810	1760	3660	23300	3900	2510	4600	1710	1250	628	2070		
26	14100	1780	1720	3100	16200	3620	2630	6010	1590	1200	602	1530		
27	15400	1730	1590	2860	7760	3470	3140	5670	1470	1160	584	1500		
28	9720	1630	1480	2960	6110	3500	4730	5350	1390	1140	589	3110		
29	6300	1540	1410	2630	---	4100	3610	5370	1440	1090	603	5400		
30	4970	1450	1390	2700	---	4960	3040	5740	1420	1010	626	5650		
31	4590	---	1310	3460	---	4860	---	5860	---	973	653	---		
TOTAL	137252	172340	52500	118140	132050	118540	84390	148740	71690	49623	23229	35926		
MEAN	4427	5745	1694	3811	4716	3824	2813	4798	2390	1601	749	1198		
MAX	19500	24000	2800	20800	23300	6480	4730	10700	5340	5050	946	5650		
MIN	722	1450	1310	1590	1530	2370	2090	2740	1390	973	584	528		
CFSM	7.34	9.53	2.81	6.32	7.82	6.34	4.67	7.96	3.96	2.66	1.24	1.99		
IN.	8.47	10.63	3.24	7.29	8.15	7.31	5.21	9.18	4.42	3.06	1.43	2.22		
AC-FT	272200	341800	104100	234300	261900	235100	167400	295000	142200	98430	46070	71260		
CAL YR 1985	TOTAL	1169106	MEAN	3203	MAX	24000	MIN	580	CFSM	5.31	IN.	72.12	AC-FT	2319000
WTR YR 1986	TOTAL	1144420	MEAN	3135	MAX	24000	MIN	528	CFSM	5.20	IN.	70.60	AC-FT	2270000

12150800 SNOHOMISH RIVER NEAR MONROE, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°49'52", long 122°02'50", in NE¼NW¼ sec.16, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on left bank 150 ft upstream from State Highway 522 bridge, 0.1 mi downstream from confluence of Snoqualmie and Skykomish Rivers, 3.6 mi southwest of Monroe, and 6.0 mi south of Snohomish.

DRAINAGE AREA.--1,537 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1963 to current year. Water years 1932, 1934, 1951, 1960, 1962-63 (annual maximum stage only) published in WSP 1932. Approximate annual maximum stages for water years 1921, 1949-50, 1952-59, and 1961 are on file in Washington office.

GAGE.--Water-stage recorder. Datum of gage is 13.25 ft above National Geodetic Vertical Datum of 1929. Prior to February 1963, crest-stage gage only at site about 800 ft downstream and Feb. 8, 1963, to May 27, 1964, water-stage recorder at site 100 ft upstream, both National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 2, Jan. 6 to Feb. 10. Water-discharge records excellent except for estimated daily discharges, which are good. Some regulation by powerplant at Snoqualmie Falls, 40 mi upstream, and by Spada Lake, 30 mi upstream. Minor diversions for irrigation returned to river upstream from gage. During the current water year, City of Seattle Water Department diverted an average daily discharge of about 72 ft³/s upstream from station from South Fork Tolt River for municipal use and the City of Everett diverted an undetermined amount of discharge upstream from the station from Sultan River for municipal use.

AVERAGE DISCHARGE.--23 years, 9,734 ft³/s, 86.00 in/yr, 7,052,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 35.8 ft Feb. 10, 1951, datum then in use (discharge not determined); maximum discharge since February 1963, 115,000 ft³/s Dec. 4, 1975, gage height, 22.92 ft; minimum discharge, 1,140 ft³/s Sept. 29, 1967, Sept. 17, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1921 reached a discharge of approximately 180,000 ft³/s. Floods in November or December 1897 and November 1906 are believed to be higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 33,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	1200	58,800	15.36	Jan. 19	unknown	64,000	16.41
Oct. 27	0700	55,100	14.62	Feb. 24	1500	61,700	15.94
Nov. 3	1300	*64,300	*16.46				

Minimum discharge, 1,240 ft³/s Sept. 8-10.

a From outside high-water mark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1800	22800	4550	3700	9900	17600	10600	7270	18200	4200	2280	1510		
2	1800	57700	4200	4410	9800	14500	9350	7260	16200	4000	2230	1480		
3	1970	61200	3900	4190	9400	12300	8310	8720	13700	3880	2200	1440		
4	2180	48800	4350	3950	8700	11000	7600	8800	12200	3920	2180	1420		
5	2110	35000	4540	4010	7800	10500	7020	8730	10500	3850	2130	1380		
6	2080	30000	5450	6800	7300	9890	6470	8460	9480	3540	2080	1330		
7	2260	30700	5920	6000	6700	11200	6270	7930	8530	3270	2040	1270		
8	2230	25700	5960	5400	6300	18100	6610	7720	8030	3180	1990	1260		
9	2100	19800	5180	5700	5900	14800	6940	7510	7340	3080	1940	1260		
10	2020	15500	4710	6500	5650	12400	7000	7900	7350	3040	1910	1270		
11	2460	12600	4180	8100	5320	10800	6320	7750	7580	4340	1890	1360		
12	4740	10400	3900	7250	5040	10300	6320	8800	7530	5370	1860	1340		
13	4810	9090	3710	7000	4650	9510	5930	25400	6830	4850	1850	1270		
14	4570	8290	3460	6400	4130	8840	5500	22300	6650	3940	1850	1290		
15	13800	7960	3250	5900	4600	8180	5290	15600	6590	3460	1780	1290		
16	14400	11500	3140	6250	7850	7090	5810	12400	5820	3490	1710	1370		
17	11200	10900	3080	15000	7250	6540	5820	10400	5280	9340	1650	1430		
18	7440	9200	3120	28500	5890	6330	6550	10700	5390	8270	1600	1410		
19	5950	8210	3200	52000	5460	7880	6230	13600	7480	5620	1570	1450		
20	8430	7530	3320	42500	5040	8270	5800	17900	6400	4640	1550	1430		
21	8600	7050	3420	24000	4800	8640	6860	16200	5710	4110	1520	1380		
22	7960	6680	3430	13500	4970	9730	8940	13800	5330	3890	1490	1330		
23	13600	6410	3510	14800	8490	8470	8330	12000	5440	3920	1480	1630		
24	16400	6150	3870	13100	53000	10100	6970	10200	5750	3650	1460	6340		
25	52400	5850	4100	11000	52700	9760	6310	11600	5580	3130	1460	5000		
26	38500	5500	4140	9800	44500	8860	6470	16800	5210	2940	1440	3300		
27	49800	5450	3900	8400	29300	8610	7030	16800	4750	2840	1420	3130		
28	35800	5350	3600	9000	21300	8780	10100	16100	4540	2710	1430	5010		
29	23000	5100	3400	7750	---	10200	8910	16700	4780	2570	1450	9190		
30	16400	4850	3300	8200	---	12100	7930	18600	4550	2450	1480	11000		
31	13900	---	3170	9150	---	12500	---	19400	---	2350	1530	---		
TOTAL	374710	501270	122960	358260	351740	323780	213590	393350	228720	123840	54450	74570		
MEAN	12090	16710	3966	11560	12560	10440	7120	12690	7624	3995	1756	2486		
MAX	52400	61200	5960	52000	53000	18100	10600	25400	18200	9340	2280	11000		
MIN	1800	4850	3080	3700	4130	6330	5290	7260	4540	2350	1420	1260		
CFSM	7.87	10.9	2.58	7.52	8.17	6.79	4.63	8.26	4.96	2.60	1.14	1.62		
IN.	9.07	12.13	2.98	8.67	8.51	7.84	5.17	9.52	5.54	3.00	1.32	1.80		
AC-FT	743200	994300	243900	710600	697700	642200	423700	780200	453700	245600	108000	147900		
CAL YR 1985	TOTAL	3114560	MEAN	8533	MAX	61200	MIN	1480	CFSM	5.55	IN.	75.38	AC-FT	6178000
WTR YR 1986	TOTAL	3121240	MEAN	8551	MAX	61200	MIN	1260	CFSM	5.56	IN.	75.54	AC-FT	6191000

SNOHOMISH RIVER BASIN

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12150800 SNOHOMISH RIVER NEAR MONROE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1974 to January 1976, July 1979 to current year.

REMARKS.--Unpublished records of temperature and suspended-sediment concentration are available in the Washington Office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 20...	1330	7520	37	7.2	3.5	1.9	12.4	92	E54	E86	15	1
FEB 20...	1015	5150	47	7.1*	2.5	2.1	13.1	96	E20	E20	17	0
MAY 20...	1515	19500	26	7.0	9.0	10	11.4	99	E140	E100	9	1
AUG 06...	1130	2080	49	7.4	18.5	1.2	8.6	92	E41	E11	19	1
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 20...	4.6	0.9	1.7	19	0.2	0.6	14	17	0	3.6	1.3	<0.1
FEB 20...	5.0	1.1	1.7	17	0.2	0.5	17	21	0	3.1	1.7	<0.1
MAY 20...	2.9	0.5	1.1	20	0.2	0.3	8.0	9.0	0	2.8	0.8	<0.1
AUG 06...	5.7	1.1	2.2	20	0.2	0.7	18	22	0	3.1	1.4	<0.1
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 20...	7.1	32	30	0.04	650	0.01	0.30	0.04	0.2	0.04	<0.01	0.01
FEB 20...	7.3	21	31	0.03	292	<0.01	0.33	0.06	0.3	0.01	<0.01	<0.01
MAY 20...	4.9	27	18	0.04	1420	<0.01	0.10	0.03	0.5	0.04	0.03	0.01
AUG 06...	6.3	33	31	0.05	185	<0.01	0.13	0.01	0.2	0.08	0.01	<0.01

* - Laboratory value.

E - Estimated value.

12150800 SNOHOMISH RIVER NEAR MONROE, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible]

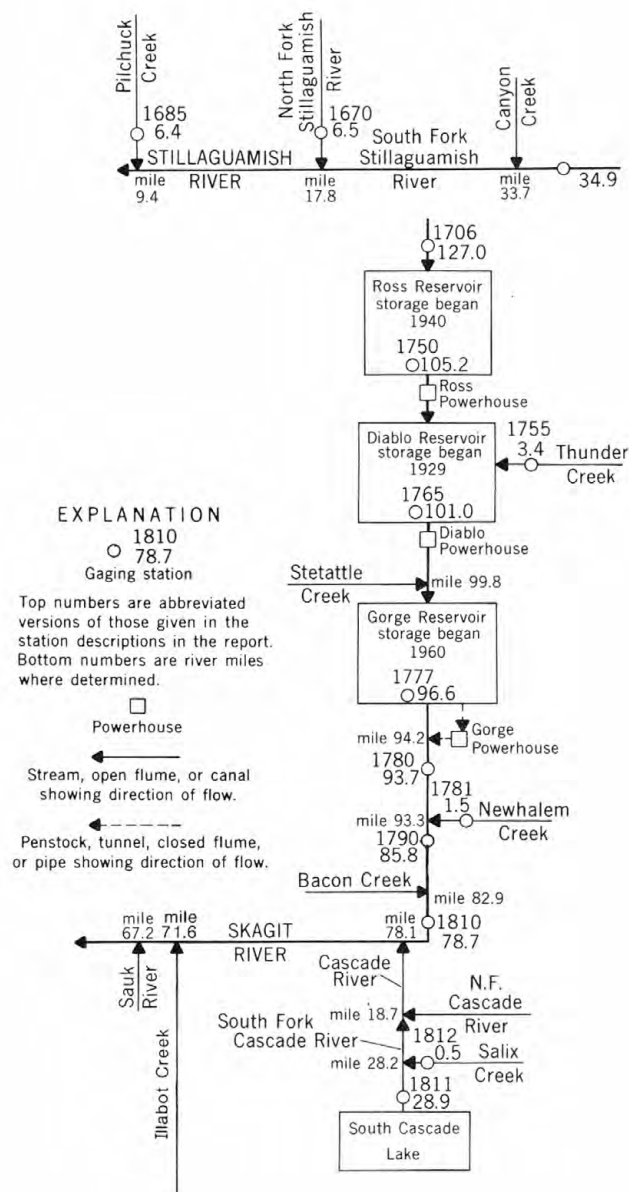


Figure 16.--Gaging stations in Stillaguamish and Skagit River (above Sauk River) basins.

12157005 QUILCEDA CREEK ABOVE WEST FORK, NEAR MARYSVILLE, WA

LOCATION.--Lat 48°05'08", long 122°10'26", in NE¼SW¼ sec.16, T.30 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, on right bank 50 ft downstream from Burlington Northern Railroad crossing, 2.0 mi north of Marysville, and 2.6 mi upstream from mouth.

DRAINAGE AREA.--17.1 mi².

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 8.8 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 27, 1985, gage was located downstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 27 to Mar. 18, 1985, June 7-9, 1985; Oct. 26 to Nov. 5, 1985, Nov. 24 to Dec. 2, 1985. Records fair except for estimated daily discharges, which are poor. No known diversion or regulation upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 165 ft³/s Jan. 19, 1986, gage height, 4.92 ft; minimum discharge, 5.0 ft³/s Aug. 25-27, 1985.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum discharge, 125 ft³/s Dec. 14, gage height, 4.31 ft; minimum discharge, 5.0 ft³/s Aug. 25-27.

WATER YEAR 1986.--Maximum discharge, 165 ft³/s Jan. 19, gage height, 4.92 ft; minimum discharge, 6.6 ft³/s Sept. 9, 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
MEAN VALUES

[illegible]

QUILCEDA CREEK BASIN

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12157005 QUILCEDA CREEK ABOVE WEST FORK, NEAR MARYSVILLE, WA--Continued

 DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	7.1	40	17	21	47	32	24	66	14	9.4	8.6	7.7		
2	7.3	70	17	23	43	30	22	51	13	9.6	8.3	7.9		
3	7.3	100	36	23	41	28	22	41	13	9.4	8.2	7.7		
4	7.2	90	40	21	40	27	23	34	13	9.5	8.1	7.5		
5	7.2	80	39	26	50	26	22	31	12	8.7	8.1	7.3		
6	11	77	39	44	42	25	20	28	12	8.4	8.0	7.2		
7	8.4	65	40	39	36	26	19	25	12	8.3	7.8	7.3		
8	7.7	63	40	34	33	25	18	24	12	8.1	7.7	7.3		
9	7.6	61	33	33	31	23	18	23	12	8.1	7.6	7.4		
10	7.4	50	29	30	29	22	17	60	11	9.8	7.6	8.5		
11	11	41	27	27	28	22	20	47	10	9.2	8.0	8.3		
12	9.4	36	24	26	26	21	38	37	10	10	8.1	7.5		
13	8.3	32	22	24	25	20	45	38	9.8	8.8	7.8	7.6		
14	10	29	21	23	25	25	40	32	11	8.5	7.7	7.6		
15	11	33	20	26	36	23	43	28	11	9.9	7.4	7.4		
16	16	40	20	31	79	21	51	25	11	22	7.4	7.4		
17	12	43	19	75	74	20	38	23	12	20	7.4	7.3		
18	10	37	19	130	55	20	31	24	12	14	7.3	7.8		
19	11	33	19	146	43	21	27	23	12	12	7.3	7.5		
20	16	32	18	103	38	20	25	46	11	11	7.3	7.4		
21	15	29	18	73	42	20	26	35	10	11	7.3	7.4		
22	13	27	17	60	43	19	29	28	9.6	11	7.2	7.3		
23	13	24	17	81	70	20	24	25	9.4	9.9	7.1	15		
24	17	23	17	85	90	25	23	23	8.7	9.6	7.1	13		
25	34	22	17	62	68	29	23	21	8.6	9.6	7.1	9.1		
26	40	21	17	50	50	34	24	20	8.7	9.6	7.1	8.7		
27	60	20	16	44	43	29	34	19	8.7	9.6	7.2	8.8		
28	120	19	16	41	38	27	62	18	8.5	9.5	7.5	9.6		
29	50	18	16	38	---	25	117	16	9.0	9.1	7.8	11		
30	40	18	17	47	---	28	111	15	9.0	8.9	8.0	9.8		
31	35	---	16	44	---	25	---	15	---	8.6	8.0	---		
TOTAL	629.9	1273	723	1530	1265	758	1036	941	324.0	321.1	237.1	251.3		
MEAN	20.3	42.4	23.3	49.4	45.2	24.5	34.5	30.4	10.8	10.4	7.65	8.38		
MAX	120	100	40	146	90	34	117	66	14	22	8.6	15		
MIN	7.1	18	16	21	25	19	17	15	8.5	8.1	7.1	7.2		
CFSM	1.17	2.44	1.34	2.84	2.60	1.41	1.98	1.75	.62	.60	.44	.48		
IN.	1.35	2.72	1.55	3.27	2.70	1.62	2.21	2.01	.69	.69	.51	.54		
AC-FT	1250	2520	1430	3030	2510	1500	2050	1870	643	637	470	498		
CAL YR 1985	TOTAL	7367.9	MEAN	20.2	MAX	120	MIN	5.2	CFSM	1.16	IN.	15.75	AC-FT	14610
WTR YR 1986	TOTAL	9289.4	MEAN	25.5	MAX	146	MIN	7.1	CFSM	1.47	IN.	19.86	AC-FT	18430

LOCATION.--Lat 48°06'07", long 122°11'06", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.8, T.30 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, on right bank 0.3 mi upstream from Interstate Highway 5, 3.0 mi north of Marysville, and 1.3 mi upstream from mouth.

PERIOD OF RECORD.--October 1984 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 40.0 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 28-31, 1984, Nov. 23-25, 1984, Dec. 7-18, 1984, Feb. 9 to Mar. 5, 1985, Mar. 10-21, 1985, Apr. 18-26, 1985, July 2-13, 1985; Nov. 24 to Dec. 2, 1985. Records good except for estimated daily discharges, which are fair. No known regulation or diversion upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 174 ft³/s Jan. 19, 1986, gage height, 4.43 ft; minimum discharge, 0.67 ft³/s Aug. 14, 1985.

EXTREMES FOR CURRENT PERIOD.--

WATER YEAR 1985.--Maximum recorded discharge, 55 ft³/s Nov. 28, gage height, 2.50 ft; minimum discharge, 0.67 ft³/s Aug. 14.

WATER YEAR 1986.--Maximum discharge, 174 ft³/s Jan. 19, gage height, 4.43 ft; minimum discharge, 1.6 ft³/s Aug. 1-8, 18-30, Sept. 6-10.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	2.8	5.4	30	15	10	9.5	13	8.4	7.5	3.1	2.3	1.6	
2	2.8	13	21	16	10	9.5	13	8.3	6.4	3.0	2.3	1.6	
3	2.8	12	16	15	10	10	13	8.3	5.9	2.8	2.3	1.6	
4	2.8	9.4	14	14	9.6	12	13	8.3	5.9	2.7	2.3	1.6	
5	2.8	8.3	12	14	9.4	12	13	8.2	5.9	2.6	2.3	1.9	
6	2.8	7.4	12	14	9.4	11	13	7.6	6.0	2.5	2.3	4.0	
7	2.8	6.7	14	14	9.4	11	12	7.0	21	2.4	2.4	3.1	
8	2.8	6.3	26	14	9.4	11	11	6.8	25	2.3	2.6	2.7	
9	2.8	7.0	26	14	10	11	11	6.1	17	2.2	2.1	2.5	
10	4.3	9.1	25	13	20	10	11	5.6	12	2.1	2.0	2.1	
11	5.9	13	25	12	35	10	10	6.1	10	2.0	2.0	2.0	
12	6.7	13	34	12	35	10	10	6.1	9.1	2.0	2.0	2.0	
13	6.2	14	36	12	25	10	9.2	6.1	8.3	1.9	2.0	2.0	
14	5.5	15	43	12	20	10	8.5	13	8.0	1.8	2.0	2.2	
15	5.4	13	50	12	18	9.5	8.5	11	7.5	1.8	1.6	2.3	
16	5.2	11	40	13	16	9.0	8.4	9.3	6.7	1.8	1.8	2.5	
17	4.8	11	30	14	15	9.0	8.3	8.0	6.1	1.8	1.6	4.1	
18	4.4	11	25	14	14	9.0	9.5	7.0	5.7	2.1	1.6	3.8	
19	4.2	11	19	14	14	9.0	9.5	6.3	5.5	1.8	1.7	2.8	
20	4.2	11	15	15	13	9.0	9.0	5.9	5.3	2.3	1.6	2.6	
21	4.2	11	14	16	16	9.0	8.5	5.6	5.0	2.3	1.7	2.6	
22	4.2	11	16	15	22	10	8.5	5.1	4.6	2.3	1.6	2.3	
23	4.2	25	34	14	22	12	11	5.1	4.4	2.3	1.6	2.3	
24	4.2	35	35	13	18	13	11	5.2	4.2	2.3	1.6	2.3	
25	4.2	25	31	12	15	13	10	5.4	4.2	2.3	1.6	2.3	
26	4.9	15	29	11	13	12	10	5.1	4.0	2.3	1.7	2.3	
27	5.4	22	31	11	11	11	13	4.8	3.7	2.3	1.6	2.3	
28	6.0	44	28	11	10	11	13	4.5	3.7	2.3	1.6	2.2	
29	6.0	47	25	11	---	11	12	4.5	3.7	2.3	1.6	2.0	
30	5.8	38	25	11	---	14	11	8.8	3.5	2.0	1.8	2.0	
31	5.6	---	19	10	---	15	---	9.1	---	2.2	1.6	---	
TOTAL	136.7	480.6	800	408	439.2	332.5	321.9	216.6	225.8	69.9	58.8	71.6	
MEAN	4.41	16.0	25.8	13.2	15.7	10.7	10.7	6.99	7.53	2.25	1.90	2.39	
MAX	6.7	47	50	16	35	15	13	13	25	3.1	2.6	4.1	
MIN	2.8	5.4	12	10	9.4	9.0	8.3	4.5	3.5	1.8	1.6	1.6	
CFSM	.47	1.70	2.74	1.40	1.67	1.14	1.14	.74	.80	.24	.20	.25	
IN.	.54	1.90	3.16	1.61	1.74	1.31	1.27	.86	.89	.28	.23	.28	
AC-FT	271	953	1590	809	871	660	638	430	448	139	117	142	
WTR YR 1985	TOTAL	3561.6	MEAN	9.76	MAX	50	MIN	1.6	CFSM	1.04	IN.	14.08	AC-FT

QUILCEDA CREEK BASIN

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12157020 WEST FORK QUILCEDA CREEK NEAR MARYSVILLE, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2.0	15	6.4	9.7	29	17	11	42	4.6	2.9	1.7	1.8		
2	2.0	34	6.3	11	26	15	10	34	4.4	2.8	1.6	1.8		
3	2.1	51	12	11	23	14	9.7	26	4.3	2.8	1.6	1.8		
4	2.0	42	19	9.8	22	13	10	20	3.8	3.3	1.6	1.8		
5	2.0	40	18	12	29	13	11	18	3.7	3.8	1.6	1.8		
6	2.5	34	17	23	21	13	10	16	3.7	3.3	1.6	1.7		
7	2.3	27	17	16	18	13	9.4	14	3.7	2.4	1.6	1.6		
8	2.2	29	18	14	16	14	8.9	13	3.7	2.3	2.0	1.6		
9	2.3	29	14	13	15	13	8.8	13	3.6	3.1	2.8	1.6		
10	2.3	20	12	13	14	13	8.7	42	3.3	3.5	2.6	1.9		
11	2.6	15	11	12	13	12	11	31	3.1	2.8	2.3	1.9		
12	2.6	13	10	11	13	12	23	22	3.6	2.3	2.2	1.8		
13	2.6	12	9.3	11	12	11	28	21	3.9	2.3	2.0	1.8		
14	2.9	11	9.1	9.8	12	13	24	17	3.5	3.9	2.0	1.8		
15	2.8	11	9.1	11	19	12	27	15	3.2	3.4	1.8	1.8		
16	3.6	13	8.9	14	67	11	37	13	3.2	5.2	1.8	1.8		
17	3.4	16	8.7	47	53	11	24	12	4.0	6.4	1.8	1.8		
18	3.3	14	8.4	116	35	11	18	12	4.2	4.8	1.8	1.8		
19	3.1	12	8.3	142	24	12	15	12	4.1	3.7	1.6	1.8		
20	4.1	11	7.9	73	19	11	14	26	3.6	3.0	1.6	1.8		
21	5.1	11	7.4	44	21	11	13	18	3.6	3.1	1.6	1.8		
22	4.7	10	7.2	33	22	10	17	13	3.4	2.6	1.6	1.8		
23	4.2	9.4	7.1	59	44	10	14	11	3.1	2.2	1.6	3.0		
24	4.6	8.6	7.1	62	61	13	12	9.4	2.8	2.4	1.6	3.0		
25	9.3	8.1	7.1	37	39	13	12	8.5	2.7	2.4	1.6	2.5		
26	11	7.7	6.9	27	27	15	14	7.9	2.6	2.0	1.6	2.3		
27	43	7.4	6.8	23	22	13	25	7.4	2.6	2.2	1.6	2.3		
28	75	7.1	6.6	21	19	12	48	6.1	2.6	2.8	1.6	2.3		
29	33	6.8	6.5	19	---	11	103	5.4	2.6	2.7	1.6	2.8		
30	16	6.5	6.8	26	---	12	86	5.1	3.3	2.3	1.7	2.6		
31	13	---	6.8	24	---	11	---	5.0	---	1.9	1.8	---		
TOTAL	271.6	531.6	306.7	954.3	735	385	662.5	515.8	104.5	94.6	55.5	59.9		
MEAN	8.76	17.7	9.89	30.8	26.3	12.4	22.1	16.6	3.48	3.05	1.79	2.00		
MAX	75	51	19	142	67	17	103	42	4.6	6.4	2.8	3.0		
MIN	2.0	6.5	6.3	9.7	12	10	8.7	5.0	2.6	1.9	1.6	1.6		
CFSM	.93	1.88	1.05	3.27	2.79	1.32	2.35	1.76	.37	.32	.19	.21		
IN.	1.07	2.10	1.21	3.77	2.91	1.52	2.62	2.04	.41	.37	.22	.24		
AC-FT	539	1050	608	1890	1460	764	1310	1020	207	188	110	119		
CAL YR 1985	TOTAL	3254.2	MEAN	8.92	MAX	75	MIN	1.6	CFSM	.95	IN.	12.86	AC-FT	6450
WTR YR 1986	TOTAL	4677.0	MEAN	12.8	MAX	142	MIN	1.6	CFSM	1.36	IN.	18.49	AC-FT	9280

12167000 NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WA

LOCATION.--Lat 48°15'42", long 122°02'47", in SW¼NW¼ sec.16, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, on right bank 5.7 mi southeast of Arlington, 7.8 mi downstream from Deer Creek, and at mile 6.5.

DRAINAGE AREA.--262 mi².

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

REVISED RECORDS.--WSP 1286: 1938-39. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 89.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 15-25. Records good except for estimated daily discharges, which are fair. No regulation. Small diversions for domestic use. National Weather Service radio telemeter at station. Chemical analyses November 1961 to September 1971, October 1973 to September 1974.

AVERAGE DISCHARGE.--58 years, 1,901 ft³/s, 98.53 in/yr, 1,377,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,300 ft³/s Dec. 3, 1982, gage height, 13.89 ft; minimum discharge, 117 ft³/s Sept. 23, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	unknown	22,600	12.28	Jan. 19	0100	*30,900	*14.08
Oct. 26	2400	20,600	11.79	Feb. 24	0500	28,300	13.54
Nov. 1	2300	25,200	12.88	Feb. 25	0600	16,500	10.71
Nov. 3	0700	18,400	11.22				

Minimum discharge, 184 ft³/s Sept. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	230	13000	758	927	3600	2590	1750	1760	1400	523	390	255		
2	249	14200	629	927	2960	2150	1490	2040	1250	837	379	250		
3	358	12300	788	773	2290	1860	1310	2240	1110	708	371	249		
4	284	6080	914	706	2040	1810	1290	1790	1050	916	365	240		
5	259	4640	1170	1080	2400	1640	1230	1650	930	661	360	231		
6	463	5440	1750	4240	1930	1510	1090	1440	857	566	351	220		
7	468	4380	1750	2100	1640	3030	1020	1340	794	520	344	215		
8	343	3280	1590	2290	1450	3460	1030	1230	758	501	339	208		
9	298	2600	1170	1960	1320	2170	1010	1180	718	482	333	214		
10	282	2040	992	2250	1210	1760	938	1260	709	501	327	234		
11	1460	1660	892	3950	1130	1590	957	1260	717	860	327	277		
12	1130	1440	814	2210	1060	1590	1270	2310	698	1040	320	228		
13	1030	1290	752	1780	984	1430	1630	7340	651	807	313	214		
14	3570	1160	719	1780	948	1550	1310	3540	655	642	304	230		
15	2800	1850	691	1570	1680	1330	1370	2560	728	577	292	219		
16	2400	3570	647	1860	4240	1170	1540	2010	619	1040	282	205		
17	1500	2150	635	4030	2110	1070	1600	1760	592	2120	273	196		
18	1750	1600	647	16900	1610	1050	1450	2380	659	1290	263	192		
19	1250	1380	676	17600	1320	1170	1170	2370	996	878	257	201		
20	2250	1240	719	5140	1220	1070	1260	3810	1040	722	250	221		
21	1800	1080	764	3410	1160	1370	1670	2430	949	646	249	204		
22	2100	936	741	2730	1210	1330	2090	1790	688	599	242	190		
23	2100	958	774	4640	6690	1150	1490	1480	636	565	241	831		
24	6600	871	822	3980	21300	2320	1250	1330	625	537	233	2170		
25	13500	814	871	2700	12500	1730	1350	1440	594	512	233	860		
26	8870	770	844	2230	5770	2510	1460	1760	560	490	233	543		
27	15700	745	783	2460	3580	2160	2800	1640	530	476	231	716		
28	7650	699	714	2790	3050	2460	3030	1490	523	459	240	1210		
29	3710	677	691	3150	---	2100	2360	1450	573	440	263	2120		
30	2910	623	671	3270	---	2780	1930	1540	543	419	270	1380		
31	2410	---	630	3490	---	2170	---	1510	---	401	265	---		
TOTAL	89724	93473	27008	108923	92402	57080	45145	63130	23152	21735	9140	14723		
MEAN	2894	3116	871	3514	3300	1841	1505	2036	772	701	295	491		
MAX	15700	14200	1750	17600	21300	3460	3030	7340	1400	2120	390	2170		
MIN	230	623	629	706	948	1050	938	1180	523	401	231	190		
CFSM	11.0	11.9	3.32	13.4	12.6	7.03	5.74	7.77	2.95	2.68	1.13	1.87		
IN.	12.74	13.27	3.83	15.47	13.12	8.10	6.41	8.96	3.29	3.09	1.30	2.09		
AC-FT	178000	185400	53570	216000	183300	113200	89550	125200	45920	43110	18130	29200		
CAL YR 1985	TOTAL	586356	MEAN	1606	MAX	15700	MIN	230	CFSM	6.13	IN.	83.25	AC-FT	1163000
WTR YR 1986	TOTAL	645635	MEAN	1769	MAX	21300	MIN	190	CFSM	6.75	IN.	91.67	AC-FT	1281000

STILLAGUAMISH RIVER BASIN

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12168500 PILCHUCK CREEK NEAR BRYANT, WA

LOCATION.--Lat 48°15'58", long 122°09'46", in NE¼NE¼ sec.16, T.32 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, on right bank 500 ft upstream from bridge on State Highway 9, 1.8 mi north of Bryant, and at mile 6.4.

DRAINAGE AREA.--52.0 mi².

PERIOD OF RECORD.--March 1929 to September 1931, June 1950 to September 1951, September 1952 to September 1975, June 1980 to current year (seasonal records only).

REVISED RECORDS.--WSP 1316: 1930-31(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 119.8 ft above National Geodetic Vertical Datum of 1929 (stadia traverse). Prior to Oct. 1, 1931, nonrecording gage at site 100 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Aug. 4-28. Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--26 years (water years 1930, 1931, 1951, 1953-75), 281 ft³/s, 73.38 in/yr, 203,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft³/s Jan. 30, 1971, gage height, 8.20 ft, from high-water mark in well, from rating curve extended above 3,900 ft³/s; minimum discharge observed, 0.5 ft³/s Aug. 29 to Sept. 1, 1931, gage height, 0.90 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period June to October, 1,320 ft³/s Oct. 26, gage height, 4.32 ft; minimum discharge, 3.9 ft³/s on all or part of each day Aug. 28-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR JUNE TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	53	18	25	5.5	96
2	47	62	24	5.5	65
3	44	46	23	5.5	51
4	41	73	22	5.2	43
5	40	41	21	4.7	40
6	37	29	20	4.5	35
7	36	22	19	4.3	30
8	35	17	18	4.1	27
9	32	15	17	4.1	24
10	29	22	16	4.7	23
11	27	91	15	13	18
12	25	81	14	9.2	16
13	23	64	14	6.9	15
14	22	41	13	6.5	14
15	27	33	12	6.5	12
16	24	285	12	5.9	11
17	24	809	11	5.4	11
18	61	275	10	5.0	10
19	101	133	9.0	5.0	10
20	62	87	8.0	5.0	10
21	65	70	7.5	5.0	9.8
22	41	60	7.0	5.0	9.3
23	36	55	6.0	136	8.8
24	31	43	5.5	274	8.8
25	25	36	5.0	82	17
26	23	34	4.5	37	611
27	22	32	4.0	139	542
28	17	35	3.9	224	228
29	14	32	3.9	569	126
30	18	30	4.0	183	283
31	---	27	4.9	---	403
TOTAL	1082	2698	379.2	1770.5	2807.7
MEAN	36.1	87.0	12.2	59.0	90.6
MAX	101	809	25	569	611
MIN	14	15	3.9	4.1	8.8
CFSM	.69	1.67	.23	1.13	1.74
IN.	.77	1.93	.27	1.27	2.01
AC-FT	2150	5350	752	3510	5570

12175000 ROSS RESERVOIR NEAR NEWHALEM, WA
(International gaging station)

LOCATION.--Lat 48°43'58", long 121°04'02", in SE¼ sec.35, T.38 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Ross Dam on Skagit River, 1.0 mi downstream from Ruby Creek, 9.1 mi northeast of Newhalem, and at mile 105.2.

DRAINAGE AREA.--999 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--March 1940 to current year (monthend elevations and contents only prior to October 1946). Prior to October 1945, published as "Ruby Reservoir near Newhalem."

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is city of Seattle Ross Dam datum; 1.79 ft above National Geodetic Vertical Datum of 1929; and 0.88 ft Geodetic Survey of Canada 1959 datum (by water level transfer of elevation from the international boundary). Prior to Sept. 24, 1940, nonrecording gage on west shore at site upstream from Ross Dam at same datum. June 29, 1943, to Apr. 29, 1948, nonrecording gage on right bank at site 500 ft upstream from dam at present datum.

REMARKS.--Reservoir is formed by concrete-arch dam completed to elevation 1,615 ft in 1949, storage began Mar. 11, 1940. Starting about July 1, 1967, taintor gates were extended to elevation 1,602.50 ft. Usable storage, 1,052,300 acre-ft between elevations 1,475 ft, lower limit of operation, and 1,602.5 ft, top of taintor gates. Dead storage below elevation 1,250 ft, 1,175 acre-ft. Water used by city of Seattle for power development. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by city of Seattle. This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,443,460 acre-ft July 20, 1981, elevation, 1,603.23 ft; minimum observed since dam was completed in 1949, 51,760 acre-ft Apr. 5, 1952, elevation, 1,348.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,435,107 acre-ft July 22, elevation, 1,602.53 ft; minimum, 794,545 acre-ft Feb. 22, elevation, 1,539.25 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on 25-foot contour intervals furnished by city of Seattle in 1943)

1,491	459,690	1,550	888,320
1,500	509,240	1,575	1,130,200
1,540	800,920	1,603	1,440,700

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1589.53	1592.74	1581.61	1570.97	1556.96	1549.21	1555.34	1552.08	1581.34	1601.92	1602.34	1601.68
2	1589.25	1593.94	1581.04	1569.91	1556.29	1550.03	1555.52	1551.89	1584.15	1602.20	1602.37	1601.37
3	1589.02	1595.25	1580.77	1569.08	1555.93	1550.41	1555.37	1551.69	1586.26	1602.08	1602.47	1601.12
4	1588.75	1596.06	1580.59	1568.34	1555.35	1551.15	1555.37	1551.23	1588.11	1601.86	1602.40	1600.95
5	1588.56	1595.86	1580.09	1567.55	1554.77	1551.41	1555.12	1550.70	1590.05	1601.66	1602.38	1600.88
6	1588.46	1595.81	1579.66	1566.91	1554.39	1551.78	1554.94	1550.44	1591.44	1601.50	1602.32	1600.65
7	1588.20	1595.70	1579.47	1565.95	1553.80	1552.72	1554.89	1550.03	1592.70	1601.39	1602.22	1600.80
8	1587.87	1595.14	1579.17	1565.70	1553.12	1553.90	1554.93	1549.95	1593.86	1601.38	1602.18	1600.65
9	1587.52	1594.70	1578.62	1565.34	1552.37	1554.66	1554.91	1549.61	1594.82	1601.73	1602.29	1600.44
10	1587.30	1594.24	1578.39	1564.70	1551.33	1555.18	1554.92	1549.46	1595.35	1601.90	1602.43	1600.18
11	1587.34	1593.54	1578.19	1564.05	1550.10	1555.44	1555.01	1549.16	1596.68	1602.02	1602.37	1599.95
12	1587.28	1593.04	1577.94	1563.53	1548.98	1555.56	1555.19	1548.95	1597.55	1602.19	1602.31	1599.67
13	1586.98	1592.57	1577.70	1562.84	1547.78	1555.73	1555.05	1549.17	1598.14	1602.21	1602.18	1599.50
14	1586.84	1592.12	1577.39	1562.11	1546.81	1555.87	1555.03	1549.28	1599.02	1602.27	1602.09	1599.59
15	1587.19	1591.74	1577.27	1561.39	1546.41	1555.63	1554.82	1549.38	1599.68	1602.38	1602.13	1599.23
16	1587.45	1591.49	1576.95	1560.68	1545.68	1555.82	1554.25	1549.45	1599.90	1602.35	1602.15	1598.96
17	1587.53	1591.16	1576.65	1560.12	1544.71	1555.81	1554.20	1549.75	1599.78	1602.22	1602.31	1598.61
18	1587.58	1590.71	1576.39	1561.46	1543.67	1555.64	1553.93	1550.36	1599.97	1602.15	1602.19	1598.35
19	1587.96	1590.32	1576.06	1563.25	1542.70	1555.54	1553.55	1551.60	1600.22	1602.17	1602.20	1598.08
20	1588.22	1589.62	1575.73	1563.38	1541.62	1555.16	1553.35	1553.35	1600.42	1602.32	1602.19	1597.72
21	1588.33	1588.93	1575.23	1563.31	1540.90	1554.85	1553.46	1554.67	1600.39	1602.45	1602.14	1597.62
22	1588.55	1588.24	1574.95	1562.72	1539.93	1554.71	1553.80	1555.56	1600.51	1602.39	1601.98	1597.19
23	1588.60	1587.53	1574.52	1562.26	1539.38	1554.47	1554.23	1556.20	1600.81	1602.31	1601.94	1597.08
24	1588.90	1586.96	1574.41	1561.68	1540.93	1554.12	1554.18	1556.86	1601.24	1602.24	1602.11	1596.88
25	1589.16	1586.23	1574.12	1561.03	1544.09	1553.99	1554.10	1558.44	1601.37	1602.34	1602.12	1596.63
26	1589.48	1585.33	1573.35	1560.18	1546.30	1554.09	1554.03	1561.45	1601.27	1602.19	1601.99	1596.25
27	1590.61	1584.57	1572.75	1559.23	1547.51	1554.14	1553.84	1564.85	1601.15	1602.17	1601.84	1595.94
28	1591.66	1583.79	1572.46	1558.82	1548.36	1554.34	1553.53	1568.26	1601.12	1602.17	1601.72	1595.62
29	1591.93	1583.00	1572.32	1558.30	---	1554.75	1553.18	1571.36	1601.49	1602.27	1601.69	1595.25
30	1592.05	1582.22	1572.06	1557.98	---	1555.01	1552.51	1574.73	1601.68	1602.36	1601.66	1594.95
31	1592.17	---	1571.65	1557.43	---	1555.01	---	1577.93	---	1602.49	1601.75	---
MAX	1592.17	1596.06	1581.61	1570.97	1556.96	1555.87	1555.52	1577.93	1601.68	1602.49	1602.47	1601.68
MIN	1586.84	1582.22	1571.65	1557.43	1539.38	1549.21	1552.51	1548.95	1581.34	1601.38	1601.66	1594.95
+	1315904	1206476	1095630	956342	873707	933793	910941	1160865	1425024	1434631	1425850	1347235
-	+27090	-109428	-110846	-139288	-82635	+60086	-22852	+249924	+264159	+9607	-8781	-78615
CAL YR 1985	MAX	1602.16	MIN	1491.30	±	+12240						
WTR YR 1986	MAX	1602.49	MIN	1539.38	±	+58421						

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

- Change in contents, in acre-feet.

12175500 THUNDER CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°40'22", long 121°04'18", in SE¼ sec.23, T.37 N., R.13 E., (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi upstream from high-water line of Diablo Reservoir, 9.0 mi east of Newhalem, and at mile 3.4.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1930 to current year. Published as "above Colonial Creek, near Marblemount" 1930-31.

REVISED RECORDS.--WSP 1012: 1943. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-ft). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,220 ft, from river-profile map.

REMARKS.--Estimated daily discharges: Oct. 1-24, Nov. 19 to Dec. 5, Dec. 19-30. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Large diurnal fluctuations caused by snowmelt during summer months.

AVERAGE DISCHARGE.--56 years, 614 ft³/s, 79.41 in/yr, 444,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s Dec. 26, 1980, gage height, 14.5 ft, from rating curve extended above 3,500 ft³/s; minimum discharge not determined, probably less than 50 ft³/s during period of ice effect or no gage-height record in February 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Records for floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	1815	2,550	7.02	Feb. 25	0530	2,700	7.19
Nov. 3	0815	2,440	6.89	May 30	2315	*3,280	*7.81
Jan. 18	2315	2,440	6.89				

Minimum discharge, 101 ft³/s Jan. 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	200	859	152	107	266	750	352	244	2730	1230	924	903		
2	235	1730	150	108	259	638	318	242	2480	1540	1230	928		
3	240	1970	145	106	244	557	295	267	2060	1170	1320	925		
4	198	1270	138	105	229	531	278	283	1950	847	1200	877		
5	190	873	148	105	218	501	260	269	1810	665	1150	801		
6	295	684	136	107	203	468	252	270	1660	664	1100	745		
7	230	574	132	104	192	619	271	307	1480	869	1180	622		
8	195	495	127	108	181	682	333	315	1180	1030	1370	542		
9	180	427	124	106	175	552	367	321	1090	1010	1500	480		
10	172	375	119	111	170	479	369	307	1310	1010	1590	585		
11	300	328	118	126	164	423	345	286	1610	1340	1230	416		
12	210	302	116	117	158	381	320	283	1470	1250	1100	344		
13	200	290	114	115	152	351	293	422	1340	987	1170	309		
14	340	267	114	114	149	324	268	352	1490	880	1210	277		
15	670	265	112	114	151	300	254	320	1290	749	1060	247		
16	550	279	111	116	147	279	244	306	946	684	858	240		
17	385	251	111	133	145	260	232	320	885	603	796	212		
18	395	236	110	961	145	246	221	902	1210	579	758	213		
19	480	230	120	1620	135	235	211	1300	988	750	756	227		
20	490	220	128	746	134	231	237	1730	794	994	756	206		
21	375	215	138	489	131	259	591	1130	676	1210	861	188		
22	375	205	130	386	129	257	951	749	781	1330	854	189		
23	395	198	132	336	165	248	594	588	1180	1240	819	637		
24	420	190	138	289	1450	253	447	566	1480	1140	724	546		
25	860	185	142	255	2380	239	379	1180	1320	1070	778	273		
26	658	178	138	235	1710	238	335	2250	1100	933	995	218		
27	1830	172	130	269	1040	266	317	2160	1020	807	1170	225		
28	1360	168	125	312	844	511	299	2100	1310	757	1390	208		
29	801	162	117	278	---	467	275	2340	1360	691	1230	310		
30	609	158	112	264	---	468	255	2760	1080	652	1090	293		
31	488	---	106	264	---	388	---	2750	---	732	965	---		
TOTAL	14326	13756	3933	8606	11466	12401	10163	27619	41080	29413	33134	13186		
MEAN	462	459	127	278	410	400	339	891	1369	949	1069	440		
MAX	1830	1970	152	1620	2380	750	951	2760	2730	1540	1590	928		
MIN	172	158	106	104	129	231	211	242	676	579	724	188		
CFSM	4.40	4.37	1.21	2.65	3.90	3.81	3.23	8.49	13.0	9.04	10.2	4.19		
IN.	5.08	4.87	1.39	3.05	4.06	4.39	3.60	9.79	14.55	10.42	11.74	4.67		
AC-FT	28420	27290	7800	17070	22740	24600	20160	54780	81480	58340	65720	26150		
CAL YR 1985	TOTAL	203625	MEAN	558	MAX	2350	MIN	87	CFSM	5.31	IN.	72.14	AC-FT	403900
WTR YR 1986	TOTAL	219083	MEAN	600	MAX	2760	MIN	104	CFSM	5.71	IN.	77.62	AC-FT	434600

12178000 SKAGIT RIVER AT NEWHALEM, WA

LOCATION.--Lat 48°40'19", long 121°14'48", in SW¼SE¼ sec.21, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi upstream from Newhalem Creek, 0.5 mi downstream from city of Seattle powerplant at Newhalem, 10.8 mi upstream from Bacon Creek, and at mile 93.7.

DRAINAGE AREA.--1,175 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--October 1908 to May 1914, October 1920 to current year. June 1914 to September 1920 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31.

REVISED RECORDS.--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401.5 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to May 24, 1914, nonrecording gages at site 0.5 mi upstream at datum 91 ft higher. Nov. 15, 1920, to June 4, 1923, nonrecording gage at site about 500 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records excellent. Water is diverted 2.9 mi upstream from station and is returned to river at city of Seattle powerplant 0.5 mi upstream from station. Flow regulated by Gorge powerplant since August 1924 and by Ross Reservoir (see sta 12175000) since March 1940, Diablo Reservoir (see sta 12176500) since October 1929, and Gorge Reservoir (see sta 12177700) since June 1960, having a combined total capacity of 1,533,000 acre-ft. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--78 years (water years 1909-86), 4,448 ft³/s, 3,223,000 acre-ft/yr, adjusted for storage in Diablo Reservoir since October 1929, Ross Reservoir since March 1940, and Gorge Reservoir since June 1960.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,500 ft³/s Nov. 29, 1909, gage height, 22.0 ft from floodmark, site and datum then in use; minimum discharge, 54 ft³/s Nov. 1, 1943, gage height, 78.15 ft; minimum daily discharge, 136 ft³/s Aug. 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1815 reached a stage of approximately 20.5 ft, discharge about 115,000 ft³/s. Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,100 ft³/s Feb. 25, gage height, 85.45 ft; minimum discharge, 1,260 ft³/s Nov. 26, gage height, 81.07 ft; minimum daily discharge, 1,400 ft³/s Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1860	4120	4930	3780	5820	4190	4330	5400	6350	4830	2800	3220
2	2020	5160	4290	6340	6240	4200	4040	4870	6130	6220	2940	3380
3	2370	5180	3360	5910	4090	4220	3380	4920	5900	7010	3900	3580
4	2580	4410	2540	4680	5090	4210	4260	4950	4970	6360	4710	3540
5	2640	6800	2840	4790	5990	4190	4490	4760	4340	6380	4010	3410
6	1990	6980	3300	4930	3900	4200	3900	5020	5080	4770	3840	2460
7	2380	7020	2900	4900	4890	4220	4090	5020	4480	5120	4100	1540
8	2610	6550	3160	3690	5090	3670	4040	4940	4160	4630	4080	2560
9	2720	6150	3770	2960	5760	3660	4190	5010	4830	3220	3330	2840
10	1870	6500	2500	4820	6610	4210	4420	4990	5420	3500	3480	3100
11	2230	7040	2160	4930	6450	4220	4430	5020	4910	5300	3980	3180
12	1400	6580	2520	4370	6970	4440	4420	4550	5040	5040	3930	2870
13	2430	4650	2600	4780	7020	2850	4130	3780	7010	4170	3800	1990
14	2730	4710	2300	4770	6250	4220	3650	3310	5420	4240	3210	1820
15	3210	4960	2270	4580	4790	4500	3790	3310	5640	3320	3080	2920
16	2960	4180	2460	5370	3910	4260	4040	3410	6300	4340	2750	2910
17	2140	5010	2640	5560	6050	3600	4290	2680	7020	4840	2210	3140
18	2210	4390	2370	6620	5520	3620	5510	3720	6460	4010	3240	3410
19	1940	4490	2590	7220	6190	3900	4420	4090	6210	3360	2530	2280
20	2450	4720	2780	6470	5910	4230	3820	5020	5420	3320	2060	2720
21	2630	5430	3470	7130	4820	4220	4730	4800	5590	4110	2620	1960
22	2920	5340	2230	7230	5610	4540	4450	3960	4890	5770	2750	2970
23	2830	5690	3160	6150	5970	4660	5780	3840	5540	6370	2500	3320
24	3350	4860	2190	6200	5770	4520	5880	2720	6000	4430	1510	3550
25	3530	5960	2860	6190	7200	4740	4370	2100	6920	3750	2760	2730
26	3470	5600	3980	6620	5530	4160	4100	4960	7170	4590	3050	3160
27	4250	6230	3770	6560	4600	3660	5270	3940	7190	4200	3330	2950
28	4400	5690	3310	6070	4470	3530	5370	4090	7110	3310	3510	3150
29	3480	5490	1940	5520	---	4490	5740	4960	5570	2230	3710	3540
30	3440	5610	1910	4460	---	4750	5890	6180	4440	2280	3280	3630
31	3400	---	3090	5340	---	4630	---	6540	---	2520	2480	---
TOTAL	84440	165500	90190	168940	156510	128710	135220	136860	171510	137540	99480	87830
MEAN	2724	5517	2909	5450	5590	4152	4507	4415	5717	4437	3209	2928
MAX	4400	7040	4930	7230	7200	4750	5890	6540	7190	7010	4710	3630
MIN	1400	4120	1910	2960	3900	2850	3380	2100	4160	2230	1510	1540
AC-FT†	167500	328300	178900	335100	310400	255300	268200	271500	340200	272800	197300	174200
+	+29062	-111152	-111217	-139473	-80870	+63106	-24745	+250936	+263118	+6674	-7772	-78305
MEAN‡	3197	3649	1100	3180	4133	5177	4093	8494	10141	4545	3081	1612
AC-FT‡	196600	217100	67680	195600	229500	318400	243500	522400	603300	279500	189500	95900
CAL YR 1985	TOTAL 1360590	MEAN 3728	MAX 7040	MIN 1400	AC-FT 2699000	MEAN‡ 3747	AC-FT‡ 2713000					
WTR YR 1986	TOTAL 1562730	MEAN 4281	MAX 7230	MIN 1400	AC-FT 3100000	MEAN‡ 4363	AC-FT‡ 3159000					

† Change in contents, in acre-feet, for Ross, Diablo, and Gorge Reservoirs.

‡ Adjusted for change in contents of Ross, Diablo, and Gorge Reservoirs.

12178100 NEWHALEM CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°39'22", long 121°14'14", in SE¼SE¼ sec.28, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, North Cascades National Park, on left bank 1.2 mi south of Newhalem, 1.5 mi downstream from East Fork, and at mile 1.5.

DRAINAGE AREA.--27.9 mi².

PERIOD OF RECORD.--January 1961 to current year.

REVISED RECORDS.--WDR WA-84-1: 1983.

GAGE.--Water-stage recorder. Elevation of gage is 1,080 ft, by barometer. Prior to October 1981, at datum 0.96 ft lower.

REMARKS.--Estimated daily discharges: Nov. 29 to Dec. 4. Records good except for discharges above 1,000 ft³/s, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--25 years, 175 ft³/s, 85.18 in/yr, 126,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,430 ft³/s Dec. 26, 1980, gage height, 9.14 ft present datum, from floodmarks, from rating curve extended above 5,570 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 20 ft³/ Feb. 1, 1963, gage height, 1.07 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 24	2230	1,220	4.45	Feb. 24	0715	1,300	4.87
Oct. 27	1630	1,280	4.54	Feb. 25	0245	1,960	5.58
Nov. 1	2100	1,350	4.64	May 20	0400	774	3.96
Nov. 3	0645	1,590	4.96	May 30	2030	930	4.26
Jan. 18	2000	*2,790	*6.08				

Minimum discharge, 37 ft³/s Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	38	622	53	52	200	299	166	111	712	276	115	69		
2	47	973	52	50	179	249	144	118	598	327	133	67		
3	48	1050	51	48	152	217	129	142	502	268	139	66		
4	41	574	51	46	134	209	120	136	455	218	128	66		
5	40	368	53	48	124	193	111	125	401	174	118	65		
6	70	296	56	61	111	181	105	124	365	166	113	63		
7	50	272	55	55	101	309	112	134	296	193	114	61		
8	44	205	52	79	94	311	135	132	260	208	118	60		
9	40	160	50	75	88	237	137	130	266	198	123	58		
10	39	132	48	93	83	197	129	122	342	200	123	67		
11	157	109	46	148	80	173	121	113	396	280	106	62		
12	84	100	45	103	75	157	116	130	349	278	96	57		
13	71	94	44	89	72	141	108	285	332	200	96	55		
14	293	87	42	88	71	129	100	199	370	171	97	56		
15	467	110	41	81	74	117	98	169	320	154	92	53		
16	357	133	41	84	81	108	96	154	231	190	84	53		
17	211	103	42	102	74	101	93	157	222	203	79	51		
18	218	87	44	1400	71	96	89	407	289	171	77	50		
19	268	82	48	986	67	92	85	504	265	174	75	50		
20	278	78	54	380	66	92	105	612	245	189	73	49		
21	204	73	62	258	65	112	294	362	210	200	73	48		
22	202	68	60	205	65	108	360	259	233	196	72	47		
23	216	65	63	178	150	103	219	208	317	180	71	137		
24	520	64	67	151	1060	117	168	214	345	159	70	110		
25	624	61	69	131	1340	108	148	423	298	151	69	73		
26	508	59	69	121	730	116	133	665	259	137	71	65		
27	933	58	64	166	395	137	140	598	246	127	73	84		
28	539	57	60	188	339	336	140	601	300	117	77	96		
29	317	55	57	154	---	261	126	684	337	111	75	152		
30	239	54	54	175	---	257	116	784	245	106	75	120		
31	181	---	51	191	---	196	---	730	---	107	72	---		
TOTAL	7344	6249	1644	5986	6141	5459	4143	9532	10006	5829	2897	2110		
MEAN	237	208	53.0	193	219	176	138	307	334	188	93.5	70.3		
MAX	933	1050	69	1400	1340	336	360	784	712	327	139	152		
MIN	38	54	41	46	65	92	85	111	210	106	69	47		
CFSM	8.49	7.46	1.90	6.92	7.85	6.31	4.95	11.0	12.0	6.74	3.35	2.52		
IN.	9.79	8.33	2.19	7.98	8.19	7.28	5.52	12.71	13.34	7.77	3.86	2.81		
AC-FT	14570	12390	3260	11870	12180	10830	8220	18910	19850	11560	5750	4190		
CAL YR 1985	TOTAL	61129	MEAN	167	MAX	1050	MIN	37	CFSM	5.99	IN.	81.51	AC-FT	121200
WTR YR 1986	TOTAL	67340	MEAN	184	MAX	1400	MIN	38	CFSM	6.59	IN.	89.79	AC-FT	133600

SKAGIT RIVER BASIN

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'27", long 121°21'37", in SW¼NE¼ sec.15, T.26 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.6 mi upstream from Alma Creek, 6.8 mi northeast of Marblemount, and at mile 85.8.

DRAINAGE AREA.--1,274 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 358.8 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Records excellent. All diversions returned to river upstream from gage. Flow regulated by Ross Reservoir (station 12175000), Diablo Reservoir (station 12176500), and Gorge Reservoir (station 12177700) since 1960. Water temperatures January 1953 to September 1973, September 1974 to September 1985.

AVERAGE DISCHARGE.--36 years, 5,442 ft³/s, 3,943,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s June 21, 1967, gage height, 17.26 ft; minimum discharge, 990 ft³/s Dec. 29, 1957, gage height, 4.55 ft; minimum daily discharge, 1,110 ft³/s Oct. 7, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,800 ft³/s Jan. 18, gage height, 12.03 ft; minimum discharge, 1,610 ft³/s Sept. 19, gage height, 5.41 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2140	6360	5250	3890	6850	5770	5180	6010	9180	6050	3260	3400
2	2280	8760	4640	6570	7310	5410	4770	5500	8520	7680	3510	3690
3	2620	9160	3650	6260	5080	5310	4060	5610	7890	8200	4280	3900
4	2860	6780	2870	5060	5710	5230	4790	5650	6820	7380	5600	3860
5	2900	8360	3010	4930	6690	5110	5110	5390	5970	7230	4500	3760
6	2360	8400	3620	5400	4560	5090	4400	5680	6590	5630	4420	2710
7	2650	8360	3250	5250	5440	5610	4690	5660	5660	5900	4650	1860
8	2870	7780	3360	4220	5630	5390	4730	5660	5230	5600	4670	2760
9	3020	6920	4080	3350	6220	4820	4890	5660	5970	4100	3930	3110
10	2160	7310	2820	5280	7150	5170	5070	5590	6630	4270	4060	3330
11	3010	7720	2390	5750	6900	5080	5010	5590	6430	6460	4490	3470
12	1860	7330	2740	5030	7460	5230	4990	5340	6520	6280	4390	3120
13	2740	5300	2820	5320	7540	3510	4620	5140	8230	5150	4280	2210
14	3720	5260	2500	5280	6790	4840	4120	4280	6890	5060	3680	2010
15	5150	5590	2470	5020	5360	4980	4240	4150	7010	4080	3530	3070
16	4560	4850	2670	5920	4390	4830	4540	4180	7250	5160	3150	3090
17	3190	5590	2850	6260	6390	4130	4810	3420	7920	5720	2530	3330
18	3200	4960	2570	11800	5990	4110	6000	5160	7690	4850	3550	3620
19	3390	5030	2770	13000	6630	4300	4870	6170	7330	4150	2920	2560
20	3770	5090	3050	8520	6410	4730	4360	7700	6480	4090	2390	2900
21	3730	5930	3720	8530	5280	4840	6070	6470	6490	4970	2930	2140
22	3970	5780	2480	8370	5960	5100	5940	5290	5820	6570	3080	3150
23	4010	6110	3470	7250	6910	5230	6680	4730	6740	7090	2820	3820
24	5240	5270	2480	7100	11400	5160	6930	3760	7370	5300	1800	4190
25	6040	6240	3140	6970	14200	5310	5110	3580	8040	4460	2990	3070
26	5530	5990	4250	7340	9070	4740	4670	7530	8240	5090	3380	3440
27	9430	6630	4170	7470	6660	4590	6010	6330	8190	4890	3590	3300
28	7230	6060	3620	7090	6170	5440	6090	6460	8290	3910	3970	3480
29	5090	5920	2230	6450	---	5900	6390	7450	7030	2750	4010	4100
30	4670	5890	2140	5410	---	6090	6540	9070	5480	2720	3640	4300
31	4430	---	3300	6190	---	5710	---	9190	---	2920	2920	---
TOTAL	119780	194730	98380	200280	190150	156760	155680	177400	211900	163710	112920	96750
MEAN	3864	6491	3174	6461	6791	5057	5189	5723	7063	5281	3643	3225
MAX	9430	9160	5250	13000	14200	6090	6930	9190	9180	8200	5600	4300
MIN	1860	4850	2140	3350	4390	3510	4060	3420	5230	2720	1800	1860
AC-FT	237600	386200	195100	397300	377200	310900	308800	351900	420300	324700	224000	191900
CAL YR 1985	TOTAL	1671770	MEAN	4580	MAX	9430	MIN	1860	AC-FT	3316000		
WTR YR 1986	TOTAL	1878440	MEAN	5146	MAX	14200	MIN	1800	AC-FT	3726000		

SKAGIT RIVER BASIN

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12181000 SKAGIT RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°32'02", long 121°25'43", in NE¼SW¼ sec.7, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on right bank 0.5 mi north of Marblemount, 0.6 mi upstream from Cascade River, and at mile 78.7.

DRAINAGE AREA.--1,381 mi², which 400 mi² is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1943 to July 1944, October 1946 to September 1951, May 1976 to current year.

REVISED RECORDS.--WDR WA-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 305.1 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Estimated daily discharges: Jan. 19-29. Water-discharge records good. All diversions returned to river upstream from gage. Flow regulated by Ross Reservoir (station 12175000), Diablo Reservoir (station 12176500), and Gorge Reservoir (station 12177700) since 1960.

AVERAGE DISCHARGE.--15 years (water years 1947-51, 1977-86), 6,062 ft³/s, 4,392,000 acre-ft/yr, unadjusted for regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,300 ft³/s Nov. 27, 1949, gage height, 11.37 ft, from rating curve extended above 20,000 ft³/s; minimum discharge, 620 ft³/s Mar. 6, 1944, gage height, 0.55 ft; minimum daily discharge, 1,190 ft³/s Feb. 25, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36,400 ft³/s Jan. 18, gage height, 8.85 ft; minimum discharge, 1,950 ft³/s Sept. 19, gage height, 2.05 ft; minimum daily discharge, 2,300 ft³/s Aug. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2620	8440	5600	3970	8090	7120	5490	6470	11700	6890	3710	3590
2	2650	12700	4850	6590	8430	6580	4710	6160	10600	8910	3970	3970
3	3040	13000	3990	6370	6110	6320	5490	6350	9650	9130	4520	4200
4	3260	9160	3360	5200	6370	6210	5400	6320	8380	8280	6220	4190
5	3290	9780	3130	5030	7430	5960	5120	6000	7280	7890	4790	4070
6	2930	9710	3920	5740	5380	5990	5400	6270	7770	6320	4860	3060
7	3050	9650	3650	5470	6020	8240	5250	6290	6650	6420	5040	2380
8	3250	9030	3530	4750	6200	6120	5660	6270	6120	6340	5110	3010
9	3450	7590	4360	3850	6700	5940	5680	6260	6850	4830	4420	3360
10	2660	8030	3270	5720	7630	5940	5800	6140	7620	4840	4500	3590
11	4080	8280	2720	6530	7400	5900	5280	6100	7670	7130	4880	3770
12	2680	7870	2940	5540	7950	5230	5300	6130	7710	7160	4770	3440
13	3310	5950	3090	5720	8010	4530	4680	6710	9280	5890	4620	2610
14	5240	5680	2770	5670	7320	5660	4830	5310	8060	5650	4120	2360
15	7440	6090	2700	5380	6000	5650	4450	5030	8030	4700	3970	3200
16	6290	5680	2820	6290	5060	5040	4430	4990	8020	5740	3540	3410
17	4440	6030	3110	6840	6770	4680	4420	4350	8640	6510	2990	3520
18	4370	5510	2840	20000	6530	4770	6200	6730	8650	5510	3780	3820
19	5170	5510	2980	20200	7030	5150	5370	8150	8290	4800	3430	2970
20	5290	5350	3340	13000	6880	5610	4950	10600	7380	4660	2820	3100
21	4990	6350	3850	10000	5800	5580	7300	8010	7150	5500	3240	2470
22	5160	6140	2900	9600	6340	5770	7330	6450	6540	7000	3470	3320
23	5360	6400	3660	8200	7970	5870	7410	5610	7570	7550	3180	4240
24	7110	5640	2920	8100	18400	5920	7770	4850	8430	5980	2300	4840
25	8870	6380	3370	8000	21800	5520	5800	5080	8920	5020	3240	3520
26	7640	6250	4430	8200	12800	5600	5210	9760	9110	5400	3650	3710
27	14800	6950	4500	8400	8700	7370	6760	8370	8990	5380	3860	3790
28	10100	6290	3830	7600	7990	7260	6810	8540	9210	4410	4310	3930
29	6590	6220	2670	6800	---	7180	7010	9660	8240	3330	4270	4780
30	5820	6050	2460	6540	---	6420	6980	11600	6270	3220	4020	4980
31	5360	---	3410	7190	---	6030	---	11600	---	3330	3430	---
TOTAL	160310	221710	106970	236490	227110	185160	172290	216160	244780	183720	125030	107200
MEAN	5171	7390	3451	7629	8111	5973	5743	6973	8159	5926	4033	3573
MAX	14800	13000	5600	20200	21800	8240	7770	11600	11700	9130	6220	4980
MIN	2620	5350	2460	3850	5060	4530	4420	4350	6120	3220	2300	2360
AC-FT	318000	439800	212200	469100	450500	367300	341700	428800	485500	364400	248000	212600
CAL YR 1985	TOTAL	2014460	MEAN	5519	MAX	14800	MIN	2460	AC-FT	3996000		
WTR YR 1986	TOTAL	2186930	MEAN	5992	MAX	21800	MIN	2300	AC-FT	4338000		

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1986 to September 1986.

INSTRUMENTATION.--Water-temperature sensor interfaced directly with a Data Collection Platform for satellite telemetry since March 1986.

REMARKS.--Daily record of water temperature for Apr. 11-17 not published due to loss of telemetry.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 13.0°C several days in August 1986; minimum, 4.0°C Mar. 18-25, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 13.0°C several days in August; minimum, 4.0°C Mar. 18-25.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1				---	---	---	5.0	4.5	5.0	6.5	5.5	6.0
2				---	---	---	6.0	4.5	5.5	6.5	6.0	6.0
3				---	---	---	5.5	4.5	5.0	7.0	6.0	6.0
4				---	---	---	5.0	5.0	5.0	6.5	5.5	6.0
5				---	---	---	6.0	4.5	5.0	7.0	5.5	6.5
6				---	---	---	6.5	4.5	5.5	8.0	6.0	6.5
7				---	---	---	7.0	5.0	5.5	7.5	6.0	6.5
8				---	---	---	6.0	5.0	5.5	7.5	6.0	6.5
9				---	---	---	6.0	5.0	5.5	7.0	6.0	6.5
10				---	---	---	5.5	4.5	5.0	7.5	6.0	6.5
11				---	---	---	---	---	---	7.0	6.0	6.5
12				---	---	---	---	---	---	6.5	6.0	6.0
13				---	---	---	---	---	---	6.0	5.5	5.5
14				---	---	---	---	---	---	7.0	5.0	6.0
15				---	---	---	---	---	---	8.0	5.5	6.5
16				---	---	---	---	---	---	8.0	6.0	7.0
17				---	---	---	---	---	---	7.5	6.5	7.0
18				4.5	4.0	4.0	5.5	5.0	5.5	7.0	6.5	7.0
19				5.5	4.0	4.5	6.0	5.0	5.5	8.5	6.5	7.5
20				5.5	4.0	4.5	6.5	5.5	6.0	7.5	6.0	6.5
21				5.0	4.0	4.5	6.0	5.5	6.0	7.0	6.0	6.5
22				5.5	4.0	4.5	7.0	5.0	6.0	8.0	6.0	7.0
23				4.5	4.0	4.0	5.5	4.5	5.0	8.0	6.0	7.0
24				5.0	4.0	4.5	5.5	4.5	5.0	8.0	7.0	7.5
25				4.5	4.0	4.5	6.0	5.0	5.5	10.0	7.0	8.5
26				5.0	4.5	4.5	6.0	5.0	5.5	8.5	7.0	8.0
27				5.5	4.5	5.0	6.0	5.0	5.5	9.5	7.0	8.0
28				5.5	5.0	5.0	6.0	5.0	5.5	10.0	7.0	8.5
29				5.5	5.0	5.0	6.0	5.0	5.5	10.5	7.0	8.5
30				5.5	4.5	5.0	6.5	5.0	5.5	10.0	7.5	8.5
31				6.0	4.5	5.0	---	---	---	9.5	7.5	8.5
MONTH				---	---	---	---	---	---	10.5	5.0	7.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.5	7.5	9.0	9.0	8.5	9.0	12.5	9.5	11.0	11.0	10.5	10.5
2	10.0	7.5	8.5	9.5	8.5	9.0	13.0	9.5	11.0	12.0	10.5	11.0
3	10.0	7.5	8.5	8.5	8.0	8.5	13.0	10.0	11.0	12.5	10.5	11.0
4	8.5	8.0	8.5	9.0	7.5	8.0	12.0	10.0	11.0	12.5	10.0	11.0
5	10.5	8.0	9.0	9.0	8.0	8.5	12.5	10.0	11.0	12.0	10.0	11.0
6	9.0	8.5	8.5	10.5	8.0	9.0	12.0	10.0	11.0	12.0	10.0	11.0
7	8.5	8.0	8.5	10.5	8.5	9.5	12.0	10.0	11.0	12.0	9.5	11.0
8	9.0	8.0	8.5	10.5	9.0	9.5	12.0	10.0	11.0	11.5	10.0	10.5
9	10.5	7.5	9.0	10.5	9.0	9.5	13.0	10.5	11.5	11.5	9.5	10.5
10	10.5	8.0	9.0	9.5	8.5	9.0	12.0	10.5	11.0	10.5	10.0	10.0
11	10.5	8.5	9.5	9.5	8.5	9.0	10.5	10.5	10.5	11.5	9.5	10.0
12	10.5	8.0	9.0	9.5	8.5	9.0	12.0	10.0	11.0	11.5	8.5	10.0
13	10.0	8.5	9.0	11.0	8.5	9.5	13.0	10.5	11.5	10.5	9.0	9.5
14	9.0	8.0	8.5	11.0	9.0	9.5	13.0	10.5	11.5	11.5	9.0	10.0
15	9.0	7.5	8.0	9.0	8.5	9.0	12.5	10.0	11.0	10.5	8.5	9.5
16	8.5	7.5	8.0	8.5	8.5	8.5	13.0	9.5	11.0	10.5	9.0	9.5
17	8.5	8.0	8.0	9.5	8.5	9.0	12.5	9.5	11.0	10.5	8.5	9.5
18	8.5	7.5	8.0	11.0	8.5	9.5	12.5	9.5	11.0	10.5	9.5	10.0
19	9.0	7.5	8.0	11.5	8.5	10.0	13.0	10.0	11.0	10.5	9.0	9.5
20	8.5	8.0	8.0	12.0	9.0	10.5	13.0	10.0	11.5	10.5	8.5	9.5
21	9.5	7.5	8.5	11.5	9.5	10.5	13.0	10.0	11.5	10.5	9.0	9.5
22	10.0	8.0	9.0	11.0	9.5	10.0	12.5	10.0	11.0	10.5	9.0	9.5
23	10.5	8.5	9.5	10.5	9.5	10.0	12.5	10.0	11.0	9.5	9.0	9.0
24	10.5	8.5	9.5	11.5	9.5	10.0	12.5	10.0	11.0	10.0	8.5	9.0
25	10.0	8.5	9.0	11.5	9.5	10.0	13.0	10.0	11.5	10.0	8.0	9.0
26	9.5	8.5	9.0	10.0	9.5	9.5	12.5	10.0	11.5	9.5	8.5	9.0
27	10.5	8.5	9.0	10.5	9.5	9.5	12.5	10.5	11.5	9.0	9.0	9.0
28	9.0	8.5	9.0	11.5	9.5	10.0	11.5	10.5	11.0	9.0	8.5	9.0
29	8.5	8.0	8.5	11.5	9.0	10.0	11.0	10.5	11.0	9.5	8.5	9.0
30	10.0	8.0	9.0	12.0	8.5	10.5	11.0	10.5	10.5	9.5	8.5	9.0
31	---	---	---	12.0	9.0	10.5	11.5	10.5	11.0	---	---	---
MONTH	10.5	7.5	8.5	12.0	7.5	9.5	13.0	9.5	11.0	12.5	8.0	10.0

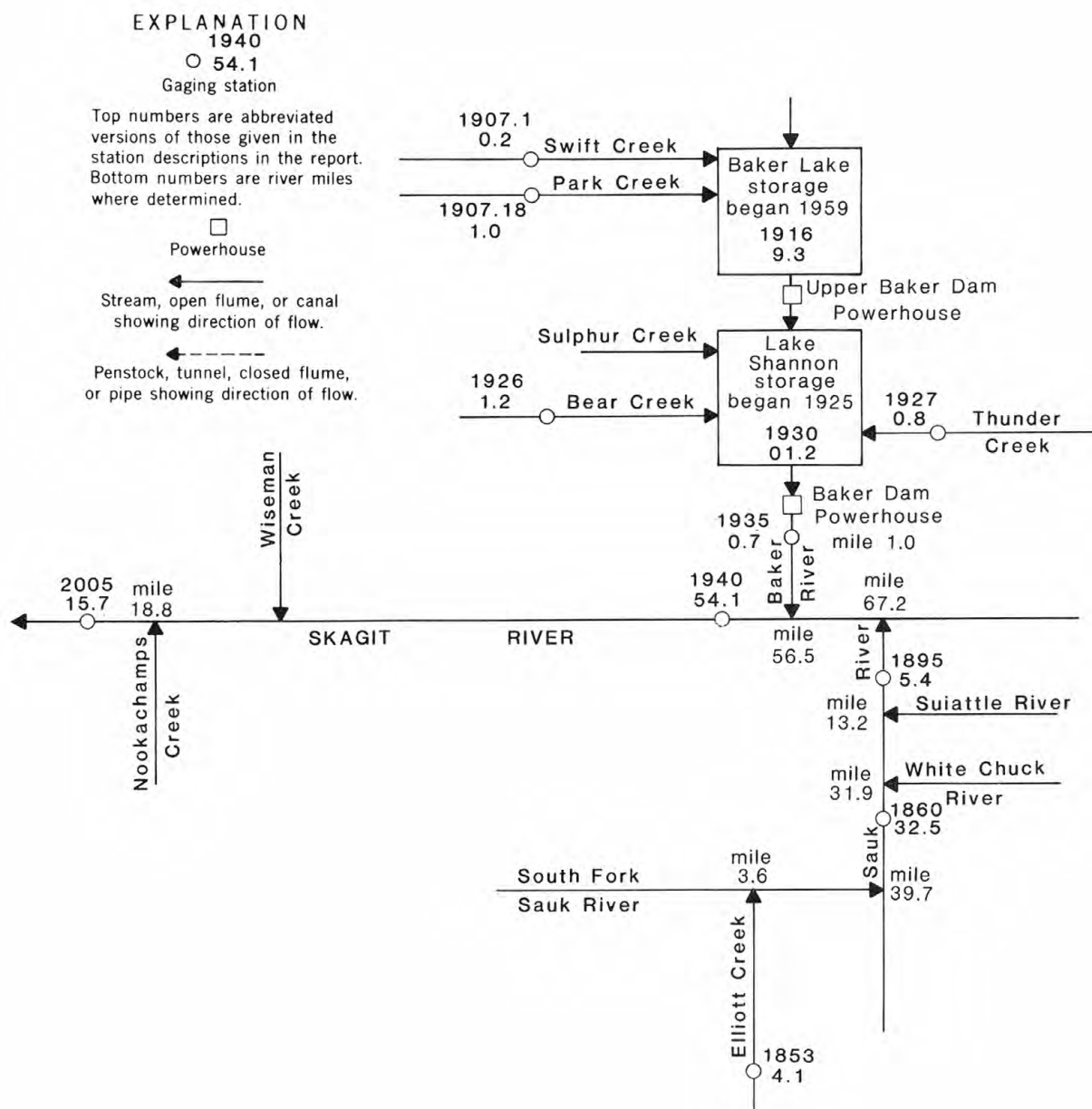


Figure 17.--Gaging stations in Skagit River basin below Cascade River.

SKAGIT RIVER BASIN

12185295 GOAT LAKE INLET NEAR MONTE CRISTO, WA

LOCATION.--Lat 48°00'52", long 121°20'51", in NE¼ sec.11, T.29 N., R.11 E. (unsurveyed), at Goat Lake Inlet, Snohomish County, Hydrologic Unit 17110006, and 2.5 miles northeast of Monte Cristo.

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

REMARKS.--Quality of water analyses for dissolved aluminum and dissolved iron were determined from water filtered through a 0.10 micrometer filter. Discharge measured intermittently at same site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3	ACIDITY (MG/L AS H)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 08...	1030	5.4	14	6.9	4.0	7	1	<0.1	1.9	0.5
APR 22...	0955	34	17	6.8	2.5	7	0	<0.1	1.9	0.5
MAY 15...	1010	15	15	6.9	3.0	6	0	<0.1	1.8	0.4
JUN 10...	1020	37	15	6.9	4.0	6	1	<0.1	1.5	0.4
JUL 15...	1015	19	14	6.8	4.5	6	1	<0.1	1.7	0.5
SEP 17...	0900	3.0	15	6.9	5.0	7	2	<0.1	1.8	0.5

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	BROMIDE DIS- SOLVED (MG/L AS BR)
OCT 08...	0.4	11	0.1	0.19	6	1.4	0.28	0.04	<0.01
APR 22...	0.4	11	0.1	0.17	--	1.3	0.33	0.02	0.01
MAY 15...	0.4	12	0.1	0.19	--	1.4	0.35	0.03	0.01
JUN 10...	0.4	13	0.1	0.19	5	1.2	0.23	0.01	<0.01
JUL 15...	0.5	14	0.1	0.24	5	1.2	0.30	0.02	<0.01
SEP 17...	0.4	11	0.1	0.30	5	1.4	0.21	0.01	<0.01

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 08...	2.5	12	0.02	0.17	0.07	0.033	<0.01	20	100	7
APR 22...	2.1	12	0.02	1.1	0.13	0.031	<0.01	<10	<3	<1
MAY 15...	2.5	11	0.02	0.45	0.11	0.010	<0.01	<10	13	<1
JUN 10...	1.8	10	0.01	1.0	0.06	0.008	<0.01	<10	7	<1
JUL 15...	2.2	10	0.01	0.54	0.04	0.012	<0.01	<10	9	<1
SEP 17...	1.9	11	0.02	0.09	0.04	<0.002	<0.01	<10	3	6

12185300 ELLIOTT CREEK AT GOAT LAKE OUTLET, NEAR MONTE CRISTO, WA--Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality of water analyses for dissolved aluminum and dissolved iron were determined from water filtered through a 0.10 micrometer filter.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB (MG/L AS CAC03)	ACIDITY (MG/L AS H)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 08...	1130	11	16	6.8	8.0	7	1	<0.1	2.0	0.4
NOV 13...	0840	15	14	6.8	2.0	7	3	<0.1	2.0	0.4
DEC 10...	0915	5.1	17	6.9	1.5	7	2	<0.1	2.0	0.5
JAN 14...	0930	9.8	20	6.8	1.5	7	0	<0.1	2.1	0.5
FEB 12...	0840	9.2	16	6.6	2.0	6	2	<0.1	1.9	0.4
MAR 12...	0845	32	15	6.7	2.5	6	1	<0.1	1.7	0.4
APR 22...	1120	42	21	6.7	5.5	8	0	<0.1	2.2	0.5
MAY 15...	1215	36	19	7.0	6.0	7	0	<0.1	2.1	0.5
JUN 10...	1200	51	13	6.8	9.0	5	0	<0.1	1.5	0.4
JUL 15...	1140	36	13	6.8	9.0	5	0	<0.1	1.6	0.3
SEP 17...	1012	7.4	16	6.9	10.5	7	2	<0.1	2.0	0.5

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	BROMIDE DIS- SOLVED (MG/L AS BR)
OCT 08...	0.4	11	0.1	0.27	6	1.4	0.28	0.02	0.01
NOV 13...	0.5	13	0.1	0.26	--	1.3	0.38	0.02	<0.01
DEC 10...	1.0	23	0.2	0.34	--	1.4	0.41	0.03	<0.01
JAN 14...	0.6	15	0.1	0.35	--	1.5	0.40	0.02	0.01
FEB 12...	0.5	14	0.1	0.26	--	1.4	0.40	<0.01	0.01
MAR 12...	0.5	15	0.1	0.26	--	1.3	0.34	0.02	<0.01
APR 22...	0.6	14	0.1	0.36	--	1.6	0.41	0.03	0.01
MAY 15...	0.6	15	0.1	0.33	--	1.5	0.39	0.02	<0.01
JUN 10...	0.5	16	0.1	0.22	5	1.1	0.26	<0.01	<0.01
JUL 15...	0.4	13	0.1	0.25	6	1.3	0.28	0.01	0.01
SEP 17...	0.4	11	0.1	0.28	5	1.5	0.26	0.02	<0.01

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 08...	2.2	12	0.02	0.35	0.03	0.025	<0.010	<10	<3	7
NOV 13...	3.0	11	0.01	0.43	0.07	0.021	<0.010	<10	47	8
DEC 10...	3.3	12	0.02	0.17	0.08	0.035	<0.010	<10	17	7
JAN 14...	3.6	14	0.02	0.36	0.08	0.009	<0.010	<10	19	13
FEB 12...	3.0	11	0.02	0.27	0.10	0.025	<0.010	<10	17	9
MAR 12...	3.0	11	0.02	0.94	0.09	0.005	<0.010	<10	14	8
APR 22...	3.8	15	0.02	1.7	0.07	0.026	<0.010	<10	14	16
MAY 15...	3.5	14	0.02	1.4	0.06	0.026	<0.010	<10	30	12
JUN 10...	2.1	10	0.01	1.4	0.04	0.016	<0.010	<10	20	4
JUL 15...	2.0	11	0.01	1.0	0.02	0.019	<0.010	<10	13	3
SEP 17...	2.6	13	0.02	0.25	0.04	<0.002	<0.010	20	11	6

12186000 SAUK RIVER ABOVE WHITE CHUCK RIVER, NEAR DARRINGTON, WA

LOCATION.--Lat 48°10'08", long 121°28'10", on north line NE¼NE¼ sec.23, T.31 N., R.10 E., Snohomish County, Hydrologic Unit 17110006, Mount Baker National Forest, on right bank 0.6 mi upstream from White Chuck River, 8.4 mi southeast of Darrington, and at mile 32.5.

DRAINAGE AREA.--152 mi².

PERIOD OF RECORD.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to current year.

REVISED RECORDS.--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

GAGE.--Water-stage recorder. Elevation of gage is 930 ft, from river-profile map. Prior to Nov. 18, 1910, nonrecording gage 0.5 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 26, 27, Dec. 1, 2, Jan. 11-14, Apr. 22-28, May 9-20, June 4-20, Aug. 12-18, Sept. 12-16. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1918-22, 1929-86), 1,139 ft³/s, 101.76 in/yr, 825,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,100 ft³/s Dec. 26, 1980, gage height, 16.03 ft, from rating curve extended above 15,000 ft³/s; minimum discharge, 115 ft³/s Nov. 15, 16, 30, Dec. 1, 1936.

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)
Oct. 25	0115	8,310	7.75	Jan. 19	0200	*12,900	*9.30
Oct. 27	0100	7,750	7.54	Feb. 24	0745	9,610	8.22
Nov. 1	2245	7,670	7.51	Feb. 25	0930	8,750	7.91
Nov. 3	0645	7,880	7.59				

Minimum discharge, 143 ft³/s Sept. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	192	3620	300	421	1180	1870	1160	683	3550	997	464	298		
2	191	6140	285	393	1180	1630	1010	705	3190	1110	521	281		
3	259	6620	323	358	1010	1450	904	825	2960	1020	564	290		
4	228	3940	309	333	900	1390	824	817	2700	969	538	285		
5	206	2620	340	388	885	1320	768	768	2400	787	501	270		
6	274	2340	422	716	781	1250	724	721	2100	710	491	247		
7	327	2220	439	534	706	1760	729	746	1900	765	492	230		
8	253	1790	412	645	644	2080	848	751	1600	884	498	220		
9	218	1500	371	609	599	1680	873	750	1400	792	509	216		
10	199	1280	343	636	570	1450	866	740	1550	751	518	209		
11	612	1080	324	900	527	1290	803	720	1750	1180	462	217		
12	617	947	307	800	491	1180	765	710	1750	1230	420	210		
13	473	859	292	720	461	1050	715	1700	1600	983	400	205		
14	648	781	280	700	440	948	657	1600	1650	834	395	200		
15	1420	796	270	638	548	852	639	1300	1500	739	380	195		
16	1300	1050	261	705	1170	777	636	1100	1300	800	370	190		
17	959	872	261	1040	1130	717	626	950	1150	1150	340	161		
18	763	747	270	5940	1130	673	596	1000	1330	951	320	155		
19	925	678	281	8710	587	657	557	1900	1380	863	305	155		
20	1570	633	302	3130	548	665	562	2400	1200	869	301	154		
21	1190	590	337	1940	476	849	806	1900	1070	870	303	149		
22	1240	524	348	1560	524	865	1050	1530	1090	854	304	146		
23	1490	511	374	1460	1450	782	1000	1300	1360	811	296	335		
24	3610	472	399	1300	7880	975	900	1240	1450	713	286	911		
25	5220	436	435	1100	7770	895	800	1820	1340	673	277	429		
26	3980	420	451	970	4850	911	770	2810	1220	637	290	314		
27	5950	400	443	1100	2660	947	750	2790	1050	576	317	315		
28	3550	365	422	1240	2100	1200	860	2790	1210	515	349	487		
29	2140	340	404	1050	---	1340	763	3100	1310	484	346	659		
30	1750	318	386	1000	---	1550	715	3750	1030	462	332	635		
31	1460	---	368	1030	---	1340	---	3650	---	450	319	---		
TOTAL	43214	44889	10759	42066	43197	36343	23676	47566	50090	25429	12208	8768		
MEAN	1394	1496	347	1357	1543	1172	789	1534	1670	820	394	292		
MAX	5950	6620	451	8710	7880	2080	1160	3750	3550	1230	564	911		
MIN	191	318	261	333	440	657	557	683	1030	450	277	146		
CFSM	9.17	9.84	2.28	8.93	10.2	7.71	5.19	10.1	11.0	5.39	2.59	1.92		
IN.	10.58	10.99	2.63	10.30	10.57	8.89	5.79	11.64	12.26	6.22	2.99	2.15		
AC-FT	85710	89040	21340	83440	85680	72090	46960	94350	99350	50440	24210	17390		
CAL YR 1985	TOTAL	372995	MEAN	1022	MAX	6620	MIN	191	CFSM	6.72	IN.	91.29	AC-FT	739800
WTR YR 1986	TOTAL	388205	MEAN	1064	MAX	8710	MIN	146	CFSM	7.00	IN.	95.01	AC-FT	770000

12189500 SAUK RIVER NEAR SAUK, WA

LOCATION.--Lat 48°25'29", long 121°34'02", in NW¼NW¼ sec.19, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on left bank, 4.4 mi southeast of Rockport, 7.6 mi southeast of Sauk, 7.8 mi downstream from Suitttle River, and at mile 5.4.

DRAINAGE AREA.--714 mi².

PERIOD OF RECORD.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to current year.
Published as "near Suitttle Crossing, near Sauk" 1910-12.

REVISED RECORDS.--WSP 1286: 1929, 1937, 1939.

GAGE.--Water-stage recorder. Datum of gage is 266 ft above National Geodetic Vertical Datum of 1929 (from river-profile survey). Prior to Aug. 4, 1912, nonrecording gages at several sites 1.0 mi downstream to 5.0 mi upstream from present site at various datums. July 24, 1928, to Sept. 16, 1929, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 27, 28. Records good. No regulation. Small diversion for millpond at Darrington and for domestic use. Summer flows augmented by glacier melt at source.

AVERAGE DISCHARGE.--58 years (water years 1929-86), 4,357 ft³/s, 82.87 in/yr, 3,157,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,600 ft³/s Dec. 26, 1980, gage height, 18.24 ft, from rating extended above 50,000 ft³/s; minimum discharge, 572 ft³/s Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0400	26,600	10.13	Nov. 3	0800	26,000	10.03
Oct. 27	0300	26,000	10.04	Jan. 19	0100	*47,600	*13.22
Nov. 1	2400	25,900	10.01	Feb. 25	1400	29,000	10.52

Minimum discharge, 926 ft³/s Sept. 23, gage height, 2.98 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1070	10800	1710	1830	4490	6900	3850	2860	13100	4140	2340	1890		
2	1080	20300	1710	1750	4580	5810	3460	2810	11900	4720	2590	1790		
3	1540	22900	1850	1620	3940	5140	3190	3000	10100	4310	2810	1820		
4	1250	14300	1820	1530	3520	4910	3040	3130	9510	3920	2730	1820		
5	1170	9860	1940	1890	3390	4640	2900	3040	8050	3320	2520	1760		
6	1480	9120	2200	3440	3210	4350	2780	2910	7490	2970	2500	1660		
7	1590	8130	2130	2530	2890	5380	2720	2840	6560	3130	2530	1610		
8	1250	6670	2000	2860	2700	7130	2850	2830	5730	3520	2630	1540		
9	1130	5490	1810	2920	2560	5710	2970	2810	5220	3300	2720	1470		
10	1070	4690	1720	2760	2440	4940	2980	2790	5910	3200	2810	1420		
11	2110	4000	1650	4250	2340	4380	2890	2740	6660	4360	2550	1410		
12	2330	3590	1610	3080	2220	4050	2840	2720	6660	4850	2310	1320		
13	1850	3340	1550	2750	2110	3720	2770	6580	5980	3950	2280	1240		
14	2650	3090	1500	2540	2040	3430	2680	6200	6320	3430	2290	1200		
15	6060	3300	1460	2490	2100	3200	2590	4820	5940	3110	2250	1140		
16	5000	4330	1420	2730	3420	2980	2570	4050	4800	3240	2090	1100		
17	3660	3470	1420	3860	3480	2840	2540	3650	4320	4130	1920	1030		
18	3000	3010	1460	23900	2940	2720	2500	3970	5060	3540	1860	1020		
19	2970	2810	1480	29700	2600	2680	2420	5440	5110	3280	1840	1030		
20	4700	2660	1560	11900	2400	2660	2360	7480	4440	3450	1830	1000		
21	3840	2470	1680	7700	2300	2800	2630	7780	3990	3590	1840	969		
22	3860	2260	1670	5980	2250	3120	4030	6680	3920	3680	1850	948		
23	4740	2180	1730	5520	2660	2920	3970	5590	4900	3520	1820	1410		
24	8480	2190	1790	5390	17700	3280	3450	4930	5670	3160	1770	3020		
25	18000	2100	1870	4450	26000	3310	3150	4980	5330	3100	1680	1710		
26	12200	2050	1880	3890	16700	3310	2960	7610	4820	2890	1780	1340		
27	21200	2010	1870	3870	9710	3400	2890	9540	4110	2690	1910	1370		
28	13600	1900	1820	4630	7920	3720	3210	9920	4620	2490	2050	1750		
29	7910	1830	1740	3940	---	4310	3130	10500	5310	2430	2090	2420		
30	6210	1750	1670	3940	---	4660	2980	12200	4340	2320	2050	2490		
31	5150	---	1620	4410	---	4450	---	13000	---	2280	1980	---		
TOTAL	152150	166600	53340	164050	144610	126850	89300	169400	185870	106020	68220	45697		
MEAN	4908	5553	1721	5292	5165	4092	2977	5465	6196	3420	2201	1523		
MAX	21200	22900	2200	29700	26000	7130	4030	13000	13100	4850	2810	3020		
MIN	1070	1750	1420	1530	2040	2660	2360	2720	3920	2280	1680	948		
CFSM	6.87	7.78	2.41	7.41	7.23	5.73	4.17	7.65	8.68	4.79	3.08	2.13		
IN.	7.93	8.68	2.78	8.55	7.53	6.61	4.65	8.83	9.68	5.52	3.55	2.38		
AC-FT	301800	330500	105800	325400	286800	251600	177100	336000	368700	210300	135300	90640		
CAL YR 1985	TOTAL	1418070	MEAN	3885	MAX	22900	MIN	1070	CFSM	5.44	IN.	73.88	AC-FT	2813000
WTR YR 1986	TOTAL	1472107	MEAN	4033	MAX	29700	MIN	948	CFSM	5.65	IN.	76.70	AC-FT	2920000

RESERVOIRS IN SKAGIT RIVER BASIN, WA

12175000 ROSS RESERVOIR.--(See sta 12175000).

12176500 DIABLO RESERVOIR.--Lat 48°42'56", long 121°07'52", in SE¼ sec.5, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Diablo Dam on Skagit River, 1.2 mi downstream from Thunder Creek, 6.0 mi northeast of Newhalem, and at mile 101.0. DRAINAGE AREA.--1,125 mi², includes 400 mi² in Canada. PERIOD OF RECORD.--October 1929 to current year. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem. GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (city of Seattle datum). Prior to Oct. 1, 1964, at datum 0.28 ft higher.

REMARKS.--Reservoir is formed by concrete-arch dam, completed in 1930; storage began in October 1929. Usable storage, 8,820 acre-ft between elevations 1,195 ft, normal lower limit of operation, and 1,205 ft, top of taintor gates. Dead storage, below elevation 1,040 ft, 12,900 acre-ft. Crest of spillway is at elevation 1,187 ft. Water used by city of Seattle for power development at Diablo and Gorge powerplants. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,600 acre-ft July 14, 1933, elevation, 1,206.5 ft; minimum contents not determined.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 89,321 acre-ft Apr. 22, elevation, 1,205.39 ft; minimum contents, 81,974 acre-ft Feb. 13, elevation, 1,197.05 ft.

12177700 GORGE RESERVOIR.--Lat 48°41'53", long 121°12'25", in NW¼ sec.14, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Gorge Dam on Skagit River, 2.4 mi upstream from Gorge powerplant at Newhalem, and at mile 96.6. DRAINAGE AREA.--1,159 mi², includes 400 mi² in Canada. PERIOD OF RECORD.--June 1960 to current year. GAGE.--Water-stage recorder; prior to Apr. 1, 1962, reference point on Gorge Dam or water-stage indicator in powerhouse. Datum of gage is 0.00 ft city of Seattle Gorge High Dam datum, and 1.792 ft below National Geodetic Vertical Datum of 1929 (Corps of Engineers' bench mark).

REMARKS.--Reservoir is formed by concrete arch and gravity dam, completed Dec. 27, 1960; storage began June 27, 1960. Usable storage, 2,115 acre-ft between elevations 865 ft, normal lower limit of operation, and 875 ft, top of gates. Lowest outlet at elevation 760 ft. No dead storage. Crest of spillway is at elevation 825 ft. Water used by city of Seattle for power development at Gorge powerplant. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 9,761 acre-ft June 1, 1982, elevation, 880.01 ft; minimum contents since normal low operating level was reached in December 1960, 102,621 acre-ft May 8, 1977, elevation, 674.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,373 acre-ft June 7, elevation, 878.54 ft; minimum contents, 6,076 acre-ft Feb. 25, elevation, 863.28 ft.

12191600 BAKER LAKE.--Lat 48°38'58", long 121°41'22", in SW¼ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi upstream from Sulphur Creek, 8.0 mi north of Concrete, and at mile 9.3. DRAINAGE AREA.--215 mi². PERIOD OF RECORD.--July 1959 to current year. GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete gravity dam, completed in June 1959; storage began July 9, 1959. Usable storage, 220,630 acre-ft between elevations 655 ft, minimum operating pool, and 724 ft, normal full pool. Dead storage below elevation 655 ft, 64,840 acre-ft. Crest of spillway is at elevation 694 ft. Water used by Puget Sound Power and Light Co. for power development. Capacity table furnished by Puget Sound Power and Light Co. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,930 acre-ft July 12, 1972, elevation, 724.49 ft; minimum contents since normal operating level was reached in August 1960, 102,621 acre-ft May 8, 1977, elevation, 674.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 284,678 acre-ft June 3, elevation, 723.84 ft; minimum contents, 145,780 acre-ft Apr. 7, 8, elevation, 690.15 ft.

12193000 LAKE SHANNON.--Lat 48°32'53", long 121°44'22", in SW¼ sec.2, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, at Baker Dam on Baker River near left bank, 0.7 mi north of Concrete, and at mile 1.2. DRAINAGE AREA.--297 mi². PERIOD OF RECORD.--November 1925 to current year. GAGE.--Water-stage recorder; prior to Nov. 11, 1959, water-stage indicator in powerplant. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to March 1959, at datum 1.72 ft lower.

REMARKS.--Reservoir is formed by concrete arch and gravity dam, completed in June 1927; storage began in November 1925. Usable storage, 142,400 acre-ft between elevations 355 ft, minimum operating pool, and 438.6 ft, normal full pool. Dead storage unknown. Spillway crest is at elevation 424.9 ft. Water used by Puget Sound Power and Light Co. for power development. Prior to Nov. 11, 1959, gage-height record furnished by Puget Sound Power and Light Co. from powerplant log. Figures given herein represent contents above elevation 341.7 ft, center line of outlet tunnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 161,470 acre-ft Sept. 17, 1968, elevation, 439.50 ft; minimum contents since October 1953, 28,260 acre-ft Mar. 6, 1969, elevation, 363.7 ft, not determined prior to October 1953 because of incomplete records.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 159,534 acre-ft June 2, Aug. 16, elevation, 438.63 ft; minimum contents, 101,362 acre-ft Feb. 23, elevation, 409.39 ft.

SKAGIT RIVER BASIN

Reservoirs in Skagit River basin--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre- feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre- feet)	Change in contents (acre-ft)
12176500 Diablo Reservoir				12177700 Gorge Reservoir		
Sept. 30.....	1,200.05	84,560	--	871.85	7,753	--
Oct. 31.....	1,202.47	86,689	+2,129	871.14	7,596	-157
Nov. 30.....	1,200.09	84,595	-2,094	872.79	7,966	+370
Dec. 31.....	1,200.11	84,612	+17	871.06	7,578	-388
CAL YR 1985.....	--	--	+1,358	--	--	-64
Jan. 31.....	1,199.77	84,316	-296	871.56	7,689	+111
Feb. 28.....	1,201.50	85,834	+1,518	872.66	7,936	+247
Mar. 31.....	1,205.13	89,084	+3,250	871.64	7,706	-230
Apr. 30.....	1,202.79	86,974	-2,110	872.60	7,923	+217
May 31.....	1,203.42	87,536	+562	874.53	8,373	+450
June 30.....	1,202.53	86,742	-794	873.48	8,126	-247
July 31.....	1,199.76	84,308	-2,434	871.28	7,627	-499
Aug. 31.....	1,200.59	85,033	+725	872.55	7,911	+284
Sept. 30.....	1,200.88	85,288	+255	872.79	7,966	+55
WTR YR 1986.....	--	--	+728	--	--	+213
12191600 Baker Lake				12193000 Lake Shannon		
Sept. 30.....	721.58	273,549	--	435.96	153,673	--
Oct. 31.....	719.64	264,183	-9,366	438.46	159,157	+5,484
Nov. 30.....	700.30	181,168	-83,015	426.22	133,345	-25,812
Dec. 31.....	693.44	156,625	-24,543	415.96	113,602	-19,743
CAL YR 1985.....	--	--	-13,849	--	--	-24,331
Jan. 31.....	699.29	177,391	+20,766	427.27	135,455	+21,853
Feb. 28.....	704.83	198,803	+21,412	427.57	136,062	+607
Mar. 31.....	692.79	154,433	-44,370	419.87	120,928	-15,134
Apr. 30.....	704.96	199,324	+44,891	424.46	129,850	+8,922
May 31.....	723.69	283,934	+84,610	438.44	159,113	+29,263
June 30.....	722.17	276,430	-7,504	435.29	152,224	-6,889
July 31.....	720.89	270,194	-6,236	438.56	159,379	+7,155
Aug. 31.....	720.39	267,783	-2,411	437.06	156,072	-3,307
Sept. 30.....	720.29	267,300	-483	432.84	146,982	-9,090
WTR YR 1986.....	--	--	-6,249	--	--	-6,691

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LOCATION.--48°44'05", long 121°39'27", in SE¼NW¼ sec.32 T.38 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, on left bank 200 ft downstream from highway bridge, 14 mi north of Concrete, at mile 0.2, upstream from Baker Lake.

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

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 4, Jan. 24-26, Feb. 4-22, Mar. 10-25, Mar. 31 to Apr. 20, Apr. 24-29, Sept. 7-23. Records poor. No regulation or diversion upstream from station.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 5,590 ft³/s Oct. 27, gage height, 10.50 ft; minimum daily discharge, 54 ft³/s Sept. 17, 21.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	954	85	112	756	483	300	270	1600	1140	353	186
2	108	1260	84	106	394	371	245	335	1320	1260	420	215
3	101	1530	100	98	294	332	220	460	1140	934	426	220
4	84	1060	140	93	265	337	220	363	985	590	384	219
5	85	611	179	153	250	319	200	305	875	425	363	194
6	113	518	201	254	200	313	205	324	787	442	361	167
7	80	535	170	180	170	1540	300	417	633	537	382	145
8	64	419	146	367	150	974	330	386	620	550	409	130
9	57	332	132	320	140	601	295	369	617	508	426	120
10	101	272	123	621	130	420	240	314	821	557	399	135
11	628	254	114	530	125	315	220	279	892	994	310	90
12	282	223	106	305	110	280	215	466	813	792	261	80
13	244	209	101	265	105	230	185	948	817	525	297	72
14	711	193	96	262	105	220	160	492	933	470	313	62
15	1330	289	93	257	280	185	205	381	1010	410	265	60
16	1060	331	90	286	270	165	220	331	586	619	226	55
17	635	246	95	363	165	160	250	357	584	531	223	54
18	530	199	100	3050	135	160	200	869	776	457	222	68
19	1570	190	102	2100	115	160	250	1410	695	497	222	68
20	977	179	124	734	110	185	450	1660	533	550	225	60
21	639	162	132	391	105	405	1010	711	470	575	228	54
22	659	150	127	296	110	250	1040	457	598	549	227	56
23	545	135	138	288	596	295	557	359	816	485	224	500
24	815	122	150	270	3140	400	340	467	845	397	219	390
25	834	115	165	215	2540	330	320	993	739	374	221	166
26	1000	108	161	205	1130	700	280	1440	626	371	234	72
27	3550	100	148	504	626	852	460	1400	606	309	251	212
28	949	95	136	383	617	1430	350	1270	678	274	283	313
29	391	90	128	288	---	821	275	1330	707	253	252	578
30	286	87	116	494	---	710	271	1530	601	247	225	431
31	207	---	108	553	---	440	---	1530	---	291	219	---
TOTAL	18721	10968	3890	14343	13133	14383	9813	22223	23723	16913	9070	5172
MEAN	604	366	125	463	469	464	327	717	791	546	293	172
MAX	3550	1530	201	3050	3140	1540	1040	1660	1600	1260	426	578
MIN	57	87	84	93	105	160	160	270	470	247	219	54
CFSM	16.6	10.1	3.44	12.7	12.9	12.8	9.00	19.7	21.8	15.0	8.06	4.73
IN.	19.16	11.22	3.98	14.68	13.44	14.72	10.04	22.74	24.28	17.31	9.28	5.29
AC-FT	37130	21760										

LOCATION.--Lat 48°44'36", long 121°41'23", in NE¼NW¼ sec.31, T.38 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, on left bank 80 ft downstream from U.S. Forest Service Road 1130 bridge, 17 mi north of Concrete, and 2.5 mi upstream from mouth at Baker Lake.

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

GAGE.--Water-stage recorder. Elevation of gage is 1,120 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,400 ft³/s Jan. 4, 1984, computed by slope-area measurement, gage height, 10.77 ft from floodmark; minimum discharge, 13 ft³/s Feb. 11, 1985, gage height, 4.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,280 ft³/s Oct. 27, gage height, 9.10 ft; minimum daily discharge, 15 ft³/s Nov. 30, Dec. 1, 2.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	373	15	27	161	107	67	50	370	300	182	136
2	57	342	15	26	95	81	54	69	290	301	218	161
3	63	402	19	23	68	76	48	96	257	237	222	172
4	56	211	43	22	59	89	48	75	227	150	194	175
5	65	114	61	83	55	72	44	65	207	114	187	158
6	69	103	62	91	43	80	45	70	175	131	198	153
7	41	110	53	49	37	366	67	88	155	169	233	125
8	33	80	41	119	32	172	74	78	146	177	262	95
9	27	61	32	103	30	109	66	76	170	159	272	90
10	53	49	28	167	28	78	53	73	214	206	243	103
11	166	41	25	128	27	70	48	64	227	300	168	67
12	70	38	23	72	24	62	47	121	216	219	181	59
13	68	35	22	63	22	51	41	208	221	165	214	56
14	280	32	21	60	22	48	35	98	245	146	207	47
15	339	83	22	63	75	40	45	73	216	123	169	45
16	259	83	21	86	70	36	48	66	136	174	141	42
17	179	49	25	91	36	34	55	79	127	142	133	40
18	130	37	28	897	29	35	44	213	168	127	138	52
19	412	34	29	419	25	35	55	274	140	167	145	52
20	227	31	37	129	23	41	133	340	122	195	167	44
21	137	28	37	81	22	90	241	163	108	216	175	40
22	184	26	35	74	23	55	198	115	152	218	170	42
23	132	24	37	81	299	65	105	91	220	196	145	226
24	217	22	43	59	946	105	75	122	233	173	123	104
25	196	20	46	47	602	74	71	229	203	154	157	46
26	294	19	43	45	222	163	62	316	170	136	212	32
27	851	18	37	143	132	165	103	311	174	122	242	59
28	233	17	32	97	137	268	78	307	193	116	268	75
29	121	16	30	70	---	141	58	327	190	106	218	196
30	107	15	27	155	---	125	51	372	173	112	163	107
31	84	---	25	137	---	81	---	362	---	137	140	---
TOTAL	5203	2513	1014	3707	3344	3014	2159	4991	5845	5388	5887	2799
MEAN	168	83.8	32.7	120	119	97.2	72.0	161	195	174	190	93.3
MAX	851	402	62	897	946	366	241	372	370	301	272	226
MIN	27	15	15	22	22	34	35	50	108	106	123	32
CFSM	13.3	6.66	2.60	9.53	9.45	7.72	5.72	12.8	15.5	13.8	15.1	7.41
IN.	15.37	7.43	3.00	10.95	9.88	8.91	6.38	14.75	17.27	15.92	17.39	8.27
AC-FT	10320	4980	2010	7350	6630	5980	4280	9900	11590	10690	11680	5550

CAL YR 1985	TOTAL	41186	MEAN	113	MAX	851	MIN	15	CFSM	8.98	IN.	121.69	AC-FT	81690
WTR YR 1986	TOTAL	45864	MEAN	126	MAX	946	MIN	15	CFSM	10.0	IN.	135.52	AC-FT	90970

SKAGIT RIVER BASIN

245

12192600 BEAR CREEK BELOW TRIBUTARIES, NEAR CONCRETE, WA

LOCATION.--Lat 48°37'11", long 121°44'09", in NW¼SE¼SW¼ sec.11, T.36 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank 0.15 mi downstream from highway bridge, and 5.3 mi north of Concrete.

DRAINAGE AREA.--14.4 mi².

PERIOD OF RECORD.--April 1982 to September 1986 (discontinued).

REVISED RECORDS.--WDR WA-84-1: 1983(M).

GAGE.--Water-stage recorder. Elevation of gage is 900 ft (revised), from topographic map.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 3. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft³/s Feb. 24, 1986, gage height, 12.99 ft; minimum discharge, 5.1 ft³/s Aug. 24-30, 1985, gage height, 10.33 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,300 ft³/s Feb. 24, gage height, 12.99 ft; minimum discharge, 5.5 ft³/s Sept. 17, gage height, 10.31 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.4	681	23	64	152	174	108	73	109	42	10	6.5		
2	11	660	23	54	129	142	91	77	92	41	9.9	6.7		
3	10	601	41	40	106	116	79	94	81	36	9.6	6.6		
4	8.7	325	46	36	97	106	77	80	71	35	9.4	6.5		
5	8.7	267	45	59	112	94	67	73	64	27	9.3	6.3		
6	14	270	50	161	86	87	60	66	57	24	9.1	6.0		
7	9.9	308	58	85	74	206	57	63	52	22	8.8	6.0		
8	9.0	225	54	94	67	195	56	59	47	21	8.5	6.5		
9	8.6	181	45	88	61	141	55	56	46	20	8.3	6.7		
10	8.2	145	40	112	57	112	51	53	48	24	8.1	7.0		
11	33	119	38	128	54	95	62	50	48	26	8.2	6.5		
12	27	103	35	94	50	85	68	120	45	24	8.2	6.2		
13	28	90	34	84	45	76	53	360	43	22	8.1	6.2		
14	154	77	33	80	43	81	47	200	43	20	7.7	6.5		
15	250	157	34	86	101	67	57	145	43	19	7.5	6.1		
16	165	159	32	100	131	60	59	117	35	40	7.5	6.0		
17	140	121	32	269	77	55	64	108	34	54	7.3	6.0		
18	130	97	32	592	65	57	55	170	39	28	7.1	6.2		
19	190	83	32	482	57	54	53	163	40	21	7.0	6.1		
20	182	72	32	224	54	49	76	199	47	18	7.0	6.0		
21	129	63	32	167	52	68	133	135	36	17	6.9	6.0		
22	188	53	32	160	59	61	143	108	30	16	6.7	6.0		
23	253	47	33	227	361	61	108	89	30	15	6.9	20		
24	391	41	33	163	1020	116	83	88	29	15	6.9	17		
25	444	36	34	127	758	92	98	101	27	14	7.0	9.6		
26	460	32	34	107	408	142	80	123	25	13	6.5	8.5		
27	596	29	33	111	259	140	135	116	24	13	6.5	20		
28	420	27	32	99	212	175	136	108	25	13	6.6	20		
29	257	25	33	88	---	148	104	110	26	12	7.1	36		
30	222	24	32	144	---	185	83	115	23	12	6.7	24		
31	191	---	30	139	---	131	---	112	---	11	6.5	---		
TOTAL	4946.5	5118	1117	4464	4747	3371	2398	3531	1359	715	240.9	293.7		
MEAN	160	171	36.0	144	170	109	79.9	114	45.3	23.1	7.77	9.79		
MAX	596	681	58	592	1020	206	143	360	109	54	10	36		
MIN	8.2	24	23	36	43	49	47	50	23	11	6.5	6.0		
CFSM	11.1	11.9	2.50	10.0	11.8	7.57	5.55	7.92	3.15	1.60	.54	.68		
IN.	12.78	13.22	2.89	11.53	12.26	8.71	6.19	9.12	3.51	1.85	.62	.76		
AC-FT	9810	10150	2220	8850	9420	6690	4760	7000	2700	1420	478	583		
CAL YR 1985	TOTAL	27017.2	MEAN	74.0	MAX	681	MIN	5.1	CFSM	5.14	IN.	69.79	AC-FT	53590
WTR YR 1986	TOTAL	32301.1	MEAN	88.5	MAX	1020	MIN	6.0	CFSM	6.15	IN.	83.44	AC-FT	64070

SKAGIT RIVER BASIN

12192700 THUNDER CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°36'08", long 121°42'17", in SE¼SW¼SE¼ sec.13, T.36 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank 0.6 mi downstream from bridge, 5 mi north of Concrete, and 0.3 mi upstream from Lake Shannon.

DRAINAGE AREA.--22.4 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 500 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 26-30, Nov. 1-4, Nov. 14 to Dec. 20, Jan. 18, 19, Feb. 23-28, Mar. 17-19. Records fair except those for period Oct. 15 to Mar. 20, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, Jan. 4, 1984, gage height, 5.93 ft; minimum discharge, 19 ft³/s Aug. 25-27, 29, 30, Sept. 3, 4, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge not determined, Feb. 24, gage height, unknown; minimum discharge, 20 ft³/s Sept. 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	30	1070	46	81	220	311	154	134	258	105	35	23		
2	44	1030	46	78	176	264	142	154	225	108	34	23		
3	51	900	67	73	151	235	132	169	206	107	33	22		
4	40	500	90	70	140	233	128	160	184	106	31	22		
5	39	338	89	98	140	224	119	151	173	87	31	22		
6	65	332	95	135	135	221	114	145	160	81	30	21		
7	50	309	112	110	132	257	121	146	143	76	29	21		
8	46	278	110	134	130	305	132	141	137	72	29	20		
9	46	254	92	123	122	241	125	136	136	69	28	22		
10	48	239	80	145	116	199	115	128	142	76	27	24		
11	156	223	77	171	113	185	113	121	143	79	27	23		
12	136	205	71	141	108	173	112	163	136	88	27	22		
13	130	190	68	141	104	156	108	335	131	74	27	21		
14	274	178	66	142	102	145	105	228	132	68	27	24		
15	327	260	67	136	137	131	112	205	117	66	25	21		
16	278	265	64	145	161	122	113	199	108	110	25	21		
17	252	220	64	176	131	118	114	198	104	107	25	21		
18	255	185	64	900	123	113	109	289	113	79	24	21		
19	296	160	64	350	112	109	107	287	117	68	23	22		
20	298	140	67	222	111	109	144	318	116	62	23	23		
21	269	125	73	174	107	132	213	271	103	57	23	21		
22	310	108	73	157	106	117	223	209	101	54	23	21		
23	303	93	82	161	450	117	164	189	104	50	22	83		
24	376	82	92	146	1600	145	149	187	99	48	22	81		
25	424	72	98	137	1300	127	142	224	92	46	22	42		
26	550	64	98	136	730	170	132	270	87	45	22	32		
27	900	59	95	156	400	189	154	261	84	44	22	78		
28	600	55	89	161	330	245	156	260	86	43	21	95		
29	380	51	85	136	---	211	146	264	92	40	23	116		
30	310	48	79	175	---	218	134	276	81	38	23	98		
31	265	---	77	181	---	169	---	273	---	36	24	---		
TOTAL	7548	8033	2440	5291	7687	5691	4032	6491	3910	2189	807	1106		
MEAN	243	268	78.7	171	275	184	134	209	130	70.6	26.0	36.9		
MAX	900	1070	112	900	1600	311	223	335	258	110	35	116		
MIN	30	48	46	70	102	109	105	121	81	36	21	20		
CFSM	10.8	12.0	3.51	7.63	12.3	8.21	5.98	9.33	5.80	3.15	1.16	1.65		
IN.	12.54	13.34	4.05	8.79	12.77	9.45	6.70	10.78	6.49	3.64	1.34	1.84		
AC-FT	14970	15930	4840	10490	15250	11290	8000	12870	7760	4340	1600	2190		
CAL YR 1985	TOTAL	54947	MEAN	151	MAX	1070	MIN	19	CFSM	6.74	IN.	91.25	AC-FT	109000
WTR YR 1986	TOTAL	55225	MEAN	151	MAX	1600	MIN	20	CFSM	6.74	IN.	91.71	AC-FT	109500

12193500 BAKER RIVER AT CONCRETE, WA

LOCATION.--Lat 48°32'24", long 121°44'31", in NW¼NW¼ sec.11, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank at upstream side of fish barrier, 0.2 mi northeast of Concrete, 0.3 mi downstream from Baker River powerplant, and at mile 0.7.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--September 1910 to March 1915, September 1943 to current year.

REVISED RECORDS.--WSP 1286: 1911-13(M), 1945-46, drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1915, nonrecording gage at site 0.2 mi downstream at different datum. Sept. 1, 1943, to Jan. 22, 1958, water-stage recorder at site 700 ft upstream at datum 172.6 ft above National Geodetic Vertical Datum of 1929 (from river-profile survey). Jan. 23 to June 11, 1958, powerplant record. Supplementary water-stage recorder on left bank about 40 ft downstream from fish barrier and on tailrace of powerhouse at same datum.

REMARKS.--Estimated daily discharges: Apr. 18-29. Records good except those below 100 ft³/s, which are poor. Flows on occasion may be affected by backwater from Skagit River during high flows. All diversions returned to river upstream from gage; at times, power generation is shut down for maintenance at Baker River or the fish-barrier dam causing the stage to drop below the control. Water is released through a valve-controlled pipe to the fish ladder located on the left bank just downstream from the gage and control. Flow regulated by Baker and Shannon Lakes (stations 12191600 and 12191300).

AVERAGE DISCHARGE.--47 years (water years 1911-14, 1944-86), 2,666 ft³/s, 121.90 in/yr, 1,932,000 acre-ft/yr, adjusted for storage in Lake Shannon since November 1925, and Baker Lake since July 1959.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s Nov. 19, 1962, elevation, 186.6 ft, computation of peak flow over dam; minimum daily discharge, 30 ft³/s Mar. 21-26, 1973, Apr. 26-28, May 7-9, 11, 1983, Apr. 20, 24-28, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,600 ft³/s Oct. 27, elevation, 183.71 ft; minimum daily discharge, 30 ft³/s Apr. 20, 24-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1870	8610	858	97	2840	3790	3910	106	7030	2640	1530	1760
2	1070	10900	99	1890	2650	3790	3890	94	6080	3940	2060	128
3	1230	10400	1880	1650	2810	3780	3880	95	5470	4020	1220	1470
4	983	7920	1780	1660	2990	3950	3770	96	4120	4010	1470	1880
5	595	5700	1600	1650	2980	3950	2380	96	4090	4010	844	1270
6	780	5950	1830	705	2980	3920	2960	94	4090	3150	2230	974
7	686	6520	753	2040	2980	3760	2300	93	4080	2440	2940	1050
8	734	5360	1790	2160	2960	3830	2220	94	4090	420	3010	1840
9	502	6120	3050	2020	2260	3870	1090	93	4080	1720	2560	1570
10	473	5050	2830	1980	2200	3860	498	94	4080	2040	3030	1090
11	2300	4100	2010	2160	2930	3850	2270	94	4070	3710	3030	1830
12	3100	4440	762	2480	2900	3370	105	95	4060	4030	3030	1750
13	2190	5460	844	2210	2890	2880	206	102	3400	4020	1760	733
14	2260	5240	1870	2250	2890	2890	458	1000	3950	3840	1860	126
15	3870	4070	845	2090	2880	3790	875	3000	3980	1760	1870	926
16	4090	4040	2070	2010	2870	3890	384	1790	3970	2310	596	843
17	4100	4040	1620	1970	2870	3890	813	112	3970	2200	642	1700
18	4090	4020	1850	2760	3060	3890	535	116	2320	1890	1740	970
19	4080	3360	1830	4070	3080	3250	33	2230	2310	1100	1620	422
20	4100	3000	1910	3680	2940	3890	30	3720	2970	1980	1500	1900
21	4100	3010	1990	3100	2860	3880	39	4080	2970	2940	1020	1760
22	4100	3730	1660	3540	2880	3880	51	4080	2970	2120	1630	1230
23	4100	3690	2260	3910	2840	3880	33	3810	2620	2240	1760	2250
24	4370	3540	1790	3910	3830	3880	30	2510	3860	2790	1610	1880
25	6990	3530	1870	3910	3890	3880	30	1120	4050	2240	1200	1470
26	8280	2470	2040	3910	3790	3890	30	3850	3400	1820	1810	1450
27	19200	2250	1180	3890	3960	3890	30	4050	3200	1890	1690	1460
28	7220	1500	1810	3890	3850	3890	30	4050	1330	2260	1970	1250
29	6090	1730	581	3740	---	3760	38	4060	1940	1060	1890	1420
30	6020	730	1870	2050	---	2710	94	4080	2230	126	1710	1230
31	5450	---	1970	1810	---	2990	---	5040	---	124	1100	---
TOTAL	119023	140480	51102	79192	84860	114620	33012	53944	110780	74840	55932	39632
MEAN	3839	4683	1648	2555	3031	3697	1100	1740	3693	2414	1804	1321
MAX	19200	10900	3050	4070	3960	3950	3910	5040	7030	4030	3030	2250
MIN	473	730	99	97	2200	2710	30	93	1330	124	596	126
AC-FT	236100	278600	101400	157100	168300	227300	65480	107000	219700	148400	110900	78610
MEAN†	3776	2854	929	3247	3427	2728	2005	3592	3451	2428	1711	1161
CFSM†	12.7	9.61	3.13	10.9	11.5	9.19	6.75	12.1	11.6	8.18	5.76	3.91
IN.†	14.65	10.71	3.60	12.60	12.01	10.59	7.53	13.94	12.95	9.42	6.64	4.36
AC-FT†	232200	169800	57110	199700	190300	167800	119300	220900	205300	149300	105200	69040

CAL YR 1985 TOTAL 862559 MEAN 2363 MAX 19200 MIN 79 AC-FT 1711000 MEAN† 2310 CFSM† 7.78 IN.† 105.57 AC-FT† 1673000
WTR YR 1986 TOTAL 957417 MEAN 2623 MAX 19200 MIN 30 AC-FT 1899000 MEAN† 2605 CFSM† 8.77 IN.† 119.07 AC-FT† 1886000

† Adjusted for change in contents of Baker Lake and Lake Shannon.

12194000 SKAGIT RIVER NEAR CONCRETE, WA

LOCATION.--Lat 48°31'28", long 121°46'11", in SE¼NE¼ sec.16, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110007, on right bank at Dalles Bridge 1.3 mi southwest of Concrete, 2.4 mi downstream from Baker River, and at mile 54.1.

DRAINAGE AREA.--2,737 mi², of which 400 mi² is in Canada.

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1736: 1948. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 130.0 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 10, 1924, nonrecording gage 200 ft upstream and Dec. 10, 1924, to Sept. 30, 1937, water-stage recorder at present site; both gages at datum 12.7 ft higher.

REMARKS.--Estimated daily discharges: July 16-23, Aug. 5-7, Sept. 16-18, 20, 23-30. Records excellent. Flow regulated by Ross Reservoir (station 12175000), and Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (stations 12176500, 12177700, 12191600, 12193000).

AVERAGE DISCHARGE.--62 years, 15,080 ft³/s, 10,925,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 154,000 ft³/s Nov. 27, 1949, gage height, 40.8 ft; minimum discharge, probably less than 2,160 ft³/s during period Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed; minimum daily recorded, 2,610 ft³/s Nov. 14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of 69.3 ft present datum, from floodmarks at site 200 ft upstream, discharge about 500,000 ft³/s. Records of other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 93,400 ft³/s Jan. 19, gage height, 32.75 ft; minimum discharge, 3,550 ft³/s Oct. 2, gage height, 13.09 ft; minimum daily discharge, 4,220 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5810	31000	9780	6600	18100	22700	16000	11000	36400	15300	8650	7630
2	4710	52500	8110	11200	18300	20100	14900	10900	33500	19800	9840	6570
3	5870	55500	9430	11200	15800	18900	13800	11500	29700	19500	9520	8290
4	5550	39100	8610	10000	14800	18200	13700	11400	27100	18400	12100	8650
5	4990	30900	7780	9150	15900	17600	12700	11200	23600	17100	9100	7840
6	5430	30000	9410	12100	13800	17000	12200	10900	22800	14500	9500	6580
7	5350	28800	7930	11900	13600	19400	11900	10900	20700	13400	10900	6110
8	5280	25500	8680	11700	13600	22600	12100	10800	18900	13700	12100	6550
9	5300	22900	10500	10700	13200	18500	11800	10800	18700	11900	10200	6770
10	4750	21300	9790	11300	13600	17700	10700	10600	19600	11400	10500	6560
11	8820	19200	7580	15300	14200	16500	12200	10400	21800	16400	11700	7670
12	9510	18700	6230	13700	14500	15700	10100	10500	21900	18500	11400	7070
13	7890	17600	6510	12500	14400	13500	9370	18100	20700	16100	9640	5360
14	10700	16400	7350	12600	14000	13400	9480	14900	21500	14700	9790	4220
15	20800	15600	6120	11900	13200	14300	9350	14900	21000	11400	9360	5140
16	18900	17100	7300	12600	15200	14200	9300	12800	19000	11500	7240	6100
17	14800	16000	7090	14800	14200	13400	8880	10500	18600	14200	6540	6700
18	13400	15200	7330	36500	14300	12900	9690	13300	18100	13300	7900	6200
19	13600	13900	7200	70100	13900	12200	9290	20400	18300	11500	7940	5190
20	16500	13200	7740	33400	13600	13100	8600	27900	17100	10900	7010	6200
21	15500	13900	8430	25400	12700	14100	11200	23800	16000	12600	6730	5860
22	15000	13800	7830	23000	12800	14200	15000	19600	15500	12900	7730	5450
23	16400	13900	8470	22100	16000	14000	13900	16700	16700	15000	7560	8000
24	20800	13000	8150	21000	52400	15000	13300	14500	20600	14200	6790	10700
25	40700	13600	8200	19000	59300	14600	10600	14200	20500	12000	6410	8300
26	31100	12500	9210	18500	42500	14600	10100	27100	19500	11400	7880	6800
27	64100	12900	9010	19000	29000	14900	11600	28000	18200	11700	8280	6700
28	40500	11300	9010	19700	24600	17700	12000	27200	17200	10600	9350	7700
29	26900	11300	6600	17900	---	17900	12000	28900	18900	8250	9070	9200
30	22900	9970	7160	15300	---	17600	11600	33400	15200	6730	8910	10000
31	20000	---	7700	15700	---	17200	---	35200	---	6640	7730	---
TOTAL	501860	626570	250240	555850	541500	503700	347360	532300	627300	415520	277370	210110
MEAN	16190	20890	8072	17930	19340	16250	11580	17170	20910	13400	8947	7004
MAX	64100	55500	10500	70100	59300	22700	16000	35200	36400	19800	12100	10700
MIN	4710	9970	6120	6600	12700	12200	8600	10400	15200	6640	6410	4220
AC-FT	995400	1243000	496400	1103000	1074000	999100	689000	1056000	1244000	824200	550200	416800
CAL YR 1985	TOTAL	4861500	MEAN	13320	MAX	64100	MIN	4380	AC-FT	9643000		
WTR YR 1986	TOTAL	5389680	MEAN	14770	MAX	70100	MIN	4220	AC-FT	10690000		

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°26'42", long 122°20'03", in SE¼SE¼ sec.7, T.34 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on draw west of and 150 ft downstream from bridge on former U.S. Highway 99, 1.5 mi north of Skagit Valley Junior College in Mount Vernon, and at mile 15.7.

DRAINAGE AREA.--3,093 mi², of which 400 mi² is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only October 1940, published in WSP 1316.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. Supplementary water-stage recorder in bridge pier 0.2 mi downstream from base gage from Dec. 3, 1957, to Oct. 15, 1964.

REMARKS.--Estimated daily discharges: Nov. 20, 21, Nov. 27 to Dec. 3, Aug. 25, Sept. 8, 9, 14-17, 20-23. Water-discharge records good. Flow regulated by Ross Reservoir (station 12175000) and Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (stations 12176500, 12177700, 12191600, 12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--46 years, 16,630 ft³/s, 12,050,000 acre-ft, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 144,000 ft³/s Feb. 11, 1951, elevation, 36.85 ft; minimum discharge, 2,740 ft³/s Oct. 26, 1942, elevation, 7.37 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1906 reached a stage of 37 ft, from Great Northern Railway highwater profile, discharge 180,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 50,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height [†] (ft)	Date	Time	Discharge (ft ³ /s)	Gage height [†] (ft)
Oct. 28	0730	65,000	27.48	Jan. 19	1915	*72,800	*28.84
Nov. 3	2115	58,700	26.22	Feb. 25	2030	62,800	27.06

Minimum daily discharge, 4,600 ft³/s Sept. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5760	26500	10200	8290	19700	25700	17500	12900	36400	15500	7860	7220
2	6060	50900	8600	9360	21100	22900	16700	12600	34300	18200	9180	7540
3	5850	56200	9700	11600	18700	21200	15400	12900	30700	19900	10000	7400
4	6280	49500	9340	10600	16200	20100	14600	13200	28400	19400	10800	8050
5	5610	35000	8630	9610	17200	19600	13900	12500	25100	17800	9780	8140
6	5860	33100	9740	13800	16300	18700	13700	11900	23200	16000	10300	7500
7	5970	31300	9890	12700	14700	19600	12600	11800	22000	13500	11200	6440
8	5780	29000	9020	12900	14700	26100	12800	11700	20200	14000	11700	6200
9	5570	25500	10600	12800	14400	21700	12800	11500	19000	13100	11500	6650
10	5440	23500	10500	12200	13500	19700	11600	11400	19500	11500	11400	6870
11	6020	20600	8570	16100	14900	18600	12000	11200	21400	14500	11400	7140
12	10500	19600	7830	15600	15000	17800	12200	11500	22200	18400	11300	7180
13	8310	18800	7140	13700	14800	16100	10800	20000	20900	17100	10500	6640
14	9670	17400	7240	13600	14500	14600	10500	18200	21800	15200	9800	4600
15	18700	16600	7500	13300	14200	15600	10000	16700	21300	13000	9420	5100
16	20900	19100	6950	13100	18000	15600	10800	14600	19700	11800	8040	5500
17	17200	17500	7750	16500	15400	14800	10200	12600	19200	15800	7190	5800
18	14600	16500	7750	25100	15600	14000	10300	13100	18400	15100	7170	6630
19	13600	14900	7730	63400	14500	13500	10800	19200	19400	12400	8250	5970
20	17300	14100	7960	49400	14100	14100	10000	26200	18000	11300	7600	5500
21	17400	14800	8460	30200	13800	14700	11000	26600	17000	13600	6970	6200
22	16100	14600	8980	25700	12900	15500	15900	22100	16300	13500	7370	5800
23	18400	14500	8170	24900	15800	14900	15600	18700	15800	14900	7470	6000
24	19000	14300	9390	24000	43600	16400	14400	16800	19900	15400	7360	11800
25	40000	13800	8310	21500	60900	16200	12600	14600	20400	12300	6650	9500
26	32400	13800	9170	20000	55100	16700	11700	21900	20000	11600	7250	7160
27	51700	13800	9610	20200	36300	16800	12500	28500	19100	11900	8150	6920
28	58200	11900	9300	21600	28300	17900	14900	27200	17400	11200	8470	7630
29	33800	11900	8760	19900	---	20100	14200	28000	18300	9850	8780	9360
30	26100	10600	7180	18200	---	18700	13400	31500	16800	7490	8870	10500
31	23300	---	7630	18200	---	19300	---	34500	---	7090	8340	---
TOTAL	531380	669600	267600	598060	584200	557200	385400	556100	642100	432330	280070	212940
MEAN	17140	22320	8632	19290	20860	17970	12850	17940	21400	13950	9035	7098
MAX	58200	56200	10600	63400	60900	26100	17500	34500	36400	19900	11700	11800
MIN	5440	10600	6950	8290	12900	13500	10000	11200	15800	7090	6650	4600
AC-FT	1054000	1328000	530800	1186000	1159000	1105000	764400	1103000	1274000	857500	555500	422400
CAL YR 1985	TOTAL	5285250	MEAN	14480	MAX	58200	MIN	5010	AC-FT	10483000		
WTR YR 1986	TOTAL	5716980	MEAN	15660	MAX	63400	MIN	4600	AC-FT	11340000		

SKAGIT RIVER BASIN

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1974 to November 1981.

WATER TEMPERATURES: July 1962 to August 1970, February 1974 to November 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 21...	1230	15200	58	7.2	3.5	3.4	12.7	95	20	23	26	2
JAN 07...	1550	11500	68	7.6	3.5	6.7	12.9	97	31	33	28	2
MAR 26...	1230	17400	59	7.1	6.0	4.5	12.7	101	56	K13	25	0
MAY 21...	1335	26100	43	7.4	8.5	7.2	11.5	98	92	250	18	3
JUL 25...	1000	11000	52	7.4	14.0	3.5	10.3	100	100	24	19	0
SEP 25...	1230	8190	52	7.5	11.5	17	10.2	95	87	320	20	2

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 21...	8.0	1.5	1.4	10	0.1	0.6	24	29	0	5.7	0.8	<0.1
JAN 07...	8.0	2.0	1.3	9	0.1	0.8	26	32	0	6.2	1.3	<0.1
MAR 26...	7.8	1.4	1.4	10	0.1	0.6	25	31	0	6.1	0.8	<0.1
MAY 21...	5.4	1.1	1.1	11	0.1	0.5	15	19	0	4.1	0.8	<0.1
JUL 25...	6.0	1.0	1.0	10	0.1	0.6	20	24	0	4.1	0.7	<0.1
SEP 25...	6.1	1.2	1.2	11	0.1	0.7	18	22	0	6.3	0.7	<0.1

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 21...	7.6	42	41	0.06	1720	0.01	0.16	0.03	<0.2	0.06	<0.01
JAN 07...	7.0	35	42	0.05	1090	<0.01	0.19	0.03	0.2	0.02	<0.01
MAR 26...	7.2	36	41	0.05	1690	<0.01	0.12	<0.01	0.3	0.02	<0.01
MAY 21...	5.6	28	28	0.04	1970	<0.01	<0.10	0.04	0.7	0.08	0.03
JUL 25...	6.0	31	31	0.04	921	<0.01	<0.10	0.06	0.2	0.01	<0.01
SEP 25...	6.1	38	33	0.05	840	<0.01	<0.10	<0.01	<0.2	0.07	<0.01

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 21...	0.01	20	<1	13	<0.5	<1	<1	<3	3	48	<1	<4
JAN 07...	0.01	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	<0.01	30	<1	12	<0.5	<1	<1	<3	3	43	<1	<4
MAY 21...	<0.01	30	<1	14	<0.5	<1	<1	<3	2	30	4	<4
JUL 25...	<0.01	--	--	--	--	--	--	--	--	--	--	--
SEP 25...	<0.01	--	--	--	--	--	--	--	--	--	--	--
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 21...	12	<0.1	<10	2	<1	<1	42	<6	11	97	3980	--
JAN 07...	--	--	--	--	--	--	--	--	--	55	1710	32
MAR 26...	8	<0.1	<10	4	<1	<1	41	<6	13	66	3100	22
MAY 21...	4	<0.1	<10	<1	<1	<1	29	<6	10	68	4790	44
JUL 25...	--	--	--	--	--	--	--	--	--	36	1070	20
SEP 25...	--	--	--	--	--	--	--	--	--	60	1330	71

WHATCOM CREEK BASIN

12202500 WHATCOM LAKE NEAR BELLINGHAM, WA

LOCATION.--Lat 48°44'55", long 122°23'40", in SW¼SW¼ sec.26, T.38 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, on west shore, 1.0 mi east of Bellingham, near Strawberry Point, at Geneva.

DRAINAGE AREA.--55.9 mi² at outlet of lake.

PERIOD OF RECORD.--February 1913 to September 1914, October 1978 to current year.

GAGE.--Staff gage. Datum of gage is at City of Bellingham datum (revised), 7.03 ft below National Geodetic Vertical Datum of 1929 (levels by city of Bellingham).

REMARKS.--Lake is formed by concrete control dam completed to elevation 315.00 ft in 1937. The dam has three 18 ft by 6 ft tainter gates that raise from the bottom. Water is diverted from Whatcom Lake at intake structure located near the intersection of Cable and Whatcom Boulevards. Water use is for both municipal and industrial supply for the city of Bellingham. Since April 1962, at times water is diverted from Middle Fork Nooksack River to Whatcom Lake via Anderson Creek to supplement Whatcom Creek. Chemical analyses water years 1964-70.

COOPERATION.--Record furnished by city of Bellingham.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, 315.75 ft Feb. 19, 1913; minimum observed, 310.37 ft Oct. 31, 1983.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum observed gage height, 316.22 ft Feb. 1, 1971; minimum observed, 308.38 ft Dec. 5, 1957, record furnished by city of Bellingham.

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 314.33 ft May 20; minimum observed, 311.06 ft Dec. 23.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 0830

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	312.25	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	314.18	314.02	---	---	---
3	---	---	311.20	---	311.62	312.50	---	---	---	---	---	312.34
4	---	312.82	---	---	---	---	---	---	---	---	313.30	---
5	---	---	---	---	---	---	---	314.16	---	---	---	---
6	---	---	---	311.34	---	---	---	---	---	---	---	---
7	311.16	---	---	---	---	---	313.61	---	---	313.56	---	---
8	---	---	---	---	---	---	---	---	---	---	---	312.23
9	---	---	311.20	---	---	---	---	---	314.00	---	---	---
10	---	---	---	---	---	312.51	---	---	---	---	---	---
11	---	---	---	---	313.36	---	---	---	---	---	313.07	---
12	---	312.25	---	---	---	---	---	313.95	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	311.13	---	---	311.60	---	---	313.74	---	---	313.46	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	311.14	---	---	---	---	---	313.94	---	---	---
17	---	---	---	---	---	312.61	---	---	---	---	---	312.02
18	---	311.88	---	---	311.79	---	---	---	---	---	312.90	---
19	---	---	---	---	---	---	---	314.08	---	---	---	---
20	---	---	---	312.25	---	---	---	314.33	---	---	---	---
21	311.18	---	---	---	---	---	314.20	---	---	313.61	---	---
22	---	---	---	---	---	---	---	---	---	---	---	311.92
23	---	---	311.06	---	---	---	---	---	313.77	---	---	---
24	---	---	---	---	312.57	312.95	---	---	---	---	---	---
25	---	311.40	---	---	---	---	---	---	---	---	312.63	---
26	311.45	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	311.92	---	---	---	314.18	---	---	---	---
28	312.05	---	---	---	---	---	314.17	---	---	313.49	---	---
29	---	---	---	---	---	---	---	---	---	---	---	312.00
30	312.11	---	311.10	---	---	---	---	---	313.50	---	---	---
31	---	---	---	---	---	313.43	---	---	---	---	---	---

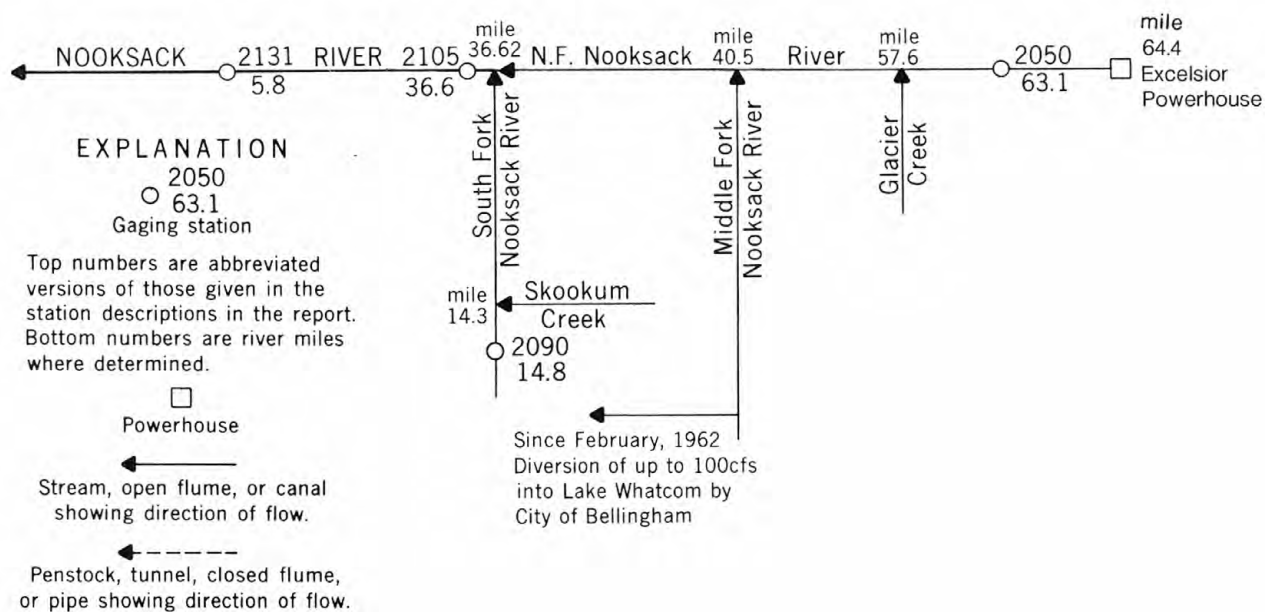


Figure 18.--Gaging stations in Nooksack River basin.

NOOKSACK RIVER BASIN

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

LOCATION.--Lat 48°54'22", long 121°50'35", in SE¼SW¼ sec.36, T.40 N., R.7 E., Whatcom County, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi downstream from Cascade Creek, 0.3 mi downstream from Deadhorse Creek, 4.8 mi east of Glacier, 5.5 mi upstream from Glacier Creek, and at mile 63.1.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1937 to current year. Published as "Nooksack River above Cascade Creek, near Glacier" 1937-58 and as "Nooksack River below Cascade Creek, near Glacier" 1958-66.

REVISED RECORDS.--WSP 1092: 1946.

GAGE.--Water-stage recorder. Elevation of gage is 1,245 ft, from river-profile map. Supplementary gage on left bank, at datum 1.19 ft lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 5, Sept. 15-19. Records good except for estimated daily discharges and discharges for Jan. 20 to Mar. 20, which are fair. No diversion upstream from station. Some regulation at low flow by powerplant at Excelsior. Summer flows augmented by glacier melt.

AVERAGE DISCHARGE.--49 years, 776 ft³/s, 100.36 in/yr, 562,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Nov. 26, 1949, gage height, 10.50 ft supplementary gage, from rating curve extended above 2,900 ft³/s on basis of contracted-opening measurement at gage height 8.13 ft, supplementary gage; minimum discharge, 60 ft³/s Mar. 12, 1969; minimum daily, 98 ft³/s Jan. 8, 1979, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	1200	*7,700	*8.16	Feb. 25	unknown	3,840	5.78
Jan. 18	2400	5,830	7.11				

Minimum discharge, 150 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202	1940	272	235	816	1040	654	487	2640	1580	862	642
2	273	2260	266	221	673	906	581	574	2320	1850	980	698
3	301	2210	261	210	601	809	530	633	2090	1560	1040	715
4	236	1660	256	202	539	803	505	599	1990	1160	971	684
5	236	1230	300	305	480	748	471	560	1820	931	943	619
6	325	1060	319	409	452	707	445	547	1690	908	929	611
7	234	1020	296	308	425	1410	457	581	1440	1040	970	577
8	190	863	271	531	399	1620	523	567	1310	1110	1060	512
9	174	741	248	474	378	1180	546	554	1280	1140	1090	462
10	191	645	235	732	365	912	503	517	1510	1100	1080	549
11	691	579	229	727	349	791	463	482	1690	1390	914	444
12	355	543	226	525	321	713	437	519	1600	1270	836	385
13	324	506	222	473	318	634	412	898	1550	1020	880	367
14	914	473	210	467	299	580	385	652	1730	936	912	362
15	1610	541	206	434	306	524	391	572	1810	881	821	330
16	1340	562	200	500	529	485	392	532	1290	1070	703	310
17	881	478	201	596	390	448	399	560	1250	1030	660	290
18	788	424	202	2970	341	439	378	1120	1420	907	646	280
19	1820	413	198	3350	306	425	364	1610	1330	989	660	312
20	1640	393	208	1500	299	416	493	2290	1130	1090	667	293
21	1130	362	214	1050	284	576	1040	1480	1020	1160	706	279
22	1180	337	216	906	280	521	1380	1090	1130	1180	704	276
23	972	330	227	809	321	497	907	900	1430	1120	679	723
24	1220	320	239	662	2470	652	717	945	1600	982	642	697
25	1380	312	258	591	3080	556	656	1600	1490	965	662	392
26	1580	304	261	707	1900	775	586	2400	1320	925	756	315
27	5290	296	255	966	1370	890	607	2390	1230	835	834	384
28	1980	290	245	719	1240	1440	586	2290	1380	792	954	384
29	1350	284	241	684	---	1030	545	2350	1480	747	892	563
30	1130	278	230	822	---	910	504	2530	1270	706	770	598
31	923	---	224	1010	---	735	---	2610	---	744	693	---
TOTAL	30860	21654	7436	24095	19531	24172	16857	35439	46240	33118	25916	14053
MEAN	995	722	240	777	698	780	562	1143	1541	1068	836	468
MAX	5290	2260	319	3350	3080	1620	1380	2610	2640	1850	1090	723
MIN	174	278	198	202	280	416	364	482	1020	706	642	276
CFSM	9.48	6.88	2.29	7.40	6.65	7.43	5.35	10.9	14.7	10.2	7.96	4.46
IN.	10.93	7.67	2.63	8.54	6.92	8.56	5.97	12.56	16.38	11.73	9.18	4.98
AC-FT	61210	42950	14750	47790	38740	47950	33440	70290	91720	65690	51400	27870
CAL YR 1985	TOTAL	260174	MEAN	713	MAX	5290	MIN	165	CFSM	6.79	IN.	92.18
WTR YR 1986	TOTAL	299371	MEAN	820	MAX	5290	MIN	174	CFSM	7.81	IN.	106.06
											AC-FT	516100
											AC-FT	593800

NOOKSACK RIVER BASIN

255

12209000 SOUTH FORK NOOKSACK RIVER NEAR WICKERSHAM, WA

LOCATION.--Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 0.5 mi upstream from Skookum Creek, 3.7 mi east of Wickersham, and at mile 14.8.

DRAINAGE AREA.--103 mi².

PERIOD OF RECORD.--October 1933 to October 1977, June to September 1978, October 1980 to current year (seasonal records only).

REVISED RECORDS.--WSP 832: 1935-36.

GAGE.--Water-stage recorder. Elevation of gage is 385 ft, from river-profile map. Prior to July 9, 1934, nonrecording gage, at same site and datum.

REMARKS.--Estimated daily discharges: June 1 to July 7. Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--44 years (water years 1934-77), 741 ft³/s, 97.70 in/yr, 536,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Nov. 3, 1955, gage height, 13.40 ft, from rating curve extended above 11,000 ft³/s; minimum discharge, 66 ft³/s Oct. 9, 1940, Sept. 11-13, 1944; minimum gage height, 1.80 ft Sept. 16, 17, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period June to October, 3,890 ft³/s Oct. 26, gage height, 6.26 ft; minimum discharge, 85 ft³/s Sept. 22, 23, gage height, 1.89 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO OCTOBER 1986
MEAN VALUES

DAY	JUN	JUL	AUG	SEP	OCT
1	840	400	185	104	450
2	760	500	183	101	301
3	700	560	182	100	246
4	600	440	177	97	218
5	580	350	170	94	206
6	520	280	165	92	190
7	470	290	160	88	175
8	450	307	155	88	163
9	420	294	152	90	155
10	450	291	149	114	147
11	500	426	148	127	138
12	480	471	147	106	132
13	450	373	141	98	127
14	500	313	136	106	123
15	560	281	130	99	118
16	450	523	127	94	114
17	400	1440	122	93	109
18	450	690	119	89	107
19	540	459	114	91	104
20	450	392	111	92	102
21	400	359	107	89	100
22	370	335	106	88	99
23	430	308	104	340	96
24	450	279	104	581	93
25	400	258	101	261	210
26	370	246	100	177	1820
27	320	238	99	596	1630
28	350	227	100	703	947
29	400	217	105	904	482
30	350	203	109	712	1230
31	---	193	110	---	839
TOTAL	14410	11943	4118	6414	10971
MEAN	480	385	133	214	354
MAX	840	1440	185	904	1820
MIN	320	193	99	88	93
CFSM	4.66	3.74	1.29	2.08	3.44
IN.	5.20	4.31	1.49	2.32	3.96
AC-FT	28580	23690	8170	12720	21760

12210500 NOOKSACK RIVER AT DEMING, WA

LOCATION.--Lat 48°48'38", long 122°12'13", in lot 12, NE¼SE¼ sec.6, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 800 ft downstream from South Fork, 1.1 mi southeast of Deming, and at mile 36.6.

DRAINAGE AREA.--584 mi², includes 5 mi² in Canada.

PERIOD OF RECORD.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1964 (discharges above 3,500 ft³/s only), October 1964 to current year. Published as "near Deming" 1910-11.

REVISED RECORDS.--WSP 1286: 1951. WSP 1736: 1937(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 204.2 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 5, 1910, nonrecording gage at site 1.1 mi downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, nonrecording gage at site 5 mi downstream at different datum. July 20 to Sept. 19, 1935, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 3-9, Nov. 20, 21, Nov. 25 to Dec. 23, Jan. 1-3, 14, 15, Jan. 24 to Feb. 23, Mar. 13-20, Aug. 30 to Sept. 18. Records fair. Slight regulation by powerplant at Excelsior. Since February 1962, city of Bellingham diverts up to 100 ft³/s from the Middle Fork for municipal use. Summer flows augmented by glacier melt at source.

AVERAGE DISCHARGE.--44 years (water years 1936-57, 1965-86), 3,349 ft³/s, 77.88 in/yr, 2,426,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s Feb. 10, 1951, gage height, 15.69 ft, from rating curve extended above 25,000 ft³/s; maximum gage height, 15.89 ft Dec. 3, 1975; minimum recorded discharge, 502 ft³/s Nov. 29, 1952, gage height, 3.72 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Mar. 15, 1908, reportedly reached a stage of 20 ft. Peak of Feb. 27, 1932, reached a stage of 16.8 ft, from floodmarks, discharge, 49,300 ft³/s. Peak of November 1909 reached a stage about equal to that of the 1932 peak.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 27	1600	24,500	12.33	Jan. 18	1900	23,600	12.03
Nov. 1	2000	*25,600	*12.59	Feb. 24	1100	24,700	12.29

Minimum discharge, 656 ft³/s Oct. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	717	14300	1350	1200	4300	4830	3180	2870	5760	2990	1950	1320
2	701	16200	1320	1370	4300	4130	3010	3210	5310	4060	2130	1300
3	770	13800	1300	1220	3300	3710	2800	3620	4800	4140	2210	1350
4	810	8480	1300	1160	2900	3660	2650	3340	4560	3450	2120	1300
5	760	5800	1650	1150	2800	3410	2560	2990	4130	2700	2030	1250
6	740	5320	1800	3010	2500	3240	2420	2800	3890	2420	2020	1200
7	810	5810	1600	2410	2200	5720	2310	2820	3400	2520	2040	1200
8	760	4500	1500	2810	2000	5910	2280	2660	3160	2580	2180	1100
9	710	3750	1380	2600	1850	4380	2280	2580	3020	2530	2210	1040
10	667	3170	1340	3340	1750	3640	2250	2470	3270	2480	2210	1020
11	1420	2710	1320	3760	1650	3270	2180	2350	3600	3020	1970	1100
12	1180	2510	1300	2670	1550	3170	2170	2620	3510	3230	1760	920
13	1140	2410	1260	2440	1400	2800	2150	7290	3330	2650	1810	870
14	4860	2250	1220	2300	1350	2700	2080	4470	3520	2360	1870	850
15	7160	2750	1180	2200	1400	2550	2020	3570	4170	2220	1730	790
16	5560	3670	1150	2370	3700	2400	2120	3060	3060	3000	1530	770
17	3660	2760	1120	3620	2300	2200	2340	2940	2980	5140	1450	750
18	3450	2430	1120	14000	1850	2080	2460	4260	3580	3600	1400	730
19	4970	2280	1120	16200	1600	2100	2360	5070	3940	3010	1390	719
20	6500	2130	1130	7860	1550	2100	2550	9460	3370	2920	1400	708
21	4010	1980	1140	5650	1500	2930	4300	6520	3020	2880	1450	694
22	4030	1820	1130	4870	1450	2660	5430	5010	2820	2870	1440	680
23	4180	1650	1130	5610	2100	2530	3790	4180	3080	2750	1380	1280
24	5120	1600	1150	4500	21500	4070	3180	4010	3380	2500	1300	2100
25	7540	1550	1180	3600	17300	3310	3110	4960	3210	2370	1270	1110
26	6730	1500	1210	3200	9860	3880	2930	6010	2950	2270	1430	866
27	19800	1450	1210	3100	6480	3950	3670	5940	2700	2140	1570	1480
28	12700	1420	1200	3500	5570	5970	3830	5610	2900	2030	1760	1880
29	7760	1400	1160	3100	---	4460	3380	5500	3090	1960	1680	2020
30	6510	1370	1140	4800	---	4360	3020	5700	2810	1820	1550	1960
31	5490	---	1090	4900	---	3510	---	5730	---	1820	1380	---
TOTAL	131215	122770	39200	124520	112010	109630	84810	133620	106320	86430	53620	34357
MEAN	4233	4092	1265	4017	4000	3536	2827	4310	3544	2788	1730	1145
MAX	19800	16200	1800	16200	21500	5970	5430	9460	5760	5140	2210	2100
MIN	667	1370	1090	1150	1350	2080	2020	2350	2700	1820	1270	680
CFSM	7.25	7.01	2.17	6.88	6.85	6.05	4.84	7.38	6.07	4.77	2.96	1.96
IN.	8.36	7.82	2.50	7.93	7.13	6.98	5.40	8.51	6.77	5.51	3.42	2.19
AC-FT	260300	243500	77750	247000	222200	217500	168200	265000	210900	171400	106400	68150

CAL YR 1985	TOTAL	1083320	MEAN	2968	MAX	19800	MIN	667	CFSM	5.08	IN.	69.01	AC-FT	2149000
WTR YR 1986	TOTAL	1138502	MEAN	3119	MAX	21500	MIN	667	CFSM	5.34	IN.	72.52	AC-FT	2258000

12213100 NOOKSACK RIVER AT FERNDAL, WA

LOCATION.--Lat 48°50'42", long 122°35'17", in NE¼NW¼ sec.29, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, on right bank 300 ft downstream from highway bridge at Ferndale, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--786 mi², of which 48.9 mi² is in Canada.

PERIOD OF RECORD.--October 1966 to current year.

REVISED RECORDS.--WDR WA-83-1: 1971(M), 1976(M).

GAGE.--Water-stage recorder. Datum of gage is 4.61 ft above National Geodetic Vertical Datum of 1929. Prior to July 18, 1968, at site 220 ft upstream at datum 4.21 ft higher.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 12. Records good except for estimated daily discharges, which are fair. Slight regulation by powerplant at Excelsior. City of Bellingham diverts up to about 100 ft³/s at times from Middle Fork Nooksack River for municipal use. City of Ferndale diverts unknown quantities for municipal use.

AVERAGE DISCHARGE.--20 years, 3,900 ft³/s, 67.38 in/yr, 2,826,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,700 ft³/s Dec. 3, 1975, gage height, 21.97 ft; minimum discharge, 676 ft³/s Sept. 22, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 28	0600	22,300	16.60	Jan. 19	1600	25,500	17.68
Nov. 2	1300	23,400	16.96	Feb. 25	0300	*29,900	*18.86

Minimum discharge, 676 ft³/s Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	757	9960	1850	1380	5220	7090	4140	3500	7260	2900	1860	1320		
2	756	22300	1800	1660	5240	5730	3650	3620	6860	4360	2040	1300		
3	858	20900	1800	1530	4060	4940	3280	4210	5950	4330	2180	1380		
4	923	14900	1750	1380	3510	4640	3090	4260	5610	4350	2160	1340		
5	834	9630	2050	1380	3460	4380	2990	3640	5080	3180	2020	1280		
6	820	8320	2200	3570	3090	3990	2760	3320	4710	2690	2000	1200		
7	919	8730	2000	2970	2770	5120	2630	3230	4160	2650	1980	1210		
8	821	7160	1800	2750	2520	8570	2660	3050	3780	2720	2100	1120		
9	759	5770	1700	3560	2330	5670	2630	2870	3570	2680	2160	1040		
10	729	4740	1600	3730	2170	4820	2510	2780	3670	2580	2240	1020		
11	1030	3990	1600	5030	2070	4300	2390	2660	4050	2930	2070	1130		
12	1540	3530	1550	3710	1920	4160	2690	2610	4100	3460	1790	947		
13	1180	3230	1530	3030	1750	3670	2530	7420	3810	2900	1770	868		
14	3110	2940	1470	2910	1650	3490	2320	5430	3870	2530	1840	863		
15	8150	2910	1420	2730	1670	3270	2190	4160	4790	2330	1770	815		
16	6670	5380	1380	2950	4670	2970	2580	3570	3740	2410	1600	773		
17	4500	4080	1350	4000	3030	2750	3000	3280	3280	5650	1480	763		
18	4410	3280	1340	10100	2370	2620	2980	4360	3730	4610	1420	738		
19	3880	2820	1330	23200	1980	2700	2590	6090	4890	3430	1390	750		
20	8440	2600	1340	13200	1910	2630	2710	10600	3760	3190	1380	734		
21	5620	2410	1370	7580	1850	3020	4080	9010	3750	3090	1420	710		
22	4560	2300	1360	5820	1790	3480	6940	6150	3170	3040	1430	691		
23	5490	2250	1350	6190	2370	2900	4750	4920	3340	2940	1400	794		
24	5050	2200	1370	5790	19800	4890	3880	4370	3670	2670	1340	2470		
25	9690	2100	1420	4510	28500	4630	3720	5100	3640	2470	1270	1520		
26	6360	2050	1440	3900	17500	4740	3590	6980	3300	2350	1350	1070		
27	17800	2000	1400	3720	10800	5120	3860	7730	2960	2230	1500	978		
28	19400	2000	1340	4470	8250	7120	5030	6930	3030	2070	1660	2410		
29	10000	1950	1290	3690	---	6410	4250	6770	3240	2010	1750	1970		
30	7100	1900	1290	4060	---	5830	3810	7130	3170	1860	1580	2380		
31	6180	---	1230	6250	---	4920	---	7330	---	1800	1440	---		
TOTAL	148336	168330	47720	150750	148250	140570	100230	157080	123940	92410	53390	35584		
MEAN	4785	5611	1539	4863	5295	4535	3341	5067	4131	2981	1722	1186		
MAX	19400	22300	2200	23200	28500	8570	6940	10600	7260	5650	2240	2470		
MIN	729	1900	1230	1380	1650	2620	2190	2610	2960	1800	1270	691		
CFSM	6.09	7.14	1.96	6.19	6.74	5.77	4.25	6.45	5.26	3.79	2.19	1.51		
IN.	7.02	7.97	2.26	7.13	7.02	6.65	4.74	7.43	5.87	4.37	2.53	1.68		
AC-FT	294200	333900	94650	299000	294100	278800	198800	311600	245800	183300	105900	70580		
CAL YR 1985	TOTAL	1205927	MEAN	3304	MAX	22300	MIN	729	CFSM	4.20	IN.	57.07	AC-FT	2392000
WTR YR 1986	TOTAL	1366590	MEAN	3744	MAX	28500	MIN	691	CFSM	4.76	IN.	64.68	AC-FT	2711000

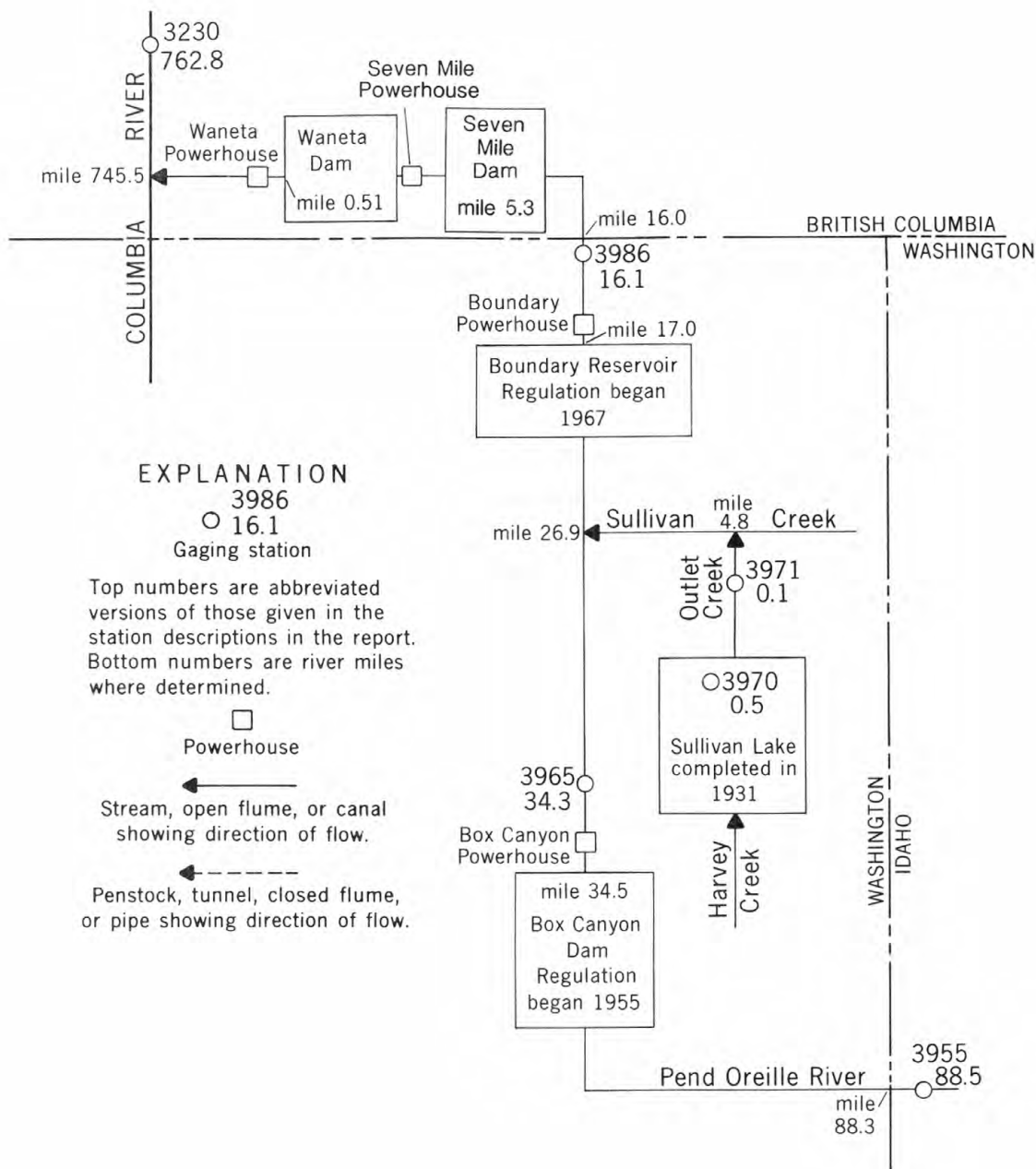


Figure 19.--Gaging stations in Pend Oreille River basin and Columbia River above international boundary.

COLUMBIA RIVER MAIN STEM

259

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

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

DRAINAGE AREA.--34,000 mi², approximately.

PERIOD OF RECORD.--April 1913 to current year. Published as "at Trail, British Columbia" 1913-37.

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

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

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

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

AVERAGE DISCHARGE.--73 years, 71,000 ft³/s, 51,440,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 377,000 ft³/s June 9, 1961, gage height, 50.05 ft; maximum gage height, 50.62 ft June 11, 1948; minimum discharge observed, 8,940 ft³/s Feb. 3, 1937, gage height, 6.27 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 132,000 ft³/s July 21, gage height, 25.61 ft; minimum daily, 26,500 ft³/s Nov. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38800	74200	74900	102000	36700	37700	33200	57600	71300	84600	101000	77900
2	38100	70300	74500	105000	46500	29800	32200	57200	77100	86500	100000	77900
3	36400	65000	80200	107000	46800	35700	31200	55300	90900	93600	105000	80200
4	35200	66700	75600	112000	48300	40200	32500	52600	96500	95600	117000	84500
5	32600	74200	74500	120000	50900	40100	33500	53300	94600	101000	119000	87400
6	38100	66400	82600	118000	52900	39400	33500	53600	99400	107000	121000	92900
7	46600	50900	90400	116000	57400	39400	34900	53700	101000	106000	118000	87900
8	53300	34100	90400	116000	62200	39900	34100	53200	100000	105000	116000	79800
9	53300	26500	84400	117000	65700	40100	37900	54200	96200	102000	120000	77800
10	53300	33300	87600	116000	72000	39800	48800	53900	85900	92200	118000	77600
11	52300	47000	92200	109000	68100	39300	49800	53400	83000	86700	114000	77800
12	43800	59300	91800	99700	70000	40800	50100	53100	82400	94300	101000	75900
13	40300	64300	92500	94400	66000	41500	49500	55000	79500	101000	91700	71000
14	40300	72400	85500	90700	69100	40300	49400	54600	76000	101000	92900	56300
15	45600	74500	76600	87900	71000	44900	50900	54700	73500	97400	94800	48000
16	49400	57200	78000	89900	80800	47500	52000	54800	71800	95900	97100	47200
17	48700	44800	78800	88900	84600	46700	55900	52300	67500	95000	98600	46300
18	48700	42700	75600	82500	80600	46700	55000	68900	64000	99800	93400	46900
19	54000	48400	76300	62300	80500	46100	54700	72000	64400	112000	78400	47000
20	61400	55400	77700	59000	80000	46000	54600	75100	63600	126000	62100	43400
21	64300	55800	83700	55400	80400	45200	55600	78000	62500	128000	57500	40700
22	65300	55400	90100	60400	79700	50200	53700	78200	59800	116000	64200	39900
23	64300	48700	93600	70600	78700	59300	53700	78500	58600	110000	65800	34500
24	62900	60000	90400	72300	61500	61900	59000	82900	57700	114000	70800	31900
25	63200	78000	94300	67000	41000	61100	59500	86900	57300	113000	70800	31500
26	66400	87200	92200	56400	28100	61700	59000	92000	55700	116000	67900	31500
27	71700	87600	90800	51700	30600	64200	58800	101000	54500	118000	61700	33200
28	78800	84000	93600	45000	36100	61900	59000	106000	58000	113000	63400	34900
29	100000	82300	99600	43400	---	58300	58500	97600	73600	102000	68700	35000
30	90100	77700	104000	41100	---	50000	58400	77500	84500	99800	69600	35000
31	77700	---	107000	35700	---	40500	---	69200	---	100000	71400	---
TOTAL	1714900	1844300	2679400	2592300	1726200	1436200	1448900	2086300	2260800	3212400	2790800	1731800
MEAN	55320	61480	86430	83620	61650	46330	48300	67300	75360	103600	90030	57730
MAX	100000	87600	107000	120000	84600	64200	59500	106000	101000	128000	121000	92900
MIN	32600	26500	74500	35700	28100	29800	31200	52300	54500	84600	57500	31500
AC-FT	3402000	3658000	5315000	5142000	3424000	2849000	2874000	4138000	4484000	6372000	5536000	3435000
CAL YR 1985	TOTAL	24192700	MEAN	66280	MAX	123000	MIN	17800	AC-FT	47986000		
WTR YR 1986	TOTAL	25524300	MEAN	69930	MAX	128000	MIN	26500	AC-FT	50627000		

PEND OREILLE RIVER BASIN

12395500 PEND OREILLE RIVER AT NEWPORT, WA

LOCATION.--Lat 48°10'56", long 117°02'00", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.24, T.56 N., R.6 W. (Boise meridian), Bonner County, ID, Hydrologic Unit 17010216, on left bank at Newport, 0.2 mi upstream from bridge on U.S. Highway 2, 0.2 mi east of Idaho-Washington state line, 1.6 mi downstream from Albeni Falls Dam, and at mile 88.5.

DRAINAGE AREA.--24,200 mi², approximately.

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,999.7 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 22, 1928, nonrecording gages at Priest River, Newport or Metaline Falls at various datums (see description, WSP 532, p. 92). Sept. 22, 1928, to Sept. 30, 1935, at datum 40.14 ft higher, and Oct. 1, 1935, to Sept. 30, 1941, water-stage recorder at datum 0.30 ft higher. Since December 1952, auxiliary water-stage recorder 2.74 mi downstream from base gage.

REMARKS.--Estimated daily discharges: Oct. 3, 4, Dec. 9-13. Records good. Flow regulated at Albeni Falls Dam and affected by storage in Pend Oreille Lake, Flathead Lake, Hungry Horse Reservoir, and several smaller reservoirs. Diversions upstream from station for irrigation of about 354,000 acres.

AVERAGE DISCHARGE.--72 years (1904-41, 1953-86), 25,920 ft³/s, 18,780,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 136,000 ft³/s June 15, 1913, June 21, 1933, June 12, 1972; minimum, 1,280 ft³/s Sept. 1, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1894 reached a stage of about 64.0 ft present site and datum, discharge, about 200,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 74,100 ft³/s June 2; maximum gage height, 44.20 ft June 4; minimum discharge, 3,270 ft³/s Oct. 3, gage height, 28.51 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17200	29800	18900	15100	18900	27200	38200	29900	72900	23900	5880	8420
2	8470	30100	21100	14600	19100	24700	41100	30000	71600	23900	3790	9390
3	4080	30300	21600	16800	19200	22900	41900	30200	71100	22900	4500	10900
4	4050	30400	20900	17500	19500	20300	41700	30300	71600	18300	8830	12100
5	4500	30600	20600	17500	19500	20100	41500	32700	70900	17300	12200	14200
6	4230	30700	19800	16500	21500	20200	41200	33500	71600	17300	10100	15600
7	10700	30700	17100	16600	22800	21900	35300	33600	71100	17400	6370	15300
8	20900	30700	15900	17500	22800	27300	25400	33500	71400	18500	6520	15500
9	24700	30700	15400	17000	21300	30100	23900	30600	63400	19900	7790	15400
10	24700	30800	19000	16600	17100	32500	27000	28000	54800	18500	8860	16600
11	24100	33500	20200	15800	15400	35900	31300	28000	52800	15700	8830	18000
12	23600	32400	20300	15800	15300	36100	37000	28600	48000	14100	8950	17800
13	23500	29600	21900	15800	15300	36300	39600	27700	39200	13300	8380	17600
14	23600	29600	19000	16800	16500	36000	40200	26000	35500	14700	8990	17600
15	24800	29300	16800	17500	18100	36100	38300	25500	35700	19400	8950	17600
16	26500	29300	16800	19300	19500	36100	35300	29000	40100	19200	8450	17500
17	27800	29700	18200	20600	20600	36500	33400	27700	42400	15500	7950	17600
18	28900	29400	19100	18800	21900	36400	31400	25800	41300	15300	7950	17600
19	29100	29500	21300	17000	20400	36500	34300	23700	35800	17700	8200	17600
20	29200	29400	20800	18100	18200	32500	34100	18000	31400	20700	8280	17400
21	28900	29500	15900	19000	18200	29900	32000	20700	31200	21800	8610	17500
22	28800	29400	10600	18100	16800	30000	27900	25700	31100	17700	9210	17500
23	28800	25100	13400	18300	19600	30100	29900	32100	29300	14300	11100	19100
24	29900	19600	16100	18400	22100	29900	33000	37900	26300	14200	10900	21600
25	30700	15500	13400	18000	22000	30100	27200	40400	25100	14400	11200	23300
26	30700	14100	9530	15200	23800	30000	25200	41300	23700	14400	10400	24100
27	30400	13900	11100	15100	29100	29800	37000	43200	19100	14300	9260	24100
28	30300	12200	12600	19000	29400	29800	37400	47200	16000	14100	8930	24300
29	30400	9900	15100	22100	---	29800	33500	54100	20900	12300	8970	24100
30	24300	25500	16700	22900	---	29900	30600	65400	24300	10600	8830	26100
31	29600	---	15500	20700	---	33500	---	72300	---	8690	8420	---
TOTAL	707430	801200	534630	548000	563900	938400	1025800	1052600	1339600	520290	265600	531410
MEAN	22820	26710	17250	17680	20140	30270	34190	33950	44650	16780	8568	17710
MAX	30700	33500	21900	22900	29400	36500	41900	72300	72900	23900	12200	26100
MIN	4050	9900	9530	14600	15300	20100	23900	18000	16000	8690	3790	8420
AC-FT	1403000	1589000	1060000	1087000	1118000	1861000	2035000	2088000	2657000	1032000	526800	1054000
CAL YR 1985	TOTAL	8080140		MEAN	22140	MAX	63500	MIN	4050	AC-FT	16027000	
WTR YR 1986	TOTAL	8828860		MEAN	24190	MAX	72900	MIN	3790	AC-FT	17512000	

PEND OREILLE RIVER BASIN

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

LOCATION.--Lat 48°46'52", long 117°24'55", in SE¼NE¼ sec.19 T.38 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left bank 1,000 ft downstream from Box Canyon Dam, 2.8 mi north of Ione, and at mile 34.3.

DRAINAGE AREA.--24,900 mi², approximately.

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

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

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

REMARKS.--No estimated daily discharges. Records good except those less than 10,000 ft³/s, which are fair. Flow completely regulated by Box Canyon Reservoir, 1,000 ft upstream, since June 1955 and by Pend Oreille Lake, Flathead Lake, Hungry Horse Reservoir, and by several smaller reservoirs and powerplants. Numerous diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--34 years, 27,690 ft³/s, 20,060,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 136,000 ft³/s June 13, 14, 1972; maximum elevation, 2,014.54 ft June 14, 1972; minimum daily discharge, 82 ft³/s Oct. 5, 1985 (result of regulation).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1948 reached an elevation of 2,018.00 ft, from floodmarks, discharge, 167,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 79,200 ft³/s June 4; maximum elevation, 2,003.72 ft June 2; minimum daily discharge, 82 ft³/s Oct. 5 (result of regulation); minimum elevation, 1,983.52 ft Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24100	28800	13900	15200	20400	28900	35400	33300	72800	23100	7350	6520
2	22400	29800	15200	15100	19300	27200	38600	33300	74900	23700	4010	7600
3	6500	30300	16900	16900	19400	26100	41200	32800	71600	23700	2010	9980
4	159	30300	17300	17500	19800	22900	42600	32900	74200	20700	3800	10900
5	82	30600	17500	17200	20100	21900	43100	33400	72100	17400	8080	14000
6	223	30700	16800	17300	20600	21500	42400	35400	71500	16500	11200	15800
7	3940	30600	15000	17200	22700	21200	40400	36300	71600	16600	7430	13400
8	14000	30600	14500	17700	23500	26300	31000	36400	71500	16700	5730	14000
9	22300	30600	15600	17800	22700	29000	28100	35000	69100	18400	5820	14200
10	25000	29700	18000	17500	20500	30500	27800	32500	58200	19100	8060	14400
11	24700	30900	20900	16600	16300	34300	29000	31900	53800	16700	7800	16100
12	23900	32800	22400	16100	15800	35900	33500	31200	50900	14200	7290	16800
13	22900	30200	22400	16000	15700	37000	37900	30600	44800	12500	7770	16600
14	23500	30000	19600	16400	15700	37200	39200	29300	37600	12300	7920	16600
15	23600	29800	16900	17800	18000	37100	40100	28000	35700	15500	8050	16400
16	26100	29700	15900	18300	19400	36800	38400	29800	36100	18700	7620	16700
17	26500	29800	17100	20700	20200	36700	34500	31600	40700	16600	6960	16800
18	26600	29700	18000	20500	21700	36700	33600	28100	39400	13600	7420	17000
19	28100	29700	20100	18400	21500	36800	32700	27900	39100	15600	6980	17000
20	28200	29300	20100	17100	19300	35600	34900	26900	33400	18100	6840	16900
21	28200	29600	15100	18800	19000	32000	35400	23000	32500	20200	6860	16700
22	28200	29000	9410	18300	18600	31200	34600	25400	30900	20200	7100	16500
23	29100	27800	9560	18500	17700	31100	31200	29400	30300	15600	8670	17200
24	29100	24200	14600	18600	21800	31500	34800	33200	26500	13900	9100	20400
25	29900	18200	12300	18200	22700	31900	33700	39000	26500	14400	9120	20900
26	30500	14200	8600	16800	22800	31200	29600	40600	24300	12100	8950	22700
27	30500	14200	8970	14600	27000	31100	32200	41600	21500	13100	8130	23300
28	30500	13800	12600	16600	27200	31000	39800	45000	18000	13300	7980	22800
29	30100	10600	14900	20400	---	31000	39900	48200	17600	12400	8210	23000
30	28700	9620	16700	23000	---	30500	35000	57100	22200	9310	8210	24900
31	27900	---	15600	23100	---	31800	---	69200	---	9230	7450	---
TOTAL	695504	795120	492440	554200	569400	963900	1070600	1088300	1369300	503440	227920	496100
MEAN	22440	26500	15890	17880	20340	31090	35690	35110	45640	16240	7352	16540
MAX	30500	32800	22400	23100	27200	37200	43100	69200	74900	23700	11200	24900
MIN	82	9620	8600	14600	15700	21200	27800	23000	17600	9230	2010	6520
AC-FT	1380000	1577000	976800	1099000	1129000	1912000	2124000	2159000	2716000	998600	452100	984000
CAL YR 1985	TOTAL	8076004	MEAN	22130	MAX	61200	MIN	82	AC-FT	16019000		
WTR YR 1986	TOTAL	8826224	MEAN	24180	MAX	74900	MIN	82	AC-FT	17507000		

LOCATION.--Lat 48°50'21", long 117°17'15", in SW¼ sec.31, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, 200 ft south of dam at outlet, and 4.0 mi southeast of Metaline Falls.

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

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

COOPERATION.--Elevation record furnished by Public Utility District No. 1 of Pend Oreille County.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2.587.14 ft Aug. 1; minimum observed, 2.564.55 ft Jan. 14.

[illegible]

PEND OREILLE RIVER BASIN

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12397100 OUTLET CREEK NEAR METALINE FALLS, WA

LOCATION.--Lat 48°50'42", long 117°17'12", in SW¼SE¼ sec.30, T.39 N., R.44 E., Pend Oreille County, Hydrologic Unit 17010216, Colville National Forest, on right bank 0.1 mi upstream from mouth, 0.4 mi downstream from Sullivan Lake Dam, and 4 mi east of Metaline Falls.

DRAINAGE AREA.--51.5 mi².

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

REVISED RECORDS.--WSP 1933: Drainage area.

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

REMARKS.--Estimated daily discharges: Jan. 23, 24, 30, Feb. 1, 9, 11-15, 19-23, Mar. 5-7, 9-11. Records good except those for estimated daily discharges, which are fair. Flow completely regulated by Sullivan Lake 0.4 mi upstream (see sta 12397000). No diversions.

AVERAGE DISCHARGE.--27 years, 75.3 ft³/s, 54,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 924 ft³/s May 31, 1969, gage height, 12.26 ft; minimum discharge, 1.6 ft³/s part of each day Apr. 9-12, 1973; minimum gage height, 8.76 ft part of each day Apr. 9-12, 1973, and Mar. 4-10, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 342 ft³/s Nov. 14, gage height, 10.95 ft; minimum daily discharge, 2.0 ft³/s Mar. 4-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	271	134	22	23	27	2.7	4.4	12	19	20	20
2	38	260	122	22	24	27	2.9	4.5	13	19	20	20
3	82	259	112	22	26	12	3.0	4.7	13	19	20	20
4	94	291	101	22	26	2.0	3.0	4.7	13	19	20	20
5	94	311	91	22	26	2.0	3.0	5.0	14	19	20	20
6	94	310	85	22	25	2.0	3.0	5.0	15	19	20	20
7	113	300	77	22	25	2.0	2.8	5.2	15	19	20	20
8	148	311	70	22	24	2.0	2.9	5.4	15	19	21	20
9	180	319	64	22	24	2.0	3.2	5.6	16	19	21	20
10	180	284	61	21	23	2.0	3.2	5.8	16	20	21	20
11	180	279	58	20	23	2.0	3.1	5.9	16	20	21	20
12	179	274	55	20	22	2.2	3.1	6.0	16	20	21	20
13	177	287	52	19	22	2.2	3.2	6.2	16	20	21	20
14	176	319	48	18	22	2.2	2.9	5.9	17	20	21	20
15	174	332	46	18	23	2.2	3.2	6.2	17	20	21	20
16	193	316	43	18	25	2.1	3.5	6.4	17	20	21	20
17	232	301	41	19	25	2.1	3.5	6.6	17	20	21	20
18	247	285	37	20	24	2.3	3.6	7.0	18	20	20	20
19	247	283	36	20	23	2.4	3.7	7.1	18	20	20	19
20	244	277	34	21	22	2.4	3.7	7.4	18	20	20	19
21	243	264	32	21	22	2.3	3.7	7.7	18	20	21	19
22	257	254	31	21	22	2.4	4.0	7.7	18	20	21	19
23	273	242	30	22	22	2.4	3.9	8.1	18	20	21	19
24	271	232	29	22	23	2.6	3.9	8.4	18	20	21	19
25	269	223	29	21	24	2.6	3.9	8.7	18	20	20	19
26	268	212	26	21	25	2.6	3.9	9.1	18	20	20	19
27	264	203	26	21	26	2.5	4.1	9.6	18	20	20	19
28	261	190	25	20	27	2.3	4.2	9.9	18	20	20	19
29	260	169	24	20	---	2.9	4.2	11	19	20	20	19
30	275	150	24	22	---	2.8	4.3	11	19	20	20	19
31	282	---	23	22	---	2.8	---	12	---	20	20	---
TOTAL	6011	8008	1666	645	668	130.3	103.3	218.2	494	611	634	588
MEAN	194	267	53.7	20.8	23.9	4.20	3.44	7.04	16.5	19.7	20.5	19.6
MAX	282	332	134	22	27	27	4.3	12	19	20	21	20
MIN	16	150	23	18	22	2.0	2.7	4.4	12	19	20	19
AC-FT	11920	15880	3300	1280	1320	258	205	433	980	1210	1260	1170
CAL YR 1985	TOTAL	19849.9	MEAN	54.4	MAX	332	MIN	2.2	AC-FT	39370		
WTR YR 1986	TOTAL	19776.8	MEAN	54.2	MAX	332	MIN	2.0	AC-FT	39230		

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 48°59'56", long 117°21'09", in SW¼NE¼ sec.3, T.40 N., R.43 E., Pend Oreille County, Hydrologic Unit 17010216, on left bank 0.1 mi upstream from International boundary, 0.9 mi downstream from Boundary Dam, 6.0 mi downstream from Slate Creek, 9.7 mi north of Meteline Falls, and at mile 16.1.

DRAINAGE AREA.--25,200 mi², approximately.

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,700 ft city of Seattle Boundary Dam datum. Prior to Dec. 20, 1928, nonrecording gage at Meteline Falls at datum approximately 1,983.4 ft above National Geodetic Vertical Datum of 1929. Dec. 20, 1928, to Sept. 30, 1964, water-stage recorder at site 1.3 mi upstream at datum 1,721.18 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Estimated daily discharges: Oct. 3-7, July 30 to Aug. 5, Aug. 7 to Sept. 15, Sept. 20-23. Water-discharge records good except for estimated daily discharges, which are fair. Flow regulated by Boundary Reservoir 0.9 mi upstream beginning April 1967, Box Canyon Reservoir beginning June 1955, Pend Oreille Lake beginning June 1952, Flathead Lake beginning April 1938, Hungry Horse Reservoir beginning September 1951, and by several smaller reservoirs and powerplants. In 1946 there were diversions for irrigation of 340,000 acres upstream from the station and there probably has not been any appreciable change since that time.

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

AVERAGE DISCHARGE.--74 years, 27,250 ft³/s, 19,740,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 171,300 ft³/s June 13, 1948, gage height, 60.25 ft, site and datum then in use; minimum daily, 200 ft³/s Aug. 12, 1967, result of regulation; minimum observed, 109 ft³/s Apr. 23, 1967, result of regulation.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 106,000 ft³/s June 11, gage height, 39.17 ft; minimum daily discharge, 218 Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23200	31600	11900	16400	21500	29200	38600	36700	75900	24700	8370	7450
2	23800	31500	16200	15900	19100	28000	42300	34700	78500	24800	5110	9940
3	9410	31000	17900	17200	19900	27500	42100	35200	74300	26300	453	11500
4	2400	33400	18600	18200	21900	27700	42900	35400	76800	21400	8640	11300
5	218	34100	18400	17000	19600	24400	47000	36500	75300	17900	8740	14300
6	1500	33000	18300	17200	21300	23600	45400	37700	74100	17000	12800	14700
7	9240	32200	15900	17300	23300	20300	43600	38900	74300	17700	9250	14100
8	16000	33800	14000	17700	22700	26700	37200	41300	74500	17800	6940	15500
9	20600	34600	16800	18700	23700	30500	33600	40100	72600	19500	6760	14900
10	23600	28700	18500	18400	20400	31800	28700	31900	62300	19500	7890	16300
11	24200	34600	20800	17300	16700	33900	30000	34200	58900	18300	9220	17500
12	24500	35100	24800	16700	16000	37300	33400	32900	53600	14300	8790	17800
13	24900	31900	23700	16600	17000	38800	39300	32900	50100	12200	8840	17100
14	24900	31300	21100	17600	16600	39900	41500	31500	41000	13900	9890	17300
15	25800	31100	15600	18600	18400	39700	43800	30100	38200	19400	9370	15400
16	29000	31000	18400	19200	21600	39500	43700	32100	38700	20200	8510	17900
17	28900	32000	18700	20700	19300	39300	37100	33500	44000	16100	6890	17500
18	26900	30600	19300	22900	22100	39200	36500	29000	43300	15000	8750	18200
19	31200	31900	21200	15300	21700	39600	36600	29300	41600	17700	7580	18500
20	30000	32300	21200	17300	19300	39300	35600	28900	34100	18100	6830	17500
21	30200	30800	15200	19100	20600	34000	39300	25500	34200	20800	8360	16600
22	29800	30400	12700	20500	19300	33700	39200	28400	32500	19600	8430	16900
23	29300	26500	13400	19000	19700	32000	33300	33800	31600	17700	10700	18300
24	31700	22900	15100	19200	18100	33100	36000	33400	27900	13000	9570	19100
25	30600	22900	15400	18700	24300	33500	39300	42300	27400	16700	10600	21600
26	34000	16900	11900	17300	26200	33300	31900	43400	28100	12500	10700	23500
27	32700	17500	9810	15100	27700	33100	35100	45900	21700	14200	10000	22900
28	33200	12400	11800	17500	26600	33000	41200	49500	19200	14200	9170	23000
29	33400	9530	16100	20800	---	33700	43900	52900	17800	13600	9190	24200
30	29400	8700	17900	24600	---	33500	39400	59300	22700	11300	8900	23700
31	29400	---	17600	24100	---	33200	---	73400	---	11000	7320	---
TOTAL	743968	844230	528210	572100	584600	1022300	1157500	1170600	1445200	536400	262563	514490
MEAN	24000	28140	17040	18450	20880	32980	38580	37760	48170	17300	8470	17150
MAX	34000	35100	24800	24600	27700	39900	47000	73400	78500	26300	12800	24200
MIN	218	8700	9810	15100	16000	20300	28700	25500	17800	11000	453	7450
AC-FT	1476000	1675000	1048000	1135000	1160000	2028000	2296000	2322000	2867000	1064000	520800	1020000
CAL YR 1985	TOTAL	8577828	MEAN	23500	MAX	66600	MIN	218	AC-FT	17014000		
WTR YR 1986	TOTAL	9382161	MEAN	25700	MAX	78500	MIN	218	AC-FT	18610000		

12398600 PEND OREILLE RIVER AT INTERNATIONAL BOUNDARY, WA--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1974 to September 1981.

WATER TEMPERATURE: April 1974 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB MG/L AS CAC03	
NOV 06...	1230	32100	165	8.2	8.0	1.9	10.8	97	<1	K1	83	1	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HC03)	CAR- BONATE IT-FLD (MG/L AS C03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 06...	23	6.2	2.9	7	0.1	0.5	82	100	0	8.1	0.9	0.1	
DATE		SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	
NOV 06...	6.0	95	97	0.13	8230	<0.01	<0.10	0.01	<0.2	<0.01	<0.01		
DATE		PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 06...	0.01	<10	1	73	<0.5	17	<1	<3	7	7	4	<4	
DATE		MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)
NOV 06...	3	<0.1	<10	<1	<1	<1	56	<6	5	--	--	--	
DATE		GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)	URANIUM NATURAL SUS- PENDE TOTAL (UG/L AS U)	URANIUM DIS- SOLVED, EXTRAC- TION (UG/L)	STRON- TIUM 90 DIS- SOLVED (PCI/L)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
NOV 06...	--	--	--	--	--	--	--	--	--	2	173	--	

K - Results based on colony count outside the acceptable range (non-ideal colony count).

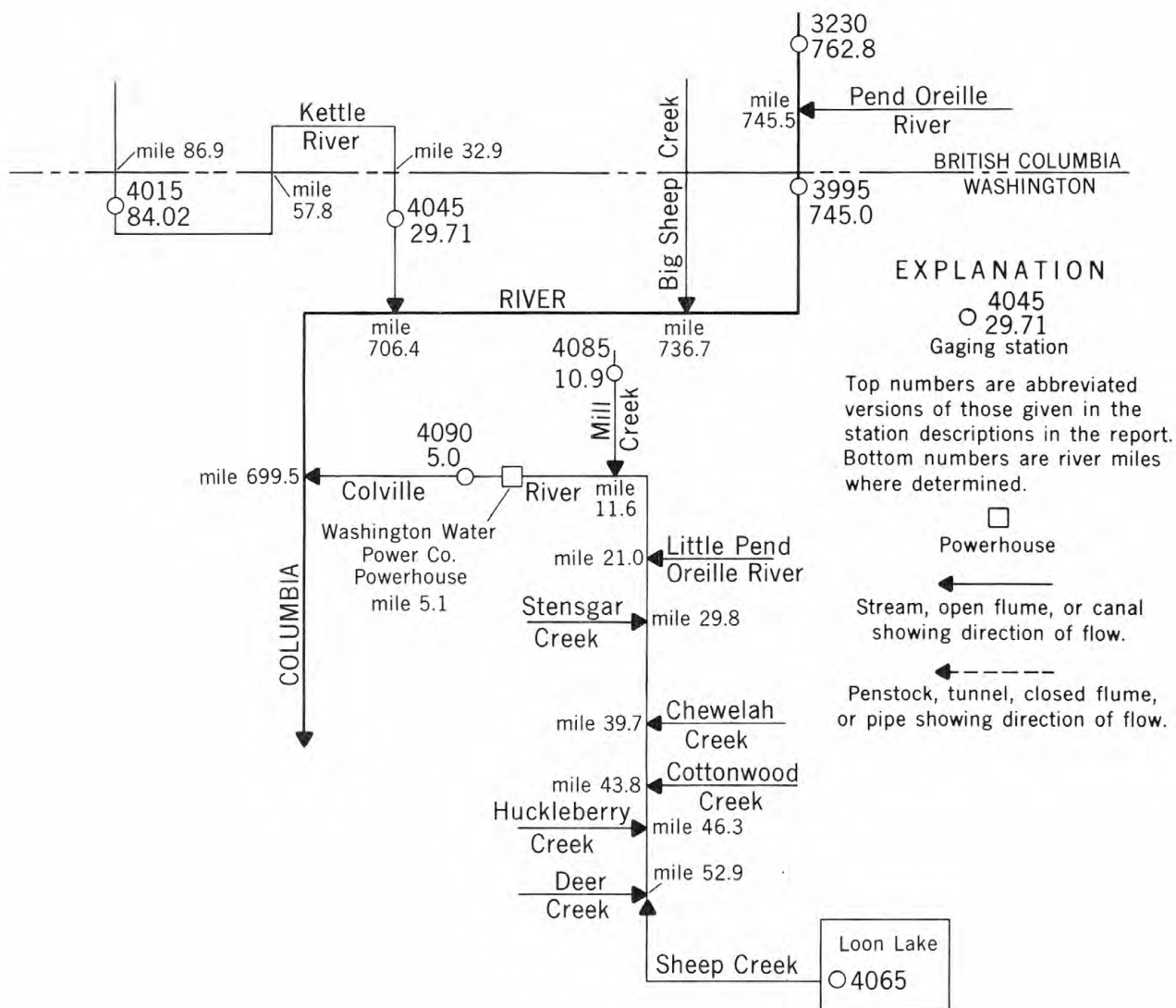


Figure 20.--Gaging stations in Columbia River basin from international boundary to Colville River.

COLUMBIA RIVER MAIN STEM

267

12399500 COLUMBIA RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 49°00'03", long 117°37'42", in NE¼SE¼ sec.4, T.40 N., R.41 E., Stevens County, Hydrologic Unit 17020001, on left bank at international boundary, 0.5 mi downstream from Pend Oreille River, and at mile 745.0.

DRAINAGE AREA.--59,700 mi², approximately.

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

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

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

REMARKS.--No estimated daily discharges. Records good. Flow regulated by eight major reservoirs and numerous smaller reservoirs and powerplants. It was estimated that 346,700 acres were under irrigation in the United States in 1946 with diversions for irrigation of an additional 35,000 acres in Canada.

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

AVERAGE DISCHARGE.--49 years, 100,000 ft³/s, 72,450,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 550,100 ft³/s June 12, 1948, elevation, 1,338.13 ft; minimum, 18,000 ft³/s Feb. 7, 1954, elevation, 1,289.38 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 1,346 ft, from information by Bureau of Reclamation, discharge, 680,000 ft³/s.

A discharge of about 12,900 ft³/s occurred Jan. 30 or 31, 1937, based on information from other gaging stations, elevation, 1,287.9 ft, from rating curve extended below 1,291.6 ft and may have been as low sometime in January 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 179,000 ft³/s June 6, elevation, 1,311.59 ft; minimum discharge, 29,800 ft³/s Oct. 5, elevation, 1,291.92 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60900	106000	81100	117000	59500	68000	71500	96300	149000	111000	109000	85700
2	60800	105000	93600	120000	68400	58300	77200	94500	154000	113000	109000	90900
3	50000	98200	96100	123000	65300	64400	75200	93400	167000	119000	106000	93000
4	37500	101000	94100	127000	69600	68000	76100	91400	172000	120000	122000	96400
5	34100	108000	94000	137000	71600	66100	80300	91800	171000	116000	129000	101000
6	38400	105000	100000	137000	75600	62300	80000	93300	172000	128000	131000	109000
7	51900	89000	107000	134000	80900	57800	79500	96200	176000	123000	127000	105000
8	71300	73000	106000	130000	87400	67300	72500	95900	175000	124000	123000	97200
9	72000	62400	103000	136000	90300	73700	72800	97700	170000	122000	125000	94100
10	78000	63500	106000	134000	98200	75100	80100	92200	152000	116000	125000	94700
11	76200	80700	111000	126000	86300	75400	85700	90600	142000	105000	125000	96500
12	70600	94300	115000	117000	86700	77000	86500	89900	139000	107000	113000	93400
13	65400	101000	116000	113000	85400	81700	85500	92100	129000	116000	103000	92500
14	67000	103000	110000	110000	84800	80300	93200	88600	122000	116000	103000	74100
15	68500	108000	97400	109000	88000	85400	96800	90100	113000	118000	102000	66600
16	74400	93100	94400	110000	104000	90500	96100	86700	112000	116000	103000	63700
17	75800	81000	97400	112000	108000	87000	97100	84300	113000	111000	107000	63700
18	79400	73400	95900	106000	103000	86500	92700	101000	108000	114000	106000	66400
19	84400	76700	101000	83400	107000	88200	92400	106000	109000	127000	93700	63900
20	91400	87700	98600	78700	104000	86600	93100	106000	102000	146000	80500	59700
21	93800	91300	101000	74700	100000	85100	93900	110000	100000	153000	69400	60600
22	99000	89500	104000	81300	99700	84900	98200	109000	95700	140000	70700	55400
23	92500	74700	107000	90900	102000	94000	91300	114000	94200	128000	75700	52400
24	98700	84000	102000	94300	85700	99500	96500	117000	86800	127000	82600	50200
25	93900	103000	112000	88400	66200	99900	102000	130000	80600	130000	82100	53100
26	102000	108000	106000	73100	51700	97900	97000	137000	80400	128000	80900	54200
27	107000	106000	101000	69100	56700	101000	93800	151000	76700	132000	73700	55700
28	111000	98900	105000	61600	62600	98700	102000	160000	63800	130000	70500	57500
29	132000	92200	117000	61300	---	97400	104000	159000	80900	116000	79700	57900
30	125000	85600	121000	65900	---	86400	100000	141000	110000	112000	77700	58700
31	110000	---	123000	59500	---	77500	---	143000	---	113000	78200	---
TOTAL	2472900	2743200	3216600	3180200	2348600	2521900	2663000	3349000	3716100	3777000	3083400	2263200
MEAN	79770	91440	103800	102600	83880	81350	88770	108000	123900	121800	99460	75440
MAX	132000	108000	123000	137000	108000	101000	104000	160000	176000	153000	131000	109000
MIN	34100	62400	81100	59500	51700	57800	71500	84300	63800	105000	69400	50200
AC-FT	4905000	5441000	6380000	6308000	4658000	5002000	5282000	6643000	7371000	7492000	6116000	4489000
CAL YR 1985	TOTAL	33065700	MEAN	90590	MAX	155000	MIN	34000	AC-FT	65586000		
WTR YR 1986	TOTAL	35335100	MEAN	96810	MAX	176000	MIN	34100	AC-FT	70087000		

COLUMBIA RIVER MAIN STEM

12400520 COLUMBIA RIVER AT NORTHPORT, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°55'21", long 117°46'32", in SW¼SW¼ sec.33, T.40 N., R.40 E., Stevens County, Hydrologic Unit 17020001, at State Highway 25 bridge at Northport, 9.9 mi downstream from gaging station at international boundary, and at mile 735.1.

DRAINAGE AREA.--60,200 mi², approximately.

PERIOD OF RECORD.--Water years 1910-11, 1952 to current year. Prior to November 1951 published as "at Northport." November 1951 to September 1957 published as 12399500 "at international boundary," October 1957 to September 1963 as "at Northport," October 1963 to September 1973 as "at international boundary."

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1951 to September 1975, April 1976 to September 1981.

pH: November 1951 to September 1969.

WATER TEMPERATURES: November 1951 to September 1981.

SUSPENDED-SEDIMENT DISCHARGE: February 1910 to January 1911.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3	
DEC 18...	1100	97600	140	8.1	3.0	0.6	13.3	102	K3	K8	72	12	
JAN 29...	1100	57500	169	8.1	2.5	1.0	12.7	99	K6	K2	83	14	
MAR 12...	1200	76000	169	8.4	4.0	1.5	14.2	115	K7	K5	79	8	
MAY 20...	1100	110000	142	8.0	8.5	2.0	11.3	102	K6	K2	66	6	
JUL 15...	1100	113000	124	8.1	15.5	1.2	10.0	106	K6	K17	57	6	
SEP 03...	1200	97900	114	8.1	17.5	0.6	10.0	109	K4	360	54	3	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
DEC 18...	21	4.6	1.6	5	0.1	0.8	60	73	0	12	0.9	<0.1	
JAN 29...	24	5.5	2.3	6	0.1	0.7	69	84	0	12	1.8	0.2	
MAR 12...	23	5.3	2.3	6	0.1	0.5	71	85	0	14	1.1	0.1	
MAY 20...	19	4.4	1.8	6	0.1	0.7	60	73	0	9.9	0.8	0.1	
JUL 15...	17	3.6	1.4	5	0.1	0.7	51	63	0	9.3	0.8	0.1	
SEP 03...	16	3.5	1.1	4	0.1	0.7	51	62	0	9.0	0.6	0.1	
DATE		SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
DEC 18...	4.8	72	82	0.1	19000	<0.01	0.12	0.03	0.3	0.03	0.02	0.02	
JAN 29...	5.1	86	93	0.12	13400	<0.01	0.11	0.05	0.3	0.04	0.03	0.03	
MAR 12...	5.6	94	94	0.13	19300	<0.01	<0.10	0.03	0.4	0.05	0.03	0.02	
MAY 20...	5.6	80	79	0.11	23800	0.02	0.24	0.03	0.2	0.04	0.04	0.04	
JUL 15...	4.2	67	68	0.09	20400	<0.01	<0.10	0.03	0.3	0.01	<0.01	<0.01	
SEP 03...	3.7	88	65	0.12	23300	<0.01	<0.10	<0.01	<0.2	<0.01	0.01	<0.01	

K - Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible]

KETTLE RIVER BASIN

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

LOCATION.--Lat 48°58'53", long 118°45'55", in SE¼NW¼ sec. 10, T.40 N., R.32 E., Ferry County, Hydrologic Unit 17020002, on right bank 0.5 mi upstream from Catherine Creek, 1.3 mi south of international boundary and Ferry, 3.2 mi upstream from Toroda Creek, and at mile 84.02.

DRAINAGE AREA.--2,200 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,836.8 ft above National Geodetic Vertical Datum of 1929, international joint adjustment of 1947. Prior to Nov. 23, 1928, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 11-15, Nov. 19 to Dec. 24. Records excellent except for estimated daily discharges, which are fair. Several small diversions upstream from station for irrigation. No regulation.

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

AVERAGE DISCHARGE.--58 years, 1,536 ft³/s, 1,113,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft³/s May 29, 1948, gage height, 21.15 ft; minimum, 14 ft³/s, discharge measurement, Jan. 23, 1930, but may have been less during period of ice effect Jan. 18-23, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	2200	*15,500	*19.17	No other peak greater than base discharge.			
Minimum discharge, 135 ft ³ /s Feb. 20, gage height, 9.54 ft.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	440	819	230	290	283	299	2050	3240	13600	2160	755	228
2	435	781	250	285	285	308	2000	3320	12600	1830	701	231
3	420	854	300	281	289	323	1960	4420	10500	1840	641	226
4	428	1040	350	278	294	340	2000	5280	8440	2190	590	214
5	461	1180	400	273	297	349	2100	5270	7530	2380	539	201
6	446	1110	410	264	285	373	2240	5060	7470	2630	507	190
7	447	1060	420	263	256	392	2390	4940	6770	2320	480	182
8	488	1040	430	268	238	460	2730	5080	6810	2020	451	175
9	459	974	430	271	219	541	3390	5260	6000	1850	425	169
10	424	878	430	276	231	645	3970	5210	5240	1750	400	171
11	427	590	390	281	247	700	3890	5060	4920	1730	376	171
12	420	470	390	286	245	748	3600	4770	4520	2050	376	171
13	415	430	390	284	235	789	3280	4520	3920	1870	373	172
14	415	410	380	279	223	822	3090	4490	3550	1740	365	178
15	431	480	370	273	224	848	2990	4170	3420	1620	340	176
16	536	683	360	271	235	847	3230	3890	3200	1860	318	179
17	707	792	350	271	219	827	3350	3840	2760	1980	299	191
18	720	709	360	276	206	811	3230	4690	2720	1870	282	196
19	668	430	360	282	188	810	3160	6420	3570	1680	264	204
20	635	340	360	284	169	832	3390	7970	3220	1510	249	203
21	669	260	360	282	193	907	3920	9290	2820	1370	242	199
22	768	250	360	275	230	1000	4790	8200	2560	1270	231	193
23	798	240	340	277	237	1080	5330	6820	2290	1240	220	212
24	758	230	330	276	238	1160	4880	6080	2110	1150	212	294
25	723	230	315	268	251	1230	4490	6050	1930	1070	205	446
26	717	220	309	258	264	1250	4140	8590	1750	1010	198	495
27	682	210	303	255	268	1260	3880	12600	1600	977	192	446
28	750	210	298	257	280	1390	3860	14600	1470	967	187	427
29	953	210	292	262	---	1680	3670	14900	1430	918	179	468
30	892	210	291	267	---	1960	3420	15100	2340	845	194	493
31	872	---	288	276	---	2050	---	14700	---	794	216	---
TOTAL	18404	17340	10846	8489	6829	27031	100420	213830	141060	50491	11007	7501
MEAN	594	578	350	274	244	872	3347	6898	4702	1629	355	250
MAX	953	1180	430	290	297	2050	5330	15100	13600	2630	755	495
MIN	415	210	230	255	169	299	1960	3240	1430	794	179	169
AC-FT	36500	34390	21510	16840	13550	53620	199200	424100	279800	100100	21830	14880
CAL YR 1985	TOTAL	448806	MEAN	1230	MAX	12600	MIN	85	AC-FT	890200		
WTR YR 1986	TOTAL	613248	MEAN	1680	MAX	15100	MIN	169	AC-FT	1216000		

KETTLE RIVER BASIN

271

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

LOCATION.--Lat 48°59'04", long 118°12'55", in SW¼NW¼ sec.11, T.40 N., R.36 E., Ferry County, Hydrologic Unit 17020002, on right bank 1,000 ft downstream from Deep Creek, 1.1 mi south of international boundary, 1.1 mi southeast of Laurier, and at mile 29.71.

DRAINAGE AREA.--3,800 mi², approximately.

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,425.5 ft above National Geodetic Vertical Datum of 1929, international joint adjustment of 1947. Prior to Jan. 3, 1930, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 11-15, Nov. 19 to Feb. 22. Records good except for estimated daily discharges, which are fair. Diversions for irrigation of about 720 acres in the United States (for 1946 from United States reports), and 2,090 acres in Canada from the Canada Year Book for 1940. Bonneville Power Administration satellite telemeter at station.

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

AVERAGE DISCHARGE.--57 years, 2,926 ft³/s, 2,120,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s May 29, 1948, gage height, 17.25 ft; minimum, 88 ft³/s Dec. 1, 1936, gage height, 2.20 ft, but was probably less during winter of 1929-30.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 18,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	1700	*26,300	*14.49	No other peak greater than base discharge.			
Minimum discharge, 337 ft ³ /s Sept. 12, gage height, 2.78 ft.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	737	1430	450	580	610	725	4190	6040	23700	3650	1360	423
2	724	1370	500	560	620	748	4080	5910	21700	3210	1290	441
3	712	1380	560	550	640	804	3940	6790	19200	3040	1220	439
4	700	1640	680	540	660	865	3920	8200	15600	3350	1150	428
5	710	1970	800	530	650	925	4030	8630	13600	3600	1080	408
6	767	2020	800	520	620	966	4230	8420	13100	4050	1020	388
7	763	1910	860	520	570	1030	4420	8250	12100	3880	965	371
8	752	1850	860	530	530	1310	4830	8290	11600	3460	916	362
9	772	1770	860	540	500	1710	5760	8600	10800	3150	861	360
10	736	1650	860	560	510	1830	6880	8730	9490	2970	816	351
11	710	1200	780	570	530	1880	7140	8460	8870	2880	771	344
12	705	1050	780	570	540	1940	6710	8150	8320	3090	758	342
13	696	960	780	560	520	2050	6200	7660	7390	3180	762	343
14	697	920	760	560	500	2140	5770	7630	6660	2920	727	345
15	701	980	740	560	510	2200	5580	7200	6270	2750	695	348
16	749	1170	720	560	520	2190	5780	6760	6000	2990	655	361
17	892	1350	700	570	480	2150	6110	6510	5280	3310	620	367
18	1060	1380	720	580	450	2080	6000	7120	4900	3200	588	379
19	1060	1100	720	590	430	2040	5780	9510	5550	2970	554	387
20	1020	760	720	600	410	2060	5910	12300	5670	2710	517	392
21	1000	520	720	590	460	2180	6650	15000	5040	2480	496	391
22	1060	490	700	580	540	2400	7960	14300	4610	2300	477	382
23	1190	470	680	580	602	2530	9390	12000	4190	2240	460	398
24	1220	460	670	580	605	2720	8900	10500	3880	2140	444	465
25	1180	460	660	580	609	2890	8140	9970	3580	2010	435	616
26	1170	450	640	560	630	2900	7570	12800	3300	1880	422	749
27	1160	420	630	560	666	2910	7070	19200	3030	1800	408	796
28	1170	420	610	560	697	3000	6970	24100	2790	1740	396	746
29	1380	420	600	580	---	3360	6790	25100	2700	1660	386	739
30	1510	420	600	590	---	3880	6400	25600	3130	1540	388	785
31	1460	---	580	600	---	4170	---	25500	---	1440	392	---
TOTAL	29163	32390	21740	17510	15609	64583	183100	353230	252050	85590	22029	13646
MEAN	941	1080	701	565	557	2083	6103	11390	8402	2761	711	455
MAX	1510	2020	860	600	697	4170	9390	25600	23700	4050	1360	796
MIN	696	420	450	520	410	725	3920	5910	2700	1440	386	342
AC-FT	57840	64250	43120	34730	30960	128100	363200	700600	499900	169800	43690	27070
CAL YR 1985	TOTAL	829035	MEAN	2271	MAX	20500	MIN	180	AC-FT	1644000		
WTR YR 1986	TOTAL	1090640	MEAN	2988	MAX	25600	MIN	342	AC-FT	2163000		

COLVILLE RIVER BASIN

12406500 LOON LAKE NEAR LOON LAKE, WA

LOCATION.--Lat 48°01'42", long 117°36'14", in SW¼NW¼ sec.11, T.29 N., R.41 E., Stevens County, Hydrologic Unit 17020003, at south end of Loon Lake, 2.7 mi southeast of town of Loon Lake.

DRAINAGE AREA.--14.1 mi².

PERIOD OF RECORD.--April 1950 to June 1980, July 1980 to current year (fragmentary).

REVISED RECORDS.--WSP 1216: 1950. WSP 1933: Drainage area. WDR WA-80-2: 1979.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 29, 1951, water-stage recorder at site 0.2 mi north at same datum.

REMARKS.--Elevation controlled by dam at lake outlet. Some pumping for domestic use and irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 2,382.71 ft May 3, 1950, but may have been higher sometime in 1951 water year while water-stage recorder was not operating; minimum observed, 2,378.14 ft Nov. 8, 1977, but may have been lower during period when water was below the intakes Aug. 1 to Dec. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2,380.77 ft May 7; minimum observed, 2,378.92 ft Oct. 19.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	2379.16	2379.41	---	---	2380.70	---	---	---	---
2	2379.06	2378.98	---	---	---	---	---	---	---	2380.39	2379.91	---
3	---	---	---	---	---	---	---	2380.75	---	---	---	2379.39
4	---	---	2379.13	2379.17	---	---	---	---	2380.70	---	---	---
5	2379.04	---	---	---	2379.43	---	---	---	---	2380.37	---	---
6	---	2379.00	---	---	---	---	---	---	---	---	2379.85	2379.31
7	---	---	2379.16	---	---	---	2380.55	2380.77	2380.67	---	---	---
8	---	---	---	2379.18	2379.46	---	---	---	---	---	---	---
9	2379.00	2379.11	---	---	---	---	---	---	---	2380.29	2379.81	---
10	---	---	---	---	---	---	2380.57	2380.76	2380.65	---	---	2379.26
11	---	---	2379.16	2379.20	---	---	---	---	2380.64	---	---	---
12	2378.98	---	---	---	2379.48	---	---	---	---	2380.22	---	---
13	---	2379.11	---	---	---	---	---	---	---	---	2379.72	2379.22
14	---	---	2379.16	2379.21	---	---	---	2380.75	2380.60	---	---	---
15	---	---	---	2379.24	2379.58	---	---	---	---	---	---	---
16	2378.95	2379.12	---	---	---	---	---	---	---	2380.17	2379.60	---
17	---	---	---	---	---	---	---	2380.74	---	---	---	2379.20
18	---	---	2379.15	2379.32	---	---	---	---	2380.52	---	---	---
19	2378.92	---	---	---	2379.61	---	---	---	---	2380.13	2379.67	---
20	---	2379.12	---	---	---	---	---	---	---	---	2379.61	2379.19
21	---	---	2379.14	---	---	---	---	2380.74	2380.46	---	---	---
22	---	---	---	2379.36	2379.63	---	2380.67	---	---	---	---	---
23	2378.93	2379.11	---	---	---	---	---	---	---	2380.09	2379.53	---
24	---	---	---	---	---	---	---	2380.75	---	---	---	2379.25
25	---	---	2379.15	2379.36	---	---	---	---	2380.44	---	---	---
26	2378.97	---	---	---	2379.72	---	---	---	---	2380.03	---	---
27	---	2379.10	---	---	---	2380.46	---	---	---	---	2379.50	2379.31
28	---	---	2379.15	---	---	---	---	2380.74	2380.40	---	---	---
29	---	---	---	2379.38	---	---	---	---	---	---	---	---
30	2378.99	2379.08	---	---	---	---	---	---	---	2379.97	2379.46	---
31	---	---	---	---	---	---	---	2380.73	---	---	---	---

COLVILLE RIVER BASIN

273

12408500 MILL CREEK NEAR COLVILLE, WA

LOCATION.--Lat 48°34'44", long 117°51'56", in SW¼NW¼ sec.35, T.36 N., R.39 E., Stevens County, Hydrologic Unit 17020003, on right bank 3.0 mi northeast of Colville, 5.3 mi downstream from North Fork, and at mile 10.9.

DRAINAGE AREA.--83.0 mi².

PERIOD OF RECORD.--October 1939 to September 1972, October 1977 to September 1986 (discontinued).

REVISED RECORDS.--WSP 1042: 1940, 1942. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,950 ft, from topographic map. Prior to Mar. 2, 1940, nonrecording gage and Mar. 2, 1940, to Oct. 5, 1959, water-stage recorder at site 0.5 mi upstream at different datum (used as supplementary gage Nov. 2, 1952, to Oct. 5, 1959). Nov. 2, 1952, to Oct. 5, 1959, nonrecording gage and crest-stage gage at site 300 ft upstream at datum 0.47 ft higher.

REMARKS.--Estimated daily discharges: Nov. 10-14, 21-24, Nov. 27 to Jan. 21, Jan. 26, 27, Feb. 6-9, 11-15, 19-21. Records excellent except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation of about 50 acres upstream from station.

AVERAGE DISCHARGE.--42 years (water years 1940-72, 1978-86), 47.9 ft³/s, 7.84 in/yr, 34,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 694 ft³/s Apr. 24, 1969, gage height, 5.37 ft; maximum gage height, 5.65 ft May 10, 1961 (backwater from bridge); minimum discharge, 3.2 ft³/s Jan. 10, 1962, result of freezeup, but may have been less during period of no gage-height record Feb. 1-4, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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)
Apr. 23	0200	*203	*3.61				

Minimum recorded discharge, 6.1 ft³/s for several days in August and September, gage height, 1.86 ft, but may have been lower during periods of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	9.6	13	8.0	9.0	19	21	80	98	43	20	11	6.3		
2	9.6	13	9.0	9.0	19	22	72	95	41	18	10	6.6		
3	9.6	14	9.0	9.0	19	23	69	100	39	20	9.9	6.5		
4	9.5	15	10	9.0	18	24	68	99	39	20	9.5	6.4		
5	9.7	18	11	10	17	26	68	94	40	21	9.2	6.1		
6	10	17	11	10	15	26	66	90	36	19	9.1	6.1		
7	12	16	11	10	11	37	66	88	35	18	8.7	6.1		
8	12	15	11	12	10	60	69	88	44	17	8.3	6.1		
9	11	15	11	13	11	60	73	85	39	17	8.1	6.1		
10	11	12	10	14	14	52	75	85	35	17	8.0	6.1		
11	11	9.0	10	13	13	49	72	85	32	17	8.0	6.3		
12	12	9.0	10	12	12	53	81	81	31	18	8.0	6.4		
13	12	9.0	10	12	10	54	75	79	29	16	8.0	6.5		
14	12	9.0	9.0	11	11	50	70	77	29	15	7.7	6.6		
15	12	9.7	9.0	13	12	48	70	73	28	14	7.5	6.6		
16	12	10	9.0	15	12	45	81	70	27	14	7.2	7.0		
17	12	10	9.0	16	12	44	82	68	26	17	7.2	7.3		
18	11	11	10	16	12	41	79	73	24	15	7.1	7.5		
19	11	9.0	10	17	11	42	76	70	25	14	6.9	7.9		
20	11	10	10	17	12	47	77	67	24	13	6.8	7.9		
21	11	9.0	10	15	13	53	78	70	25	13	6.9	8.0		
22	12	9.0	10	15	13	56	106	77	23	13	6.9	7.9		
23	12	8.0	10	14	13	53	164	70	22	14	6.7	8.5		
24	13	8.0	10	14	14	76	125	65	21	13	6.6	15		
25	15	8.0	9.0	14	18	74	123	61	20	13	6.8	12		
26	15	8.4	9.0	10	22	67	119	58	19	13	6.6	11		
27	14	8.0	9.0	10	22	68	117	56	19	13	6.6	14		
28	13	8.0	9.0	12	21	80	117	54	18	13	6.5	17		
29	13	8.0	9.0	12	---	86	110	51	23	12	6.4	14		
30	13	8.0	9.0	14	---	87	104	48	23	11	6.3	17		
31	13	---	9.0	17	---	86	---	45	---	11	6.1	---		
TOTAL	364.0	326.1	300.0	394.0	406	1610	2632	2320	879	479	238.6	256.8		
MEAN	11.7	10.9	9.68	12.7	14.5	51.9	87.7	74.8	29.3	15.5	7.70	8.56		
MAX	15	18	11	17	22	87	164	100	44	21	11	17		
MIN	9.5	8.0	8.0	9.0	10	21	66	45	18	11	6.1	6.1		
CFSM	.14	.13	.12	.15	.17	.63	1.06	.90	.35	.19	.09	.10		
IN.	.16	.15	.13	.18	.18	.72	1.18	1.04	.39	.21	.11	.12		
AC-FT	722	647	595	781	805	3190	5220	4600	1740	950	473	509		
CAL YR 1985	TOTAL	10228.1	MEAN	28.0	MAX	180	MIN	7.1	CFSM	.34	IN.	4.58	AC-FT	20290
WTR YR 1986	TOTAL	10205.5	MEAN	28.0	MAX	164	MIN	6.1	CFSM	.34	IN.	4.57	AC-FT	20240

COLVILLE RIVER BASIN

12409000 COLVILLE RIVER AT KETTLE FALLS, WA

LOCATION.--Lat 48°35'40", Long 118°03'41", in NE¼NE¼ sec.30, T.36 N., R.38, E., Stevens County, Hydrologic Unit 17020003, on right bank 600 ft downstream from Washington Water Power Co.'s hydroelectric plant at foot of Meyers Falls, 1.0 mi south of town of Kettle Falls, and at mile 5.0.

DRAINAGE AREA.--1,007 mi².

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

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

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

REMARKS.--Estimated daily discharges: Nov. 11 to Jan. 16. Records good except for estimated daily discharges, which are poor. Several diversions upstream from station for irrigation. Regulation at low flow by powerplant. Bonneville Power Administration satellite telemeter at station.

AVERAGE DISCHARGE.--64 years, 306 ft³/s, 221,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,440 ft³/s Jan. 21, 1974, gage height, 9.84 ft; maximum gage height, 10.17 ft Apr. 23, 1956; minimum discharge observed, 0.5 ft³/s Aug. 15, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 814 ft³/s Apr. 10, gage height, 6.82 ft; minimum discharge, 29 ft³/s Aug. 6, gage height, 5.00 ft, result of regulation by powerplant.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	125	95	105	247	364	652	507	245	109	62	40
2	109	129	110	105	244	356	633	494	232	99	61	49
3	110	129	115	100	249	358	603	484	207	98	45	54
4	107	145	125	100	244	362	574	491	204	104	50	48
5	104	158	130	105	244	372	545	493	209	109	52	48
6	108	177	130	110	244	393	524	473	206	119	39	47
7	117	155	130	120	217	416	511	459	197	112	31	51
8	121	151	130	130	196	569	503	460	203	100	45	47
9	120	152	130	135	178	629	503	449	215	93	31	58
10	118	146	125	135	168	660	491	441	208	94	31	55
11	118	110	125	130	194	668	510	437	192	98	31	53
12	124	82	125	125	186	674	524	435	176	104	32	66
13	125	85	125	120	144	669	545	421	166	104	46	54
14	118	85	120	115	126	638	528	404	159	101	31	67
15	120	90	115	125	164	612	501	380	154	95	32	64
16	118	100	115	140	153	585	495	375	152	88	40	68
17	120	110	115	171	196	550	519	359	146	88	43	71
18	97	100	115	202	214	520	514	356	138	91	31	72
19	110	95	115	241	158	492	492	360	132	91	41	84
20	120	95	115	277	129	481	481	351	126	82	30	87
21	119	95	115	277	169	481	481	343	136	86	31	82
22	118	95	115	232	206	490	495	404	139	80	31	82
23	124	95	115	212	196	494	615	415	125	78	32	82
24	149	95	110	214	200	534	610	373	110	71	32	95
25	135	95	105	203	259	609	569	354	99	68	52	134
26	147	90	105	171	383	614	580	335	96	74	33	121
27	142	90	105	168	395	617	574	323	95	71	34	103
28	138	90	105	193	388	611	573	311	96	73	49	100
29	132	90	105	193	---	619	569	294	97	72	33	114
30	128	90	105	192	---	642	541	275	109	69	43	120
31	128	---	105	232	---	660	---	259	---	64	43	---
TOTAL	3759	3344	3595	5078	6091	16739	16255	12315	4769	2785	1217	2216
MEAN	121	111	116	164	218	540	542	397	159	89.8	39.3	73.9
MAX	149	177	130	277	395	674	652	507	245	119	62	134
MIN	97	82	95	100	126	356	481	259	95	64	30	40
AC-FT	7460	6630	7130	10070	12080	33200	32240	24430	9460	5520	2410	4400
CAL YR 1985	TOTAL	82854	MEAN	227	MAX	944	MIN	30	AC-FT	164300		
WTR YR 1986	TOTAL	78163	MEAN	214	MAX	674	MIN	30	AC-FT	155000		

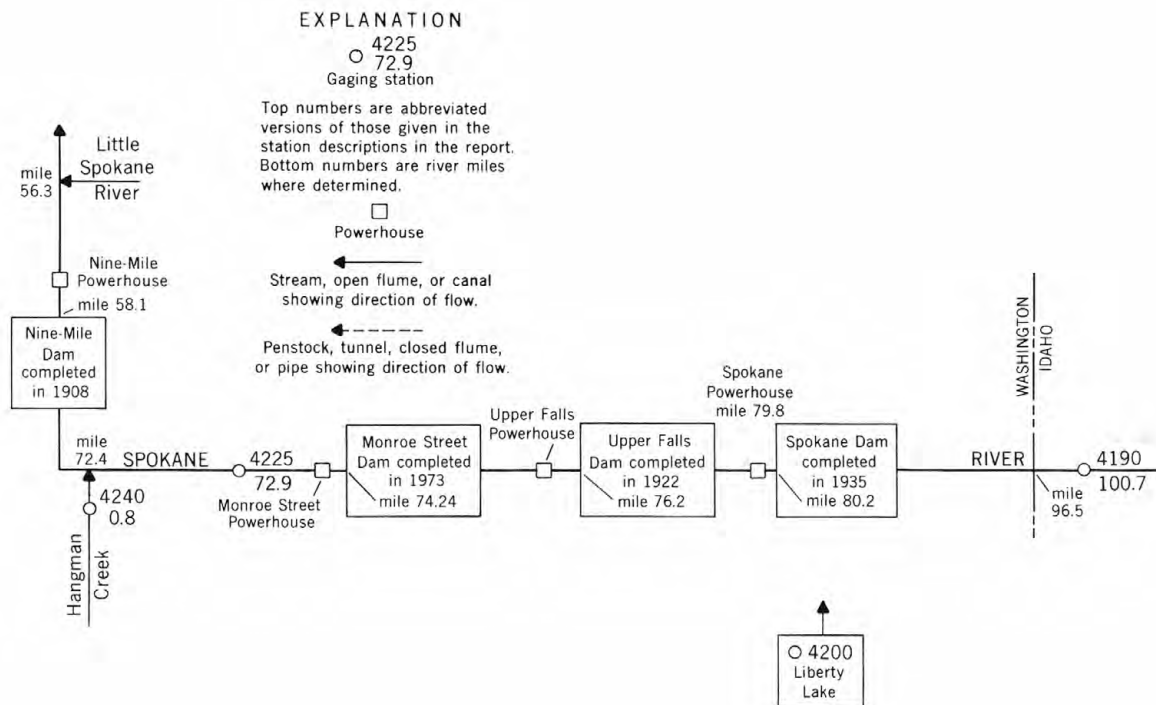


Figure 21.--Gaging stations in Spokane River basin above Little Spokane River.

SPOKANE RIVER BASIN

12419000 SPOKANE RIVER NEAR POST FALLS, ID

LOCATION.--Lat 47°42'11", long 116°58'37", in SW¼SW¼ sec.4, T.50 N., R.5 W., Kootenai County, Hydrologic Unit 17010305, on right bank 1.0 mi downstream from powerplant of Washington Water Power Co., 1.5 mi southwest of Post Falls, and at mile 100.7.

DRAINAGE AREA.--3,840 mi², approximately, of which about 122 mi² in the vicinity of Hayden Lake is noncontributing to this station.

PERIOD OF RECORD.--October 1912 to current year (prior to January 1913 monthly discharge only, published in WSP 870 and 1736). Prior to October 1949, published as "at Post Falls."

GAGE.--Water-stage recorder. Datum of gage is 2,050.00 ft referred to originally accepted elevation of 2,157.40 ft for the Geological Survey bench mark in southeast corner of Idaho First National Bank Building (see WSP 882). Datum of gage is 2,047.00 ft above National Geodetic Vertical Datum of 1929. Jan. 1, 1913, to Nov. 21, 1920, nonrecording gage and Nov. 22, 1920, to Sept. 15, 1934, recording gage 0.6 mi upstream. From Sept. 16, 1934, to Nov. 15, 1949, recording gage 0.8 mi upstream. From Nov. 16, 1949, at present site. Datum of all gages prior to Sept. 30, 1964, 50.0 ft lower.

REMARKS.--No estimated daily discharges. Records good. Rathdrum Prairie Canal diverts water upstream from gage for irrigation. Figures of daily discharge do not include water diverted by this canal. Flow regulated by dam at Post Falls and affected by storage in Coeur d'Alene Lake.

AVERAGE DISCHARGE.--River only, 74 years, 6,275 ft³/s, 4,546,000 acre-ft/yr; combined river and diversions upstream from gage, 74 years, 6,356 ft³/s, 4,615,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,100 ft³/s, when recorder was not operating Dec. 25, 1933 (determined from unpublished records collected by Washington Water Power Co. for station at Liberty Bridge); minimum, 65 ft³/s July 25, 30, 1973; minimum gage height, 4.68 ft July 20, 21, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,800 ft³/s Mar. 11, gage height, 19.04 ft; minimum discharge, 320 ft³/s July 7, gage height, 5.54 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2110	3120	4380	2010	4160	19400	16400	7580	10600	468	419	419
2	1830	3080	4510	2020	4780	19800	17000	7600	8160	988	408	409
3	1840	3100	4560	2000	5350	20100	17200	7650	7090	2010	426	408
4	1830	3120	4500	1990	5510	20100	17000	7750	6430	2030	408	408
5	1820	4160	4530	1990	6080	20100	16700	7790	5890	2110	416	420
6	1820	4700	4620	1960	6810	20000	16200	7910	6570	1860	490	433
7	1810	4640	4670	1870	6930	19900	15700	8560	6220	323	416	421
8	1850	4590	4660	1550	6960	20300	15300	9300	5220	593	416	415
9	1840	4730	4500	1450	6890	21500	14900	9740	4280	1510	433	422
10	1840	4740	4110	1450	6750	22500	14900	10500	4010	1530	424	424
11	1840	4750	4100	1540	6700	23000	14500	10500	4000	1820	404	423
12	1840	4750	4200	1570	6500	22900	14200	10500	3750	1960	418	420
13	1860	4810	4080	1580	6260	22400	14000	9740	2930	1060	418	419
14	1840	4850	3890	1580	6110	21700	13800	9210	2350	1980	414	419
15	1820	4930	3740	1600	6110	20800	13300	9590	2650	977	416	1160
16	1840	4700	3520	1450	6150	19800	13000	9290	3260	1880	412	1770
17	1860	4850	3290	1620	6290	19000	12500	9280	3250	1530	414	1720
18	1830	5240	3250	1910	7080	18200	11900	9240	3270	1060	430	1850
19	1840	5520	3040	1940	7610	17300	11600	8790	3370	1510	419	1930
20	1850	5310	2920	1970	7780	16600	11200	4830	3320	1410	418	1920
21	1880	5200	2840	2080	7970	16000	10700	7270	2900	745	428	1930
22	1890	5360	2660	2230	7900	15300	10600	15700	2350	1260	416	2000
23	1850	5460	2540	2440	7810	14700	10600	13400	1870	1160	404	2040
24	1990	5370	2360	2480	8230	14500	10600	10800	1660	846	411	2030
25	2700	5090	2430	2560	10600	14300	10300	7540	1620	706	412	2030
26	3130	4940	2310	2590	13800	14100	10100	6840	1850	584	412	2030
27	3140	4770	2230	2720	16700	14000	9470	9310	2000	555	420	2040
28	3150	4390	1960	2770	18400	13800	8700	12500	2030	469	421	2050
29	3120	4410	1940	2770	---	13800	8130	13400	2030	413	417	2040
30	3110	4410	2000	2940	---	14200	7780	13400	1640	414	423	2220
31	3110	---	2000	3370	---	15100	---	11900	---	414	424	---
TOTAL	66080	139090	106340	64000	218220	565200	388280	297410	116570	36175	13007	36620
MEAN	2132	4636	3430	2065	7794	18230	12940	9594	3886	1167	420	1221
MAX	3150	5520	4670	3370	18400	23000	17200	15700	10600	2110	490	2220
MIN	1810	3080	1940	1450	4160	13800	7780	4830	1620	323	404	408
AC-FT	131100	275900	210900	126900	432800	1121000	770200	589900	231200	71750	25800	72640
MEAN†	2132	4636	3430	2065	7794	18230	12940	9613	3931	1208	461	1239
AC-FT†	131100	275900	210900	126900	432800	1121000	770200	591100	233900	74260	28330	73740
CAL YR 1985 TOTAL	2024224			5546		25500		621	AC-FT 4015000		MEAN† 5559	AC-FT† 4024000
WTR YR 1986 TOTAL	2046992			5608		23000		323	AC-FT 4060000		MEAN† 5622	AC-FT† 4070000

† Adjusted for flow in Rathdrum Prairie Canal.

SPOKANE RIVER BASIN

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12420000 LIBERTY LAKE AT LIBERTY LAKE, WA

LOCATION.--Lat 47°39'09", long 117°05'20", in NE¼ sec.22, T.25 N., R.45 E., Spokane County, Hydrologic Unit 17010305, on right wall of concrete outlet flume at town of Liberty Lake, 15.0 mi east of Spokane.

DRAINAGE AREA.--13.3 mi².

PERIOD OF RECORD.--December 1950 to December 1955 (fragmentary), January 1956 to July 1966, August 1966 to current year (fragmentary).

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1958, published at datum 2,046.48 ft higher.

REMARKS.--Stage controlled by gates at outlet. Some pumping from lake for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 2,051.81 ft, from high-water mark, occurred during period Jan. 19 to Feb. 5, 1974; minimum observed, 2,045.56 ft Nov. 11, 15, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum elevation observed, 2,049.45 ft Apr. 1; minimum observed below 2,047.00 ft when lake was frozen Jan. 21.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2047.30	---			---	---	2049.45		---		---	---
2	---	---			---	2048.50	---		---		---	---
3	---	---			---	---	---		---		---	---
4	---	2047.20			---	---	---		---		---	---
5	---	---			---	---	---		---		---	---
6	---	---			---	---	---		---		---	---
7	---	---			---	2048.68	---		---		---	---
8	2047.28	---			---	---	2049.40		---		---	---
9	---	2047.34			---	---	---		---		---	---
10	---	---			---	2048.85	---		---		---	---
11	---	---			---	---	---		---		---	---
12	---	---			---	---	---		---		---	---
13	---	---			---	2049.00	---		---		---	---
14	---	---			---	---	---		---		---	---
15	---	2047.22			---	---	---		---		---	---
16	---	---			---	---	2049.42		---		---	---
17	2047.20	2047.24			---	---	---		---		---	---
18	---	---			---	---	---		---		---	---
19	---	---			---	2049.10	---		---		---	---
20	2047.16	---			---	---	2049.44		---		---	---
21	---	---			---	---	---		---		---	---
22	---	2047.20			---	2049.21	---		---		2047.65	---
23	---	---			2048.16	---	2049.38		2048.86		---	---
24	2047.10	---			---	2049.30	---		---		---	2047.19
25	---	---			---	---	---		---		---	---
26	---	---			2048.30	---	---		---		---	---
27	---	---			---	---	---		---		---	---
28	---	---			---	2049.35	---		---		---	---
29	2047.10	---			---	---	---		---		---	---
30	---	---			---	---	---		---		---	---
31	---	---			---	---	---		---		---	---

SPOKANE RIVER BASIN

12422500 SPOKANE RIVER AT SPOKANE, WA

LOCATION.--Lat 47°39'34", long 117°26'53", in SW¼SW¼ sec.13, T.25 N., R.42 E., Spokane County, Hydrologic Unit 17010305, on right bank at Cochran Street in Spokane, 0.5 mi upstream from Hangman Creek, and at mile 72.9.

DRAINAGE AREA.--4,290 mi², approximately.

PERIOD OF RECORD.--April 1891 to current year.

REVISED RECORDS.--WSP 532: 1891-1904. WSP 1246: Drainage area. WSP 1286: 1907-09.

GAGE.--Water-stage recorder. Datum of gage is 1,696.6 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to July 1, 1921, water-stage recorders and nonrecording gages at several sites within 4 mi of present site at various datums.

REMARKS.--No estimated daily discharges. Records excellent. Flow partly regulated by powerplants of Washington Water Power Co. at Post Falls, Idaho, 28.8 mi upstream and at Spokane, 1.3 mi upstream, and by Coeur d'Alene Lake, Idaho. Rathdrum Prairie Canal diverts water above station for irrigation. In 1946, approximately 22,600 acres, of which about 15,000 acres utilized surface water, were under irrigation upstream from Spokane. Since 1966 irrigation has been from many wells in the valley near the river with only about 3,000 acres irrigated from the river. Chemical analyses October 1972 to September 1973.

AVERAGE DISCHARGE.--95 years, 6,840 ft³/s, 4,956,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,000 ft³/s, estimated, May 31, 1894 (see WSP 532); minimum, 95 ft³/s Sept. 19, 1956, gage height, 15.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,700 ft³/s Mar. 11, gage height, 25.20 ft; minimum discharge, 282 ft³/s July 1, gage height, 16.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2550	3320	4680	2460	3920	19100	16500	7770	10500	1480	928	767
2	2240	3320	4800	2520	4590	19700	17300	7770	8820	1250	882	758
3	2250	3300	4840	2450	5100	20100	17500	7790	7160	2180	886	750
4	2240	3420	4780	2430	5310	20200	17500	7810	6890	2360	871	763
5	2190	3810	4800	2420	5580	20400	17100	7900	6200	2400	877	771
6	2360	4620	4850	2430	6370	20200	16700	7930	6440	2440	856	766
7	2310	4580	4930	2390	6520	20100	16200	8350	6560	1510	875	828
8	2390	4600	4900	2260	6610	20500	15600	9140	5810	1110	837	772
9	2290	4800	4880	2090	6560	21600	15400	9460	4930	1670	825	786
10	2240	4800	4470	2040	6490	22600	15200	10200	4500	1880	850	765
11	2260	4830	4410	2050	6500	23200	14800	10300	4420	1960	806	786
12	2250	4830	4440	2180	6440	23300	14600	10300	4310	2300	821	823
13	2250	4880	4480	2110	6190	22900	14300	9860	3730	1580	803	798
14	2250	4900	4250	2130	6080	22300	14100	9090	2990	2240	790	809
15	2240	5120	4140	2150	6140	21500	13600	9460	3000	1540	791	891
16	2220	4830	4010	2150	6100	20600	13300	9210	3640	2160	809	1680
17	2280	4920	3710	2030	6150	19700	12800	9180	3600	1950	769	1760
18	2230	5210	3700	2350	6640	18900	12100	9150	3610	1540	800	1800
19	2260	5590	3580	2420	7210	17900	11800	8830	3670	1820	779	1900
20	2280	5480	3370	2440	7400	17200	11400	7070	3660	1800	779	1920
21	2290	5310	3330	2490	7530	16400	10900	5730	3460	1390	767	1920
22	2300	5450	3130	2590	7570	15700	10700	15000	3030	1530	789	1960
23	2270	5590	3120	2800	7500	15200	10600	13700	2510	1590	758	2020
24	2270	5570	2840	2840	7680	14900	10600	11400	2360	1370	755	2050
25	2680	5340	2910	2870	9450	14700	10400	8130	2150	1240	736	2040
26	3210	5180	2890	2950	12500	14400	10100	7080	2300	1130	774	2070
27	3250	5100	2750	3000	15800	14300	9700	8640	2410	1060	747	2070
28	3290	4780	2640	3080	17900	14100	8930	11800	2470	1030	768	2120
29	3290	4680	2460	3120	---	14000	8380	13200	2440	954	728	2130
30	3280	4750	2520	3170	---	14400	8030	13200	2440	959	753	2150
31	3320	---	2420	3520	---	15100	---	12200	---	903	770	---
TOTAL	77030	142910	119030	77930	207830	575200	396140	296650	130010	50326	24979	41423
MEAN	2485	4764	3840	2514	7423	18550	13200	9569	4334	1623	806	1381
MAX	3320	5590	4930	3520	17900	23300	17500	15000	10500	2440	928	2150
MIN	2190	3300	2420	2030	3920	14000	8030	5730	2150	903	728	750
AC-FT	152800	283500	236100	154600	412200	1141000	785700	588400	257900	99820	49550	82160
CAL YR 1985	TOTAL	2146160	MEAN	5880	MAX	25600	MIN	1090	AC-FT	4257000		
WTR YR 1986	TOTAL	2139458	MEAN	5862	MAX	23300	MIN	728	AC-FT	4244000		

12424000 HANGMAN CREEK AT SPOKANE, WA

LOCATION.--Lat 47°39'10", long 117°26'55", in NW¼ sec.24, T.25 N., R.42 E., Spokane County, Hydrologic Unit 17010306, on left bank 0.3 mi downstream from bridge on Interstate 90 in Spokane, and at mile 0.8.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--April 1948 to September 1977; October 1977 to September 1978 (discharges above 20 ft³/s only), October 1978 to current year. Prior to October 1958, published as Latah Creek at Spokane.

REVISED RECORDS.--WSP 1933: Drainage area. WSP 2133: 1965(P).

GAGE.--Water-stage recorder. Datum of gage is 1,717.42 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 22, 1948, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 21-25, 28-30, Dec. 1-4, 10, 11, 13-16, Jan. 1, 2, 12-14, 17-19. Records good except for estimated daily discharges, which are fair. No regulation. Some diversions for irrigation upstream from station. National Weather Service telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1949-77, 1979-86), 247 ft³/s, 4.87 in/yr, 179,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s Feb. 3, 1963, gage height, 13.35 ft; minimum discharge, 1.4 ft³/s Sept. 6, 7, 9, 10, 14-17, 1973; minimum gage height, 1.43 ft part or all of each day Aug. 19, 20, 28, Sept. 14, 15, 17-22, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	unknown	2,760	6.58	Feb. 17	0100	2,610	6.44
Jan. 30	1945	4,160	7.77	Feb. 24	0900	*7,230	*9.90

Minimum discharge, 9.4 ft³/s Aug. 27-29, gage height, 1.50 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	22	32	26	26	2000	714	329	126	73	27	15	9.9		
2	22	32	26	27	1480	614	270	117	69	26	15	11		
3	22	32	27	30	1930	527	241	119	65	26	14	12		
4	21	36	27	30	1510	465	216	134	61	27	14	12		
5	21	38	27	30	1070	412	197	226	59	29	14	12		
6	22	45	27	31	1030	385	184	214	56	29	14	11		
7	23	50	31	31	594	405	169	172	55	29	13	12		
8	21	48	35	34	391	648	155	156	56	27	13	12		
9	21	50	43	33	314	1230	145	144	57	26	13	12		
10	21	48	37	34	273	1250	136	131	55	26	12	11		
11	23	38	33	35	224	810	129	123	51	26	12	12		
12	24	29	37	55	193	892	132	122	48	26	11	12		
13	24	28	29	75	158	930	185	117	45	26	11	12		
14	25	30	27	75	144	665	259	109	43	25	11	13		
15	26	31	30	77	146	605	254	105	42	24	12	13		
16	26	30	31	89	257	477	219	104	41	23	11	14		
17	24	32	31	250	2330	392	281	97	39	24	10	15		
18	24	33	31	900	1100	325	220	91	39	24	10	16		
19	24	32	31	2570	551	306	186	87	37	25	10	16		
20	24	30	31	1530	387	305	170	85	37	26	10	16		
21	25	29	31	721	356	268	158	96	37	23	11	16		
22	26	28	32	401	315	252	150	178	35	21	11	17		
23	26	27	32	713	2070	240	143	354	35	21	10	19		
24	29	28	31	1170	6300	374	136	218	33	20	9.9	20		
25	29	29	30	508	3390	473	136	165	32	20	9.9	19		
26	30	29	30	339	1970	332	131	136	31	19	9.9	20		
27	30	28	29	296	1260	297	132	119	31	18	9.9	20		
28	30	27	29	384	875	260	137	105	30	19	9.4	20		
29	31	26	29	508	---	232	155	94	29	19	9.7	22		
30	33	26	29	2810	---	217	143	86	28	17	9.9	23		
31	33	---	28	2830	---	422	---	79	---	15	9.9	---		
TOTAL	782	1001	947	16642	32618	15724	5498	4209	1349	733	355.5	449.9		
MEAN	25.2	33.4	30.5	537	1165	507	183	136	45.0	23.6	11.5	15.0		
MAX	33	50	43	2830	6300	1250	329	354	73	29	15	23		
MIN	21	26	26	26	144	217	129	79	28	15	9.4	9.9		
CFSM	.04	.05	.04	.78	1.69	.74	.27	.20	.07	.03	.02	.02		
IN.	.04	.05	.05	.90	1.76	.85	.30	.23	.07	.04	.02	.02		
AC-FT	1550	1990	1880	33010	64700	31190	10910	8350	2680	1450	705	892		
CAL YR 1985	TOTAL	68181	MEAN	187	MAX	3280	MIN	12	CFSM	.27	IN.	3.68	AC-FT	135200
WTR YR 1986	TOTAL	80308.4	MEAN	220	MAX	6300	MIN	9.4	CFSM	.32	IN.	4.34	AC-FT	159300

SPOKANE RIVER BASIN

12431000 LITTLE SPOKANE RIVER AT DARTFORD, WA

LOCATION.--Lat 47°47'05", long 117°24'12", in NE¼NW¼ sec.5, T.26 N., R.43 E., Spokane County, Hydrologic Unit 17010308, on left bank 50 ft upstream from county bridge, 0.5 mi east of Dartford, 1.7 mi downstream from Deadman Creek, 7.5 mi north of Spokane, and at mile 11.4.

DRAINAGE AREA.--665 mi².

PERIOD OF RECORD.--April 1929 to September 1932, December 1946 to current year.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1930, 1932(M), 1947-49(M). WSP1446: 1951(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,590 ft, from topographic map. Prior to Mar. 16, 1951, nonrecording gage and Mar. 16, 1951 to July 5, 1961 water-stage recorder, at site 0.5 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 20 to Dec. 4, Dec. 11-20, Jan. 1-7. Records excellent except for estimated daily discharges, which are fair. No regulation. Small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1930-32, 1948-86), 308 ft³/s, 6.29 in/yr, 223,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,170 ft³/s Feb. 17, 1970, gage height, 7.29 ft; minimum discharge observed, 63 ft³/s July 24, 1930, gage height, 1.07 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 940 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 8	1600	*983	*4.62	No other peak greater than base discharge.			

Minimum discharge, 102 ft³/s Sept. 1, gage height, 1.84 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	142	168	150	150	375	523	501	294	187	139	120	118		
2	142	173	150	140	379	516	492	287	184	137	119	123		
3	141	173	160	140	392	529	471	301	180	139	117	123		
4	140	188	170	150	381	504	455	323	181	142	115	123		
5	139	257	177	150	378	510	438	316	192	147	114	120		
6	142	225	183	160	369	519	418	300	185	144	115	119		
7	145	207	190	160	304	573	404	294	183	139	111	118		
8	146	201	189	171	270	891	390	287	191	138	113	118		
9	145	201	181	176	272	830	379	275	190	135	111	119		
10	145	192	170	178	259	824	370	269	183	138	113	121		
11	152	182	150	177	236	761	363	267	176	142	112	122		
12	155	176	140	173	237	748	381	264	170	143	112	122		
13	155	177	140	173	227	762	393	265	165	141	114	122		
14	154	173	140	173	224	718	366	263	161	138	112	125		
15	152	177	150	181	215	696	353	253	159	136	112	124		
16	152	182	150	187	247	655	354	246	157	136	113	128		
17	152	184	150	207	268	619	349	239	155	139	112	131		
18	151	187	150	224	251	585	332	236	155	140	113	137		
19	151	183	150	410	221	561	324	233	157	138	111	140		
20	153	170	160	313	208	543	324	230	156	134	113	136		
21	157	160	165	257	228	531	319	240	159	131	113	134		
22	162	150	166	235	223	521	314	264	156	130	113	133		
23	167	140	166	291	236	508	306	246	153	128	112	134		
24	170	140	165	272	462	658	298	234	148	127	113	156		
25	181	140	165	234	597	708	308	226	143	126	114	165		
26	179	150	166	228	626	610	331	219	140	125	114	150		
27	172	150	167	223	561	586	328	213	141	125	114	150		
28	169	150	167	221	536	570	347	208	142	125	114	159		
29	166	150	167	223	---	553	320	201	142	122	117	167		
30	165	150	153	332	---	541	303	195	142	121	114	179		
31	165	---	151	385	---	521	---	192	---	120	119	---		
TOTAL	4807	5256	4998	6694	9182	19174	11031	7880	4933	4165	3529	4016		
MEAN	155	175	161	216	328	619	368	254	164	134	114	134		
MAX	181	257	190	410	626	891	501	323	192	147	120	179		
MIN	139	140	140	140	208	504	298	192	140	120	111	118		
CFSM	.23	.26	.24	.32	.49	.93	.55	.38	.25	.20	.17	.20		
IN.	.27	.29	.28	.37	.51	1.07	.62	.44	.28	.23	.20	.22		
AC-FT	9530	10430	9910	13280	18210	38030	21880	15630	9780	8260	7000	7970		
CAL YR 1985	TOTAL	85880	MEAN	235	MAX	791	MIN	112	CFSM	.35	IN.	4.80	AC-FT	170300
WTR YR 1986	TOTAL	85665	MEAN	235	MAX	891	MIN	111	CFSM	.35	IN.	4.79	AC-FT	169900

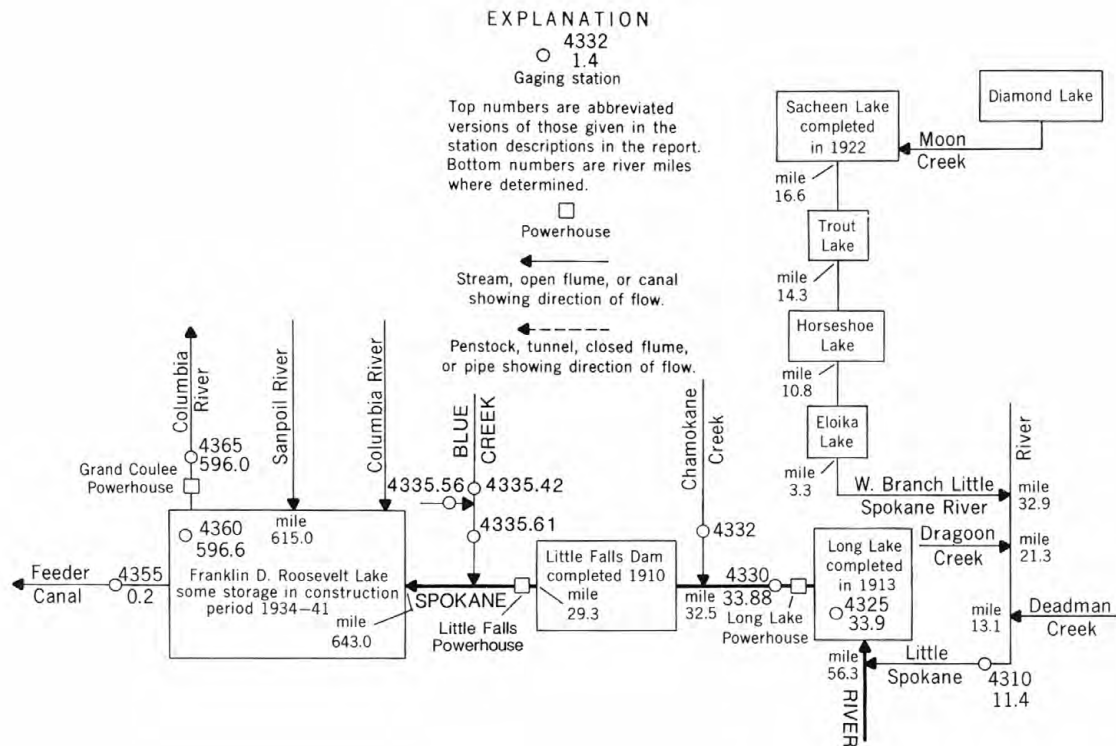


Figure 22.--Gaging stations in Spokane River basin from Little Spokane River downstream and at Grand Coulee Dam.

12432500 LONG LAKE AT LONG LAKE, WA

LOCATION.--Lat 47°50'12", long 117°50'20", in NW¼SW¼ sec.13, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, at left end of spillway at Long Lake Dam on Spokane River, 12.0 mi north of Reardan, and at mile 33.9.

DRAINAGE AREA.--6,020 mi², approximately.

PERIOD OF RECORD.--October 1913 to current year. Prior to October 1950 monthend contents only, published in WSP 1316. October 1950 to September 1977 monthend stage and contents only.

REVISED RECORDS.--WSP 1736: Monthend contents for 1916-33 corrected. WSP 1933: Drainage area.

GAGE.--Water-stage recorder with remote indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Washington Water Power Co.).

REMARKS.--Reservoir is formed by concrete dam, completed in 1913 and raised in 1950. Capacity, 104,200 acre-ft between elevations 1,512 ft and 1,536 ft, normal limits of operation. Contents at elevation 1,512 ft by capacity table used prior to October 1915, 148,600 acre-ft. Records given herein represent usable contents. Water used for power. About 25,000 acres irrigated above station, largely from wells in the Spokane Valley. Flow regulated by Coeur d'Alene Lake and powerplants along Spokane River.

COOPERATION.--Lake elevations and capacity table furnished by Washington Water Power Co. Records not reviewed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 107,600 acre-ft Jan. 16, 1974, elevation, 1,536.67 ft; minimum contents, since filling reservoir in 1920, 214 acre-ft Feb. 16, 1985, elevation, 1,512.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 104,200 acre-ft Aug. 4, elevation, 1,535.99 ft; minimum contents, 43,240 acre-ft Jan. 30, elevation, 1,523.00 ft.

Capacity table (elevation, in feet and usable contents, in acre-feet)
(Based on data furnished by Washington Water Power Company)

1,512	0	1,526	56,330	1,534	94,240
1,513	3,570	1,528	65,460	1,535	99,190
1,517	18,640	1,531	79,740	1,536	104,200
1,520	30,550	1,532	84,540	1,537	109,300
1,522	38,880	1,533	89,360		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1534.55	1534.53	1534.55	1530.95	1523.96	1532.43	1535.45	1535.73	1535.40	1535.48	1535.36	1535.81
2	1534.43	1534.48	1534.57	1530.31	1524.13	1532.45	1535.41	1535.72	1535.58	1535.60	1535.49	1535.50
3	1534.46	1534.40	1534.59	1529.75	1524.53	1532.54	1535.41	1535.77	1535.78	1535.48	1535.80	1535.48
4	1534.48	1534.52	1534.58	1529.11	1524.85	1532.58	1535.40	1535.72	1535.66	1535.75	1535.77	1535.39
5	1534.55	1534.32	1534.63	1528.43	1525.49	1532.72	1535.31	1535.25	1535.57	1535.59	1535.54	1535.30
6	1534.45	1534.57	1534.65	1527.81	1526.10	1532.80	1535.26	1535.20	1535.73	1535.71	1535.52	1535.43
7	1534.49	1534.53	1534.58	1527.28	1526.60	1532.87	1535.30	1535.73	1535.72	1535.50	1535.48	1535.79
8	1534.49	1534.55	1534.59	1527.05	1526.98	1533.27	1535.24	1535.74	1535.59	1535.50	1535.44	1535.73
9	1534.50	1534.49	1534.62	1526.55	1527.30	1534.20	1535.22	1535.69	1535.57	1535.68	1535.65	1535.59
10	1534.53	1534.51	1534.56	1525.85	1527.62	1535.20	1535.32	1535.82	1535.69	1535.65	1535.62	1535.58
11	1534.39	1534.55	1534.51	1525.50	1527.81	1534.84	1535.38	1535.69	1535.75	1535.35	1535.40	1535.30
12	1534.53	1534.46	1534.48	1525.15	1528.00	1534.95	1535.32	1535.59	1535.73	1535.59	1535.36	1535.25
13	1534.50	1534.55	1534.50	1524.90	1528.05	1534.84	1535.26	1535.52	1535.74	1535.62	1535.40	1535.30
14	1534.41	1534.50	1534.53	1525.11	1528.06	1534.81	1535.29	1535.58	1535.68	1535.65	1535.05	1535.46
15	1534.30	1534.68	1534.60	1525.05	1528.12	1534.89	1535.27	1535.73	1535.63	1535.63	1535.07	1535.18
16	1534.49	1534.65	1534.50	1524.73	1528.17	1534.86	1535.26	1535.61	1535.55	1535.70	1535.46	1535.09
17	1534.40	1534.52	1534.36	1524.51	1529.08	1534.85	1535.50	1535.59	1535.71	1535.66	1535.72	1535.05
18	1534.54	1534.52	1534.39	1524.39	1529.74	1535.00	1535.52	1535.61	1535.77	1535.51	1535.64	1535.35
19	1534.40	1534.62	1534.31	1524.54	1530.44	1534.94	1535.56	1535.45	1535.70	1535.72	1535.58	1535.30
20	1534.50	1534.63	1534.25	1524.70	1530.86	1535.03	1535.54	1535.06	1535.70	1535.59	1535.50	1535.21
21	1534.43	1534.63	1534.28	1524.30	1531.60	1535.12	1535.48	1535.17	1535.65	1535.50	1535.25	1535.20
22	1534.44	1534.60	1534.37	1524.35	1532.15	1535.10	1535.60	1535.39	1535.42	1535.51	1535.20	1535.37
23	1534.60	1534.57	1534.20	1524.32	1533.30	1535.30	1535.60	1535.34	1535.44	1535.37	1535.45	1535.38
24	1534.53	1534.57	1533.95	1524.46	1535.15	1535.35	1535.59	1535.37	1535.20	1535.52	1535.70	1535.37
25	1534.50	1534.61	1534.35	1524.30	1535.39	1535.30	1535.45	1535.41	1535.54	1535.59	1535.65	1535.35
26	1534.72	1534.55	1534.15	1523.98	1534.21	1535.18	1535.45	1535.75	1535.45	1535.70	1535.38	1535.33
27	1534.63	1534.50	1534.18	1523.75	1533.13	1535.34	1535.51	1535.30	1535.40	1535.52	1535.12	1535.30
28	1534.52	1534.68	1533.60	1523.43	1532.58	1535.28	1535.41	1535.71	1535.58	1535.60	1535.04	1535.30
29	1534.40	1534.51	1532.85	1523.12	---	1535.23	1535.55	1535.53	1535.62	1535.45	1535.03	1535.33
30	1534.43	1534.47	1532.25	1523.32	---	1535.27	1535.74	1535.53	1535.50	1535.55	1535.47	1535.34
31	1534.64	---	1531.57	1523.83	---	1535.54	---	1535.45	---	1535.63	1535.65	---
MAX	1534.72	1534.68	1534.65	1530.95	1535.39	1535.54	1535.74	1535.82	1535.78	1535.75	1535.80	1535.81
MIN	1534.30	1534.32	1531.57	1523.12	1523.96	1532.43	1535.22	1535.06	1535.20	1535.35	1535.03	1535.05
†	97410	96570	82470	46860	87330	101900	102900	101500	101700	102400	102500	100900
‡	+400	-840	-14100	-35610	+40470	+14570	+1000	-1400	+200	+700	+100	-1600

CAL YR 1985 MAX 1535.85 MIN 1512.22 AC-FT† -7620

WTR YR 1986 MAX 1535.82 MIN 1523.12 AC-FT† +3890

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

‡ Change in contents, in acre-feet.

12433000 SPOKANE RIVER AT LONG LAKE, WA
(National stream quality accounting network station)

LOCATION.--Lat 47°50'12", long 117°50'25", in NW¼SW¼ sec.13, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, on left bank at Long Lake powerhouse, 1.4 mi upstream from Chamokane Creek, 12.0 mi north of Reardan, and at mile 33.88.

DRAINAGE AREA.--6,020 mi², approximately.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,299.00 ft above National Geodetic Vertical Datum of 1929 (levels by Washington Water Power Co.). Oct. 1, 1978, to Sept. 30, 1981, incorrectly published at datum 1,300 ft.

REMARKS.--Flow regulated by Coeur d'Alene Lake and Long Lake (see sta 12432500) for powerplants of Washington Water Power Co. About 25,000 acres irrigated upstream from station, largely from wells in the Spokane Valley.

COOPERATION.--Discharge records furnished by Washington Water Power Co.; two discharge measurements made by Geological Survey.

AVERAGE DISCHARGE.--47 years, 7,926 ft³/s, 5,742,000 acre-ft/yr, adjusted for storage in Long Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,700 ft³/s Jan. 19, 1974, gage height, 78.40 ft; maximum recorded gage height, 78.66 ft May 24, 1948; minimum daily discharge, 114 ft³/s Sept. 2, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,200 ft³/s Mar. 11, gage height, 70.80 ft; minimum discharge, 150 ft³/s Aug. 16, gage height, 60.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	3380	4300	5220	5000	6650	20800	17800	9090	11300	2950	2310	885		
2	3240	4370	5500	5040	6630	20900	18700	9030	9960	1640	1230	2280		
3	2830	4370	5520	4830	6630	21100	18700	9010	7590	2630	528	1580		
4	2830	4540	5530	5030	6620	21100	18700	9130	8550	1350	1760	1600		
5	2890	4610	5380	5010	6720	21200	18600	10600	7240	3370	2040	1600		
6	3170	4650	5510	4940	6640	21100	18000	9300	6580	2650	1670	863		
7	2990	5520	5850	4560	6710	21100	17100	7730	7680	3000	1620	465		
8	3060	5300	5590	3940	6750	20800	16900	10400	7120	1600	1630	1610		
9	3010	5860	5540	4320	6720	20800	16500	10400	5740	1730	864	1590		
10	2760	5300	5460	4470	6490	22200	15900	10900	5120	2750	1600	1590		
11	3360	5520	5380	3960	6550	25600	15900	11800	5170	3160	2010	2100		
12	2610	5740	5340	3940	6720	25000	16000	11700	5230	2260	1550	1590		
13	3070	5340	5170	3610	6760	25100	15800	11500	4710	2710	1380	1280		
14	3340	5770	5090	2860	6870	24500	15300	9890	4110	2390	2150	1030		
15	3020	5480	4660	3230	6850	23300	15100	10100	4080	2480	1490	2290		
16	2610	6050	5030	4110	6710	22600	14600	10800	4510	2470	150	2600		
17	3160	5830	4940	4440	6820	21300	13500	10300	4070	2840	964	2470		
18	2670	5690	4510	4740	6880	20100	13300	10200	4180	2600	1590	2120		
19	3340	5790	4510	4430	6770	19400	13100	10100	4580	1970	1580	2380		
20	2630	6020	4330	4900	7380	18500	12700	10100	4450	2720	1600	2880		
21	3320	6130	3920	4920	6960	17600	12300	6220	4430	2480	1960	2340		
22	2990	6030	3940	4060	6720	16800	11600	14000	4940	2170	1580	2370		
23	2640	6160	4230	4590	6720	16000	11700	15300	3740	2710	725	2780		
24	3320	6070	4260	4890	9890	16300	11800	12800	3740	1640	523	2700		
25	3360	6080	2630	4890	13200	16500	11900	9710	2320	1630	1610	2810		
26	3410	6090	3930	4960	18300	16400	11400	7100	3020	1450	2200	2810		
27	4410	5750	3710	4840	20700	15200	11100	10400	3050	2040	2030	2790		
28	4390	5080	5050	5140	20800	15800	10500	10800	2610	1610	1600	2800		
29	4330	5720	5060	5360	---	15600	9240	14500	3000	1520	1530	2780		
30	3950	5620	5020	6170	---	15400	8870	13900	3670	1660	150	2850		
31	3540	---	5080	6550	---	15700	---	14100	---	1640	854	---		
TOTAL	99630	164780	150890	143730	238160	613800	432610	330910	156490	69820	44478	61833		
MEAN	3214	5493	4867	4636	8506	19800	14420	10670	5216	2252	1435	2061		
MAX	4410	6160	5850	6550	20800	25600	18700	15300	11300	3370	2310	2880		
MIN	2610	4300	2630	2860	6490	15200	8870	6220	2320	1350	150	465		
AC-FT	197600	326800	299300	285100	472400	1217000	858100	656400	310400	138500	88220	122600		
MEAN†	3220	5479	4638	4058	9235	20040	14440	10650	5220	2264	1436	2033		
AC-FT†	198000	326000	285200	249500	512900	1232000	859100	655000	310600	139200	88320	121000		
CAL YR 1985	TOTAL	2491573	MEAN	6826	MAX	26200	MIN	210	AC-FT	4942000	MEAN†	6815	AC-FT†	4934000
WTR YR 1986	TOTAL	2507131	MEAN	6869	MAX	25600	MIN	150	AC-FT	4973000	MEAN†	6875	AC-FT†	4977000

† Adjusted for change in contents in Long Lake.

SPOKANE RIVER BASIN

12433000 SPOKANE RIVER AT LONG LAKE, WA--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 47°50'26", long 117°51'11", in SE¼NW¼ sec.14, T.27 N., R.39 E., Lincoln County, Hydrologic Unit 17010307, on right bank 0.7 mi downstream from Long Lake Dam, and 13 mi north of Reardan.

PERIOD OF RECORD.--Water years 1959 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1973 to September 1981.

WATER TEMPERATURES: July 1959 to September 1962, October 1966 to September 1970, March 1973 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)
NOV 21...	1000	6200	188	7.9	6.0	1.5	11.2	95	<1	K3	66
JAN 13...	1100	4900	155	7.9	3.5	1.1	11.8	93	<1	<1	69
MAR 05...	1200	21200	82	7.9	4.0	17	12.5	99	K11	25	31
MAY 13...	1030	11600	98	8.0	11.0	200	10.3	99	<1	K9	44
JUL 24...	1200	2660	170	8.0	19.0	1.3	8.4	96	<1	K1	70
SEP 02...	1100	3790	210	8.1	19.0	0.5	8.1	92	<1	K5	92

DATE	HARD NESS NONCARB MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 21...	5	16	6.2	3.3	10	0.2	1.5	61	74	0	9.7
JAN 13...	3	17	6.5	3.5	10	0.2	1.5	66	80	0	10
MAR 05...	4	8.2	2.6	2.5	14	0.2	1.2	27	33	0	8.6
MAY 13...	4	11	4.0	2.7	11	0.2	1.1	40	49	0	8.1
JUL 24...	1	17	6.8	3.5	10	0.2	1.5	70	86	0	10
SEP 02...	6	22	8.9	4.8	10	0.2	1.8	86	105	0	10

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
NOV 21...	2.4	<0.1	9.2	83	87	0.11	1390	0.01	0.55	0.06	0.3
JAN 13...	2.6	<0.1	11	93	94	0.13	1230	0.01	0.59	0.07	0.6
MAR 05...	1.0	0.1	10	54	51	0.07	3090	<0.01	0.49	0.03	0.4
MAY 13...	1.6	<0.1	8.8	63	62	0.09	1970	<0.01	0.23	0.03	0.4
JUL 24...	2.5	<0.1	8.5	94	92	0.13	675	0.01	0.74	0.03	0.3
SEP 02...	3.0	0.2	9.2	118	110	0.16	1210	<0.01	0.61	<0.01	<0.2

K - Results based on colony count outside the acceptable range (non-ideal colony count).

SPOKANE RIVER BASIN

12433200 CHAMOKANE CREEK BELOW FALLS, NEAR LONG LAKE, WA

LOCATION.--Lat 47°51'42", long 117°51'28", in SE¼SW¼ sec.2, T.27 N., R. 39 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank 800 ft downstream from Chamokane Falls, 1.4 mi upstream from mouth, and 1.8 mi north of town of Long Lake.

DRAINAGE AREA.--179 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1971 to September 1978, April 1984 to current year (seasonal records only).

GAGE.--Water-stage recorder. Datum of gage is 1,418.5 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 26 to Nov. 1, June 6-10, July 9-15. Water-discharge records excellent except for periods of missing record, which are fair. No known regulation. Diversions upstream for irrigation, domestic use, and fish hatchery.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,200 ft³/s Apr. 25, 1975, gage height, 5.06 ft, from rating curve extended above 500 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 16 ft³/s July 10, 1973, gage height, 0.87 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period Mar. 28 to Sept. 30, 1986, 196 ft³/s Mar. 28, gage height, 2.07 ft; minimum discharge, 24 ft³/s for many days July to September; minimum gage height, 1.20 ft June 17, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR MARCH TO SEPTEMBER 1986
MEAN VALUES

DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	135	48	29	25	27	24
2	---	123	46	28	25	27	24
3	---	108	48	28	25	27	24
4	---	101	49	29	26	27	24
5	---	95	49	29	26	27	24
6	---	86	49	29	25	26	24
7	---	79	46	29	25	26	24
8	---	74	45	29	25	26	25
9	---	71	44	29	26	26	25
10	---	69	43	28	26	26	25
11	---	68	41	27	26	26	25
12	---	78	40	27	26	26	25
13	---	82	41	27	26	26	25
14	---	72	40	27	26	25	26
15	---	67	39	27	26	25	26
16	---	67	38	27	26	25	26
17	---	64	37	26	27	25	28
18	---	59	36	26	26	25	31
19	---	57	35	26	26	25	29
20	---	55	35	26	26	25	29
21	---	54	37	27	26	25	29
22	---	53	37	27	26	24	28
23	---	52	38	27	26	24	32
24	---	50	36	28	27	24	31
25	---	54	34	28	27	24	29
26	---	57	33	27	27	24	33
27	---	58	34	27	28	24	31
28	192	57	31	26	28	24	30
29	187	54	30	26	28	24	30
30	171	51	29	27	27	24	30
31	155	---	29	---	28	24	---
TOTAL	---	2150	1217	823	813	783	816
MEAN	---	71.7	39.3	27.4	26.2	25.3	27.2
MAX	---	135	49	29	28	27	33
MIN	---	50	29	26	25	24	24
CFSM	---	.40	.22	.15	.15	.14	.15
IN.	---	.45	.25	.17	.17	.16	.17
AC-FT	---	4260	2410	1630	1610	1550	1620

SPOKANE RIVER BASIN

12433200 CHAMOKANE CREEK BELOW FALLS, NEAR LONG LAKE, WA

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: April 1984 to current year (seasonal records only).

INSTRUMENTATION.--Temperature recorder since April 1984.

REMARKS.--Seasonal records.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.5°C July 9, 1985, May 29 to June 1, 1986; minimum, 3.0°C Nov. 1, 1984.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum during period Mar. 28 to Sept. 30, 23.5°C May 29 to June 1; minimum, 5.0°C Mar. 31.

TEMPERATURE, WATER (DEG. C), WATER YEAR MARCH TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
MARCH			APRIL			MAY			
1	---	---	---	8.0	5.5	6.5	15.5	7.5	11.0
2	---	---	---	11.5	5.5	8.0	14.5	10.0	12.0
3	---	---	---	10.5	5.5	8.0	13.5	10.0	11.5
4	---	---	---	10.5	6.5	8.5	14.0	9.5	11.5
5	---	---	---	12.5	6.0	9.0	13.5	7.5	10.5
6	---	---	---	13.5	6.0	9.5	16.5	7.5	11.5
7	---	---	---	14.5	6.5	10.5	15.5	8.0	11.5
8	---	---	---	15.0	7.5	11.0	16.0	8.0	12.0
9	---	---	---	14.0	8.5	11.0	15.0	8.0	11.5
10	---	---	---	13.5	8.0	10.5	12.5	7.5	10.5
11	---	---	---	9.5	6.5	8.0	12.0	8.5	10.0
12	---	---	---	8.5	7.5	8.0	11.5	7.0	10.0
13	---	---	---	10.0	6.5	8.0	13.0	8.5	10.5
14	---	---	---	11.5	6.0	9.0	14.5	6.0	10.0
15	---	---	---	12.0	7.5	9.5	14.0	6.5	10.5
16	---	---	---	11.0	7.5	9.5	17.0	6.5	11.5
17	---	---	---	13.5	6.0	9.5	17.5	10.0	13.5
18	---	---	---	13.5	6.5	9.5	19.5	11.0	15.0
19	---	---	---	12.5	8.5	10.0	20.0	11.0	15.5
20	---	---	---	13.0	8.5	11.0	15.5	12.5	14.0
21	---	---	---	16.0	9.5	12.5	12.5	10.0	11.5
22	---	---	---	12.0	9.5	11.0	16.5	7.5	11.5
23	---	---	---	13.5	7.0	10.0	16.0	7.5	12.0
24	---	---	---	13.0	6.0	9.5	18.5	9.0	13.5
25	---	---	---	10.5	7.5	9.0	21.0	10.5	15.5
26	---	---	---	11.5	6.5	9.0	22.0	11.5	16.5
27	---	---	---	12.0	8.5	10.0	22.5	12.5	17.0
28	11.0	---	---	12.5	7.0	9.5	23.0	12.5	17.5
29	9.5	7.0	8.0	12.0	6.5	9.0	23.5	13.0	18.0
30	10.0	6.5	8.5	14.0	5.5	9.5	23.5	13.0	18.0
31	9.0	5.0	7.0	---	---	---	23.5	13.0	18.0
MONTH	---	---	---	16.0	5.5	9.5	23.5	6.0	13.0

12433200 CHAMOKANE CREEK BELOW FALLS, NEAR LONG LAKE, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR MARCH TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	23.5	13.0	18.0	22.0	13.0	17.0	21.5	11.0	16.0	15.5	12.0	13.5
2	22.0	13.5	17.5	17.0	13.5	15.5	21.5	11.5	16.5	18.5	11.0	14.0
3	22.5	12.5	17.5	18.0	11.5	14.5	22.5	12.5	17.0	18.5	11.0	14.5
4	22.0	13.5	17.0	16.0	12.0	14.0	20.5	11.5	16.0	18.5	10.5	14.5
5	21.0	12.5	16.5	16.5	11.5	14.0	21.5	11.5	16.0	18.0	10.5	14.0
6	21.0	11.5	16.0	21.0	12.0	16.0	21.5	11.5	16.0	16.5	10.5	13.0
7	16.5	12.0	14.5	21.5	11.0	16.5	21.5	11.5	16.5	17.0	9.5	13.0
8	17.0	12.0	14.0	18.5	13.0	15.5	22.0	12.0	16.5	16.5	9.5	13.0
9	20.5	10.5	15.0	20.5	12.0	---	22.0	12.0	17.0	15.5	9.0	12.0
10	22.0	11.0	16.0	---	---	---	21.0	12.5	16.5	14.5	10.5	12.0
11	22.5	12.0	16.5	---	---	---	20.5	12.0	16.0	14.5	8.0	11.0
12	22.0	11.5	16.5	---	---	---	21.0	13.0	16.5	14.0	7.0	10.5
13	22.5	11.5	16.5	---	---	---	21.0	12.5	16.5	14.5	10.5	12.5
14	16.5	12.0	14.5	---	---	---	21.5	12.0	16.5	16.0	10.5	12.5
15	20.0	11.0	15.0	16.0	---	---	20.5	11.5	15.5	11.5	8.5	10.0
16	21.0	12.5	16.5	16.0	9.5	12.5	20.0	11.0	15.5	---	---	---
17	23.0	12.0	17.0	17.0	11.5	13.5	20.0	11.0	15.0	---	---	---
18	17.0	12.5	14.5	20.5	9.5	14.5	18.5	10.5	14.5	---	---	---
19	19.0	10.0	14.0	21.0	11.5	16.0	20.5	12.0	16.0	---	---	---
20	16.0	10.0	13.0	20.0	11.5	16.0	19.5	10.5	15.0	---	---	---
21	20.5	9.5	15.0	22.5	12.0	16.5	19.0	11.0	14.5	---	---	---
22	21.0	10.5	15.5	21.0	12.5	16.0	19.0	11.0	14.5	---	---	---
23	22.5	11.5	17.0	20.5	12.5	16.5	19.5	11.5	15.5	---	---	---
24	23.0	12.5	17.5	21.0	12.5	16.5	17.5	12.5	15.0	---	---	---
25	22.5	12.5	17.0	20.5	12.5	16.5	20.0	11.0	15.0	---	---	---
26	18.0	11.5	14.5	18.5	11.5	15.0	20.0	10.5	15.0	---	---	---
27	21.5	11.5	16.5	20.5	12.0	15.5	19.5	11.0	15.0	---	---	---
28	22.0	13.0	17.0	17.5	11.0	14.0	19.5	12.0	15.5	---	---	---
29	16.5	13.5	15.0	19.5	10.5	14.5	19.0	13.5	16.0	---	---	---
30	22.0	11.0	16.0	20.0	10.0	14.5	16.5	13.0	15.0	---	---	---
31	---	---	---	20.5	10.5	15.5	18.0	12.0	14.5	---	---	---
MONTH	23.5	9.5	16.0	---	---	---	22.5	10.5	15.5	---	---	---

SPOKANE RIVER BASIN

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1243542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA

LOCATION.--Lat 47°55'28", long 118°05'18", in NW¼SE¼ sec.13, T.28 N., R.37 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank, 2.4 mi downstream from Turtle Lake, and 5.4 mi northwest of Wellpinit.

DRAINAGE AREA.--6.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,070 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 9 to Jan. 31, Feb. 7-27. Water-discharge records good except for estimated daily discharges, due to ice, which are fair. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16 ft³/s Mar. 12, 1986, gage height, 2.11 ft; minimum discharge, 0.09 ft³/s Aug. 20, 1985, Aug. 16, 1986, gage height, 0.92 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16 ft³/s Mar. 12, gage height, 2.11 ft; minimum discharge, 0.09 ft³/s Aug. 16, but may have been less during period of freeze or ice effect Nov. 9 to Jan. 31, Feb. 7-27, gage height, 0.92 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.17	.13	.12	.49	1.7	6.3	1.6	.85	.37	.17	.16
2	.15	.17	.14	.13	.46	2.1	5.9	1.6	.84	.39	.17	.16
3	.15	.17	.14	.13	.41	2.4	5.6	1.6	.82	.37	.17	.16
4	.15	.29	.15	.14	.46	2.6	5.3	1.6	.80	.37	.16	.16
5	.16	.22	.16	.15	.48	2.8	5.0	1.5	.79	.35	.17	.15
6	.19	.18	.17	.16	.46	3.0	4.7	1.4	.78	.34	.16	.15
7	.16	.16	.17	.17	.44	5.4	4.4	1.4	.77	.34	.16	.15
8	.16	.17	.18	.18	.42	6.6	4.3	1.4	.75	.33	.15	.16
9	.16	.16	.17	.19	.40	6.3	4.0	1.4	.70	.32	.15	.15
10	.17	.16	.16	.18	.39	8.6	3.7	1.3	.68	.33	.15	.16
11	.20	.15	.15	.17	.37	14	3.7	1.3	.67	.32	.15	.16
12	.17	.15	.15	.16	.35	15	3.9	1.2	.65	.28	.17	.16
13	.17	.14	.16	.15	.34	15	3.5	1.2	.64	.26	.16	.16
14	.16	.14	.17	.16	.32	14	3.3	1.2	.63	.25	.16	.16
15	.16	.13	.17	.16	.31	13	3.1	1.2	.62	.25	.15	.17
16	.16	.13	.16	.17	.30	12	2.9	1.2	.60	.25	.15	.19
17	.16	.12	.16	.18	.29	11	2.8	1.2	.57	.25	.15	.19
18	.16	.12	.15	.19	.27	10	2.6	1.2	.57	.25	.15	.27
19	.18	.12	.15	.19	.26	9.8	2.6	1.1	.59	.23	.15	.19
20	.16	.11	.14	.20	.25	9.6	2.5	1.1	.60	.23	.15	.19
21	.17	.11	.13	.21	.30	9.5	2.4	1.2	.58	.23	.15	.19
22	.21	.11	.13	.22	.37	8.9	2.4	1.1	.48	.22	.15	.19
23	.18	.11	.12	.23	.46	8.7	2.2	1.1	.45	.21	.15	.33
24	.20	.10	.13	.24	.58	10	2.0	1.0	.44	.21	.15	.30
25	.19	.10	.13	.26	.74	8.9	2.1	.98	.44	.21	.15	.19
26	.16	.11	.14	.27	.90	8.4	2.0	1.0	.42	.21	.15	.20
27	.16	.11	.13	.28	1.1	8.0	1.9	.98	.42	.21	.15	.22
28	.16	.11	.13	.30	1.4	7.7	1.9	.97	.41	.21	.14	.21
29	.16	.12	.12	.32	---	7.3	1.8	.93	.41	.21	.15	.22
30	.16	.12	.12	.35	---	7.0	1.7	.91	.39	.19	.16	.19
31	.17	---	.11	.38	---	6.6	---	.89	---	.18	.16	---
TOTAL	5.21	4.26	4.52	6.34	13.32	255.9	100.5	37.76	18.36	8.37	4.81	5.64
MEAN	.17	.14	.15	.20	.48	8.25	3.35	1.22	.61	.27	.16	.19
MAX	.21	.29	.18	.38	1.4	15	6.3	1.6	.85	.39	.17	.33
MIN	.15	.10	.11	.12	.25	1.7	1.7	.89	.39	.18	.14	.15
AC-FT	10	8.4	9.0	13	26	508	199	75	36	17	9.5	11
CAL YR 1985	TOTAL	285.15	MEAN	.78	MAX	8.0	MIN	.10	AC-FT	566		
WTR YR 1986	TOTAL	464.99	MEAN	1.27	MAX	15	MIN	.10	AC-FT	922		

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1980, June 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1984 to current year.

pH: July 1984 to current year.

WATER TEMPERATURES: June 1984 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1984. Digital recorder set for one-hour-interval punch.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 164 microsiemens Mar. 22, 1985; minimum, 80 microsiemens Mar. 27-30, 1986, but may have been lower during period of missing record Mar. 31 to May 27, 1986.

pH: Maximum, 9.5 units, July 6, 7, 1986; minimum, 6.2 units June 13, 1986.

WATER TEMPERATURES: Maximum, 23.0°C July 9, 1985; minimum, 0.0°C during many days in 1985, 1986.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 150 microsiemens Nov. 14, but may have been higher during period of questionable record Mar. 8-26 (available in files of the Geological Survey); minimum, 80 microsiemens Mar. 27-30, but may have been lower during period of missing record Mar. 31 to May 27.

pH: Maximum, 9.5 units July 6, 7; minimum, 6.2 units June 13.

WATER TEMPERATURES: Maximum, 20.0°C June 25, Aug. 3, 9; minimum, 0.0°C during many days from November to February.

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	128	126	128	127	126	127				---	---	---
2	129	127	128	128	125	127				---	---	---
3	128	126	127	128	121	126				130	---	---
4	127	125	126	126	121	123				129	128	129
5	127	124	126	127	123	125				129	128	128
6	126	124	125	128	125	127				130	128	129
7	126	125	125	129	127	128				130	128	129
8	126	124	125	129	125	128				129	128	129
9	126	123	125	123	120	121				130	125	128
10	127	124	126	130	119	124				124	121	122
11	128	126	127	137	129	133				125	123	124
12	129	127	128	143	138	141				127	124	126
13	128	127	128	147	143	145				129	127	128
14	129	127	128	150	143	147				131	129	130
15	130	128	129	148	136	142				132	130	131
16	131	129	130	137	129	132				131	122	128
17	131	130	130	129	124	126				126	121	124
18	131	130	130	127	124	125				126	123	125
19	132	128	130	125	123	124				125	122	124
20	130	128	129	124	122	123				130	121	126
21	129	127	128	126	123	125				130	127	129
22	128	124	126	127	124	125				131	128	129
23	128	126	128	130	126	129				131	128	130
24	128	125	126	130	127	128				131	128	129
25	129	126	128	129	127	128				133	129	131
26	129	128	128	131	126	128				135	131	133
27	134	128	129	129	125	126				136	131	133
28	132	129	131	130	125	127				136	131	133
29	133	129	131	127	125	126				135	126	129
30	129	128	129	---	---	---				127	122	124
31	129	125	128	---	---	---				131	126	128
MONTH	134	123	128	---	---	---				---	---	---

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	136	131	133	135	130	132				---	---	---
2	138	133	136	136	131	134				---	---	---
3	140	133	136	135	131	132				---	---	---
4	142	136	139	132	130	131				---	---	---
5	138	134	136	133	129	132				---	---	---
6	144	136	139	132	129	131				---	---	---
7	144	141	142	138	128	132				---	---	---
8	145	142	144	---	---	---				---	---	---
9	145	142	143	---	---	---				---	---	---
10	144	142	143	---	---	---				---	---	---
11	144	141	143	---	---	---				---	---	---
12	142	141	142	---	---	---				---	---	---
13	143	141	142	---	---	---				---	---	---
14	142	134	141	---	---	---				---	---	---
15	139	133	137	---	---	---				---	---	---
16	138	135	136	---	---	---				---	---	---
17	137	136	136	---	---	---				---	---	---
18	139	136	137	---	---	---				---	---	---
19	---	---	---	---	---	---				---	---	---
20	---	---	---	---	---	---				---	---	---
21	---	---	---	---	---	---				---	---	---
22	---	---	---	---	---	---				---	---	---
23	---	---	---	---	---	---				---	---	---
24	---	---	---	---	---	---				---	---	---
25	---	---	---	---	---	---				---	---	---
26	---	---	---	---	---	---				---	---	---
27	---	---	---	82	80	81				---	---	---
28	135	130	133	81	80	81				---	101	---
29	---	---	---	82	80	81				108	101	104
30	---	---	---	82	80	81				107	101	104
31	---	---	---	---	---	---				107	102	104
MONTH	---	---	---	---	---	---				---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	109	104	106	117	112	115	113	109	112	117	116	117
2	111	104	107	117	113	116	115	109	113	118	116	117
3	110	104	108	116	113	115	116	111	114	117	115	116
4	110	105	107	116	112	114	116	111	114	118	114	116
5	110	104	108	117	114	115	116	112	114	118	115	116
6	109	104	106	117	114	115	116	112	114	118	114	116
7	109	103	106	116	113	115	117	113	115	116	114	115
8	108	104	106	116	113	114	117	112	115	115	112	114
9	109	103	106	115	113	114	117	113	115	115	112	114
10	108	102	105	116	112	114	118	114	116	115	112	113
11	115	104	107	116	113	115	118	114	116	115	113	114
12	110	104	108	116	111	112	119	115	117	114	112	113
13	111	107	109	113	110	112	119	116	118	114	112	113
14	112	108	110	112	110	111	119	116	118	114	111	112
15	112	107	110	112	109	111	120	115	118	114	112	113
16	111	107	109	113	111	112	120	115	117	115	111	113
17	112	109	110	114	111	112	119	115	117	112	108	111
18	115	110	113	114	111	113	117	114	116	114	108	111
19	114	103	108	114	111	113	118	115	116	117	112	114
20	108	104	106	116	113	114	118	115	116	115	114	114
21	107	103	105	117	114	115	118	114	116	114	113	114
22	109	103	106	117	110	114	118	114	116	113	111	112
23	109	103	106	113	110	112	118	114	116	113	101	110
24	109	105	107	113	109	111	118	115	116	112	108	110
25	110	105	108	114	110	112	118	115	117	114	111	112
26	110	105	108	114	109	111	118	115	117	116	112	114
27	110	106	108	113	109	111	118	115	117	116	113	115
28	112	107	110	113	109	111	120	116	118	118	115	117
29	114	110	112	113	109	111	119	116	117	120	116	118
30	114	112	113	113	107	111	119	115	117	121	118	119
31	---	---	---	113	107	111	119	116	117	---	---	---
MONTH	115	102	108	117	107	113	120	109	116	121	101	114

SPOKANE RIVER BASIN

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.3	7.7	7.9	7.9	7.8	7.9				---	---	---
2	8.3	7.7	7.8	7.9	7.8	7.8				---	---	---
3	8.1	7.7	7.8	7.9	7.8	7.8				---	---	---
4	8.1	7.7	7.8	7.9	7.7	7.8				8.1	8.1	8.1
5	8.1	7.7	7.8	7.9	7.8	7.9				8.0	8.0	8.0
6	7.9	7.7	7.8	7.9	7.8	7.8				8.0	8.0	8.0
7	8.0	7.7	7.8	7.9	7.8	7.9				8.0	8.0	8.0
8	7.8	7.7	7.8	7.9	7.8	7.9				8.0	8.0	8.0
9	7.9	7.5	7.7	7.8	7.7	7.8				7.9	7.8	7.9
10	8.5	7.5	7.8	7.8	7.7	7.8				7.9	7.8	7.9
11	8.0	7.6	7.7	7.7	7.5	7.6				8.0	7.9	8.0
12	8.3	7.6	7.8	7.5	7.4	7.4				8.0	7.9	8.0
13	8.4	7.6	7.8	7.5	7.4	7.4				8.0	8.0	8.0
14	8.5	7.6	7.9	7.4	7.4	7.4				8.0	7.9	8.0
15	8.5	7.5	7.8	7.4	7.4	7.4				8.0	7.9	7.9
16	8.0	7.5	7.7	7.5	7.4	7.5				7.9	7.7	7.8
17	8.3	7.5	7.8	7.5	7.5	7.5				7.9	7.7	7.8
18	8.3	7.6	7.8	7.6	7.6	7.6				7.9	7.8	7.8
19	8.5	7.5	7.8	7.6	7.6	7.6				7.9	7.8	7.8
20	8.0	7.4	7.6	7.7	7.6	7.6				7.9	7.8	7.8
21	7.7	7.4	7.5	7.7	7.7	7.7				7.9	7.9	7.9
22	8.1	7.3	7.6	7.7	7.7	7.7				7.9	7.8	7.8
23	7.9	7.7	7.7	7.7	7.6	7.6				7.8	7.7	7.8
24	7.8	7.6	7.7	7.6	7.6	7.6				7.8	7.8	7.8
25	7.8	7.7	7.7	7.6	7.6	7.6				7.8	7.8	7.8
26	7.8	7.7	7.7	7.6	7.6	7.6				7.8	7.7	7.8
27	7.8	7.7	7.7	7.6	7.6	7.6				7.8	7.7	7.7
28	7.8	7.7	7.7	7.6	7.6	7.6				7.7	7.7	7.7
29	7.8	7.7	7.7	7.6	7.6	7.6				7.7	7.6	7.6
30	7.9	7.7	7.8	---	---	---				7.6	7.5	7.6
31	7.9	7.8	7.9	---	---	---				7.6	7.6	7.6
MONTH	8.5	7.3	7.8	---	---	---				---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.6	7.6	7.6	7.5	7.5	7.5	8.0	7.9	8.0	7.9	7.3	7.5
2	7.6	7.6	7.6	7.5	7.4	7.5	8.0	7.9	7.9	7.6	7.3	7.4
3	7.6	7.5	7.6	7.5	7.4	7.5	8.0	7.9	7.9	7.6	7.3	7.4
4	7.6	7.6	7.6	7.4	7.4	7.4	8.0	7.8	7.9	7.7	7.4	7.5
5	7.6	7.5	7.6	7.4	7.2	7.3	8.0	7.8	7.9	7.7	7.4	7.6
6	7.6	7.6	7.6	7.5	7.2	7.3	8.1	7.8	7.9	8.0	7.3	7.6
7	7.6	7.6	7.6	7.4	7.2	7.3	8.1	7.8	7.9	7.6	7.3	7.4
8	7.6	7.5	7.6	---	---	---	8.1	7.8	7.9	7.8	7.4	7.6
9	7.6	7.6	7.6	---	---	---	8.1	7.9	7.9	8.0	7.5	7.6
10	7.6	7.6	7.6	---	---	---	8.1	7.8	7.9	8.2	7.4	7.7
11	7.6	7.6	7.6	---	---	---	8.0	7.8	7.8	8.0	7.4	7.6
12	7.6	7.6	7.6	---	---	---	7.9	7.8	7.8	8.1	7.5	7.7
13	7.6	7.6	7.6	---	---	---	7.9	7.7	7.8	8.3	7.5	7.8
14	7.6	7.5	7.6	---	---	---	8.0	7.7	7.8	8.2	7.5	7.7
15	7.6	7.5	7.6	---	---	---	7.9	7.7	7.7	8.1	7.5	7.7
16	7.7	7.6	7.7	---	---	---	7.8	7.7	7.7	7.9	7.6	7.7
17	7.7	7.7	7.7	---	---	---	7.9	7.6	7.7	8.0	7.6	7.7
18	7.8	7.7	7.7	---	---	---	7.9	7.6	7.7	8.0	7.6	7.7
19	---	---	---	---	---	---	7.9	7.6	7.7	8.0	7.6	7.7
20	---	---	---	---	---	---	7.8	7.6	7.6	8.1	7.6	7.8
21	---	---	---	---	---	---	7.9	7.5	7.6	7.8	7.4	7.6
22	---	---	---	---	---	---	7.7	7.5	7.6	7.8	7.6	7.7
23	---	---	---	---	---	---	7.8	7.5	7.6	7.9	7.6	7.7
24	---	---	---	---	---	---	7.7	7.5	7.6	8.0	7.6	7.7
25	---	---	---	---	---	---	7.7	7.5	7.5	8.1	7.6	7.8
26	---	---	---	---	---	---	7.7	7.5	7.6	8.1	7.7	7.8
27	---	---	---	8.0	8.0	8.0	7.8	7.4	7.5	8.2	7.7	7.8
28	7.6	7.5	7.5	8.0	7.9	8.0	7.8	7.5	7.6	8.0	7.7	7.8
29	---	---	---	8.0	7.9	8.0	7.7	7.4	7.6	8.0	7.6	7.8
30	---	---	---	8.0	7.9	8.0	7.9	7.2	7.6	7.7	7.0	7.2
31	---	---	---	8.0	7.9	8.0	---	---	---	7.2	6.9	7.1
MONTH	---	---	---	---	---	---	8.1	7.2	7.7	8.3	6.9	7.6

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.1	6.9	7.0	9.0	7.5	8.1	8.8	8.2	8.4	8.4	8.2	8.2
2	7.1	6.9	7.0	8.8	7.6	8.0	8.8	8.2	8.5	8.5	8.2	8.2
3	7.1	6.9	7.0	9.2	7.5	8.2	8.8	8.2	8.6	8.4	8.1	8.2
4	7.1	6.9	7.0	9.3	8.1	8.5	8.9	8.3	8.6	8.4	8.1	8.2
5	7.1	6.8	6.9	9.3	7.4	8.2	8.8	8.2	8.6	8.4	8.0	8.1
6	7.1	6.8	7.0	9.5	7.4	8.2	8.8	8.2	8.5	8.5	7.9	8.1
7	7.0	6.7	6.8	9.5	7.5	8.4	8.8	8.2	8.5	8.4	7.9	8.0
8	7.0	6.7	6.8	9.3	8.3	8.6	8.8	8.2	8.5	8.6	7.8	8.0
9	7.1	6.7	6.9	9.4	8.3	8.6	8.7	8.3	8.5	8.9	7.8	8.1
10	7.3	6.7	6.9	9.2	8.3	8.6	8.6	8.4	8.5	8.5	7.8	8.2
11	7.4	6.5	6.7	9.4	7.7	8.4	8.8	8.4	8.6	8.6	7.8	8.0
12	7.4	6.4	6.7	8.7	7.2	7.8	8.8	8.3	8.5	8.9	7.8	8.1
13	7.4	6.2	6.8	---	---	---	8.5	8.2	8.4	8.8	7.9	8.2
14	6.8	6.5	6.6	---	---	---	8.6	8.3	8.4	8.9	7.8	8.1
15	---	---	---	---	---	---	8.8	8.3	8.6	8.6	7.8	8.1
16	---	---	---	---	---	---	8.8	8.3	8.5	8.7	7.8	8.1
17	---	---	---	---	---	---	8.7	8.2	8.5	8.7	7.7	8.0
18	---	---	---	---	---	---	8.8	8.0	8.4	8.3	7.8	7.9
19	---	---	---	---	---	---	8.7	7.9	8.1	8.7	7.8	8.1
20	---	---	---	---	---	---	8.6	7.8	8.0	8.9	8.0	8.2
21	---	---	---	---	---	---	8.5	7.7	7.9	9.1	7.7	8.2
22	---	---	---	---	---	---	8.6	7.7	7.9	8.8	7.8	8.0
23	---	---	---	---	---	---	8.7	7.8	8.0	8.3	7.8	7.9
24	8.3	---	---	---	---	---	8.4	7.8	8.0	8.7	7.7	8.0
25	8.3	7.2	7.8	---	---	---	8.7	7.8	8.0	8.8	7.9	8.2
26	8.4	7.2	7.7	---	---	---	8.5	7.8	8.1	8.6	7.8	8.0
27	8.5	7.3	7.9	---	---	---	8.6	8.0	8.3	8.5	7.7	8.1
28	8.5	7.3	8.0	---	---	---	8.6	8.2	8.3	8.5	7.8	8.0
29	8.3	7.4	7.7	---	---	---	8.3	8.1	8.2	8.0	7.7	7.8
30	8.8	7.3	8.0	8.4	---	---	8.3	8.1	8.2	8.2	8.0	8.1
31	---	---	---	8.7	8.0	8.3	8.4	8.1	8.2	---	---	---
MONTH	---	---	---	---	---	---	8.9	7.7	8.3	9.1	7.7	8.1

SPOKANE RIVER BASIN

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.0	4.5	6.0	4.5	2.5	3.5				---	---	---
2	9.0	5.5	7.5	5.5	3.5	4.5				---	---	---
3	8.5	5.5	7.0	6.0	4.5	5.5				.5	.0	.0
4	7.5	3.5	5.5	6.0	4.5	5.5				.0	.0	.0
5	8.5	5.0	7.0	4.5	3.0	4.0				.0	.0	.0
6	8.5	6.5	7.5	3.5	2.5	3.0				.0	.0	.0
7	6.5	3.5	5.5	3.0	2.0	2.5				.0	.0	.0
8	4.5	1.5	3.0	3.0	1.5	2.0				.0	.0	.0
9	4.5	1.0	3.0	1.0	.5	.5				.0	.0	.0
10	6.0	3.5	4.5	.5	.5	.5				.0	.0	.0
11	7.0	5.0	5.5	.5	.5	.5				.0	.0	.0
12	5.5	3.0	4.5	.5	.5	.5				.0	.0	.0
13	5.5	2.5	4.0	.5	.5	.5				.0	.0	.0
14	7.0	3.5	5.5	.5	.0	.5				.0	.0	.0
15	8.0	5.0	6.5	.0	.0	.0				.0	.0	.0
16	8.0	5.0	6.5	.0	.0	.0				.0	.0	.0
17	6.5	4.0	5.0	.0	.0	.0				.0	.0	.0
18	6.5	3.5	5.0	.0	.0	.0				.0	.0	.0
19	6.5	4.5	5.5	.5	.0	.5				.0	.0	.0
20	7.5	4.5	6.0	.5	.0	.5				.0	.0	.0
21	7.0	5.5	6.5	.5	.5	.5				.0	.0	.0
22	7.0	4.5	5.5	.5	.5	.5				.0	.0	.0
23	6.0	4.5	5.5	.5	.0	.5				.0	.0	.0
24	6.5	5.0	5.5	.5	.0	.5				.0	.0	.0
25	7.0	4.5	6.0	.5	.0	.5				.0	.0	.0
26	6.0	4.0	5.0	.5	.0	.5				.0	.0	.0
27	6.5	4.0	5.5	.5	.0	.5				.0	.0	.0
28	6.0	3.0	4.5	.5	.0	.5				.5	.0	.0
29	3.5	1.5	2.5	.5	.0	.0				.0	.0	.0
30	4.0	1.5	2.5	---	---	---				.0	.0	.0
31	3.5	1.0	2.0	---	---	---				.0	.0	.0
MONTH	9.0	1.0	5.0	---	---	---				---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	1.5	.5	1.0	7.5	5.0	6.0	11.5	5.5	8.5
2	.5	.0	.0	1.5	.5	1.0	9.0	4.0	6.0	11.0	8.0	10.0
3	.5	.0	.5	2.0	1.0	1.5	8.5	4.0	6.5	10.5	8.5	9.5
4	.5	.5	.5	2.5	1.5	1.5	9.0	5.5	7.0	11.5	7.5	9.5
5	.5	.0	.0	2.5	1.5	2.0	9.5	4.5	7.0	10.0	6.0	8.5
6	.5	.0	.0	2.5	2.0	2.0	10.5	4.0	7.0	12.0	6.0	9.0
7	.0	.0	.0	2.0	1.5	2.0	11.0	4.5	7.5	12.0	6.5	9.5
8	.0	.0	.0	2.5	1.5	2.0	11.5	5.0	8.0	13.0	6.5	10.0
9	.5	.0	.0	3.0	2.5	2.5	10.5	5.5	8.0	11.0	7.0	9.5
10	.5	.0	.0	3.0	2.5	2.5	10.0	5.0	7.5	9.5	6.5	8.5
11	.0	.0	.0	3.0	2.5	2.5	7.0	4.0	5.5	9.0	6.5	8.0
12	.0	.0	.0	4.0	3.0	3.5	7.0	5.0	6.0	9.0	5.5	7.5
13	.0	.0	.0	4.0	3.5	3.5	7.5	5.0	6.0	10.5	8.0	9.0
14	.0	.0	.0	4.0	4.0	4.0	9.5	4.5	7.0	10.0	4.5	7.5
15	.0	.0	.0	4.5	3.5	4.0	9.0	5.5	7.5	12.0	5.0	8.5
16	.0	.0	.0	4.5	4.0	4.5	8.5	5.5	7.0	12.5	6.0	9.5
17	.5	.0	.0	4.5	4.0	4.5	10.0	4.0	7.0	14.0	9.0	11.5
18	.5	.0	.0	4.5	4.0	4.5	10.0	4.5	7.0	15.5	10.5	13.0
19	---	.0	.0	5.5	4.5	5.0	9.5	6.0	7.5	16.0	10.5	13.5
20	---	---	---	5.5	4.5	5.0	10.0	6.5	8.5	14.5	12.0	13.0
21	---	---	---	6.0	5.0	5.5	12.0	7.5	10.0	11.5	8.5	10.0
22	---	---	---	5.5	4.5	5.0	9.5	7.5	9.0	11.5	6.5	9.0
23	---	---	---	5.5	4.5	5.0	8.5	5.0	7.0	12.0	6.5	9.5
24	---	---	---	6.0	5.5	5.5	8.5	3.5	6.5	14.0	8.5	11.5
25	---	---	---	5.5	4.5	5.0	8.0	5.0	6.5	16.5	11.0	14.0
26	---	---	---	8.5	5.5	6.5	8.5	4.0	6.5	18.0	12.5	15.5
27	---	---	---	9.0	5.0	7.0	9.0	6.5	7.5	18.5	14.5	16.5
28	1.0	---	---	9.5	6.0	7.5	8.5	5.0	7.0	18.5	14.5	16.5
29	---	---	---	8.5	5.0	7.0	8.0	4.5	6.5	19.0	14.5	17.0
30	---	---	---	8.0	5.0	7.0	10.0	3.0	7.0	18.5	15.0	17.0
31	---	---	---	8.0	4.0	5.5	---	---	---	18.5	15.0	17.0
MONTH	---	---	---	9.5	.5	4.0	12.0	3.0	7.0	19.0	4.5	11.0

12433542 BLUE CREEK ABOVE MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	18.5	15.5	17.5	19.5	14.5	17.0	18.5	12.0	15.0	15.5	13.0	14.0
2	18.5	16.0	17.5	17.5	14.5	16.5	19.0	13.0	16.0	16.0	11.5	14.0
3	17.5	15.0	16.5	16.0	13.0	14.5	20.0	13.5	16.5	16.5	12.0	14.0
4	17.5	15.5	16.5	15.0	12.5	13.5	18.5	13.0	15.5	16.0	11.0	13.5
5	16.5	15.0	16.0	15.0	12.0	13.5	18.5	13.0	15.5	15.5	11.0	13.0
6	16.0	14.0	15.0	17.5	12.0	14.5	18.5	12.5	16.0	14.0	10.0	12.0
7	15.0	13.5	14.5	18.5	11.5	15.0	19.0	13.0	16.0	14.0	9.5	12.0
8	15.0	13.5	14.0	17.5	14.0	15.5	19.5	13.5	16.5	14.0	9.5	11.5
9	15.5	12.5	14.0	18.0	13.0	15.0	20.0	14.0	17.0	13.0	8.5	10.5
10	16.5	13.0	15.0	14.5	12.5	13.5	19.0	14.5	17.0	13.0	9.5	11.0
11	17.0	14.0	15.5	15.5	11.5	14.0	18.5	13.5	16.0	11.0	7.0	9.0
12	16.5	14.0	15.5	15.0	12.0	13.5	19.0	14.5	16.5	10.5	6.0	8.5
13	17.0	14.0	15.5	17.5	12.0	14.5	19.0	14.0	16.5	11.5	9.5	10.0
14	16.0	14.0	14.5	17.0	11.5	14.5	19.5	14.0	16.5	11.0	7.5	9.5
15	15.0	12.5	14.0	14.0	11.0	12.5	18.5	13.0	15.5	10.0	7.5	9.0
16	16.0	14.0	15.0	13.5	9.5	11.5	17.5	12.0	14.5	11.0	8.0	9.5
17	17.0	14.0	15.5	14.5	11.5	12.5	17.5	12.0	14.5	10.0	6.5	8.5
18	16.0	14.0	15.5	16.0	10.0	13.0	17.0	11.5	14.0	10.5	8.5	9.5
19	14.5	11.0	13.0	17.5	11.5	14.5	18.0	13.0	15.0	10.0	6.0	8.0
20	13.5	11.0	12.0	18.5	12.5	15.5	16.5	10.5	13.5	9.0	6.0	7.5
21	15.5	10.0	13.0	18.5	14.0	16.5	16.5	11.5	13.5	10.5	7.5	8.5
22	17.0	11.0	14.0	18.5	14.0	16.5	17.0	11.5	14.0	10.0	6.0	8.0
23	19.0	13.0	16.0	18.5	14.0	16.5	17.0	12.5	14.5	8.5	7.0	8.0
24	19.5	14.5	17.0	18.5	14.0	16.5	16.5	13.5	15.0	10.0	7.5	9.0
25	20.0	14.5	17.0	18.0	14.5	16.0	17.0	12.0	14.5	9.0	6.5	7.5
26	17.0	13.0	15.0	16.5	13.0	15.0	17.0	11.5	14.5	9.5	7.5	8.0
27	18.0	12.5	15.5	17.0	13.0	15.0	17.5	12.0	14.5	8.0	6.5	7.5
28	19.0	14.0	16.5	16.0	12.0	14.0	18.0	13.0	15.5	8.5	7.0	7.5
29	16.0	14.0	15.5	16.0	11.0	13.5	18.0	14.0	16.0	9.0	8.0	8.5
30	18.0	12.0	15.0	16.0	10.5	13.5	16.0	14.0	15.0	10.0	7.5	9.0
31	---	---	---	17.0	10.5	14.0	16.0	13.0	14.5	---	---	---
MONTH	20.0	10.0	15.0	19.5	9.5	14.5	20.0	10.5	15.5	16.5	6.0	10.0

12433556 MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA

LOCATION.--Lat 47°55'27", long 118°05'20", in NW¼SE¼ sec.13, T.28 N., R.37 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank, 2.4 mi downstream from Turtle Lake, .13 mi upstream from confluence with Blue Creek, and 5.4 mi northwest of Wellpinit.

DRAINAGE AREA.--1.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,070 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 16 to Jan. 31. Water-discharge records good except for estimated daily discharges, due to ice, which are fair. Three mine waste-retention ponds upstream from gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5.7 ft³/s June 21, 1984, Mar. 7, 1986; maximum gage height, 1.67 ft Mar. 7, 1986; no flow during part or all of each day June 21-24, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5.7 ft³/s Mar. 7, gage height, 1.67 ft; no flow during part or all of each day June 21-24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.16	.11	.11	.87	1.9	.60	.26	.13	.12	.11	.10
2	.15	.16	.11	.12	.75	1.8	.56	.26	.12	.13	.11	.10
3	.14	.16	.12	.12	.70	1.6	.54	.26	.12	.12	.11	.09
4	.13	.30	.13	.12	.65	1.5	.54	.26	.12	.14	.11	.07
5	.13	.21	.14	.13	.70	1.5	.51	.26	.12	.12	.11	.07
6	.15	.19	.14	.14	.64	1.5	.49	.25	.12	.12	.11	.07
7	.17	.19	.14	.15	.55	3.3	.49	.23	.12	.12	.11	.07
8	.21	.19	.14	.15	.53	2.6	.47	.23	.12	.12	.11	.07
9	.23	.20	.13	.16	.53	2.1	.44	.23	.12	.12	.10	.07
10	.23	.19	.13	.17	.49	2.0	.44	.23	.10	.13	.11	.07
11	.27	.19	.14	.18	.47	1.9	.45	.23	.11	.12	.11	.07
12	.23	.19	.14	.17	.43	1.8	.46	.23	.12	.13	.13	.07
13	.19	.19	.14	.17	.39	1.8	.40	.23	.15	.14	.09	.08
14	.19	.19	.13	.18	.39	1.9	.35	.23	.15	.13	.08	.08
15	.19	.19	.13	.20	.39	1.9	.35	.18	.14	.14	.08	.09
16	.19	.18	.12	.22	.35	1.4	.35	.16	.12	.15	.08	.10
17	.19	.17	.12	.24	.30	1.2	.35	.18	.10	.15	.08	.12
18	.19	.16	.12	.25	.30	1.1	.33	.17	.14	.15	.08	.17
19	.19	.15	.12	.26	.26	1.1	.30	.16	.15	.13	.08	.13
20	.19	.14	.12	.27	.24	.96	.30	.17	.15	.12	.08	.11
21	.19	.13	.12	.29	.23	.89	.30	.25	.02	.13	.08	.07
22	.24	.12	.11	.30	.23	.80	.30	.21	.00	.12	.08	.07
23	.23	.12	.11	.32	.25	.73	.26	.19	.00	.12	.08	.19
24	.24	.11	.12	.33	.47	1.4	.26	.18	.09	.11	.09	.11
25	.21	.10	.12	.35	1.0	.89	.28	.18	.12	.11	.09	.08
26	.19	.10	.12	.37	1.3	.77	.26	.18	.13	.11	.08	.08
27	.19	.11	.12	.38	1.6	.71	.30	.17	.12	.12	.08	.09
28	.19	.11	.12	.40	1.8	.68	.26	.15	.12	.12	.08	.09
29	.19	.12	.12	.43	---	.65	.26	.15	.13	.11	.09	.11
30	.18	.12	.12	.45	---	.65	.26	.15	.12	.11	.09	.12
31	.16	---	.11	.50	---	.60	---	.14	---	.12	.10	---
TOTAL	5.92	4.84	3.86	7.63	16.81	43.63	11.46	6.36	3.37	3.88	2.92	2.81
MEAN	.19	.16	.12	.25	.60	1.41	.38	.21	.11	.13	.09	.09
MAX	.27	.30	.14	.50	1.8	3.3	.60	.26	.15	.15	.13	.19
MIN	.13	.10	.11	.11	.23	.60	.26	.14	.00	.11	.08	.07
AC-FT	12	9.6	7.7	15	33	87	23	13	6.7	7.7	5.8	5.6
CAL YR 1985	TOTAL	91.27	MEAN	.25	MAX	.93	MIN	.07	AC-FT	181		
WTR YR 1986	TOTAL	113.49	MEAN	.31	MAX	3.3	MIN	.00	AC-FT	225		

SPOKANE RIVER BASIN

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12433556 MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1980, June 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1984 to current year.

pH: June 1984 to current year.

WATER TEMPERATURES: June 1984 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1984. Digital recorder set for one-hour-interval punch.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 3,320 microsiemens Aug. 16, 1984; minimum recorded, 1,350 microsiemens Nov. 2, 1985.

pH: Maximum recorded, 8.5 units Sept. 11, 14, 1985; minimum recorded, 4.5 units several days in February 1986.

WATER TEMPERATURES: Maximum recorded, 18.5°C July 8, 9, 1985; minimum, 0.0°C during many days in 1985, 1986.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 3,090 microsiemens Aug. 28; minimum recorded, 1,540 microsiemens Feb. 1.

pH: Maximum recorded, 8.1 units on several days during the year; minimum recorded, 4.5 units on several days in February.

WATER TEMPERATURES: Maximum recorded, 17.0°C June 1; minimum, 0.0°C during many days in November and December.

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	2610	2560	2590	2460	2400	2440	2440	2400	2420	2310	2290	2300
2	2620	2560	2590	2470	2420	2450	2400	2320	2360	2320	2290	2310
3	2630	2570	2610	2470	2320	2450	2340	2290	2330	2310	2290	2300
4	2630	2570	2600	2270	2040	2160	2330	2300	2310	2320	2260	2300
5	2600	2570	2590	2470	2310	2420	2320	2280	2310	2320	2280	2300
6	2580	2380	2520	2480	2440	2470	2320	2120	2250	2310	2290	2300
7	2580	2410	2530	2470	2450	2460	2260	2170	2220	2300	2290	2300
8	2580	2550	2570	2470	2380	2450	2280	2220	2250	2320	2290	2310
9	2570	2540	2560	2400	2230	2320	2320	2260	2280	2290	2080	2230
10	2560	2530	2540	2450	2380	2410	2330	2290	2310	2210	2010	2130
11	2520	2330	2450	2500	2410	2450	2310	2270	2300	2260	2230	2240
12	2550	2530	2540	2570	2430	2500	2400	2280	2350	2280	2250	2270
13	2550	2520	2540	2570	2470	2520	2430	2360	2390	2310	2250	2300
14	2540	2500	2520	2570	2460	2520	2440	2390	2410	2320	2290	2310
15	2530	2500	2520	2510	2370	2450	2400	2330	2370	2320	2290	2310
16	2540	2520	2530	2360	2310	2330	2380	2310	2350	2280	1860	2150
17	2550	2510	2540	2340	2270	2310	2350	2310	2340	2220	1950	2130
18	2540	2500	2530	2330	2310	2320	2360	2330	2340	2230	1970	2120
19	2530	2500	2520	2360	2260	2330	2350	2310	2330	2150	1990	2040
20	2520	2500	2510	2390	2330	2350	2330	2300	2310	2290	2170	2250
21	2520	2480	2500	2400	2360	2380	2320	2300	2310	2410	2300	2350
22	2530	2330	2430	2470	2370	2390	2340	2320	2330	2470	2420	2450
23	2510	2450	2490	2510	2420	2470	2330	2280	2320	2440	2370	2400
24	2510	2350	2440	2530	2460	2500	2330	2310	2320	2430	2390	2420
25	2510	2430	2480	2500	2420	2470	2330	2310	2320	2430	2370	2410
26	2520	2490	2500	2530	2510	2520	2330	2300	2320	2460	2380	2430
27	2500	2420	2490	2540	2500	2520	2320	2310	2320	2470	2400	2440
28	2500	2480	2490	2540	2410	2500	2330	2320	2330	2450	2370	2430
29	2500	2470	2490	2510	2420	2480	2320	2290	2310	2440	2220	2330
30	2570	2470	2490	2440	2370	2400	2350	2320	2330	2210	1910	1990
31	2510	2430	2490	---	---	---	2350	2300	2320	2110	1820	2000
MONTH	2630	2330	2520	2570	2040	2420	2440	2120	2320	2470	1820	2280

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1900	1540	1690	2450	2360	2420	2550	2530	2540	2540	2500	2520
2	2200	1960	2120	2540	2460	2510	2540	2520	2530	2520	2500	2510
3	2380	2250	2320	2550	2490	2530	2550	2520	2540	2520	2420	2480
4	2580	2430	2520	2560	2530	2550	2560	2540	2550	2520	2490	2500
5	2610	2550	2580	2540	2480	2520	2560	2540	2550	2520	2490	2510
6	2710	2610	2660	2470	2300	2370	2570	2550	2560	2520	2490	2510
7	2730	2650	2690	2300	1860	2050	2580	2550	2570	2520	2490	2510
8	2810	2700	2750	2040	1910	1990	2570	2550	2570	2520	2490	2510
9	2810	2770	2780	2120	2040	2100	2580	2560	2570	2530	2510	2520
10	2860	2790	2820	2150	2100	2120	2590	2570	2580	2530	2500	2520
11	2870	2770	2820	2170	2140	2150	2590	2540	2570	2520	2500	2510
12	2820	2730	2760	2180	2090	2140	2550	2520	2530	2520	2500	2510
13	2780	2730	2760	2160	2130	2150	2550	2540	2540	2530	2500	2510
14	2770	2720	2750	2180	2150	2170	2560	2550	2550	2520	2500	2510
15	2790	2690	2740	2200	2170	2190	2570	2550	2560	2530	2510	2520
16	2710	2670	2690	2240	2200	2210	2570	2550	2560	2520	2510	2520
17	2730	2700	2710	2280	2230	2260	2580	2560	2570	2530	2500	2520
18	2730	2700	2720	2300	2280	2290	2590	2560	2580	2530	2500	2520
19	2770	2710	2740	2320	2290	2300	2580	2550	2560	2550	2510	2530
20	2810	2720	2770	2320	2290	2310	2570	2550	2560	2540	2510	2520
21	2760	2710	2740	2360	2290	2320	2590	2570	2580	2530	2300	2420
22	2740	2720	2730	2380	2330	2360	2590	2570	2580	2470	2390	2440
23	2750	2620	2690	2380	2330	2370	2610	2590	2600	2500	2470	2480
24	2670	2130	2470	2330	2090	2230	2620	2600	2610	2520	2490	2500
25	2170	2090	2130	2370	2310	2330	2600	2490	2540	2550	2500	2520
26	2150	2120	2140	2440	2360	2400	2590	2560	2580	2560	2510	2530
27	2340	2180	2240	2470	2450	2460	2600	2500	2550	2570	2520	2540
28	2460	2350	2400	2490	2470	2480	2570	2520	2530	2620	2530	2560
29	---	---	---	2510	2480	2500	2540	2490	2520	2640	2510	2560
30	---	---	---	2530	2490	2510	2520	2480	2500	2660	2530	2590
31	---	---	---	2530	2510	2520	---	---	---	2680	2540	2600
MONTH	2870	1540	2570	2560	1860	2320	2620	2480	2560	2680	2300	2520
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	2690	2550	2610	2750	2550	2630	2890	2610	2730	2770	2690	2730
2	2690	2560	2620	2650	2560	2590	2930	2640	2760	2890	2670	2750
3	2680	2570	2620	2670	2530	2590	2940	2650	2770	2970	2700	2800
4	2640	2530	2580	2610	2500	2550	2930	2660	2770	3000	2740	2840
5	2640	2550	2590	2600	2510	2550	2940	2660	2770	2970	2750	2850
6	2650	2550	2600	2630	2510	2560	2940	2650	2780	2970	2770	2850
7	2600	2550	2570	2680	2530	2590	2960	2660	2780	3000	2780	2860
8	2580	2510	2540	2630	2550	2580	2960	2680	2790	2960	2760	2850
9	2610	2520	2560	2660	2520	2580	2980	2680	2800	2890	2740	2820
10	2640	2540	2580	2620	2500	2560	2940	2690	2790	2840	2730	2780
11	2660	2550	2600	2590	2490	2520	2930	2690	2790	2870	2730	2800
12	2660	2570	2610	2600	2510	2550	2840	2620	2720	2890	2740	2800
13	2670	2590	2620	2650	2520	2570	2880	2630	2730	2850	2750	2790
14	2640	2590	2610	2660	2550	2600	2930	2670	2770	2800	2700	2750
15	2650	2580	2610	2650	2560	2590	2970	2720	2820	2780	2640	2710
16	2650	2570	2610	2570	2520	2550	2950	2720	2820	2700	2620	2650
17	2670	2570	2610	2570	2520	2550	2950	2720	2820	2710	2300	2650
18	2630	2570	2600	2640	2560	2590	2950	2720	2820	2590	2270	2470
19	2610	2560	2580	2650	2560	2600	2940	2740	2830	2670	2590	2630
20	2600	2550	2570	2680	2610	2640	2950	2750	2840	2680	2640	2660
21	2600	2540	2570	2670	2620	2650	2940	2750	2820	2700	2630	2660
22	2640	2550	2590	2660	2600	2630	2920	2730	2810	2710	2640	2670
23	2660	2570	2610	2670	2590	2620	2930	2740	2810	2690	1840	2450
24	2760	2600	2660	2680	2620	2650	2900	2760	2810	2440	2110	2340
25	2770	2560	2650	2700	2630	2670	2880	2720	2780	2520	2460	2480
26	2680	2570	2620	2690	2630	2660	3080	2730	2860	2510	2450	2470
27	2740	2550	2630	2660	2610	2640	3080	2750	2880	2480	2400	2450
28	2760	2560	2650	2640	2600	2620	3090	2760	2890	2450	2400	2430
29	2640	2560	2590	2660	2600	2630	3020	2740	2860	2460	2300	2410
30	2700	2530	2600	2850	2630	2710	2890	2720	2790	2560	2430	2510
31	---	---	---	2870	2610	2710	2830	2700	2750	---	---	---
MONTH	2770	2510	2600	2870	2490	2600	3090	2610	2800	3000	1840	2660
YEAR	3090	1540	2510									

12433556 MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.0	8.0	8.0	8.0	7.9	8.0	7.6	7.5	7.5	8.1	8.0	8.1
2	8.0	8.0	8.0	8.0	7.9	8.0	7.6	7.5	7.6	8.0	7.9	7.9
3	8.0	8.0	8.0	8.0	7.9	8.0	7.6	7.6	7.6	---	---	---
4	6.0	7.9	8.0	8.0	7.8	7.9	7.7	7.6	7.6	---	---	---
5	8.0	7.9	8.0	8.0	7.9	7.9	7.7	7.7	7.7	---	---	---
6	8.0	8.0	8.0	7.9	7.9	7.9	---	---	---	---	---	---
7	8.0	7.9	8.0	8.0	7.9	7.9	---	---	---	---	---	---
8	7.9	7.9	7.9	8.0	7.9	7.9	---	---	---	---	---	---
9	7.9	7.9	7.9	8.0	7.8	7.9	---	---	---	---	---	---
10	7.9	7.9	7.9	7.9	7.9	7.9	---	---	---	---	---	---
11	8.0	7.9	7.9	7.9	7.7	7.8	---	---	---	---	---	---
12	7.9	7.9	7.9	7.8	7.6	7.7	---	---	---	---	---	---
13	7.9	7.9	7.9	7.8	7.7	7.7	7.3	7.1	7.2	---	---	---
14	8.0	7.9	7.9	7.8	7.6	7.7	7.1	6.9	7.0	---	---	---
15	8.0	7.9	8.0	7.8	7.7	7.8	6.9	6.8	6.9	---	---	---
16	8.0	7.9	8.0	7.9	7.8	7.9	6.8	6.7	6.7	---	---	---
17	8.0	7.9	8.0	7.9	7.9	7.9	6.6	6.6	6.6	---	---	---
18	8.0	7.9	7.9	7.9	7.9	7.9	6.6	6.6	6.6	---	---	---
19	8.0	7.9	8.0	7.9	7.8	7.9	6.6	6.6	6.6	---	---	---
20	8.0	8.0	8.0	7.9	7.8	7.8	6.8	6.6	6.7	---	---	---
21	8.0	8.0	8.0	7.8	7.7	7.8	6.9	6.8	6.8	---	---	---
22	8.1	7.9	8.0	7.8	7.6	7.8	7.0	6.9	6.9	---	---	---
23	8.0	7.9	8.0	7.6	7.5	7.5	7.2	7.0	7.1	---	---	---
24	8.0	7.9	8.0	7.4	7.3	7.4	7.5	7.2	7.3	---	---	---
25	8.0	7.9	8.0	7.4	7.3	7.4	7.6	7.5	7.6	---	---	---
26	8.0	7.9	8.0	7.5	7.4	7.4	7.6	7.5	7.6	---	---	---
27	8.0	7.8	7.9	7.6	7.4	7.5	7.7	7.6	7.6	---	---	---
28	7.9	7.7	7.8	7.6	7.5	7.5	7.9	7.7	7.9	---	---	---
29	7.8	7.7	7.7	7.6	7.6	7.6	8.1	7.9	8.0	---	---	---
30	7.9	7.7	7.8	7.6	7.6	7.6	8.1	8.1	8.1	---	---	---
31	8.0	7.9	7.9	---	---	---	8.1	8.0	8.1	---	---	---
MONTH	8.1	7.7	8.0	8.0	7.3	7.8	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.5	4.7	---	---	---	5.6	5.4	5.5	7.1	6.8	6.9
2	4.5	4.5	4.5	---	---	---	5.7	5.5	5.6	7.0	6.9	6.9
3	4.5	4.5	4.5	---	---	---	5.8	5.5	5.6	7.0	6.8	6.9
4	4.5	4.5	4.5	---	---	---	5.7	5.6	5.7	7.0	6.9	6.9
5	4.6	4.5	4.5	---	---	---	5.8	5.7	5.7	6.9	6.9	6.9
6	4.6	4.5	4.6	4.8	4.7	4.8	5.8	5.7	5.8	7.0	6.9	6.9
7	4.6	4.6	4.6	5.1	4.8	5.0	5.8	5.8	5.8	7.0	6.9	7.0
8	4.6	4.6	4.6	5.0	4.9	4.9	5.9	5.8	5.9	7.0	6.9	7.0
9	4.6	4.6	4.6	4.9	4.9	4.9	5.9	5.8	5.9	7.0	6.9	6.9
10	4.6	4.6	4.6	4.9	4.9	4.9	6.0	5.9	5.9	6.9	6.9	6.9
11	4.6	4.6	4.6	4.9	4.9	4.9	6.0	6.0	6.0	6.9	6.9	6.9
12	4.6	4.6	4.6	4.9	4.9	4.9	6.0	6.0	6.0	6.9	6.9	6.9
13	4.6	4.6	4.6	4.9	4.9	4.9	6.1	6.1	6.1	6.9	6.9	6.9
14	4.6	4.6	4.6	4.9	4.9	4.9	6.2	6.1	6.1	6.9	6.9	6.9
15	4.6	4.6	4.6	4.9	4.9	4.9	6.2	6.2	6.2	6.9	6.9	6.9
16	4.6	4.6	4.6	4.9	4.9	4.9	6.3	6.2	6.3	6.9	6.9	6.9
17	4.7	4.6	4.7	5.0	4.9	5.0	6.3	6.3	6.3	6.9	6.9	6.9
18	4.7	4.7	4.7	5.0	5.0	5.0	6.4	6.3	6.4	6.9	6.9	6.9
19	4.7	4.7	4.7	5.0	5.0	5.0	6.5	6.4	6.4	6.9	6.8	6.9
20	4.7	4.7	4.7	5.1	5.0	5.0	6.4	6.4	6.4	6.9	6.8	6.9
21	4.7	4.7	4.7	5.0	5.0	5.0	6.5	6.4	6.5	7.4	7.2	7.3
22	4.7	4.7	4.7	5.1	5.0	5.0	6.6	6.5	6.5	7.3	7.3	7.3
23	4.8	4.7	4.7	5.1	5.0	5.1	6.6	6.6	6.6	7.3	7.3	7.3
24	4.8	4.7	4.8	5.7	5.1	5.4	6.6	6.6	6.6	7.3	7.2	7.3
25	4.8	4.8	4.8	5.4	5.3	5.3	6.7	6.6	6.7	7.3	7.2	7.3
26	4.9	4.8	4.8	5.3	5.2	5.3	6.7	6.7	6.7	7.3	7.2	7.3
27	---	---	---	5.3	5.2	5.3	6.8	6.8	6.8	7.3	7.2	7.3
28	---	---	---	5.4	5.2	5.3	6.8	6.8	6.8	7.4	7.3	7.3
29	---	---	---	5.4	5.3	5.4	6.9	6.8	6.9	7.5	7.3	7.4
30	---	---	---	5.5	5.3	5.4	6.9	6.9	6.9	7.5	7.3	7.4
31	---	---	---	5.6	5.4	5.5	---	---	---	7.4	7.3	7.4
MONTH	---	---	---	---	---	---	6.9	5.4	6.2	7.5	6.8	7.1

SPOKANE RIVER BASIN

12433556 MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.4	7.2	7.4	7.6	7.4	7.6	7.7	7.2	7.5	7.9	7.7	7.8
2	7.4	7.3	7.4	7.7	7.6	7.6	7.7	7.2	7.5	7.9	7.6	7.8
3	7.5	7.3	7.4	7.7	7.5	7.6	7.7	7.2	7.5	7.9	7.6	7.8
4	7.5	7.3	7.4	7.7	7.6	7.7	7.7	7.2	7.5	7.9	7.5	7.7
5	7.5	7.4	7.4	7.7	7.6	7.7	7.7	7.3	7.5	7.9	7.6	7.8
6	7.5	7.3	7.4	7.7	7.6	7.7	7.7	7.3	7.5	7.9	7.6	7.7
7	7.5	7.4	7.5	7.7	7.5	7.6	7.7	7.3	7.5	7.9	7.5	7.7
8	7.5	7.4	7.5	7.7	7.6	7.6	7.7	7.2	7.5	7.9	7.6	7.8
9	7.5	7.4	7.5	7.7	7.5	7.6	7.7	7.2	7.5	7.9	7.6	7.8
10	7.5	7.3	7.4	7.8	7.6	7.7	7.7	7.3	7.5	7.9	7.6	7.8
11	7.5	7.3	7.4	7.8	7.6	7.7	7.7	7.4	7.6	8.0	7.6	7.8
12	7.5	7.3	7.4	7.8	7.6	7.7	7.8	7.5	7.7	7.9	7.6	7.8
13	7.5	7.3	7.4	7.8	7.6	7.7	7.8	7.5	7.7	8.0	7.8	7.9
14	7.5	7.4	7.4	7.7	7.6	7.7	7.8	7.3	7.6	8.0	7.9	8.0
15	7.4	7.3	7.4	7.7	7.6	7.6	7.8	7.3	7.6	8.1	8.0	8.0
16	7.4	7.3	7.4	7.8	7.6	7.7	7.8	7.3	7.6	8.1	8.0	8.0
17	7.5	7.3	7.4	7.7	7.7	7.7	7.7	7.3	7.6	8.0	7.8	8.0
18	7.5	7.4	7.4	7.8	7.6	7.7	7.7	7.3	7.6	7.8	7.7	7.7
19	7.5	7.3	7.4	7.7	7.6	7.7	7.7	7.3	7.6	7.7	7.6	7.7
20	7.5	7.5	7.5	7.7	7.5	7.6	7.8	7.3	7.6	7.7	7.6	7.7
21	7.5	7.4	7.5	7.7	7.6	7.7	7.7	7.3	7.5	7.7	7.6	7.6
22	7.5	7.4	7.5	7.7	7.6	7.7	7.6	7.4	7.5	7.6	7.6	7.6
23	7.5	7.3	7.4	7.7	7.5	7.6	7.6	7.3	7.5	8.0	7.6	7.7
24	7.6	7.4	7.5	7.7	7.5	7.6	7.6	7.4	7.5	7.7	7.6	7.7
25	7.6	7.4	7.6	7.7	7.5	7.6	7.6	7.4	7.5	7.7	7.6	7.7
26	7.6	7.5	7.6	7.8	7.6	7.7	7.7	7.2	7.4	7.7	7.6	7.6
27	7.7	7.4	7.6	7.7	7.6	7.7	7.8	7.2	7.6	7.7	7.6	7.7
28	7.7	7.4	7.6	7.6	7.5	7.6	7.8	7.2	7.6	7.7	7.7	7.7
29	7.7	7.6	7.6	7.7	7.5	7.6	7.8	7.4	7.6	7.8	7.2	7.7
30	7.7	7.5	7.6	7.6	7.3	7.5	7.8	7.6	7.7	7.8	7.6	7.7
31	---	---	---	7.7	7.3	7.5	7.9	7.7	7.8	---	---	---
MONTH	7.7	7.2	7.5	7.8	7.3	7.7	7.9	7.2	7.6	8.1	7.2	7.8

12433556 MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	6.5	8.0	7.0	4.0	5.5	.0	.0	.0	1.0	.5	.5
2	10.5	7.5	9.0	7.5	5.5	6.5	.5	.0	.0	1.5	.5	1.0
3	10.0	7.0	8.5	8.0	6.5	7.5	.5	.5	.5	1.5	1.5	1.5
4	9.0	5.5	7.5	8.0	5.0	7.0	1.0	.5	1.0	1.0	.5	.5
5	10.0	7.0	8.5	5.0	3.5	4.5	1.0	.5	1.0	1.5	1.0	1.0
6	9.5	7.5	9.0	5.5	3.5	4.5	2.0	.5	1.5	2.0	1.5	2.0
7	7.5	4.5	6.5	5.0	3.5	4.0	2.0	2.0	2.0	2.0	1.5	1.5
8	6.0	3.0	4.5	4.5	2.5	3.5	2.5	1.5	2.0	2.0	1.0	2.0
9	6.0	3.0	4.5	2.0	.0	1.5	1.5	.5	1.0	2.5	2.0	2.0
10	7.5	5.5	6.5	1.5	.0	1.0	.5	.0	.0	2.5	2.0	2.5
11	8.5	6.0	7.0	.5	.0	.0	.5	.0	.5	2.5	1.5	2.0
12	7.5	4.5	6.0	.0	.0	.0	1.0	.0	.5	2.0	1.0	1.5
13	7.5	4.0	5.5	.0	.0	.0	.0	.0	.0	1.5	.5	1.0
14	9.0	5.5	7.0	.0	.0	.0	.0	.0	.0	2.0	1.0	1.5
15	10.0	7.5	8.5	1.0	.0	.5	.0	.0	.0	2.0	1.5	2.0
16	10.0	7.0	8.5	1.5	1.0	1.5	.5	.0	.0	2.5	1.5	2.0
17	8.5	5.0	6.5	2.0	1.5	2.0	.5	.0	.5	2.5	2.5	2.5
18	8.5	5.5	7.0	2.0	.0	1.5	.5	.0	.5	3.0	2.0	2.5
19	8.5	6.5	7.5	.5	.0	.0	1.5	.5	1.0	3.5	3.0	3.0
20	9.5	6.5	8.0	1.0	.0	.0	2.0	1.5	1.5	3.5	3.0	3.0
21	8.5	7.0	8.5	.0	.0	.0	2.0	1.0	1.5	3.0	1.5	2.0
22	8.0	5.5	7.0	.0	.0	.0	1.0	.5	1.0	3.0	1.5	2.0
23	8.0	5.5	7.0	.0	.0	.0	1.0	.5	1.0	2.5	.5	2.0
24	8.0	6.0	7.0	.0	.0	.0	1.0	1.0	1.0	2.5	1.5	2.0
25	9.0	6.0	8.0	.0	.0	.0	1.5	1.0	1.5	2.0	1.5	2.0
26	7.5	5.0	6.0	.0	.0	.0	1.5	1.5	1.5	1.5	.5	1.0
27	9.0	5.5	7.5	.0	.0	.0	1.5	1.5	1.5	2.5	1.0	2.0
28	8.5	4.5	6.5	.0	.0	.0	1.5	1.0	1.5	3.0	2.5	3.0
29	6.0	3.0	4.5	.0	.0	.0	1.0	.5	1.0	3.0	2.0	3.0
30	6.5	3.5	5.0	.5	.0	.0	.5	.5	.5	3.5	3.0	3.5
31	5.0	2.5	4.0	---	---	---	.5	.5	.5	4.0	3.5	3.5
MONTH	10.5	2.5	7.0	8.0	.0	1.5	2.5	.0	1.0	4.0	.5	2.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	3.5	4.0	7.5	5.5	6.5	9.0	6.5	7.5	11.5	7.0	9.0
2	5.5	4.5	5.0	7.5	6.0	6.5	10.0	6.0	7.5	12.0	9.0	10.0
3	6.0	5.5	5.5	7.0	6.0	6.5	10.0	6.0	8.0	11.0	9.0	10.0
4	6.5	5.5	6.0	7.5	7.0	7.0	10.0	7.5	8.5	11.5	8.0	9.5
5	6.5	5.5	6.0	8.0	6.5	7.5	11.0	6.5	8.5	10.0	6.5	8.0
6	6.0	4.5	5.5	7.5	7.0	7.0	11.5	6.5	8.5	12.0	6.5	9.0
7	6.0	4.5	5.0	7.0	5.5	6.5	12.0	7.0	9.0	12.0	7.0	9.0
8	5.5	4.0	4.5	7.5	5.5	6.0	12.5	7.5	9.5	13.0	7.0	9.5
9	6.0	4.0	5.0	7.5	6.5	7.0	11.5	7.5	9.5	11.0	7.0	9.0
10	6.0	4.0	5.0	8.0	6.0	7.0	11.5	7.0	8.5	10.0	7.0	8.5
11	5.5	4.0	5.0	7.5	6.5	7.0	8.5	6.0	7.5	9.5	7.0	8.0
12	6.0	3.5	5.0	7.0	6.5	7.0	8.5	7.0	7.5	9.5	6.0	8.5
13	5.0	3.5	4.5	8.5	6.0	7.0	8.5	6.5	7.5	10.5	6.5	9.0
14	5.0	3.5	4.5	7.5	6.5	7.0	10.5	6.5	8.5	10.0	5.5	7.5
15	5.5	2.5	4.5	7.5	5.5	6.5	10.0	7.5	9.0	11.5	5.5	8.5
16	6.5	5.5	6.0	8.0	6.5	7.0	9.5	7.0	8.5	12.0	6.0	9.0
17	6.0	4.5	5.0	8.0	6.0	7.0	11.0	6.0	8.0	12.5	8.5	10.5
18	5.5	3.0	4.0	8.0	6.0	7.0	10.5	6.0	8.0	14.0	10.0	11.5
19	4.0	2.0	3.0	9.0	7.0	7.5	10.5	7.5	9.0	14.5	9.5	12.0
20	4.5	2.0	3.5	9.5	6.5	8.0	11.0	8.5	9.5	12.0	10.5	11.5
21	5.0	3.0	4.0	10.0	7.0	8.5	12.5	9.0	11.0	10.0	8.0	9.5
22	5.5	4.5	5.0	9.0	6.0	7.5	11.0	8.5	10.0	11.0	6.5	8.5
23	5.5	5.0	5.5	9.0	6.5	7.5	9.5	6.5	8.0	11.5	6.5	9.0
24	6.5	5.0	5.5	9.0	6.5	8.0	9.5	5.5	7.5	12.5	8.0	10.5
25	6.0	4.5	5.0	9.0	6.0	7.5	10.0	6.5	8.0	14.5	9.5	12.0
26	7.0	5.0	5.5	10.0	7.5	8.5	9.5	5.5	7.5	15.5	10.5	13.0
27	7.0	5.0	5.5	10.5	7.0	9.0	10.0	8.0	8.5	16.0	12.0	13.5
28	7.5	5.0	6.0	11.0	8.0	9.5	9.5	6.5	7.5	16.0	11.5	13.5
29	---	---	---	10.0	7.0	8.5	9.5	6.0	7.5	16.5	12.0	14.0
30	---	---	---	10.0	6.5	8.5	10.5	5.0	7.5	16.5	12.0	14.0
31	---	---	---	9.0	5.5	7.0	---	---	---	16.5	12.0	14.0
MONTH	7.5	2.0	5.0	11.0	5.5	7.5	12.5	5.0	8.5	16.5	5.5	10.5

SPOKANE RIVER BASIN

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12433558 BLUE CREEK BELOW MIDNITE MINE DRAINAGE NEAR WELLPINIT, WA

LOCATION.--Lat 47°55'27", long 118°06'20", in NW¼SE¼ sec. 13, T.28 N., R.37 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, 100 ft downstream from mouth of unnamed tributary, and 2.4 mi southwest of Turtle Lake.

DRAINAGE AREA.--7.3 mi².

PERIOD OF RECORD.--1980, June 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1984 to current year.

pH: June 1984 to current year.

WATER TEMPERATURES: July 1984 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1984. Digital recorder set for one-hour-interval punch.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,090 microsiemens Feb. 15, 1986; minimum recorded, 156 microsiemens Apr. 23, 1985.

pH: Maximum recorded, 8.2 units Aug. 14-17, 1985; minimum recorded, 5.2 units Feb. 27, 1986, but may have been lower during period of missing record Feb. 28 to Mar. 26, 1986.

WATER TEMPERATURES: Maximum, 21.5°C July 9, 10, 1985; minimum, 0.0°C during many days in 1985, 1986.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 2,090 microsiemens Feb. 15; minimum recorded, 337 microsiemens Mar. 23.

pH: Maximum recorded, 8.1 units during several days in April, May; minimum recorded, 5.2 units Feb. 27, but may have been lower during period of missing record Feb. 28 to Mar. 26.

WATER TEMPERATURES: Maximum, 19.5°C June 1; minimum, 0.0°C during many days from November to January.

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1470	1380	1430	1360	1320	1330	1310	1270	1300	1260	1210	1230
2	1560	1340	1420	1360	950	1310	1300	1220	1270	1260	1220	1240
3	1470	1390	1430	1330	1150	1300	1240	1210	1230	1240	1190	1220
4	1490	1420	1450	1260	1070	1120	1230	1200	1210	1230	1200	1220
5	1490	1360	1420	1330	1140	1260	1220	1200	1210	1260	1210	1230
6	1450	1270	1400	1360	1310	1350	1230	1060	1160	1220	1200	1210
7	1470	1270	1380	1380	1340	1360	1170	1080	1130	1230	1200	1210
8	1480	1440	1460	1380	1290	1350	1170	1120	1150	1230	1210	1220
9	1480	1420	1450	1260	1040	1180	1210	1170	1190	1230	1110	1170
10	1440	1400	1420	1350	1260	1310	1250	1210	1230	1190	1060	1150
11	1420	1230	1310	1470	1280	1360	1240	1200	1220	1210	1160	1190
12	1480	1340	1410	1550	1380	1480	1230	1190	1200	1220	1190	1200
13	1440	1400	1420	1530	1370	1460	1290	1230	1260	1230	1210	1220
14	1430	1380	1410	1520	1380	1460	1280	1230	1260	1240	1230	1230
15	1440	1380	1400	1470	1270	1370	1260	1200	1230	1240	1230	1230
16	1450	1390	1410	1270	1200	1240	1230	1210	1220	1250	978	1160
17	1490	1410	1440	1260	1210	1240	1240	1220	1220	1150	960	1090
18	1440	1390	1420	1250	1210	1230	1250	1220	1230	1180	1100	1130
19	1440	1380	1410	1260	1240	1250	1220	1190	1210	1170	1110	1140
20	1450	1390	1410	1260	1200	1250	1210	1180	1190	1240	1170	1220
21	1420	1380	1400	1300	1270	1280	1210	1190	1200	1340	1250	1290
22	1420	1230	1320	1300	1230	1280	1220	1200	1210	1360	1340	1350
23	1390	1280	1360	1330	1270	1300	1220	1200	1210	1380	1260	1310
24	1400	1250	1330	1290	1250	1270	1220	1210	1210	1340	1300	1320
25	1380	1290	1340	1320	1270	1290	1230	1210	1220	1330	1310	1320
26	1410	1380	1390	1310	1280	1290	1230	1210	1220	1360	1310	1340
27	1420	1370	1390	1300	1280	1290	1230	1200	1210	1340	1320	1330
28	1400	1380	1390	1320	1290	1310	1230	1210	1220	1340	1320	1340
29	1430	1390	1410	1310	1270	1290	1240	1220	1230	1360	1200	1280
30	1420	1380	1400	1270	1250	1260	1250	1230	1240	1180	1030	1080
31	1410	1250	1370	---	---	---	1260	1230	1240	1260	1130	1190
MONTH	1560	1230	1400	1550	950	1300	1310	1060	1220	1380	960	1230

SPOKANE RIVER BASIN

12433558 BLUE CREEK BELOW MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1610	1140	1310	1420	1320	1370	402	392	394	630	610	617
2	1880	1640	1780	1420	1220	1330	402	392	394	640	620	628
3	1820	1720	1770	1270	668	1110	402	392	396	639	619	630
4	1970	1830	1920	680	600	644	412	392	402	649	629	641
5	1930	1810	1880	672	652	661	412	392	402	658	628	646
6	1980	1880	1930	664	644	654	412	402	407	668	628	651
7	2000	1950	1970	666	416	554	422	402	408	668	608	650
8	2050	1950	1990	458	408	430	422	402	411	667	637	653
9	2020	1960	1980	490	440	468	422	402	412	677	647	666
10	2020	1950	1990	592	442	499	422	412	413	687	667	677
11	2040	1960	1990	473	423	443	422	412	414	686	666	676
12	1990	1940	1960	425	395	411	412	402	406	696	666	683
13	1970	1900	1940	407	377	396	411	401	405	695	686	692
14	1940	1910	1920	459	359	390	421	401	412	705	675	695
15	2090	1850	1950	411	381	395	421	411	418	715	675	696
16	1900	1830	1870	393	373	384	471	411	425	714	674	698
17	1890	1860	1870	385	375	383	531	471	504	724	684	705
18	1910	1860	1880	397	377	385	551	511	528	744	684	712
19	1950	1830	1900	389	369	377	531	511	528	753	693	726
20	1980	1800	1890	381	371	377	561	521	548	763	713	739
21	1850	1770	1810	383	353	370	561	511	539	783	663	725
22	1800	1730	1760	365	345	360	561	541	548	742	702	724
23	1760	1570	1660	377	337	359	571	551	558	752	712	735
24	1730	1390	1550	419	359	374	591	571	578	751	711	732
25	1550	1260	1450	371	361	367	590	571	581	771	711	740
26	1560	1410	1490	383	363	373	610	590	597	781	711	749
27	1580	1360	1480	393	373	380	600	590	597	780	710	753
28	1480	1310	1400	393	373	384	620	600	608	800	710	759
29	---	---	---	393	373	385	620	610	615	792	722	762
30	---	---	---	393	383	386	620	610	615	804	734	775
31	---	---	---	403	383	391	---	---	---	816	746	788
MONTH	2090	1140	1800	1420	337	509	620	392	482	816	608	701
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	838	758	801	1130	968	1050	1440	1150	1300	1510	1340	1420
2	850	760	811	1120	1030	1090	1430	1140	1300	1530	1250	1400
3	852	762	815	1160	1030	1090	1520	1100	1310	1510	1220	1370
4	914	774	830	1160	1060	1110	1530	1060	1280	1540	1160	1380
5	856	786	833	1150	1030	1100	1460	1060	1280	1540	1260	1400
6	918	788	845	1140	1010	1090	1360	1040	1230	1520	1250	1410
7	890	820	861	1180	1010	1100	1400	1030	1220	1640	1250	1420
8	882	822	855	1200	1060	1130	1430	997	1220	1550	1260	1410
9	944	814	863	1180	1040	1120	1430	956	1220	1610	1280	1460
10	906	816	869	1210	1100	1150	1460	1020	1260	1500	1310	1410
11	918	828	881	1200	1070	1140	1500	1040	1270	1510	1270	1400
12	931	821	888	1260	1080	1160	1440	1120	1290	1520	1270	1410
13	963	843	901	1240	1050	1160	1410	1080	1270	1580	1340	1450
14	975	895	926	1250	1070	1180	1390	1030	1230	1500	1320	1410
15	957	877	926	1290	1120	1190	1380	1010	1220	1530	1360	1440
16	1010	859	932	1240	1120	1190	1380	1040	1190	1450	1310	1380
17	1080	871	943	1250	1110	1190	1420	1030	1210	1490	1190	1400
18	1050	913	961	1260	1070	1190	1460	1030	1220	1370	1040	1230
19	1010	905	962	1320	1060	1180	1370	943	1170	1440	1340	1400
20	1040	947	983	1280	1070	1200	1470	1000	1230	1500	1360	1430
21	1040	909	971	1290	1080	1210	1440	1010	1230	---	---	---
22	1150	911	992	1450	1120	1240	1450	1020	1230	---	---	---
23	1090	923	1000	1350	1100	1230	1410	1020	1210	---	---	---
24	1060	925	1010	1360	1100	1230	1410	1080	1240	---	---	---
25	1090	944	1020	1410	1110	1240	1390	1080	1220	---	---	---
26	1120	963	1030	1410	1140	1260	1510	1140	1310	---	---	---
27	1150	942	1030	1360	1140	1250	1530	1150	1360	---	---	---
28	1140	951	1040	1360	1160	1260	1670	1170	1430	---	---	---
29	1160	1030	1060	1360	1180	1270	1510	1200	1380	---	---	---
30	1170	979	1060	1370	1150	1290	1530	1300	1410	1450	1390	1420
31	---	---	---	1410	1150	1300	1480	1290	1390	---	---	---
MONTH	1170	758	930	1450	968	1180	1670	943	1270	---	---	---

12433558 BLUE CREEK BELOW MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.8	7.8	7.9	7.8	7.8	7.5	7.4	7.5	7.6	7.6	7.6
2	7.9	7.8	7.8	7.9	7.8	7.8	7.5	7.4	7.5	7.6	7.6	7.6
3	7.9	7.8	7.8	7.9	7.8	7.8	7.5	7.5	7.5	7.6	7.6	7.6
4	7.9	7.8	7.8	7.9	7.7	7.8	7.5	7.5	7.5	7.6	7.6	7.6
5	7.9	7.8	7.8	7.8	7.8	7.8	7.5	7.5	7.5	7.6	7.6	7.6
6	7.9	7.8	7.8	7.8	7.8	7.8	7.5	7.4	7.5	7.6	7.6	7.6
7	7.8	7.7	7.8	7.8	7.8	7.8	7.5	7.4	7.5	7.6	7.6	7.6
8	7.8	7.7	7.7	7.8	7.8	7.8	7.5	7.5	7.5	7.6	7.6	7.6
9	7.8	7.7	7.7	7.8	7.6	7.7	7.6	7.5	7.5	7.6	7.6	7.6
10	7.8	7.7	7.8	7.8	7.7	7.7	7.5	7.5	7.5	7.7	7.6	7.6
11	7.8	7.7	7.7	7.7	7.5	7.6	7.5	7.5	7.5	7.7	7.7	7.7
12	7.9	7.7	7.7	7.5	7.4	7.5	7.5	7.5	7.5	7.7	7.7	7.7
13	7.8	7.7	7.7	7.5	7.4	7.4	7.5	7.4	7.5	7.7	7.7	7.7
14	7.8	7.7	7.7	7.4	7.3	7.4	7.5	7.4	7.5	7.7	7.7	7.7
15	7.9	7.7	7.8	7.5	7.4	7.4	7.5	7.4	7.5	7.7	7.7	7.7
16	7.9	7.7	7.8	7.5	7.5	7.5	7.5	7.5	7.5	7.7	7.6	7.7
17	7.9	7.7	7.7	7.6	7.5	7.6	7.5	7.5	7.5	7.7	7.6	7.7
18	7.9	7.7	7.7	7.6	7.6	7.6	7.5	7.5	7.5	7.8	7.7	7.7
19	7.8	7.7	7.8	7.6	7.6	7.6	7.5	7.5	7.5	7.8	7.7	7.7
20	7.9	7.7	7.8	7.6	7.6	7.6	7.6	7.5	7.5	7.8	7.7	7.7
21	7.8	7.7	7.8	7.6	7.6	7.6	7.6	7.5	7.6	7.7	7.4	7.6
22	7.8	7.7	7.8	7.6	7.6	7.6	7.6	7.5	7.6	7.3	7.3	7.3
23	7.8	7.7	7.8	7.5	7.5	7.5	7.6	7.5	7.6	7.5	7.1	7.4
24	7.8	7.7	7.7	7.5	7.4	7.4	7.6	7.5	7.6	7.6	7.5	7.5
25	7.8	7.7	7.8	7.5	7.4	7.4	7.6	7.6	7.6	7.6	7.6	7.6
26	7.8	7.7	7.8	7.5	7.4	7.5	7.6	7.6	7.6	7.6	7.5	7.6
27	7.8	7.7	7.7	7.5	7.4	7.5	7.6	7.6	7.6	7.6	7.6	7.6
28	7.8	7.7	7.8	7.5	7.5	7.5	7.6	7.6	7.6	7.7	7.7	7.7
29	7.8	7.7	7.7	7.5	7.4	7.5	7.6	7.6	7.6	7.7	6.9	7.5
30	7.8	7.7	7.8	7.5	7.5	7.5	7.6	7.6	7.6	7.3	7.3	7.3
31	7.8	7.7	7.8	---	---	---	7.6	7.5	7.6	7.3	6.4	6.9
MONTH	7.9	7.7	7.8	7.9	7.3	7.6	7.6	7.4	7.5	7.8	6.4	7.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.4	6.0	6.2	---	---	---	7.7	7.6	7.6	8.1	7.9	8.0
2	5.9	5.8	5.8	---	---	---	7.7	7.6	7.7	8.1	7.9	8.0
3	5.8	5.7	5.7	---	---	---	7.7	7.7	7.7	8.1	7.8	7.9
4	5.6	5.6	5.6	---	---	---	7.8	7.7	7.7	8.1	7.9	8.0
5	5.6	5.5	5.6	---	---	---	7.8	7.7	7.7	8.0	7.8	7.9
6	5.5	5.5	5.5	---	---	---	7.8	7.7	7.8	8.1	7.8	7.9
7	5.5	5.5	5.5	---	---	---	7.8	7.8	7.8	8.0	7.8	7.9
8	5.5	5.5	5.5	---	---	---	7.9	7.8	7.8	8.1	7.8	7.9
9	5.5	5.4	5.5	---	---	---	7.9	7.8	7.8	8.0	7.8	7.9
10	5.5	5.4	5.5	---	---	---	7.9	7.8	7.9	8.0	7.8	7.9
11	5.5	5.4	5.5	---	---	---	7.9	7.8	7.9	8.0	7.8	7.9
12	5.5	5.4	5.5	---	---	---	8.0	7.9	7.9	8.0	7.8	7.9
13	5.6	5.5	5.5	---	---	---	8.0	7.9	8.0	8.0	7.8	7.9
14	5.6	5.5	5.6	---	---	---	8.0	7.9	8.0	8.0	7.8	7.8
15	5.6	5.5	5.6	---	---	---	8.0	7.9	8.0	8.0	7.8	7.8
16	5.6	5.6	5.6	---	---	---	8.0	7.9	8.0	8.0	7.7	7.8
17	5.6	5.6	5.6	---	---	---	8.0	7.9	8.0	8.0	7.8	7.8
18	5.6	5.6	5.6	---	---	---	8.0	7.9	8.0	8.0	7.7	7.8
19	5.7	5.6	5.6	---	---	---	8.1	7.9	8.0	8.0	7.7	7.8
20	5.7	5.6	5.6	---	---	---	8.1	7.9	8.0	7.9	7.7	7.8
21	5.7	5.6	5.6	---	---	---	8.1	7.9	8.0	7.8	7.7	7.8
22	5.6	5.6	5.6	---	---	---	8.0	7.9	8.0	7.9	7.7	7.8
23	5.6	5.6	5.6	---	---	---	8.0	7.9	8.0	7.9	7.7	7.8
24	5.6	5.6	5.6	---	---	---	8.0	7.9	8.0	8.0	7.7	7.8
25	5.5	5.4	5.5	---	---	---	8.1	7.9	8.0	7.9	7.7	7.8
26	5.4	5.3	5.3	7.3	---	---	8.1	7.9	8.0	7.9	7.7	7.8
27	5.2	5.2	5.2	7.4	7.3	7.3	8.1	8.0	8.0	7.9	7.7	7.8
28	---	---	---	7.5	7.4	7.4	8.1	7.9	8.0	7.9	7.7	7.8
29	---	---	---	7.5	7.5	7.5	8.1	7.9	8.0	7.9	7.7	7.8
30	---	---	---	7.6	7.5	7.6	8.1	7.9	8.0	7.9	7.7	7.8
31	---	---	---	7.6	7.5	7.6	---	---	---	8.0	7.8	7.8
MONTH	---	---	---	---	---	---	8.1	7.6	7.9	8.1	7.7	7.9

SPOKANE RIVER BASIN

12433558 BLUE CREEK BELOW MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.7	7.9	7.8	7.9
2	8.0	7.8	7.8	7.8	7.7	7.8	7.9	7.6	7.7	8.0	7.8	7.9
3	7.9	7.8	7.8	7.9	7.7	7.8	7.9	7.6	7.7	8.0	7.8	7.8
4	8.0	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.7	7.9	7.7	7.8
5	8.0	7.8	7.8	7.9	7.7	7.8	7.9	7.6	7.8	8.0	7.8	7.8
6	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.7	7.9	7.8	7.8
7	7.9	7.7	7.8	7.9	7.7	7.7	7.9	7.6	7.7	7.9	7.7	7.8
8	7.9	7.7	7.8	7.8	7.7	7.7	7.9	7.6	7.7	8.0	7.8	7.8
9	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.7	7.9	7.8	7.8
10	7.9	7.7	7.8	7.8	7.7	7.7	7.9	7.6	7.7	8.0	7.8	7.9
11	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.8	7.9	7.8	7.8
12	7.9	7.7	7.8	7.8	7.7	7.8	7.9	7.7	7.8	7.9	7.8	7.8
13	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.8	7.8
14	7.8	7.7	7.8	7.9	7.7	7.7	7.9	7.6	7.8	7.9	7.8	7.8
15	7.9	7.7	7.8	7.8	7.7	7.7	7.9	7.6	7.8	7.9	7.8	7.8
16	7.9	7.7	7.8	7.8	7.7	7.8	7.9	7.6	7.8	7.9	7.8	7.8
17	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.8	7.9	7.7	7.8
18	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.8	7.9	7.8	7.8
19	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.6	7.8	7.9	7.7	7.8
20	7.8	7.7	7.8	7.9	7.7	7.7	8.0	7.6	7.8	7.8	7.7	7.8
21	7.9	7.7	7.8	7.9	7.7	7.7	7.9	7.6	7.8	---	7.8	---
22	7.9	7.7	7.8	7.8	7.7	7.7	8.0	7.7	7.8	---	---	---
23	7.9	7.7	7.8	7.9	7.7	7.8	8.0	7.7	7.8	---	---	---
24	7.9	7.7	7.7	7.9	7.7	7.7	7.9	7.7	7.8	---	---	---
25	7.8	7.7	7.7	7.9	7.6	7.7	8.0	7.7	7.8	---	---	---
26	7.8	7.7	7.7	7.8	7.6	7.7	8.0	7.7	7.8	---	---	---
27	7.8	7.7	7.7	7.9	7.7	7.8	8.0	7.7	7.8	---	---	---
28	7.9	7.7	7.7	7.8	7.7	7.7	7.9	7.7	7.8	---	---	---
29	7.8	7.7	7.8	7.8	7.7	7.7	8.0	7.7	7.8	8.0	---	---
30	7.9	7.7	7.8	7.9	7.7	7.7	8.0	7.8	7.9	7.9	7.8	7.8
31	---	---	---	7.9	7.7	7.7	8.0	7.8	7.9	---	---	---
MONTH	8.0	7.7	7.8	7.9	7.6	7.8	8.0	7.6	7.8	---	---	---

12433558 BLUE CREEK BELOW MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA---Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.5	5.5	6.5	6.0	3.5	4.5	.0	.0	.0	.5	.0	.0
2	10.0	6.0	8.0	7.0	4.5	5.5	.5	.0	.0	.5	.0	.5
3	9.0	6.0	7.5	7.5	5.5	6.5	.5	.5	.5	.5	.5	.5
4	8.0	4.0	6.0	7.0	4.5	6.5	.5	.5	.5	.5	.0	.5
5	9.0	5.5	7.5	4.5	3.0	4.0	1.0	.5	.5	.5	.5	.5
6	9.0	6.5	8.0	4.5	2.5	3.5	1.0	.0	.5	1.0	.5	1.0
7	6.5	3.5	5.5	4.0	2.5	3.5	1.0	.5	1.0	1.0	.5	.5
8	5.0	2.0	3.5	4.0	2.0	3.0	1.0	.5	1.0	1.0	.5	1.0
9	5.0	2.0	3.5	1.0	.0	1.0	.5	.5	.5	1.0	.5	1.0
10	6.5	4.0	5.5	1.0	.0	.5	.0	.0	.0	1.0	.5	1.0
11	7.5	5.0	6.0	.5	.0	.0	.0	.0	.0	1.0	.5	1.0
12	6.5	3.5	5.0	.0	.0	.0	.5	.0	.5	1.0	.5	.5
13	6.5	3.0	4.5	.0	.0	.0	.0	.0	.0	.5	.0	.5
14	8.0	4.5	6.0	.0	.0	.0	.0	.0	.0	1.0	.5	.5
15	9.0	6.0	7.5	.5	.0	.5	.0	.0	.0	1.0	.5	1.0
16	9.0	6.0	7.5	1.0	.5	1.0	.0	.0	.0	1.0	.5	1.0
17	7.5	4.5	6.0	1.0	1.0	1.0	.0	.0	.0	1.0	1.0	1.0
18	7.5	4.0	6.0	1.0	.5	1.0	.0	.0	.0	1.0	1.0	1.0
19	7.5	5.0	6.5	.5	.0	.5	.5	.0	.5	1.5	1.0	1.5
20	8.5	5.5	7.0	.5	.0	.5	1.0	.5	.5	1.5	1.0	1.5
21	8.0	6.0	7.5	.5	.0	.0	1.0	.5	.5	1.5	.5	1.0
22	7.5	5.0	6.0	.5	.0	.0	.5	.5	.5	1.5	.5	1.0
23	7.0	5.0	6.0	.0	.0	.0	.5	.5	.5	1.0	.0	1.0
24	7.0	5.5	6.5	.0	.0	.0	.5	.5	.5	1.0	.5	1.0
25	8.0	5.0	7.0	.0	.0	.0	.5	.5	.5	1.0	.5	1.0
26	6.5	4.5	5.5	.0	.0	.0	.5	.5	.5	.5	.0	.5
27	8.0	5.0	6.5	.0	.0	.0	.5	.5	.5	1.5	.5	1.0
28	7.0	4.0	5.5	.0	.0	.0	.5	.5	.5	1.5	1.0	1.5
29	4.5	2.0	3.5	.0	.0	.0	.5	.0	.5	1.5	1.0	1.5
30	5.5	2.5	4.0	.5	.0	.5	.0	.0	.0	1.5	1.5	1.5
31	4.5	2.0	3.0	---	---	---	.0	.0	.0	2.0	1.5	2.0
MONTH	10.0	2.0	6.0	7.5	.0	1.5	1.0	.0	.5	2.0	.0	1.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	2.5	2.0	2.5	5.0	3.0	3.5	7.5	5.0	6.0	11.0	6.0	8.5
2	3.5	2.5	3.0	4.5	3.0	3.5	9.0	4.5	6.5	11.0	8.0	9.5
3	3.5	3.0	3.5	4.5	3.0	3.5	8.5	4.5	6.5	10.5	8.0	9.0
4	4.0	3.5	3.5	4.5	3.5	4.0	8.5	5.5	7.0	11.5	7.5	9.5
5	3.5	3.0	3.5	4.5	3.0	4.0	9.5	4.5	7.0	10.0	5.5	8.0
6	3.5	2.5	3.0	4.5	4.0	4.0	10.0	4.5	7.0	12.0	5.5	9.0
7	3.5	2.0	2.5	4.0	3.0	3.5	10.5	5.0	7.5	11.5	6.0	9.0
8	3.0	2.0	2.5	4.0	3.0	3.5	11.0	5.5	8.0	12.5	6.5	9.5
9	3.5	2.0	2.5	4.5	3.5	4.0	10.0	5.5	8.0	11.0	6.5	9.0
10	3.5	2.0	2.5	4.5	2.5	3.5	9.5	5.5	7.5	9.5	6.0	8.0
11	3.0	2.0	2.5	4.5	3.0	4.0	7.0	4.5	6.0	8.5	6.5	7.5
12	3.0	2.0	2.5	5.0	4.0	4.5	7.0	5.5	6.0	9.0	5.5	7.5
13	2.5	1.5	2.0	6.0	3.5	4.5	7.5	5.0	6.5	10.0	7.5	9.0
14	2.5	1.5	2.5	5.5	4.0	5.0	9.0	5.0	7.0	9.5	4.5	7.5
15	3.0	1.0	2.0	6.0	3.5	4.5	8.5	5.5	7.5	11.5	5.0	8.5
16	3.5	3.0	3.0	6.0	4.5	5.0	8.0	6.0	7.0	12.0	5.5	9.0
17	3.0	2.0	2.5	6.0	4.0	5.0	9.0	4.5	7.0	13.5	9.0	11.5
18	3.0	1.0	2.0	5.5	4.0	5.0	9.0	5.0	7.0	15.0	10.5	12.5
19	2.0	1.0	1.5	7.0	5.0	5.5	8.5	6.5	7.5	15.5	10.5	13.0
20	2.5	1.0	1.5	7.5	4.0	6.0	9.0	7.0	8.0	13.5	11.5	12.5
21	2.5	1.5	2.0	7.5	5.5	6.0	10.5	7.5	9.0	11.0	8.0	9.5
22	3.0	2.0	2.5	7.0	4.0	5.5	9.5	8.0	8.5	11.0	6.0	8.5
23	2.5	2.5	2.5	6.5	4.5	5.5	7.5	6.0	7.0	11.5	6.0	9.0
24	3.5	2.5	3.0	7.0	5.0	6.0	7.5	5.0	6.5	13.5	8.0	11.0
25	4.0	2.5	3.0	7.0	4.0	5.5	7.5	6.0	6.5	16.0	10.5	13.5
26	4.5	2.5	3.5	8.5	5.5	6.5	7.5	5.0	6.5	17.5	12.0	15.0
27	5.0	3.0	3.5	9.0	5.0	7.0	8.0	6.5	7.5	18.0	13.5	16.0
28	5.0	3.0	3.5	9.5	6.0	7.5	7.5	6.0	7.0	18.5	13.5	16.0
29	---	---	---	8.5	5.5	7.0	7.5	5.5	6.5	19.0	14.0	16.5
30	---	---	---	8.0	5.5	7.0	8.0	5.0	6.5	19.0	14.5	17.0
31	---	---	---	7.5	4.0	6.0	---	---	---	19.0	14.5	17.0
MONTH	5.0	1.0	2.5	9.5	2.5	5.0	11.0	4.5	7.0	19.0	4.5	11.0

SPOKANE RIVER BASIN

12433558 BLUE CREEK BELOW MIDNITE MINE DRAINAGE, NEAR WELLPINIT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	19.5	15.0	17.5	18.5	13.5	16.0	17.5	11.5	14.5	15.0	12.5	14.0
2	19.0	15.0	17.0	16.5	13.5	15.5	18.0	12.5	15.5	16.0	11.5	13.5
3	18.5	14.0	16.5	15.0	12.5	14.0	19.0	13.0	16.0	16.0	12.0	14.0
4	18.5	15.0	16.5	14.5	12.0	13.0	17.5	12.5	15.0	16.0	11.0	13.5
5	17.0	14.0	15.5	14.5	11.5	13.0	18.0	12.5	15.0	15.0	11.5	13.0
6	16.5	12.5	14.5	16.0	11.5	13.5	18.0	12.0	15.0	13.5	10.5	12.0
7	15.0	13.0	14.0	17.0	11.0	14.0	18.5	12.5	15.5	14.0	9.5	12.0
8	15.0	12.5	14.0	16.5	13.5	14.5	18.5	13.0	15.5	14.0	10.0	11.5
9	16.0	11.5	14.0	17.0	12.5	14.5	19.0	13.5	16.0	13.0	8.5	11.0
10	17.0	12.0	15.0	14.0	11.5	13.0	18.5	14.0	16.0	13.0	10.0	11.5
11	18.0	13.0	15.5	15.0	11.5	13.5	17.5	13.0	15.5	11.5	7.5	9.5
12	17.0	12.5	15.0	14.5	11.5	13.0	18.0	14.0	16.0	11.0	6.5	9.0
13	17.5	12.5	15.0	16.5	11.5	14.0	18.5	13.5	16.0	11.5	10.0	10.5
14	15.0	13.0	14.0	16.5	11.0	13.5	18.5	13.5	16.0	11.5	8.0	10.0
15	15.0	11.5	13.0	13.5	10.0	12.0	17.5	12.5	15.0	10.5	8.0	9.5
16	17.0	13.0	15.0	13.0	9.0	11.0	17.0	11.5	14.5	11.5	8.5	10.0
17	18.0	12.5	15.5	14.0	11.0	12.0	17.0	11.5	14.0	10.5	7.0	9.0
18	15.5	12.0	14.5	15.5	9.5	12.5	16.5	11.0	14.0	10.5	8.5	10.0
19	14.0	9.5	12.0	17.0	11.0	14.0	17.5	12.5	15.0	10.0	6.5	8.5
20	13.0	10.5	11.5	18.0	12.0	14.5	16.0	10.5	13.5	9.5	6.5	8.5
21	15.0	9.5	12.5	18.0	13.5	15.5	16.0	11.5	13.5	---	8.0	---
22	16.0	10.5	13.5	17.5	13.0	15.5	16.5	11.5	14.0	---	---	---
23	18.0	12.5	15.0	17.5	13.0	15.5	16.5	12.0	14.5	---	---	---
24	18.5	13.5	16.0	18.0	13.0	15.5	16.0	13.0	14.5	---	---	---
25	18.5	13.5	16.0	17.5	13.5	15.5	16.5	11.5	14.0	---	---	---
26	16.0	12.0	14.0	16.0	12.0	14.0	17.0	11.5	14.0	---	---	---
27	17.0	12.0	14.5	16.5	12.0	14.0	17.0	12.0	14.5	---	---	---
28	18.0	13.5	15.5	15.0	11.0	13.0	17.5	13.0	15.0	---	---	---
29	15.5	13.5	15.0	15.5	10.5	13.0	17.5	14.0	16.0	10.0	---	---
30	17.0	11.5	14.5	15.5	10.0	12.5	15.5	13.5	14.5	10.5	7.5	9.0
31	---	---	---	16.0	10.5	13.5	15.5	12.5	14.0	---	---	---
MONTH	19.5	9.5	14.5	18.5	9.0	14.0	19.0	10.5	15.0	---	---	---

SPOKANE RIVER BASIN

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12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA

LOCATION.--Lat 47°53'49", long 118°08'05", in NE¼SW¼ sec.27, T.28 N., R.37 E., Stevens County, Hydrologic Unit 17010307, Spokane Indian Reservation, on right bank, 0.75 mi upstream from Franklin D. Roosevelt Lake, and 7.0 mi west of Wellpinit.

DRAINAGE AREA.--19.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,340 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 16 to Jan. 31, Feb. 8-24. Water-discharge records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Refer to station 12433558 for retention pond details.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 93 ft³/s Mar. 7, 1986, gage height, 3.54 ft, from slope-area measurement of peak flow; minimum discharge, no flow for several days in 1985 and 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 93 ft³/s Mar. 7, gage height, 3.54 ft, from slope-area measurement of peak flow; minimum discharge, no flow for several days in August and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.31	.34	.32	4.5	17	11	3.2	1.2	.37	.05	.00
2	.16	.30	.36	.34	5.0	18	10	3.1	1.2	.38	.02	.00
3	.15	.31	.39	.34	5.1	20	9.4	3.1	1.2	.38	.00	.00
4	.15	.55	.41	.35	5.2	20	9.0	3.0	1.2	.37	.00	.00
5	.16	.48	.43	.36	5.6	21	8.4	2.9	1.1	.35	.00	.00
6	.21	.36	.42	.37	5.6	22	7.9	2.8	1.1	.29	.00	.00
7	.24	.33	.42	.39	5.2	49	7.4	2.7	1.1	.26	.00	.00
8	.20	.31	.43	.40	4.5	49	7.0	2.7	1.1	.25	.00	.00
9	.20	.52	.42	.40	4.1	38	6.6	2.6	1.0	.25	.00	.00
10	.21	.36	.43	.38	4.1	35	6.1	2.6	.93	.26	.00	.00
11	.28	.33	.43	.37	4.0	34	6.1	2.6	.86	.30	.00	.00
12	.26	.37	.44	.35	4.0	32	6.7	2.4	.78	.21	.00	.00
13	.23	.30	.45	.34	3.9	31	6.0	2.4	.77	.17	.00	.00
14	.23	.28	.45	.36	3.9	28	5.6	2.3	.80	.14	.00	.03
15	.23	.26	.42	.37	3.9	24	5.4	2.1	.75	.14	.00	.06
16	.23	.25	.40	.39	3.8	23	5.3	2.1	.72	.18	.00	.15
17	.23	.25	.38	.41	3.9	23	5.3	2.0	.68	.17	.00	.15
18	.23	.24	.37	.42	4.0	23	5.0	2.0	.67	.16	.00	.38
19	.23	.24	.35	.45	4.1	21	4.8	2.0	.69	.13	.00	.20
20	.25	.23	.33	.70	4.3	20	4.7	2.0	.70	.12	.00	.15
21	.26	.22	.32	1.0	4.4	20	4.5	2.3	.65	.09	.00	.14
22	.34	.22	.30	1.0	4.5	19	4.5	2.1	.57	.09	.00	.14
23	.32	.21	.29	1.1	4.7	17	4.1	2.0	.53	.09	.00	.30
24	.31	.20	.31	1.1	4.8	22	3.9	1.8	.50	.08	.00	.58
25	.32	.21	.33	1.2	8.1	19	4.3	1.8	.47	.08	.00	.26
26	.26	.22	.35	1.2	16	18	3.9	1.7	.48	.09	.00	.27
27	.26	.26	.33	1.1	17	17	3.8	1.6	.46	.11	.00	.30
28	.27	.28	.32	1.2	17	15	3.6	1.5	.41	.11	.00	.31
29	.24	.30	.30	1.3	---	14	3.4	1.4	.44	.10	.00	.30
30	.27	.32	.29	1.4	---	13	3.3	1.4	.44	.08	.00	.29
31	.27	---	.31	2.9	---	11	---	1.3	---	.07	.00	---
TOTAL	7.35	9.02	11.52	22.31	165.2	733	177.0	69.5	23.50	5.87	.07	4.01
MEAN	.24	.30	.37	.72	5.90	23.6	5.90	2.24	.78	.19	.00	.13
MAX	.34	.55	.45	2.9	17	49	11	3.2	1.2	.38	.05	.58
MIN	.15	.20	.29	.32	3.8	11	3.3	1.3	.41	.07	.00	.00
AC-FT	15	18	23	44	328	1450	351	138	47	12	.1	8.0
CAL YR 1985	TOTAL	623.95	MEAN	1.71	MAX	16	MIN	.00	AC-FT	1240		
WTR YR 1986	TOTAL	1228.35	MEAN	3.37	MAX	49	MIN	.00	AC-FT	2440		

SPOKANE RIVER BASIN

12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1980, June 1984 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1984 to current year.

pH: June 1984 to current year.

WATER TEMPERATURES: June 1984 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1984. Digital recorder set for one-hour-interval punch.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,330 microsiemens Sept. 26, 27, Oct. 1, 1985; minimum, 225 microsiemens Apr. 10, 1985.

pH: Maximum, 9.0 units May 20, 21, 23, 1985; minimum, 7.0 units July 31, 1985.

WATER TEMPERATURES: Maximum, 27.5°C July 9, 10, 1985; minimum, 0.0°C on many days during winters.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,330 microsiemens Oct. 1; minimum, 241 microsiemens Mar. 24.

pH: Maximum, 8.9 units May 1; minimum, 7.2 units Aug. 2.

WATER TEMPERATURES: Maximum, 26.0°C June 1, July 21; minimum, 0.0°C during many days from November to February.

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1330	1300	1310	1110	1090	1100						
2	1310	1290	1300	1110	1080	1090						
3	1310	1290	1300	1100	1070	1090						
4	1310	1280	1300	1050	990	1010						
5	1300	1280	1290	1000	980	984						
6	1290	1230	1270	1010	980	993						
7	1280	1240	1260	1040	1010	1020						
8	1290	1250	1270	1050	1030	1040						
9	1260	1240	1250	1020	960	982						
10	1260	1250	1260	1030	970	997						
11	1240	1200	1210	1110	1020	1060						
12	1240	1210	1220	1170	1120	1140						
13	1220	1190	1200	1220	1140	1180						
14	1210	1190	1200	1230	1200	1220						
15	1210	1190	1200	1220	1170	1190						
16	1210	1190	1200	1170	1100	1150						
17	1210	1190	1200	1100	1000	1040						
18	1210	1190	1200	1010	1000	1010						
19	1210	1200	1200	1020	1010	1010						
20	1200	1180	1190	1020	990	1010						
21	1190	1170	1180	1020	1010	1020						
22	1190	1130	1150	1040	1010	1020						
23	1160	1130	1150	1110	1040	1070						
24	1130	1090	1110	---	---	---						
25	1120	1090	1110	---	---	---						
26	1120	1100	1110	---	---	---						
27	1120	1110	1110	---	---	---						
28	1120	1100	1110	---	---	---						
29	1130	1110	1120	---	---	---						
30	1130	1110	1120	---	---	---						
31	1130	1110	1120	---	---	---						
MONTH	1330	1090	1200	---	---	---						

12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	561	541	553	477	447	462	---	---	---			
2	651	561	595	477	447	466	---	---	---			
3	652	632	636	457	437	450	334	304	319			
4	643	623	628	456	437	445	333	313	321			
5	643	633	636	436	366	392	341	301	323			
6	624	604	615	406	316	373	---	---	---			
7	655	625	635	366	266	311	---	---	---			
8	685	635	661	295	275	283	---	---	---			
9	706	676	689	305	285	296	---	---	---			
10	747	707	721	295	285	294	---	---	---			
11	767	737	747	284	264	274	---	---	---			
12	778	748	763	264	254	260	---	---	---			
13	819	749	790	254	244	253	---	---	---			
14	799	779	791	253	244	252	---	---	---			
15	810	740	786	263	243	253	---	---	---			
16	801	761	784	263	253	255	---	---	---			
17	801	791	795	263	253	254	---	---	---			
18	832	802	807	262	252	256	---	---	---			
19	903	763	833	262	252	257	---	---	---			
20	883	783	850	262	252	257	---	---	---			
21	854	814	828	261	251	256	---	---	---			
22	815	795	802	261	251	258	---	---	---			
23	805	765	786	271	261	263	---	---	---			
24	776	686	737	271	241	254	---	---	---			
25	647	427	520	260	250	253	---	---	---			
26	447	397	415	270	250	262	---	---	---			
27	458	418	435	271	261	269	---	---	---			
28	468	438	455	---	---	---	---	---	---			
29	---	---	---	---	---	---	---	---	---			
30	---	---	---	---	---	---	---	---	---			
31	---	---	---	---	---	---	---	---	---			
MONTH	903	397	689	---	---	---	---	---	---			
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1										---	---	---
2										---	---	---
3										---	---	---
4										---	---	---
5										---	---	---
6										---	---	---
7										---	---	---
8										---	---	---
9										---	---	---
10										---	---	---
11										---	---	---
12										---	---	---
13										---	---	---
14										---	---	---
15										---	---	---
16										---	---	---
17										---	---	---
18										---	---	---
19										---	---	---
20										---	---	---
21										---	---	---
22										---	---	---
23										---	---	---
24										---	---	---
25										---	---	---
26										---	---	---
27										---	---	---
28										---	---	---
29										---	---	---
30										1190	1170	1180
31										---	---	---
MONTH										---	---	---

SPOKANE RIVER BASIN

12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.8	7.4	7.6	8.2	7.9	8.0	7.9	7.8	7.8	8.0	7.9	8.0
2	7.9	7.4	7.6	8.2	7.9	8.1	7.8	7.8	7.8	8.0	7.9	8.0
3	7.8	7.5	7.6	8.3	7.9	8.1	7.9	7.8	7.8	---	---	---
4	7.8	7.5	7.6	8.4	8.1	8.2	7.9	7.9	7.9	---	---	---
5	7.9	7.5	7.6	8.3	8.2	8.2	8.0	7.8	7.9	---	---	---
6	7.7	7.5	7.6	8.3	8.0	8.2	7.9	7.9	7.9	---	---	---
7	7.9	7.5	7.6	8.3	8.0	8.1	7.9	7.8	7.9	---	---	---
8	7.7	7.5	7.6	8.2	8.1	8.2	8.0	7.9	8.0	---	---	---
9	7.7	7.5	7.6	8.2	7.9	8.1	8.0	7.8	8.0	---	---	---
10	7.7	7.4	7.6	8.2	7.9	8.0	8.0	7.8	8.0	---	---	---
11	7.9	7.6	7.7	8.2	7.9	8.0	8.0	7.9	7.9	---	---	---
12	7.8	7.5	7.6	8.0	7.8	7.9	8.0	7.9	7.9	---	---	---
13	7.8	7.5	7.6	8.0	7.7	7.8	8.0	7.9	8.0	---	---	---
14	7.9	7.5	7.7	7.9	7.7	7.8	8.0	7.9	8.0	---	---	---
15	7.9	7.6	7.7	7.8	7.7	7.8	8.0	7.9	7.9	---	---	---
16	7.9	7.6	7.7	8.0	7.7	7.9	8.0	7.8	7.9	---	---	---
17	7.9	7.6	7.7	8.0	7.9	8.0	8.0	7.8	7.9	---	---	---
18	7.8	7.6	7.7	8.0	7.7	8.0	8.0	7.9	7.9	---	---	---
19	7.8	7.5	7.6	8.0	7.8	7.9	8.0	7.9	8.0	---	---	---
20	8.0	7.5	7.7	7.9	7.6	7.8	8.0	7.8	7.9	---	---	---
21	7.9	7.6	7.7	7.9	7.7	7.8	8.0	7.9	8.0	---	---	---
22	8.0	7.6	7.7	7.8	7.6	7.7	8.0	8.0	8.0	---	---	---
23	7.8	7.6	7.7	7.8	7.7	7.7	8.0	8.0	8.0	---	---	---
24	7.9	7.6	7.7	7.8	7.6	7.7	8.0	8.0	8.0	---	---	---
25	7.9	7.6	7.7	7.8	7.7	7.7	8.0	8.0	8.0	---	---	---
26	7.8	7.7	7.7	7.8	7.7	7.8	8.0	8.0	8.0	---	---	---
27	8.0	7.7	7.8	7.9	7.7	7.8	8.0	7.9	7.9	---	---	---
28	7.9	7.7	7.8	7.9	7.8	7.8	8.0	7.9	7.9	---	---	---
29	7.9	7.6	7.7	7.8	7.8	7.8	7.9	7.8	7.9	---	---	---
30	8.4	7.7	8.0	7.9	7.8	7.8	7.9	7.7	7.8	---	---	---
31	8.3	7.9	8.1	---	---	---	8.0	7.8	7.9	---	---	---
MONTH	8.4	7.4	7.7	8.4	7.6	7.9	8.0	7.7	7.9	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	8.0	7.9	7.9	8.1	8.0	8.0	---	---	---	8.9	8.1	8.5
2	7.9	7.7	7.8	8.0	8.0	8.0	7.9	---	---	8.8	8.1	8.3
3	7.7	7.7	7.7	8.0	8.0	8.0	7.9	7.8	7.8	8.6	8.0	8.3
4	7.7	7.7	7.7	8.0	7.6	7.7	7.9	7.8	7.9	8.7	8.0	8.3
5	7.7	7.6	7.7	7.6	7.6	7.6	7.9	7.8	7.9	8.6	7.9	8.2
6	7.7	7.7	7.7	7.7	7.4	7.6	8.0	7.8	7.9	8.7	7.9	8.2
7	7.7	7.7	7.7	---	---	---	8.0	7.8	7.9	8.6	7.9	8.2
8	7.7	7.7	7.7	---	---	---	8.0	7.9	7.9	8.6	7.9	8.1
9	7.7	7.7	7.7	---	---	---	8.0	7.9	8.0	8.5	7.9	8.1
10	7.7	7.7	7.7	---	---	---	8.1	7.9	8.0	8.4	7.9	8.1
11	7.7	7.7	7.7	---	---	---	8.0	7.9	7.9	8.3	7.9	8.0
12	7.8	7.7	7.7	---	---	---	8.1	7.9	8.0	8.2	7.8	8.0
13	7.8	7.7	7.7	---	---	---	8.1	7.9	8.0	8.1	7.8	8.0
14	7.8	7.7	7.8	---	---	---	8.2	7.9	8.0	8.1	7.8	8.0
15	7.8	7.7	7.7	---	---	---	8.2	7.9	8.1	8.1	7.9	8.0
16	7.8	7.7	7.8	---	---	---	8.2	8.0	8.1	8.2	7.8	8.0
17	7.9	7.8	7.9	---	---	---	8.3	7.9	8.1	8.3	8.1	8.2
18	7.9	7.8	7.9	---	---	---	8.4	7.9	8.1	8.3	8.1	8.2
19	7.8	7.6	7.8	---	---	---	8.4	8.0	8.2	8.3	8.0	8.2
20	7.8	7.8	7.8	---	---	---	8.5	8.0	8.2	8.3	8.0	8.2
21	7.9	7.8	7.8	---	---	---	8.7	8.0	8.3	---	---	---
22	7.9	7.9	7.9	---	---	---	8.6	8.1	8.3	---	---	---
23	7.9	7.9	7.9	---	---	---	8.6	8.0	8.2	---	---	---
24	8.0	8.0	8.0	---	---	---	8.6	8.0	8.2	---	---	---
25	8.1	8.0	8.0	---	---	---	8.5	8.0	8.2	---	---	---
26	8.0	8.0	8.0	---	---	---	8.7	8.0	8.3	---	---	---
27	8.1	8.0	8.1	8.0	7.9	7.9	8.7	8.1	8.3	---	---	---
28	8.1	8.0	8.1	---	---	---	8.7	8.1	8.3	8.7	---	---
29	---	---	---	---	---	---	8.6	8.0	8.3	8.3	8.0	8.1
30	---	---	---	---	---	---	8.8	8.0	8.3	8.3	7.9	8.1
31	---	---	---	---	---	---	---	---	---	8.3	7.9	8.0
MONTH	8.1	7.6	7.8	---	---	---	---	---	---	---	---	---

12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.3	7.9	8.0	8.0	7.7	7.8	8.7	7.3	7.9	---	---	---
2	8.3	7.9	8.1	7.9	7.7	7.8	8.7	7.2	7.8	---	---	---
3	8.3	7.9	8.1	8.0	7.7	7.8	---	---	---	---	---	---
4	8.3	7.9	8.0	7.9	7.8	7.8	---	---	---	---	---	---
5	8.2	7.9	8.0	8.0	7.8	7.9	---	---	---	---	---	---
6	8.2	7.9	8.0	7.9	7.8	7.8	---	---	---	---	---	---
7	8.2	7.9	8.0	8.0	7.8	7.8	---	---	---	---	---	---
8	8.2	7.9	8.0	8.0	7.8	7.9	---	---	---	---	---	---
9	8.1	7.9	8.0	8.1	7.8	7.9	---	---	---	---	---	---
10	8.1	7.9	7.9	8.1	7.8	8.0	---	---	---	---	---	---
11	8.0	7.8	7.9	8.1	7.9	7.9	---	---	---	---	---	---
12	8.0	7.8	7.9	8.2	7.9	8.0	---	---	---	---	---	---
13	8.0	7.8	7.9	8.1	7.8	8.0	---	---	---	---	---	---
14	8.0	7.8	7.9	8.1	7.8	7.9	---	---	---	---	---	---
15	8.0	7.8	7.9	8.2	7.7	8.0	---	---	---	---	---	---
16	8.0	7.8	7.9	8.2	7.9	8.0	---	---	---	---	---	---
17	8.0	7.8	7.9	8.3	7.9	8.1	---	---	---	---	---	---
18	8.0	7.8	7.9	8.3	7.9	8.0	---	---	---	---	---	---
19	8.0	7.8	7.9	8.3	7.8	8.0	---	---	---	---	---	---
20	7.9	7.8	7.9	8.2	7.8	8.0	---	---	---	---	---	---
21	7.9	7.8	7.8	8.3	7.8	8.0	---	---	---	---	---	---
22	7.9	7.8	7.8	8.5	7.8	8.1	---	---	---	---	---	---
23	7.9	7.8	7.8	8.7	7.9	8.2	---	---	---	---	---	---
24	7.9	7.7	7.8	8.5	7.9	8.1	---	---	---	---	---	---
25	8.0	7.7	7.8	8.6	7.8	8.1	---	---	---	---	---	---
26	8.0	7.8	7.9	8.7	7.8	8.1	---	---	---	---	---	---
27	8.0	7.8	7.9	8.5	7.9	8.1	---	---	---	---	---	---
28	8.0	7.7	7.8	8.5	7.9	8.1	---	---	---	---	---	---
29	7.9	7.7	7.8	8.6	7.8	8.1	---	---	---	7.9	---	---
30	7.9	7.7	7.8	8.8	7.4	8.1	---	---	---	8.0	7.9	7.9
31	---	---	---	8.7	7.3	7.9	---	---	---	---	---	---
MONTH	8.3	7.7	7.9	8.8	7.3	8.0	---	---	---	---	---	---

SPOKANE RIVER BASIN

12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	6.0	8.0	7.0	4.0	5.5	.0	.0	.0	.0	.0	.0
2	12.0	7.0	9.5	8.0	5.5	6.5	.0	.0	.0	.0	.0	.0
3	11.5	7.0	8.5	8.0	6.5	7.5	.0	.0	.0	---	.0	---
4	10.0	4.5	7.0	8.0	5.0	7.0	.0	.0	.0	---	---	---
5	11.0	6.0	8.5	4.5	3.5	4.0	.0	.0	.0	---	---	---
6	10.5	8.0	9.5	4.0	2.5	3.5	.0	.0	.0	---	---	---
7	8.0	4.5	7.0	5.0	2.5	3.5	.0	.0	.0	---	---	---
8	6.0	2.0	4.0	4.5	2.5	3.5	.0	.0	.0	---	---	---
9	6.0	2.5	4.0	2.5	.5	1.0	.0	.0	.0	---	---	---
10	8.0	4.5	6.0	1.5	.5	1.0	.0	.0	.0	---	---	---
11	10.0	6.5	7.5	1.0	.5	.5	.0	.0	.0	---	---	---
12	7.5	4.0	5.5	1.0	.0	.5	.0	.0	.0	---	---	---
13	7.5	3.5	5.5	1.0	.0	.5	.0	.0	.0	---	---	---
14	9.5	5.0	7.0	.5	.0	.0	.0	.0	.0	---	---	---
15	11.0	7.0	8.5	.0	.0	.0	.0	.0	.0	---	---	---
16	10.5	6.5	8.5	.0	.0	.0	.0	.0	.0	---	---	---
17	8.5	4.5	6.5	.0	.0	.0	.0	.0	.0	---	---	---
18	8.5	4.0	6.0	.0	.0	.0	.0	.0	.0	---	---	---
19	8.0	5.0	6.5	.0	.0	.0	.0	.0	.0	---	---	---
20	9.5	6.0	7.5	.0	.0	.0	.0	.0	.0	---	---	---
21	9.0	7.0	8.0	.0	.0	.0	.0	.0	.0	---	---	---
22	8.5	6.0	7.0	.0	.0	.0	.0	.0	.0	---	---	---
23	7.5	5.0	6.5	.0	.0	.0	.0	.0	.0	---	---	---
24	8.0	5.5	7.0	.0	.0	.0	.0	.0	.0	---	---	---
25	8.5	5.5	7.5	.0	.0	.0	.0	.0	.0	---	---	---
26	7.0	4.5	5.5	.0	.0	.0	.0	.0	.0	---	---	---
27	8.0	4.5	6.5	.0	.0	.0	.0	.0	.0	---	---	---
28	7.5	3.5	5.5	.0	.0	.0	.0	.0	.0	---	---	---
29	4.5	2.5	3.5	.0	.0	.0	.0	.0	.0	---	---	---
30	5.5	2.5	3.5	.0	.0	.0	.0	.0	.0	---	---	---
31	4.5	2.0	3.5	---	---	---	.0	.0	.0	1.0	---	---
MONTH	12.0	2.0	6.5	8.0	.0	1.5	.0	.0	.0	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1.5	.5	1.0	4.0	2.5	3.0	---	---	---	13.0	5.0	8.5
2	2.0	1.5	2.0	4.5	2.5	3.0	9.0	---	---	13.0	8.5	10.0
3	3.0	2.0	2.5	4.0	2.0	3.0	8.5	3.5	6.0	11.5	9.0	10.0
4	3.0	2.0	2.5	3.5	2.5	3.0	9.0	5.5	7.0	13.5	8.0	10.0
5	3.0	1.5	2.5	3.5	3.0	3.0	10.0	4.5	6.5	11.0	5.5	8.0
6	2.0	1.0	1.5	4.5	3.0	3.5	10.0	4.0	7.0	14.5	5.5	9.5
7	1.5	.0	.5	3.5	2.5	3.0	11.0	4.5	8.0	15.0	6.5	10.0
8	.5	.0	.0	3.5	2.5	3.0	12.0	5.0	8.5	15.5	6.5	10.5
9	2.0	.0	.5	4.0	3.5	3.5	11.0	6.0	8.5	12.5	6.5	9.5
10	1.5	.0	.5	4.0	3.5	3.5	11.0	5.5	7.5	10.5	6.0	8.5
11	.5	.0	.0	4.0	3.5	3.5	7.5	4.0	6.0	10.5	6.5	8.0
12	1.5	.0	.5	4.5	3.5	4.0	6.5	5.5	6.0	10.0	5.0	8.0
13	.0	.0	.0	4.5	4.0	4.0	8.0	5.0	6.5	11.5	7.0	9.5
14	.5	.0	.0	5.0	4.5	4.5	9.5	4.5	7.0	13.0	4.0	8.0
15	.0	.0	.0	4.5	4.0	4.0	9.0	6.0	7.5	13.5	4.5	8.5
16	1.0	.0	.5	5.0	4.5	4.5	9.0	5.5	7.0	15.5	5.0	10.0
17	1.5	.0	.5	5.0	4.0	4.5	10.5	4.0	7.0	17.0	8.5	12.5
18	1.5	.0	.5	5.0	4.5	4.5	10.5	4.5	7.5	19.0	11.0	14.0
19	.5	.0	.0	6.0	5.0	5.0	10.5	6.5	8.0	20.0	10.5	15.0
20	.0	.0	.0	6.0	5.0	5.5	10.5	7.5	9.0	15.5	11.5	13.5
21	.0	.0	.0	6.5	5.5	6.0	14.0	8.5	10.5	11.5	8.5	10.5
22	.0	.0	.0	6.5	5.0	5.5	11.0	7.5	9.5	14.0	6.0	9.5
23	1.0	.0	.5	6.0	5.0	5.5	10.5	5.0	7.5	14.5	6.0	10.0
24	2.5	1.0	1.5	6.5	6.0	6.0	8.5	3.5	6.5	17.0	8.0	12.0
25	3.0	1.0	1.5	6.5	5.0	5.5	9.5	5.5	7.0	20.5	10.0	15.0
26	3.5	1.5	2.5	8.0	6.0	7.0	9.5	4.5	6.5	23.0	11.5	16.5
27	3.5	1.5	2.5	9.0	5.0	7.0	10.5	6.5	8.0	23.5	14.0	18.0
28	4.0	2.0	2.5	---	---	---	9.5	5.0	7.0	24.0	13.5	18.0
29	---	---	---	---	---	---	9.5	4.5	6.5	25.0	14.0	19.0
30	---	---	---	---	---	---	11.0	3.0	7.0	25.0	14.0	19.0
31	---	---	---	---	---	---	---	---	---	25.5	14.0	19.0
MONTH	4.0	.0	1.0	---	---	---	---	---	---	25.5	4.0	12.0

12433561 BLUE CREEK NEAR MOUTH, NEAR WELLPINIT, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	26.0	14.5	19.5	24.0	15.5	19.5	24.5	13.5	18.5	---	---	---
2	24.5	15.0	19.5	19.0	15.0	17.5	25.0	14.5	19.5	---	---	---
3	24.0	14.0	18.5	19.5	13.5	16.5	---	---	---	---	---	---
4	23.5	15.5	18.5	18.5	13.5	15.5	---	---	---	---	---	---
5	23.0	14.0	18.0	18.5	12.5	15.5	---	---	---	---	---	---
6	22.0	12.5	17.0	23.5	12.5	17.5	---	---	---	---	---	---
7	19.0	13.5	15.5	24.5	13.0	18.0	---	---	---	---	---	---
8	20.0	13.0	16.0	21.0	15.5	17.5	---	---	---	---	---	---
9	21.5	11.5	16.0	23.0	14.0	18.0	---	---	---	---	---	---
10	23.5	12.0	17.5	17.5	13.5	15.5	---	---	---	---	---	---
11	24.0	13.0	18.0	21.0	13.0	16.5	---	---	---	---	---	---
12	24.0	12.5	17.5	18.5	13.0	15.5	---	---	---	---	---	---
13	24.0	12.5	18.0	23.0	12.5	17.5	---	---	---	---	---	---
14	18.5	13.0	15.5	23.0	12.5	17.0	---	---	---	---	---	---
15	21.0	12.0	16.0	18.0	12.0	15.0	---	---	---	---	---	---
16	22.0	13.5	17.0	17.0	10.5	14.0	---	---	---	---	---	---
17	24.5	13.0	18.5	19.0	13.0	15.0	---	---	---	---	---	---
18	17.0	13.0	15.5	22.5	11.0	16.0	---	---	---	---	---	---
19	18.0	10.0	14.0	24.5	13.0	18.0	---	---	---	---	---	---
20	17.0	10.5	13.5	24.5	13.5	18.5	---	---	---	---	---	---
21	21.5	10.0	15.0	26.0	15.5	20.0	---	---	---	---	---	---
22	22.5	11.0	16.5	25.0	16.0	19.5	---	---	---	---	---	---
23	24.5	13.0	18.5	24.5	15.5	19.5	---	---	---	---	---	---
24	25.0	14.0	19.0	24.0	15.0	19.5	---	---	---	---	---	---
25	25.5	14.5	19.0	24.5	15.5	19.0	---	---	---	---	---	---
26	20.5	13.0	16.5	21.5	14.0	18.0	---	---	---	---	---	---
27	24.0	13.5	18.5	22.5	14.0	17.5	---	---	---	---	---	---
28	24.0	15.0	19.0	20.0	13.5	16.5	---	---	---	---	---	---
29	18.0	15.0	17.0	22.0	12.5	17.0	---	---	---	11.5	---	---
30	24.0	12.5	18.0	23.0	12.5	17.0	---	---	---	13.0	9.5	11.0
31	---	---	---	23.5	12.5	17.5	---	---	---	---	---	---
MONTH	26.0	10.0	17.0	26.0	10.5	17.5	---	---	---	---	---	---

DIVERSION AT GRAND COULEE DAM

12435500 FEEDER CANAL AT GRAND COULEE, WA

LOCATION.--Lat 47°57'05", long 118°59'40", on line between secs.1 and 2, T.28 N., R.30 E., Grant County, Hydrologic Unit 17020001, on left bank at Grand Coulee, 0.2 mi downstream from headworks structure, and 0.5 mi southwest of Grand Coulee Dam.

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

GAGE.--Recording flowmeters and water-stage recorder on rated pumps. Datum of gage is 1,500.00 ft above Bureau of Reclamation datum, adjustment of 1937. May 1, 1952, to Jan. 10, 1978, at datum 50.00 ft higher. Jan. 11, 1978, to Feb. 22, 1981, nonrecording gage at datum 1,500.00 ft lower. Water-stage recorder for Franklin D. Roosevelt Lake (see sta 12436000) also used to determine head. May 1, 1952, to Oct. 13, 1960, auxiliary gage 0.6 mi downstream from base gage at same datum.

REMARKS.--Since 1951, water has been pumped (lift about 280 ft) from Franklin D. Roosevelt Lake into the two-mile long Feeder Canal, which empties into Banks Lake. From Banks Lake, it is distributed through a system of canals to the Columbia Basin project for irrigation. Between May 1951, and December 1974, six pumps were used. Since December 1974, six pump generators, which can also generate power during peak demand periods by returning water from Banks Lake, via the Feeder Canal, to Franklin D. Roosevelt Lake have been added; two in December 1974 and one each in April, June, and November 1983 and April 1984. Discharge is computed from relations between pump operation and head.

COOPERATION.--Discharge records furnished by U.S. Bureau of Reclamation; two discharge measurements made by Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 17,000 ft³/s July 26, 27, 1986; minimum daily, -4,410 ft³/s Sept. 27, 1985, reverse flow from Banks Lake.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 17,000 ft³/s July 26, 27; minimum daily, -3,000 ft³/s Oct. 1, reverse flow from Banks Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	-3000	.00	.00	.00	.00	.00	11000	-548	8050	10000	6010	6430
2	-2990	.00	.00	.00	.00	.00	15400	4180	8130	9370	10700	4680
3	-2460	.00	.00	.00	.00	.00	15300	13600	8220	10500	10700	6410
4	.00	.00	.00	.00	.00	.00	15300	13600	8290	10400	5110	5280
5	.00	.00	.00	.00	.00	.00	15200	6730	7370	9050	3130	6400
6	.00	.00	.00	.00	.00	.00	15200	4190	6860	8330	3310	6390
7	.00	.00	.00	.00	.00	.00	14800	1650	6920	5550	4580	6400
8	.00	.00	.00	.00	.00	.00	15000	4280	6960	5680	5110	6400
9	.00	.00	.00	.00	.00	.00	14900	9990	7020	10000	13700	6400
10	.00	.00	.00	.00	.00	.00	14900	14700	7050	5820	13700	5590
11	.00	.00	.00	.00	.00	.00	14800	14600	1630	5490	13000	5320
12	.00	.00	.00	.00	.00	.00	14700	4960	7440	5730	7630	4820
13	.00	.00	.00	.00	.00	.00	14600	-1250	8790	5730	7600	4820
14	.00	.00	.00	.00	.00	.00	3520	-253	13700	5740	7580	4830
15	.00	.00	.00	.00	.00	.00	-187	161	13700	5740	7570	4830
16	.00	.00	.00	.00	.00	.00	1130	6840	9710	5720	7570	3840
17	.00	.00	.00	.00	.00	.00	300	14200	7510	5700	7580	4140
18	.00	.00	.00	.00	.00	.00	3610	14100	7540	5930	3870	3740
19	.00	.00	.00	.00	.00	.00	11200	10600	7520	14900	3200	4820
20	.00	.00	.00	.00	.00	.00	11200	9830	8330	6930	3190	4820
21	.00	.00	.00	.00	.00	.00	3180	6460	13700	4080	5770	4820
22	.00	.00	.00	.00	.00	.00	3490	4970	13400	1260	6370	4820
23	.00	.00	.00	.00	.00	.00	4820	5210	-1750	1890	6360	3530
24	.00	.00	.00	.00	.00	.00	3480	11500	5980	1900	6370	3210
25	.00	.00	.00	.00	.00	.00	6480	10700	5560	4180	2210	1650
26	.00	.00	.00	.00	.00	.00	14000	6010	5560	17000	.0	3200
27	.00	.00	.00	.00	.00	72	13900	4660	6930	17000	.0	3210
28	.00	.00	.00	.00	.00	136	1690	5060	14900	9640	.0	4760
29	.00	.00	.00	.00	---	.00	-1960	4830	14900	3980	.0	4810
30	.00	.00	.00	.00	---	.00	-1580	4800	12500	3970	3070	4800
31	.00	---	.00	.00	---	716	---	7960	---	5020	6420	---
TOTAL	-8450.00	.00	.00	.00	.00	924.00	269373	218320	252420	222230	181410.0	145170
MEAN	-273	.000	.000	.000	.000	29.8	8979	7043	8414	7169	5852	4839
MAX	.00	.00	.00	.00	.00	716	15400	14700	14900	17000	13700	6430
MIN	-3000	.00	.00	.00	.00	.00	-1960	-1250	-1750	1260	.00	1650
AC-FT	-16760	.00	.00	.00	.00	1830	534300	433000	500700	440800	359800	287900
CAL YR 1985	TOTAL	1143573.90	MEAN	3133	MAX	13600	MIN	-4410	AC-FT	2268000		
WTR YR 1986	TOTAL	1281397.00	MEAN	3511	MAX	17000	MIN	-3000	AC-FT	2542000		

12436000 FRANKLIN D. ROOSEVELT LAKE AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'20", long 118°59'02", near center of sec.1, T.28 N., R.30 E., Grant County, Hydrologic Unit 17020001, in block 12 of Grand Coulee Dam on Columbia River, and at mile 596.6.

DRAINAGE AREA.--74,700 mi², approximately.

PERIOD OF RECORD.--April 1938 to current year. Prior to October 1943, published as Columbia River Reservoir at Grand Coulee Dam.

REVISED RECORDS.--WSP 1286: 1942, 1945(M). WSP 1316: 1942 (May monthend contents). WSP 1933: Drainage area. WDR WA-73-1: 1965, 1967. WDR WA-75-1: 1974 monthend contents.

GAGE.--Water-stage recorder. Datum of gage is Bureau of Reclamation datum, adjustment of 1937, or 1.425 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Apr. 24, 1942, nonrecording gage at site 2,000 ft upstream at same datum.

REMARKS.--Reservoir is formed by concrete dam; construction of dam began in 1934; completed in 1941; storage began early in construction period. Capacity, 5,022,179 acre-ft between elevations 1,208 ft, proposed lower limit of operation, and 1,288 ft, top of gates. Capacity increased to 5,185,452 acre-ft by use of 2 ft flashboards installed after high-water period each year beginning August 1961. Storage below 1,208 ft, 4,209,207 acre-ft. Figures given herein represent total contents. Water is used for power development and irrigation. Flow is regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Diversions by Feeder Canal (see sta 12435500) and for irrigation of about 350,000 acres in the United States plus an additional 37,000 acres in Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 9,586,200 acre-ft July 17, 1942, June 3, 1945, elevation, 1,290.3 ft; maximum elevation, 1,290.36 ft Aug. 6, 1976; minimum contents observed, 16,200 acre-ft Aug. 29, 1938, elevation, 956.1 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,370,825 acre-ft July 10, elevation, 1,289.71 ft; minimum, 5,992,913 acre-ft May 20, elevation, 1,241.83 ft.

Capacity table dated October 24, 1975 (elevation, in feet, and contents, in acre-ft)
(Prepared by Geological Survey from data furnished by Bureau of Reclamation)

1,210.0	4,301,035	1,270.0	7,864,082
1,230.0	5,308,657	1,291.0	9,477,261
1,250.0	6,501,603		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1283.55	1285.04	1274.09	1266.70	1288.22	1287.32	1280.30	1255.27	1264.68	1280.07	1285.74	1286.10
2	1283.17	1286.37	1273.05	1267.68	1288.25	1287.06	1278.97	1254.41	1266.76	1280.60	1286.40	1285.67
3	1282.23	1287.50	1272.63	1268.96	1288.16	1286.70	1277.91	1253.78	1268.73	1281.65	1286.20	1285.17
4	1280.85	1287.91	1271.87	1270.31	1287.89	1286.63	1276.85	1253.93	1270.63	1283.27	1286.44	1284.78
5	1280.06	1288.33	1271.18	1272.18	1287.35	1286.55	1276.37	1253.06	1272.25	1285.04	1286.77	1284.32
6	1279.31	1288.81	1270.73	1273.82	1286.91	1286.26	1275.55	1252.35	1273.85	1287.08	1287.13	1284.65
7	1278.30	1289.03	1269.87	1275.17	1286.47	1285.87	1274.90	1251.94	1275.48	1288.40	1287.49	1285.26
8	1277.34	1288.73	1269.63	1276.40	1286.24	1286.03	1273.49	1251.54	1277.12	1289.53	1287.64	1285.42
9	1276.42	1288.28	1268.78	1277.98	1285.62	1286.64	1272.49	1250.74	1278.53	1289.60	1287.70	1285.52
10	1276.51	1287.48	1268.19	1279.04	1285.01	1286.74	1272.36	1249.64	1279.80	1289.43	1288.17	1285.78
11	1276.46	1286.81	1267.23	1280.46	1284.16	1286.68	1271.68	1248.61	1280.72	1288.74	1288.19	1286.36
12	1276.93	1286.33	1266.72	1281.54	1283.40	1286.61	1270.28	1247.62	1281.50	1288.59	1287.93	1286.89
13	1277.13	1286.29	1266.15	1281.92	1282.44	1286.59	1269.31	1246.80	1281.85	1288.93	1287.60	1287.50
14	1276.63	1286.21	1265.37	1282.35	1281.47	1286.21	1268.23	1245.89	1281.88	1289.11	1287.25	1287.84
15	1276.46	1286.61	1264.77	1282.88	1281.08	1286.21	1266.93	1244.97	1281.72	1288.67	1287.05	1287.37
16	1276.73	1286.74	1263.73	1283.50	1281.94	1286.63	1265.69	1243.67	1282.14	1287.73	1287.22	1287.22
17	1276.63	1286.37	1262.31	1284.11	1282.54	1285.95	1264.77	1242.53	1282.40	1287.14	1287.58	1287.30
18	1276.81	1285.67	1261.36	1285.52	1282.99	1285.16	1264.69	1242.49	1282.60	1286.17	1287.67	1287.37
19	1277.27	1284.98	1260.05	1286.74	1283.44	1285.20	1264.98	1242.12	1282.90	1285.66	1286.94	1287.42
20	1278.27	1284.14	1259.54	1287.30	1283.82	1285.17	1265.25	1241.98	1282.46	1286.04	1286.08	1287.68
21	1278.50	1283.36	1259.95	1287.15	1284.42	1284.76	1264.05	1242.27	1282.30	1286.25	1285.21	1287.95
22	1278.74	1282.06	1260.72	1287.12	1285.26	1285.13	1262.84	1243.16	1281.95	1286.25	1284.52	1287.63
23	1278.65	1280.77	1260.76	1287.31	1286.86	1285.70	1261.72	1244.58	1281.84	1286.11	1284.72	1287.28
24	1279.08	1279.78	1261.06	1287.69	1287.77	1285.50	1260.79	1245.88	1281.40	1286.07	1285.25	1287.26
25	1279.40	1278.41	1262.23	1288.15	1288.22	1285.28	1260.09	1247.35	1281.21	1285.73	1285.02	1287.01
26	1280.44	1277.86	1261.99	1288.56	1287.99	1285.12	1259.11	1248.92	1281.01	1285.13	1284.56	1286.59
27	1281.28	1277.04	1262.08	1288.40	1287.80	1285.23	1258.22	1251.59	1280.39	1285.40	1284.23	1286.81
28	1281.83	1276.87	1262.06	1287.80	1287.46	1285.19	1257.68	1254.32	1279.56	1285.37	1284.39	1287.32
29	1282.63	1276.29	1263.06	1287.38	---	1283.94	1257.03	1257.40	1279.31	1285.40	1284.60	1286.96
30	1283.40	1275.26	1264.01	1287.63	---	1282.85	1256.21	1259.87	1279.37	1285.44	1285.09	1286.61
31	1284.12	---	1264.96	1287.93	---	1281.77	---	1262.44	---	1285.66	1285.93	---
MAX	1284.12	1289.03	1274.09	1288.56	1288.25	1287.32	1280.30	1262.44	1282.90	1289.60	1288.19	1287.95
MIN	1276.42	1275.26	1259.54	1266.70	1281.08	1281.77	1256.21	1241.98	1264.68	1280.07	1284.23	1284.32
(+)	8921917	8248175	7506085	9225718	9187742	8739101	6907151	7330602	8555915	9043604	9065093	9119420
(/)	-785	-673742	-742090	+1719633	-37976	-448641	-1831950	+423451	+1225313	+487689	+21489	+54327
CAL YR 1985	MAX	1289.03	MIN	1215.74	AC-FT†	-1591729						
WTR YR 1986	MAX	1289.60	MIN	1241.98	AC-FT†	+196718						

† Total contents, in acre-feet, at end of month.

‡ Change in contents, in acre-feet.

COLUMBIA RIVER MAIN STEM

12436500 COLUMBIA RIVER AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'56", long 118°58'54", in SW¼SE¼ sec.36, T.29 N., R.30 E., Douglas County, Hydrologic Unit 17020005, in pier 3 on west side of bridge on State Highway 155, 3,200 ft downstream from Grand Coulee Dam, 14.2 mi upstream from Nespelem River, and at mile 596.3.

DRAINAGE AREA.--74,700 mi², approximately.

PERIOD OF RECORD.--April 1913 to June 1923 (monthly discharge only), July to December 1923, January 1924 to May 1928 (monthly discharge only), June 1928 to current year. Published as "at Grand Coulee near Nespelem" prior to 1936 and as "at Grand Coulee" 1936-42.

REVISED RECORDS.--WSP 1286: 1942, 1947. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is Bureau of Reclamation datum, adjustment of 1937. June 27 to Dec. 31, 1923, June 12, 1928, to Mar. 31, 1931, nonrecording gage at site 0.5 mi upstream at datum 2.4 ft lower. Apr. 1, 1931, to Dec. 31, 1935, water-stage recorder at site 850 ft downstream at present datum. Since June 12, 1955, auxiliary water-stage recorder 5.3 mi downstream from base gage at datum 1.42 ft lower.

REMARKS.--Flow is regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Feeder Canal diversion (see sta 12435500) for Columbia Basin project is used to irrigate approximately 380,000 acres in the United States. An additional 35,000 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge provided by U.S. Bureau of Reclamation through the Corps of Engineers N.P.D. Reservoir Control Center.

AVERAGE DISCHARGE.--73 years, 109,900 ft³/s, 79,620,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 637,800 ft³/s June 12, 1948, elevation, 987.90 ft; minimum discharge, 14,900 ft³/s Dec. 17, 1956, elevation, 934.37 ft; minimum daily discharge, 15,300 ft³/s Feb. 1, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 725,000 ft³/s, estimated.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 166,000 ft³/s Apr. 15; minimum daily, 35,200 ft³/s Jan. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92800	69900	132000	62300	56500	92700	133000	143000	91100	80700	104000	69300
2	78900	53600	143000	91800	71300	96900	139000	137000	93300	81300	74100	107000
3	94000	50700	121000	77100	85000	103000	128000	115000	112000	71700	98200	107000
4	95500	89300	125000	81900	87300	89300	124000	99300	109000	43400	110000	106000
5	68600	94900	126000	74100	100000	94900	113000	126000	126000	39700	114000	111000
6	70900	91800	124000	79100	100000	95100	113000	132000	120000	38400	114000	86900
7	94100	83700	141000	85800	103000	102000	115000	125000	121000	68200	110000	73300
8	110000	92100	116000	84900	100000	79400	129000	120000	116000	79400	114000	80000
9	106000	89200	144000	78100	126000	76200	123000	132000	122000	104000	110000	86000
10	83400	102000	132000	87300	128000	101000	94200	130000	113000	124000	89900	81300
11	78300	110000	147000	71800	128000	98600	125000	132000	113000	128000	118000	65900
12	54700	112000	142000	79000	122000	112000	142000	135000	109000	111000	116000	71200
13	60500	107000	138000	103000	131000	108000	138000	138000	113000	98200	110000	53300
14	91100	108000	144000	89900	133000	118000	148000	138000	113000	110000	105000	61400
15	76300	94700	124000	90600	99800	111000	166000	133000	113000	135000	106000	83100
16	69700	95000	137000	82500	80100	100000	157000	136000	96600	150000	88100	63700
17	78400	102000	150000	92600	92800	138000	150000	120000	94900	135000	84800	60400
18	72900	105000	137000	51900	90600	144000	113000	108000	98600	149000	98100	60800
19	66300	120000	149000	35200	93700	100000	91600	125000	96200	132000	117000	60700
20	54100	116000	121000	64100	95400	110000	94600	122000	114000	123000	106000	41700
21	85300	138000	88100	81400	86400	118000	154000	116000	99600	139000	101000	46600
22	90900	140000	81700	90400	68000	90800	155000	103000	101000	144000	91800	66100
23	98700	135000	113000	78700	43100	87700	152000	87200	110000	132000	59900	70400
24	85100	128000	91900	84300	54700	130000	147000	84100	96600	128000	53200	49700
25	83100	155000	74400	71900	60000	123000	143000	92300	94100	138000	90900	64600
26	62200	137000	121000	59300	81000	125000	137000	94100	91700	136000	102000	70900
27	67400	148000	97000	88500	85200	111000	127000	82500	101000	107000	89600	44300
28	101000	109000	110000	89300	98600	122000	136000	92100	95500	122000	60700	37700
29	102000	122000	88200	85400	---	159000	146000	90000	84400	115000	71600	73500
30	92800	131000	95000	65600	---	149000	146000	85800	101000	106000	52400	63400
31	83300	---	86400	49900	---	150000	---	80700	---	101000	43000	---
TOTAL	2548300	3229900	3739700	2407700	2600500	3435600	3979400	3554100	3159600	3370000	2903300	2117200
MEAN	82200	107700	120600	77670	92880	110800	132600	114600	105300	108700	93650	70570
MAX	110000	155000	150000	103000	133000	159000	166000	143000	126000	150000	118000	111000
MIN	54100	50700	74400	35200	43100	76200	91600	80700	84400	38400	43000	37700
AC-FT	5055000	6407000	7418000	4776000	5158000	6815000	7893000	7050000	6267000	6684000	5759000	4199000
CAL YR 1985	TOTAL	35471900	MEAN	97180	MAX	179000	MIN	32600	AC-FT	70359000		
WTR YR 1986	TOTAL	37045300	MEAN	101500	MAX	166000	MIN	35200	AC-FT	73479000		

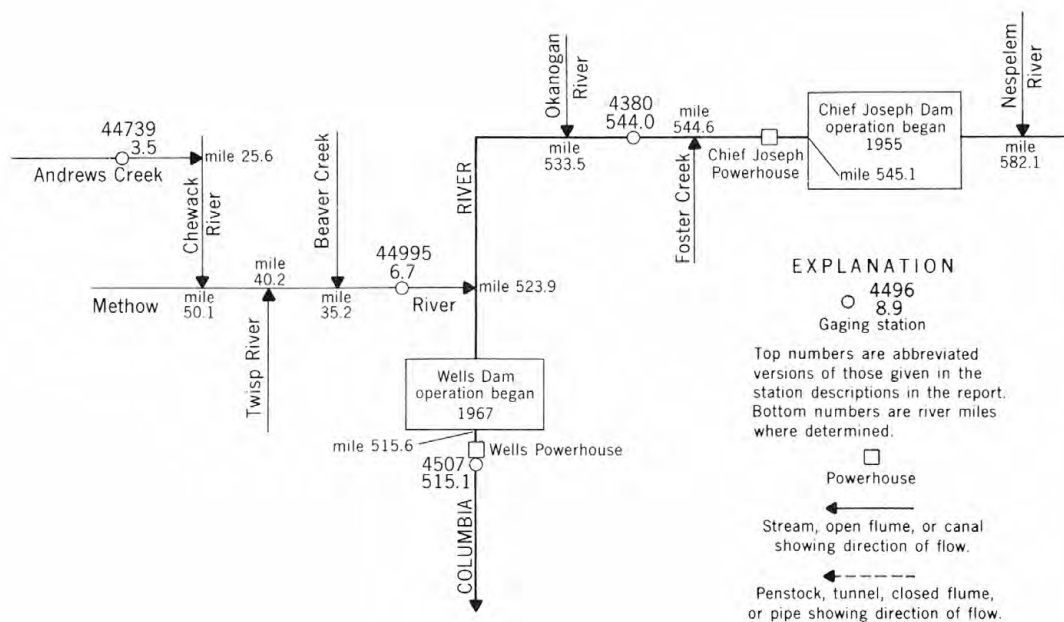


Figure 23.--Gaging stations in Columbia River basin from Chief Joseph Dam to Wells Dam.

COLUMBIA RIVER MAIN STEM

12438000 COLUMBIA RIVER AT BRIDGEPORT, WA

LOCATION.--Lat 48°00'34", long 119°39'51", in SW¼SW¼ sec.14, T.29 N., R.25 E., Douglas County, Hydrologic Unit 17020005, on left bank at Bridgeport, 1.0 mi downstream from Foster Creek, 1.6 mi downstream from Chief Joseph Dam, and at mile 543.9.

DRAINAGE AREA.--75,700 mi², approximately.

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

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Since May 26, 1967, auxiliary water-stage recorder 4,800 ft upstream from base gage at same datum.

REMARKS.--Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Feeder Canal diversion (see sta 12435500) for Columbia Basin project is used to irrigate approximately 380,000 acres in the United States. An additional 35,000 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge provided by Corps of Engineers Chief Joseph Dam powerplant through the Corps of Engineers N.P.D. Reservoir Control Center.

AVERAGE DISCHARGE.--34 years, 112,300 ft³/s, 81,361,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 495,800 ft³/s June 11, 1961; maximum elevation, 792.20 ft June 7, 1956; minimum observed discharge, 4,200 ft³/s Mar. 22, 1966, elevation, 746.91 ft; minimum daily discharge, 22,300 ft³/s Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 174,000 ft³/s Apr. 15; minimum daily, 33,700 ft³/s Jan. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95300	70000	129000	61600	56300	92700	137000	145000	81900	81300	105000	63800
2	79200	52000	136000	92400	71500	96100	134000	141000	103000	80800	74200	114000
3	94600	51900	126000	75300	88900	100000	131000	116000	108000	71800	96800	105000
4	95600	87300	127000	82000	87200	94500	127000	98600	109000	44500	110000	108000
5	68200	94700	126000	75000	97800	98900	117000	129000	124000	39700	113000	112000
6	70500	90600	126000	78900	99400	96400	110000	133000	121000	37300	116000	88800
7	95600	82500	141000	84500	105000	102000	119000	127000	124000	67300	111000	72700
8	112000	92100	121000	84000	97700	79200	128000	118000	119000	77600	112000	78000
9	105000	97400	137000	76700	120000	73800	122000	128000	122000	101000	110000	79000
10	84900	101000	141000	85800	134000	103000	96700	137000	112000	125000	90300	80500
11	77700	111000	147000	72200	127000	96600	123000	137000	114000	130000	115000	69700
12	53500	112000	141000	78500	121000	111000	132000	132000	102000	115000	116000	70600
13	60100	106000	145000	101000	131000	106000	144000	138000	120000	98600	110000	53200
14	91500	107000	147000	89700	133000	119000	142000	142000	114000	114000	109000	61900
15	75600	96100	131000	90400	99400	110000	174000	137000	107000	132000	106000	94700
16	68200	94000	138000	83100	80000	96600	149000	140000	94600	143000	86800	57500
17	78700	98500	142000	91800	92100	130000	163000	122000	93700	145000	82700	64800
18	80200	103000	148000	51300	88400	142000	106000	112000	102000	147000	99500	54600
19	68600	119000	153000	33700	90300	113000	94000	126000	96600	133000	118000	57500
20	58000	116000	121000	66700	96700	109000	96100	121000	116000	123000	106000	43100
21	88400	132000	80000	76700	85100	117000	138000	120000	98200	142000	101000	44500
22	91400	139000	81200	92200	69100	91400	159000	104000	102000	145000	91100	69100
23	99800	143000	109000	80100	38400	86600	153000	92800	109000	133000	60200	69700
24	85300	136000	91900	84800	56700	118000	147000	82600	99800	128000	52700	52900
25	78300	142000	72900	69900	58200	124000	142000	93700	98300	137000	90000	64500
26	59200	147000	120000	57700	75200	126000	144000	93100	87700	140000	104000	71300
27	62200	139000	97100	88000	87500	111000	128000	86100	102000	108000	88500	43300
28	93000	113000	110000	88500	97200	119000	137000	89100	96300	124000	60100	38100
29	99000	122000	88100	85300	---	159000	148000	91000	84100	115000	70100	74800
30	93200	128000	94800	63600	---	148000	148000	84300	101000	109000	55800	76800
31	82300	---	85000	49100	---	143000	---	85800	---	102000	39100	---
TOTAL	2545100	3223100	3753000	2390500	2584100	3412800	3988800	3602100	3162200	3389900	2899900	2134400
MEAN	82100	107400	121100	77110	92290	110100	133000	116200	105400	109400	93550	71150
MAX	112000	147000	153000	101000	134000	159000	174000	145000	124000	147000	118000	114000
MIN	53500	51900	72900	33700	38400	73800	94000	82600	81900	37300	39100	38100
AC-FT	5048000	6393000	7444000	4742000	5126000	6769000	7912000	7145000	6272000	6724000	5752000	4234000
CAL YR 1985	TOTAL	35855200	MEAN	98230	MAX	172000	MIN	33300	AC-FT	71119000		
WTR YR 1986	TOTAL	37085900	MEAN	101600	MAX	174000	MIN	33700	AC-FT	73560000		

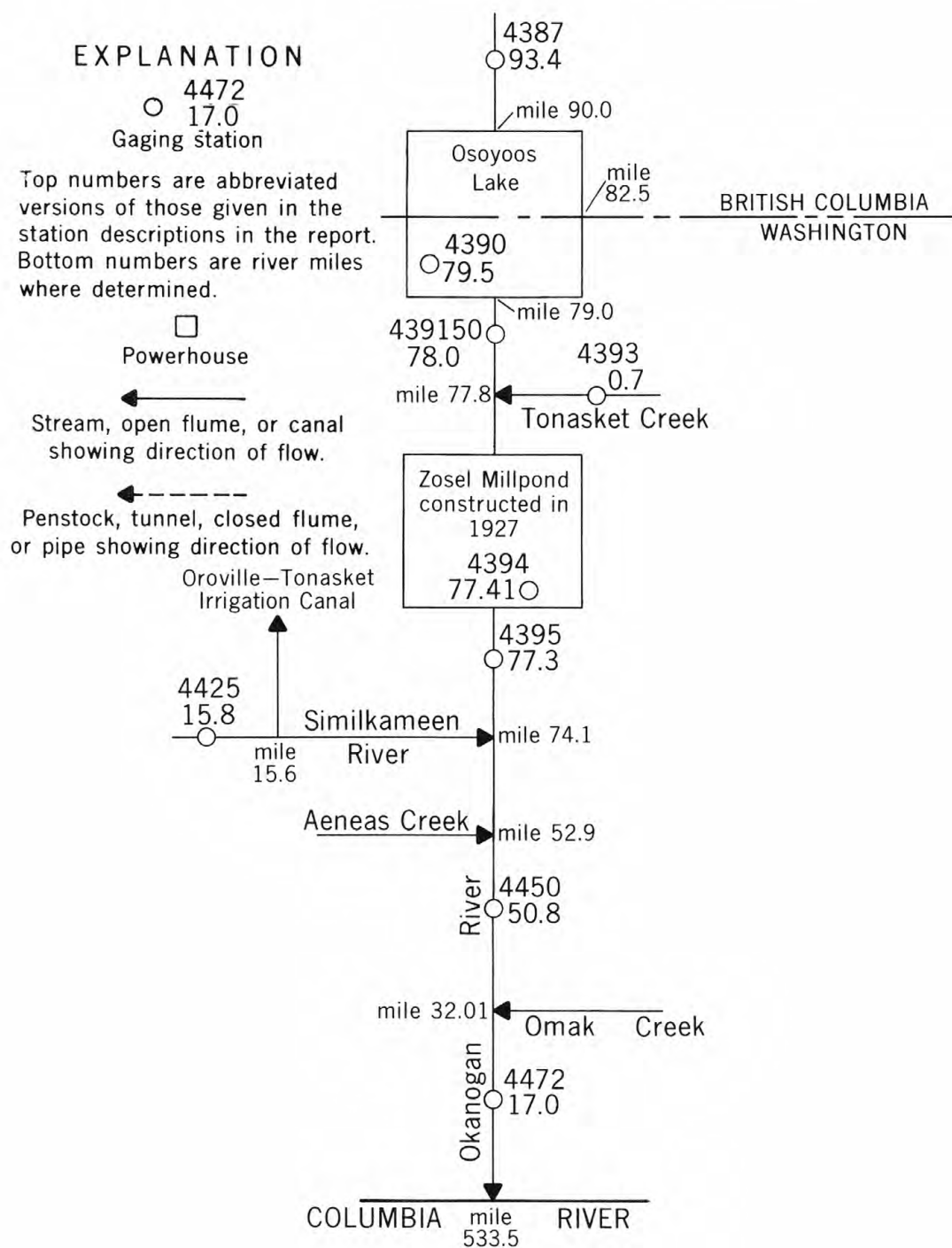


Figure 24.--Gaging stations in Okanogan River basin.

OKANAGAN RIVER BASIN

12438700 OKANAGAN RIVER NEAR OLIVER, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°06'53", long 119°33'50", approximately 75 ft upstream from drop structure No. 3, 0.8 mi downstream from Testalinden Creek, 4.2 mi south of Oliver, and at mile 93.4.

DRAINAGE AREA.--2,930 mi².

PERIOD OF RECORD.--October 1961 to current year in reports of Geological Survey. March 1944 to December 1948 and April 1952 to September 1961 in reports of Water Survey of Canada.

GAGE.--Water-stage recorder.

REMARKS.--Records good. Regulation by control dams at outlets of Okanagan and Skaha Lakes. Diversion for irrigation.

COOPERATION.--This station is maintained by Canada under agreement with the United States subsequent to Feb. 14, 1965.

AVERAGE DISCHARGE.--36 years (water years 1945-47, 1953-56, 1958-86), 640 ft³/s, 463,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,130 ft³/s May 27, 1974, gage height, 7.07 ft; minimum, 55.9 ft³/s Jan. 30, 1963, gage height, 0.63 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 2,680 ft³/s May 27, gage height, 6.52 ft; minimum daily discharge, 188 ft³/s Dec. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	381	357	344	213	226	840	558	812	1580	788	1160	865
2	399	360	339	212	228	847	551	929	1450	784	1230	848
3	399	360	325	216	227	851	540	961	1360	788	1260	632
4	392	367	314	214	225	847	519	950	1280	812	1260	537
5	381	371	307	213	225	851	501	950	1290	833	1250	519
6	392	381	289	210	225	879	501	946	1290	819	1270	505
7	406	417	277	209	233	936	512	968	1300	805	1390	523
8	434	424	277	211	284	946	523	1310	1290	943	1430	523
9	424	424	280	212	286	925	540	1630	1270	1010	1440	480
10	420	417	261	212	289	890	551	1730	1410	1020	1440	427
11	413	410	294	213	341	816	491	1770	1450	1030	1440	417
12	417	431	299	212	717	685	434	1720	1410	1030	1440	417
13	410	456	281	213	837	674	424	1710	1340	1020	1420	417
14	403	448	255	214	872	664	413	1680	1310	989	1300	427
15	396	441	262	213	862	650	415	1660	1310	989	1280	417
16	396	448	257	214	851	636	424	1650	1300	1040	1290	417
17	396	441	258	214	780	597	424	1670	1240	1090	1280	427
18	392	424	269	216	544	558	417	1780	960	1080	1270	438
19	392	403	262	216	480	558	420	1900	918	1050	1260	431
20	396	388	241	215	618	554	434	2010	879	1010	1210	396
21	410	360	230	215	777	547	512	2100	855	953	1180	385
22	410	346	231	215	837	512	614	2150	840	795	1180	371
23	392	325	238	216	847	519	498	2240	809	710	1190	357
24	315	320	226	214	900	561	420	2310	777	678	1190	403
25	322	318	225	213	936	586	463	2400	759	675	1120	396
26	323	321	226	213	883	561	501	2490	756	703	777	364
27	328	330	216	215	862	544	505	2580	756	742	650	367
28	341	335	190	216	847	551	540	2400	756	763	604	371
29	350	343	188	219	---	558	565	2410	784	939	597	374
30	351	346	188	221	---	565	565	2310	795	1010	777	378
31	352	---	194	221	---	558	---	1810	---	1150	858	---
TOTAL	11933	11512	8043	6640	16239	21266	14775	53936	33524	28048	36443	13829
MEAN	385	364	259	214	580	686	493	1740	1117	905	1176	461
MAX	434	456	344	221	936	946	614	2580	1580	1150	1440	865
MIN	315	318	188	209	225	512	413	812	756	675	597	357
AC-FT	23670	22830	15950	13170	32210	42180	29310	107000	66490	55630	72280	27430
CAL YR 1985	TOTAL	126251	MEAN	346	MAX	671	MIN	188	AC-FT	250400		
WTR YR 1986	TOTAL	256188	MEAN	702	MAX	2580	MIN	188	AC-FT	508100		

OKANOGAN RIVER BASIN

323

12439000 OSOYOOS LAKE NEAR OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°57'24", long 119°26'18", in NW¼NE¼ sec.21, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on west shore 1.0 mi north of Oroville, 3.0 mi south of international boundary, and at mile 79.5.

DRAINAGE AREA.--3,132 mi².

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

REVISED RECORDS.--WSP 1346: Drainage area. WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 2, 1928, nonrecording gage, and Sept. 2, 1928, to Nov. 9, 1929, water-stage recorder, 100 ft south of international boundary. Nov. 10, 1929, to Sept. 7, 1930, Mar. 22, 1952, to Sept. 23, 1953, June 25, 1955, to Apr. 11, 1956, nonrecording gage, and Sept. 8, 1930, to Mar. 21, 1952, Sept. 24, 1953, to June 24, 1955, Apr. 12, 1956, to Feb. 7, 1969, water-stage recorder, at site 1.0 mi south of international boundary. All elevations prior to Oct. 1, 1944, at datum 2.39 ft lower. To convert from present datum to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert from present datum to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

REMARKS.--Approximately 44,000 acres are irrigated upstream from station in Canada. Elevation may occasionally be affected by dam at Zosel's mill in Oroville. U.S. Geological Survey satellite telemeter at this station.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 917.11 ft June 2, 3, 1972; minimum, 908.82 ft, present datum, Oct. 14, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 29, 1894, reached an elevation of 918.8 ft plus or minus 0.5 ft, present datum, 1.0 mi downstream from present lake outlet, from floodmark on old Okanogan Hotel Building, documented in 1930 from the diary of Mr. and Mrs. Stansbury, operators of the hotel in 1894.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 914.32 ft June 2; minimum, 909.87 ft Feb. 7, 8.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	910.95	910.76	910.75	910.13	909.91	911.45	911.02	911.17	914.20	911.29	911.34	911.13
2	910.95	910.75	910.75	910.11	909.91	911.41	911.02	911.26	914.29	911.32	911.44	911.12
3	910.95	910.74	910.76	910.10	909.91	911.38	911.00	911.37	914.20	911.35	911.54	911.10
4	910.97	910.73	910.77	910.07	909.91	911.37	911.01	911.45	913.98	911.37	911.63	911.01
5	910.98	910.72	910.78	910.05	909.91	911.35	911.00	911.46	913.68	911.39	911.69	910.91
6	911.03	910.71	910.77	910.04	909.90	911.33	910.98	911.48	913.34	911.43	911.71	910.78
7	911.03	910.70	910.76	910.01	909.89	911.35	910.97	911.48	913.03	911.46	911.76	910.76
8	911.05	910.71	910.74	910.01	909.88	911.38	910.96	911.50	912.77	911.49	911.84	910.78
9	911.07	910.72	910.71	909.99	909.89	911.39	910.96	911.60	912.53	911.54	911.93	910.79
10	911.08	910.75	910.68	909.98	909.89	911.40	910.95	911.75	912.35	911.58	912.00	910.81
11	911.12	910.75	910.66	909.98	909.91	911.39	910.94	911.92	912.28	911.61	912.06	910.80
12	911.15	910.68	910.64	909.97	909.96	911.36	910.99	911.99	912.19	911.64	912.08	910.80
13	911.16	910.68	910.63	909.96	910.16	911.32	911.01	912.08	912.11	911.67	912.11	910.81
14	911.18	910.69	910.60	909.95	910.39	911.27	911.02	912.12	912.06	911.71	912.11	910.85
15	911.18	910.70	910.57	909.94	910.64	911.23	911.05	912.14	911.97	911.72	912.09	910.87
16	911.17	910.73	910.55	909.93	910.85	911.18	911.06	912.14	911.92	911.80	912.04	910.87
17	911.15	910.78	910.52	909.94	911.04	911.14	911.08	912.14	911.88	911.86	912.01	910.88
18	911.14	910.80	910.50	909.96	911.15	911.11	911.08	912.16	911.82	911.92	911.99	910.89
19	911.12	910.76	910.48	909.96	911.15	911.09	911.08	912.21	911.70	911.95	911.97	910.90
20	911.14	910.78	910.45	909.96	911.16	911.08	911.08	912.27	911.61	911.93	911.91	910.90
21	911.15	910.76	910.42	909.95	911.22	911.07	911.10	912.41	911.51	911.90	911.87	910.87
22	911.11	910.83	910.39	909.94	911.30	911.06	911.15	912.53	911.44	911.82	911.83	910.85
23	911.08	910.85	910.37	909.96	911.39	911.03	911.16	912.60	911.37	911.71	911.80	910.84
24	911.03	910.85	910.35	909.95	911.47	911.03	911.14	912.66	911.33	911.58	911.78	910.85
25	910.99	910.85	910.32	909.94	911.53	911.03	911.12	912.72	911.28	911.48	911.77	910.85
26	910.93	910.85	910.30	909.94	911.56	911.03	911.11	912.79	911.25	911.36	911.70	910.84
27	910.89	910.83	910.27	909.93	911.54	911.02	911.11	912.96	911.24	911.28	911.56	910.87
28	910.88	910.79	910.24	909.92	911.49	911.04	911.12	913.21	911.25	911.23	911.42	910.89
29	910.83	910.77	910.21	909.92	---	911.03	911.13	913.49	911.25	911.21	911.26	910.91
30	910.81	910.75	910.18	909.93	---	911.04	911.13	913.79	911.26	911.22	911.16	910.93
31	910.78	---	910.15	909.92	---	911.01	---	914.04	---	911.26	911.13	---
MEAN	911.03	910.76	910.52	909.98	910.60	911.21	911.05	912.22	912.24	911.55	911.76	910.88
MAX	911.18	910.85	910.78	910.13	911.56	911.45	911.16	914.04	914.29	911.95	912.11	911.13
MIN	910.78	910.68	910.15	909.92	909.88	911.01	910.94	911.17	911.24	911.21	911.13	910.76
CAL YR 1985	MEAN	910.68	MAX	911.24	MIN	910.10						
WTR YR 1986	MEAN	911.15	MAX	914.29	MIN	909.88						

OKANOGAN RIVER BASIN

12439150 OKANOGAN RIVER AT BRIDGE STREET, AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°56'20", long 119°25'36", in SW¼NW¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on right bank 15 ft upstream from Cherry Street Bridge in Oroville, 700 ft upstream from Tonasket Creek, 1.0 mi downstream from Osoyoos Lake, and at mile 78.0.

DRAINAGE AREA.--3,133 m².

PERIOD OF RECORD.--October 1942 to September 1964 (annual maximum and minimum gage heights only published in WSP 1933), October 1964 to current year (gage heights only). April 1939 to November 1944 (fragmentary) and December 1944 to September 1964 gage heights available in file of Washington office.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929. Prior to Nov. 14, 1944, nonrecording gage and Nov. 15, 1944, to Sept. 30, 1945, water-stage recorder at present site at datum 897.61 ft higher and Oct. 1, 1945, to Sept. 30, 1975, at datum 900.00 ft higher. To convert to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation recorded, 916.99 ft June 2, 1972; minimum recorded, 907.30 ft Mar. 3, 4, 1948.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 914.19 ft June 2; minimum, 908.43 ft Nov. 23.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	910.85	910.64	---	---	909.77	911.18	910.87	911.04	914.06	911.09	911.06	910.74
2	910.88	910.64	---	---	909.77	911.14	910.87	911.10	914.15	911.11	911.15	910.74
3	910.90	910.62	---	---	909.78	911.12	910.84	911.19	914.00	911.15	911.25	910.73
4	910.91	910.61	910.64	---	909.77	911.09	910.85	911.24	913.64	911.17	911.33	910.66
5	910.93	910.58	910.65	---	909.78	911.06	910.85	911.21	913.23	911.18	911.40	910.58
6	911.00	910.59	910.65	---	909.77	911.04	910.84	911.23	912.84	911.22	911.41	910.47
7	910.99	910.59	910.65	---	909.76	911.05	910.83	911.21	912.50	911.25	911.44	910.56
8	910.98	910.60	910.62	---	909.74	911.08	910.82	911.22	912.23	911.26	911.52	910.62
9	911.00	910.61	910.59	909.89	909.75	911.10	910.82	911.30	911.98	911.29	911.61	910.64
10	911.01	910.74	910.58	909.87	909.76	911.10	910.82	911.42	911.84	911.32	911.67	910.69
11	911.05	910.72	910.56	909.88	909.77	911.08	910.83	911.56	911.80	911.33	911.73	910.68
12	911.08	910.58	910.55	909.87	909.87	911.07	910.91	911.58	911.73	911.38	911.74	910.68
13	911.10	910.57	910.54	909.86	910.10	911.04	910.92	911.66	911.67	911.43	911.76	910.69
14	911.11	910.57	---	909.86	910.32	911.00	910.93	911.69	911.60	911.48	911.74	910.74
15	911.10	910.59	---	909.85	910.56	910.96	910.97	911.70	911.49	911.52	911.72	910.73
16	911.09	910.62	---	909.83	910.78	910.91	910.96	911.68	911.45	911.60	911.66	910.70
17	911.06	910.74	---	909.84	910.94	910.89	910.98	911.69	911.42	911.62	911.63	910.72
18	911.05	910.74	---	909.86	---	910.91	910.98	911.71	911.38	911.67	911.61	910.73
19	911.03	910.66	---	909.87	---	910.91	910.98	911.75	911.27	911.68	911.60	910.75
20	911.06	910.73	---	909.87	---	910.90	910.98	911.80	911.19	911.64	911.52	910.74
21	911.04	910.73	---	909.85	---	910.89	911.00	911.92	911.10	911.60	911.48	910.71
22	910.98	909.90	---	909.83	---	910.89	911.06	912.01	911.03	911.51	911.44	910.68
23	910.95	909.38	---	909.85	911.09	910.86	911.05	912.05	911.01	911.39	911.42	910.68
24	910.90	910.66	---	909.84	911.15	910.87	911.01	912.11	911.03	911.25	911.38	910.70
25	910.86	910.70	---	909.83	911.22	910.85	910.99	912.16	911.01	911.16	911.38	910.70
26	910.79	910.73	---	909.82	911.31	910.86	910.97	912.23	911.03	911.03	911.31	910.71
27	910.75	910.74	---	909.80	911.29	910.84	910.98	912.51	911.01	910.95	911.16	910.75
28	910.75	---	---	909.81	911.22	910.87	910.99	912.91	911.02	910.92	911.01	910.77
29	910.70	---	---	909.81	---	910.87	911.00	913.26	911.02	910.90	910.85	910.79
30	910.67	---	---	909.81	---	910.89	911.00	913.60	911.05	910.89	910.75	910.81
31	910.66	---	---	909.78	---	910.85	---	913.89	---	910.94	910.73	---
MEAN	910.94	---	---	---	---	910.97	910.93	911.86	911.86	911.29	911.40	910.70
MAX	911.11	---	---	---	---	911.18	911.06	913.89	914.15	911.68	911.76	910.81
MIN	910.66	---	---	---	---	910.84	910.82	911.04	911.01	910.89	910.73	910.47

12439300 TONASKET CREEK AT OROVILLE, WA

LOCATION.--Lat 48°56'35", long 119°24'45", in NW¼NE¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank 3 ft upstream from road bridge, 1.0 mi northeast of Oroville, and 0.7 mi upstream from mouth.

DRAINAGE AREA.--60.1 mi².

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

REVISED RECORDS.--WDR WA-73-1: 1972(M).

GAGE.--Water-stage recorder. Elevation of gage is 960 ft, from topographic map. Prior to Aug. 6, 1986, at a site 30 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 20 to Mar. 10, June 13-21, Aug. 6. Records fair except for estimated daily discharges and computed daily discharges Oct. 1, 2, Mar. 11 to Apr. 1, which are poor. Two small diversions for irrigation of 45 acres upstream from station.

AVERAGE DISCHARGE.--19 years, 3.59 ft³/s, 0.81 in/yr, 2,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 455 ft³/s Feb. 27, 1973, gage height, 5.47 ft, from rating curve extended above 50 ft³/s on basis of slope-area measurement of peak flow; no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Apr. 12, 1950, was 484 ft³/s at site 0.5 mi upstream.

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)
Apr. 24	1445	*17	2.65	Sept. 12	0330	(a)	*3.13

Minimum discharge, no flow for several days during the year.

(a) Change in gage intake location.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.76	.73	.05	.10	.90	1.2	4.8	6.7	1.5	.54	.17	3.4		
2	.75	.73	.05	.10	1.0	1.2	4.8	9.2	1.2	.44	.15	1.5		
3	.63	.65	.05	.10	1.1	1.2	4.8	12	1.1	.65	.12	1.6		
4	.62	.65	.05	.10	1.2	1.4	4.8	10	.52	2.8	.10	1.7		
5	.76	.67	.10	.10	1.2	1.4	5.6	9.0	.46	6.4	.07	2.1		
6	.90	.67	.20	.20	1.2	1.4	5.0	7.3	.48	6.1	.06	2.8		
7	1.7	.73	.20	.20	1.2	2.0	5.3	7.0	.60	2.1	.12	2.6		
8	2.1	.71	.30	.20	1.1	2.0	7.8	7.1	.68	.31	.60	2.7		
9	2.0	.65	.20	.30	.80	2.2	9.6	6.9	.43	.28	.63	2.6		
10	1.9	1.5	.20	.40	1.0	2.4	10	7.6	.16	.23	1.1	2.9		
11	.99	.61	.10	.50	1.0	4.4	9.1	10	.07	.30	.43	4.8		
12	.18	.43	.10	.30	1.0	12	12	9.9	.01	1.1	.10	5.3		
13	.15	.42	.10	.30	1.0	11	15	9.2	.00	1.8	.14	3.7		
14	.13	.37	.05	.30	.80	8.4	14	8.3	.00	.87	.11	2.4		
15	.12	.36	.05	.40	.80	7.6	13	7.2	.00	.49	.18	1.6		
16	.12	.31	.05	.60	.80	6.2	15	6.7	.00	1.5	.19	1.7		
17	.12	.32	.05	1.0	.60	6.3	16	7.8	.00	3.5	.32	2.9		
18	.13	.28	.05	.80	.60	5.7	15	8.0	.00	4.4	.17	4.2		
19	.12	.32	.10	.90	.40	5.6	13	5.8	.00	4.8	.17	4.2		
20	.22	.30	.10	.70	.40	6.8	13	3.3	.00	3.2	.13	4.2		
21	.25	.20	.10	.60	.40	8.1	14	2.9	.85	1.5	.21	4.2		
22	.51	.20	.10	.50	.60	7.7	15	3.6	1.9	.31	.15	4.2		
23	.46	.10	.10	.60	.80	7.6	13	3.4	1.2	.26	.67	4.2		
24	.43	.10	.10	.50	1.4	7.4	12	3.2	.61	.22	1.0	4.2		
25	.46	.10	.10	.40	1.6	7.1	8.6	3.0	.40	.19	.69	4.2		
26	.47	.10	.10	.30	1.6	5.2	8.3	2.7	.27	.25	.56	4.0		
27	.49	.10	.10	.40	1.4	4.2	7.3	1.9	1.2	.64	.74	4.5		
28	.78	.05	.10	.50	1.4	6.4	6.2	1.6	2.0	.39	.98	5.2		
29	.90	.05	.10	.50	---	7.5	6.6	1.6	2.5	.28	1.5	5.1		
30	.75	.05	.10	.60	---	6.6	6.6	1.5	2.5	.24	2.6	4.8		
31	.74	---	.10	.70	---	5.6	---	1.8	---	.20	4.0	---		
TOTAL	20.64	12.46	3.25	13.20	27.30	163.8	295.2	186.2	20.64	46.29	18.16	103.5		
MEAN	.67	.42	.10	.43	.97	5.28	9.84	6.01	.69	1.49	.59	3.45		
MAX	2.1	1.5	.30	1.0	1.6	12	16	12	2.5	6.4	4.0	5.3		
MIN	.12	.05	.05	.10	.40	1.2	4.8	1.5	.00	.19	.06	1.5		
CFSM	.01	.01	.00	.01	.02	.09	.16	.10	.01	.02	.01	.06		
IN.	.01	.01	.00	.01	.02	.10	.18	.12	.01	.03	.01	.06		
AC-FT	41	25	6.4	26	54	325	586	369	41	92	36	205		
CAL YR 1985	TOTAL	648.77	MEAN	1.78	MAX	18	MIN	.04	CFSM	.03	IN.	.40	AC-FT	1290
WTR YR 1986	TOTAL	910.64	MEAN	2.49	MAX	16	MIN	.00	CFSM	.04	IN.	.56	AC-FT	1810

OKANOGAN RIVER BASIN

12439400 OKANOGAN RIVER AT ZOSEL MILLPOND, AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°55'55", long 119°25'05", in SE¼SW¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank in Oroville, 0.4 mi downstream from Tonasket Creek, 1.6 mi downstream from Osoyoos Lake, and at mile 77.41.

DRAINAGE AREA.--3,195 mi².

PERIOD OF RECORD.--October 1942 to September 1964 (annual maximum and minimum gage heights only, published in WSP 1933), October 1964 to July 1986, gage heights only (discontinued). April 1939 to March 1944 (fragmentary) and April 1944 to September 1964 gage heights available in file of Washington office.

REVISED RECORDS.--WRD WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929. Prior to Mar. 27, 1944, nonrecording gage and Mar. 28, 1944, to Sept. 30, 1945, water-stage recorder at present site at datum 897.61 ft higher and Oct. 1, 1945, to Sept. 30, 1975, at datum 900.00 ft higher. To convert to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation recorded, 916.91 ft June 2, 1972; minimum recorded, 905.90 ft Jan. 3, 1959, but may have been lower during period of no gage-height record Mar. 3 or 4, 1948.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 914.09 ft June 1, 2; minimum, 907.44 ft Nov. 23.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	910.80	910.53	910.55	909.88	909.60	910.72	910.72	910.95	914.04	910.84		
2	910.83	910.53	910.56	909.87	909.60	910.68	910.73	910.97	914.08	910.86		
3	910.85	910.51	910.56	909.86	909.61	910.70	910.70	911.04	913.81	910.91		
4	910.86	910.51	910.58	909.83	909.60	910.68	910.72	911.04	913.22	910.93		
5	910.88	910.49	910.59	909.80	909.61	910.67	910.71	910.96	912.62	910.94		
6	910.95	910.48	910.59	909.78	909.61	910.65	910.70	910.96	912.15	910.99		
7	910.95	910.48	910.59	909.75	909.60	910.66	910.69	910.89	911.65	911.00		
8	910.94	910.49	910.57	909.74	909.58	910.69	910.69	910.86	911.26	910.99		
9	910.96	910.50	910.54	909.73	909.58	910.70	910.69	910.90	910.94	910.97		
10	910.97	910.62	910.50	909.72	909.59	910.71	910.69	910.96	910.69	910.96		
11	911.01	910.66	910.47	909.74	909.61	910.69	910.74	910.99	910.60	910.94		
12	911.04	910.48	910.46	909.73	909.76	910.71	910.86	910.90	910.48	910.89		
13	911.06	910.47	910.44	909.71	910.03	910.71	910.87	910.93	910.39	910.77		
14	911.05	910.48	910.42	909.71	910.27	910.67	910.88	910.94	910.35	910.71		
15	911.04	910.49	910.39	909.70	910.51	910.63	910.92	910.89	910.35	910.29		
16	911.03	910.52	910.37	909.68	910.73	910.59	910.91	910.84	910.27	910.02		
17	911.00	910.63	910.34	909.70	910.92	910.60	910.93	910.85	910.22	910.21		
18	910.99	910.68	910.31	909.72	910.97	910.69	910.93	910.87	910.23	910.20		
19	910.96	910.58	910.27	909.73	910.93	910.73	910.92	910.91	910.21	910.31		
20	911.00	910.65	910.25	909.73	910.92	910.71	910.92	910.96	910.19	910.43		
21	910.94	910.62	910.22	909.71	910.95	910.71	910.95	911.10	910.17	910.33		
22	910.87	910.04	910.19	909.69	911.02	910.71	911.00	911.10	910.10	---		
23	910.84	908.41	910.17	909.72	911.10	910.68	910.98	911.02	910.32	---		
24	910.79	910.52	910.14	909.71	911.12	910.69	910.93	911.09	910.52	---		
25	910.75	910.59	910.11	909.70	911.07	910.68	910.90	911.14	910.61	---		
26	910.67	910.65	910.09	909.68	911.04	910.69	910.88	911.25	910.72	---		
27	910.64	910.64	910.06	909.67	910.88	910.67	910.88	911.92	910.70	---		
28	910.65	910.59	910.03	909.68	910.76	910.71	910.90	912.67	910.71	---		
29	910.59	910.57	909.99	909.69	---	910.71	910.91	913.11	910.71	---		
30	910.57	910.55	909.95	909.65	---	910.74	910.91	913.49	910.78	---		
31	910.55	---	909.91	909.61	---	910.70	---	913.86	---	---		
MEAN	910.87	910.47	910.33	909.73	910.31	910.69	910.84	911.30	911.10	---		
MAX	911.06	910.68	910.59	909.88	911.12	910.74	911.00	913.86	914.08	---		
MIN	910.55	908.41	909.91	909.61	909.58	910.59	910.69	910.84	910.10	---		
CAL YR 1985	MEAN	910.46	MAX	911.08	MIN	908.41						

12439500 OKANOGAN RIVER AT OROVILLE, WA
(International gaging station)

LOCATION.--Lat 48°55'51", long 119°25'09", in SE¼SW¼ sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on left bank in Oroville, 20 ft downstream from Burlington Northern trestle, 0.5 mi downstream from Tonasket Creek, 1.7 mi downstream from Osyoos Lake, 3.2 mi upstream from Similkameen River, and at mile 77.3.

DRAINAGE AREA.--3,195 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WPD WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft above National Geodetic Vertical Datum of 1929; gage readings have been reduced to elevations above National Geodetic Vertical Datum of 1929. Prior to Oct. 26, 1944, nonrecording gage at Zosel milldam 200 ft upstream, Oct. 26, 1944, to Mar. 6, 1948, water-stage recorder on railroad trestle 20 ft upstream, both at same datum. Auxiliary water-stage recorder 0.5 mi downstream used during high-water periods: May 15, 1946, to Apr. 9, 1948, nonrecording gage at same site, both at datum 900.00 ft above National Geodetic Vertical Datum of 1929. To convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Estimated daily discharges: Nov. 22, 23, Dec. 1, 2. Water-discharge records good except estimated daily discharges and those for May 20 to June 20, which are fair. Diversions made to irrigate approximately 44,000 acres in Canada and minor diversions in the United States upstream from station. Natural regulation in several large lakes and artificial regulation in Okanogan Lake 46.7 mi upstream for flood control and irrigation; also regulated by Zosel milldam at Oroville, 200 ft upstream from gage.

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

AVERAGE DISCHARGE.--44 years, 691 ft³/s, 500,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,730 ft³/s June 14, 1972; maximum elevation, 916.89 ft June 2, 1972, at datum then in use (backwater from Similkameen River); minimum daily discharge, 2,270 ft³/s reverse flow May 29, 1948; minimum elevation, 903.98 ft Mar. 1, 1948, at datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,310 ft³/s June 5; maximum elevation, 914.00 ft June 1 (backwater from Similkameen River); minimum daily discharge, 170 ft³/s Nov. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	363	440	400	305	300	1030	563	580	1230	620	798	842
2	345	438	400	305	295	1010	566	667	1470	631	834	833
3	345	435	400	305	295	978	558	729	1770	643	875	816
4	340	433	400	305	295	974	567	834	2080	649	924	781
5	343	428	400	300	295	967	564	908	2180	655	986	726
6	351	427	400	295	295	957	559	930	2100	667	1010	631
7	349	426	400	295	290	962	557	974	1960	691	1030	484
8	347	424	395	290	285	975	556	1010	1850	727	1070	453
9	346	424	390	285	285	981	563	1070	1710	787	1100	412
10	348	444	385	280	288	982	563	1150	1560	841	1130	382
11	353	438	380	275	290	975	469	1300	1490	884	1170	379
12	357	401	375	275	248	942	418	1400	1400	868	1200	375
13	360	400	375	275	230	901	422	1490	1330	840	1240	359
14	410	398	375	275	252	879	432	1540	1300	847	1280	358
15	437	395	370	275	282	861	436	1580	1310	786	1280	406
16	437	399	370	270	323	841	436	1580	1270	811	1270	463
17	428	416	365	270	360	790	452	1590	1270	922	1250	466
18	427	416	365	270	443	689	471	1600	1220	950	1250	466
19	421	396	355	270	527	655	476	1650	1130	1020	1250	467
20	428	409	350	270	525	646	477	1730	1080	1070	1210	465
21	500	382	350	270	582	647	482	1780	1010	1070	1190	459
22	543	180	345	265	623	641	517	1910	971	1060	1180	455
23	536	170	340	265	652	623	532	2050	857	1030	1170	455
24	526	406	335	265	739	621	547	2090	786	976	1150	455
25	513	414	335	265	869	609	568	2130	712	927	1160	442
26	496	420	330	265	931	608	563	2140	653	879	1130	390
27	483	425	325	265	1020	595	566	1930	649	854	1070	373
28	475	416	320	265	1050	594	565	1610	655	799	1010	376
29	463	416	315	265	---	579	566	1430	661	792	936	378
30	456	405	310	290	---	583	572	1370	631	822	893	383
31	448	---	310	300	---	564	---	1240	---	804	857	---
TOTAL	12974	12021	11265	8670	12869	24659	15583	43992	38295	25922	33903	14730
MEAN	419	401	363	280	460	795	519	1419	1277	836	1094	491
MAX	543	444	400	305	1050	1030	572	2140	2180	1070	1280	842
MIN	340	170	310	265	230	564	418	580	631	620	798	358
AC-FT	25730	23840	22340	17200	25530	48910	30910	87260	75960	51420	67250	29220
CAL YR 1985	TOTAL	134193	MEAN	368	MAX	663	MIN	107	AC-FT	266200		
WTR YR 1986	TOTAL	254883	MEAN	698	MAX	2180	MIN	170	AC-FT	505600		

OKANOGAN RIVER BASIN

12439500 OKANOGAN RIVER AT OROVILLE, WA--Continued

WATER-QUALITY RECORDS

RECORD OF DAILY RECORD.--

WATER TEMPERATURES: April 1986 to September 1986.

INSTRUMENTATION.--Temperature recorder since April 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 26.5°C Aug. 10, 14, 1986; minimum, 9.0°C Apr. 29, 30, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 26.5°C Aug. 10, 14; minimum, 9.0°C Apr. 29, 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR APRIL TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
APRIL			MAY			
1	---	---	---	12.0	9.5	10.5
2	---	---	---	12.0	10.5	11.0
3	---	---	---	12.5	10.5	11.0
4	---	---	---	13.0	11.0	12.0
5	---	---	---	13.5	11.0	12.0
6	---	---	---	14.0	11.0	12.5
7	---	---	---	15.5	13.0	14.0
8	---	---	---	15.5	13.5	14.5
9	---	---	---	14.5	13.0	14.0
10	---	---	---	14.0	12.5	13.5
11	---	---	---	13.0	12.5	13.0
12	---	---	---	12.5	10.5	12.0
13	---	---	---	12.0	10.5	11.0
14	---	---	---	13.0	11.0	12.0
15	---	---	---	14.0	11.5	13.0
16	---	---	---	13.5	12.0	12.5
17	---	---	---	14.0	12.5	13.0
18	---	---	---	14.5	13.5	14.0
19	---	---	---	14.0	12.0	13.0
20	---	---	---	13.0	11.5	12.5
21	---	---	---	12.5	11.5	12.0
22	---	---	---	14.0	12.0	13.0
23	---	---	---	13.5	12.5	13.0
24	---	---	---	14.0	12.0	13.0
25	---	---	---	16.0	13.5	14.5
26	---	---	---	16.5	13.5	15.0
27	---	---	---	17.0	14.0	15.5
28	11.0	---	---	18.0	15.5	16.5
29	11.0	9.0	10.0	20.0	15.5	17.5
30	12.0	9.0	10.5	22.0	19.0	20.5
31	---	---	---	23.0	20.5	21.5
MONTH	---	---	---	23.0	9.5	13.5

12439500 OKANOGAN RIVER AT OROVILLE, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR APRIL TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	23.5	21.0	22.5	22.0	20.5	21.0	24.5	22.0	23.0	24.0	23.0	23.0
2	23.5	21.5	22.5	21.0	20.5	21.0	25.5	22.5	24.0	24.0	22.0	23.0
3	22.0	20.5	21.0	22.0	20.0	20.5	26.0	23.0	24.5	23.5	22.0	23.0
4	21.0	19.0	20.0	20.0	19.0	19.5	26.0	23.0	24.5	24.0	22.0	23.0
5	21.0	19.0	19.5	20.0	19.0	19.5	24.5	22.5	23.5	22.5	21.0	21.5
6	21.0	19.0	19.5	22.0	19.0	20.0	24.0	22.0	23.0	22.5	20.5	21.5
7	20.0	19.0	19.5	22.0	19.0	20.0	25.0	22.0	23.5	21.5	19.5	20.5
8	20.5	18.5	19.5	21.0	20.0	20.5	25.0	23.0	24.0	21.5	19.5	20.5
9	21.0	18.5	19.5	23.0	20.0	21.5	26.0	23.5	25.0	21.5	19.0	20.0
10	20.5	18.0	19.0	22.0	20.5	21.0	26.5	23.0	24.5	21.0	20.0	20.5
11	21.5	18.0	20.0	22.0	20.0	21.0	24.0	23.0	23.5	20.0	18.0	19.0
12	22.0	20.0	21.0	22.0	20.0	21.0	25.0	22.5	23.5	19.0	17.5	18.5
13	22.5	20.5	21.5	24.0	20.0	21.5	25.5	23.0	24.0	18.5	17.0	17.5
14	22.0	20.5	21.0	23.0	21.0	22.0	26.5	23.5	24.5	19.5	17.0	18.0
15	21.0	19.5	20.0	21.0	20.0	20.5	25.0	23.5	24.5	19.0	18.0	18.5
16	20.5	19.0	19.5	21.5	19.5	20.0	24.5	22.5	23.5	18.5	17.0	18.0
17	22.0	19.5	20.0	20.5	19.5	20.0	24.5	22.5	23.5	18.0	16.5	17.5
18	21.0	19.0	20.0	22.0	19.5	20.5	25.0	22.5	23.5	17.5	17.0	17.0
19	20.5	18.5	19.0	23.5	20.5	21.5	24.0	22.0	23.0	18.0	16.5	17.5
20	20.0	18.5	19.0	24.5	22.0	23.0	24.0	21.5	22.5	17.5	16.5	17.0
21	20.5	18.5	19.5	24.5	22.5	23.5	24.0	22.0	22.5	18.0	16.0	17.0
22	21.5	18.5	20.0	24.5	22.5	23.5	23.5	22.0	22.5	17.5	16.0	16.5
23	23.0	20.0	21.5	25.0	22.5	23.5	23.5	21.5	22.5	16.5	16.0	16.0
24	23.5	20.5	21.5	24.0	22.5	23.0	22.5	21.5	22.0	17.0	15.5	16.0
25	24.0	21.5	22.5	23.5	22.0	23.0	23.5	21.0	22.0	17.0	15.5	16.0
26	22.5	21.5	22.0	22.5	21.5	22.0	24.0	22.0	23.0	16.5	15.5	16.0
27	24.5	21.0	22.5	23.5	21.0	22.0	25.0	22.5	23.5	16.0	15.0	15.5
28	23.0	22.0	22.5	23.5	21.5	22.5	24.0	23.0	23.5	15.0	14.5	15.0
29	22.0	21.0	21.5	23.5	20.5	22.0	24.0	22.5	23.0	16.0	15.0	15.5
30	23.5	20.0	21.5	23.0	20.5	22.0	23.5	22.5	23.0	16.0	15.0	15.5
31	---	---	---	23.5	21.0	22.0	24.0	22.0	23.0	---	---	---
MONTH	24.5	18.0	20.5	25.0	19.0	21.5	26.5	21.0	23.5	24.0	14.5	18.5

OKANOGAN RIVER BASIN

12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA
(International gaging station)

LOCATION.--Lat 48°59'05", long 119°37'02", in NW¼ sec.7, T.40 N., R.26 E., Okanogan County, Hydrologic Unit 17020007, on left bank 1,000 ft upstream from Oroville-Tonasket Irrigation District canal intake, 1.6 mi northeast of Nighthawk, 3.8 mi downstream from Palmer Creek, and at mile 15.8.

DRAINAGE AREA.--3,550 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1911 to current year (prior to September 1928, mean monthly discharge included Oroville-Tonasket Irrigation District canal). Published as "near Oroville" 1911-28.

REVISED RECORDS.--WSP 1183: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,137.70 ft above National Geodetic Vertical Datum of 1929, international joint adjustment of 1947. Prior to Sept. 11, 1928, staff gages at sites 7 mi downstream (below Oroville-Tonasket Irrigation District canal) at various datums.

REMARKS.--Estimated daily discharges: Oct. 11-13, Nov. 11-14, Nov. 18 to Jan. 16, Mar. 30. Water-discharge records good except for estimated daily discharges, which are fair. Flow at high stages regulated by natural diversion into and release from Palmer Lake. Several small diversions upstream from station for irrigation of about 2,900 acres in the United States in 1946 and approximately 10,500 acres in Canada in 1957. National Weather Service satellite telemeter at station.

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

AVERAGE DISCHARGE.--75 years, 2,291 ft³/s, 1,660,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,800 ft³/s June 1, 1972; maximum gage height, 18.78 ft May 31, 1972; minimum discharge, 65 ft³/s Jan. 3, 1974, gage height, 1.59 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,200 ft³/s June 1, gage height, 13.72 ft; minimum discharge, 219 ft³/s Feb. 18, but may have been less during period of ice effect, Nov. 18 through Jan. 16, gage height, 2.11 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	422	977	350	420	532	2480	2040	2970	23100	3120	1300	546
2	423	915	400	410	534	2300	2020	2930	22600	2900	1230	546
3	417	1640	450	400	530	2200	1970	2970	20000	2860	1180	513
4	411	1850	500	400	518	2090	1960	3140	16600	2730	1150	488
5	414	1760	560	390	516	2060	1940	3230	15100	2680	1090	465
6	423	1480	560	390	505	2010	1900	3230	14000	2600	1030	441
7	437	1330	580	390	493	2000	1910	3290	12500	2400	989	424
8	451	1230	580	390	469	2040	2060	3440	11200	2260	934	414
9	470	1130	580	400	437	2200	2450	3600	9880	2250	886	405
10	454	1060	580	410	414	2200	2930	3740	9110	2200	847	410
11	455	780	540	420	416	2110	3050	3710	8920	2140	813	410
12	455	530	540	440	451	2030	3020	3600	8690	2250	802	403
13	446	530	540	440	451	1950	2930	3540	7880	2260	803	408
14	473	500	540	440	421	1860	2800	3670	7320	2060	772	432
15	461	648	540	440	408	1790	2750	3510	7010	1910	745	438
16	690	790	530	440	389	1690	2720	3390	6410	1950	708	478
17	1060	855	520	442	379	1630	2640	3340	5680	2300	683	487
18	1010	683	510	440	337	1570	2550	3560	5590	2370	657	504
19	919	520	500	453	337	1530	2480	5110	6050	2170	625	521
20	905	400	500	485	330	1490	2420	7370	5440	1990	589	513
21	1030	350	500	529	341	1500	2580	9170	4900	1870	572	515
22	1040	310	500	576	400	1580	3330	8180	4490	1900	553	509
23	969	300	490	601	421	1580	4160	7180	4260	2390	534	493
24	867	280	480	609	432	1560	3850	6750	4190	2130	516	482
25	806	280	460	589	475	1540	3670	7010	4100	1910	503	491
26	884	270	440	538	2030	1490	3500	10200	3780	1770	482	515
27	885	260	430	543	3120	1480	3390	15200	3460	1690	467	537
28	917	280	420	518	2750	1550	3310	17700	3190	1660	451	561
29	1350	300	410	502	---	1840	3200	19600	3130	1550	441	596
30	1160	320	410	510	---	2080	3060	21100	3260	1450	453	635
31	1050	---	410	513	---	2070	---	22500	---	1360	497	---
TOTAL	22154	22658	15350	14468	18836	57500	82590	217930	261840	67080	23302	14580
MEAN	715	755	495	467	673	1855	2753	7030	8728	2164	752	486
MAX	1350	1850	580	609	3120	2480	4160	22500	23100	3120	1300	635
MIN	411	260	350	390	330	1480	1900	2930	3130	1360	441	403
AC-FT	43940	44940	30450	28700	37360	114100	163800	432300	519400	133100	46220	28920
CAL YR 1985	TOTAL	643803	MEAN	1764	MAX	15100	MIN	250	AC-FT	1277000		
WTR YR 1986	TOTAL	818288	MEAN	2242	MAX	23100	MIN	260	AC-FT	1623000		

12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: April 1986 to September 1986.

INSTRUMENTATION.--Temperature recorder since April 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.0°C Aug. 9, 10, 14, 1986; minimum, 6.0°C May 22, 23, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 23.0°C Aug. 9, 10, 14; minimum, 6.0°C May 22, 23.

TEMPERATURE, WATER (DEG. C), WATER YEAR APRIL TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
	APRIL			MAY		
1	---	---	---	9.5	8.5	9.0
2	---	---	---	9.5	9.0	9.0
3	---	---	---	9.5	8.5	9.0
4	---	---	---	10.5	8.5	9.5
5	---	---	---	10.5	8.5	9.5
6	---	---	---	11.0	8.5	10.0
7	---	---	---	11.0	9.5	10.5
8	---	---	---	11.5	9.0	10.5
9	---	---	---	11.0	8.5	9.5
10	---	---	---	9.5	8.0	9.0
11	---	---	---	9.5	8.5	9.0
12	---	---	---	9.0	7.5	8.0
13	---	---	---	10.5	8.0	9.0
14	---	---	---	10.0	7.0	8.5
15	---	---	---	9.5	7.5	8.5
16	---	---	---	9.5	8.0	8.5
17	---	---	---	10.5	9.0	9.5
18	---	---	---	12.0	9.5	10.5
19	---	---	---	12.0	10.0	11.5
20	---	---	---	11.5	9.0	10.0
21	---	---	---	8.5	6.5	7.5
22	---	---	---	8.0	6.0	7.0
23	---	---	---	8.5	6.0	7.5
24	---	---	---	9.0	7.0	8.0
25	---	---	---	10.0	8.5	9.0
26	---	---	---	11.5	9.5	10.5
27	---	---	---	9.5	9.0	9.5
28	---	---	---	10.0	8.0	9.0
29	---	---	---	10.5	9.0	9.5
30	9.0	6.5	7.5	11.0	9.0	10.0
31	---	---	---	11.0	9.5	10.0
MONTH	---	---	---	12.0	6.0	9.0

OKANOGAN RIVER BASIN

12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR APRIL TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.5	10.0	11.0	16.5	15.0	15.5	20.5	18.0	19.0	20.5	19.5	19.5
2	12.0	10.0	11.0	16.5	15.5	16.0	21.5	19.5	20.5	19.5	18.0	19.0
3	12.0	10.0	11.0	15.0	14.0	14.5	21.5	20.0	21.0	19.5	18.0	19.0
4	11.5	10.5	11.0	14.0	13.5	14.0	21.5	19.5	20.5	20.0	19.0	19.5
5	12.5	10.5	11.5	13.5	12.5	13.0	21.0	19.5	20.0	19.5	18.5	19.0
6	13.0	11.0	12.0	15.5	12.5	14.0	21.0	19.0	20.0	19.0	18.0	18.5
7	12.0	11.0	11.5	17.5	15.5	16.5	21.5	19.5	20.5	18.0	17.0	17.5
8	12.5	10.0	11.0	17.0	16.0	16.5	22.5	20.5	21.5	17.5	16.5	17.0
9	13.0	10.0	11.5	17.5	15.0	16.0	23.0	21.0	22.0	16.5	15.5	16.0
10	14.0	11.5	13.0	16.5	15.5	16.0	23.0	21.5	22.5	17.0	15.5	16.5
11	15.5	13.0	14.0	16.5	14.5	15.5	22.5	20.0	21.0	16.5	15.0	15.5
12	15.0	12.5	14.0	16.0	15.5	16.0	20.5	18.5	19.5	15.0	14.0	14.5
13	15.0	13.0	14.0	16.5	14.5	15.5	22.0	19.5	20.5	14.0	12.5	13.5
14	15.0	13.5	14.0	17.5	15.5	16.5	23.0	20.5	21.5	13.5	12.0	13.0
15	13.5	11.5	12.5	16.5	15.0	15.5	22.5	21.0	21.5	13.5	13.0	13.5
16	13.0	11.5	12.5	16.0	14.0	14.5	22.0	20.0	20.5	13.5	13.0	13.0
17	14.0	12.0	13.0	14.5	14.0	14.5	20.5	19.0	20.0	14.0	12.5	13.0
18	14.0	12.5	13.0	15.5	13.5	14.5	20.5	19.5	20.0	13.5	13.0	13.5
19	13.0	11.0	12.0	17.5	15.0	16.0	20.5	19.0	19.5	14.0	13.0	13.5
20	13.5	11.5	12.5	19.0	17.0	18.0	19.5	18.0	19.0	13.5	13.0	13.0
21	14.5	11.5	13.0	20.0	18.0	19.0	20.0	18.0	19.0	13.5	12.5	13.0
22	15.0	13.5	14.5	19.5	18.0	18.5	20.0	18.5	19.5	13.5	12.5	13.0
23	17.0	14.5	15.5	19.5	18.0	18.5	20.0	19.0	19.5	13.5	12.0	13.0
24	17.5	15.5	16.5	19.5	18.5	19.0	20.0	18.5	19.0	12.5	12.0	12.0
25	18.0	16.0	17.0	19.0	18.0	18.5	19.5	17.5	18.5	12.5	11.5	12.0
26	17.5	15.5	16.0	18.0	17.5	18.0	20.5	18.5	19.5	12.0	11.0	11.5
27	17.0	15.0	16.0	18.0	16.0	17.0	21.0	20.0	20.5	11.5	10.5	11.0
28	17.5	17.0	17.0	18.5	16.0	17.5	21.0	20.5	21.0	10.5	10.0	10.0
29	17.0	15.0	16.0	18.0	15.5	17.0	20.5	20.0	20.5	11.0	10.0	10.5
30	16.0	13.5	15.0	18.0	16.5	17.5	20.0	19.5	20.0	11.5	10.5	11.0
31	---	---	---	19.0	17.0	18.0	20.5	18.5	19.5	---	---	---
MONTH	18.0	10.0	13.5	20.0	12.5	16.5	23.0	17.5	20.0	20.5	10.0	14.5

OKANOGAN RIVER BASIN

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12445000 OKANOGAN RIVER NEAR TONASKET, WA

LOCATION.--Lat 48°37'57", long 119°27'38", in lot 3, sec.8, T.36 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on right bank 1,000 ft upstream from Chewiliken Creek, 5.2 mi south of Tonasket, and at mile 50.8.

DRAINAGE AREA.--7,260 mi², approximately.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 862: 1937. WSP 1316: 1934(M), 1938(M). WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 860.78 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 18 to Jan. 26, Jan. 28-30, Feb. 18-21, May 1-22. Water-discharge records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 10,700 acres in the United States and 55,000 acres in Canada. Flow affected by regulation of Okanogan and Skaha Lakes and by natural storage in other lakes.

AVERAGE DISCHARGE.--57 years, 2,951 ft³/s, 2,138,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,700 ft³/s June 2, 1972, gage height, 22.54 ft; minimum discharge recorded, 126 ft³/s Sept. 5, 1931, gage height, 3.43 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,900 ft³/s June 2, gage height, 16.88 ft; minimum daily discharge, 470 ft³/s Nov. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	793	1510	740	740	889	3390	2560	3300	24200	3700	1940	1190
2	766	1440	760	740	906	3160	2530	3300	24700	3470	1880	1220
3	751	1490	820	740	901	3030	2490	3500	24100	3370	1860	1180
4	734	2160	870	720	887	2910	2470	3800	21500	3290	1850	1130
5	731	2210	930	720	885	2850	2460	3900	18900	3210	1830	1070
6	755	2070	950	700	871	2810	2420	4000	17500	3170	1820	994
7	761	1860	1000	700	855	2800	2380	4100	16100	3010	1790	873
8	773	1740	1000	700	836	2810	2420	4300	14500	2830	1780	773
9	781	1660	1000	700	816	2890	2610	4500	12700	2790	1760	728
10	801	1580	1000	700	792	2990	3020	4700	11200	2820	1750	693
11	792	1480	950	700	776	2950	3330	4900	10400	2830	1740	676
12	815	1370	940	720	775	2890	3290	5000	10200	2820	1740	681
13	823	1150	940	720	753	2760	3250	5100	9460	2920	1760	688
14	853	1020	940	720	746	2650	3130	5200	8600	2810	1800	723
15	940	1020	940	720	751	2560	3040	5200	8210	2630	1790	757
16	944	1120	930	720	762	2460	3020	5000	7790	2480	1750	854
17	1170	1240	920	720	761	2360	2950	4900	6960	2760	1720	919
18	1450	1200	900	720	800	2240	2900	4900	6460	3110	1680	938
19	1370	960	870	720	880	2100	2830	6200	6750	3050	1650	956
20	1330	820	870	740	870	2050	2780	7900	6590	2960	1600	968
21	1350	730	870	780	940	2040	2760	9800	5940	2790	1550	955
22	1530	530	870	810	1010	2060	3100	9910	5480	2700	1520	944
23	1540	470	860	840	1050	2100	4070	9030	5100	2900	1500	951
24	1470	600	830	850	1090	2100	4270	8370	4800	3050	1490	944
25	1400	690	820	880	1260	2060	4110	8190	4740	2750	1460	931
26	1350	670	800	840	1500	2050	3940	9420	4470	2550	1430	913
27	1420	670	780	844	3370	2010	3820	13500	4150	2420	1370	890
28	1400	690	750	820	3690	2020	3690	16800	3850	2330	1290	911
29	1490	720	740	800	---	2120	3540	19600	3680	2200	1230	932
30	1760	720	740	820	---	2420	3390	21300	3710	2120	1190	969
31	1580	---	740	887	---	2540	---	22900	---	2050	1190	---
TOTAL	34423	35590	27070	23531	30422	78180	92570	242520	312740	87890	50710	27351
MEAN	1110	1186	873	759	1087	2522	3086	7823	10420	2835	1636	912
MAX	1760	2210	1000	887	3690	3390	4270	22900	24700	3700	1940	1220
MIN	731	470	740	700	746	2010	2380	3300	3680	2050	1190	676
AC-FT	68280	70590	53690	46670	60340	155100	183600	481000	620300	174300	100600	54250
CAL YR 1985	TOTAL	756486	MEAN	2073	MAX	15400	MIN	395	AC-FT	1500000		
WTR YR 1986	TOTAL	1042997	MEAN	2858	MAX	24700	MIN	470	AC-FT	2069000		

12445000 OKANOGAN RIVER NEAR TONASKET, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: April 1986 to September 1986.

INSTRUMENTATION.--Temperature recorder since April 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 25.5°C Aug. 9, 10, 1986; minimum, 7.5°C Apr. 30, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 25.5°C Aug. 9, 10; minimum, 7.5°C Apr. 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR APRIL TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
APRIL			MAY			
1	---	---	---	10.0	9.5	9.5
2	---	---	---	10.5	10.0	10.5
3	---	---	---	11.5	10.5	11.0
4	---	---	---	11.5	10.5	11.0
5	---	---	---	12.0	10.5	11.5
6	---	---	---	12.5	11.0	11.5
7	---	---	---	13.0	11.5	12.5
8	---	---	---	13.5	12.5	13.0
9	---	---	---	13.5	12.0	12.5
10	---	---	---	12.5	11.0	11.5
11	---	---	---	11.5	10.5	11.0
12	---	---	---	11.5	10.0	10.5
13	---	---	---	10.5	9.5	10.0
14	---	---	---	11.5	9.5	10.5
15	---	---	---	11.5	9.5	10.5
16	---	---	---	11.5	10.5	11.0
17	---	---	---	12.5	11.0	11.5
18	---	---	---	13.0	12.5	12.5
19	---	---	---	14.5	12.5	13.5
20	---	---	---	14.0	12.5	13.0
21	---	---	---	12.5	8.5	10.5
22	---	---	---	9.0	8.0	8.5
23	---	---	---	10.0	8.5	9.0
24	---	---	---	10.5	9.0	9.5
25	---	---	---	12.0	10.0	11.0
26	---	---	---	13.5	11.5	12.5
27	---	---	---	13.0	11.5	12.5
28	---	---	---	11.5	10.0	10.5
29	8.5	---	---	11.5	11.0	11.5
30	9.5	7.5	8.5	12.0	11.5	11.5
31	---	---	---	12.0	11.5	12.0
MONTH	---	---	---	14.5	8.0	11.0

12445000 OKANOGAN RIVER NEAR TONASKET, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR APRIL TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	12.5	12.0	12.0	18.0	17.5	18.0	22.5	20.0	21.5	23.0	22.0	22.5
2	12.5	12.5	12.5	18.0	17.5	17.5	23.5	21.5	22.5	23.0	21.0	22.0
3	12.5	12.0	12.5	18.0	17.0	17.5	24.5	22.0	23.5	23.0	21.0	22.0
4	13.0	12.5	13.0	17.0	16.0	16.5	24.5	22.5	23.5	23.0	20.5	21.5
5	13.0	13.0	13.0	16.0	15.5	16.0	24.0	22.5	23.0	21.5	20.0	21.0
6	13.5	12.5	13.0	17.5	15.0	16.0	23.5	21.5	22.5	21.0	19.5	20.0
7	13.0	11.0	12.0	19.0	16.5	17.5	24.0	21.5	22.5	20.0	18.5	19.5
8	12.0	11.0	11.5	19.5	18.5	19.0	25.0	22.5	23.5	19.5	18.5	19.0
9	13.5	11.5	12.0	20.0	18.0	19.0	25.5	23.5	24.0	20.0	18.0	19.0
10	14.0	12.0	13.0	19.0	18.5	18.5	25.5	23.5	24.5	20.0	18.5	19.0
11	16.0	13.0	14.5	19.0	17.5	18.5	25.0	23.0	24.0	19.0	17.5	18.0
12	16.0	14.0	15.0	19.0	18.0	18.5	24.5	22.0	23.0	17.5	16.0	17.0
13	15.5	13.0	14.0	19.5	18.0	19.0	24.5	22.5	23.5	16.5	15.0	15.5
14	16.5	14.5	15.5	20.0	19.0	19.5	25.0	23.0	24.0	16.0	14.0	15.0
15	16.0	15.0	15.5	19.5	18.0	18.5	25.0	23.0	24.0	16.0	15.5	15.5
16	15.0	14.0	14.5	18.5	17.0	17.5	24.0	22.5	23.0	15.5	15.0	15.0
17	15.5	14.0	15.0	18.0	17.0	17.5	23.5	21.5	22.5	15.5	14.5	15.0
18	15.5	14.0	15.0	18.5	16.5	17.5	24.0	21.5	23.0	15.5	15.0	15.0
19	15.5	14.5	14.5	19.5	18.0	18.5	23.5	22.0	22.5	15.5	14.5	15.0
20	14.5	13.5	13.5	21.0	19.0	20.0	23.0	20.5	21.5	15.5	14.5	15.0
21	15.5	13.5	14.5	22.5	21.0	21.5	23.0	20.0	21.5	15.5	14.5	15.0
22	16.5	14.5	15.5	22.5	21.0	22.0	23.0	20.5	22.0	15.5	14.5	15.0
23	18.5	16.5	17.0	22.5	21.5	22.0	23.0	21.0	22.0	15.5	14.5	14.5
24	19.5	18.0	18.5	21.5	21.0	21.5	22.0	21.0	21.5	14.5	13.5	14.0
25	19.5	18.5	19.0	22.0	21.0	21.5	22.5	20.0	21.0	15.0	14.0	14.5
26	19.5	18.5	18.5	21.0	20.0	20.5	23.5	20.5	22.0	14.5	14.0	14.0
27	19.0	17.5	18.5	21.0	19.0	20.0	24.0	21.5	22.5	14.5	13.5	14.0
28	18.5	18.0	18.5	21.0	19.5	20.5	23.5	22.0	23.0	13.5	12.5	13.0
29	19.0	18.0	18.5	21.0	19.5	20.0	23.0	22.0	22.5	14.0	12.5	13.0
30	19.0	17.5	18.0	21.0	19.5	20.0	23.0	22.0	22.5	14.5	13.0	14.0
31	---	---	---	21.0	19.5	20.5	23.5	21.5	22.5	---	---	---
MONTH	19.5	11.0	15.0	22.5	15.0	19.0	25.5	20.0	22.5	23.0	12.5	17.0

OKANOGAN RIVER BASIN

12447200 OKANOGAN RIVER AT MALOTT, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°16'53", long 119°42'12", in SW¼ sec.9, T.32 N., R.25 E., Okanogan County, Hydrologic Unit 17020006, on right bank 75 ft upstream from highway bridge at Malott, 0.1 mi upstream from Loup Loup Creek, and at mile 17.0.

DRAINAGE AREA.--8,080 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1958 to current year. April 1958 to September 1965, published as "near Malott." Records published for both sites December 1965 to July 1967.

REVISED RECORDS.--WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 783.55 ft above National Geodetic Vertical Datum of 1929. April 1958 to November 1965, water-stage recorder at site 3.9 mi downstream at National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 19 to Feb. 3, Feb. 19-23. Water-discharge records excellent except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 22,000 acres in the United States and 55,000 acres in Canada. Flow regulated by Okanogan and Skaha Lakes and by natural storage in other lakes. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--28 years, 3,100 ft³/s, 2,246,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft³/s June 3, 1972, gage height, 22.16 ft; minimum observed, 288 ft³/s Sept. 4, 1970, gage height, 2.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,800 ft³/s June 2, gage height, 15.78 ft; minimum daily, 520 ft³/s Nov. 23, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	879	1670	800	800	1010	3660	2740	3530	22600	3740	2070	1290
2	870	1620	830	800	1030	3420	2720	3470	23500	3620	1990	1300
3	836	1550	890	800	1050	3260	2700	3530	23500	3450	1960	1320
4	815	1850	940	780	1070	3150	2660	3630	21700	3420	1930	1260
5	805	2290	1000	780	1030	3050	2650	3840	18700	3340	1910	1200
6	816	2300	1050	760	989	3010	2620	3990	16900	3290	1890	1140
7	838	2100	1100	760	946	3020	2590	4020	15700	3210	1880	1070
8	837	1950	1100	760	914	3080	2580	4120	14200	3040	1870	942
9	849	1870	1100	760	900	3060	2670	4280	12600	2920	1870	863
10	866	1770	1100	760	860	3190	2950	4500	11000	2910	1870	821
11	880	1680	1050	760	829	3200	3350	4760	10000	2930	1850	778
12	882	1520	1000	780	807	3160	3480	4880	9730	2910	1830	759
13	901	1370	1000	780	805	3070	3430	4890	9320	2950	1850	773
14	909	1340	1000	780	784	2940	3350	4860	8590	2950	1850	812
15	954	1210	1000	780	800	2820	3250	4970	8120	2790	1880	851
16	1030	1180	1000	780	794	2730	3200	4880	7840	2650	1870	908
17	1030	1280	1000	780	787	2620	3160	4800	7230	2660	1850	1000
18	1370	1420	970	780	743	2520	3100	4750	6630	3010	1810	1070
19	1540	1200	950	780	720	2390	3040	5010	6540	3140	1760	1080
20	1460	1000	950	800	720	2310	2990	6320	6740	3040	1710	1090
21	1440	800	950	820	860	2260	2940	8260	6160	2910	1670	1100
22	1520	610	960	840	1030	2270	3060	9620	5690	2760	1640	1090
23	1650	520	940	880	1150	2300	3660	8960	5280	2730	1610	1100
24	1630	640	910	900	1240	2350	4440	8290	4920	3070	1590	1110
25	1570	770	900	930	1320	2330	4330	8010	4770	2910	1580	1090
26	1500	750	880	920	1480	2300	4130	8350	4590	2670	1550	1070
27	1470	740	850	900	2370	2260	4020	11300	4280	2540	1510	1050
28	1550	750	840	910	3840	2240	3880	14700	3990	2440	1450	1030
29	1510	780	810	920	---	2280	3750	17500	3770	2340	1370	1050
30	1730	780	800	940	---	2470	3630	19600	3700	2220	1320	1080
31	1830	---	800	990	---	2690	---	21100	---	2160	1280	---
TOTAL	36767	39310	29470	25510	30878	85410	97070	224720	308290	90720	54070	31097
MEAN	1186	1310	951	823	1103	2755	3236	7249	10280	2926	1744	1037
MAX	1830	2300	1100	990	3840	3660	4440	21100	23500	3740	2070	1320
MIN	805	520	800	760	720	2240	2580	3470	3700	2160	1280	759
AC-FT	72930	77970	58450	50600	61250	169400	192500	445700	611500	179900	107200	61680
CAL YR 1985	TOTAL	804163	MEAN	2203	MAX	15400	MIN	374	AC-FT	1595000		
WTR YR 1986	TOTAL	1053312	MEAN	2886	MAX	23500	MIN	520	AC-FT	2089000		

12447200 OKANOGAN RIVER AT MALOTT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-62, 1963-70 (partial-record station), 1972, 1975 to current year. Published as "near Brewster" prior to 1964 and as "near Malott" 1963-66 (station 12447300).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1969 to June 1971.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB MG/L AS CAC03
OCT 07...	1400	843	318	8.2	10.5	0.7	10.4	96	32	K10	150	21
FEB 06...	1000	960	307	8.2	0.0	1.4	13.4	93	29	39	130	16
JUN 04...	1100	21800	105	7.8	13.5	36	10.0	99	120	120	40	2
AUG 14...	1400	1860	276	8.4	24.5	1.8	7.9	99	29	25	120	4
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HC03)	CAR- BONATE IT-FLD (MG/L AS C03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 07...	40	12	12	15	0.4	2.3	129	157	0	34	2.5	0.2
FEB 06...	35	10	9.4	13	0.4	2.2	113	138	0	28	2.6	0.2
JUN 04...	12	2.4	2.7	12	0.2	1.1	38	46	0	9.1	0.9	<0.1
AUG 14...	32	8.6	8.9	14	0.4	2.3	111	131	2	29	2.3	0.3
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
OCT 07...	8.1	196	190	0.27	446	<0.01	<0.10	0.03	0.3	0.02	0.01	<0.01
FEB 06...	8.4	171	160	0.23	443	<0.01	0.11	0.02	0.4	0.02	0.01	0.02
JUN 04...	7.9	69	59	0.09	4060	<0.01	<0.10	0.02	0.4	0.15	0.02	0.01
AUG 14...	6.8	158	160	0.21	793	<0.01	<0.10	<0.01	0.3	0.02	0.01	<0.01

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12447200 OKANOGAN RIVER AT MALOTT, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDIM- ENT, DIS- CHARGE, SUS- PENDED (MG/L)	SEDIM- ENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 07...	<0.1	<10	2	<1	<1	340	<6	<3	7	16	--
FEB 06...	<0.1	<10	<1	<1	<1	330	<6	4	3	7.8	--
JUN 04...	--	--	--	--	--	--	--	--	156	9180	59
AUG 14...	--	--	--	--	--	--	--	--	15	75	--

METHOW RIVER BASIN

339

12447390 ANDREWS CREEK NEAR MAZAMA, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 48°49'23", long 120°08'41", in NE¼ sec.1, T.38 N., R.21 E., Okanogan County, Hydrologic Unit 17020008, Okanogan National Forest, on left bank 50 ft upstream from Blizzard Creek, 3.5 mi upstream from mouth, and 20 mi northeast of Mazama.

DRAINAGE AREA.--22.1 mi².

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Elevation of gage is 4,300 ft, from topographic map.

REMARKS.--No estimated daily discharges. Water-discharge records good. No regulation or diversion.

AVERAGE DISCHARGE.--18 years, 31.9 ft³/s, 19.60 in/yr, 23,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft³/s June 10, 1972, gage height, 4.00 ft, from rating curve extended above 440 ft³/s; minimum discharge, 1.2 ft³/s Nov. 4, 1968, Nov. 20, 1970, Apr. 7, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 31	1800	*722	*3.29	No other peak greater than base discharge.			
Minimum discharge, 1.9 ft ³ /s Jan. 18.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4.4	5.6	3.2	3.3	2.9	3.9	5.0	17	449	31	15	6.3		
2	4.4	6.0	3.2	3.3	2.8	3.8	5.0	17	350	31	14	6.2		
3	4.6	6.2	3.2	3.3	2.8	3.7	5.1	19	257	29	15	5.9		
4	4.3	6.1	3.2	3.2	2.8	3.7	5.2	19	216	29	13	5.6		
5	4.2	5.6	3.3	3.2	2.8	3.7	5.3	19	191	30	13	5.4		
6	5.3	5.3	3.4	3.2	2.8	3.7	5.5	19	157	28	12	5.3		
7	5.1	5.3	3.5	3.1	2.8	4.5	6.9	20	155	26	11	5.2		
8	4.3	4.5	3.4	3.1	2.8	4.5	9.5	23	133	25	11	5.2		
9	4.5	5.1	3.5	3.1	2.8	4.2	12	24	118	26	11	5.2		
10	4.6	4.5	3.4	3.1	2.8	4.1	16	24	110	24	10	5.1		
11	4.7	3.2	3.3	3.0	2.8	4.1	16	23	101	26	12	4.9		
12	4.5	4.1	3.3	3.0	2.8	4.1	15	23	90	23	16	4.8		
13	4.4	4.5	3.3	3.0	2.7	4.0	14	22	81	22	12	5.2		
14	4.5	4.2	3.3	3.0	2.7	4.0	14	22	76	21	11	5.8		
15	6.1	4.3	3.3	2.9	2.7	4.0	13	21	68	25	10	6.3		
16	6.4	4.4	3.3	2.7	2.7	3.9	13	21	62	32	9.7	6.8		
17	5.5	4.4	3.3	2.7	2.7	3.9	13	24	60	29	9.3	7.3		
18	5.1	4.2	3.2	2.7	2.7	3.9	12	35	80	26	8.7	7.7		
19	5.0	3.8	3.3	2.8	2.7	3.9	12	52	65	24	8.3	8.5		
20	6.0	3.8	3.3	2.8	2.7	4.0	13	82	57	22	8.1	7.3		
21	7.3	3.7	3.3	2.8	2.7	4.1	19	76	52	22	7.8	6.7		
22	6.5	3.5	3.2	2.8	2.7	4.1	25	63	49	24	7.7	6.3		
23	6.2	3.2	3.3	2.8	2.7	4.1	22	58	46	21	7.4	6.6		
24	5.5	3.0	3.2	2.8	3.3	4.1	21	59	44	20	7.2	8.6		
25	5.8	3.0	3.2	2.8	4.4	4.0	20	110	41	19	7.2	7.8		
26	5.1	3.1	3.2	2.8	5.3	4.1	19	267	38	18	6.9	7.4		
27	6.2	3.2	3.2	2.8	5.2	4.2	19	373	36	18	6.5	7.0		
28	8.2	3.2	3.2	2.8	4.1	4.7	18	434	35	17	6.3	7.0		
29	5.8	3.2	3.2	2.8	---	5.0	17	486	38	16	6.6	7.4		
30	6.3	3.2	3.3	2.8	---	5.0	17	495	33	16	6.6	8.2		
31	5.7	---	3.3	2.8	---	5.0	---	483	---	15	6.5	---		
TOTAL	166.5	127.4	101.8	91.3	85.7	128.0	407.5	3430	3288	735	306.8	193.0		
MEAN	5.37	4.25	3.28	2.95	3.06	4.13	13.6	111	110	23.7	9.90	6.43		
MAX	8.2	6.2	3.5	3.3	5.3	5.0	25	495	449	32	16	8.6		
MIN	4.2	3.0	3.2	2.7	2.7	3.7	5.0	17	33	15	6.3	4.8		
CFSM	.24	.19	.15	.13	.14	.19	.62	5.02	4.98	1.07	.45	.29		
IN.	.28	.21	.17	.15	.14	.22	.69	5.77	5.53	1.24	.52	.32		
AC-FT	330	253	202	181	170	254	808	6800	6520	1460	609	383		
CAL YR 1985	TOTAL	7422.8	MEAN	20.3	MAX	289	MIN	2.6	CFSM	.92	IN.	12.49	AC-FT	14720
WTR YR 1986	TOTAL	9061.0	MEAN	24.8	MAX	495	MIN	2.7	CFSM	1.12	IN.	15.25	AC-FT	17970

METHOW RIVER BASIN

12447390 ANDREWS CREEK NEAR MAZAMA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3	
OCT													
08...	1030	4.1	55	7.5	2.0	2.8	11.6	98	K2	K10	24	0	
FEB													
05...	1100	2.8	60	7.6	1.0	0.5	12.9	99	<1	<1	25	0	
JUN													
03...	1130	218	21	7.4	4.0	1.4	11.5	98	<1	K2	7	0	
AUG													
13...	1000	12	53	7.7	9.0	0.2	9.8	99	<1	<1	20	0	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT													
08...	7.8	1.1	2.4	17	0.2	0.7	28	34	0	1.1	0.2	<0.1	
FEB													
05...	8.1	1.2	2.6	18	0.2	0.8	33	41	0	1.3	0.2	<0.1	
JUN													
03...	2.3	0.36	1.0	22	0.2	0.4	9.0	11	0	3.8	0.4	<0.1	
AUG													
13...	6.6	0.95	2.1	18	0.2	0.6	25	30	0	1.7	0.3	<0.1	
DATE		SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	
OCT													
08...	11	42	41	0.06	0.46	<0.01	<0.10	0.03	0.2	<0.01	<0.01		
FEB													
05...	12	38	47	0.05	0.29	<0.01	0.21	0.04	0.4	0.01	0.02		
JUN													
03...	6.6	21	20	0.03	12	<0.01	<0.10	0.02	0.2	0.01	0.02		
AUG													
13...	9.9	39	37	0.05	1.3	0.04	0.69	<0.01	<0.2	<0.01	0.01		

K - Results based on colony count outside the acceptable range (non-ideal colony count).

METHOW RIVER BASIN

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12447390 ANDREWS CREEK NEAR MAZAMA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 08...	<0.01	<10	<1	29	<0.5	<1	<1	<3	1	<3	2	<4
FEB 05...	0.02	<10	<1	27	<0.5	<1	1	<3	1	<3	<1	<4
JUN 03...	0.02	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	<0.01	--	--	--	--	--	--	--	--	--	--	--
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)
OCT 08...	2	<0.1	<10	6	<1	<1	79	<6	<3	--	--	--
FEB 05...	3	<0.1	<10	<1	<1	<1	88	<6	16	<0.4	<0.5	0.7
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	--	--	--	--	--	--	--	--	--	--	--	--
DATE	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM DIS- SOLVED, EXTRAC- TION (UG/L)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)						
OCT 08...	--	--	--	--	<1	--						
FEB 05...	0.6	<0.6	0.04	0.45	<1	--						
JUN 03...	--	--	--	--	4	2.4						
AUG 13...	--	--	--	--	<1	--						

METHOW RIVER BASIN

12449950 METHOW RIVER NEAR PATEROS, WA

LOCATION.--Lat 48°04'39", long 119°59'02", in SE¼SW¼ sec.20, T.30 N., R.23 E., Okanogan County, Hydrologic Unit 17020008, on right bank 1.4 mi downstream from Black Canyon Creek, 4.3 mi northwest of Pateros, and at mile 6.7.

DRAINAGE AREA.--1,772 mi².

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

REVISED RECORDS.--WSP 1933: Drainage area.

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

REMARKS.--Estimated daily discharges: Nov. 20 to Jan. 17. Records good except for estimated daily discharges, which are fair. Diversions for irrigation of about 11,000 acres upstream from station (1959 Bureau of Reclamation land classification). U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--27 years, 1,592 ft³/s, 1,153,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,800 ft³/s May 31, 1972, gage height, 12.25 ft; minimum daily discharge, 150 ft³/s Jan. 8-10, 1974, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1920, 46,700 ft³/s May 29, 1948, determined by slope-area measurement of peak flow at site 1 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 31	0915	*14,400	*8.78	No other peak greater than base discharge.			
Minimum discharge, 226 ft ³ /s Feb. 20, gage height, 1.05 ft.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	373	498	270	320	347	770	1230	1590	12900	1580	572	321
2	401	519	260	330	349	768	1210	1530	12000	1530	551	310
3	402	599	260	320	340	784	1180	1530	9470	1500	544	300
4	393	635	300	310	336	814	1180	1540	8030	1390	538	292
5	392	654	350	310	339	836	1160	1530	7240	1300	518	290
6	407	652	390	310	329	862	1140	1500	6570	1220	494	285
7	423	637	450	310	322	898	1170	1500	5890	1140	478	285
8	421	620	420	310	311	959	1300	1560	5460	1100	462	286
9	411	610	400	300	301	998	1620	1680	4800	1090	441	287
10	405	598	390	300	302	1020	1920	1760	4470	1060	430	285
11	402	566	400	300	320	1020	1990	1770	4400	1060	420	280
12	408	500	390	300	316	1020	1960	1720	4240	1040	419	282
13	407	495	390	300	306	1030	1840	1700	3820	997	418	296
14	404	506	390	300	307	1010	1720	1650	3590	938	417	319
15	404	505	390	300	320	977	1670	1580	3390	883	401	329
16	405	521	380	290	316	942	1660	1530	3050	898	386	354
17	409	530	380	330	299	916	1550	1520	2750	960	375	361
18	414	517	370	367	279	898	1470	1710	2840	934	363	422
19	411	448	370	369	273	882	1410	2360	2960	862	351	421
20	418	420	360	354	276	894	1400	3550	2590	815	341	410
21	433	390	360	346	308	933	1550	4510	2340	788	333	405
22	444	350	360	349	360	975	2040	4010	2160	809	324	396
23	457	320	350	355	344	982	2370	3530	2120	905	313	387
24	469	300	350	340	327	989	2280	3250	2230	855	310	395
25	486	290	340	323	372	976	2210	3380	2200	795	308	404
26	499	290	340	307	709	963	2070	5790	2010	752	300	404
27	498	280	330	347	865	957	1960	10100	1840	716	292	396
28	501	280	340	343	785	995	1860	11100	1720	687	285	390
29	515	290	340	332	---	1090	1750	12200	1750	653	289	385
30	505	280	340	335	---	1190	1660	13200	1730	627	315	383
31	508	---	330	330	---	1230	---	13400	---	599	327	---
TOTAL	13425	14100	11090	10037	10358	29578	49530	119280	130560	30483	12315	10360
MEAN	433	470	358	324	370	954	1651	3848	4352	983	397	345
MAX	515	654	450	369	865	1230	2370	13400	12900	1580	572	422
MIN	373	280	260	290	273	768	1140	1500	1720	599	285	280
AC-FT	26630	27970	22000	19910	20550	58670	98240	236600	259000	60460	24430	20550
CAL YR 1985	TOTAL	358736	MEAN	983	MAX	7550	MIN	229	AC-FT	711600		
WTR YR 1986	TOTAL	441116	MEAN	1209	MAX	13400	MIN	260	AC-FT	875000		

COLUMBIA RIVER MAIN STEM

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12450700 COLUMBIA RIVER BELOW WELLS DAM, WA

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

DRAINAGE AREA.--86,100 mi², approximately.

PERIOD OF RECORD.--October 1967 to current year. October 1953 to September 1967 (monthly discharge only) on file in Washington office.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bechtel Corporation). Prior to Oct. 1, 1970, at site 0.8 mi downstream at same datum. Auxiliary water-stage recorder 6.8 mi downstream from base gage at same datum.

REMARKS.--Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Feeder Canal diversion (see sta 12435500) for Columbia Basin project is used to irrigate approximately 380,000 acres in the United States. An additional 35,000 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge provided by Public Utility District No. 1 of Douglas County through the Corps of Engineers N.P.D. Reservoir Control Center.

AVERAGE DISCHARGE.--33 years, 117,500 ft³/s, 85,130,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 402,000 ft³/s June 15, 1972; maximum elevation, 731.92 ft June 16, 1972; minimum discharge, 17,900 ft³/s Oct. 5, 1970 (from powerplant records); minimum elevation, 703.55 ft Sept. 28, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 176,000 ft³/s Apr. 15; minimum daily, 35,100 ft³/s Jan. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99000	69200	131000	60000	57900	99100	150000	144000	122000	87800	104000	64100
2	79800	51900	138000	92700	72300	103000	138000	144000	143000	87200	75700	110000
3	98000	52100	133000	73400	85200	105000	148000	119000	144000	75500	97500	103000
4	98700	89600	129000	81500	90000	99800	129000	101000	154000	49100	110000	103000
5	67900	99500	130000	73600	98900	105000	125000	130000	153000	44100	114000	106000
6	70400	93400	129000	78700	101000	102000	120000	138000	152000	40300	118000	87100
7	97600	84300	148000	84400	107000	106000	131000	129000	151000	71500	113000	69700
8	116000	94600	124000	84500	98800	83900	139000	121000	144000	80800	113000	75700
9	108000	101000	147000	78500	123000	75500	130000	151000	146000	107000	109000	77400
10	88200	103000	135000	85600	141000	110000	100000	135000	131000	133000	88800	85500
11	78500	115000	155000	74100	130000	102000	136000	137000	133000	139000	114000	69100
12	54500	115000	143000	79800	126000	120000	140000	150000	120000	117000	116000	66600
13	61300	107000	155000	102000	133000	116000	144000	151000	139000	105000	111000	53900
14	93000	109000	150000	91500	138000	129000	147000	147000	129000	118000	109000	61100
15	77600	96800	129000	92600	102000	111000	176000	129000	125000	139000	106000	93900
16	70700	95300	141000	85100	82300	121000	168000	146000	105000	150000	86700	64800
17	80900	100000	154000	92200	91800	136000	173000	124000	107000	151000	83500	59500
18	81500	105000	144000	52900	89700	136000	114000	120000	114000	152000	99100	53700
19	70100	122000	155000	35100	91500	120000	98600	132000	105000	142000	114000	56700
20	58900	120000	122000	65800	98800	115000	102000	131000	127000	131000	102000	43700
21	94100	137000	81000	79300	86000	121000	139000	136000	108000	148000	98500	45000
22	92700	139000	80300	91500	70900	98000	166000	119000	112000	152000	88900	70500
23	102000	153000	110000	80100	39600	91600	165000	106000	120000	140000	58800	71800
24	93200	144000	92400	84200	58200	126000	161000	94300	109000	134000	51400	53600
25	76200	150000	72300	71000	57200	139000	156000	109000	102000	143000	88700	62400
26	60600	141000	123000	58100	77000	136000	131000	111000	98600	146000	99400	72500
27	64000	141000	96700	88800	90600	110000	133000	126000	110000	111000	90000	43800
28	96700	113000	112000	90700	99800	126000	140000	124000	108000	129000	57700	41000
29	103000	124000	88500	88500	---	168000	156000	108000	82400	119000	70100	76100
30	94900	131000	93900	65400	---	163000	153000	114000	111000	106000	55600	76800
31	85000	---	85700	50300	---	159000	---	121000	---	105000	39300	---
TOTAL	2613000	3296700	3827800	2411900	2637500	3632900	4208600	3947300	3705000	3553300	2882700	2118000
MEAN	84290	109900	123500	77800	94200	117200	140300	127300	123500	114600	92990	70600
MAX	116000	153000	155000	102000	141000	168000	176000	151000	154000	152000	118000	110000
MIN	54500	51900	72300	35100	39600	75500	98600	94300	82400	40300	39300	41000
AC-FT	5183000	6539000	7592000	4784000	5231000	7206000	8348000	7829000	7349000	7048000	5718000	4201000
CAL YR 1985	TOTAL	37016500	MEAN	101400	MAX	169000	MIN	34200	AC-FT	73422000		
WTR YR 1986	TOTAL	38834700	MEAN	106400	MAX	176000	MIN	35100	AC-FT	77029000		

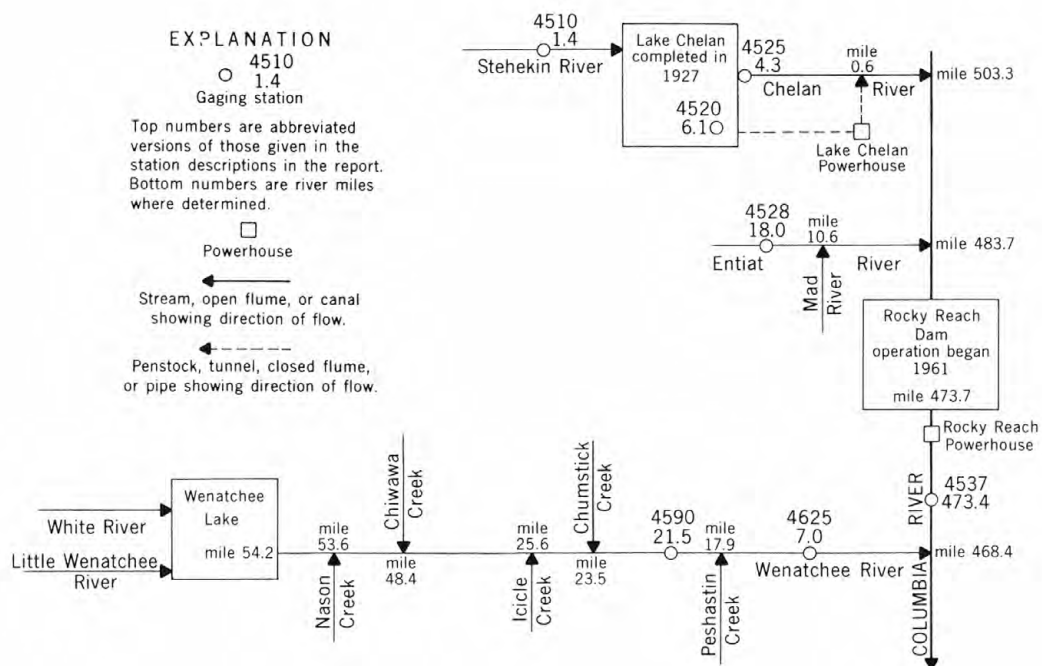


Figure 25.--Gaging stations in Columbia River basin from Chelan to Wenatchee Rivers.

12451000 STEHEKIN RIVER AT STEHEKIN, WA

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

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--October 1910 to October 1915, October 1926 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 412: 1914. WSP 1316: 1911(M), 1914-15(M). WSP 1446: 1912(M). WSP 1933: Drainage area. WDR-20-2: Drainage area.

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

REMARKS.--Estimated daily discharges: Oct. 1, 2, 9-11, Jan. 18-20. Records good. No known regulation or diversion. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--65 years, 1,412 ft³/s, 59.74 in/yr, 1,023,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,900 ft³/s May 29, 1948, gage height, 29.00 ft, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 56 ft³/s Jan. 21, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	2300	*11,800	*25.90	No other peak greater than base discharge.			
Minimum discharge, 184 ft ³ /s Feb. 20.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	270	980	370	240	232	1400	1390	1180	9230	2130	1090	841		
2	280	2030	362	240	232	1350	1290	1150	7960	2350	1310	816		
3	445	2690	358	232	228	1310	1240	1190	6470	2040	1400	808		
4	328	2190	372	228	228	1270	1200	1240	6070	1680	1320	768		
5	315	1600	350	232	228	1310	1160	1230	5580	1450	1270	719		
6	477	1320	333	232	224	1270	1160	1230	4790	1410	1220	638		
7	392	1200	322	232	218	1380	1250	1330	4360	1560	1220	565		
8	319	1090	341	228	215	1520	1560	1410	3370	1750	1320	538		
9	280	998	327	224	218	1450	2010	1500	3130	1710	1430	489		
10	260	923	317	224	215	1370	2140	1460	3430	1670	1510	513		
11	350	832	313	224	212	1300	1960	1380	3910	1940	1300	457		
12	331	788	313	224	209	1260	1760	1350	3640	1910	1170	406		
13	293	759	308	221	206	1220	1570	1510	3170	1630	1210	382		
14	463	732	304	218	206	1150	1420	1400	3270	1560	1200	368		
15	1600	712	295	218	206	1100	1350	1330	2880	1410	1080	344		
16	1120	684	286	215	206	1040	1280	1300	2400	1280	904	337		
17	845	658	282	224	218	989	1220	1370	2190	1190	830	322		
18	745	605	278	260	206	956	1170	2490	2690	1110	792	337		
19	726	576	273	320	192	960	1140	3730	2360	1210	776	322		
20	829	565	269	370	192	981	1210	5080	2070	1480	783	308		
21	802	531	265	345	209	1060	1820	4040	1870	1730	801	295		
22	742	469	261	308	206	1080	2930	3110	1980	1900	786	287		
23	727	391	257	286	206	1070	2450	2640	2530	1780	764	479		
24	737	401	252	273	682	1050	2080	2430	2900	1630	721	610		
25	927	416	252	257	2250	1000	1810	3670	2630	1540	711	390		
26	783	417	248	244	2560	984	1590	7420	2310	1340	804	344		
27	890	390	248	244	1800	987	1480	7920	2060	1170	898	335		
28	1040	380	248	240	1490	1150	1380	7620	2350	1110	1040	331		
29	865	389	248	236	---	1340	1290	8450	2460	1020	1010	393		
30	802	391	244	232	---	1540	1220	9610	2080	949	965	409		
31	729	---	240	232	---	1490	---	9330	---	972	886	---		
TOTAL	19712	26107	9136	7703	13694	37337	46530	100100	106140	47611	32521	14151		
MEAN	636	870	295	248	489	1204	1551	3229	3538	1536	1049	472		
MAX	1600	2690	372	370	2560	1540	2930	9610	9230	2350	1510	841		
MIN	260	380	240	215	192	956	1140	1150	1870	949	711	287		
CFSM	1.98	2.71	.92	.77	1.52	3.75	4.83	10.1	11.0	4.79	3.27	1.47		
IN.	2.28	3.03	1.06	.89	1.59	4.33	5.39	11.60	12.30	5.52	3.77	1.64		
AC-FT	39100	51780	18120	15280	27160	74060	92290	198500	210500	94440	64510	28070		
CAL YR 1985	TOTAL	441962	MEAN	1211	MAX	7160	MIN	160	CFSM	3.77	IN.	51.22	AC-FT	876600
WTR YR 1986	TOTAL	460742	MEAN	1262	MAX	9610	MIN	192	CFSM	3.93	IN.	53.39	AC-FT	913900

CHELAN RIVER BASIN

12452000 LAKE CHELAN AT CHELAN, WA

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

DRAINAGE AREA.--924 mi².

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,100.10 ft June 18 (affected by seiche action); maximum contents, 677,000 acre-ft Aug. 11, elevation, 1,099.99 ft, mean of seiche; minimum elevation, 1,085.87 ft Feb. 22, 23, contents, 218,000 acre-ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)
(Based on data by the Pacific Northwest Coordination Agreement)

1,080	31,540	1,090	350,900	1,100	677,400
1,085	190,200	1,095	513,300		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1098.20	1096.00	1093.76	1090.39	1087.42	1086.57	1088.60	1091.04	1097.87	1099.82	1099.57	1099.74
2	1098.10	1096.00	1093.68	1090.26	1087.33	1086.65	1088.67	1091.08	1098.27	1099.89	1099.61	1099.73
3	1098.02	1096.04	1093.60	1090.15	1087.24	1086.73	1088.71	1091.16	1098.49	1099.89	1099.72	1099.71
4	1097.94	1096.11	1093.50	1090.04	1087.13	1086.81	1088.78	1091.23	1098.68	1099.88	1099.82	1099.67
5	1097.85	1096.11	1093.41	1089.93	1087.03	1086.89	1088.83	1091.25	1098.96	1099.79	1099.84	1099.63
6	1097.79	1096.08	1093.29	1089.84	1086.94	1086.97	1088.87	1091.28	1099.19	1099.76	1099.86	1099.58
7	1097.69	1096.03	1093.22	1089.73	1086.83	1087.07	1088.90	1091.37	1099.28	1099.79	1099.89	1099.56
8	1097.59	1095.97	1093.12	1089.63	1086.73	1087.21	1088.98	1091.43	1099.30	1099.86	1099.94	1099.57
9	1097.47	1095.89	1093.04	1089.52	1086.63	1087.31	1089.11	1091.49	1099.37	1099.89	1099.94	1099.51
10	1097.38	1095.79	1092.91	1089.44	1086.52	1087.40	1089.26	1091.56	1099.50	1099.85	1099.95	1099.47
11	1097.34	1095.75	1092.77	1089.33	1086.44	1087.51	1089.32	1091.61	1099.68	1099.87	1100.00	1099.41
12	1097.25	1095.67	1092.67	1089.22	1086.39	1087.59	1089.42	1091.67	1099.79	1099.91	1099.91	1099.33
13	1097.13	1095.58	1092.51	1089.11	1086.34	1087.67	1089.53	1091.76	1099.82	1099.88	1099.87	1099.30
14	1097.01	1095.48	1092.40	1089.01	1086.30	1087.73	1089.61	1091.81	1099.84	1099.86	1099.89	1099.27
15	1096.97	1095.43	1092.30	1088.91	1086.28	1087.78	1089.70	1091.86	1099.80	1099.83	1099.92	1099.23
16	1096.95	1095.34	1092.19	1088.81	1086.26	1087.82	1089.78	1091.91	1099.79	1099.81	1099.90	1099.21
17	1096.87	1095.27	1092.08	1088.74	1086.15	1087.87	1089.86	1091.96	1099.82	1099.80	1099.87	1099.18
18	1096.77	1095.17	1091.94	1088.69	1086.04	1087.90	1089.95	1092.10	1099.85	1099.78	1099.87	1099.18
19	1096.70	1095.05	1091.84	1088.72	1085.98	1087.93	1089.94	1092.27	1099.79	1099.77	1099.85	1099.15
20	1096.63	1094.95	1091.71	1088.62	1085.92	1087.97	1089.98	1092.57	1099.75	1099.77	1099.81	1099.12
21	1096.56	1094.83	1091.61	1088.50	1085.89	1088.03	1090.16	1092.86	1099.70	1099.81	1099.81	1099.06
22	1096.51	1094.76	1091.50	1088.38	1085.87	1088.08	1090.34	1093.07	1099.69	1099.92	1099.80	1099.01
23	1096.50	1094.63	1091.37	1088.30	1085.87	1088.11	1090.45	1093.23	1099.78	1099.91	1099.78	1098.97
24	1096.45	1094.50	1091.28	1088.22	1085.92	1088.17	1090.53	1093.37	1099.92	1099.83	1099.78	1098.96
25	1096.41	1094.38	1091.18	1088.11	1086.04	1088.20	1090.64	1093.58	1099.84	1099.80	1099.74	1098.92
26	1096.37	1094.27	1091.06	1087.99	1086.24	1088.25	1090.70	1094.03	1099.69	1099.71	1099.72	1098.88
27	1096.30	1094.19	1090.93	1087.88	1086.38	1088.28	1090.82	1094.63	1099.67	1099.65	1099.71	1098.86
28	1096.27	1094.07	1090.81	1087.79	1086.49	1088.33	1090.88	1095.29	1099.75	1099.61	1099.72	1098.79
29	1096.20	1093.97	1090.71	1087.69	---	1088.39	1090.95	1095.95	1099.86	1099.61	1099.73	1098.75
30	1096.13	1093.86	1090.59	1087.58	---	1088.47	1090.99	1096.72	1099.83	1099.59	1099.75	1098.74
31	1096.04	---	1090.47	1087.50	---	1088.52	---	1097.39	---	1099.57	1099.74	---
MEAN	1097.01	1095.24	1092.18	1088.90	1086.45	1087.68	1089.74	1092.66	1099.49	1099.80	1099.82	1099.25
MAX	1098.20	1096.11	1093.76	1090.39	1087.42	1088.52	1090.99	1097.39	1099.92	1099.92	1100.00	1099.74
MIN	1096.04	1093.86	1090.47	1087.50	1085.87	1086.57	1088.60	1091.04	1097.87	1099.57	1099.57	1098.74
(†)	547700	474900	364100	268700	239500	303800	381900	600400	670100	662900	670100	635500
(†)	-73000	-72800	-110800	-95400	-92900	+64300	+78100	+218500	+69700	-7200	+7200	-34600

CAL YR 1985 MEAN 1092.31 MAX 1099.94 MIN 1083.36 AC-FT† +29700
WTR YR 1986 MEAN 1094.06 MAX 1100.00 MIN 1085.87 AC-FT† +14800

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

† Change in contents, in acre-feet.

12452500 CHELAN RIVER AT CHELAN, WA

LOCATION.--Lat 47°48'31", long 119°59'08", in SE¼NE¼ sec.30, T.27 N., R.23 E., Chelan County, Hydrologic Unit 17020009, at Chelan River powerplant tailrace, 4.3 mi downstream from control dam at outlet of Lake Chelan, and 3.0 mi southeast of Chelan.

DRAINAGE AREA.--924 mi².

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

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

GAGE.--Water-stage recorder and watt-hour meters on each turbine. Datum of gage is mean sea level, datum of 1912. To convert to National Geodetic Vertical Datum of 1929, subtract 1.62 ft. See WSP 1933 for history of changes prior to Mar. 20, 1939. Water-stage recorder for Lake Chelan at Chelan (see sta 12452000) also used to determine head and spill discharge. Mar. 20, 1939, to Sept. 30, 1981, gage at site 1.7 mi downstream from the Lake Chelan gage, at same datum, and published as the gage of record, used to determine head and spill discharge.

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

COOPERATION.--Records completely furnished by Public Utility District No. 1 of Chelan County except for partial records furnished during period of spill.

AVERAGE DISCHARGE.--82 years (water years 1905-86), 2,048 ft³/s, 30.10 in/yr, 1,484,000 acre-ft/yr, adjusted for storage since October 1911.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18,400 ft³/s June 3, 1968; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at other times owing to artificial regulation.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6,650 ft³/s June 25; minimum daily, 119 ft³/s Aug. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1910	2100	2200	2200	2200	1000	1000	1020	3170	1650	1020	1120
2	1700	2200	2200	2200	2200	905	1010	1020	6080	2020	119	1120
3	1500	2200	2300	2200	2200	905	1010	1020	6180	3090	119	1120
4	1900	2200	2200	2200	2200	905	1010	1020	4570	2720	719	1120
5	1900	2200	2200	2200	2200	905	1010	1020	3710	2710	719	1120
6	1900	2200	2200	2200	2200	905	1010	1020	4280	1230	723	1120
7	1900	2200	2200	2200	2200	805	1010	1010	6520	1010	823	1120
8	1900	2200	2200	2200	2200	1000	1010	1010	4060	1680	923	1120
9	1900	2200	2200	2200	2200	1000	1010	1010	3090	2110	1620	1120
10	1600	2200	2200	2200	1400	1000	1010	1010	2530	2210	1620	1120
11	1800	2200	2200	2200	904	1000	1010	1010	2920	2110	2030	1120
12	2200	2200	2200	2200	904	1000	1010	1010	4780	2210	2040	1120
13	2200	2200	2200	2200	1000	1000	1010	1010	4800	2210	1020	1120
14	2200	2200	2200	2200	804	1000	1010	1010	5600	2210	1020	1120
15	2200	2200	2200	2200	1100	1000	1010	1010	4790	1820	1020	1120
16	2200	2200	2200	2200	2200	1000	1010	1010	3710	1530	1020	1120
17	2200	2200	2200	2200	2200	1000	1010	1010	3020	1530	1020	1110
18	2200	2200	2200	2200	1300	1000	1010	1010	4220	1530	1020	1110
19	2200	2200	2200	2200	1000	1000	1010	1010	4780	1530	1020	1110
20	2200	2200	2200	2200	1000	1000	1010	1010	3230	1430	1120	1110
21	2200	2200	2200	2200	1000	1000	1010	1020	2910	1430	1120	1110
22	2200	2200	2200	2200	1000	1000	1010	1020	2040	1600	1120	1110
23	2200	2200	2200	2200	1000	1000	1010	1020	1430	2420	1120	1110
24	2200	2200	2200	2200	1000	1000	1010	1020	4090	2520	1120	1110
25	2200	2200	2200	2200	1000	1000	1010	1020	6650	2470	1020	1110
26	2200	2200	2200	2200	1000	1000	1010	1020	3800	2630	1020	1110
27	2200	2200	2200	2200	1000	1000	1010	1020	2200	2220	1120	1110
28	2200	2200	2200	2200	1000	1000	1010	1020	1890	1520	1120	1110
29	2200	2200	2200	2200	---	1000	1010	920	2180	1020	1120	1110
30	2200	2200	2200	2200	---	1000	1020	1640	3330	1020	1120	1110
31	2200	---	2200	2200	---	1000	---	4010	---	1320	1120	---
TOTAL	63910	65900	68300	68200	41612	30330	30300	34990	116560	58710	32855	33460
MEAN	2062	2197	2203	2200	1486	978	1010	1129	3885	1894	1060	1115
MAX	2200	2200	2300	2200	2200	1000	1020	4010	6650	3090	2040	1120
MIN	1500	2100	2200	2200	804	805	1000	920	1430	1010	119	1110
AC-FT	126800	130700	135500	135300	82540	60160	60100	69400	231200	116500	65170	66370
MEAN†	875	973	402	649	960	2025	2322	4682	5057	1778	1177	534
CFSM†	0.95	1.05	0.44	0.70	1.04	2.19	2.51	5.07	5.47	1.92	1.27	0.58
IN.†	1.09	1.18	0.50	0.81	1.08	2.53	2.81	5.84	6.11	2.22	1.47	0.64
AC-FT†	53800	57900	24700	39900	53340	124500	138200	287900	300900	109300	72370	31770

CAL YR 1985 TOTAL 536779 MEAN 1471 MAX 3530 MIN 106 AC-FT 1065000 MEAN† 1512 CFSM† 1.64 IN.† 22.23 AC-FT† 1095000
WTR YR 1986 TOTAL 645127 MEAN 1767 MAX 6650 MIN 119 AC-FT 1280000 MEAN† 1789 CFSM† 1.94 IN.† 26.29 AC-FT† 1295000

† Adjusted for change in contents of Lake Chelan.

ENTIAT RIVER BASIN

12452800 ENTIAT RIVER NEAR ARDENVOIR, WA

LOCATION.--Lat 47°49'07", long 120°25'19", in NE¼NE¼ sec.27, T.27 N., R.19 E., Chelan County, Hydrologic Unit 17020010, on left bank 0.5 mi downstream from Stormy Creek, 6.0 mi northwest of Ardenvoir, and at mile 18.0.

DRAINAGE AREA.--203 mi².

PERIOD OF RECORD.--September 1957 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,560.97 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 3, Dec. 11-13, Jan. 25, Feb. 8-10, 13, 18-20. Records good except estimated daily discharges, which are fair. No regulation or diversion.

AVERAGE DISCHARGE.--29 years, 382 ft³/s, 25.55 in/yr, 276,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,430 ft³/s June 10, 1972, gage height, 8.98 ft; minimum daily discharge, 25 ft³/s Dec. 17, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 31	0530	*3,900	*7.09	No other peak greater than base discharge.			
Minimum daily discharge, 57 ft ³ /s Feb. 9, 19.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	68	111	68	66	77	269	303	387	3170	494	172	113		
2	67	178	74	67	75	260	298	375	3220	500	177	108		
3	66	172	78	66	71	253	296	372	2550	467	185	105		
4	65	166	84	67	70	250	295	375	2220	415	181	102		
5	64	154	85	67	71	253	289	370	1980	367	174	98		
6	69	146	85	66	70	254	289	362	1750	338	168	94		
7	81	138	84	65	68	288	305	372	1570	329	163	91		
8	72	129	79	66	58	337	350	399	1400	336	163	87		
9	68	123	76	67	57	321	437	437	1280	335	168	85		
10	67	120	72	68	61	318	489	445	1250	328	171	82		
11	74	93	70	70	73	308	496	437	1300	319	167	80		
12	78	74	69	66	66	302	483	433	1270	317	157	78		
13	70	95	68	64	62	290	452	461	1170	297	151	77		
14	70	91	66	64	67	276	426	429	1140	285	149	82		
15	87	101	66	64	66	263	414	416	1020	277	143	83		
16	97	113	66	65	65	252	394	413	889	266	135	90		
17	87	114	69	67	67	243	369	433	795	254	127	86		
18	82	94	67	73	60	236	353	545	819	234	119	107		
19	79	73	70	108	57	234	342	733	755	223	115	96		
20	86	81	68	101	58	235	354	996	689	229	114	86		
21	91	76	67	87	68	244	409	1070	628	244	112	81		
22	95	74	66	82	68	243	541	972	603	263	111	77		
23	101	72	66	78	72	238	559	893	646	265	109	81		
24	104	70	66	75	153	237	556	836	721	250	108	120		
25	131	74	65	67	264	231	539	977	696	243	109	92		
26	113	72	62	67	363	233	504	1640	636	227	105	83		
27	128	65	62	79	324	234	484	2360	571	212	106	78		
28	148	66	65	73	291	252	459	2370	566	199	110	77		
29	118	69	66	71	---	278	430	2790	568	189	119	76		
30	113	72	65	71	---	296	407	3260	525	179	129	75		
31	105	---	66	71	---	302	---	3340	---	173	127	---		
TOTAL	2744	3076	2180	2228	2922	8230	12322	29698	36397	9054	4344	2670		
MEAN	88.5	103	70.3	71.9	104	265	411	958	1213	292	140	89.0		
MAX	148	178	85	108	363	337	559	3340	3220	500	185	120		
MIN	64	65	62	64	57	231	289	362	525	173	105	75		
CFSM	.44	.51	.35	.35	.51	1.31	2.02	4.72	5.98	1.44	.69	.44		
IN.	.50	.56	.40	.41	.54	1.51	2.26	5.44	6.67	1.66	.80	.49		
AC-FT	5440	6100	4320	4420	5800	16320	24440	58910	72190	17960	8620	5300		
CAL YR 1985	TOTAL	92125	MEAN	252	MAX	1910	MIN	54	CFSM	1.24	IN.	16.88	AC-FT	182700
WTR YR 1986	TOTAL	115865	MEAN	317	MAX	3340	MIN	57	CFSM	1.56	IN.	21.23	AC-FT	229800

COLUMBIA RIVER MAIN STEM

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12453700 COLUMBIA RIVER AT ROCKY REACH DAM, WA

LOCATION.--Lat 47°31'28", long 120°18'04", in SW¼NW¼ sec.2, T.23 N., R.20 E., Chelan County, Hydrologic Unit 17020010, on right bank 0.5 mi downstream from Rocky Reach Dam, 1.5 mi downstream from Swakane Creek, 7.4 mi north of Wenatchee, and at mile 473.4.

DRAINAGE AREA.--87,800 mi², approximately.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Auxiliary water-stage recorder 1.9 mi downstream from base gage at same datum.

REMARKS.--Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Feeder Canal diversion (see sta 12435500) for Columbia Basin project is used to irrigate approximately 380,000 acres in the United States. An additional 35,000 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge provided by Public Utility District No. 1 of Chelan County through the Corps of Engineers N.P.D. Reservoir Control Center.

AVERAGE DISCHARGE.--26 years, 116,900 ft³/s, 84,690,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 535,000 ft³/s June 10, 1961, elevation, about 635.50 ft; minimum daily discharge, 25,100 ft³/s Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 179,000 ft³/s Apr. 16; minimum daily, 37,900 ft³/s Jan. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102000	74800	133000	65000	59400	106000	149000	146000	130000	89900	104000	63200
2	83500	56700	137000	96100	72700	104000	134000	144000	150000	87000	76200	112000
3	98600	55000	134000	79600	86000	107000	148000	124000	147000	80800	98600	107000
4	102000	92800	132000	86000	93900	102000	124000	106000	156000	53800	112000	109000
5	73800	102000	131000	79900	99900	108000	125000	135000	151000	46500	115000	113000
6	75300	96600	130000	83800	105000	105000	120000	144000	158000	42200	115000	92000
7	101000	88600	151000	88800	110000	107000	129000	130000	156000	72000	114000	73800
8	118000	98000	124000	88900	102000	88200	138000	127000	146000	81700	115000	78900
9	112000	103000	153000	83800	121000	77800	127000	152000	146000	106000	112000	78700
10	91700	104000	133000	86200	140000	111000	105000	139000	137000	130000	95400	84700
11	83300	119000	159000	79900	132000	102000	137000	137000	129000	136000	116000	72100
12	59100	117000	146000	82600	126000	122000	138000	148000	124000	120000	122000	70900
13	65900	111000	153000	104000	136000	113000	153000	154000	141000	107000	113000	55600
14	96200	113000	144000	97200	139000	128000	143000	155000	132000	118000	113000	62700
15	81400	100000	135000	95800	105000	111000	166000	128000	129000	136000	110000	97200
16	74200	101000	144000	88800	87300	121000	179000	149000	112000	147000	88800	70900
17	91900	104000	161000	97100	96200	134000	160000	128000	110000	150000	84500	56100
18	80600	108000	146000	56100	91300	132000	120000	122000	116000	149000	103000	59100
19	73600	122000	154000	37900	90600	124000	99500	138000	109000	144000	120000	58700
20	63100	126000	122000	70800	102000	116000	101000	133000	129000	125000	109000	45100
21	98900	137000	85800	81500	88200	122000	136000	136000	111000	143000	102000	45700
22	98900	136000	86100	96800	73800	100000	174000	122000	106000	152000	93500	73500
23	105000	155000	112000	85400	42000	92500	164000	110000	124000	141000	64400	72200
24	100000	147000	98900	89800	61300	124000	166000	93900	114000	131000	53100	54900
25	73900	150000	75700	74800	60300	139000	155000	110000	107000	142000	91500	66700
26	63300	138000	125000	63300	75800	132000	129000	111000	106000	148000	106000	74500
27	64000	140000	104000	91800	93700	111000	137000	127000	111000	123000	95500	43300
28	100000	118000	114000	95700	98100	119000	145000	128000	107000	123000	60800	41200
29	103000	127000	92900	91400	---	156000	158000	113000	85000	119000	72500	77500
30	101000	133000	99000	68800	---	163000	156000	117000	111000	114000	56800	90000
31	88500	---	91000	58700	---	158000	---	130000	---	105000	41000	---
TOTAL	2723700	3373500	3906400	2546300	2688500	3635500	4215500	4036900	3790000	3562900	2973600	2200200
MEAN	87860	112500	126000	82140	96020	117300	140500	130200	126300	114900	95920	73340
MAX	118000	155000	161000	104000	140000	163000	179000	155000	158000	152000	122000	113000
MIN	59100	55000	75700	37900	42000	77800	99500	93900	85000	42200	41000	41200
AC-FT	5402000	6691000	7748000	5051000	5333000	7211000	8361000	8007000	7517000	7067000	5898000	4364000
CAL YR 1985	TOTAL	37989600	MEAN	104100	MAX	179000	MIN	35200	AC-FT	75352000		
WTR YR 1986	TOTAL	39653000	MEAN	108600	MAX	179000	MIN	37900	AC-FT	78652000		

WENATCHEE RIVER BASIN

12459000 WENATCHEE RIVER AT PESHASTIN, WA

LOCATION.--Lat 47°35'00", long 120°36'46", in SE¼SW¼ sec.8, T.24 N., R.18 E., Chelan County, Hydrologic Unit 17020011, on right bank 1.0 mi northwest of Peshastin, 3.5 mi upstream from Peshastin Creek, 4.1 mi downstream from Icicle Creek, and at mile 21.5.

DRAINAGE AREA.--1,000 mi², approximately.

PERIOD OF RECORD.--October 1928 to February 1929 (monthly discharge only), March 1929 to current year.

REVISED RECORDS.--WSP 1316: 1929-32(M).

GAGE.--Water-stage recorder. Datum of gage is 1,028.04 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 24, 1932, nonrecording gage at site 1.2 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 23 to Jan. 9. Records excellent except for estimated daily discharges, which are fair. Numerous diversions upstream for irrigation of an estimated 3,200 acres upstream from station. Diversion from Icicle Creek 5.7 mi upstream from mouth is used for irrigation of a substantial part of the 22,000 acres irrigated downstream from station. Bonneville Power Administration telemeter at station.

AVERAGE DISCHARGE.--58 years, 3,092 ft³/s, 2,240,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s May 28, 1948, gage height, 15.88 ft; minimum discharge, 183 ft³/s Oct. 14, 1939; minimum gage height, 1.24 ft Nov. 1, 1952; minimum daily discharge, 270 ft³/s Oct. 2, 1929, Nov. 30, 1936, Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,500 ft³/s May 31, gage height, 11.32 ft; minimum discharge, 458 ft³/s Oct. 5, 6, gage height, 1.76 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	508	2500	840	740	1250	5880	4380	3150	17800	3460	1190	725
2	501	5390	880	750	1250	5350	4100	3040	17000	3430	1160	688
3	496	7160	900	780	1220	4930	3910	3050	14900	3370	1210	664
4	486	7500	960	790	1180	4580	3760	3150	13100	3060	1240	653
5	466	6160	1000	740	1160	4540	3600	3120	11600	2680	1220	636
6	477	5030	960	740	1130	4370	3510	3040	10400	2400	1170	605
7	552	4290	920	740	1080	4730	3600	3120	9430	2290	1150	575
8	560	3740	880	740	1000	6070	4000	3260	8220	2360	1120	559
9	519	3280	840	720	1000	6050	4510	3410	7310	2410	1130	530
10	497	2900	800	698	985	5710	4830	3430	7120	2360	1150	525
11	498	2510	780	696	1010	5280	4730	3290	7420	2360	1140	513
12	655	2220	800	724	965	4920	4550	3180	7560	2510	1080	495
13	658	2070	780	696	941	4560	4240	3660	6980	2380	1040	483
14	628	1920	760	676	936	4180	3930	3880	6790	2220	1000	493
15	978	1850	720	663	947	3860	3780	3600	6440	2080	968	503
16	1430	1810	680	664	953	3610	3680	3420	5710	1920	914	535
17	1470	1740	700	691	950	3390	3470	3430	5020	1940	846	534
18	1270	1620	740	807	926	3210	3310	4050	5210	1850	802	637
19	1140	1480	760	1700	877	3190	3160	5670	5130	1730	762	613
20	1250	1420	740	2690	806	3280	3170	7430	4600	1730	724	568
21	1380	1350	760	2420	920	3430	3740	7710	4120	1830	706	545
22	1360	1270	760	2120	907	3670	5070	6750	3900	1930	690	519
23	1530	1160	740	1910	1020	3560	5080	5880	4220	2020	680	507
24	1620	1060	740	1750	3080	3480	4720	5390	4800	1950	671	857
25	3300	800	720	1580	7610	3320	4400	6370	4910	1840	661	882
26	3210	820	700	1450	9780	3240	4050	9870	4520	1730	647	770
27	3650	820	700	1410	8250	3260	3860	12800	3970	1600	648	721
28	4140	820	720	1370	6740	3530	3740	13600	3780	1460	658	673
29	3610	820	720	1320	---	4060	3520	15100	3950	1350	696	678
30	3030	820	740	1300	---	4420	3300	16900	3720	1260	743	728
31	2650	---	740	1250	---	4570	---	18200	---	1190	746	---
TOTAL	44519	76330	24480	35325	58873	132230	119700	191950	219630	66700	28562	18414
MEAN	1436	2544	790	1140	2103	4265	3990	6192	7321	2152	921	614
MAX	4140	7500	1000	2690	9780	6070	5080	18200	17800	3460	1240	882
MIN	466	800	680	663	806	3190	3160	3040	3720	1190	647	483
AC-FT	88300	151400	48560	70070	116800	262300	237400	380700	435600	132300	56650	36520
CAL YR 1985	TOTAL	897155	MEAN	2458	MAX	13700	MIN	466	AC-FT	1780000		
WTR YR 1986	TOTAL	1016713	MEAN	2786	MAX	18200	MIN	466	AC-FT	2017000		

WENATCHEE RIVER BASIN

351

12462500 WENATCHEE RIVER AT MONITOR, WA

LOCATION.--Lat 47°29'58", long 120°25'24", in NE¼SW¼ sec.11, T.23 N., R.19 E., Chelan County, Hydrologic Unit 17020011, on right bank 1.0 mi north of Monitor, 3.5 mi downstream from Mission Creek, and at mile 7.0.

DRAINAGE AREA.--1,301 mi².

PERIOD OF RECORD.--August to November 1897, October 1962 to current year. Published as "near Wenatchee" 1897.

GAGE.--Water-stage recorder. Elevation of gage is 680 ft, from topographic map. Aug. 7 to Nov. 7, 1897, nonrecording gage 1 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Jan. 10. Records excellent except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation of about 25,000 acres upstream from station. Chelan County Public Utility District No. 1 gage-height telemeter at station.

AVERAGE DISCHARGE.--24 years, 3,322 ft³/s, 2,407,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,600 ft³/s Dec. 27, 1980, gage height, 27.23 ft; minimum discharge, 357 ft³/s Oct. 12, 1979, gage height, 17.01 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,500 ft³/s May 31, gage height, 25.10 ft; minimum discharge, 445 ft³/s Oct. 5, 6, gage height, 17.15 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	496	2570	960	820	1420	6760	4990	3390	18800	3500	1080	668
2	485	5330	980	840	1420	6170	4650	3220	18000	3450	1060	629
3	480	7470	1000	860	1400	5700	4400	3210	15900	3410	1080	597
4	469	8110	1050	840	1350	5290	4230	3300	13900	3100	1120	585
5	452	6620	1080	820	1340	5270	4040	3290	12500	2720	1120	571
6	463	5370	1020	800	1300	5100	3920	3190	11200	2410	1080	548
7	529	4570	1000	800	1240	5590	3990	3240	10100	2270	1050	521
8	564	3990	980	820	1170	7200	4400	3380	8860	2310	1020	505
9	534	3500	940	820	1140	7080	4990	3550	7770	2380	1020	485
10	520	3110	900	840	1120	6620	5330	3590	7460	2340	1040	472
11	550	2700	880	836	1160	6100	5210	3460	7780	2320	1040	477
12	704	2370	900	841	1120	5670	5010	3310	7970	2460	984	472
13	763	2230	860	817	1090	5260	4650	3720	7330	2380	946	464
14	723	2070	820	792	1080	4810	4310	4060	7080	2190	909	487
15	914	1990	800	779	1090	4420	4120	3760	6730	2050	879	507
16	1480	1940	780	779	1090	4110	4030	3550	5970	1900	830	567
17	1540	1870	800	804	1080	3850	3770	3530	5240	1880	768	597
18	1360	1750	820	918	1050	3640	3600	4150	5380	1830	716	736
19	1230	1600	840	1810	997	3600	3440	5910	5340	1680	671	734
20	1290	1540	820	2890	866	3720	3430	7900	4810	1670	634	665
21	1450	1460	820	2700	1040	3900	4030	8360	4320	1740	617	638
22	1430	1370	800	2380	1040	4180	5530	7260	4040	1830	603	608
23	1600	1260	800	2130	1140	4080	5580	6250	4300	1940	594	585
24	1650	1120	800	1950	3740	3970	5150	5670	4870	1890	583	876
25	3270	1000	780	1760	9190	3790	4790	6630	5030	1780	576	1020
26	3430	900	760	1620	11600	3690	4390	10500	4640	1670	560	889
27	3820	900	760	1570	9670	3710	4160	13600	4100	1550	554	810
28	4350	900	780	1530	7800	4020	3990	14400	3830	1400	559	745
29	3870	920	800	1480	---	4650	3830	15900	4010	1270	602	733
30	3240	940	800	1450	---	5050	3630	17800	3820	1170	665	769
31	2840	---	780	1410	---	5220	---	19100	---	1100	689	---
TOTAL	46496	81470	26910	39506	68743	152220	131590	202180	231080	65590	25649	18960
MEAN	1500	2716	868	1274	2455	4910	4386	6522	7703	2116	827	632
MAX	4350	8110	1080	2890	11600	7200	5580	19100	18800	3500	1120	1020
MIN	452	900	760	779	866	3600	3430	3190	3820	1100	554	464
AC-FT	92220	161600	53380	78360	136400	301900	261000	401000	458300	130100	50870	37610
CAL YR 1985	TOTAL	951297	MEAN	2606	MAX	14400	MIN	408	AC-FT	1887000		
WTR YR 1986	TOTAL	1090394	MEAN	2987	MAX	19100	MIN	452	AC-FT	2163000		

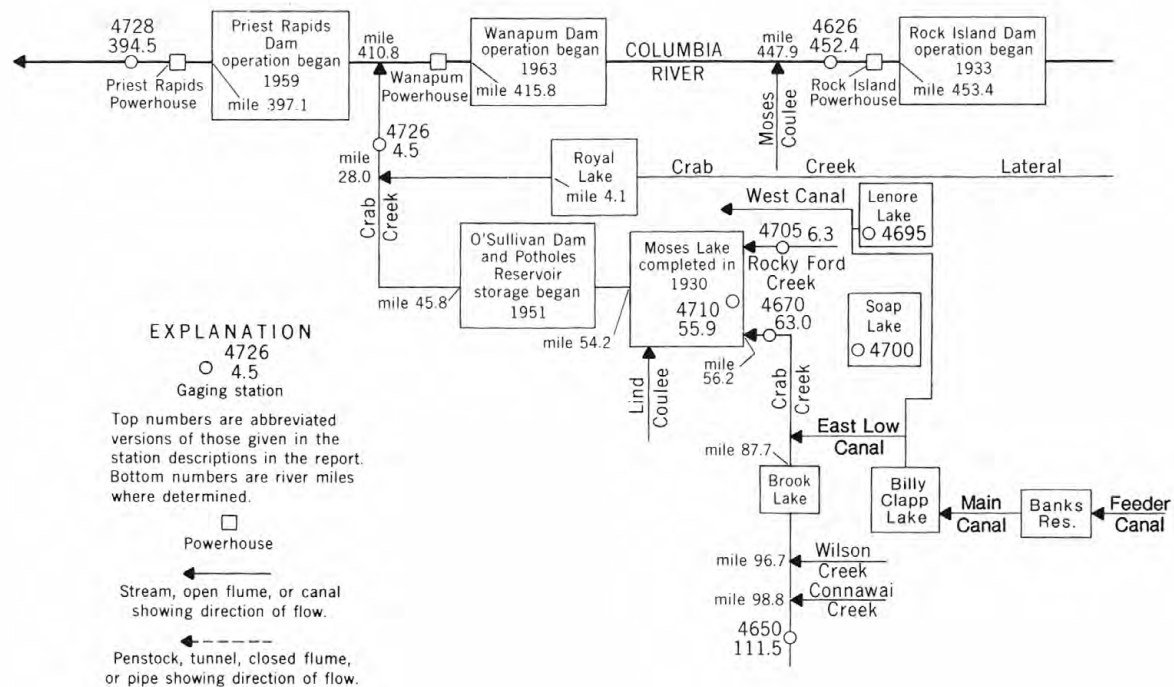


Figure 26.--Gaging stations in Columbia River basin from Rock Island Dam to Priest Rapids gage.

COLUMBIA RIVER MAIN STEM

353

12462600 COLUMBIA RIVER BELOW ROCK ISLAND DAM, WA

LOCATION.--Lat 47°19'57", long 120°04'48", in NE¼NW¼ sec.9, T.21 N., R.22 E., Douglas County, Hydrologic Unit 17020010, on left bank 1.0 mi downstream from Rock Island Dam, 2.0 mi downstream from Rock Island Creek, 12 mi southeast of Wenatchee, and at mile 452.4.

DRAINAGE AREA.--89,400 mi², approximately.

PERIOD OF RECORD.--January to December 1910 (gage heights only), May 1913 to December 1916, October 1930 to current year.
Published as "at Wenatchee" January 1910 to December 1916, and as "at Trinidad" October 1930 to May 1961.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1916, nonrecording gage 1.2 mi upstream from highway bridge at Wenatchee, at mile 466.3, at datum 583 ft above National Geodetic Vertical Datum of 1929. Jan. 1 to Dec. 31, 1916, nonrecording gage on pier of highway bridge at Wenatchee, at mile 465.1, at datum 579.30 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1930, to May 31, 1961, water-stage recorder 0.5 mi southwest of Trinidad, at mile 441.7, at datum 499.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Since May 21, 1963, auxiliary water-stage recorder 2.0 mi downstream at same datum.

REMARKS.--Flow regulated by nine major reservoirs and numerous smaller reservoirs and powerplants. Feeder Canal diversion (see sta 12435500) for Columbia Basin project is used to irrigate approximately 380,000 acres in the United States. An additional 35,000 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge provided by Public Utility District No. 1 of Chelan County through the Corps of Engineers N.P.D. Reservoir Control Center.

AVERAGE DISCHARGE.--59 years (water years 1914-16, 1931-86), 120,800 ft³/s, 87,520,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum discharge, 4,120 ft³/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, from floodmarks at Wenatchee.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 186,000 ft³/s Apr. 16; minimum daily, 38,100 ft³/s Jan. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99600	75000	131000	64400	60200	112000	152000	146000	145000	92900	104000	63300
2	81500	60800	135000	93700	72900	109000	140000	148000	161000	89900	76200	111000
3	95400	61600	130000	79600	85900	110000	150000	125000	158000	83800	99200	108000
4	99400	97300	130000	84700	93500	105000	126000	107000	163000	58400	113000	108000
5	71700	104000	128000	79700	97800	112000	126000	135000	159000	48400	116000	114000
6	73200	100000	127000	82700	105000	109000	122000	137000	163000	44200	117000	92400
7	97400	90000	148000	87800	109000	109000	133000	130000	162000	72300	115000	74100
8	114000	99500	123000	88300	101000	95500	140000	129000	152000	83100	115000	78800
9	110000	102000	151000	83800	120000	84600	131000	152000	149000	108000	113000	78000
10	89800	105000	129000	84200	138000	115000	109000	142000	144000	132000	96700	84900
11	81100	117000	156000	80400	134000	105000	138000	137000	134000	138000	116000	72200
12	58000	116000	142000	82200	123000	127000	137000	148000	129000	123000	121000	69900
13	64100	109000	150000	102000	131000	116000	160000	157000	144000	110000	113000	57300
14	93500	112000	140000	96500	136000	131000	147000	155000	134000	118000	111000	61700
15	79800	97800	133000	94500	108000	114000	161000	131000	130000	137000	110000	98300
16	73600	97100	142000	87300	87200	125000	186000	152000	116000	146000	89500	71500
17	90200	103000	158000	96200	95100	137000	158000	132000	112000	152000	85400	56600
18	77400	106000	146000	56400	90900	135000	126000	122000	120000	149000	102000	61600
19	71300	118000	150000	38100	90900	127000	102000	142000	111000	145000	120000	59000
20	62100	122000	121000	70900	101000	118000	102000	140000	133000	127000	109000	46100
21	95700	136000	86900	83000	87900	124000	134000	141000	116000	142000	102000	45100
22	96200	131000	85000	96100	74800	105000	176000	127000	109000	150000	94100	74000
23	102000	153000	110000	85500	43200	94800	166000	114000	127000	142000	65000	72200
24	99800	143000	100000	88500	63700	125000	170000	98400	118000	131000	53100	54900
25	71700	147000	74800	75200	67300	141000	160000	113000	110000	141000	91200	68500
26	65900	136000	123000	63400	84600	134000	134000	120000	111000	150000	104000	73900
27	66400	137000	104000	89300	103000	114000	140000	138000	114000	125000	97600	43800
28	100000	117000	112000	95100	102000	121000	146000	138000	111000	123000	61600	41800
29	104000	123000	92700	90200	---	154000	158000	127000	88000	122000	73000	77800
30	102000	131000	96300	68900	---	168000	159000	131000	116000	113000	57200	90100
31	90500	---	90900	59000	---	162000	---	141000	---	108000	42100	---
TOTAL	2677300	3347100	3845600	2527600	2706900	3738900	4289000	4155400	3939000	3605000	2982900	2208800
MEAN	86360	111600	124100	81540	96680	120600	143000	134000	131300	116300	96220	73630
MAX	114000	153000	158000	102000	138000	168000	186000	157000	163000	152000	121000	114000
MIN	58000	60800	74800	38100	43200	84600	102000	98400	88000	44200	42100	41800
AC-FT	5310000	6639000	7628000	5013000	5369000	7416000	8507000	8242000	7813000	7151000	5917000	4381000
CAL YR 1985	TOTAL	38071400	MEAN	104300	MAX	172000	MIN	35700	AC-FT	75515000		
WTR YR 1986	TOTAL	40023500	MEAN	109700	MAX	186000	MIN	38100	AC-FT	79387000		

CRAB CREEK BASIN

12465000 CRAB CREEK AT IRBY, WA

LOCATION.--Lat 47°21'38", long 118°50'56", in NW¼NW¼ sec.31, T.22 N., R.32 E., Lincoln County, Hydrologic Unit 17020013, on right bank 8 ft upstream from highway bridge at Irby, 5.4 mi downstream from Lake Creek, 7.5 mi west of Odessa, and at mile 11.5.

DRAINAGE AREA.--1,042 mi².

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1446: 1949-51. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,386.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 11 to Jan. 3. Records good except for estimated daily discharges, which are fair. Pumpage from ground-water wells for irrigation has been on the increase upstream from station since 1964. No regulation.

AVERAGE DISCHARGE.--44 years, 71.5 ft³/s, 51,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,370 ft³/s Feb. 27, 1957, gage height, 11.94 ft; no flow several days during 1969, 1977, 1978, 1979, and 1980.

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)
Feb. 24	2000	*1,380	*5.55	No other peak greater than base discharge.			
Minimum daily discharge, 3.0 ft ³ /s many days during period November to January.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	5.6	3.0	3.0	117	409	126	73	25	19	11	8.4
2	6.8	5.6	3.0	3.0	131	349	121	73	26	19	11	8.0
3	6.2	5.6	3.0	3.5	130	305	119	72	26	18	12	7.6
4	6.2	5.8	3.0	3.6	122	276	120	68	25	18	11	7.4
5	6.2	5.6	3.5	3.9	119	255	115	62	23	18	11	6.8
6	6.2	5.6	3.5	3.9	112	234	114	67	22	17	9.3	7.1
7	6.4	5.6	3.5	3.8	109	208	112	63	22	15	9.0	7.8
8	6.1	5.6	3.5	4.0	103	191	108	61	22	15	9.5	7.2
9	5.9	5.6	3.0	4.1	99	187	104	59	22	15	9.3	6.9
10	6.4	3.7	3.0	4.1	93	189	103	58	22	14	8.7	6.7
11	6.5	3.5	3.0	4.2	88	178	99	58	22	14	9.5	6.9
12	5.8	3.5	3.0	4.5	86	168	99	56	21	14	9.3	7.1
13	5.6	3.5	3.0	4.5	83	163	91	51	21	14	9.3	7.2
14	5.6	3.5	3.0	4.5	81	157	92	48	21	14	9.7	6.8
15	5.7	3.5	3.0	4.5	83	155	90	47	21	14	9.6	7.2
16	5.8	4.0	3.0	4.8	82	149	93	47	20	14	9.4	7.3
17	5.6	4.0	3.0	7.5	80	142	92	47	20	14	9.6	6.7
18	5.6	4.0	3.0	10	79	137	86	47	20	14	9.4	7.0
19	5.7	3.5	3.0	20	77	134	92	44	20	14	9.4	6.6
20	5.7	3.0	3.0	12	77	131	89	42	20	14	8.7	6.7
21	6.0	3.5	3.0	8.3	73	121	88	42	20	14	8.9	7.1
22	6.5	3.5	3.0	8.4	72	106	78	41	20	14	8.7	6.4
23	6.0	3.5	3.0	22	78	110	62	39	21	14	8.5	6.9
24	6.1	3.0	3.0	11	962	107	83	38	20	14	7.9	6.4
25	5.9	3.0	3.0	11	1260	117	82	37	20	13	7.4	6.0
26	5.8	3.0	3.0	13	1010	137	79	36	20	13	6.8	6.1
27	5.6	3.0	3.0	15	725	139	76	35	20	13	6.8	6.1
28	5.6	3.0	3.0	14	516	134	70	33	20	13	7.1	6.2
29	5.6	3.0	3.0	21	---	131	71	33	20	13	7.6	6.0
30	5.6	3.0	3.0	50	---	127	72	28	19	12	8.1	6.1
31	5.6	---	3.0	101	---	123	---	24	---	12	8.8	---
TOTAL	185.2	121.8	95.0	388.1	6647	5469	2826	1529	641	453	282.3	206.7
MEAN	5.97	4.06	3.06	12.5	237	176	94.2	49.3	21.4	14.6	9.11	6.89
MAX	6.9	5.8	3.5	101	1260	409	126	73	26	19	12	8.4
MIN	5.6	3.0	3.0	3.0	72	106	62	24	19	12	6.8	6.0
AC-FT	367	242	188	770	13180	10850	5610	3030	1270	899	560	410
CAL YR 1985	TOTAL	10761.9	MEAN	29.5	MAX	166	MIN	3.0	AC-FT	21350		
WTR YR 1986	TOTAL	18844.1	MEAN	51.6	MAX	1260	MIN	3.0	AC-FT	37380		

CRAB CREEK BASIN

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12467000 CRAB CREEK NEAR MOSES LAKE, WA

LOCATION.--Lat 47°11'22", long 119°15'53", in NW¼NE¼ sec.35, T.20 N., R.28 E., Grant County, Hydrologic Unit 17020015, on left bank at downstream side of highway bridge, 3.0 mi upstream from Parker Horn, 4.0 mi north of town of Moses Lake, and at mile 63.0.

DRAINAGE AREA.--2,228 mi², of which 219 mi² in the vicinity of Long Lake Reservoir is noncontributing.

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,070.39 ft above U.S. Bureau of Reclamation datum. Prior to July 14, 1956, at site 300 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 11 to Dec. 13, Dec. 22-29, Feb. 10-20. Records excellent except for estimated daily discharges, which are fair. Numerous small diversions for irrigation and domestic use upstream from station. Most of natural flow from upper basin passes this station underground. No known regulation. Since 1952, return flow from irrigation on Columbia Basin project has increased runoff during summer months.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft³/s Feb. 28, 1957, gage height, 6.81 ft; no flow for several months each year prior to 1952 and part of each day Jan. 14, 15, 1953.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 310 ft³/s Mar. 6, 7, gage height, 3.70 ft; minimum discharge, 9.7 ft³/s Feb. 21, but may have been lower during periods of ice or estimated discharge, gage height, 1.70 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	52	24	18	31	19	93	75	35	48	59	72
2	75	50	24	19	27	19	93	74	36	50	59	70
3	75	49	25	18	27	18	92	73	36	52	59	69
4	74	47	25	18	24	21	93	69	37	54	59	68
5	74	45	26	18	28	174	94	66	36	55	60	67
6	74	44	28	18	23	303	93	65	37	53	59	65
7	80	42	29	18	20	306	93	65	39	53	59	67
8	75	40	31	18	19	288	93	65	40	54	59	68
9	74	38	31	18	18	266	92	62	39	54	59	69
10	73	33	31	18	17	251	92	58	38	54	59	69
11	75	30	30	18	16	244	90	54	38	54	59	69
12	70	29	30	18	16	231	93	51	37	53	60	69
13	70	28	29	17	15	211	94	50	39	54	61	71
14	70	28	23	17	15	191	95	48	41	57	61	74
15	71	28	22	17	15	175	92	48	41	56	61	76
16	70	27	22	17	15	163	92	48	42	58	62	88
17	67	27	21	18	15	152	88	47	43	61	64	80
18	66	27	21	22	15	141	85	46	43	58	65	83
19	66	26	20	23	14	135	85	46	43	56	66	79
20	66	26	20	22	14	128	87	44	43	55	66	78
21	65	26	19	19	14	122	88	49	43	55	67	76
22	65	26	18	18	15	115	89	47	43	54	70	75
23	64	26	17	25	17	112	87	44	43	54	71	85
24	62	25	18	22	37	113	86	44	43	55	70	88
25	60	24	18	19	43	107	88	44	43	53	68	75
26	59	24	17	18	26	104	83	40	44	54	67	74
27	57	24	17	17	22	102	81	39	47	55	68	70
28	56	24	17	17	20	101	81	39	47	55	69	70
29	54	24	18	24	---	97	80	36	47	56	73	69
30	53	25	18	34	---	98	77	35	47	57	73	67
31	53	---	18	29	---	92	---	35	---	58	71	---
TOTAL	2089	964	707	612	578	4599	2669	1606	1230	1695	1983	2200
MEAN	67.4	32.1	22.8	19.7	20.6	148	89.0	51.8	41.0	54.7	64.0	73.3
MAX	80	52	31	34	43	306	95	75	47	61	73	88
MIN	53	24	17	17	14	18	77	35	35	48	59	65
AC-FT	4140	1910	1400	1210	1150	9120	5290	3190	2440	3360	3930	4360
CAL YR 1985	TOTAL	16549	MEAN	45.3	MAX	108	MIN	10	AC-FT	32820		
WTR YR 1986	TOTAL	20932	MEAN	57.3	MAX	306	MIN	14	AC-FT	41520		

CRAB CREEK BASIN

12469500 LENORE LAKE NEAR SOAP LAKE, WA

LOCATION.--Lat 47°30'52", long 119°30'06", in SE¼SW¼ sec.1, T.23 N., R.26 E., Grant County, Hydrologic Unit 17020014, on east shore 1,000 ft downlake from outlet gate on Alkali Lake, and 8.8 mi north of town of Soap Lake.

DRAINAGE AREA.--367 mi², of which 281 mi² in the vicinity of Banks Lake is noncontributing.

PERIOD OF RECORD.--July 1936, March 1938 to December 1956 (fragmentary), January 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is U.S. Bureau of Reclamation datum. Prior to Dec. 20, 1956, nonrecording gages 0.90 mi uplake at same datum.

REMARKS.--Some diversion from tributaries for irrigation. During extreme high stages of Soap Lake, water is pumped from Soap Lake into Lenore Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,087.73 ft June 12, 1953; minimum, 1,072.72 ft Jan. 2, 1959 (affected by wind).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 1,092.2 ft, from well-defined alkali line at gage, date unknown.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,080.85 ft Apr. 1; minimum, 1,076.68 ft Sept. 12, 13.

ELEVATION (FEET USBR DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1077.18	1076.81	1077.10	1077.73	1078.73	1079.74	1080.83	1080.31	1079.73	1078.54	1077.44	1076.84
2	1077.16	1076.82	1077.12	1077.76	1078.76	1079.77	1080.81	1080.30	1079.70	1078.49	1077.41	1076.84
3	1077.11	1076.83	1077.16	1077.79	1078.80	1079.81	1080.79	1080.29	1079.67	1078.46	1077.35	1076.81
4	1077.08	1076.83	1077.17	1077.81	1078.83	1079.84	1080.78	1080.26	1079.65	1078.40	1077.30	1076.82
5	1077.05	1076.85	1077.19	1077.85	1078.89	1079.87	1080.76	1080.25	1079.60	1078.36	1077.25	1076.77
6	1076.99	1076.84	1077.22	1077.89	1078.92	1079.91	1080.74	1080.23	1079.55	1078.31	1077.20	1076.78
7	1076.96	1076.84	1077.27	1077.91	1078.95	1079.96	1080.73	1080.21	1079.50	1078.27	1077.16	1076.78
8	1076.94	1076.85	1077.30	1077.94	1078.98	1080.01	1080.72	1080.17	1079.45	1078.24	1077.14	1076.77
9	1076.91	1076.85	1077.31	1077.96	1079.01	1080.04	1080.70	1080.14	1079.40	1078.20	1077.10	1076.75
10	1076.88	1076.82	1077.32	1078.00	1079.04	1080.08	1080.67	1080.12	1079.37	1078.16	1077.08	1076.73
11	1076.85	1076.79	1077.34	1078.02	1079.07	1080.12	1080.65	1080.09	1079.31	1078.11	1077.02	1076.72
12	1076.82	1076.83	1077.35	1078.04	1079.11	1080.18	1080.64	1080.08	1079.26	1078.06	1076.98	1076.70
13	1076.78	1076.84	1077.36	1078.07	1079.14	1080.22	1080.64	1080.05	1079.22	1078.01	1076.97	1076.70
14	1076.77	1076.84	1077.38	1078.10	1079.18	1080.26	1080.61	1080.00	1079.19	1077.97	1076.97	1076.70
15	1076.75	1076.86	1077.40	1078.13	1079.25	1080.30	1080.60	1079.97	1079.14	1077.92	1076.95	1076.71
16	1076.75	1076.87	1077.41	1078.16	1079.29	1080.34	1080.62	1079.94	1079.09	1077.92	1076.91	1076.74
17	1076.75	1076.86	1077.43	1078.19	1079.32	1080.37	1080.59	1079.92	1079.06	1077.93	1076.92	1076.75
18	1076.75	1076.89	1077.45	1078.24	1079.35	1080.41	1080.57	1079.91	1079.02	1077.92	1076.92	1076.78
19	1076.76	1076.92	1077.46	1078.27	1079.38	1080.44	1080.55	1079.88	1079.00	1077.92	1076.88	1076.79
20	1076.76	1076.93	1077.48	1078.29	1079.41	1080.48	1080.54	1079.87	1078.98	1077.93	1076.86	1076.79
21	1076.78	1076.95	1077.50	1078.31	1079.44	1080.52	1080.53	1079.84	1078.97	1077.93	1076.86	1076.80
22	1076.79	1076.97	1077.52	1078.36	1079.49	1080.54	1080.51	1079.81	1078.93	1077.90	1076.86	1076.81
23	1076.79	1076.98	1077.54	1078.42	1079.53	1080.58	1080.48	1079.77	1078.90	1077.86	1076.86	1076.85
24	1076.79	1076.99	1077.55	1078.45	1079.56	1080.62	1080.46	1079.75	1078.85	1077.81	1076.83	1076.90
25	1076.79	1077.00	1077.57	1078.47	1079.60	1080.64	1080.45	1079.73	1078.80	1077.75	1076.84	1076.90
26	1076.79	1077.02	1077.60	1078.50	1079.64	1080.68	1080.42	1079.71	1078.74	1077.71	1076.84	1076.90
27	1076.81	1077.04	1077.61	1078.53	1079.67	1080.71	1080.42	1079.70	1078.71	1077.66	1076.84	1076.90
28	1076.80	1077.05	1077.64	1078.56	1079.71	1080.75	1080.39	1079.71	1078.66	1077.61	1076.84	1076.91
29	1076.80	1077.07	1077.66	1078.60	---	1080.77	1080.35	1079.71	1078.62	1077.56	1076.84	1076.90
30	1076.81	1077.08	1077.68	1078.66	---	1080.79	1080.33	1079.72	1078.57	1077.50	1076.84	1076.90
31	1076.81	---	1077.70	1078.69	---	1080.81	---	1079.72	---	1077.47	1076.84	---
MEAN	1076.86	1076.90	1077.41	1078.18	1079.22	1080.31	1080.60	1079.97	1079.15	1078.00	1077.00	1076.80
MAX	1077.18	1077.08	1077.70	1078.69	1079.71	1080.81	1080.83	1080.31	1079.73	1078.54	1077.44	1076.91
MIN	1076.75	1076.79	1077.10	1077.73	1078.73	1079.74	1080.33	1079.70	1078.57	1077.47	1076.83	1076.70
CAL YR 1985	MEAN	1078.53	MAX	1080.94	MIN	1076.75						
WTR YR 1986	MEAN	1078.36	MAX	1080.83	MIN	1076.70						

CRAB CREEK BASIN

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12470000 SOAP LAKE NEAR SOAP LAKE, WA

LOCATION.--Lat 47°24'11", long 119°29'11", in NW¼SW¼ sec.18, T.22 N., R.27 E., Grant County, Hydrologic Unit 17020014, on east shore 0.9 mi north of town of Soap Lake.

DRAINAGE AREA.--413 mi², of which 281 mi² in the vicinity of Banks Lake is noncontributing.

PERIOD OF RECORD.--May to August 1936, March 1938 to February 1957 (fragmentary), March 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is U.S. Bureau of Reclamation datum. Prior to Feb. 4, 1953, nonrecording gage at site 0.2 mi uplake. Feb. 4, 1953, to June 8, 1954, nonrecording gage at site 1.5 mi uplake and June 9, 1954, to June 21, 1957, water-stage recorder at site 0.2 mi uplake.

REMARKS.--Some diversion from tributaries for irrigation. During extreme high stages of Soap Lake, water is pumped from Soap Lake into Lenore Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation observed, 1,079.20 ft Jan. 28, 1953; minimum observed, 1,070.87 ft Oct. 21, 1939.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 1,083.1 ft, from well-defined alkali line at gage, date unknown.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,076.46 ft Mar. 24, 30; minimum, 1,074.81 ft Sept. 13.

ELEVATION (FEET USBR DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1075.19	1075.39	1075.45	---	1076.10	1076.32	1076.42	1076.32	1076.15	1075.70	1075.28	1075.00
2	1075.19	1075.40	1075.45	---	1076.11	1076.32	1076.41	1076.32	1076.13	1075.68	1075.28	1074.99
3	1075.19	1075.41	1075.45	---	1076.12	1076.32	1076.40	1076.32	1076.11	1075.67	1075.27	1074.97
4	1075.19	1075.42	1075.47	---	1076.12	1076.33	1076.40	1076.32	1076.10	1075.65	1075.24	1074.97
5	1075.20	1075.41	1075.49	---	1076.14	1076.33	1076.40	1076.31	1076.09	1075.63	1075.23	1074.95
6	1075.21	1075.42	1075.53	---	1076.15	1076.33	1076.40	1076.30	1076.07	1075.62	1075.22	1074.93
7	1075.21	1075.42	1075.58	---	1076.15	1076.36	1076.40	1076.30	1076.06	1075.61	1075.22	1074.92
8	1075.21	1075.42	1075.61	---	1076.15	1076.37	1076.40	1076.29	1076.03	1075.60	1075.21	1074.91
9	1075.20	1075.44	1075.63	---	1076.15	1076.37	1076.39	1076.27	1076.01	1075.60	1075.21	1074.89
10	1075.21	1075.43	1075.66	---	1076.15	1076.38	1076.38	1076.26	1076.00	1075.58	1075.21	1074.88
11	1075.23	1075.40	1075.66	---	1076.16	1076.40	1076.37	1076.25	1075.99	1075.57	1075.19	1074.85
12	1075.23	1075.40	---	---	1076.17	1076.41	1076.37	1076.24	1075.97	1075.55	1075.16	1074.84
13	1075.24	1075.40	---	---	1076.17	1076.42	1076.38	1076.24	1075.96	1075.53	1075.16	1074.82
14	1075.25	1075.40	---	---	1076.17	1076.42	1076.37	1076.22	1075.95	1075.52	1075.15	1074.82
15	1075.27	1075.40	---	1075.88	1076.22	1076.43	1076.37	1076.21	1075.93	1075.48	1075.14	1074.84
16	1075.28	1075.41	---	1075.89	1076.23	1076.43	1076.38	1076.20	1075.91	1075.47	1075.11	1074.87
17	1075.28	1075.43	---	1075.91	1076.23	1076.44	1076.37	1076.20	1075.91	1075.46	1075.10	1074.88
18	1075.30	1075.44	---	1075.93	1076.24	1076.43	1076.36	1076.20	1075.88	1075.46	1075.10	1074.90
19	1075.32	1075.44	---	1075.94	1076.23	1076.43	1076.36	1076.20	1075.86	1075.46	1075.08	1074.90
20	1075.33	1075.45	---	1075.94	1076.23	1076.44	1076.37	1076.20	1075.85	1075.45	1075.06	1074.90
21	1075.34	1075.44	---	1075.95	1076.23	1076.43	1076.37	1076.20	1075.82	1075.45	1075.05	1074.91
22	1075.35	1075.46	---	1075.96	1076.24	1076.43	1076.36	1076.18	1075.81	1075.44	1075.04	1074.92
23	1075.36	1075.45	---	1076.01	1076.27	1076.43	1076.34	1076.17	1075.81	1075.41	1075.04	1074.94
24	1075.37	1075.45	---	1076.02	1076.28	1076.43	1076.33	1076.17	1075.80	1075.40	1075.02	1074.98
25	1075.38	1075.45	---	1076.02	1076.30	1076.43	1076.33	1076.17	1075.79	1075.38	1075.01	1074.98
26	1075.38	1075.46	---	1076.02	1076.31	1076.43	1076.33	1076.17	1075.76	1075.35	1075.01	1074.99
27	1075.39	1075.47	---	1076.02	1076.31	1076.43	1076.33	1076.17	1075.75	1075.34	1075.01	1074.99
28	1075.39	1075.46	---	1076.03	1076.31	1076.43	1076.33	1076.17	1075.75	1075.33	1075.01	1075.00
29	1075.39	1075.45	---	1076.06	---	1076.43	1076.32	1076.16	1075.73	1075.30	1075.01	1075.00
30	1075.39	1075.45	---	1076.09	---	1076.43	1076.32	1076.16	1075.70	1075.28	1075.00	1074.99
31	1075.39	---	---	1076.09	---	1076.42	---	1076.15	---	1075.28	1075.00	---
MEAN	1075.29	1075.43	---	---	1076.20	1076.40	1076.37	1076.23	1075.92	1075.49	1075.12	1074.92
MAX	1075.39	1075.47	---	---	1076.31	1076.44	1076.42	1076.32	1076.15	1075.70	1075.28	1075.00
MIN	1075.19	1075.39	---	---	1076.10	1076.32	1076.32	1076.15	1075.70	1075.28	1075.00	1074.82

CRAB CREEK BASIN

12470500 ROCKY FORD CREEK NEAR EPHRATA, WA

LOCATION.--Lat 47°18'46", long 119°26'40", in SW¼SW¼ sec.16, T.21 N., R.27 E., Grant County, Hydrologic Unit 17020015, on right bank 1.4 mi downstream from source at Rocky Ford Springs, 5.0 mi east of Ephrata, and 6.3 mi upstream from mouth.

DRAINAGE AREA.--458 mi², of which 446 mi² in vicinity of Banks and Soap Lakes is noncontributing.

PERIOD OF RECORD.--June 1909 to April 1910, July to December 1911, August 1942 to current year. Prior to January 1910, published as Upper Crab Creek near Ephrata.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,068.51 ft above U.S. Bureau of Reclamation datum. Prior to Jan. 1, 1912, nonrecording gages at sites 4.5 mi to 5.5 mi downstream at different datums. Aug. 19, 1942, to May 23, 1945, water-stage recorder at site 3.5 mi downstream at datum 5.37 ft lower. May 23, 1945, to June 15, 1977, water-stage recorder at site 0.2 mi downstream at datum 3.53 ft lower.

REMARKS.--No estimated daily discharges. Records good. Base flow derived from Rocky Ford Springs, no known regulation or diversion.

AVERAGE DISCHARGE.--44 years (water years 1943-86), 76.0 ft³/s, 55,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 212 ft³/s Apr. 15-18, 1956, gage height, 3.58 ft datum then in use; minimum observed, 20 ft³/s Aug. 13-18, 1911.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 91 ft³/s Sept. 23, maximum gage height, 5.72 ft July 20, affected by backwater from debris on control; minimum discharge, 46 ft³/s Apr. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	82	74	66	56	52	49	54	68	82	83	90
2	87	81	74	64	56	52	49	55	68	82	82	86
3	87	81	74	64	56	51	49	55	68	81	84	89
4	87	80	74	64	55	51	49	54	70	82	84	86
5	87	80	74	64	55	51	49	54	71	82	85	88
6	87	79	74	63	54	51	48	54	72	82	85	88
7	87	78	73	63	54	51	49	55	74	84	85	90
8	86	78	72	63	54	50	50	55	75	82	86	82
9	86	78	71	63	54	50	50	56	75	79	85	84
10	86	77	71	63	54	50	50	57	75	78	86	80
11	86	76	71	62	54	50	50	57	76	80	86	84
12	86	77	70	61	54	50	50	58	75	80	84	83
13	85	77	70	61	54	49	50	59	75	79	86	84
14	85	76	70	60	54	50	50	59	77	80	86	86
15	86	76	70	60	55	49	50	60	77	81	85	83
16	85	75	71	60	54	49	50	60	77	79	86	84
17	84	77	70	61	54	49	51	63	77	82	86	85
18	85	78	68	60	54	49	50	65	78	81	86	86
19	85	78	69	59	54	49	51	64	78	83	86	86
20	85	77	70	58	53	49	51	63	78	84	86	88
21	85	77	67	58	53	49	52	63	78	81	86	88
22	85	76	67	57	53	49	51	63	80	78	85	89
23	84	76	67	57	53	49	52	64	81	79	85	91
24	84	76	69	56	53	49	52	66	81	79	84	90
25	84	76	69	56	54	49	52	67	82	81	85	88
26	83	75	68	56	53	49	52	69	82	82	85	87
27	83	75	68	56	52	49	52	69	81	82	87	87
28	83	75	67	56	52	48	53	69	79	82	86	87
29	82	75	67	56	---	49	53	66	79	82	87	87
30	82	74	66	56	---	48	53	66	79	82	88	87
31	82	---	66	56	---	49	---	68	---	81	87	---
TOTAL	2636	2316	2171	1859	1511	1539	1517	1887	2286	2512	2647	2593
MEAN	85.0	77.2	70.0	60.0	54.0	49.6	50.6	60.9	76.2	81.0	85.4	86.4
MAX	87	82	74	66	56	52	53	69	82	84	88	91
MIN	82	74	66	56	52	48	48	54	68	78	82	80
AC-FT	5230	4590	4310	3690	3000	3050	3010	3740	4530	4980	5250	5140
CAL YR 1985	TOTAL	25557	MEAN	70.0	MAX	90	MIN	48	AC-FT	50690		
WTR YR 1986	TOTAL	25474	MEAN	69.8	MAX	91	MIN	48	AC-FT	50530		

CRAB CREEK BASIN

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12471000 MOSES LAKE AT MOSES LAKE, WA

LOCATION.--Lat 47°06'11", long 119°19'02", in SW¼SW¼ sec.28, T.19 N., R.28 E., Grant County, Hydrologic Unit 17020015, on east shore 35 ft north of Interstate 90, 1.7 mi upstream from outlet, at town of Moses Lake, and at mile 55.9.

DRAINAGE AREA.--3,080 mi², of which 665 mi² is noncontributing.

PERIOD OF RECORD.--June 1909 to September 1914 and November 1936 to September 1945 (fragmentary), October 1945 to current year.
Published as "at Neppel" 1912-14.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is U.S. Bureau of Reclamation datum. Prior to Apr. 3, 1910, nonrecording gage at site 0.6 mi northeast at different datum. Apr. 3, 1910, to Sept. 30, 1914, and Nov. 19, 1936, to Nov. 24, 1944, nonrecording gages at site 2.8 mi northeast at Parker Horn at various datums. Oct. 30, 1945, to Mar. 12, 1955, water-stage recorder at site near west shore on downstream side of bridge on U.S. Highway 10 at present datum.

REMARKS.--Elevation controlled between 1,041 ft and 1,047 ft by two outlet structures at south end of lake. Many small diversions for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,048.29 ft Mar. 10, 1950; minimum observed, 1,038.17 ft Aug. 27, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,047.16 ft Aug. 24; minimum, 1,043.58 ft Nov. 27.

ELEVATION (FEET USBR DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1046.62	1046.74	1043.72	1044.17	1044.50	1044.18	1045.35	1046.74	1046.71	1046.91	1046.54	1046.77
2	1046.60	1046.63	1043.77	1044.17	1044.51	1044.21	1045.45	1046.74	1046.71	1046.92	1046.53	1046.80
3	1046.59	1046.54	1043.82	1044.18	1044.51	1044.25	1045.55	1046.74	1046.70	1046.93	1046.53	1046.84
4	1046.57	1046.42	1043.84	1044.18	1044.51	1044.29	1045.69	1046.74	1046.69	1046.92	1046.52	1046.87
5	1046.55	1046.16	1043.86	1044.19	1044.52	1044.34	1045.83	1046.73	1046.69	1046.90	1046.52	1046.89
6	1046.55	1045.91	1043.90	1044.20	1044.44	1044.43	1045.94	1046.73	1046.72	1046.89	1046.53	1046.88
7	1046.54	1045.68	1043.94	1044.20	1044.33	1044.53	1046.05	1046.74	1046.76	1046.88	1046.54	1046.88
8	1046.51	1045.45	1043.97	1044.21	1044.23	1044.62	1046.14	1046.74	1046.79	1046.86	1046.57	1046.90
9	1046.47	1045.25	1043.99	1044.21	1044.14	1044.68	1046.22	1046.74	1046.83	1046.82	1046.61	1046.91
10	1046.46	1045.06	1044.00	1044.22	1044.04	1044.74	1046.30	1046.73	1046.87	1046.77	1046.64	1046.92
11	1046.47	1044.86	1044.02	1044.22	1043.96	1044.79	1046.35	1046.74	1046.92	1046.75	1046.67	1046.93
12	1046.54	1044.67	1044.03	1044.22	1043.89	1044.84	1046.41	1046.73	1046.94	1046.71	1046.69	1046.95
13	1046.61	1044.53	1044.03	1044.22	1043.83	1044.89	1046.47	1046.75	1046.98	1046.68	1046.73	1046.96
14	1046.68	1044.41	1044.04	1044.22	1043.77	1044.92	1046.52	1046.76	1047.00	1046.64	1046.76	1046.96
15	1046.76	1044.30	1044.05	1044.23	1043.76	1044.97	1046.56	1046.75	1047.01	1046.62	1046.79	1046.96
16	1046.85	1044.21	1044.05	1044.23	1043.73	1045.00	1046.59	1046.73	1047.04	1046.62	1046.82	1047.00
17	1046.92	1044.14	1044.06	1044.24	1043.70	1045.03	1046.62	1046.73	1047.06	1046.61	1046.85	1046.99
18	1046.98	1044.07	1044.07	1044.26	1043.69	1045.07	1046.64	1046.73	1047.04	1046.61	1046.88	1046.96
19	1046.91	1043.98	1044.08	1044.28	1043.69	1045.11	1046.67	1046.73	1047.02	1046.61	1046.88	1046.93
20	1046.84	1043.91	1044.09	1044.28	1043.69	1045.14	1046.70	1046.71	1047.02	1046.61	1046.94	1046.91
21	1046.75	1043.85	1044.10	1044.29	1043.70	1045.18	1046.72	1046.72	1047.01	1046.61	1047.01	1046.88
22	1046.67	1043.82	1044.11	1044.30	1043.74	1045.21	1046.74	1046.71	1047.02	1046.61	1047.05	1046.85
23	1046.60	1043.75	1044.11	1044.33	1043.78	1045.22	1046.72	1046.71	1047.03	1046.59	1047.10	1046.85
24	1046.56	1043.70	1044.12	1044.34	1043.96	1045.25	1046.72	1046.71	1047.02	1046.59	1047.14	1046.87
25	1046.63	1043.66	1044.13	1044.34	1044.09	1045.27	1046.72	1046.71	1046.98	1046.59	1047.08	1046.85
26	1046.71	1043.62	1044.14	1044.34	1044.11	1045.29	1046.72	1046.71	1046.93	1046.57	1046.99	1046.82
27	1046.78	1043.59	1044.14	1044.34	1044.12	1045.30	1046.73	1046.71	1046.91	1046.56	1046.88	1046.80
28	1046.85	1043.62	1044.15	1044.34	1044.15	1045.31	1046.72	1046.71	1046.93	1046.56	1046.76	1046.78
29	1046.93	1043.66	1044.15	1044.37	---	1045.32	1046.72	1046.71	1046.91	1046.54	1046.70	1046.75
30	1046.96	1043.69	1044.16	1044.44	---	1045.34	1046.73	1046.72	1046.91	1046.53	1046.72	1046.74
31	1046.85	---	1044.16	1044.48	---	1045.32	---	1046.71	---	1046.53	1046.75	---
MEAN	1046.69	1044.66	1044.03	1044.27	1044.04	1044.90	1046.38	1046.73	1046.91	1046.69	1046.77	1046.88
MAX	1046.98	1046.74	1044.16	1044.48	1044.52	1045.34	1046.74	1046.76	1047.06	1046.93	1047.14	1047.00
MIN	1046.46	1043.59	1043.72	1044.17	1043.69	1044.18	1045.35	1046.71	1046.69	1046.53	1046.52	1046.74
CAL YR 1985	MEAN	1045.77	MAX	1047.05	MIN	1043.59						
WTR YR 1986	MEAN	1045.75	MAX	1047.14	MIN	1043.59						

12472600 CRAB CREEK NEAR BEVERLY, WA

LOCATION.--Lat 46°49'48", long 119°49'48", in NW¼SW¼ sec. 33, T.16 N., R.24 E., Grant County, Hydrologic Unit 17020015, on right bank 4.9 mi east of Beverly, and at mile 4.5.

DRAINAGE AREA.--4,842 mi², of which 665 mi² in the vicinity of Soap Lake is noncontributing.

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

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 500 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 18 to Dec. 7, Dec. 12-24. Records good except those for periods with ice effect Nov. 18 to Dec. 7, Dec. 12-24, which are poor. Many diversions upstream from station for irrigation. Flow largely regulated by Potholes Reservoir 41.3 mi upstream. A major portion of flow is return flows, including transbasin diversions, from parts of the Columbia Basin project. Chemical analyses water years 1959-72, 1975-80. Daily water temperatures August 1959 to September 1962, July 1968 to August 1970.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 936 ft³/s Mar. 3, 1980, gage height, 6.46 ft; minimum discharge, 10 ft³/s Jan. 10, 1963, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 373 ft³/s Sept. 27, gage height, 4.51 ft; minimum daily discharge, 110 ft³/s Nov. 23, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	305	226	120	183	263	218	174	221	224	239	258	297
2	308	225	140	186	253	214	197	223	217	246	248	301
3	304	225	160	184	248	209	209	230	206	252	236	303
4	298	221	180	181	242	206	213	237	193	269	236	305
5	291	223	190	184	237	203	222	253	188	281	249	299
6	288	222	190	186	234	201	222	265	190	291	257	291
7	290	217	195	185	225	203	220	274	194	299	255	288
8	299	218	194	182	218	210	217	260	196	304	247	285
9	308	217	202	183	212	205	222	238	197	302	239	288
10	319	216	190	192	208	202	218	235	194	298	235	286
11	328	209	177	212	205	201	219	231	183	295	235	288
12	332	202	175	206	205	205	223	233	177	291	236	288
13	334	205	172	198	206	202	224	233	179	285	235	289
14	334	202	170	193	206	200	228	240	177	277	238	292
15	333	207	175	191	211	208	231	240	180	280	243	300
16	333	212	178	190	226	205	235	233	201	268	252	311
17	341	216	180	226	239	199	228	229	206	264	257	321
18	346	210	180	255	238	196	229	233	207	261	263	321
19	347	185	180	302	224	193	226	233	215	264	269	319
20	345	150	180	310	204	187	220	228	214	264	276	322
21	338	130	180	266	207	179	228	220	224	261	275	327
22	336	112	180	243	207	177	217	230	229	249	273	335
23	340	110	180	249	222	175	212	234	233	238	278	344
24	332	115	182	266	246	177	213	233	234	228	285	354
25	315	120	184	246	247	178	215	235	228	219	289	363
26	292	125	188	228	240	173	219	234	226	219	292	371
27	271	130	192	222	230	173	227	228	226	230	295	372
28	263	128	191	219	223	166	247	228	227	240	294	370
29	256	125	186	235	---	168	253	229	222	251	286	362
30	247	122	190	269	---	165	247	229	233	255	281	352
31	236	---	185	274	---	173	---	227	---	259	288	---
TOTAL	9609	5425	5566	6846	6326	5971	6655	7296	6220	8179	8100	9544
MEAN	310	181	180	221	226	193	222	235	207	264	261	318
MAX	347	226	202	310	263	218	253	274	234	304	295	372
MIN	236	110	120	181	204	165	174	220	177	219	235	285
AC-FT	19060	10760	11040	13580	12550	11840	13200	14470	12340	16220	16070	18930
CAL YR 1985	TOTAL	81690	MEAN	224	MAX	393	MIN	110	AC-FT	162000		
WTR YR 1986	TOTAL	85737	MEAN	235	MAX	372	MIN	110	AC-FT	170100		

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA

LOCATION.--Lat 46°37'44", long 119°51'49", in SE¼NW¼ 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.

WATER-DISCHARGE RECORDS

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 National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1930, nonrecording gages at site 3.4 mi downstream at datum 388.7 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1930, to July 27, 1959, water-stage recorder at site 46.5 mi upstream at datum 499.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Estimated daily discharges: Jan. 7-13, Jan. 31 to Feb. 12, Mar. 5-7, July 21, 22. Water-discharge records excellent. Estimated daily discharges taken from Priest Rapids Dam powerplant records. Diversions for irrigation of about 500,000 acres upstream from station. Flow regulated by 10 major reservoirs and numerous smaller reservoirs and powerplants. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--69 years, 119,800 ft³/s, 86,800,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum discharge, 4,120 ft³/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, based on information obtained at other points.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 279,000 ft³/s Nov. 24, elevation, 416.11 ft; minimum discharge, 37,200 ft³/s Nov. 3, elevation, 396.53 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113000	95000	132000	72400	68900	117000	155000	154000	160000	107000	101000	63700
2	77200	72000	138000	90000	66500	112000	142000	156000	162000	89900	115000	99200
3	94600	68300	124000	83200	79300	116000	152000	137000	165000	88500	87200	103000
4	108000	72400	131000	74800	93400	112000	143000	114000	171000	66600	96900	105000
5	74500	104000	126000	83500	95900	116000	139000	128000	163000	46900	109000	120000
6	71100	105000	132000	91800	114000	106000	134000	141000	176000	46100	116000	115000
7	99800	111000	147000	90100	114000	116000	124000	151000	171000	68900	115000	87000
8	106000	112000	139000	87900	105000	111000	132000	143000	147000	86400	116000	101000
9	115000	112000	145000	86200	113000	84600	131000	143000	152000	97400	117000	66000
10	107000	109000	150000	80800	131000	109000	124000	153000	154000	132000	107000	70200
11	107000	104000	149000	80000	131000	122000	126000	144000	154000	139000	108000	78100
12	78400	107000	152000	83200	137000	122000	140000	146000	147000	127000	131000	65400
13	68900	111000	153000	101000	134000	131000	162000	153000	131000	130000	114000	62300
14	70100	112000	147000	109000	132000	121000	149000	157000	137000	131000	120000	61100
15	91000	113000	141000	99500	132000	129000	164000	153000	135000	130000	106000	90600
16	74000	112000	143000	94400	105000	120000	197000	141000	135000	124000	102000	97800
17	84700	102000	149000	102000	85700	121000	163000	135000	129000	148000	95200	53100
18	88800	106000	156000	72400	96500	141000	140000	134000	126000	153000	102000	58100
19	72200	112000	157000	69900	94000	139000	112000	143000	117000	150000	113000	62700
20	64700	116000	140000	69900	105000	117000	113000	141000	120000	136000	118000	47000
21	81600	123000	134000	69900	90700	123000	126000	149000	115000	142000	101000	46200
22	102000	140000	97200	76500	84600	118000	175000	136000	107000	152000	101000	74200
23	88100	170000	113000	87100	70700	97800	163000	122000	128000	144000	76500	75300
24	98500	141000	104000	96700	66700	114000	174000	124000	132000	135000	56300	58600
25	94300	142000	83000	83500	70500	136000	173000	104000	123000	146000	81300	71900
26	83100	147000	100000	74700	69900	143000	153000	114000	110000	151000	95200	77100
27	71300	149000	117000	83100	82100	128000	137000	130000	102000	137000	105000	50200
28	83900	134000	89600	103000	101000	115000	149000	153000	110000	118000	75900	44900
29	93800	123000	91400	95800	---	133000	172000	137000	98700	120000	71700	74100
30	104000	130000	99900	77100	---	190000	168000	131000	107000	115000	64600	84500
31	102000	---	95700	68800	---	159000	---	139000	---	121000	48900	---
TOTAL	2768600	3454700	3975800	2638200	2769400	3819400	4432000	4306000	4084700	3678700	3066700	2263300
MEAN	89310	115200	128300	85100	98910	123200	147700	138900	136200	118700	98930	75440
MAX	115000	170000	157000	109000	137000	190000	197000	157000	176000	153000	131000	120000
MIN	64700	68300	83000	68800	66500	84600	112000	104000	98700	46100	48900	44900
AC-FT	5492000	6852000	7886000	5233000	5493000	7576000	8791000	8541000	8102000	7297000	6083000	4489000
CAL YR 1985	TOTAL	39319900	MEAN	107700	MAX	179000	MIN	39000	AC-FT	77991000		
WTR YR 1986	TOTAL	41257500	MEAN	113000	MAX	197000	MIN	44900	AC-FT	81834000		

COLUMBIA RIVER MAIN STEM

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: March 1980 to current year. Temperature records for site "at Vernita Bridge, near Priest Rapids Dam" (station 12472900) for period July 1974 to September 1980 are equivalent.

INSTRUMENTATION.--Temperature recorder since December 1979.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 21.5°C Aug. 4, 1985; minimum, 1.0°C Feb. 3-11, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 20.5°C Aug. 7-11, 13-18, 21-27, 30, 31, Sept. 1, 4; minimum, 1.5°C Dec. 31, Jan. 1-17.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.5	17.0	17.0	13.0	12.5	13.0	5.5	5.0	5.0	2.0	1.5	2.0
2	17.5	17.0	17.0	13.5	13.0	13.0	5.0	4.5	5.0	2.0	1.5	1.5
3	17.5	16.5	17.0	13.5	13.0	13.0	4.5	4.5	4.5	2.0	1.5	1.5
4	17.0	16.5	17.0	13.0	12.5	12.5	4.5	4.5	4.5	1.5	1.5	1.5
5	17.5	16.5	17.0	12.5	12.0	12.0	5.0	4.5	4.5	1.5	1.5	1.5
6	17.0	16.5	17.0	12.5	12.0	12.0	5.5	5.0	5.0	2.0	1.5	1.5
7	16.5	16.5	16.5	12.5	12.0	12.0	5.5	5.0	5.5	2.0	1.5	1.5
8	16.5	16.0	16.0	12.0	11.5	12.0	5.5	5.5	5.5	2.0	1.5	1.5
9	16.5	16.0	16.0	11.5	11.5	11.5	5.5	5.5	5.5	1.5	1.5	1.5
10	16.5	16.0	16.0	11.5	10.5	11.0	5.5	5.5	5.5	2.0	1.5	1.5
11	16.5	16.0	16.0	10.5	10.0	10.5	5.5	5.0	5.0	2.0	1.5	1.5
12	16.0	15.5	15.5	10.5	10.0	10.0	5.0	5.0	5.0	2.0	1.5	1.5
13	16.0	15.0	15.5	10.5	9.5	10.0	5.0	4.5	5.0	1.5	1.5	1.5
14	15.5	15.0	15.0	10.0	9.5	10.0	4.5	4.5	4.5	1.5	1.5	1.5
15	16.0	15.0	15.5	10.0	9.5	9.5	4.5	4.0	4.0	2.0	1.5	1.5
16	15.5	15.0	15.5	10.0	9.5	9.5	4.0	4.0	4.0	2.0	1.5	2.0
17	15.5	15.0	15.5	10.0	9.0	9.0	4.0	3.5	4.0	2.5	1.5	2.0
18	15.5	15.0	15.0	9.5	8.5	9.0	3.5	3.5	3.5	2.5	2.0	2.5
19	15.0	15.0	15.0	8.5	8.0	8.5	3.5	3.5	3.5	3.0	2.5	2.5
20	15.5	15.0	15.0	8.5	8.0	8.0	3.5	3.5	3.5	3.0	2.5	3.0
21	15.0	15.0	15.0	8.0	7.5	8.0	3.5	3.0	3.5	2.5	2.5	2.5
22	15.0	14.5	15.0	7.5	7.5	7.5	4.0	3.0	3.5	2.5	2.0	2.5
23	15.0	14.0	14.5	7.5	6.5	7.0	3.5	3.0	3.0	2.5	2.0	2.5
24	15.0	14.5	14.5	8.0	6.5	7.0	3.5	3.0	3.0	2.5	2.0	2.0
25	15.0	14.5	14.5	7.0	6.5	6.5	3.0	3.0	3.0	2.5	2.0	2.0
26	15.0	14.0	14.5	7.0	6.5	6.5	3.0	2.5	2.5	2.5	2.0	2.0
27	15.0	14.0	14.5	6.5	6.0	6.0	2.5	2.5	2.5	2.5	2.0	2.0
28	14.5	14.0	14.0	6.0	5.5	5.5	2.5	2.0	2.5	2.0	2.0	2.0
29	14.0	13.5	14.0	5.5	5.5	5.5	2.5	2.0	2.0	2.5	2.0	2.0
30	14.0	13.0	13.5	5.5	5.0	5.5	2.0	2.0	2.0	2.5	2.0	2.5
31	13.0	12.5	13.0	---	---	---	2.0	1.5	2.0	2.5	2.5	2.5
MONTH	17.5	12.5	15.5	13.5	5.0	9.5	5.5	1.5	4.0	3.0	1.5	2.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	3.0	2.5	2.5	4.0	3.5	3.5	6.0	5.5	6.0	8.5	8.0	8.0
2	3.0	2.5	3.0	4.0	3.5	3.5	6.0	5.5	5.5	8.5	8.0	8.5
3	3.0	2.5	2.5	4.0	3.5	3.5	6.0	5.5	6.0	8.5	8.5	8.5
4	3.0	2.5	2.5	4.0	3.5	4.0	6.0	6.0	6.0	9.5	8.5	9.0
5	3.0	2.5	3.0	4.5	4.0	4.0	6.0	6.0	6.0	9.0	8.5	9.0
6	3.0	2.5	3.0	4.5	4.0	4.5	6.5	6.0	6.0	9.0	8.5	9.0
7	3.0	3.0	3.0	4.5	4.0	4.5	6.5	6.0	6.0	9.5	9.0	9.0
8	3.0	3.0	3.0	5.0	4.5	4.5	7.0	6.0	6.5	10.0	9.5	9.5
9	3.0	3.0	3.0	5.5	4.5	5.0	7.0	6.5	7.0	10.0	9.5	9.5
10	3.0	3.0	3.0	5.0	4.5	5.0	7.0	6.5	7.0	10.0	9.5	9.5
11	3.0	3.0	3.0	5.0	4.5	4.5	7.0	6.5	6.5	10.0	9.5	10.0
12	3.0	3.0	3.0	5.0	5.0	5.0	6.5	6.5	6.5	10.0	10.0	10.0
13	3.0	2.5	2.5	5.0	4.5	5.0	6.5	6.5	6.5	10.5	10.0	10.0
14	2.5	2.5	2.5	5.0	4.5	5.0	7.0	6.5	7.0	10.0	10.0	10.0
15	2.5	2.5	2.5	5.0	5.0	5.0	7.0	6.5	7.0	10.5	10.0	10.0
16	2.5	2.5	2.5	5.0	5.0	5.0	6.5	6.5	6.5	10.5	10.0	10.0
17	3.0	2.5	3.0	5.5	5.0	5.0	7.0	6.5	6.5	10.5	10.0	10.5
18	3.0	2.5	3.0	5.0	5.0	5.0	7.0	7.0	7.0	11.0	10.5	10.5
19	2.5	2.5	2.5	5.5	5.0	5.0	7.0	7.0	7.0	11.0	10.5	11.0
20	2.5	2.5	2.5	5.5	5.5	5.5	7.5	7.0	7.0	11.0	11.0	11.0
21	3.0	2.5	2.5	5.5	5.5	5.5	8.0	7.0	7.5	11.0	10.5	11.0
22	3.0	2.5	2.5	6.0	5.5	5.5	8.0	7.5	8.0	10.5	10.5	10.5
23	3.0	2.5	3.0	6.0	5.5	5.5	8.0	7.5	7.5	11.0	10.5	10.5
24	4.0	3.0	3.5	6.0	5.5	5.5	8.0	7.5	8.0	11.5	10.5	11.0
25	4.0	3.5	3.5	5.5	5.5	5.5	8.0	7.5	7.5	12.0	11.0	11.5
26	4.5	3.5	4.0	5.5	5.5	5.5	8.0	7.5	7.5	12.0	11.5	12.0
27	4.0	3.5	4.0	5.5	5.5	5.5	8.0	7.5	8.0	12.5	11.5	12.0
28	4.0	3.5	3.5	6.0	5.5	6.0	8.0	8.0	8.0	12.5	12.0	12.5
29	---	---	---	6.0	5.5	6.0	8.5	8.0	8.0	13.0	12.0	12.5
30	---	---	---	6.0	6.0	6.0	8.5	8.0	8.0	13.0	12.5	12.5
31	---	---	---	6.0	5.5	5.5	---	---	---	13.5	12.5	13.0
MONTH	4.5	2.5	3.0	6.0	3.5	5.0	8.5	5.5	7.0	13.5	8.0	10.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	13.5	13.0	13.5	17.0	16.0	16.5	19.5	18.5	19.5	20.5	19.0	19.5
2	14.0	13.5	13.5	17.0	16.5	17.0	19.5	19.0	19.5	20.0	19.5	19.5
3	14.0	13.5	13.5	17.5	16.5	17.0	20.0	19.0	19.5	20.0	19.5	20.0
4	14.0	14.0	14.0	17.0	16.0	16.5	20.0	19.0	19.5	20.5	19.5	20.0
5	14.5	14.0	14.0	17.5	15.5	16.5	19.5	19.0	19.5	20.0	19.5	20.0
6	14.5	14.0	14.0	18.5	16.0	17.0	20.0	19.5	19.5	20.0	19.5	19.5
7	14.5	14.0	14.0	18.5	17.0	17.5	20.5	19.5	20.0	20.0	19.0	19.5
8	14.0	14.0	14.0	18.0	17.0	17.5	20.5	19.5	20.0	19.5	19.0	19.0
9	14.0	13.5	14.0	17.5	17.0	17.5	20.5	20.0	20.0	19.5	18.5	19.0
10	14.5	13.5	14.0	17.5	17.0	17.5	20.5	20.0	20.5	19.0	18.0	18.5
11	14.5	14.0	14.0	17.5	17.0	17.0	20.5	20.0	20.0	18.5	18.0	18.0
12	14.5	14.0	14.5	17.5	17.0	17.0	20.0	19.5	20.0	18.5	17.5	18.0
13	15.0	14.5	14.5	17.0	16.5	17.0	20.5	19.5	20.0	18.5	17.5	18.0
14	15.0	14.5	15.0	17.0	17.0	17.0	20.5	20.0	20.0	18.5	17.5	18.0
15	15.5	15.0	15.0	17.0	16.5	16.5	20.5	19.5	19.5	18.0	17.5	18.0
16	15.5	15.0	15.0	16.5	16.0	16.0	20.5	19.5	20.0	18.5	17.5	18.0
17	15.5	15.0	15.5	16.5	16.0	16.5	20.5	19.5	20.0	18.0	17.5	17.5
18	15.5	15.0	15.0	17.0	16.5	17.0	20.5	19.5	20.0	18.5	17.5	18.0
19	15.0	15.0	15.0	17.5	17.0	17.5	20.0	19.5	20.0	18.0	17.5	17.5
20	15.5	15.0	15.0	18.0	17.5	17.5	20.0	19.5	19.5	18.5	17.0	17.5
21	15.5	15.0	15.0	18.5	17.5	18.0	20.5	19.5	20.0	18.5	17.0	17.5
22	16.0	15.0	15.5	18.5	18.0	18.0	20.5	19.5	20.0	18.0	17.0	17.5
23	16.0	15.0	15.5	18.5	18.0	18.0	20.5	19.5	20.0	17.5	16.5	17.0
24	16.0	16.0	16.0	19.0	18.0	18.5	20.5	19.5	20.0	17.0	16.5	17.0
25	16.5	16.0	16.0	19.0	18.5	18.5	20.5	20.0	20.0	17.0	16.0	16.5
26	16.0	15.5	16.0	18.5	18.5	18.5	20.5	20.0	20.0	17.0	16.0	16.5
27	16.5	15.5	16.0	19.0	18.5	18.5	20.5	20.0	20.0	17.0	16.0	16.5
28	16.5	16.0	16.0	19.0	18.5	18.5	20.0	19.5	20.0	17.0	16.0	16.5
29	16.5	16.0	16.0	19.0	18.5	18.5	20.0	19.5	19.5	16.5	16.0	16.0
30	16.5	16.0	16.5	19.0	18.5	18.5	20.5	19.0	19.5	16.0	15.5	16.0
31	---	---	---	19.5	18.5	19.0	20.5	19.0	19.5	---	---	---
MONTH	16.5	13.0	15.0	19.5	15.5	17.5	20.5	18.5	20.0	20.5	15.5	18.0
YEAR	20.5	1.5	10.5									

COLUMBIA RIVER MAIN STEM

12472900 COLUMBIA RIVER AT VERNITA BRIDGE, NEAR PRIEST RAPIDS DAM, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°38'34", long 119°43'54", in NW¼SE¼ sec.6, T.13 N., R.25 E., Grant County, Hydrologic Unit 17020016, at State Highway 24 Vernita Bridge crossing, 9.0 mi downstream from Priest Rapids Dam, and at mile 388.1.

DRAINAGE AREA.--96,000 mi², approximately.

PERIOD OF RECORD.--Water years 1962-63, 1972, 1974 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1974 to September 1980.

REMARKS.--October 1971 to September 1972, at site 6.4 mi upstream, published as 12472800 "below Priest Rapids Dam." Prior to October 1971 published as 12472800 "at Vernita Ferry."

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
DEC 17...	1145	155000	142	8.4*	4.0	1.0	12.6	94	44	K6	70	0
JAN 21...	1030	73600	136	7.7	2.0	1.0	13.8	101	--	K38	72	10
MAR 12...	1130	125000	149	8.2*	4.5	1.4	13.4	106	K1	K3	78	15
MAY 27...	1115	131000	147	8.4	11.5	1.2	13.4	125	K4	K10	63	0
JUL 21...	1150	145000	125	8.2*	17.5	4.0	10.4	111	<1	81	59	1
SEP 25...	1110	65700	127	8.1	16.5	1.5	9.6	102	K3	K1	61	7

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
DEC 17...	20	4.8	2.1	6	0.1	0.9	75	--	--	10	1.8	<0.1
JAN 21...	21	4.8	2.5	7	0.1	0.9	62	76	0	12	1.2	0.1
MAR 12...	23	5.0	2.1	5	0.1	0.6	63	77	0	12	1.2	0.1
MAY 27...	18	4.3	2.5	8	0.1	0.9	65	60	9.0	11	1.2	0.1
JUL 21...	17	4.1	2.3	8	0.1	0.8	59	71	0	9.9	0.9	0.1
SEP 25...	18	4.0	2.0	7	0.1	0.9	54	66	0	13	1.1	0.1

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
DEC 17...	4.8	82	90	0.11	34300	<0.01	0.14	0.02	<0.2	0.01	0.01
JAN 21...	4.9	81	86	0.11	16100	0.01	0.15	0.02	0.2	0.03	0.02
MAR 12...	5.1	82	87	0.11	27700	<0.01	0.13	0.01	<0.2	0.02	0.01
MAY 27...	3.6	81	89	0.11	28600	<0.01	<0.10	0.02	0.2	0.06	<0.01
JUL 21...	5.1	73	75	0.1	28600	0.02	0.10	0.05	0.3	0.02	0.01
SEP 25...	3.8	93	75	0.13	16500	<0.01	<0.10	<0.01	0.2	0.02	0.01

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

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WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible]

COLUMBIA RIVER MAIN STEM

12473520 COLUMBIA RIVER AT RICHLAND, WA

LOCATION.--Lat 46°18'46", long 119°15'28", in NW¼NW¼ sec.36, T.10 N., R.28 E., Benton County, Hydrologic Unit 17020016, at city of Richland pumping plant, 4.8 mi upstream from Yakima River, and at mile 340.2.

DRAINAGE AREA.--96,900 mi², approximately.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1974 to current year. Unpublished records of stage at site 2.3 miles downstream are available in files of the Geological Survey, and U.S. Army Corps of Engineers.

INSTRUMENTATION.--Water-temperature recorder with probe located at city of Richland pumping-plant pier near right bank from July 1974 until January 1977. Since January 1977, recorder probe located 200 ft streamward from plant.

REMARKS.--Water temperatures as recorded for the period July 1974 to January 1977 did not represent mean stream temperatures (see previous state reports for correlation between thermal load measurements and recorded temperatures). Temperature probe, relocated January 1977, represents both horizontal and vertical cross section of the river.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.0°C July 21, Aug. 4, 5, 1985; minimum, 0.5°C Feb. 1-4, 1979, Feb. 4, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 21.5°C Aug. 25, 26; minimum, 1.0°C Jan. 3-8, 12-15.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	COLIFORM, FECAL, (0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI, FECAL, (COLS. PER 100 ML)	HARDNESS (MG/L AS CaCO3)
DEC 18...	1045	145	8.3*	3.5	0.6	12.8	95	77	K15	71
MAR 13...	0930	149	8.1*	4.5	1.4	13.0	102	<1	K6	68
MAY 28...	1315	147	8.4	13.0	3.0	12.5	120	K16	57	63
JUL 22...	0945	126	8.2	18.0	3.2	10.1	108	K1	270	59
	HARDNESS NONCARB MG/L AS CaCO3	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	ALKALINITY, CARBONATE IT-FLD (MG/L - CaCO3)	BICARBONATE IT-FLD (MG/L AS HCO3)	CARBONATE IT-FLD (MG/L AS CO3)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)
DEC 18...	4	20	5.0	67	81	0	3.1	81	2	<0.01
MAR 13...	7	19	5.0	61	74	0	1.3	80	3	<0.01
MAY 28...	4	18	4.3	59	--	--	1.1	75	8	<0.01
JUL 22...	3	17	4.1	56	68	0	0.8	68	4	0.02
DATE	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	IRON, DIS-SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	
DEC 18...	0.14	0.02	<0.2	0.01	<0.01	<10	3	1.1	4	
MAR 13...	0.13	0.02	<0.2	0.02	<0.01	<10	6	6.8	4	
MAY 28...	<0.10	0.04	0.2	0.04	<0.01	<10	8	4.9	14	
JUL 22...	0.10	0.03	0.4	0.02	<0.01	<10	18	3.3	7	

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12473520 COLUMBIA RIVER AT RICHLAND, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	16.5	16.5	12.5	12.0	12.5	5.0	4.0	4.5	1.5	1.5	1.5
2	17.0	16.5	16.5	12.5	12.5	12.5	4.5	4.0	4.5	1.5	1.5	1.5
3	17.0	16.5	16.5	13.0	12.5	12.5	4.5	4.0	4.0	1.5	1.0	1.5
4	17.0	16.0	16.5	13.0	12.5	12.5	4.5	4.5	4.5	1.0	1.0	1.0
5	17.0	16.5	16.5	12.5	11.5	11.5	4.5	4.5	4.5	1.5	1.0	1.0
6	16.5	16.5	16.5	11.5	11.5	11.5	5.0	4.5	4.5	1.5	1.0	1.5
7	16.5	15.5	15.5	12.0	11.5	11.5	5.0	5.0	5.0	1.0	1.0	1.0
8	15.5	15.0	15.0	12.0	11.0	11.5	5.5	5.0	5.5	1.5	1.0	1.0
9	15.0	14.5	15.0	11.0	11.0	11.0	5.5	5.0	5.0	1.5	1.5	1.5
10	16.0	15.0	15.5	11.0	9.0	10.0	5.0	5.0	5.0	1.5	1.5	1.5
11	16.0	15.5	15.5	9.5	9.0	9.5	5.0	4.5	5.0	1.5	1.5	1.5
12	15.5	15.0	15.5	9.5	9.0	9.0	5.0	4.5	5.0	1.5	1.0	1.5
13	15.5	15.0	15.0	9.0	9.0	9.0	5.0	4.5	4.5	1.5	1.0	1.0
14	15.0	14.5	14.5	9.0	9.0	9.0	4.5	4.0	4.5	1.5	1.0	1.5
15	15.0	14.5	15.0	9.0	9.0	9.0	4.0	4.0	4.0	1.5	1.0	1.5
16	15.0	15.0	15.0	9.0	9.0	9.0	4.0	3.5	4.0	1.5	1.5	1.5
17	15.0	14.5	14.5	9.0	8.5	9.0	3.5	3.5	3.5	2.0	1.5	1.5
18	15.0	14.5	15.0	8.5	8.0	8.5	3.5	3.0	3.5	2.0	2.0	2.0
19	15.0	14.5	14.5	8.0	7.5	7.5	3.0	3.0	3.0	2.5	2.5	2.5
20	14.5	14.5	14.5	7.5	7.5	7.5	3.0	3.0	3.0	2.5	2.5	2.5
21	14.5	14.0	14.5	7.5	6.5	7.0	3.0	3.0	3.0	2.5	2.0	2.5
22	14.0	14.0	14.0	6.5	6.0	6.5	3.0	3.0	3.0	2.0	2.0	2.0
23	14.0	13.5	14.0	6.5	6.0	6.0	3.0	2.5	2.5	2.5	2.0	2.0
24	14.0	14.0	14.0	6.5	6.0	6.0	2.5	2.5	2.5	2.0	2.0	2.0
25	14.5	14.0	14.0	6.0	5.5	6.0	2.5	2.5	2.5	2.0	2.0	2.0
26	14.0	13.5	14.0	6.0	6.0	6.0	2.5	2.5	2.5	2.0	2.0	2.0
27	14.5	13.5	14.0	6.0	5.5	5.5	2.5	2.0	2.0	2.0	2.0	2.0
28	14.0	13.5	14.0	5.5	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0
29	13.5	13.0	13.5	5.0	5.0	5.0	2.0	1.5	2.0	2.0	2.0	2.0
30	13.5	13.0	13.0	5.0	5.0	5.0	1.5	1.5	1.5	2.5	2.0	2.0
31	13.0	12.0	12.5	---	---	---	1.5	1.5	1.5	2.5	2.5	2.5
MONTH	17.0	12.0	15.0	13.0	5.0	8.5	5.5	1.5	3.5	2.5	1.0	1.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3.0	2.5	3.0	3.0	3.0	3.0	5.5	5.0	5.5	8.5	8.0	8.5
2	3.0	2.5	2.5	3.5	3.0	3.0	6.0	5.0	5.5	8.5	8.5	8.5
3	3.0	2.5	3.0	3.5	3.0	3.0	6.0	5.5	5.5	9.0	8.5	8.5
4	3.0	2.5	3.0	4.0	3.5	3.5	6.0	5.5	6.0	9.5	8.5	9.0
5	3.0	2.5	3.0	4.0	3.5	4.0	6.5	5.5	6.0	9.5	9.0	9.5
6	3.0	2.5	2.5	4.0	3.5	4.0	6.5	5.5	6.0	9.5	9.0	9.0
7	2.5	2.5	2.5	4.5	4.0	4.0	7.0	6.0	6.5	10.0	9.0	9.5
8	2.5	2.5	2.5	4.5	4.0	4.0	7.0	6.0	6.5	10.5	9.0	10.0
9	3.0	2.5	2.5	5.0	4.0	4.5	7.0	6.5	7.0	10.5	9.5	10.0
10	3.0	2.5	2.5	4.5	4.5	4.5	7.5	6.5	7.0	10.0	9.5	10.0
11	2.5	2.5	2.5	5.0	4.0	4.5	7.0	6.5	6.5	10.5	9.5	10.0
12	2.5	2.5	2.5	5.0	4.5	4.5	7.0	6.5	6.5	10.5	9.5	10.0
13	2.5	2.5	2.5	5.0	4.5	4.5	7.0	6.5	6.5	10.5	10.0	10.5
14	2.5	2.0	2.0	5.0	4.5	4.5	7.0	6.5	6.5	10.5	9.5	10.0
15	2.5	2.0	2.0	4.5	4.0	4.5	7.0	6.5	7.0	11.0	10.0	10.5
16	2.5	2.5	2.5	5.0	4.5	4.5	7.0	6.5	6.5	11.0	10.0	10.5
17	3.0	2.5	2.5	5.0	4.5	4.5	7.0	6.5	6.5	11.5	10.5	11.0
18	3.0	2.5	3.0	5.0	4.5	4.5	7.5	6.5	7.0	11.5	11.0	11.0
19	2.5	2.0	2.5	5.0	4.5	4.5	7.5	7.0	7.0	12.0	11.0	11.5
20	2.5	2.0	2.5	5.5	4.5	5.0	8.0	7.0	7.5	11.5	11.0	11.5
21	2.5	2.0	2.5	6.0	5.0	5.5	8.5	7.5	8.0	11.5	11.0	11.0
22	3.0	2.5	2.5	5.5	4.5	5.0	8.5	7.5	8.0	11.5	10.5	11.0
23	4.0	3.0	3.0	5.0	5.0	5.0	8.0	7.0	7.5	11.5	10.5	11.0
24	4.5	4.0	4.5	6.0	5.0	5.5	8.0	7.5	7.5	12.0	11.0	11.5
25	4.5	4.0	4.5	5.5	5.0	5.0	8.5	7.5	8.0	12.5	11.5	12.0
26	4.0	3.5	4.0	5.5	5.0	5.0	8.0	7.5	8.0	13.5	12.5	13.0
27	4.0	3.5	3.5	5.5	5.0	5.0	9.0	7.5	8.0	13.5	13.0	13.5
28	3.5	3.0	3.0	6.0	5.0	5.5	8.5	8.0	8.0	14.0	13.0	13.5
29	---	---	---	6.0	5.5	5.5	8.5	8.0	8.0	14.0	13.0	13.5
30	---	---	---	6.0	5.5	5.5	8.5	8.0	8.5	14.5	13.5	14.0
31	---	---	---	6.0	5.0	5.5	---	---	---	14.5	13.5	14.0
MONTH	4.5	2.0	3.0	6.0	3.0	4.5	9.0	5.0	7.0	14.5	8.0	11.0

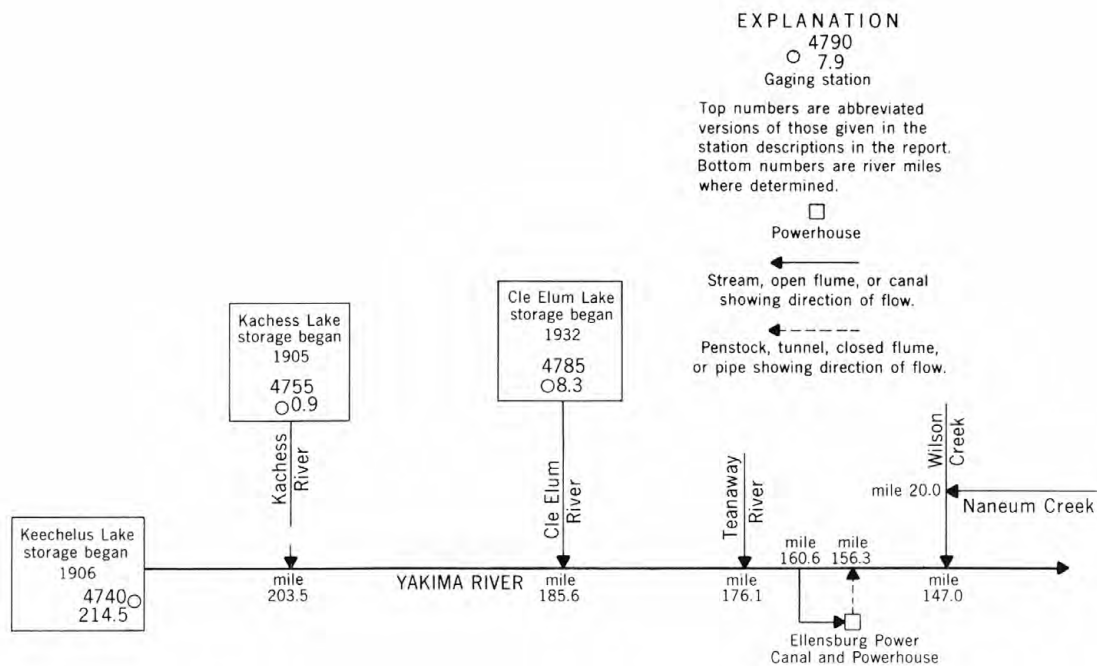


Figure 27.--Gaging stations in Yakima River basin between Keechelus Lake and Naneum Creek.

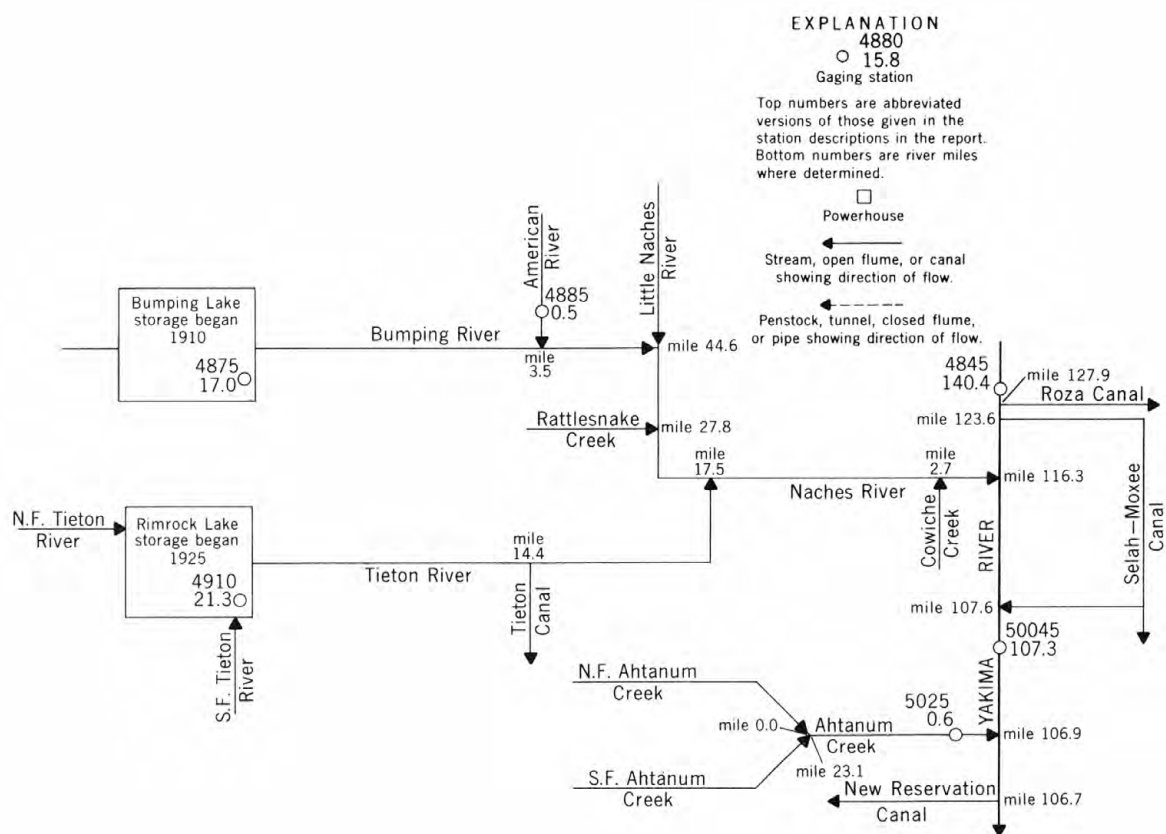


Figure 28.--Gaging stations in Yakima River basin between Bumping Lake and Ahtanum Creek.

YAKIMA RIVER BASIN

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12484500 YAKIMA RIVER AT UMTANUM, WA

LOCATION.--Lat 46°51'46", long 120°28'44", in SW¼NW¼ sec.20, T.16 N., R.19 E., Kittitas County, Hydrologic Unit 17030001, on right bank at Umtanum railway siding, 0.5 mi upstream from Umtanum Creek, 4.2 mi upstream from McPherson Canyon, 10 mi south of Ellensburg, and at mile 140.4.

DRAINAGE AREA.--1,594 mi².

PERIOD OF RECORD.--August 1906 to current year.

REVISED RECORDS.--WSP 412: 1914. WSP 1286: 1910. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,300.00 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 28, 1911, nonrecording gage at approximately same site at various datums. Sept. 28, 1911, to Nov. 23, 1936, water-stage recorder at site about 300 ft upstream at datum 26.70 ft higher.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 6, Dec. 11 to Jan. 4. Records excellent except for estimated daily discharges, which are poor. Flow partly regulated by Keechelus, Kachess, and Cle Elum Lakes. Diversions upstream from station for irrigation of about 105,000 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,000 ft³/s Nov. 15 or 16, 1906, gage height, 41.1 ft, from floodmarks, present datum; minimum recorded discharge, 138 ft³/s Oct. 3, 1915, gage height, 2.86 ft, datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,620 ft³/s Feb. 26, gage height, 34.34 ft; minimum daily discharge, 560 ft³/s Nov. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1140	1120	640	620	802	4670	3080	1250	1790	4150	3680	3370
2	1090	1520	620	630	858	4800	2750	1320	1610	4200	3710	3300
3	1090	1930	650	620	883	4460	2510	1410	1480	4180	3760	3260
4	1070	2100	680	640	915	4130	2400	1450	1840	4050	3770	3210
5	1030	1950	700	649	970	4260	2210	1520	1920	4020	3830	3110
6	1020	1920	750	660	994	4040	2110	1550	1820	3960	3970	3040
7	1110	1980	771	658	971	4380	2150	1460	1950	3980	3920	2850
8	1150	1790	773	661	893	5630	2340	1420	2400	4090	3880	2050
9	1080	1580	739	654	785	5070	2470	1420	2690	4060	3990	1440
10	914	1400	735	663	752	4490	2440	1500	2810	3980	4050	1330
11	759	1290	710	667	748	4170	2220	1510	2850	4010	4000	1300
12	744	1210	660	650	779	3880	2090	1490	2780	3900	3980	1320
13	723	1190	610	630	779	3600	1890	1550	2900	3800	4050	1390
14	730	1140	590	649	779	3280	1710	1650	3120	3810	3990	1480
15	739	1120	570	636	801	2960	1620	1510	3430	3840	3930	1560
16	700	1110	580	643	797	2710	1690	1390	3460	3840	3960	1840
17	693	1090	590	663	789	2490	1540	1490	3290	3840	4020	1890
18	690	1040	600	713	749	2330	1440	1820	3320	3570	4000	2260
19	742	947	620	784	720	2330	1380	2050	3210	3480	3930	2010
20	713	839	630	1150	656	2540	1300	2160	3290	3400	3850	1840
21	693	790	640	1070	736	2790	1450	2050	3370	3530	3860	1640
22	693	730	630	1010	766	3010	1930	1720	3390	3460	3920	1540
23	753	680	630	928	893	2860	1980	1710	3540	3740	3950	1480
24	772	640	620	890	3650	2670	1740	2160	3570	3870	3920	1490
25	959	610	620	831	7290	2500	1590	2510	3660	3820	3870	1410
26	1050	590	620	801	8030	2390	1440	2910	3700	3770	3750	1300
27	1340	560	610	828	6310	2380	1350	3010	4020	3840	3710	1210
28	1430	580	600	799	5030	2560	1340	2340	4110	3780	3820	1220
29	1240	610	600	795	---	2910	1300	2030	4160	3680	3950	1210
30	1110	630	600	796	---	3190	1220	1960	4150	3690	3830	1190
31	1120	---	600	785	---	3370	---	1900	---	3710	3530	---
TOTAL	29087	34686	19988	23173	49125	106850	56680	55220	89630	119050	120380	57540
MEAN	938	1156	645	748	1754	3447	1889	1781	2988	3840	3883	1918
MAX	1430	2100	773	1150	8030	5630	3080	3010	4160	4200	4050	3370
MIN	690	560	570	620	656	2330	1220	1250	1480	3400	3530	1190
AC-FT	57690	68800	39650	45960	97440	211900	112400	109500	177800	236100	238800	114100
CAL YR 1985	TOTAL	762235	MEAN	2088	MAX	4640	MIN	500	AC-FT	1512000		
WTR YR 1986	TOTAL	761409	MEAN	2086	MAX	8030	MIN	560	AC-FT	1510000		

YAKIMA RIVER BASIN

12488500 AMERICAN RIVER NEAR NILE, WA

LOCATION.--Lat 46°58'40", long 121°10'03", in SE¼NW¼ sec.12, T.17 N., R.13 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, on right bank 300 ft upstream from Bumping Lake Road bridge, 4.9 mi downstream from Hall Creek, 16.0 mi northwest of Nile, and at mile 0.5.

DRAINAGE AREA.--78.9 mi².

PERIOD OF RECORD.--April 1909 to March 1912, July to September 1913, June to September 1914, June to September 1915, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 982: 1940-42. WSP 1216: Drainage area. WSP 1286: 1911.

GAGE.--Water-stage recorder. Datum of gage is 2,700 ft above Washington State Highway Department datum. Prior to Sept. 12, 1915, nonrecording gage at site 300 ft downstream at different datum. Oct. 12 to Dec. 7, 1939, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 13 to Dec. 12, Dec. 21 to Jan. 6, Feb. 9-11, 14-21. Records good except for period of no gage-height record Nov. 14 to Dec. 12, and periods of ice effect Nov. 13, Dec. 21 to Jan. 6, Feb. 9-11, 14-21, which are poor. No regulation or diversion.

AVERAGE DISCHARGE.--49 years (water years, 1910-11, 1940-86), 241 ft³/s, 41.48 in/yr, 174,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,230 ft³/s Dec. 26, 1980, gage height, 77.99 ft; minimum discharge, 20 ft³/s Nov. 22, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,490 ft³/s May 31, gage height, 75.29 ft; minimum discharge, 33 ft³/s Oct. 6-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	34	118	43	39	126	442	348	244	1220	173	65	41		
2	34	145	45	39	128	426	333	237	1120	168	64	41		
3	34	170	52	38	122	406	315	243	896	164	62	40		
4	34	216	57	38	118	381	301	246	813	158	60	39		
5	34	177	59	38	115	372	286	251	717	145	59	39		
6	34	159	59	38	110	362	281	263	661	136	57	38		
7	34	143	58	39	102	498	302	265	593	131	56	38		
8	33	128	55	41	96	664	339	265	520	131	55	37		
9	33	118	54	43	98	601	370	276	462	124	55	38		
10	33	108	52	47	96	543	388	275	469	122	54	37		
11	34	100	50	52	91	473	378	263	503	119	53	37		
12	34	96	47	53	89	417	357	256	509	115	53	36		
13	34	99	42	50	86	375	332	302	470	111	51	36		
14	34	97	41	50	84	337	308	301	451	105	51	38		
15	34	100	41	49	83	306	296	283	401	101	50	40		
16	34	98	40	49	89	280	282	272	355	102	49	44		
17	34	90	40	49	88	255	264	280	337	106	48	44		
18	34	78	40	65	80	234	249	337	323	100	48	49		
19	34	70	40	191	77	225	234	447	300	95	46	49		
20	44	55	39	338	78	228	239	602	276	92	45	47		
21	48	47	39	322	80	243	290	593	267	88	44	44		
22	51	42	45	236	84	238	401	521	266	86	43	43		
23	59	39	44	188	111	233	404	459	281	84	43	42		
24	82	40	42	166	363	236	380	440	292	82	42	52		
25	289	42	41	145	616	228	359	545	279	80	42	50		
26	201	45	40	135	672	230	333	810	249	77	42	50		
27	278	43	39	130	541	244	313	1070	223	75	41	49		
28	261	40	38	134	467	279	302	1120	215	72	41	48		
29	194	39	38	124	---	305	278	1180	204	70	42	48		
30	152	40	39	120	---	344	258	1280	185	68	43	48		
31	130	---	40	122	---	355	---	1280	---	67	43	---		
TOTAL	2422	2782	1399	3168	4890	10760	9520	15206	13857	3347	1547	1282		
MEAN	78.1	92.7	45.1	102	175	347	317	491	462	108	49.9	42.7		
MAX	289	216	59	338	672	664	404	1280	1220	173	65	52		
MIN	33	39	38	38	77	225	234	237	185	67	41	36		
CFSM	.99	1.17	.57	1.29	2.22	4.40	4.02	6.22	5.86	1.37	.63	.54		
IN.	1.14	1.31	.66	1.49	2.31	5.07	4.49	7.17	6.53	1.58	.73	.60		
AC-FT	4800	5520	2770	6280	9700	21340	18880	30160	27490	6640	3070	2540		
CAL YR 1985	TOTAL	58158	MEAN	159	MAX	1330	MIN	27	CFSM	2.02	IN.	27.42	AC-FT	115400
WTR YR 1986	TOTAL	70180	MEAN	192	MAX	1280	MIN	33	CFSM	2.43	IN.	33.09	AC-FT	139200

12474000 KEECHELUS LAKE.--Lat 47°19'21", long 121°20'18", in SE¼NE¼ sec.12, T.21 N., R.11 E., Kittitas County, Hydrologic Unit 17030001, Wenatchee National Forest, at headgate tower of outlet at dam on Yakima River, 3.0 mi northwest of Martin, 10 mi northwest of Easton, and at mile 214.5. DRAINAGE AREA.--54.7 mi². PERIOD OF RECORD.--January 1906 to current year. GAGE.--water-stage recorder and low-water staff gages. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Mar. 24, 1967, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1917; storage began behind crib dam Jan. 12, 1906, behind present dam Aug. 19, 1914. Initial filling of present reservoir June 15, 1920. Usable capacity, 157,800 acre-ft between elevations 2,425.00 ft, invert of gate sill, and 2,517.00 ft, spillway crest. Spillway raised 2 ft Sept. 12, 1952. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 160,940 acre-ft June 5, 1969, elevation, 2,518.23 ft; minimum contents observed, 448 acre-ft Sept. 6, 12, 13, 1906 (original crib dam); minimum elevation observed, 2,428.30 ft Sept. 20, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 131,440 acre-ft Apr. 27, elevation, 2,506.29 ft; minimum contents, 10,040 acre-ft Oct. 8, elevation, 2,432.98 ft.

12475500 KACHESS LAKE.--Lat 47°15'53", long 121°12'16", in SW¼SW¼ sec.34, T.21 N., R.13 E., Kittitas County, Hydrologic Unit 17030001, at dam on Cle Elum River at outlet of Cle Elum Lake, 4.0 mi northwest of Roslyn, and at mile 8.3. DRAINAGE AREA.--63.6 mi². PERIOD OF RECORD.--September 1905 to current year. GAGE.--water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Oct. 28, 1966, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1912. Original crib dam capacity, 21,000 acre-ft, used Sept. 20, 1905, to June 30, 1911. Storage behind present dam began June 30, 1911. Usable capacity, 239,000 acre-ft between elevations 2,192.75 ft, invert of gate sill, and 2,262.00 ft, top of spillway gate. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 244,800 acre-ft May 9, 1957, elevation, 2,263.29 ft; minimum contents observed, 525 acre-ft Sept. 14, 15, 1910 (original crib dam); minimum elevation observed, 2,197.73 ft Sept. 25, 27, 1915.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 219,490 acre-ft June 7, elevation, 2,257.65 ft; minimum contents, 24,280 acre-ft Sept. 29, elevation, 2,201.53 ft.

12478500 CLE ELUM LAKE.--Lat 47°14'44", long 121°04'24", in NE¼NE¼ sec.10, T.20 N., R.14 E., Kittitas County, Hydrologic Unit 17030001, at dam on Cle Elum River at outlet of Cle Elum Lake, 4.0 mi northwest of Roslyn, and at mile 8.3. DRAINAGE AREA.--203 mi². PERIOD OF RECORD.--May 1906 to current year. GAGE.--water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Mar. 6, 1968, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1933; storage began behind present dam Feb. 26, 1932. Usable capacity, 436,900 acre-ft between elevations 2,110.00 ft, invert of gate sill, and 2,240.00 ft, top of spillway gate. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 448,520 acre-ft May 8, 9, 1957, elevation, 2,241.98 ft; minimum contents observed, 2,380 acre-ft Aug. 31, 1906; minimum elevation observed, 2,114.35 ft Oct. 14, 1932. Storage was uncontrolled Oct. 3, 1931, to Feb. 26, 1932.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 413,110 acre-ft June 8, elevation, 2,234.99 ft; minimum contents, 36,340 acre-ft Oct. 28, elevation, 2,127.83 ft.

12487500 BUMPING LAKE.--Lat 46°52'25", long 121°17'57", in SW¼ sec.14 (unsurveyed), T.16 N., R.12 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, at outlet of dam on Bumping River, 2.2 mi southwest of Goose Prairie, 10 mi southwest of town of American River, 19 mi west of Nile, and at mile 17.0. DRAINAGE AREA.--69.3 mi². PERIOD OF RECORD.--June to July 1906, April 1909 to current year. GAGE.--water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Nov. 23, 1966, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed on natural lake by earthfill dam completed in 1910; storage began Nov. 3, 1910. Usable capacity, 33,700 acre-ft between elevations 3,389.00 ft, invert of gate sill, and 3,426.00 ft, spillway crest. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 39,840 acre-ft June 21, 22, 1925, elevation, 3,430.55 ft; minimum contents observed, 1,130 acre-ft Feb. 5-9, 1949, elevation, 3,390.80 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 34,620 acre-ft June 1, elevation, 3,426.70 ft; minimum contents, 3,810 acre-ft Oct. 28, elevation, 3,394.93 ft.

12491000 RIMROCK LAKE.--Lat 46°39'23", long 121°07'43", in NE¼SW¼ sec.31, T.14 N., R.14 E., Yakima County, Hydrologic Unit 17030002, Snoqualmie National Forest, on upstream spillway pier at Tieton dam on Tieton River at Rimrock, 0.6 mi upstream from Wildcat Creek, 7.1 mi upstream from headworks on Tieton Canal, 21 mi west of Naches, and at mile 21.3. DRAINAGE AREA.--187 mi². PERIOD OF RECORD.--April 1925 to current year. Prior to October 1959, published as Tieton Reservoir. GAGE.--water-stage recorder and low-water staff gages. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to Mar. 14, 1967, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed in 1925; storage began Apr. 27, 1925. Usable capacity, 198,000 acre-ft between elevations 2,766.00 ft, invert of tunnel entrance, and 2,926.00 ft, crest of spillway gates. Figures given herein represent usable contents. Water is used for irrigation.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 201,630 acre-ft June 18, 1974, elevation, 2,927.43 ft; minimum contents observed, 30 acre-ft Oct. 19, 20, 1979, elevation, 2,766.25 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 198,880 acre-ft June 15, elevation, 2,926.35 ft; minimum contents, 73,360 acre-ft Oct. 28, elevation, 2,863.25 ft.

YAKIMA RIVER BASIN

RESERVOIRS IN YAKIMA RIVER BASIN, WA--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre- feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre- feet)	Change in contents (acre-feet)
12474000 KEECHELUS LAKE			12475500 KACHESS LAKE			
Sept. 30.....	2,434.02	11,360	--	2,214.19	59,890	--
Oct. 31.....	2,451.41	34,150	+22,790	2,217.11	68,220	+8,330
Nov. 30.....	2,470.13	60,940	+26,790	2,225.74	93,540	+25,320
Dec. 31.....	2,469.03	59,240	-1,700	2,227.04	98,070	+4,530
CAL YR 1985.....	---	---	-24,970	---	---	-46,900
Jan. 31.....	2,471.07	62,420	+3,180	2,229.56	106,970	+8,900
Feb. 28.....	2,482.54	81,880	+19,460	2,235.50	128,620	+21,650
Mar. 31.....	2,498.50	113,800	+31,920	2,243.41	159,180	+30,560
Apr. 30.....	2,505.67	129,980	+16,180	2,248.90	181,700	+22,520
May 31.....	2,503.56	125,100	-4,880	2,256.37	213,850	+32,150
June 30.....	2,500.55	118,310	-6,790	2,249.91	185,980	-27,870
July 31.....	2,498.11	112,950	-5,360	2,227.79	100,700	-85,280
Aug. 31.....	2,462.06	48,920	-64,030	2,209.11	45,520	-55,180
Sept. 30.....	2,435.03	12,980	-35,940	2,201.60	24,480	-21,040
WTR YR 1986.....	---	---	+1,620	---	---	-35,410
12478500 CLE ELUM LAKE			12487500 BUMPING LAKE			
Sept. 30.....	2,131.86	44,980	--	3,404.86	11,060	--
Oct. 31.....	2,142.15	69,660	+24,680	3,399.19	6,730	-4,330
Nov. 30.....	2,159.27	118,240	+48,580	3,400.07	7,360	+630
Dec. 31.....	2,159.34	118,460	+220	3,395.73	4,340	-3,020
CAL YR 1985.....	---	---	-55,930	---	---	+510
Jan. 31.....	2,162.79	129,230	+10,770	3,401.23	8,220	+3,880
Feb. 28.....	2,176.19	173,660	+44,430	3,411.68	17,240	+9,020
Mar. 31.....	2,195.22	243,420	+69,760	3,406.65	12,560	-4,680
Apr. 30.....	2,209.23	299,630	+59,210	3,410.14	15,740	+3,180
May 31.....	2,228.81	384,520	+84,890	3,426.63	34,530	+18,790
June 30.....	2,220.93	349,380	-35,140	3,425.86	33,530	-1,000
July 31.....	2,186.36	210,010	-139,370	3,423.88	30,990	-2,540
Aug. 31.....	2,139.80	63,630	-146,380	3,419.69	25,910	-5,080
Sept. 30.....	2,129.14	39,130	-24,500	3,403.83	10,220	-15,690
WTR YR 1986.....	---	---	-5,850	---	---	-840
12491000 RIMROCK LAKE						
Sept. 30.....	2,880.02	100,720	--			
Oct. 31.....	2,881.49	103,320	+2,600			
Nov. 30.....	2,887.93	115,110	+11,790			
Dec. 31.....	2,889.90	118,840	+3,730			
CAL YR 1985.....	--	--	+19,210			
Jan. 31.....	2,895.33	129,440	+10,600			
Feb. 28.....	2,907.05	153,780	+24,340			
Mar. 31.....	2,904.86	149,080	-4,700			
Apr. 30.....	2,913.75	163,640	+14,560			
May 31.....	2,918.61	179,920	+16,280			
June 30.....	2,926.14	198,350	+18,430			
July 31.....	2,915.12	171,770	-26,580			
Aug. 31.....	2,895.28	129,340	-42,430			
Sept. 30.....	2,866.90	78,970	-50,370			
WTR YR 1986.....	---	---	-21,750			

YAKIMA RIVER BASIN

375

12500450 YAKIMA RIVER ABOVE AHTANUM CREEK, AT UNION GAP, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°32'04", long 120°27'58", in NW1/4 sec.17, T.12 N., R.19 E., Yakima County, Hydrologic Unit 17030003, on left bank 2,200 ft upstream from Ahtanum Creek, 0.8 mi upstream from Wapato Dam, 1.4 mi southeast of Union Gap, and at about mile 107.3.

DRAINAGE AREA.--3,479 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft above National Geodetic Vertical Datum of 1929; gage readings have been reduced to elevations above National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1967, at site 1,200 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 24-30, Dec. 1-9, 15-26. Water-discharge records fair except those for period July 7-29, which are poor. Diversions upstream from station for irrigation of about 212,000 acres. Flow partly regulated by Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes. Records at this site plus those for Ahtanum Creek at Union Gap (station 12502500) are equivalent to discontinued station 12503000, Yakima River at Union Gap.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,300 ft³/s Dec. 3, 1977, elevation, 949.55 ft; minimum daily discharge, 300 ft³/s Jan. 1, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,900 ft³/s Feb. 26, elevation, 945.39 ft; minimum discharge, 808 ft³/s Feb. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2410	1950	1180	1130	1630	9110	5960	2630	6250	3340	3440	3020
2	2270	2150	1100	1110	1740	10100	5390	2740	5700	3380	3450	2970
3	2140	2740	1150	1160	1780	9840	4730	2790	4590	3410	3510	3240
4	2010	3150	1300	1150	1820	9190	4410	2850	4270	3330	3470	3010
5	1930	3120	1500	1170	1810	9590	3960	2980	3830	3270	3440	2820
6	1880	2930	1480	1160	1850	9260	3760	3330	3500	3180	3610	2830
7	1960	3080	1470	1140	1820	9620	3780	3170	3310	3160	3490	2630
8	1940	2890	1440	1100	1710	11600	4050	2920	3380	3240	3490	3050
9	1910	2650	1390	1180	1540	11000	4430	2800	3510	3300	3590	2680
10	1790	2480	1260	1220	1570	9810	4450	2870	3510	3170	3780	2590
11	1650	2160	1190	1200	1560	9130	4080	2850	3600	3300	3550	2700
12	1590	1870	1240	1180	1550	8430	3820	2790	3350	3290	3440	2680
13	1530	1770	1170	1150	1520	8080	3420	2800	3310	3180	3490	2620
14	1540	1740	1110	1130	1490	7510	3000	2990	3390	3270	3440	2780
15	1600	1790	1060	1150	1540	6870	2810	2610	3680	3290	3390	2800
16	1560	1790	1050	1150	1530	6390	2660	2390	3850	3360	3400	3200
17	1540	1740	1040	1220	1530	5900	2490	2630	3700	3510	3490	2930
18	1510	1700	1030	1280	1460	5100	2190	3070	3680	3230	3530	3190
19	1470	1600	1020	1610	1410	4810	2230	3540	3390	3190	3450	2770
20	1430	1480	1020	2040	1220	5010	2260	3980	3210	3230	3280	2450
21	1420	1270	1020	2200	1210	5350	2550	3910	3250	3480	3250	2420
22	1410	1240	1020	2080	1470	5460	3470	3190	3170	3330	3290	2390
23	1450	1200	1020	1910	1570	5280	3810	2570	3480	3380	3370	2500
24	1530	1100	1030	1770	6100	5000	3080	3200	3230	3470	3390	2300
25	1720	1160	1040	1670	12400	4710	2720	3810	3310	3430	3340	1960
26	2160	1160	1060	1560	14000	4510	2300	4630	3190	3360	3210	1750
27	2140	1150	1090	1580	11200	4510	2330	5680	3340	3530	3130	1870
28	2470	1150	1080	1590	9820	4850	2500	5320	3450	3600	3280	1910
29	2270	1160	1140	1610	---	5430	2620	5190	3570	3420	3610	2030
30	2040	1170	1160	1610	---	5990	2590	5990	3510	3380	3630	2070
31	1970	---	1130	1580	---	6330	---	6290	---	3460	3270	---
TOTAL	56240	56540	35990	43790	89850	223770	101850	108510	110510	103470	106500	78160
MEAN	1814	1885	1161	1413	3209	7218	3395	3500	3684	3338	3435	2605
MAX	2470	3150	1500	2200	14000	11600	5960	6290	6250	3600	3780	3240
MIN	1410	1100	1020	1100	1210	4510	2190	2390	3170	3160	3130	1750
AC-FT	111600	112100	71390	86860	178200	443800	202000	215200	219200	205200	211200	155000
CAL YR 1985	TOTAL	1000430	MEAN	2741	MAX	8950	MIN	1000	AC-FT	1984000		
WTR YR 1986	TOTAL	1115180	MEAN	3055	MAX	14000	MIN	1020	AC-FT	2212000		

YAKIMA RIVER BASIN

12500450 YAKIMA RIVER ABOVE AHTANUM CREEK, AT UNION GAP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at the cableway 0.2 miles downstream from gage and 0.7 miles downstream from Moxee Drain.

PERIOD OF RECORD.--Water years 1969, 1971, March 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1981 to December 1981.

REMARKS.--Water-quality records affected by Moxee Drain during the summer months when it accounts for about three percent of the flow of the Yakima River at the entry point of Moxee Creek, about 0.7 miles above the sampling point. Moxee Drain contributes significant suspended sediment load and nutrients to the river, during the irrigation season.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 05...	1000	3130	116	8.1*	6.0	3.2	12.4	103	69	210	43	0
JAN 27...	1045	1510	153	8.2*	2.0	2.5	15.6	117	220	530	57	0
MAR 10...	1315	9760	101	7.8	8.0	15	11.2	99	2600	190	44	0
JUN 12...	1110	3360	95	7.6	17.0	3.5	11.4	122	--	45	39	0
JUL 07...	1130	3180	108	8.0	17.5	5.5	9.9	107	120	320	40	0
SEP 22...	1430	2410	153	8.2*	14.5	3.5	12.2	124	88	110	53	0

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 05...	11	3.8	5.3	21	0.4	0.5	43*	--	--	5.8	2.4	<0.1
JAN 27...	14	5.3	8.1	23	0.5	1.3	62*	--	--	5.5	4.0	0.1
MAR 10...	11	4.0	4.9	19	0.3	1.2	42*	--	--	11	2.4	<0.1
JUN 12...	10	3.5	4.9	21	0.4	1.0	43	53	0	5.3	2.3	<0.1
JUL 07...	9.7	3.9	5.1	21	0.4	1.0	43	52	0	2.7	1.9	<0.1
SEP 22...	13	4.9	7.3	22	0.5	1.7	58	70	0	7.9	3.2	0.1

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 05...	15	66	77	0.09	558	0.01	0.20	0.04	0.3	0.06	0.05	0.03
JAN 27...	17	88	110	0.12	359	<0.01	0.32	0.14	0.5	0.09	0.07	0.07
MAR 10...	20	70	85	0.09	1840	<0.01	0.10	0.05	0.6	0.06	0.03	0.02
JUN 12...	14	58	67	0.08	526	<0.01	0.21	0.04	0.3	0.07	0.04	0.04
JUL 07...	12	61	62	0.08	524	<0.01	0.24	0.04	0.4	0.08	0.05	0.04
SEP 22...	18	97	91	0.13	631	<0.01	0.30	<0.01	0.2	0.10	0.06	0.06

* - Laboratory value.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM % FINER THAN .062 MM
NOV 05...	<0.1	<10	1	<1	<1	47	<6	7	11	93	--
JAN 27...	--	--	--	--	--	--	--	--	8	33	--
MAR 10...	<0.1	<10	<1	<1	<1	60	<6	6	53	1400	70
JUN 12...	--	--	--	--	--	--	--	--	23	209	--
JUL 07...	0.1	<10	2	<1	<1	47	<6	5	30	258	--
SEP 22...	--	--	--	--	--	--	--	--	10	65	--

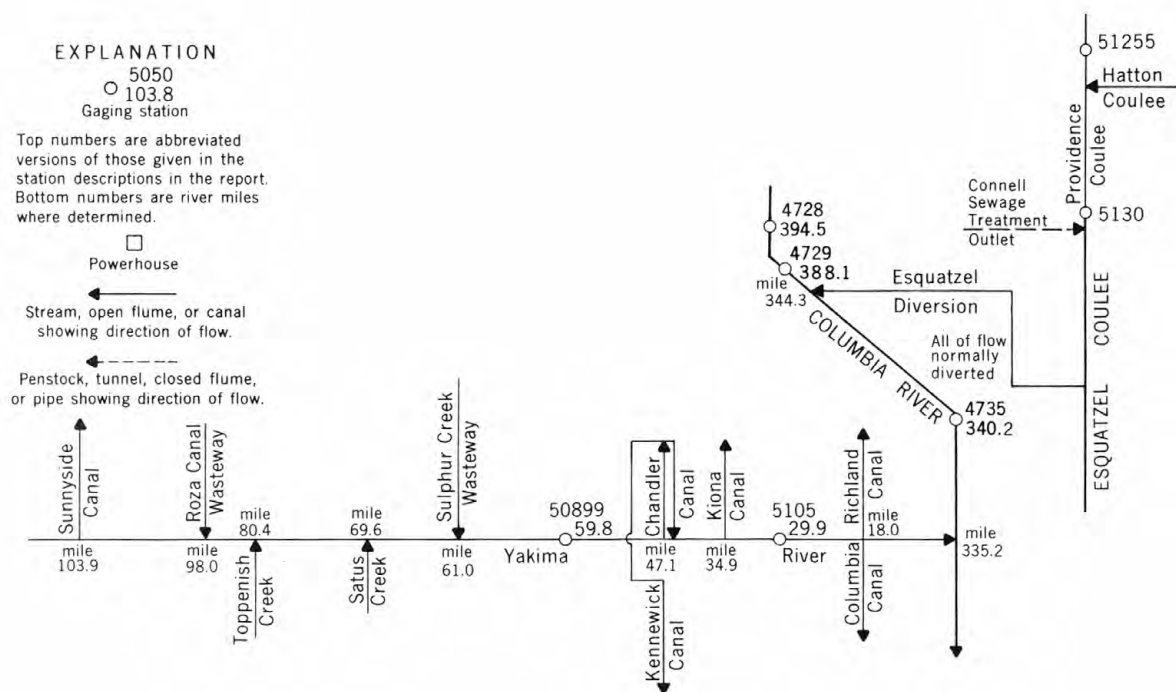


Figure 29.--Gaging stations in Yakima River basin downstream from Sunnyside Canal and in Esquatzel Coulee.

YAKIMA RIVER BASIN

379

12502500 AHTANUM CREEK AT UNION GAP, WA

LOCATION.--Lat 46°32'08", long 120°28'20", in SE¼SW¼ sec.8, T.12 N., R.19 E., Yakima County, Hydrologic Unit 17030003, on right downstream wingwall of Union Pacific Railway bridge at Union Gap, 1.0 mi south of town of Union Gap, and at mile 0.6.

DRAINAGE AREA.--173 mi².

PERIOD OF RECORD.--May to November 1904, August 1907 to July 1908, March to October 1910, April 1911 to September 1914, May 1951 to April 1953, August 1960 to current year. Published as "near Yakima" 1904, 1907-08, 1910-12. Records for water years 1913-14 are published in WSP 1286.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 940 ft, from topographic map. Prior to Sept. 30, 1914, nonrecording gage at approximately same site at various datums. May 12, 1951 to Sept. 30, 1972, water-stage recorder at present site at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Extreme high flows may include transbasin flow from Wide Hollow Creek. Diversions and ground-water withdrawals for irrigation of about 9,000 acres upstream from station. Return from transbasin irrigation flows contribute to base flow. Chemical data (irrigation seasons only) for 1975-76 water years. Water temperature records March to December 1981.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft³/s Jan. 16, 1974, gage height, 10.36 ft; no flow many days during September and October 1904.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 993 ft³/s Feb. 25, gage height, 7.34 ft; minimum discharge, 6.1 ft³/s Aug. 14, 15, 18, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	16	18	25	48	365	210	85	258	16	10	17
2	20	16	18	25	57	340	194	73	246	14	9.2	14
3	16	16	19	26	62	326	180	72	214	16	6.6	15
4	13	16	18	26	69	307	174	70	186	18	6.6	15
5	13	16	19	27	73	312	165	70	164	19	8.6	16
6	12	15	21	26	73	309	161	100	141	22	11	17
7	15	9.1	23	25	69	339	164	107	126	19	9.6	16
8	13	9.5	23	25	62	468	174	100	114	15	12	16
9	12	11	22	27	57	409	184	100	96	11	13	17
10	12	12	22	27	61	354	184	96	82	11	11	18
11	13	11	20	27	58	332	173	90	70	12	11	19
12	12	11	20	27	57	304	169	92	60	14	9.7	18
13	12	11	17	27	54	283	150	89	53	20	9.5	12
14	13	11	17	27	53	266	139	83	47	20	7.2	10
15	12	11	19	27	55	239	132	75	48	20	8.2	14
16	11	13	20	28	55	224	126	70	45	21	11	19
17	11	16	22	32	56	204	113	70	38	22	12	25
18	11	16	20	35	52	190	109	78	39	22	10	26
19	11	15	22	58	47	184	106	96	37	19	6.8	26
20	11	14	24	54	39	191	107	111	33	14	8.1	25
21	11	13	26	48	42	195	116	117	32	13	8.8	23
22	11	13	25	47	54	194	143	103	29	11	10	22
23	12	13	25	44	64	191	151	101	25	9.9	14	23
24	12	13	25	41	374	184	133	100	27	12	14	23
25	14	14	25	40	763	172	136	108	21	13	13	22
26	14	14	24	37	796	169	118	132	19	13	13	22
27	14	14	23	40	551	173	113	174	20	11	11	22
28	14	15	24	39	422	186	104	197	20	12	12	22
29	15	16	24	43	---	208	92	214	19	12	16	22
30	16	17	23	43	---	223	83	233	19	12	16	22
31	16	---	24	43	---	225	---	255	---	11	20	---
TOTAL	414	407.6	672	1066	4223	8066	4303	3461	2328	474.9	338.9	578
MEAN	13.4	13.6	21.7	34.4	151	260	143	112	77.6	15.3	10.9	19.3
MAX	22	17	26	58	796	468	210	255	258	22	20	26
MIN	11	9.1	17	25	39	169	83	70	19	9.9	6.6	10
AC-FT	821	808	1330	2110	8380	16000	8540	6860	4620	942	672	1150
CAL YR 1985	TOTAL	14611.8	MEAN	40.0	MAX	191	MIN	3.9	AC-FT	28980		
WTR YR 1986	TOTAL	26332.4	MEAN	72.1	MAX	796	MIN	6.6	AC-FT	52230		

YAKIMA RIVER BASIN

12508990 YAKIMA RIVER AT MABTON, WA

LOCATION.--Lat 46°13'53", long 119°59'54", in SW¼SW¼ sec.30, T.9 N., R.23 E., Yakima County, Hydrologic Unit 17030003, on right bank under county highway bridge, at east boundary of Yakima Indian Reservation, 1.1 mi north of Mabton, and at mile 59.8.

DRAINAGE AREA.--5,359 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 643 ft, from topographic map. Prior to Oct. 1, 1976, at elevation 10 ft higher.

REMARKS.--Estimated daily discharges: Nov. 12-14, Nov. 20 to Dec. 13. Records good except for period with ice effect Nov. 25 to Dec. 4, which is poor. Flow affected by storage in five reservoirs and by diversions upstream from station for irrigation upstream and downstream from station of about 424,000 acres and by return flow from irrigated area. Water temperatures March 1981 to February 1982.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,200 ft³/s Jan. 17, 1974, gage height, 25.30 ft present datum; minimum daily discharge, 320 ft³/s Mar. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,700 ft³/s Feb. 27, gage height, 18.08 ft; minimum discharge, 1,120 ft³/s Aug. 9, gage height, 10.52 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1970	2520	1700	1660	3020	13100	7270	1410	4360	1680	1160	1760
2	2630	2490	1750	1640	3140	12000	6860	1450	4300	1550	1150	1660
3	2540	2860	1800	1680	3170	12200	6230	1540	3650	1610	1150	1610
4	2330	3300	2200	1680	3160	11700	5600	1590	2780	1670	1170	1800
5	2210	3560	2830	1720	3160	11100	5290	1680	2540	1730	1170	1720
6	2120	3460	2700	1710	3100	11100	4820	2020	2150	1780	1150	1650
7	2130	3470	2500	1680	3060	10900	4610	2430	1820	1720	1210	1670
8	2290	3520	2100	1670	2970	11700	4540	2220	1650	1600	1170	1610
9	2310	3310	2000	1710	2800	12900	4690	2000	1740	1530	1160	1830
10	2260	3140	1850	1770	2560	12600	4820	1920	1760	1500	1270	1650
11	2140	2910	1800	1820	2640	11600	4660	2000	1720	1450	1390	1520
12	1990	2740	1700	1850	2560	10800	4380	1990	1690	1490	1290	1590
13	1930	2560	1700	1820	2520	10000	4060	1850	1470	1500	1240	1620
14	1880	2490	1660	1780	2470	9670	3620	1850	1330	1430	1280	1640
15	1910	2490	1610	1760	2480	9030	3100	1910	1420	1400	1290	1830
16	2320	2530	1630	1780	2480	8520	2830	1630	1730	1430	1290	2130
17	2360	2490	1620	2220	2730	7980	2560	1410	1890	1540	1370	2310
18	2320	2470	1610	2310	2720	7210	2190	1480	1730	1630	1380	2320
19	2270	2400	1610	3880	2580	6600	1870	1810	1760	1460	1400	2520
20	2170	2290	1700	3440	2460	6570	1860	2000	1590	1360	1330	2330
21	2100	2160	1740	3440	2300	6720	1800	2150	1450	1350	1310	2200
22	2070	1980	1690	3520	2370	6960	1760	2070	1460	1370	1280	2170
23	2030	1820	1680	3460	2990	7040	2510	1680	1440	1260	1330	2210
24	2070	1700	1660	3190	5860	6800	2520	1430	1560	1210	1410	2420
25	2110	1650	1640	2950	10500	6170	2020	1620	1360	1240	1480	2280
26	2450	1600	1650	2750	13200	5810	1760	2120	1310	1240	1480	2140
27	2630	1650	1640	2620	15200	5910	1490	2960	1300	1210	1410	2010
28	2780	1700	1610	2600	14700	6000	1500	3710	1400	1330	1380	2030
29	2930	1700	1610	2650	---	6420	1480	3340	1630	1340	1510	2080
30	2720	1700	1680	2750	---	6930	1430	3500	1740	1200	1790	2230
31	2570	---	1680	3010	---	7350	---	4130	---	1150	1860	---
TOTAL	70540	74660	56350	72520	122900	279390	104130	64900	57730	44960	41260	58540
MEAN	2275	2489	1818	2339	4389	9013	3471	2094	1924	1450	1331	1951
MAX	2930	3560	2830	3880	15200	13100	7270	4130	4360	1780	1860	2520
MIN	1880	1600	1610	1640	2300	5810	1430	1410	1300	1150	1150	1520
AC-FT	139900	148100	111800	143800	243800	554200	206500	128700	114500	89180	81840	116100
CAL YR 1985	TOTAL	806490	MEAN	2210	MAX	6960	MIN	1130	AC-FT	1600000		
WTR YR 1986	TOTAL	1047880	MEAN	2871	MAX	15200	MIN	1150	AC-FT	2078000		

12510500 YAKIMA RIVER AT KIONA, WA
(National stream quality accounting network station)

LOCATION.--Lat 46°15'13", long 119°28'37", in SE¼NE¼ sec.19, T.9 N., R.27 E., Benton County, Hydrologic Unit 17030003, on left bank just upstream from abandoned highway bridge pier at Kiona, 0.1 mi upstream from highway bridge, 3.6 mi downstream from Corral Canyon Creek, 5.0 mi downstream from intake of Kiona Canal, and at mile 29.9.

DRAINAGE AREA.--5,615 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to December 1895 (gage heights only, fragmentary), August 1896 to March 1915, February 1933 to current year.

REVISED RECORDS.--WSP 214: 1905. WSP 1122: 1934(M). WSP 1216: 1949-50. WSP 1286: 1907(M), 1909, 1936. WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 454.41 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1915, nonrecording gages at approximately same site and datum. Feb. 6, 1933, to July 26, 1934, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 6, May 27 to June 4, July 5-10. Water-discharge records good except for periods of no gage-height record May 27 to June 4, July 5-10, and period with ice effect Nov. 25 to Dec. 6, which are poor. Diversion upstream from station for irrigation of about 424,000 acres. Flow affected by diversions and by Keechelus, Kachess, Cle Elum, Bumping, and Rimrock lakes. The Kiona Canal bypasses station with a mean flow of approximately 23 ft³/s for irrigation of about 1,100 acres downstream from station. Diversion by the Kennewick Canal, which bypasses station, began in August 1956, and diverted 102,200 acre-ft during the current water year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft³/s Dec. 23, 1933, gage height, 21.57 ft, from high-water marks; minimum observed discharge, 105 ft³/s Sept. 11, 1906.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,100 ft³/s Feb. 28, gage height, 11.96 ft; minimum discharge, 1,050 ft³/s June 26, 27, gage height, 2.91 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2010	2820	1900	1780	3200	14000	7410	1500	4000	1600	1200	1860
2	2400	2730	1950	1760	3310	12700	7130	1530	3900	1510	1200	1750
3	2750	2900	2000	1750	3380	12600	6570	1600	3250	1470	1180	1660
4	2480	3550	3100	1790	3360	12300	5920	1680	2850	1510	1160	1670
5	2290	3970	3200	1820	3380	11700	5610	1760	2480	1600	1180	1820
6	2180	3930	3000	1840	3240	11700	5170	1970	2150	1650	1170	1740
7	2160	3820	2520	1800	3250	11500	4880	2570	1850	1700	1150	1680
8	2270	3940	2270	1800	3150	11700	4690	2520	1590	1700	1170	1680
9	2400	3760	2190	1780	2990	12900	4690	2280	1560	1650	1130	1660
10	2370	3560	2070	1820	2770	13200	4870	2140	1640	1600	1130	1800
11	2330	3360	1960	1890	2700	12300	4770	2150	1580	1510	1200	1710
12	2150	3090	1910	1940	2700	11600	4520	2200	1540	1520	1280	1590
13	2090	2890	1930	1940	2650	10800	4240	2160	1420	1550	1190	1670
14	2030	2770	1880	1850	2590	10300	3830	2040	1230	1570	1150	1700
15	2110	2710	1800	1810	2570	9660	3390	2120	1190	1520	1150	1810
16	2490	2780	1840	1830	2580	8980	2940	1950	1340	1480	1160	2130
17	2610	2780	1890	2060	2730	8370	2700	1660	1620	1490	1190	2470
18	2560	2720	1870	2410	2850	7480	2430	1550	1640	1570	1280	2560
19	2500	2690	1860	3760	2750	6760	2030	1780	1510	1640	1390	2730
20	2390	2600	1830	3980	2610	6550	1890	2070	1520	1480	1380	2730
21	2340	2490	1920	3700	2390	6650	1930	2220	1320	1440	1350	2480
22	2270	2210	1870	3800	2400	6900	1810	2290	1250	1400	1310	2430
23	2220	2050	1850	3800	2770	7060	2140	2020	1260	1390	1300	2420
24	2240	1830	1830	3510	4900	6970	2610	1700	1280	1250	1360	2700
25	2290	1730	1790	3210	9750	6480	2230	1580	1270	1220	1440	2660
26	2430	1800	1800	2970	12700	6050	1900	2050	1110	1250	1500	2510
27	2920	1850	1790	2780	15200	5890	1670	2610	1080	1260	1470	2310
28	2920	1850	1740	2740	15600	6030	1520	3400	1120	1260	1410	2290
29	3270	1850	1720	2780	---	6270	1520	3300	1350	1370	1410	2330
30	3150	1900	1770	2870	---	6750	1500	3400	1520	1340	1540	2430
31	2880	---	1810	3110	---	7200	---	3850	---	1230	1870	---
TOTAL	75500	82930	62860	76680	124470	289350	108510	67650	52420	45730	40000	62980
MEAN	2435	2764	2028	2474	4445	9334	3617	2182	1747	1475	1290	2099
MAX	3270	3970	3200	3980	15600	14000	7410	3850	4000	1700	1870	2730
MIN	2010	1730	1720	1750	2390	5890	1500	1500	1080	1220	1130	1590
AC-FT	149800	164500	124700	152100	246900	573900	215200	134200	104000	90710	79340	124900
CAL YR 1985	TOTAL	858640	MEAN	2352	MAX	7150	MIN	1040	AC-FT	1703000		
WTR YR 1986	TOTAL	1089080	MEAN	2984	MAX	15600	MIN	1080	AC-FT	2160000		

YAKIMA RIVER BASIN

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1952 to September 1969 (composite samples), October 1969 to September 1977.

WATER TEMPERATURES: December 1952 to September 1980, March 1981 to February 1982.

SUSPENDED SEDIMENT: June 1977 to October 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 12...	0925	3090	217	7.4	2.5	2.1	12.9	96	600	48	81	0
JAN 08...	1140	1730	285	8.2*	2.5	1.4	15.4	114	510	97	110	0
MAR 11...	0950	12400	137	7.4	8.0	29	12.0	103	230	2000	56	1
JUN 11...	1010	1580	257	8.3	23.0	3.2	9.8	116	90	1800	99	0
JUL 01...	1100	1600	289	8.2*	22.5	1.0	9.6	113	120	1300	110	0
SEP 15...	1010	1780	271	8.3	15.5	1.0	9.4	96	K180	K1300	120	0

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 12...	20	7.4	12	24	0.6	1.8	88	107	0	12	4.8	0.2
JAN 08...	27	10	17	25	0.7	2.8	115	139	0	14	7.9	0.2
MAR 11...	14	5.1	7.1	21	0.4	1.5	55	67	0	9.1	5.4	<0.1
JUN 11...	25	8.8	14	23	0.6	2.6	104	127	0	17	7.1	0.2
JUL 01...	28	10	16	23	0.7	3.1	123	149	0	18	6.4	0.2
SEP 15...	31	11	17	22	0.7	3.8	128	156	0	19	6.9	0.2

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 12...	21	127	130	0.17	1060	0.01	0.86	0.04	0.3	0.07	0.06
JAN 08...	23	157	170	0.21	733	0.01	1.30	0.04	0.4	0.09	0.07
MAR 11...	23	98	99	0.13	3280	<0.01	0.42	0.06	<0.2	0.14	0.04
JUN 11...	22	163	160	0.22	695	0.02	1.10	0.01	0.6	0.10	0.06
JUL 01...	22	179	180	0.24	773	0.03	1.30	0.03	0.6	0.15	0.08
SEP 15...	26	220	190	0.3	1060	0.01	1.40	0.04	0.5	0.13	0.09

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

12510500 YAKIMA RIVER AT KIONA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 12...	0.05	<10	1	15	<0.5	<1	2	<3	<1	21	1	<4
JAN 08...	0.07	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	0.04	120	<1	13	0.7	<1	<1	<3	1	120	<1	<4
JUN 11...	0.05	--	--	--	--	--	--	--	--	--	--	--
JUL 01...	0.07	<10	2	31	<0.5	<1	<1	<3	2	13	<5	4
SEP 15...	0.07	--	--	--	--	--	--	--	--	--	--	--
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 12...	10	<0.1	<10	<1	<1	<1	93	<6	3	4	33	--
JAN 08...	--	--	--	--	--	--	--	--	--	4	19	--
MAR 11...	8	<0.1	<10	<1	<1	<1	68	<6	9	173	5790	66
JUN 11...	--	--	--	--	--	--	--	--	--	20	85	--
JUL 01...	4	0.2	<10	2	<1	<1	130	8	6	42	181	--
SEP 15...	--	--	--	--	--	--	--	--	--	24	115	--

ESQUATZEL COULEE BASIN

12512550 PROVIDENCE COULEE NEAR CUNNINGHAM, WA

LOCATION.--Lat 46°48'11", long 118°48'55", in SE¼NE¼ sec.8, T.15 N., R.32 E., Adams County, Hydrologic Unit 17020016, on right bank, 0.8 mi upstream from State Highway 26, 0.9 mi downstream from Cunningham Coulee, and 1.4 mi southwest of Cunningham.

DRAINAGE AREA.--52.1 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,115 ft, from topographic map. Prior to Oct. 1, 1985, at datum 10.00 ft lower.

REMARKS.--Estimated daily discharges: Jan. 24, 25, Apr. 14 to May 13. Records fair. No known diversions. Undetermined amount of ground-water withdrawal for irrigation upstream from gage.

AVERAGE DISCHARGE.--8 years (water years 1978-85), 0.89 ft³/s, 645 acre-ft/yr. Average discharge is not computed after the 1985 water year because of ground-water withdrawals and return flows from irrigation occurring during the summer months upstream from the gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 711 ft³/s Feb. 9, 1979, gage height, 5.40 ft; no flow most of the time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 21, 1956, reached a discharge of 2,160 ft³/s at a site 1.5 mi upstream, at station 12512500 Providence Coulee at Cunningham.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 126 ft³/s Feb. 23, gage height 11.81 ft; no flow most of the time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.02	.00	.00	.00	.00	.04	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.24	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.4	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.48	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	18	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	13	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.52	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.09	21	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	4.9	51	.01	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.79	2.8	.02	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00
29	.00	.00	.00	1.5	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	3.8	---	.00	.00	.00	.03	.00	.00	.00
31	.00	---	.00	.47	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	43.58	75.06	.03	.00	.00	.18	.23	3.64	.00
MEAN	.00	.00	.00	1.41	2.68	.00	.00	.00	.01	.01	.12	.00
MAX	.00	.00	.00	18	51	.02	.00	.00	.06	.05	3.4	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	86	149	.06	.00	.00	.4	.5	7.2	.00
CAL YR 1985	TOTAL	903.82	MEAN	2.48	MAX	136	MIN	.00	AC-FT	1790		
WTR YR 1986	TOTAL	122.72	MEAN	.34	MAX	51	MIN	.00	AC-FT	243		

ESQUATZEL COULEE BASIN

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12513000 ESQUATZEL COULEE AT CONNELL, WA

LOCATION.--Lat 46°39'49", long 118°51'44", in SE¼SW¼SE¼ sec.36, T.14 N., R.31 E., Franklin County, Hydrologic Unit 17020016, on right bank, at Clark Street Bridge in Connell, and 7.8 mi downstream from Hatton Coulee.

DRAINAGE AREA.--234 mi², approximately.

PERIOD OF RECORD.--October 1952 to current year. Records published for period August 1959 to September 1964 include effluent from sewage treatment plant 0.8 mi downstream; records adjusted to exclude effluent October 1964 to June 1967.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 820 ft, from topographic map. Prior to Aug. 7, 1959, at site 0.4 mi downstream at different datum, Aug. 7, 1959, to July 8, 1967, at site 0.9 mi downstream at different datum, July 9, 1967, to Oct. 28, 1981, at site 0.7 mi downstream at different datum, and Oct. 29, 1981, to Sept. 30, 1984 at different datum.

REMARKS.--Estimated daily discharges: Nov. 4, 8, 9, 15-17, Dec. 3, 4, 6-10, Jan. 3-19, 21-25, Feb. 5, 16, 21, Mar. 14, 30, Apr. 9 to May 13. Records fair except those for Oct. 23 to May 13, which are poor. No diversion upstream from station. Most of the flow for Oct. 1-22, and Apr. 9 through Sept. 30 is waste from irrigation return water, entering about 3 mi upstream on the right bank.

AVERAGE DISCHARGE.--33 years (water years 1953-85), 1.73 ft³/s, 1,253 acre-ft/yr, adjusted for effluent from sewage treatment plant 1959-64. Average discharge is not computed after the 1985 water year because of ground-water withdrawals and return flows from irrigation occurring during the summer months upstream from the gage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,560 ft³/s Feb. 21, 1956, gage height, 12.68 ft, site and datum then in use; no flow most of the time.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 128 ft³/s Feb. 24, gage height, 12.64 ft. No flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	.00	.00	.00	.00	.00	.00	3.0	1.8	4.8	4.4	3.3
2	5.2	.00	.00	.00	.00	.00	.00	3.5	2.1	4.4	4.1	5.3
3	3.2	.00	.00	.00	.00	.00	.00	4.0	3.4	7.5	.16	4.0
4	.53	.00	.00	.00	.00	.00	.00	3.5	5.4	8.1	3.6	4.4
5	.20	.00	.00	.00	.00	.00	.00	4.0	6.0	12	6.1	4.3
6	.24	.00	.00	.00	.00	.00	.00	4.5	5.1	12	3.3	.16
7	1.0	.00	.00	.00	.00	.00	.00	4.0	7.2	8.5	2.7	.33
8	6.3	.00	.00	.00	.00	.00	.00	3.5	5.7	7.7	.72	.02
9	4.0	.00	.00	.00	.00	.00	.50	4.0	6.6	6.1	1.7	.47
10	3.3	.00	.00	.00	.00	.00	4.0	4.5	6.3	6.4	2.3	1.6
11	3.1	.00	.00	.00	.00	.00	3.5	4.5	3.7	10	2.5	2.0
12	3.9	.00	.00	.00	.00	.00	4.5	4.0	2.3	8.9	3.6	2.0
13	1.3	.00	.00	.00	.00	.00	5.5	5.0	.04	4.6	3.5	.24
14	.81	.00	.00	.00	.00	.00	6.0	6.0	.55	5.7	3.8	3.4
15	.65	.00	.00	.00	.00	.00	6.0	4.1	4.4	4.2	2.3	5.7
16	.21	.00	.00	.00	.00	.00	5.0	4.4	5.5	2.8	4.6	6.7
17	.30	.00	.00	.00	.00	.00	4.0	3.3	6.6	4.9	5.1	8.4
18	1.2	.00	.00	.00	.00	.00	4.5	3.2	6.7	5.4	3.7	8.4
19	1.1	.00	.00	40	.00	.00	3.5	2.9	8.2	5.6	3.6	5.5
20	3.8	.00	.00	6.6	.00	.00	2.0	1.2	2.4	3.6	5.8	5.4
21	3.9	.00	.00	.00	.00	.00	1.5	7.8	6.9	5.8	6.4	5.2
22	.22	.00	.00	.00	.00	.00	1.0	7.7	2.4	1.7	4.7	5.0
23	.00	.00	.00	.00	50	.39	3.5	8.3	3.4	3.2	3.4	6.1
24	.00	.00	.00	6.0	37	.19	3.0	6.3	4.0	5.3	2.5	6.3
25	.00	.00	.00	.00	.32	.00	3.0	4.4	4.9	5.7	3.2	7.4
26	.00	.00	.00	.00	.00	.00	3.5	4.6	3.0	6.4	1.6	7.4
27	.00	.00	.00	.00	.00	.00	2.5	4.9	9.0	4.8	3.2	7.0
28	.00	.00	.00	.00	.00	.00	2.5	3.2	6.1	6.5	4.5	5.3
29	.00	.00	.00	.00	---	.00	3.0	4.2	7.8	7.4	3.8	5.1
30	.00	.00	.00	1.1	---	.00	4.0	3.9	8.2	6.4	2.8	5.3
31	.00	---	.00	.40	---	.00	---	3.5	---	3.5	.50	---
TOTAL	49.16	.00	.00	54.10	87.32	.58	76.50	135.9	145.69	189.9	104.18	131.72
MEAN	1.59	.00	.00	1.75	3.12	.02	2.55	4.38	4.86	6.13	3.36	4.39
MAX	6.3	.00	.00	40	50	.39	6.0	8.3	9.0	12	6.4	8.4
MIN	.00	.00	.00	.00	.00	.00	.00	1.2	.04	1.7	.16	.02
AC-FT	98	.00	.00	107	173	1.2	152	270	289	377	207	261
CAL YR 1985	TOTAL	4510.54	MEAN	12.4	MAX	720	MIN	.00	AC-FT	8950		
WTR YR 1986	TOTAL	975.05	MEAN	2.67	MAX	50	MIN	.00	AC-FT	1930		

COLUMBIA RIVER MAIN STEM

12514000 COLUMBIA RIVER AT PASCO, WA

LOCATION.--Lat 46°13'40", long 119°08'03", in NW¼NW¼ sec.36, T.9 N., R.29 E., Franklin County, Hydrologic Unit 17020016, in bridge pier on U.S. Highway 12 between Pasco and Kennewick, 5.2 mi downstream from Yakima River, 5.8 mi upstream from Snake River, and at mile 330.0.

DRAINAGE AREA.--104,000 mi², approximately.

PERIOD OF RECORD.--October 1963 to September 1966 (discharge); October 1979 to current year (elevations only). Fragmentary records of gage height for other years in files of Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Gage is within the pool formed by McNary Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 346.09 ft June 17, 1964; minimum, 335.97 ft Jan. 27, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 342.06 ft June 1; minimum, 337.11 ft July 2.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	339.25	339.98	339.52	339.40	339.21	340.28	341.04	340.55	340.87	337.86	339.83	338.01
2	339.59	339.75	339.81	339.02	339.10	340.08	340.34	340.23	340.34	337.70	339.23	338.31
3	339.07	339.46	339.81	339.51	339.04	339.52	339.71	340.09	340.37	338.99	339.00	338.72
4	339.10	339.28	339.62	339.23	339.20	339.97	339.73	339.74	340.38	339.50	338.25	338.73
5	339.33	339.74	339.14	339.36	339.31	340.76	339.49	338.89	339.30	339.41	338.70	338.50
6	339.19	339.60	339.42	339.38	339.69	340.67	339.51	340.41	---	339.05	338.99	338.79
7	338.84	339.51	339.60	339.43	339.75	340.97	339.31	340.25	340.00	338.98	339.46	339.12
8	338.73	339.67	339.95	339.46	339.80	340.83	339.14	340.83	340.01	339.35	339.52	338.91
9	339.10	339.71	339.30	339.34	339.30	340.75	340.18	340.26	339.23	339.33	339.68	338.83
10	339.45	339.45	339.72	339.17	339.24	340.58	340.74	340.60	339.68	339.93	339.12	338.54
11	339.57	339.28	339.77	339.30	338.90	340.90	340.69	340.25	339.38	339.92	338.76	338.72
12	339.62	338.34	339.70	339.25	339.33	340.75	340.35	340.12	338.90	339.93	338.93	338.75
13	339.15	338.70	339.90	338.86	339.52	340.97	340.68	340.35	339.21	339.91	339.34	339.41
14	339.37	338.20	339.96	339.38	339.36	340.80	340.59	340.04	339.90	339.80	338.86	339.41
15	339.34	338.20	339.80	339.45	339.06	340.61	340.04	339.16	340.25	339.59	339.04	338.85
16	339.66	338.23	339.03	339.42	339.62	340.84	340.79	338.65	340.64	338.39	338.57	338.66
17	339.11	338.82	338.97	339.33	339.27	340.51	340.64	338.58	340.65	338.45	339.05	339.17
18	339.25	339.06	339.50	339.62	339.24	340.53	340.83	338.56	340.31	338.54	339.28	339.03
19	339.42	339.55	339.81	339.48	339.34	340.64	339.52	340.30	340.13	339.35	338.89	338.85
20	339.32	339.44	339.92	339.44	339.07	340.49	338.75	340.35	339.68	339.89	338.92	339.01
21	339.17	339.56	339.87	339.49	339.16	339.44	339.00	339.92	339.10	339.83	339.20	339.16
22	339.81	338.54	339.71	339.21	339.24	339.99	340.32	340.17	339.35	339.63	339.10	338.85
23	339.77	338.70	339.42	339.17	339.44	339.90	340.36	339.32	339.79	339.48	339.43	339.07
24	339.71	340.02	339.69	339.04	340.53	339.93	340.15	338.58	339.55	340.07	339.22	339.35
25	339.67	338.34	339.40	339.19	340.78	340.59	340.98	338.65	339.69	339.90	338.60	338.70
26	339.84	338.53	338.90	339.09	340.62	340.39	341.22	339.71	338.63	339.98	338.84	338.48
27	339.74	339.50	339.36	339.04	340.33	340.14	340.72	340.15	338.05	340.14	338.86	339.07
28	340.01	339.22	339.39	339.05	340.83	340.42	340.54	340.92	338.56	339.75	338.57	339.27
29	340.59	339.29	339.27	339.33	---	340.67	340.67	340.73	338.24	339.74	337.79	339.16
30	340.68	339.48	339.20	339.53	---	341.32	339.65	341.04	338.01	339.61	338.52	339.36
31	340.56	---	339.34	339.38	---	341.02	---	340.51	---	339.84	338.45	---
MEAN	339.52	339.17	339.54	339.30	339.55	340.49	340.19	339.93	---	339.41	338.97	338.89
MAX	340.68	340.02	339.96	339.62	340.83	341.32	341.22	341.04	---	340.14	339.83	339.41
MIN	338.73	338.20	338.90	338.86	338.90	339.44	338.75	338.56	---	337.70	337.79	338.01

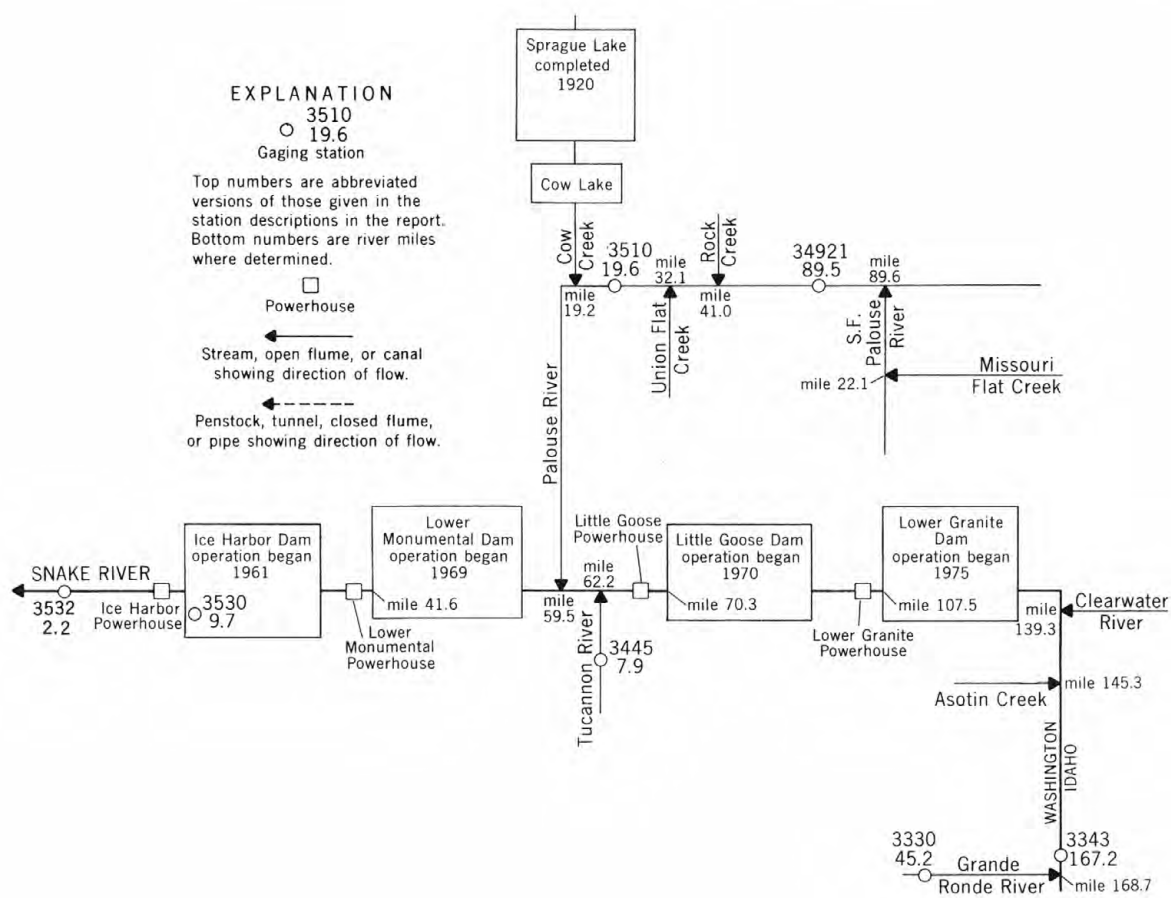


Figure 30.--Gaging stations in Snake River basin.

LOWER GRANDE RONDE RIVER BASIN

13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'47", long 117°26'54", in NE¼NW¼ sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank 500 ft downstream from bridge at Troy, 600 ft downstream from Wenaha River, and at mile 45.2.

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 National Geodetic Vertical Datum of 1929. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at site 500 ft upstream at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at site 500 ft upstream at datum 1.15 ft higher.

REMARKS.--Estimated daily discharges: Nov. 24 to Jan. 15. Records excellent except for estimated daily discharges, which are poor. Flow slightly regulated by Wallowa Lake (station 13326000) 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.

AVERAGE DISCHARGE.--42 years, 3,141 ft³/s, 2,276,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s Dec. 23, 1964, gage height, 11.25 ft; minimum discharge, 344 ft³/s Aug. 19-21, 23, 1977.

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)
Feb. 23	2030	*28,500	*9.93	May 31	0530	10,300	6.60
Mar. 7	2300	18,800	8.35				

Minimum discharge, 568 ft³/s Aug. 8, 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	765	1050	850	670	3570	12000	6590	3700	9390	1610	690	675
2	765	1070	870	700	3930	11800	6060	3660	8780	1510	665	664
3	760	1120	960	740	4250	10800	5560	4400	8100	1480	657	641
4	743	1100	1050	780	3890	9980	5240	4660	7700	1480	645	632
5	739	1130	950	770	3610	9740	5010	4520	7570	1690	633	616
6	740	1150	920	750	3250	9330	4890	4470	6960	1570	609	623
7	784	1250	910	720	2780	13100	4850	4390	5990	1410	601	613
8	809	1620	900	680	2400	16000	4990	4210	5230	1310	591	622
9	772	1580	890	700	2090	14500	5270	4130	4810	1270	595	642
10	756	1470	850	720	1900	12700	5430	4080	4560	1260	584	652
11	781	1370	780	720	1840	11300	5270	3880	4480	1330	576	651
12	817	1240	700	740	1810	10300	5160	3690	4450	1360	600	658
13	812	1090	650	740	1720	9360	4880	3580	4230	1260	600	677
14	797	1020	710	750	1670	8440	4520	3530	4010	1200	603	687
15	793	1040	750	740	1740	7600	4230	3380	4250	1130	600	695
16	795	1120	710	723	2960	7000	4160	3220	3810	1100	602	751
17	802	1120	670	968	6950	6460	3970	3170	3790	1120	604	766
18	786	1100	650	1110	7770	5890	3760	3350	3710	1060	609	764
19	770	1040	640	1930	6560	5510	3560	3800	3390	998	614	781
20	770	1030	620	2610	4860	5430	3520	4760	2960	948	598	799
21	772	1010	600	2290	3970	5470	3810	6190	2640	924	593	847
22	886	1020	600	1940	6480	5430	4940	6040	2530	918	643	833
23	1050	945	590	1950	19200	5220	5410	5330	2470	876	648	787
24	1050	890	600	2010	24400	5430	5100	4890	2470	847	680	869
25	1170	750	600	1810	19500	5480	4850	4940	2470	818	684	965
26	1360	850	600	1640	16300	5320	4480	5850	2430	805	676	964
27	1240	920	590	1570	14300	5490	4260	7540	2180	793	666	941
28	1190	860	590	1560	12700	6140	4320	8890	2050	793	647	943
29	1140	850	590	1670	---	6790	4070	9310	1930	779	648	932
30	1070	850	580	2190	---	7080	3840	9720	1760	738	659	981
31	1050	---	630	3210	---	7040	---	9700	---	718	671	---
TOTAL	27534	32655	22600	40101	186400	262130	142000	156980	131100	35105	19491	22671
MEAN	888	1089	729	1294	6657	8456	4733	5064	4370	1132	629	756
MAX	1360	1620	1050	3210	24400	16000	6590	9720	9390	1690	690	981
MIN	739	750	580	670	1670	5220	3520	3170	1760	718	576	613
AC-FT	54610	64770	44830	79540	369700	519900	281700	311400	260000	69630	38660	44970
CAL YR 1985	TOTAL	986492	MEAN	2703	MAX	13900	MIN	572	AC-FT	1957000		
WTR YR 1986	TOTAL	1078767	MEAN	2956	MAX	24400	MIN	576	AC-FT	2140000		

SNAKE RIVER MAIN STEM

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13334300 SNAKE RIVER NEAR ANATONE, WA

LOCATION.--Lat 46°05'50", long 116°58'36", in SE¼SE¼NE¼ sec.12, T.7 N., R.46 E., Asotin County, Hydrologic Unit 17060103, on left bank 1.2 mi downstream from Grand Ronde River, 7.8 mi east of Anatone, 22 mi south of Clarkston, and at mile 167.2.

DRAINAGE AREA.--92,960 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1958 to current year.

REVISED RECORDS.--WDR WA-76-1: 1974 and 1975.

GAGE.--Water-stage recorder. Datum of gage is 806.78 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diversions upstream from station for irrigation of about 4,090,000 acres, of which about 750,000 acres are irrigated by withdrawals from ground water. Flow regulated by many reservoirs upstream from station with a total usable capacity of more than 10,000,000 acre-feet, the most effective of which is Brownlee Reservoir 117.8 mi upstream. Diurnal fluctuations caused by Hells Canyon powerplant.

AVERAGE DISCHARGE.--28 years, 37,940 ft³/s, 27,490,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 195,000 ft³/s June 18, 1974, gage height, 24.45 ft; minimum discharge, 6,010 ft³/s Sept. 2, 1958, gage height, 1.29 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 159,000 ft³/s June 1, gage height, 21.20 ft; minimum discharge, 14,400 ft³/s Aug. 17, gage height, 3.81 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24900	23300	23800	17000	33800	104000	87500	68700	154000	38200	20200	20100
2	22500	24100	25000	19200	36000	102000	88800	67600	156000	34100	19200	20900
3	20600	23800	25500	20400	35000	100000	83000	68500	155000	33800	19200	20900
4	25000	20400	25500	26100	38200	95700	81400	72500	153000	28300	18600	20900
5	22700	23700	25800	24800	36700	95100	81700	80500	145000	28900	19800	19600
6	17600	25000	25500	25600	33500	90200	81100	72200	146000	29800	16000	19900
7	21300	24800	23100	26100	34800	92500	76800	69000	137000	31300	16900	19600
8	24800	24400	21700	25600	32400	103000	80600	73600	123000	30000	17400	21000
9	23100	24200	21900	22800	32700	103000	83200	73500	121000	29600	17300	21100
10	20900	25000	25300	25600	32900	99800	84200	76600	111000	28700	17500	23900
11	19400	25000	24600	22700	33100	101000	82200	75100	102000	28500	16900	26100
12	20600	24400	23700	26000	33000	99400	76600	75500	95700	31200	18600	25400
13	19300	24300	22800	23200	32000	101000	75200	74300	94900	28700	16200	23800
14	19800	21900	19900	26200	33800	99200	76100	73200	95600	26900	16500	20300
15	21300	22400	17800	24000	32400	97300	75400	71500	91800	27900	18400	20300
16	22600	23700	18400	24400	37100	95700	70300	70100	87800	24700	16700	27100
17	25000	20000	24100	26700	43100	94600	68500	67400	83800	23300	16400	32000
18	25500	20100	25900	29300	48200	92300	67000	66200	79400	23000	16800	31400
19	24800	22500	27200	27200	65400	86300	67200	67700	74000	22900	18300	29600
20	25300	23800	27500	31100	67500	77800	67900	73000	68400	22300	18100	30100
21	25200	23500	19300	31100	70100	77200	67100	77700	64200	20000	17000	28800
22	25300	23100	17600	32900	70700	72600	71000	83900	58700	21700	18300	28800
23	25000	21200	22700	32600	85400	72000	85800	76300	55500	20600	17600	30600
24	22300	20900	22500	33500	103000	73700	89100	70400	57300	21100	20500	28200
25	26200	21200	16400	33600	112000	80300	84500	67000	54100	20300	19700	26900
26	24400	21700	17300	32100	109000	80400	78300	71000	53200	19200	19200	18800
27	22900	21800	18600	30000	109000	80400	77200	84700	52300	19000	19900	25200
28	26200	19800	22400	30300	106000	81400	73100	112000	47900	19300	18700	27700
29	26800	18900	22600	24000	---	81600	72500	129000	40200	20200	19900	28100
30	25400	21000	18000	29100	---	84000	70700	141000	39100	21900	19900	27100
31	26000	---	19200	33500	---	86800	---	150000	---	20600	18900	---
TOTAL	722700	679900	691600	836700	1536800	2800300	2324000	2499700	2796900	796000	564600	744200
MEAN	23310	22660	22310	26990	54890	90330	77470	80640	93230	25680	18210	24810
MAX	26800	25000	27500	33600	112000	104000	89100	150000	156000	38200	20500	32000
MIN	17600	18900	16400	17000	32000	72000	67000	66200	39100	19000	16000	18800
AC-FT	1433000	1349000	1372000	1660000	3048000	5554000	4610000	4958000	5548000	1579000	1120000	1476000
CAL YR 1985	TOTAL	12005400	MEAN	32890	MAX	81200	MIN	13900	AC-FT	23813000		
WTR YR 1986	TOTAL	16993400	MEAN	46560	MAX	156000	MIN	16000	AC-FT	33706000		

SNAKE RIVER MAIN STEM

13334300 SNAKE RIVER NEAR ANATONE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to May 1984, October 1985 to September 1986.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1959 to May 1984, April 1986 to September 1986.

INSTRUMENTATION.--Temperature recorder since October 1959.

COOPERATION.--Temperature records furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum (1959-68, 1970-81), 25.5°C July 15, 1981; minimum, 0.0°C several days during winter months.

EXTREMES FOR CURRENT PERIOD.--

WATER TEMPERATURES: Maximum, 24.0°C Aug. 8-11; minimum, 9.5°C April 1-3.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1							10.0	9.5	9.5	12.5	11.5	12.0
2							10.0	9.5	9.5	12.5	12.0	12.5
3							10.0	9.5	10.0	12.5	12.5	12.5
4							11.0	10.0	10.5	12.5	12.0	12.5
5							11.5	10.5	11.0	12.5	11.5	12.0
6							12.0	11.0	11.5	12.0	11.5	11.5
7							12.5	11.5	12.0	11.5	11.0	11.5
8							12.5	11.5	12.0	12.0	11.0	11.5
9							12.5	12.0	12.0	12.0	11.5	12.0
10							12.0	11.5	11.5	12.0	11.5	12.0
11							11.5	10.5	11.0	12.0	11.5	12.0
12							10.5	10.5	10.5	13.0	11.5	12.5
13							11.0	10.0	10.5	13.0	12.5	13.0
14							11.0	10.0	10.5	13.0	12.5	13.0
15							11.0	10.5	11.0	13.0	12.5	13.0
16							11.5	11.0	11.5	13.5	12.5	13.0
17							11.5	11.0	11.5	14.0	13.0	13.5
18							12.0	11.0	11.5	14.5	13.5	14.5
19							12.0	11.5	12.0	15.5	14.5	15.0
20							13.0	12.0	12.5	15.0	14.0	14.5
21							13.5	12.5	13.0	14.0	12.0	13.0
22							13.5	12.5	13.0	12.5	11.5	12.0
23							12.5	11.5	11.5	12.0	11.5	12.0
24							11.5	11.0	11.0	13.0	12.0	12.5
25							11.0	11.0	11.0	14.5	13.0	14.0
26							11.0	10.5	11.0	15.5	14.5	15.0
27							11.5	11.0	11.0	16.0	14.5	15.5
28							11.5	11.0	11.0	15.5	14.0	14.5
29							11.5	11.0	11.5	14.5	14.0	14.5
30							12.0	11.0	11.5	14.5	14.0	14.5
31							---	---	---	14.5	14.0	14.5
MONTH							13.5	9.5	11.5	16.0	11.0	13.0

SNAKE RIVER MAIN STEM

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13334300 SNAKE RIVER NEAR ANATONE, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	14.5	14.0	14.5	21.5	20.5	21.0	22.5	21.5	22.0	22.0	21.5	21.5
2	15.0	14.0	14.5	21.5	21.0	21.0	23.0	21.5	22.5	22.5	21.5	22.0
3	15.0	14.5	15.0	21.0	20.5	21.0	23.5	22.0	22.5	23.0	22.0	22.5
4	15.5	15.0	15.5	21.0	19.5	20.0	23.5	22.5	23.0	23.0	22.0	22.5
5	15.5	15.0	15.5	19.5	18.5	19.0	23.5	22.5	23.0	23.0	22.0	22.5
6	15.5	15.0	15.5	20.0	19.0	19.5	23.5	22.5	23.0	22.5	21.5	22.0
7	15.5	15.0	15.0	20.5	19.5	20.0	23.5	22.5	23.0	22.5	21.5	22.0
8	15.5	15.0	15.5	20.5	20.0	20.0	24.0	22.5	23.0	22.0	21.5	21.5
9	16.0	15.0	15.5	20.5	20.0	20.5	24.0	23.0	23.5	21.5	21.0	21.0
10	21.0	15.5	16.5	20.5	20.0	20.0	24.0	23.0	23.5	21.0	20.5	21.0
11	17.5	16.5	17.0	20.5	19.5	20.0	24.0	23.0	23.5	21.0	20.5	20.5
12	18.0	17.0	17.5	21.0	20.0	20.5	23.5	22.5	23.0	20.5	19.5	20.0
13	18.5	17.5	18.0	21.5	20.5	21.0	23.5	22.0	23.0	20.0	19.5	20.0
14	18.5	17.5	18.0	21.5	20.5	21.0	23.5	21.5	23.0	19.5	19.0	19.5
15	18.5	17.5	18.0	21.0	20.5	21.0	23.5	22.5	23.0	19.0	18.5	18.5
16	18.5	17.5	18.5	20.5	20.0	20.0	23.0	22.5	22.5	19.5	18.5	19.0
17	19.5	18.0	19.0	20.5	19.0	20.0	23.0	22.0	22.5	19.5	19.0	19.5
18	19.0	18.0	18.5	21.0	20.0	20.5	23.5	22.0	22.5	19.5	19.0	19.0
19	18.5	18.0	18.0	22.0	20.5	21.0	23.5	22.5	23.0	19.0	18.5	19.0
20	18.5	18.0	18.5	22.5	21.0	21.5	23.0	22.0	22.5	19.0	18.0	18.5
21	18.5	18.0	18.5	22.5	21.5	22.0	23.0	22.0	22.5	18.5	18.0	18.5
22	19.0	18.5	19.0	23.0	21.5	22.5	23.5	22.0	22.5	18.5	18.0	18.0
23	20.0	19.0	19.5	23.0	21.5	22.5	23.5	22.5	23.0	18.5	18.0	18.5
24	20.5	19.5	20.0	23.0	21.5	22.5	23.0	22.5	22.5	18.5	17.5	18.0
25	21.0	20.5	20.5	23.0	22.0	22.5	23.0	22.0	22.5	18.0	16.5	18.0
26	21.0	20.5	20.5	23.0	22.0	22.5	23.0	22.0	22.5	16.5	---	---
27	21.0	20.5	20.5	22.5	21.5	22.0	23.5	22.0	23.0	---	---	---
28	21.0	20.5	20.5	22.5	21.5	22.0	23.5	22.5	23.0	---	---	---
29	21.0	20.0	20.5	22.0	21.5	21.5	23.5	22.5	23.0	---	---	---
30	21.0	20.0	20.5	22.0	21.0	21.5	23.0	22.0	22.5	---	---	---
31	---	---	---	22.5	21.0	21.5	22.0	21.5	22.0	---	---	---
MONTH	21.0	14.0	18.0	23.0	18.5	21.0	24.0	21.5	23.0	---	---	---

TUCANNON RIVER BASIN

13344500 TUCANNON RIVER NEAR STARBUCK, WA

LOCATION.--Lat 46°30'17", long 118°03'55", in NE¼SW¼ sec.21, T.12 N., R.38 E., Columbia County, Hydrologic Unit 17060107, on right bank 180 ft downstream from county road bridge, 0.5 mi downstream from Smith Hollow, 3.0 mi east of Starbuck, 3.3 mi downstream from Pataha Creek, and at mile 7.9.

DRAINAGE AREA.--431 mi².

PERIOD OF RECORD.--October 1914 to September 1917, August 1928 to September 1931, October 1958 to current year. Monthly discharge only for October and November 1914, published in WSP 1317.

REVISED RECORDS.--WSP 1347: 1930.

GAGE.--Water-stage recorder. Elevation of gage is 735.9 ft, from plane table survey. Nov. 8, 1914, to Sept. 30, 1917, nonrecording gage at site 2.8 mi upstream at different datum. Aug. 9, 1928, to Sept. 30, 1931, nonrecording gages at site 2.5 mi upstream at various datums.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 1, Mar. 10-19, Sept. 16-30. Records good except for Nov. 24 to Dec. 1, Mar. 10-19, Apr. 17 to May 21, which are fair, and Sept. 16-30, which are poor. Many small diversions for irrigation upstream from the station. Water temperatures and sediment records October 1962 to June 1970.

AVERAGE DISCHARGE.--34 years (water years 1915-17, 1929-31, 1959-86), 173 ft³/s, 125,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,980 ft³/s Dec. 22, 1964, gage height, 9.84 ft, from rating curve extended above 2,500 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 15 ft³/s July 11, 12, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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)
Jan. 17	0430	703	2.59	Feb. 24	1200	*1,360	*3.60
Minimum daily discharge, 35 ft ³ /s Aug. 19.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	103	48	98	199	447	224	156	161	55	45	60
2	79	102	44	107	203	418	220	159	154	51	44	53
3	78	103	140	116	207	388	199	177	141	57	44	50
4	77	105	130	113	199	333	191	189	134	63	45	49
5	78	115	114	101	201	305	186	175	131	76	41	47
6	78	105	113	295	194	297	181	175	126	73	42	49
7	99	102	115	160	181	314	177	161	115	67	46	51
8	99	110	115	138	172	421	179	154	110	55	42	55
9	89	110	109	363	162	419	182	154	101	57	38	52
10	88	105	103	327	157	370	188	164	94	62	38	52
11	86	102	90	309	150	330	185	151	88	63	43	57
12	90	97	102	201	147	300	189	141	84	60	38	64
13	89	93	93	140	139	275	185	146	79	58	39	66
14	87	94	89	133	138	260	174	159	77	56	38	73
15	87	95	87	124	141	245	169	141	81	52	37	73
16	85	104	82	204	209	235	172	141	82	54	36	78
17	87	104	83	429	328	225	181	136	75	67	41	80
18	86	101	78	232	315	220	172	141	70	65	45	80
19	85	96	78	257	293	210	161	151	76	58	35	81
20	85	103	83	200	267	204	161	167	73	56	38	85
21	85	100	84	172	258	187	171	206	70	56	38	88
22	91	85	83	157	380	192	193	195	70	51	37	88
23	109	49	80	204	765	190	207	174	74	48	38	85
24	105	47	79	219	1190	203	193	164	65	50	42	90
25	114	46	79	171	1030	194	191	160	61	51	45	105
26	123	54	79	159	805	187	183	170	60	50	37	100
27	111	61	75	155	638	186	177	180	62	51	39	96
28	106	60	74	154	519	192	186	194	59	50	40	93
29	101	54	73	168	---	207	177	197	59	48	39	96
30	99	50	75	185	---	225	161	189	66	50	48	100
31	99	---	84	199	---	227	---	177	---	48	61	---
TOTAL	2855	2655	2761	5990	9587	8406	5515	5144	2698	1758	1279	2196
MEAN	92.1	88.5	89.1	193	342	271	184	166	89.9	56.7	41.3	73.2
MAX	123	115	140	429	1190	447	224	206	161	76	61	105
MIN	77	46	44	98	138	186	161	136	59	48	35	47
AC-FT	5660	5270	5480	11880	19020	16670	10940	10200	5350	3490	2540	4360
CAL YR 1985	TOTAL	52673	MEAN	144	MAX	676	MIN	44	AC-FT	104500		
WTR YR 1986	TOTAL	50844	MEAN	139	MAX	1190	MIN	35	AC-FT	100800		

13349210 PALOUSE RIVER BELOW SOUTH FORK, AT COLFAX, WA

LOCATION.--Lat 46°53'23", long 117°22'09", in NW¼SW¼ sec.11, T.16 N., R.43 E., Whitman County, Hydrologic Unit 17060108, on left bank at Colfax, 750 ft downstream from South Fork, 0.3 mi upstream from bridge on U.S. Highway 195, and at mile 89.5.

DRAINAGE AREA.--796 mi².

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to September 1975 (annual maximum only), October 1975 to current year.

REVISED RECORDS.--WSP 2134: 1967, 1968.

GAGE.--Water-stage recorder. Datum of gage is 1,932.22 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Estimated daily discharges: Nov. 13-16, Nov. 19 to Jan. 15. Records fair except for estimated daily discharges, which are poor. Small diversions for irrigation upstream from station. Slight regulation by millpond and city of Moscow, Idaho, sewage disposal plant.

AVERAGE DISCHARGE.--20 years (water years 1964-72, 1976-86), 388 ft³/s, 281,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft³/s Jan. 16, 1974, gage height, 18.73 ft; minimum discharge, 1.7 ft³/s Aug. 3, 23, 1966; minimum gage height, 0.88 ft Aug. 3, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 3, 1963, reached a stage of 16.49 ft, discharge, 14,500 ft³/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 16	2300	4,630	10.63	Feb. 24	0330	*5,670	*11.61

Minimum discharge, 8.7 ft³/s Aug. 12, gage height, 1.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	51	36	47	1480	1860	868	217	115	32	17	30
2	23	53	40	48	1260	1730	700	204	107	32	18	23
3	21	65	44	49	1610	1600	593	215	97	31	17	22
4	22	103	48	49	1280	1460	520	318	90	34	16	24
5	23	88	53	50	1240	1330	466	399	89	37	16	23
6	23	76	59	51	1010	1230	425	328	86	36	16	20
7	28	76	61	53	676	1540	400	286	78	36	15	17
8	30	84	62	54	500	2300	394	262	74	41	16	16
9	27	105	60	120	389	2370	361	239	69	38	16	16
10	27	90	56	320	353	2080	336	216	67	32	15	15
11	27	77	50	650	318	1660	314	205	61	33	13	14
12	29	65	45	430	256	1560	325	193	58	34	10	14
13	27	31	40	290	204	1410	437	184	53	35	11	16
14	27	40	39	180	231	1230	534	179	53	36	13	22
15	32	50	39	260	306	1060	469	182	53	31	12	20
16	32	62	39	405	2110	912	495	164	50	27	10	20
17	30	67	39	1100	3480	829	530	154	54	30	10	22
18	31	65	39	724	1900	741	441	143	48	34	11	32
19	31	58	39	1250	1090	757	382	136	48	39	11	31
20	40	54	40	841	706	756	350	139	48	44	10	29
21	37	45	40	483	649	726	322	211	48	31	11	32
22	39	35	40	302	1420	726	298	524	46	26	12	38
23	50	30	41	800	3970	687	278	488	42	24	10	35
24	52	29	41	767	4910	764	287	317	40	26	11	41
25	72	29	41	429	3930	804	256	259	39	21	14	46
26	77	30	42	308	3190	668	259	223	37	20	12	37
27	126	31	43	274	2800	608	253	195	35	18	12	39
28	80	32	44	308	2120	600	263	174	35	16	11	42
29	63	33	44	560	---	628	282	158	34	17	12	46
30	56	34	45	1780	---	784	244	144	33	18	16	53
31	51	---	46	1830	---	1050	---	129	---	17	34	---
TOTAL	1257	1688	1395	14812	43388	36460	12082	7185	1787	926	428	835
MEAN	40.5	56.3	45.0	478	1550	1176	403	232	59.6	29.9	13.8	27.8
MAX	126	105	62	1830	4910	2370	868	524	115	44	34	53
MIN	21	29	36	47	204	600	244	129	33	16	10	14
AC-FT	2490	3350	2770	29380	86060	72320	23960	14250	3540	1840	849	1660
CAL YR 1985	TOTAL	112640.2	MEAN	309	MAX	3260	MIN	9.2	AC-FT	223400		
WTR YR 1986	TOTAL	122243	MEAN	335	MAX	4910	MIN	10	AC-FT	242500		

PALOUSE RIVER BASIN

13351000 PALOUSE RIVER AT HOOPER, WA

LOCATION.--Lat 46°45'31", long 118°08'52", in NE¼SE¼ sec.27, T.15 N., R.37 E., Whitman County, Hydrologic Unit 17060108, on left bank 150 ft downstream from bridge on State Highway 26 at Hooper, 0.3 mi upstream from Cow Creek, 3.5 mi downstream from right bank tributary, 6.0 mi downstream from Willow Creek, and at mile 19.6.

DRAINAGE AREA.--2,500 mi².

PERIOD OF RECORD.--April to August 1897 (gage heights only), September 1897 to December 1899, April 1900 to April 1907, June 1908 to July 1912, March 1913 to March 1916, February 1951 to current year. Prior to 1904 sometimes published as "near Hooper."

REVISED RECORDS.--WSP 1287: 1897-1904, 1910(M), 1915-16(M). WSP 1447: 1910. WSP 1934: Drainage area. WSP 1447: 1906(M). WSP 1567: 1908-09(M).

GAGE.--Water-stage recorder. Datum of gage is 1,040.8 ft above National Geodetic Vertical Datum of 1929. Apr. 1 to Aug. 31, 1897, nonrecording gage at site 2.5 mi upstream at different datum. Sept. 9, 1897, to March 1916, various nonrecording gages at site 1.5 mi upstream from present site at different datums. Feb. 8 to Mar. 28, 1951, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 6, Dec. 12 to Jan. 3. Records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation and municipal use. Bonneville Power Administration satellite telemeter at station.

AVERAGE DISCHARGE.--48 years (water years 1898-99, 1901-06, 1909-11, 1914-15, 1952-86), 620 ft³/s, 449,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s Feb. 4, 1963, gage height, 19.13 ft, from rating curve extended above 18,000 ft³/s on basis of slope-area measurement of peak flow; no flow part or all of each day June 25, 1910, Aug. 1-17, Aug. 28 to Sept. 4, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0130	4,240	9.96	Feb. 24	1645	*7,160	*11.81

Minimum discharge, 27 ft³/s Aug. 23-25, gage height, 3.05 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	126	86	108	2660	2820	1460	495	289	91	53	37
2	74	124	95	113	2340	2570	1230	468	268	88	58	41
3	73	124	105	120	2270	2420	1100	455	249	91	50	63
4	72	128	115	126	2380	2220	984	457	241	94	46	59
5	72	162	125	130	2050	2000	900	531	237	99	42	51
6	73	190	140	137	2110	1900	840	603	228	99	40	49
7	77	172	160	137	1640	1810	785	550	223	99	38	48
8	79	161	173	144	1310	2460	737	509	213	92	37	48
9	82	176	182	156	1110	2860	694	482	206	89	35	47
10	86	194	170	593	956	3070	662	454	198	87	34	45
11	91	193	156	1310	887	2520	644	431	187	92	34	46
12	90	174	148	933	836	2250	642	415	174	88	31	48
13	91	145	138	571	723	2250	655	394	167	87	29	47
14	90	125	130	468	656	2010	777	378	159	82	29	49
15	89	123	123	427	710	1880	845	369	154	77	28	52
16	86	154	115	634	893	1670	779	370	153	78	29	50
17	87	161	110	2820	4700	1530	796	354	148	81	32	56
18	91	157	110	2400	3350	1400	803	334	139	84	34	60
19	91	132	115	3050	2350	1290	720	322	143	85	33	59
20	90	126	117	2830	1750	1280	663	313	136	84	32	69
21	89	126	119	1990	1430	1230	623	326	130	80	32	85
22	92	116	117	1380	1490	1180	593	394	128	85	30	83
23	96	96	116	1410	4280	1150	567	688	130	75	28	80
24	103	82	114	2160	7090	1150	553	646	118	71	27	85
25	112	68	112	1590	6240	1290	552	508	108	64	29	83
26	113	68	111	1170	4890	1270	529	443	102	60	31	88
27	136	72	110	963	4260	1140	522	403	102	58	31	102
28	155	70	109	909	3400	1070	513	368	100	56	29	100
29	173	70	108	946	---	1040	516	341	95	55	29	103
30	145	78	107	1770	---	1070	529	319	95	54	31	110
31	132	---	106	3290	---	1440	---	305	---	53	35	---
TOTAL	3001	3893	3842	34785	68761	55240	22213	13425	5020	2478	1076	1943
MEAN	96.8	130	124	1122	2456	1782	740	433	167	79.9	34.7	64.8
MAX	173	194	182	3290	7090	3070	1460	688	289	99	58	110
MIN	71	68	86	108	656	1040	513	305	95	53	27	37
AC-FT	5950	7720	7620	69000	136400	109600	44060	26630	9960	4920	2130	3850
CAL YR 1985	TOTAL	197110	MEAN	540	MAX	3910	MIN	31	AC-FT	391000		
WTR YR 1986	TOTAL	215677	MEAN	591	MAX	7090	MIN	27	AC-FT	427800		

13353000 SNAKE RIVER BELOW ICE HARBOR DAM, WA

LOCATION.--Lat 46°14'33", long 118°52'43", in NE1/4 sec. 24, T.9 N., R.31 E., Walla Walla County, Hydrologic Unit 17060110, in powerhouse forebay pier P-1 on south side of Bay 1 at Ice Harbor Dam, 8.0 mi northeast of Burbank, and at mile 9.7.

DRAINAGE AREA.--108,500 mi², approximately.

PERIOD OF RECORD.--October 1907 to March 1917 (gage heights only October 1907 to August 1909), March 1962 to current year.
Published as "at Burbank" prior to 1911 and as "near Burbank" 1912-17.

REVISED RECORDS.--WSP 1317: Drainage area.

GAGE.--Watt-hour meters on each turbine in Ice Harbor Dam powerhouse. Elevations are National Geodetic Vertical Datum of 1929.
Oct. 2, 1907, to Mar. 31, 1917, nonrecording gage at site approximately 2 mi downstream at datum 300 ft higher. Mar. 23, 1962, to Sept. 30, 1968, water-stage recorder 1.0 mi downstream at National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records computed from power output, flow over spillway, flow through fish ladder, and lockage records at Ice Harbor Dam. Diversions upstream from station for irrigation of over 4,090,000 acres. Flow regulated by Lake Sacajawea and many upstream storage reservoirs and powerplants. Chemical analyses October 1965 to September 1969, October 1971 to September 1972. For records collected at site 7.5 mi downstream see station 13353200.

COOPERATION.--Records furnished by U.S. Corps of Engineers. Records not reviewed.

AVERAGE DISCHARGE.--31 years (water years 1910-16, 1963-86), 56,550 ft³/s, 40,970,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 312,000 ft³/s June 19, 1974; no flow momentarily Aug. 27, 1965 (result of testing at Ice Harbor Dam).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1948, reached an elevation of 361.9 ft at a site 0.7 mi downstream, from information by U.S. Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum hourly discharge, 230,000 ft³/s June 1; maximum forebay elevation, 440.05 ft Mar. 28; minimum hourly discharge, 300 ft³/s Dec. 15; minimum forebay elevation, 437.00 ft Feb. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31100	36000	32300	19900	54800	141000	104000	89200	212000	42500	29800	14900
2	27100	30700	48400	25700	42300	140000	112000	88000	209000	36200	17600	33800
3	25900	23700	38400	39900	57000	136000	119000	78200	204000	39700	18500	31800
4	27100	36100	42000	29900	51500	127000	112000	90400	205000	35500	19100	34000
5	23900	33700	35600	28000	48700	127000	100000	99700	190000	41900	20500	28300
6	14300	34600	43000	29300	43900	138000	103000	117000	180000	30100	15100	25600
7	34400	33800	26500	31400	42500	137000	103000	101000	178000	40800	16700	23900
8	27500	33600	18800	31100	41100	160000	94900	102000	155000	33600	23000	34400
9	28700	26700	43400	36600	37600	170000	96100	90200	151000	33800	14800	28000
10	22800	31000	34800	27500	48700	164000	101000	107000	140000	45200	12000	36200
11	28000	42600	43700	34800	40200	151000	110000	96000	121000	33900	18900	34600
12	24300	38400	40300	28000	36800	158000	102000	109000	114000	25600	19300	42700
13	16500	41600	39200	25100	48000	149000	99600	98200	115000	24100	16700	41300
14	22100	29600	21800	26600	37100	154000	100000	92400	123000	42400	28300	36500
15	30800	38400	8800	29700	33100	141000	94500	95600	105000	37500	17500	22900
16	28400	20500	42000	31700	37800	134000	86700	95300	106000	26000	14300	27900
17	31500	32600	24100	25500	62900	143000	93000	93100	105000	24000	12400	49800
18	32300	41800	37700	30700	81400	139000	96900	86000	96500	23800	17600	49100
19	26100	40300	33200	39800	80800	123000	79200	97900	96100	23500	20500	38400
20	26200	33100	35900	46100	82400	118000	89300	99900	75800	20600	20500	47500
21	38400	35400	37800	39900	79200	114000	93500	117000	78700	39500	17100	38400
22	33500	27700	29200	43200	80400	95300	78200	131000	64800	26300	23300	28800
23	24900	41200	30600	38600	81400	92500	109000	127000	64800	13800	20200	43100
24	25600	41400	36500	38900	165000	84500	120000	93300	63200	24500	21300	43000
25	30200	17600	21500	35500	163000	117000	107000	95300	62000	24800	27300	44800
26	33300	30000	22100	37200	155000	105000	105000	107000	55300	16500	28800	29700
27	29700	32800	34200	39700	150000	99000	93000	134000	64200	14800	21700	24700
28	37500	28700	34600	32600	156000	113000	95300	167000	43400	24000	14800	35900
29	33000	31200	26800	29500	---	108000	97000	184000	45500	19900	24900	44800
30	32800	40200	28100	37000	---	113000	85300	202000	47000	22700	14500	38600
31	31000	---	32700	50700	---	111000	---	214000	---	24700	14600	---
TOTAL	878800	1005000	1024000	1040100	2038600	4002300	2979500	3497700	3470300	912200	601600	1055400
MEAN	28350	33500	33030	33550	72810	129100	99320	112800	115700	29430	19410	35180
MAX	38400	42600	48400	50700	165000	170000	120000	214000	212000	45200	29800	49800
MIN	14300	17600	8800	19900	33100	84500	78200	78200	43400	13800	12000	14900
AC-FT	1743000	1993000	2031000	2063000	4044000	7939000	5910000	6938000	6883000	1809000	1193000	2093000
CAL YR 1985	TOTAL	16938900	MEAN	46410	MAX	132000	MIN	8800	AC-FT	33598000		
WTR YR 1986	TOTAL	22505500	MEAN	61660	MAX	214000	MIN	8800	AC-FT	44640000		

SNAKE RIVER BASIN

13353200 SNAKE RIVER AT BURBANK, WA
(National stream quality accounting network station)

LOCATION.--Lat 48°12'59", long 119°01'22", in NE¼SW¼ sec.35, T.9 N., R.30 E., Franklin County, Hydrologic Unit 17060110, at U.S. Highway 395/410 bridge at Burbank, 2.2 mi upstream from mouth, and 7.5 mi downstream from Ice Harbor Dam.

DRAINAGE AREA.--108,800 mi².

PERIOD OF RECORD.--Water years 1960-69, 1972 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1973 to September 1979.

WATER TEMPERATURES: April 1973 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)
NOV 26...	1420	33000	333	8.2*	5.0	1.5	11.4	89	--	120	110
MAR 10...	1120	168000	207	8.1*	7.0	22	15.4	131	K3	K19	70
MAY 28...	0950	171000	151	7.8	14.0	3.5	12.2	120	K2	K1	51
AUG 12...	0915	16000	185	7.9	21.0	5.3	8.5	97	K7	K3	69
DATE	HARD- NESS NONCARB MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HC03)	CAR- BONATE IT-FLD (MG/L AS C03)	SULFATE DIS- SOLVED (MG/L AS S04)
NOV 26...	0	28	10	24	31	1	2.8	113	138	0	25
MAR 10...	0	18	6.0	13	28	0.7	2.3	72	88	0	15
MAY 28...	0	14	4.0	7.7	24	0.5	1.5	56	68	0	13
AUG 12...	1	19	5.1	10	24	0.5	1.8	68	83	0	16
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	
NOV 26...	11	0.4	21	194	190	0.26	17300	<0.01	0.62	0.07	
MAR 10...	7.5	0.3	24	136	130	0.18	61700	0.01	0.75	0.07	
MAY 28...	4.5	0.2	13	90	91	0.12	41600	<0.01	0.12	0.02	
AUG 12...	6.0	0.3	13	111	110	0.15	4800	<0.01	0.14	0.03	

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

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WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible]

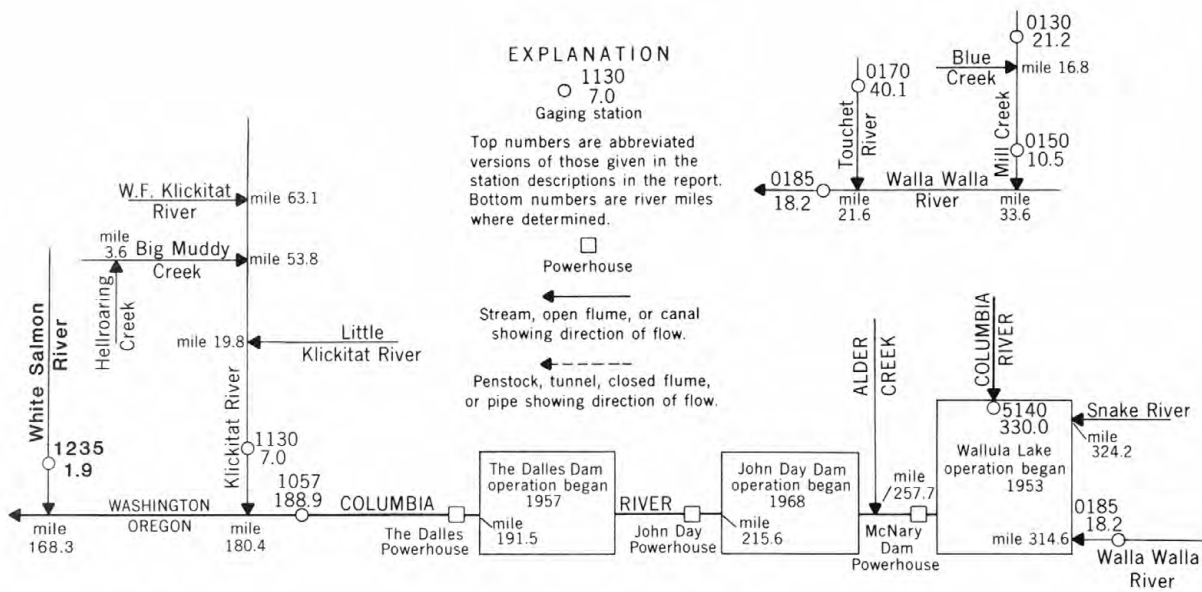


Figure 31.--Gaging stations in Columbia River basin between Wallula Lake and White Salmon River.

14013000 MILL CREEK NEAR WALLA WALLA, WA

LOCATION.--Lat 46°00'29", long 118°07'03", in SW¼SW¼ sec.7, T.6 N., R.38 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.1 mi downstream from Railroad Canyon, 4.0 mi downstream from city of Walla Walla diversion dam, 4.4 mi upstream from Blue Creek, 11.5 mi southeast of Walla Walla, and at mile 21.2.

DRAINAGE AREA.--59.6 mi².

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

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

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

REMARKS.--Estimated daily discharges: Nov. 23-25, Dec. 1-3. Records good. No regulation. City of Walla Walla diverts about 22 ft³/s 4.0 mi upstream from station for municipal use. Water temperatures March 1962 to July 1965. Sediment records March 1962 to July 1965.

AVERAGE DISCHARGE.--48 years (water years 1914-17, 1940-76, 1980-86), 97.5 ft³/s, 70,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,240 ft³/s Dec. 23, 1964, gage height, 19.26 ft; minimum daily discharge, 9.5 ft³/s Dec. 9, 10, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 31 or April 1, 1931, reached a discharge of about 11,000 ft³/s, based on slope-area measurement about 900 ft upstream at old city of Walla Walla diversion dam.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	1530	*2,140	*18.24	No other peak greater than base discharge.			
Minimum discharge, 20 ft ³ /s Aug. 18.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	35	33	38	189	268	163	91	73	29	28	23
2	29	36	32	36	175	232	141	93	69	29	28	23
3	29	36	35	38	170	191	125	97	64	29	26	23
4	28	37	42	34	152	168	115	101	62	33	22	33
5	28	39	46	36	150	159	106	95	59	32	23	30
6	29	47	48	40	133	152	101	96	60	30	22	24
7	40	50	60	45	122	223	97	94	48	29	22	23
8	32	59	63	64	107	249	97	93	45	29	22	24
9	29	54	55	59	93	295	97	98	42	29	21	23
10	29	50	48	65	83	305	94	121	40	30	23	24
11	33	46	52	75	78	263	89	119	39	30	22	43
12	34	42	43	73	71	261	88	114	38	29	22	35
13	31	39	41	70	66	264	83	110	37	28	23	26
14	30	37	40	73	62	238	77	101	38	28	22	24
15	30	38	38	73	66	200	79	93	38	28	23	25
16	31	46	37	87	92	169	85	87	36	30	23	26
17	30	47	36	134	166	150	82	83	36	33	22	24
18	28	46	36	131	215	135	80	85	35	30	21	25
19	28	43	35	133	174	129	78	88	35	30	21	25
20	29	44	34	138	137	122	79	91	35	30	28	24
21	30	41	35	132	131	125	91	109	34	29	25	24
22	43	40	35	125	271	118	102	107	33	29	22	23
23	50	37	34	194	1480	114	94	103	32	29	23	24
24	37	32	34	161	1230	140	84	97	31	29	23	34
25	44	34	34	128	671	134	86	95	31	29	23	31
26	41	36	34	105	458	132	77	98	31	29	23	33
27	37	35	34	90	359	136	90	99	30	29	22	29
28	35	34	33	86	299	146	93	95	30	29	21	41
29	34	34	33	114	---	151	95	92	32	29	22	41
30	33	34	33	190	---	188	92	87	30	30	23	37
31	33	---	33	207	---	179	---	79	---	29	23	---
TOTAL	1040	1228	1226	2974	7400	5736	2860	3011	1243	915	714	844
MEAN	33.5	40.9	39.5	95.9	264	185	95.3	97.1	41.4	29.5	23.0	28.1
MAX	50	59	63	207	1480	305	163	121	73	33	28	43
MIN	28	32	32	34	62	114	77	79	30	28	21	23
AC-FT	2060	2440	2430	5900	14680	11380	5670	5970	2470	1810	1420	1670
CAL YR 1985	TOTAL	26719	MEAN	73.2	MAX	380	MIN	27	AC-FT	53000		
WTR YR 1986	TOTAL	29191	MEAN	80.0	MAX	1480	MIN	21	AC-FT	57900		

WALLA WALLA RIVER BASIN

14015000 MILL CREEK AT WALLA WALLA, WA

LOCATION.--Lat 46°04'35", long 118°16'21", in NE¼NW¼ sec.23, T.7 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 200 ft downstream from diversion dam, 1.5 mi east of Walla Walla, and at mile 10.5.

DRAINAGE AREA.--95.7 mi².

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

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

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

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 4, Dec. 24-31. Records good except those below 20 ft³/s and estimated daily discharges, which are poor. Some regulation at diversion dam 200 ft upstream from station where water is diverted into Yellowhawk and Garrison Creeks for stock and irrigation. Since Nov. 19, 1941, water has been diverted 1.0 mi upstream into Mill Creek Reservoir for flood control with release of stored water after flood into Russell Creek, and is also diverted as required to replenish losses from seepage and evaporation from small recreation pool maintained in the reservoir. City of Walla Walla diverts water for municipal supply about 11 mi upstream. Other small diversions upstream from station for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s Dec. 28, 1945, gage height, 4.0 ft, site and datum then in use; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 31, April 1, 1931, discharge not determined, was greatest since at least 1913. Discharge about 11,000 ft³/s, based on a slope-area measurement made at old city of Walla Walla diversion dam 10.8 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,620 ft³/s Feb. 23, gage height, 4.71 ft; no flow Oct. 1, June 17, 18, 21-26, July 14-16, 18-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	37	36	43	296	362	193	64	52	5.5	2.5	2.4
2	5.9	42	36	42	281	323	170	65	50	6.8	2.0	2.5
3	5.3	48	40	42	268	259	135	72	48	11	2.1	1.4
4	1.7	57	50	38	242	223	113	73	42	20	2.1	1.4
5	.69	75	65	38	259	206	104	70	38	19	2.1	2.0
6	.62	38	69	50	235	195	94	62	39	12	2.1	3.8
7	7.4	1.4	72	46	204	251	73	56	28	6.6	2.0	3.0
8	7.9	22	78	56	170	298	95	55	26	3.3	1.9	2.8
9	6.4	49	89	74	151	371	78	58	17	5.3	2.2	2.8
10	5.8	52	71	84	133	387	71	87	14	9.6	2.4	4.3
11	5.7	54	62	104	116	317	68	86	8.9	12	2.2	3.1
12	5.1	48	62	103	109	352	69	79	6.4	9.0	2.1	16
13	5.0	34	53	97	101	362	67	74	5.7	8.4	2.1	5.1
14	4.6	31	53	98	89	333	58	64	8.5	4.8	1.9	2.2
15	4.2	29	50	98	94	287	58	54	11	.39	1.7	2.2
16	3.4	37	46	107	121	256	65	47	5.5	3.1	1.9	2.7
17	2.8	57	44	202	269	253	62	43	5.0	6.2	2.3	1.5
18	2.7	46	42	203	395	205	61	46	2.5	.39	1.9	2.3
19	2.9	49	41	215	321	188	58	54	4.8	1.4	1.7	2.0
20	4.0	49	43	234	274	176	53	61	5.4	.94	1.9	1.6
21	3.7	46	43	200	235	173	59	112	4.7	.33	2.3	1.8
22	4.4	43	42	173	443	161	69	105	5.1	.00	4.9	1.6
23	29	40	40	291	1360	153	67	91	3.0	.89	1.5	1.5
24	27	35	39	306	1350	179	59	83	2.0	1.7	1.7	13
25	32	36	38	220	973	168	62	79	3.1	2.2	1.6	11
26	34	37	38	177	689	159	55	80	4.7	2.8	1.5	12
27	30	37	38	141	520	158	63	70	6.8	3.6	1.5	7.0
28	32	37	39	116	412	165	69	63	8.5	3.3	1.3	19
29	34	37	40	150	---	168	68	61	14	3.0	1.3	19
30	35	37	43	266	---	201	64	59	10	2.8	2.2	26
31	33	---	45	318	---	214	---	55	---	3.0	2.4	---
TOTAL	376.33	1240.4	1547	4332	10110	7503	2380	2128	479.6	169.34	63.3	177.0
MEAN	12.1	41.3	49.9	140	361	242	79.3	68.6	16.0	5.46	2.04	5.90
MAX	35	75	89	318	1360	387	193	112	52	20	4.9	26
MIN	.12	1.4	36	38	89	153	53	43	2.0	.00	1.3	1.4
AC-FT	746	2460	3070	8590	20050	14880	4720	4220	951	336	126	351
CAL YR 1985	TOTAL	25137.55	MEAN	68.9	MAX	528	MIN	.00	AC-FT	49860		
WTR YR 1986	TOTAL	30505.97	MEAN	83.6	MAX	1360	MIN	.00	AC-FT	60510		

14017000 TOUCHET RIVER AT BOLLES, WA

LOCAL UN.--Lat 46°16'28", long 118°13'13", on line between secs.7 and 8, T.9 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, on right bank just downstream from bridge on State Highway 124, 0.4 mi southeast of Bolles, 2.9 mi downstream from Coppei Creek, and at mile 40.1.

DRAINAGE AREA.--361 mi².

PERIOD OF RECORD.--February 1924 to October 1929, April 1951 to current year. Monthly discharge only for February and March 1929, published in WSP 1318.

REVISED RECORDS.--WSP 1446: 1952-53(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,150 ft, from topographic map. Prior to Oct. 5, 1929, water-stage recorder at site 0.5 mi upstream at different datum. Apr. 1 to May 6, 1951, October 1968 to September 1974, nonrecording gage.

REMARKS.--Estimated daily discharges: Nov. 23 to Jan. 2, May 31 to July 15. Records good except for periods of no gage-height record, Nov. 23 to Dec. 10, Dec. 13-16, May 31 to July 15, and period of ice effect, Dec. 11, 12, Dec. 17 to Jan. 2, which are poor. Diurnal fluctuation and some regulation at low flow caused by operation of flour mill at Waitsburg 3 mi upstream. Numerous small diversions for municipal, domestic, and irrigation use. Chemical analyses October 1973 to September 1975. Sediment records July 1962 to September 1985 (partial-record station).

AVERAGE DISCHARGE.--40 years (water years 1925-29, 1952-86), 231 ft³/s, 167,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,350 ft³/s Dec. 23, 1964, gage height, 14.06 ft, from rating curve extended above 3,800 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 1.4 ft³/s July 30, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	1500	*5,010	*9.08	No other peak greater than base discharge.			
Minimum discharge, 20 ft ³ /s Aug. 11, 19, 20.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	81	64	84	465	1070	355	175	100	38	28	30
2	54	82	72	105	450	950	326	172	96	37	27	30
3	52	81	96	136	461	824	295	181	92	39	28	30
4	53	82	140	121	436	724	281	190	90	42	26	29
5	53	96	135	116	464	668	267	188	87	49	24	28
6	56	89	130	150	427	618	251	186	82	46	24	27
7	88	91	130	141	378	815	238	183	75	43	23	29
8	78	102	125	126	324	919	230	174	70	40	23	31
9	68	106	110	153	283	1180	227	169	65	42	24	31
10	68	100	102	221	258	1060	221	174	60	45	24	33
11	68	97	104	236	232	883	213	165	57	46	22	34
12	72	89	109	200	221	834	217	157	55	44	23	32
13	70	93	115	179	197	734	215	157	52	43	24	32
14	68	93	97	176	194	679	201	156	52	42	23	36
15	66	84	86	169	192	582	192	147	54	43	22	38
16	66	102	74	215	440	546	212	137	50	44	23	39
17	67	126	69	416	674	504	198	134	48	50	24	41
18	66	113	69	378	706	444	185	132	47	48	24	46
19	65	100	70	398	587	413	181	136	49	42	21	44
20	64	104	73	389	488	377	178	149	46	37	22	46
21	63	97	75	312	446	357	176	186	47	36	23	49
22	72	78	76	273	923	339	193	172	48	35	22	48
23	120	66	74	506	3860	320	195	149	44	35	23	44
24	96	60	74	465	3220	415	187	137	42	34	23	70
25	119	62	72	364	2260	351	188	131	41	30	23	78
26	127	66	72	298	1770	332	184	127	42	28	24	74
27	101	70	72	264	1460	325	178	130	40	31	23	65
28	90	66	72	269	1210	328	209	129	41	29	23	64
29	85	64	72	316	---	335	195	123	42	29	24	70
30	80	61	74	435	---	396	183	120	40	31	31	73
31	78	---	78	476	---	389	---	110	---	29	36	---
TOTAL	2327	2601	2781	8087	23026	18711	6571	4776	1754	1207	754	1321
MEAN	75.1	86.7	89.7	261	822	604	219	154	58.5	38.9	24.3	44.0
MAX	127	126	140	506	3860	1180	355	190	100	50	36	78
MIN	52	60	64	84	192	320	176	110	40	28	21	27
AC-FT	4620	5160	5520	16040	45670	37110	13030	9470	3480	2390	1500	2620
CAL YR 1985	TOTAL	70116	MEAN	192	MAX	1500	MIN	35	AC-FT	139100		
WTR YR 1986	TOTAL	73916	MEAN	203	MAX	3860	MIN	21	AC-FT	146600		

WALLA WALLA RIVER BASIN

14018500 WALLA WALLA RIVER NEAR TOUCHET, WA

LOCATION.--Lat 46°01'40", long 118°43'43", in NW¼SE¼ sec.6, T.6 N., R.33 E., Walla Walla County, Hydrologic Unit 17070102, on left bank 0.8 mi upstream from Gardena Creek, 2.8 mi southwest of Touchet, 3.4 mi downstream from Touchet River, and at mile 18.2.

DRAINAGE AREA.--1,657 mi².

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

REVISED RECORDS.--WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 405 ft, from topographic map. Prior to Nov. 27, 1951, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 2, Dec. 22-31, Apr. 15, 20, 21, 25-27, 29, 30, May 1-20. Records good except for estimated daily discharges, which are poor. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--35 years, 597 ft³/s, 432,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft³/s Dec. 22, 1964, gage height, 18.90 ft, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; no flow July 30 to Aug. 8, Aug. 12, 13, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 24	0500	*10,100	*14.91	Mar. 9	2130	3,030	8.65

Minimum discharge, 2.9 ft³/s Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	106	270	286	1630	2450	1230	480	204	41	14	11
2	64	116	300	295	1610	2210	1130	450	174	34	13	17
3	64	119	342	303	1590	1930	994	430	147	32	13	15
4	49	122	412	307	1480	1720	911	420	124	36	11	12
5	38	161	530	306	1500	1620	858	420	102	73	9.4	11
6	36	158	600	360	1450	1530	806	410	105	83	8.1	10
7	48	150	684	390	1270	1780	765	400	95	71	7.4	12
8	78	248	636	379	1110	2360	739	380	86	55	7.1	14
9	74	314	611	414	981	2650	702	370	80	48	6.6	14
10	67	298	540	547	881	2830	670	370	73	42	4.8	15
11	62	335	471	702	799	2450	626	370	65	46	4.3	17
12	62	313	414	705	762	2340	617	340	54	55	4.2	21
13	69	275	410	638	697	2230	626	320	44	53	4.5	24
14	66	278	366	593	670	2100	590	290	44	49	3.9	31
15	68	300	353	589	662	1850	540	280	44	42	4.1	26
16	66	332	332	609	891	1730	608	260	57	36	4.1	27
17	69	351	328	1150	1880	1650	601	260	47	38	4.1	30
18	78	378	332	1410	2410	1470	590	265	42	48	3.9	37
19	74	340	344	1790	2220	1390	565	270	37	47	5.5	41
20	69	375	292	1450	1810	1300	530	280	39	39	5.7	41
21	67	374	289	1220	1600	1240	520	451	38	34	5.8	40
22	71	337	270	1000	2310	1210	604	627	39	28	4.6	42
23	96	266	270	1320	5900	1150	652	514	39	21	5.3	42
24	161	241	260	1690	9310	1290	575	463	37	22	5.8	54
25	128	260	260	1300	6120	1270	550	411	34	20	7.6	74
26	161	255	260	1050	4290	1160	540	389	30	20	7.5	106
27	159	250	260	911	3400	1140	550	358	30	21	6.9	108
28	131	250	250	829	2780	1170	566	342	31	21	6.5	107
29	115	250	250	916	---	1180	540	309	32	19	5.5	128
30	113	260	250	1340	---	1250	500	269	38	14	4.8	184
31	107	---	260	1780	---	1400	---	228	---	14	4.6	---
TOTAL	2581	7812	11446	26579	62013	53050	20295	11426	2011	1202	203.6	1311
MEAN	83.3	260	369	857	2215	1711	677	369	67.0	38.8	6.57	43.7
MAX	161	378	684	1790	9310	2830	1230	627	204	83	14	184
MIN	36	106	250	286	662	1140	500	228	30	14	3.9	10
AC-FT	5120	15500	22700	52720	123000	105200	40260	22660	3990	2380	404	2600
CAL YR 1985	TOTAL	178637.3	MEAN	489	MAX	8070	MIN	7.0	AC-FT	354300		
WTR YR 1986	TOTAL	199929.6	MEAN	548	MAX	9310	MIN	3.9	AC-FT	396600		

MIDDLE COLUMBIA RIVER BASIN

403

14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW¼SW¼ 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). WSP 1094: 1894. WSP 1248: 1866, 1888, 1899, 1909. WSP 1518: 1876(M).

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

REMARKS.--Estimated daily discharges: Oct. 11 to Dec. 8, Dec. 15, 18, Dec. 20 to Feb. 18, Feb. 22-25, Mar. 20 to Sept. 30. 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.

AVERAGE DISCHARGE.--108 years, 193,500 ft³/s, 140,200,000 acre-ft/yr.

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 AVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 407,000 ft³/s June 3; maximum elevation, 82.3 ft June 7; minimum daily discharge, 78,000 ft³/s Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134000	153000	166000	119000	145000	310000	295000	271000	401000	134000	146000	78000
2	139000	130000	211000	119000	139000	313000	295000	264000	395000	147000	158000	110000
3	128000	105000	190000	129000	138000	308000	302000	243000	407000	132000	152000	132000
4	137000	121000	169000	125000	166000	285000	298000	228000	395000	100000	131000	156000
5	110000	134000	188000	106000	158000	250000	277000	248000	391000	110000	125000	135000
6	81100	143000	169000	123000	166000	256000	253000	268000	358000	92700	131000	126000
7	150000	162000	163000	139000	171000	287000	261000	256000	378000	102000	131000	133000
8	145000	150000	175000	125000	176000	338000	243000	252000	353000	118000	119000	129000
9	137000	161000	197000	135000	178000	354000	240000	256000	327000	132000	134000	126000
10	150000	159000	196000	129000	197000	329000	241000	271000	293000	140000	135000	114000
11	133000	182000	200000	119000	200000	303000	264000	274000	280000	180000	131000	111000
12	134000	182000	218000	117000	193000	294000	256000	284000	278000	174000	142000	111000
13	93200	198000	226000	131000	193000	318000	262000	276000	243000	173000	152000	109000
14	106000	175000	164000	142000	195000	336000	305000	252000	238000	185000	158000	110000
15	128000	188000	152000	142000	149000	335000	271000	280000	238000	178000	147000	118000
16	127000	92800	216000	137000	137000	311000	276000	278000	249000	202000	119000	131000
17	131000	92100	181000	123000	184000	294000	282000	253000	244000	177000	89400	125000
18	138000	135000	187000	128000	199000	273000	289000	222000	244000	162000	140000	111000
19	114000	144000	162000	135000	212000	285000	246000	270000	249000	153000	130000	108000
20	106000	195000	172000	147000	225000	288000	216000	250000	214000	157000	127000	116000
21	121000	206000	175000	134000	220000	283000	242000	287000	199000	182000	125000	95400
22	129000	156000	158000	144000	202000	236000	248000	323000	173000	188000	128000	113000
23	128000	199000	134000	137000	249000	220000	268000	308000	205000	177000	121000	114000
24	132000	208000	138000	161000	248000	204000	301000	209000	186000	167000	93300	128000
25	134000	208000	144000	139000	355000	271000	271000	216000	171000	165000	108000	122000
26	134000	148000	123000	128000	304000	286000	292000	203000	196000	160000	123000	119000
27	117000	164000	154000	132000	317000	283000	274000	279000	167000	158000	124000	97100
28	122000	148000	137000	140000	313000	265000	264000	317000	156000	151000	117000	78400
29	125000	187000	119000	136000	---	238000	276000	353000	151000	140000	104000	123000
30	137000	164000	136000	132000	---	316000	256000	358000	144000	150000	92400	109000
31	159000	---	132000	150000	---	318000	---	379000	---	142000	90700	---
TOTAL	3960300	4789900	5252000	4103000	5729000	8987000	8064000	8428000	7923000	4728700	3923800	3481900
MEAN	127800	159700	169400	132400	204600	289900	268800	271900	264100	152500	126600	116100
MAX	159000	208000	226000	161000	355000	354000	305000	379000	407000	202000	158000	156000
MIN	81100	92100	119000	106000	137000	204000	216000	203000	144000	92700	89400	78000
AC-FT	7855000	9501000	10417000	8138000	11363000	17826000	15995000	16717000	15715000	9379000	7783000	6906000
CAL YR 1985	TOTAL	61017000	MEAN	167200	MAX	295000	MIN	71900	AC-FT	121027000		
WTR YR 1986	TOTAL	69370600	MEAN	190100	MAX	407000	MIN	78000	AC-FT	137597000		

KLICKITAT RIVER BASIN

14113000 KLICKITAT RIVER NEAR PITT, WA
(National stream quality accounting network station)

LOCATION.--Lat 45°45'24", long 121°12'32", in SW¼ sec.8, T.3 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, on left bank 2.8 mi south of Pitt, 4.8 mi southwest of Klickitat, 5.3 mi upstream from Silvias Creek, and at mile 7.0.

DRAINAGE AREA.--1,297 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1909 to January 1912, October 1928 to current year. Published as "at Klickitat" 1909-12 and as "at Pitt" 1928-35.

REVISED RECORDS.--WSP 1348: 1910(M), 1929-33(M), 1934, 1935-38(M), 1940(M), 1942-43(M), 1946(M), 1948(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.9 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). July 3, 1909, to Jan. 31, 1912, nonrecording gage at site 7 mi upstream at different datum. Oct. 1, 1928, to Sept. 30, 1935, nonrecording gage at site 3.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 29 to Dec. 4. Water-discharge records excellent except those for period of ice effect Nov. 29 to Dec. 4, which are poor. Several small diversions upstream from station for irrigation of about 7,500 acres, mostly in vicinity of Glenwood. The largest of these is Hellroaring Irrigation Canal with a maximum flow of 74.5 ft³/s Aug. 13, 1974, which at times diverts the entire flow of Hellroaring Creek (tributary to Big Muddy Creek). No regulation.

AVERAGE DISCHARGE.--60 years (water years 1910-11, 1929-86), 1,650 ft³/s, 1,195,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Jan. 15, 1974, gage height, 17.12 ft from high-water mark in well, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement at gage height 14.34 ft; minimum discharge, 412 ft³/s Jan. 16, 1979, gage height, 3.81 ft.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	1830	*12,100	*10.27	May 8	0430	6,970	8.28

Minimum daily discharge, 550 ft³/s Dec. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	628	751	550	644	2440	4590	2760	1470	2720	900	683	642
2	631	774	550	660	2790	4310	2560	1450	2640	904	690	640
3	632	817	560	662	2760	4050	2410	1460	2270	887	693	642
4	628	892	580	652	2510	3780	2310	1440	2050	872	688	649
5	631	904	588	655	2490	3720	2210	1450	1880	818	678	631
6	636	869	620	648	2020	3720	2150	1480	1710	793	685	626
7	643	902	721	637	1730	5170	2160	1510	1590	786	686	608
8	637	981	705	634	1560	6650	2210	1450	1480	789	695	613
9	635	854	681	675	1500	5850	2330	1440	1400	776	699	606
10	636	843	662	717	1450	5550	2330	1440	1360	767	690	611
11	653	755	626	723	1400	5410	2240	1400	1330	809	688	613
12	652	721	646	715	1330	4900	2160	1370	1320	792	660	605
13	645	710	652	693	1280	4550	2020	1410	1270	776	661	597
14	643	710	650	677	1230	4220	1910	1430	1230	769	668	593
15	648	751	649	678	1200	3830	1880	1380	1180	760	669	598
16	661	781	643	739	1720	3520	1870	1360	1140	746	662	614
17	666	775	638	1010	2100	3200	1780	1370	1190	750	643	627
18	678	737	636	1290	1930	2950	1710	1470	1180	737	641	667
19	675	715	629	2300	1640	2820	1660	1590	1120	729	648	640
20	705	728	615	2130	1450	2780	1630	1740	1070	737	651	636
21	709	707	604	1750	1570	2810	1770	1790	1020	746	640	635
22	737	680	601	1570	3860	2780	2050	1680	1010	750	644	624
23	773	649	609	1690	8410	2720	1980	1570	1010	735	637	630
24	788	634	614	1670	9660	2930	1890	1500	1020	717	629	727
25	895	642	618	1400	8590	2710	1840	1610	1020	721	631	704
26	917	680	607	1260	7460	2640	1740	1860	1000	709	639	705
27	857	697	596	1200	6090	2670	1690	2260	959	697	650	680
28	852	674	586	1210	5170	2770	1660	2340	952	696	654	662
29	821	630	599	1340	---	2910	1580	2460	941	695	665	655
30	786	560	611	1860	---	2970	1510	2610	915	674	676	660
31	767	---	620	2180	---	2920	---	2670	---	677	648	---
TOTAL	21865	22523	19266	34669	87340	116400	60000	51460	40977	23714	20591	19140
MEAN	705	751	621	1118	3119	3755	2000	1660	1366	765	664	638
MAX	917	981	721	2300	9660	6650	2760	2670	2720	904	699	727
MIN	628	560	550	634	1200	2640	1510	1360	915	674	629	593
AC-FT	43370	44670	38210	68770	173200	230900	119000	102100	81280	47040	40840	37960
CAL YR 1985	TOTAL	409985	MEAN	1123	MAX	3610	MIN	550	AC-FT	813200		
WTR YR 1986	TOTAL	517945	MEAN	1419	MAX	9660	MIN	550	AC-FT	1027000		

KLICKITAT RIVER BASIN

14113000 KLICKITAT RIVER NEAR PITT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-70, 1973, 1975 to September 1986 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1950 to September 1970.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB MG/L AS CACO3
NOV 05...	1600	897	74	7.2	7.0	1.9	12.0	99	K4	26	28	0
FEB 11...	1155	1420	86	7.8	3.0	10	13.3	100	K2	--	34	0
JUN 09...	1305	1390	60	7.7*	15.0	3.1	10.2	101	K1	K8	22	0
JUL 28...	1400	699	85	8.3	17.5	1.9	9.4	99	K4	510	34	0
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	CAR- BONATE IT-FLD (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 05...	6.4	3.0	3.9	22	0.3	1.2	36	44	0	3.7	1.2	<0.1
FEB 11...	7.5	3.8	4.5	21	0.3	1.3	37	45	0	4.8	1.5	<0.1
JUN 09...	5.2	2.3	3.1	22	0.3	1.2	28	34	0	3.5	1.2	<0.1
JUL 28...	7.4	3.7	4.7	22	0.4	1.7	38	47	0	2.8	1.0	<0.1
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 05...	26	60	67	0.08	145	<0.01	<0.10	0.04	<0.2	0.04	0.03	0.02
FEB 11...	29	78	75	0.11	299	<0.01	0.76	0.03	0.4	0.05	0.04	0.03
JUN 09...	24	64	57	0.09	240	<0.01	<0.10	0.03	0.3	0.04	0.03	0.02
JUL 28...	30	71	75	0.10	134	<0.01	<0.10	<0.01	<0.2	0.04	0.02	0.03

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

KLICKITAT RIVER BASIN

14113000 KLICKITAT RIVER NEAR PITT, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 05...	20	<1	4	<0.5	<1	1	<3	1	38	1	<4
FEB 11...	430	<1	7	<0.5	<1	<1	<3	<1	190	1	<4
JUN 09...	--	--	--	--	--	--	--	--	--	--	--
JUL 28...	20	<1	3	<0.5	<1	<1	<3	2	31	<5	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
NOV 05...	3	<0.1	<10	<1	<1	<1	37	<6	9	9	22
FEB 11...	5	<0.1	<10	<1	<1	<1	50	<6	6	14	54
JUN 09...	--	--	--	--	--	--	--	--	--	16	60
JUL 28...	2	<0.1	<10	<1	<1	<1	40	<6	<3	4	7.5

WHITE SALMON RIVER BASIN

407

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW¼NW¼ sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft downstream from bridge, 1,000 ft downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi north of Underwood, and at mile 1.9.

DRAINAGE AREA.--386 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records excellent. Diversions for irrigation of about 4,500 acres in Trout Lake area. Low and medium flows regulated by powerplant of Pacific Power & Light Co. Water quality records: 1960-70, 1976-June 1980. Water temperatures: July 1968 to August 1970.

AVERAGE DISCHARGE.--66 years (water years 1916-30, 1936-86), 1,128 ft³/s, 817,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s Jan. 15, 1974, gage height, 12.85 ft, from rating curve extended above 6,000 ft³/s; practically no flow at times when powerplant is shut down; minimum daily discharge, 158 ft³/s Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,340 ft³/s Feb. 23, gage height, 8.23 ft; minimum discharge, 47 ft³/s Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	607	512	502	1050	2530	1900	1290	1340	744	571	519
2	544	675	611	489	1170	2500	1790	1270	1310	750	587	516
3	536	724	508	514	1250	2290	1690	1240	1210	724	573	506
4	536	754	546	485	1230	2230	1640	1260	1170	738	563	497
5	519	720	550	502	1210	2220	1620	1270	1120	743	557	483
6	540	687	565	487	1140	2150	1570	1270	1090	730	653	482
7	610	930	592	476	1070	2920	1570	1250	1050	710	463	488
8	508	991	554	497	955	3570	1600	1200	999	713	554	475
9	523	826	488	536	902	3110	1660	1230	998	676	554	481
10	427	777	593	592	889	2900	1690	1270	975	717	544	503
11	568	692	561	646	856	2990	1630	1200	969	695	539	502
12	527	633	527	626	837	2740	1600	1200	948	702	539	491
13	526	619	527	592	812	2550	1510	1210	922	672	536	465
14	536	602	536	577	776	2370	1430	1350	915	698	517	486
15	531	607	519	577	782	2190	1410	1300	908	696	534	505
16	520	704	523	596	1340	2040	1450	1270	863	670	523	506
17	521	710	519	772	1410	1910	1370	1220	863	701	516	582
18	533	651	490	958	1150	1770	1360	1220	893	655	541	620
19	511	634	533	1240	1050	1730	1340	1260	861	671	506	615
20	570	629	510	1180	976	1730	1340	1280	839	666	506	488
21	557	596	506	1060	976	1740	1440	1280	836	626	532	549
22	611	570	489	942	1230	1800	1550	1250	826	630	511	499
23	637	514	489	922	3900	1750	1520	1180	803	606	508	528
24	687	543	510	928	5810	1930	1430	1160	800	621	508	550
25	911	516	489	869	4810	1910	1410	1150	794	616	527	579
26	842	562	485	800	4090	1840	1340	1240	777	604	483	610
27	729	560	489	770	3360	1870	1340	1280	785	599	512	531
28	750	544	489	752	2820	1890	1400	1290	753	596	514	519
29	660	527	481	752	---	1920	1360	1280	782	593	503	456
30	623	509	481	837	---	1980	1290	1310	744	592	496	550
31	604	---	497	955	---	2000	---	1360	---	572	519	---
TOTAL	18227	19613	16169	22431	47851	69070	45250	38840	28143	20726	16489	15581
MEAN	588	654	522	724	1709	2228	1508	1253	938	669	532	519
MAX	911	991	611	1240	5810	3570	1900	1360	1340	750	653	620
MIN	427	509	481	476	776	1730	1290	1150	744	572	463	456
AC-FT	36150	38900	32070	44490	94910	137000	89750	77040	55820	41110	32710	30900
CAL YR 1985	TOTAL	311579	MEAN	854	MAX	2580	MIN	427	AC-FT	618000		
WTR YR 1986	TOTAL	358390	MEAN	982	MAX	5810	MIN	427	AC-FT	710900		

MIDDLE COLUMBIA RIVER BASIN

14128600 COLUMBIA RIVER AT STEVENSON, WA

LOCATION.--Lat 45°41'58", long 121°52'02", in NW¼ sec.36, T.3 N., R.7-1/2 E., Skamania County, Hydrologic Unit 17070105, on right bank 0.9 mi east of Stevenson, and at mile 151.3.

DRAINAGE AREA.--239,800 mi², approximately.

PERIOD OF RECORD.--October 1973 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 79.79 ft June 20, 1974; minimum, 70.39 ft Oct. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 78.56 ft Feb. 23; minimum, 71.61 ft Aug. 14.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	76.49	74.82	75.63	76.53	74.59	75.35	76.36	74.95	75.39	75.86	74.25	74.97
2	76.27	74.61	75.59	76.75	74.66	75.71	75.62	72.67	74.33	75.97	74.61	75.35
3	76.57	74.44	75.40	76.63	74.68	75.40	75.35	72.77	73.89	76.16	73.60	74.84
4	76.45	75.14	75.85	75.84	74.26	74.99	76.07	74.54	75.28	76.13	75.04	75.58
5	75.95	74.64	75.04	76.04	74.88	75.47	75.98	74.01	75.10	75.90	73.99	74.61
6	75.12	72.70	73.62	75.62	73.69	74.67	76.70	74.53	75.62	75.54	73.50	74.30
7	73.97	71.97	72.66	76.64	73.94	75.33	76.60	74.85	75.97	75.93	74.88	75.21
8	75.16	73.13	74.16	76.47	73.99	75.03	76.45	74.67	75.65	75.93	73.98	74.94
9	75.41	73.44	74.72	76.11	74.53	75.15	76.47	74.11	75.30	76.23	74.49	75.07
10	76.09	73.78	75.04	76.23	74.09	74.80	76.33	73.75	74.80	76.39	75.17	75.75
11	76.12	74.38	75.18	75.11	73.68	74.27	75.66	73.55	74.54	76.10	74.54	75.41
12	76.41	74.73	75.53	75.04	73.93	74.50	76.71	73.11	74.78	76.10	74.87	75.63
13	76.44	74.79	75.38	76.38	72.55	74.13	77.01	74.81	75.89	75.99	75.00	75.56
14	75.59	74.52	75.17	76.49	73.39	74.54	76.50	74.65	75.43	76.35	74.06	75.31
15	75.99	74.00	75.04	76.41	73.40	75.23	75.26	72.82	73.92	76.42	74.39	75.70
16	76.19	74.31	75.28	76.23	74.51	75.29	76.76	73.54	74.85	76.66	74.93	76.03
17	76.65	74.86	75.71	75.61	75.23	75.41	76.71	73.91	74.99	77.01	76.29	76.68
18	76.61	75.54	76.27	75.80	75.06	75.42	75.79	73.43	74.70	77.14	76.07	76.57
19	76.29	74.43	75.19	76.24	75.50	75.82	75.66	73.58	74.67	76.82	75.51	76.24
20	75.26	73.83	74.55	76.36	75.34	76.01	75.68	72.81	74.59	76.57	75.06	75.93
21	75.31	73.84	74.77	76.92	76.11	76.37	76.27	74.49	75.49	76.04	73.92	74.90
22	76.01	73.84	74.95	76.88	74.43	75.44	75.57	73.53	74.54	76.93	73.89	75.20
23	75.84	74.88	75.44	76.33	74.57	75.44	75.20	72.70	74.12	76.57	74.06	75.04
24	75.85	74.74	75.38	76.54	74.84	75.86	76.01	73.49	74.81	77.07	76.11	76.58
25	76.47	75.17	75.84	76.30	74.03	75.13	76.03	75.34	75.73	77.03	75.46	76.38
26	76.08	75.43	75.71	76.19	73.13	74.59	75.79	73.20	74.13	75.38	73.83	74.51
27	75.93	74.41	75.09	75.83	72.93	74.62	76.26	73.72	74.81	73.80	72.78	73.24
28	75.83	74.53	75.09	75.81	72.93	74.46	76.31	74.47	75.30	75.14	72.56	73.44
29	75.72	74.49	75.18	76.12	74.96	75.66	75.82	73.98	74.78	75.74	73.55	74.58
30	76.74	74.23	75.33	76.22	74.83	75.45	75.26	73.99	74.70	75.51	73.13	73.77
31	76.56	75.49	76.08	---	---	---	75.51	74.05	74.88	75.94	72.59	73.93
MONTH	76.74	71.97	75.16	76.92	72.55	75.18	77.01	72.67	74.93	77.14	72.56	75.20

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	76.91	75.33	75.78	76.90	75.48	75.99	76.56	75.50	76.07	77.05	75.44	76.11
2	76.65	75.56	75.90	77.21	75.14	75.94	77.00	76.00	76.40	77.07	75.87	76.38
3	75.91	73.80	74.70	77.87	76.82	77.28	77.12	75.88	76.47	76.75	75.78	76.21
4	76.13	72.83	74.01	77.17	75.88	76.61	76.95	75.52	76.27	76.43	75.07	75.51
5	76.97	75.97	76.59	77.16	76.07	76.62	76.93	75.63	76.33	76.26	75.40	75.85
6	77.15	76.34	76.73	76.47	75.71	76.02	76.67	75.61	76.05	76.30	75.35	75.82
7	77.25	76.59	76.76	77.28	75.77	76.61	76.88	75.15	76.15	76.49	75.44	76.07
8	77.28	76.33	76.69	78.13	76.49	77.37	76.68	74.86	75.97	76.58	75.18	75.95
9	76.32	75.31	75.81	78.11	77.36	77.72	76.55	75.18	76.04	76.31	74.77	75.52
10	75.95	73.57	74.88	77.30	76.68	77.04	77.50	75.55	76.19	75.91	74.52	75.18
11	75.68	74.09	74.96	77.58	76.14	77.03	76.49	75.73	75.98	76.46	75.77	76.04
12	76.54	73.61	75.10	76.71	76.19	76.48	76.73	75.45	76.07	76.44	75.34	75.84
13	76.22	73.52	75.18	77.45	75.90	76.59	76.88	75.21	76.04	76.96	74.66	75.32
14	76.09	74.19	75.25	77.24	76.30	76.80	76.75	75.59	76.21	77.09	75.63	76.34
15	75.81	72.76	74.46	76.98	76.34	76.62	76.84	75.56	76.30	76.96	75.55	76.17
16	76.10	74.07	75.02	77.01	76.46	76.70	76.78	75.39	75.99	76.64	75.78	76.23
17	76.72	74.76	75.77	77.26	75.84	76.64	77.36	75.71	76.57	76.55	75.72	76.17
18	76.63	74.57	75.60	76.99	75.18	76.29	76.78	75.76	76.35	76.12	75.56	75.78
19	76.45	75.30	75.91	76.76	75.81	76.09	76.59	75.09	75.77	76.64	75.14	75.78
20	76.28	74.59	75.35	76.72	75.64	76.06	76.18	75.33	75.68	76.43	74.35	75.28
21	76.77	73.27	74.77	76.86	75.69	76.13	76.88	74.93	75.69	74.64	73.62	74.35
22	76.94	73.68	75.31	76.65	74.89	75.74	76.84	75.29	76.09	75.62	74.00	75.07
23	78.56	75.54	76.77	76.35	75.07	75.67	77.25	74.91	75.95	75.94	74.92	75.55
24	77.96	74.79	76.90	76.33	74.83	75.61	77.25	75.67	76.39	75.68	73.92	74.75
25	77.96	74.68	76.28	76.36	74.54	75.45	77.26	75.96	76.54	75.67	73.80	75.01
26	77.73	74.68	75.90	76.43	75.44	75.99	76.98	75.95	76.42	75.35	74.50	74.86
27	76.51	75.16	75.74	76.55	75.38	75.93	77.30	75.79	76.40	77.12	74.55	75.62
28	77.08	75.54	76.30	76.35	75.64	75.99	76.98	75.92	76.44	77.12	76.31	76.68
29	---	---	---	76.01	75.63	75.81	77.11	75.85	76.43	78.18	76.40	77.44
30	---	---	---	76.72	75.25	75.92	76.50	75.52	75.94	77.89	76.61	77.20
31	---	---	---	76.77	76.03	76.41	---	---	---	76.59	75.24	75.98
MONTH	78.56	72.76	75.66	78.13	74.54	76.36	77.50	74.86	76.17	78.18	73.62	75.81
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	76.51	75.01	75.67	76.44	74.84	75.51	76.22	75.30	75.81	76.49	74.98	75.68
2	76.75	76.02	76.35	75.99	74.77	75.45	76.14	75.46	75.77	75.84	74.10	75.03
3	76.92	75.71	76.19	75.82	74.90	75.39	76.32	74.98	75.76	76.26	75.14	75.86
4	77.20	76.11	76.84	75.81	75.04	75.38	76.24	74.85	75.51	76.80	75.86	76.32
5	78.25	76.16	77.14	76.62	74.66	75.57	76.15	73.53	74.73	76.64	76.01	76.43
6	77.68	76.01	76.73	76.55	75.43	75.78	76.32	74.46	75.43	76.39	75.48	75.83
7	78.28	76.15	77.12	75.81	74.85	75.27	76.37	74.67	75.68	75.79	75.13	75.35
8	77.92	76.76	77.35	76.05	74.30	75.20	76.09	74.47	75.37	75.35	73.95	74.59
9	77.85	77.07	77.45	76.19	72.82	74.29	76.20	75.19	75.68	75.16	74.57	74.82
10	77.84	76.40	76.99	76.70	74.98	75.90	75.97	74.80	75.37	74.97	74.15	74.57
11	77.76	76.26	76.98	77.25	76.22	76.76	75.25	74.02	74.46	74.96	73.77	74.33
12	77.14	76.47	76.82	76.79	75.22	76.16	74.33	73.09	73.69	75.42	74.41	74.94
13	76.88	75.82	76.30	76.52	75.78	76.16	73.59	72.43	72.98	75.33	74.58	74.95
14	77.01	76.01	76.44	76.94	75.63	76.09	74.26	71.61	72.60	75.27	74.68	75.02
15	76.56	75.74	76.27	77.02	75.84	76.54	75.94	74.24	75.12	76.02	74.70	75.39
16	77.09	76.14	76.54	77.06	75.97	76.53	75.97	75.55	75.73	76.01	74.72	75.59
17	76.95	75.72	76.21	77.39	75.26	76.26	75.82	74.09	74.88	76.23	74.30	75.42
18	76.93	75.94	76.36	76.97	75.75	76.07	75.79	73.33	74.38	76.19	74.65	75.43
19	77.48	76.16	76.80	76.28	75.35	75.92	76.22	74.87	75.40	76.28	75.46	75.94
20	77.49	75.38	76.38	76.51	75.69	76.24	76.19	75.13	75.71	75.92	75.03	75.37
21	76.78	75.03	75.99	76.89	75.00	76.06	76.32	74.72	75.59	75.68	75.08	75.33
22	76.93	75.58	76.08	76.83	75.22	76.12	76.54	74.79	75.79	75.92	74.62	75.40
23	77.15	75.18	76.14	76.74	75.75	76.28	76.05	74.52	75.24	76.15	75.12	75.73
24	77.52	74.91	76.28	76.45	75.26	75.79	75.63	74.38	74.89	76.54	74.53	75.41
25	77.10	75.29	76.14	76.85	74.96	75.96	76.15	74.26	75.20	76.19	75.32	75.87
26	76.76	74.73	76.12	76.73	74.82	75.74	76.37	75.12	75.76	76.16	74.64	75.43
27	76.53	75.18	75.73	76.23	75.08	75.59	76.78	74.70	75.76	75.45	74.27	74.77
28	76.15	75.09	75.52	76.34	74.67	75.56	76.32	73.83	74.99	74.43	72.77	73.39
29	76.66	75.71	76.12	76.75	74.95	75.71	76.45	74.60	75.63	76.20	73.17	74.23
30	76.69	74.92	75.77	76.34	74.61	75.50	76.48	75.43	75.99	76.08	74.58	75.13
31	---	---	---	76.48	75.54	76.02	76.51	75.60	76.08	---	---	---
MONTH	78.28	74.73	76.43	77.39	72.82	75.83	76.78	71.61	75.19	76.80	72.77	75.25
YEAR	78.56	71.61	75.60									

LOWER COLUMBIA RIVER BASIN

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National stream quality accounting network station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NE¼SE¼ 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.

WATER-STAGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 30.91 ft June 20, 1972; minimum, 4.49 ft July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 24.31 ft Feb. 25; minimum recorded, 5.44 ft Sept. 1.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.13	8.00	8.52	11.19	10.72	10.91	10.46	9.82	10.11	9.07	8.36	8.67
2	9.53	9.01	9.18	10.80	8.99	9.55	12.75	10.28	10.88	9.07	8.29	8.64
3	9.48	7.99	8.59	9.39	8.18	8.70	13.55	11.32	12.80	9.35	8.44	8.99
4	9.03	8.32	8.56	8.69	7.91	8.26	11.68	10.08	10.67	8.55	7.80	8.26
5	9.19	7.57	8.21	9.68	8.09	8.83	12.06	11.56	11.84	9.28	7.77	8.41
6	7.84	6.62	7.08	10.13	9.65	9.96	11.65	11.12	11.49	9.62	8.62	9.00
7	9.12	7.46	8.52	12.09	10.07	11.03	12.27	11.00	11.58	9.99	8.51	9.11
8	8.75	8.15	8.53	12.47	11.77	12.28	13.19	12.01	12.38	10.53	9.39	9.89
9	8.66	7.87	8.24	12.13	11.23	11.61	14.06	13.15	13.46	10.47	9.14	9.64
10	9.09	8.48	8.81	12.46	11.79	12.12	14.19	13.54	13.85	11.07	9.76	10.32
11	9.23	8.61	8.94	13.14	11.64	12.28	14.27	13.18	13.75	10.72	9.02	9.73
12	9.18	8.27	8.81	13.26	12.44	12.84	14.24	13.23	13.61	9.77	8.03	8.79
13	9.07	6.95	7.99	12.59	11.10	11.92	14.63	14.00	14.24	10.11	8.96	9.61
14	8.63	6.61	7.67	12.58	10.99	11.80	14.62	12.29	13.17	10.26	8.90	9.41
15	9.36	7.69	8.41	13.62	10.89	11.82	12.42	9.93	10.86	10.57	9.92	10.16
16	9.68	8.39	8.85	13.47	8.84	10.17	12.97	10.19	11.56	10.51	9.72	10.12
17	9.69	8.57	9.05	9.41	8.16	8.59	13.08	11.74	12.44	10.20	9.35	9.86
18	10.13	8.91	9.31	10.32	8.54	9.53	11.83	10.55	11.30	12.07	9.20	10.73
19	10.20	8.19	9.15	10.50	9.21	9.68	11.11	9.39	9.89	12.22	10.88	11.54
20	8.83	7.44	8.00	12.99	10.54	12.12	9.88	9.16	9.52	12.42	12.05	12.21
21	8.61	8.13	8.38	13.34	12.07	12.80	10.47	9.49	9.98	12.03	11.01	11.49
22	9.00	8.19	8.58	12.90	11.08	12.04	10.46	9.00	9.88	11.30	10.37	10.75
23	9.71	8.63	9.14	12.38	10.60	11.12	9.33	7.33	8.37	12.17	11.05	11.77
24	9.87	9.09	9.44	13.32	11.05	12.02	7.30	6.20	6.75	12.92	10.50	11.84
25	10.51	9.21	9.86	13.91	12.91	13.48	8.49	7.20	7.69	12.07	11.13	11.56
26	10.52	9.28	9.84	12.91	11.13	11.71	8.36	7.36	7.91	12.04	10.22	10.93
27	10.26	9.25	9.78	11.22	10.31	10.73	9.20	6.87	7.91	11.14	10.23	10.69
28	9.61	8.66	9.12	10.97	8.76	9.54	9.41	8.45	8.88	10.78	9.40	10.01
29	9.67	8.28	9.08	12.11	9.48	10.55	9.30	8.28	8.82	10.15	9.46	9.73
30	9.69	8.52	8.96	12.05	10.12	10.76	8.83	8.16	8.50	11.14	10.13	10.73
31	11.22	9.29	10.00	---	---	---	8.96	8.40	8.64	10.79	9.94	10.41
MONTH	11.22	6.61	8.79	13.91	7.91	10.96	14.63	6.20	10.73	12.92	7.77	10.10

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	11.29	10.43	10.86	21.85	21.39	21.64	18.26	17.29	17.73	16.42	15.80	16.10
2	11.79	10.98	11.35	21.46	20.29	20.89	18.03	17.10	17.42	16.25	15.81	16.05
3	11.65	11.26	11.45	20.43	20.00	20.21	17.81	17.31	17.49	16.06	15.25	15.60
4	13.21	10.98	12.09	20.04	18.66	19.62	17.68	17.43	17.58	15.25	14.04	14.55
5	12.32	10.78	11.55	18.64	17.48	18.07	17.72	16.69	17.20	15.74	13.98	14.94
6	12.54	11.59	12.08	17.45	16.75	17.12	16.67	15.70	16.05	16.57	15.67	16.16
7	12.67	11.56	12.20	18.73	16.61	17.46	15.97	15.64	15.77	16.01	15.31	15.64
8	12.84	11.67	12.37	21.11	18.71	19.59	16.06	14.83	15.35	15.99	15.34	15.58
9	12.88	12.49	12.68	21.60	21.03	21.37	15.48	14.59	14.89	16.54	15.84	16.25
10	13.51	12.71	13.07	21.20	20.44	20.86	14.92	14.44	14.67	16.13	15.81	15.99
11	13.60	12.91	13.32	20.44	19.74	20.20	16.29	15.04	15.83	16.33	15.87	16.11
12	13.08	12.28	12.88	19.78	18.95	19.37	16.30	15.25	15.73	17.28	16.36	16.70
13	12.59	12.03	12.31	20.18	18.81	19.24	16.24	15.12	15.60	17.13	16.09	16.67
14	12.74	12.43	12.57	20.58	20.11	20.33	17.37	16.23	16.87	16.49	14.99	15.58
15	12.92	10.89	11.86	20.39	19.93	20.21	17.21	16.19	16.58	16.82	16.19	16.52
16	12.24	10.99	11.51	19.96	19.04	19.60	16.52	16.11	16.25	16.86	16.38	16.65
17	14.44	12.25	13.27	19.06	17.75	18.47	16.44	16.14	16.25	16.71	15.30	15.76
18	15.25	14.43	14.93	18.00	17.17	17.53	17.23	16.31	16.81	15.35	---	---
19	15.60	15.05	15.23	17.23	16.77	17.03	16.77	14.56	16.06	16.25	---	---
20	16.18	15.60	15.86	17.57	17.13	17.33	14.53	13.52	13.87	16.51	15.84	16.15
21	16.52	15.13	15.91	17.51	16.83	17.08	15.00	13.39	14.04	17.50	15.69	16.81
22	16.41	15.18	15.92	16.89	15.29	15.77	15.82	14.70	15.21	18.12	16.94	17.49
23	22.14	16.41	18.94	15.30	13.99	14.43	16.19	14.99	15.63	17.72	16.89	17.46
24	23.75	22.14	22.77	15.76	12.69	14.81	17.51	16.12	16.71	16.79	14.15	15.49
25	24.31	23.63	24.02	16.24	12.21	14.60	17.87	16.58	17.18	14.12	13.16	13.65
26	24.25	23.17	23.79	17.86	16.18	17.17	17.65	16.68	17.27	13.64	12.92	13.35
27	23.19	22.43	22.77	17.76	17.06	17.34	17.72	16.56	17.10	16.41	13.64	14.89
28	22.44	21.83	22.10	17.39	16.65	17.06	17.19	16.13	16.63	18.37	16.39	17.41
29	---	---	---	16.71	15.22	15.92	18.14	15.86	17.08	19.77	18.36	19.01
30	---	---	---	18.47	15.13	16.84	16.68	15.67	16.10	20.74	19.76	20.20
31	---	---	---	19.38	18.20	18.84	---	---	---	21.29	20.68	20.95
MONTH	24.31	10.43	14.99	21.85	12.21	18.26	18.26	13.39	16.23	21.29	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	21.34	20.66	21.04	9.86	8.65	9.18	10.56	8.84	9.35	6.76	5.44	6.23
2	---	---	---	9.76	8.70	9.39	10.27	9.61	9.95	7.19	6.15	6.69
3	21.68	21.30	21.49	---	---	---	10.15	9.62	9.85	8.82	6.76	8.00
4	22.15	21.44	21.63	8.24	6.98	7.61	10.08	9.36	9.71	10.54	8.23	9.56
5	---	---	---	7.81	6.66	7.15	9.16	7.75	8.31	9.88	8.89	9.47
6	20.71	20.13	20.47	---	6.65	---	9.20	8.20	8.64	---	---	---
7	---	---	---	7.89	6.64	7.17	9.33	8.34	8.86	9.90	8.97	9.37
8	20.38	19.18	19.70	9.02	---	---	9.20	7.76	8.71	9.91	8.54	9.21
9	19.53	18.26	19.05	9.97	7.92	9.06	9.45	8.36	8.78	9.17	8.12	8.67
10	18.28	17.07	17.68	---	---	---	9.82	9.01	9.29	9.14	7.49	8.23
11	17.13	16.71	16.92	---	---	---	10.02	8.79	9.41	8.46	6.84	7.57
12	17.09	15.95	16.59	12.08	10.45	11.59	9.92	9.20	9.51	7.96	6.86	7.28
13	15.99	15.07	15.48	11.86	10.24	10.96	10.42	9.71	10.06	7.98	6.82	7.31
14	15.13	13.91	14.62	11.89	10.26	11.17	10.47	8.73	9.73	7.93	6.86	7.38
15	14.30	13.87	14.02	---	---	---	9.57	8.55	8.98	8.22	7.09	7.60
16	14.77	14.25	14.46	---	---	---	9.21	8.00	8.55	9.23	7.54	8.33
17	15.09	14.38	14.83	---	---	---	8.62	7.03	7.78	9.24	8.28	8.86
18	14.92	14.43	14.63	11.70	10.68	---	9.28	7.08	8.53	8.85	7.55	8.21
19	15.07	14.65	14.77	10.80	9.93	10.38	9.56	8.58	8.99	8.79	6.90	7.97
20	14.86	13.68	14.21	---	---	---	9.35	8.46	8.89	8.78	7.64	8.16
21	13.85	12.52	13.17	12.32	10.21	11.24	9.40	8.52	8.94	8.48	6.73	7.44
22	---	---	---	13.09	10.80	11.96	9.18	8.41	8.81	8.17	7.00	7.52
23	13.48	---	---	13.09	11.21	11.84	9.18	8.49	8.85	---	---	---
24	13.25	11.82	12.33	11.92	10.48	11.12	8.79	6.63	7.48	---	---	---
25	12.29	11.29	11.71	11.67	10.34	10.79	7.78	6.24	6.88	8.85	7.67	8.20
26	12.58	---	---	11.04	10.13	10.50	8.24	6.69	7.32	9.13	8.22	8.57
27	12.46	11.07	11.65	10.90	9.97	10.42	8.70	7.57	8.07	8.59	7.09	7.74
28	11.40	9.62	10.43	10.75	9.06	9.88	---	---	---	6.97	6.11	6.49
29	10.05	9.20	9.66	10.03	8.63	9.39	---	---	---	6.85	5.85	6.29
30	9.73	9.15	9.48	9.82	8.50	9.21	---	---	---	---	---	---
31	---	---	---	9.93	8.41	9.08	6.67	5.45	6.03	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURES: October 1975 to current year.

INSTRUMENTATION.--Specific conductance and temperature recorders since October 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 243 microsiemens Mar. 4, 5, 1986; minimum, 95 microsiemens June 26, 27, 1982.

WATER TEMPERATURES: Maximum, 22.5°C Aug. 17, 18, 1977, Aug. 11, 1980; minimum recorded, 0.0°C many days in January and February, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 243 microsiemens Mar. 4, 5; minimum, 126 microsiemens June 16, 17.

WATER TEMPERATURES: Maximum recorded, 22.0°C Aug. 26-28; minimum, 1.5°C Dec. 27, 30.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)
		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CAC03	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)
NOV 05...	1250	134000	182	7.9	12.0	11.2	K2	K11	74	0	20
MAR 26...	1130	286000	145	7.5	7.0	12.4	K14	K9	66	4	16
MAY 20...	1230	25000	161	8.4	12.5	10.8	3	4	66	2	18
SEP 04...	1220	156000	146	7.8	21.0	8.7	K5	K5	64	3	18
NOV 05...	5.7	8.3	1.5	76	16	4.1	0.2	--	0.25	0.2	0.02
MAR 26...	6.4	7.2	1.6	62	11	3.1	0.2	0.03	0.36	0.3	0.03
MAY 20...	5.0	5.9	1.3	66	14	3.4	0.2	<0.01	<0.10	0.5	<0.01
SEP 04...	4.6	4.3	1.1	61	10	2.2	0.2	0.02	<0.10	0.3	0.02
DATE		PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	TUR- BID- ITY (NTU)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 05...		0.02	0.03	9.4	102	110	36900	2.0	9	3260	85
MAR 26...		0.04	0.06	16	102	99	78800	16	25	19300	85
MAY 20...		0.02	0.03	7.5	95	93	6410	1.2	--	--	--
SEP 04...		0.02	0.02	7.6	110	85	46300	2.1	10	4210	72

K - Results based on colony count outside acceptable range (non-ideal colony count).

LOWER COLUMBIA RIVER BASIN

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WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 05...	10	1	32	<0.5	--	2	<3	4	5	<1
MAR 26...	80	1	20	<0.5	<1	<1	<3	5	56	1
MAY 20...	--	--	--	--	--	--	--	--	--	--
SEP 04...	<10	1	28	<0.5	<1	<1	<3	3	6	<5
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 05...	7	<1	<0.1	<10	4	<1	<1	110	<6	9
MAR 26...	6	6	<0.1	<10	3	<1	<1	84	<6	20
MAY 20...	--	--	--	--	--	--	--	--	--	--
SEP 04...	6	<1	0.1	<10	<1	<1	<1	95	<6	13

LOWER COLUMBIA RIVER BASIN

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	174	171	173	176	173	175	191	189	190	169	168	169
2	175	173	174	179	176	177	190	187	189	170	168	169
3	185	174	176	180	178	179	187	180	183	170	168	169
4	179	176	177	181	178	179	180	178	179	171	169	170
5	178	177	178	182	179	181	179	174	175	172	170	171
6	177	174	176	185	181	183	178	174	176	173	171	172
7	175	173	174	184	179	181	177	173	175	175	172	173
8	175	173	174	181	179	180	172	171	172	176	175	175
9	175	174	174	180	176	179	172	171	171	178	176	177
10	176	174	175	184	179	182	172	171	172	178	177	178
11	174	170	173	189	184	187	175	171	173	178	177	177
12	171	169	170	193	189	192	176	175	175	179	176	177
13	170	168	169	193	192	193	178	176	177	181	178	180
14	170	169	169	192	191	192	178	177	177	184	181	182
15	171	169	169	191	190	191	178	177	177	185	183	184
16	171	169	170	192	189	191	178	177	177	185	183	184
17	170	169	170	192	191	192	178	177	177	184	182	183
18	169	168	169	195	192	194	177	173	175	183	179	181
19	169	168	169	196	195	195	173	170	171	178	173	175
20	169	168	169	194	190	192	171	169	170	177	175	176
21	169	167	168	191	187	189	172	170	170	180	177	179
22	167	165	166	187	182	184	170	169	170	180	179	179
23	166	165	166	182	181	181	171	169	170	180	178	179
24	167	165	166	187	181	184	172	170	172	182	178	180
25	165	163	164	192	187	189	172	171	172	185	181	183
26	165	164	164	192	191	191	172	169	171	186	184	185
27	165	164	165	191	190	190	169	166	168	188	185	186
28	166	164	165	190	188	189	166	165	166	188	186	187
29	168	165	167	188	186	186	168	165	167	187	185	185
30	170	168	169	189	187	188	169	167	168	184	179	181
31	173	170	171	---	---	---	169	168	169	179	178	179
MONTH	185	163	170	196	173	186	191	165	174	188	168	178

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	179	178	179	202	198	201	159	157	158	162	160	161
2	178	177	178	204	197	200	159	158	159	163	161	162
3	180	177	178	226	203	212	160	159	159	163	162	162
4	186	180	183	243	227	237	160	158	159	163	161	162
5	192	186	189	243	235	241	161	159	160	162	161	161
6	195	192	193	237	228	231	161	160	160	163	161	162
7	195	193	194	228	218	223	162	160	161	163	162	163
8	193	188	191	219	208	214	162	160	161	163	160	162
9	189	188	189	207	190	199	162	160	161	161	157	159
10	197	189	191	190	182	185	163	161	162	158	154	156
11	197	193	195	181	175	178	164	163	164	154	151	153
12	197	192	195	175	173	174	166	164	165	151	150	150
13	216	198	205	176	174	175	166	165	165	150	149	150
14	225	214	220	175	174	174	166	165	166	151	150	150
15	226	222	225	178	174	176	166	164	166	152	150	151
16	223	217	220	179	177	178	165	162	163	153	151	152
17	222	216	220	177	170	174	162	160	160	155	153	154
18	220	211	216	170	162	166	160	159	160	157	155	156
19	215	203	210	162	157	160	160	159	159	158	157	157
20	208	193	203	157	153	155	161	159	160	158	156	157
21	208	196	202	152	147	150	161	159	160	157	153	155
22	202	196	199	147	144	146	163	160	161	154	150	152
23	195	177	189	145	142	143	164	162	162	150	148	149
24	176	159	169	143	141	142	164	163	164	149	148	148
25	168	160	165	145	142	143	163	162	163	150	148	149
26	180	168	174	148	143	146	164	163	163	151	150	150
27	199	181	190	149	145	147	164	163	164	152	150	151
28	203	199	201	151	148	150	164	162	163	152	150	151
29	---	---	---	152	150	151	164	161	162	153	150	151
30	---	---	---	155	152	153	161	160	161	154	151	152
31	---	---	---	157	154	156	---	---	---	154	152	153
MONTH	226	159	195	243	141	177	166	157	162	163	148	155

LOWER COLUMBIA RIVER BASIN

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS PER CENTIMETER AT 25, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	155	153	154	---	---	---	132	130	131	160	138	143
2	156	154	155	---	---	---	134	132	133	162	138	143
3	156	155	155	---	---	---	135	133	134	160	138	142
4	156	148	153	---	---	---	136	134	135	157	139	141
5	150	146	148	---	---	---	137	135	136	157	140	143
6	147	143	146	---	---	---	137	136	137	157	141	143
7	144	140	142	---	---	---	139	136	138	145	144	144
8	143	139	140	---	---	---	139	137	138	162	143	144
9	143	137	139	---	---	---	139	137	138	146	143	145
10	145	138	140	---	---	---	139	138	138	150	146	148
11	139	132	137	---	---	---	140	138	139	152	149	151
12	137	130	134	---	---	---	141	139	140	153	151	153
13	139	133	136	---	---	---	143	141	142	156	154	155
14	137	132	135	---	---	---	145	142	144	157	155	156
15	138	129	134	---	---	---	146	144	145	157	156	157
16	130	126	128	---	---	---	146	143	144	159	157	158
17	132	126	129	---	---	---	146	144	145	160	158	159
18	131	127	130	---	---	---	146	144	144	163	158	160
19	132	129	131	---	---	---	145	143	144	160	159	159
20	136	130	133	---	---	---	148	145	146	165	157	159
21	138	133	135	---	---	---	148	146	147	158	157	158
22	139	134	137	---	---	---	147	144	146	189	158	159
23	138	134	137	---	---	---	147	146	146	167	156	158
24	137	135	136	---	---	---	146	145	146	157	155	156
25	138	135	137	---	---	---	146	144	146	157	155	156
26	137	136	137	---	---	---	147	146	146	157	155	155
27	---	---	---	---	---	---	148	146	147	159	156	158
28	---	---	---	---	---	---	148	147	148	162	159	160
29	---	---	---	---	---	---	150	147	148	164	162	163
30	---	---	---	134	128	129	149	146	147	171	164	167
31	---	---	---	131	128	130	147	146	147	---	---	---
MONTH	---	---	---	---	---	---	150	130	142	189	138	153

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	15.5	15.0	15.5	12.0	12.0	12.0	3.0	2.5	3.0	2.0	2.0	2.0
2	16.0	15.5	15.5	12.0	12.0	12.0	2.5	2.0	2.0	2.0	2.0	2.0
3	15.5	15.5	15.5	12.0	12.0	12.0	2.5	2.0	2.5	2.0	2.0	2.0
4	15.5	15.5	15.5	12.0	12.0	12.0	2.5	2.5	2.5	2.0	2.0	2.0
5	15.5	15.5	15.5	12.0	11.5	12.0	2.5	2.5	2.5	2.0	2.0	2.0
6	15.5	15.5	15.5	11.5	11.5	11.5	3.0	2.5	2.5	2.5	2.0	2.0
7	15.5	15.0	15.5	11.5	11.0	11.5	3.0	3.0	3.0	2.5	2.5	2.5
8	15.0	15.0	15.0	11.0	11.0	11.0	3.0	3.0	3.0	2.5	2.5	2.5
9	15.0	14.5	14.5	11.0	10.5	10.5	3.0	3.0	3.0	2.5	2.0	2.5
10	14.5	14.0	14.5	10.5	10.0	10.5	3.0	2.5	2.5	2.5	2.5	2.5
11	14.5	14.0	14.5	10.0	9.5	10.0	2.5	2.5	2.5	2.5	2.5	2.5
12	14.5	14.0	14.0	9.5	9.5	9.5	2.5	2.5	2.5	2.5	2.5	2.5
13	14.0	14.0	14.0	9.5	9.0	9.0	2.5	2.5	2.5	2.5	2.5	2.5
14	14.0	14.0	14.0	9.0	8.5	9.0	2.5	2.5	2.5	2.5	2.5	2.5
15	14.0	14.0	14.0	8.5	8.5	8.5	2.5	2.5	2.5	2.5	2.5	2.5
16	14.0	14.0	14.0	8.5	8.5	8.5	3.0	2.5	2.5	2.5	2.5	2.5
17	14.0	14.0	14.0	8.5	8.5	8.5	2.5	2.5	2.5	2.5	2.5	2.5
18	14.0	13.5	14.0	8.5	8.0	8.0	2.5	2.5	2.5	3.0	2.5	3.0
19	14.0	13.5	13.5	8.0	8.0	8.0	2.5	2.5	2.5	3.0	3.0	3.0
20	13.5	13.5	13.5	7.5	7.0	7.5	2.5	2.5	2.5	3.0	3.0	3.0
21	13.5	13.0	13.0	7.0	6.5	7.0	2.5	2.5	2.5	3.0	3.0	3.0
22	13.0	13.0	13.0	6.5	6.5	6.5	2.5	2.5	2.5	3.0	3.0	3.0
23	13.0	13.0	13.0	6.0	5.5	6.0	2.5	2.0	2.5	3.0	3.0	3.0
24	13.0	13.0	13.0	5.5	4.5	5.0	2.0	2.0	2.0	3.0	3.0	3.0
25	13.0	12.5	12.5	5.0	5.0	5.0	2.0	2.0	2.0	3.0	3.0	3.0
26	12.5	12.5	12.5	5.5	5.0	5.0	2.0	2.0	2.0	3.0	3.0	3.0
27	12.5	12.5	12.5	5.5	4.5	5.0	2.0	1.5	1.5	3.0	3.0	3.0
28	12.5	12.5	12.5	4.5	3.5	4.0	2.0	2.0	2.0	3.0	3.0	3.0
29	12.5	12.0	12.5	3.5	3.5	3.5	2.0	2.0	2.0	3.0	3.0	3.0
30	12.5	12.0	12.0	3.5	3.0	3.5	2.0	1.5	2.0	3.5	3.0	3.0
31	12.0	12.0	12.0	---	---	---	2.0	2.0	2.0	3.5	3.5	3.5
MONTH	16.0	12.0	14.0	12.0	3.0	8.5	3.0	1.5	2.5	3.5	2.0	2.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3.5	3.5	3.5	5.5	5.0	5.5	8.5	8.5	8.5	9.5	9.5	9.5
2	4.0	3.5	3.5	5.5	5.5	5.5	8.5	8.5	8.5	10.0	9.5	10.0
3	4.0	4.0	4.0	6.0	6.0	6.0	8.5	8.5	8.5	10.5	10.0	10.0
4	4.0	4.0	4.0	6.0	6.0	6.0	8.5	8.5	8.5	10.5	10.0	10.0
5	4.5	4.0	4.0	6.5	6.0	6.5	8.5	8.5	8.5	10.5	10.0	10.5
6	4.5	4.0	4.0	6.5	6.5	6.5	9.0	8.5	8.5	10.0	10.0	10.0
7	4.0	4.0	4.0	6.5	6.5	6.5	9.0	8.5	8.5	10.0	10.0	10.0
8	4.0	4.0	4.0	6.5	6.5	6.5	9.0	8.5	9.0	10.5	10.0	10.5
9	4.0	3.5	4.0	6.5	6.0	6.5	9.0	9.0	9.0	10.5	10.5	10.5
10	4.0	3.5	4.0	6.5	6.5	6.5	9.0	8.5	9.0	10.5	10.5	10.5
11	4.0	4.0	4.0	7.0	6.5	6.5	9.0	9.0	9.0	10.5	10.0	10.5
12	4.0	3.5	4.0	7.0	7.0	7.0	9.0	8.5	9.0	10.5	10.5	10.5
13	4.0	3.5	3.5	7.0	7.0	7.0	9.0	9.0	9.0	11.0	10.5	11.0
14	3.5	3.5	3.5	7.0	7.0	7.0	9.5	9.0	9.0	11.0	10.5	11.0
15	3.5	3.5	3.5	7.0	7.0	7.0	9.5	9.0	9.5	11.0	11.0	11.0
16	4.0	3.5	3.5	7.5	7.0	7.5	9.5	9.5	9.5	11.5	11.0	11.0
17	4.0	3.5	3.5	7.5	7.5	7.5	9.5	9.5	9.5	11.5	11.0	11.5
18	4.0	4.0	4.0	7.5	7.5	7.5	9.5	9.0	9.5	12.0	11.5	12.0
19	4.0	4.0	4.0	8.0	7.5	7.5	9.5	9.0	9.5	12.5	12.0	12.0
20	4.0	3.5	3.5	8.0	7.5	7.5	10.0	9.5	9.5	12.0	12.0	12.0
21	4.0	3.5	4.0	8.0	7.5	7.5	10.0	9.5	10.0	12.0	12.0	12.0
22	4.0	4.0	4.0	7.5	7.5	7.5	10.0	9.5	10.0	12.5	12.0	12.0
23	4.5	4.0	4.0	7.5	7.5	7.5	9.5	9.5	9.5	12.5	12.5	12.5
24	5.0	4.5	4.5	7.5	7.0	7.5	9.5	9.0	9.5	13.0	12.5	12.5
25	5.0	5.0	5.0	7.5	7.5	7.5	9.5	9.0	9.5	13.5	12.5	13.0
26	5.5	5.0	5.0	8.0	7.5	7.5	9.5	9.5	9.5	14.0	13.5	13.5
27	5.5	5.0	5.0	8.0	8.0	8.0	10.0	9.5	9.5	14.5	13.5	14.0
28	5.0	5.0	5.0	8.0	8.0	8.0	10.0	9.5	9.5	14.0	14.0	14.0
29	---	---	---	8.5	8.0	8.5	10.0	9.5	9.5	14.5	14.0	14.0
30	---	---	---	9.0	8.5	8.5	9.5	9.5	9.5	15.0	14.5	14.5
31	---	---	---	8.5	8.5	8.5	---	---	---	15.5	15.0	15.0
MONTH	5.5	3.5	4.0	9.0	5.0	7.0	10.0	8.5	9.0	15.5	9.5	11.5

LOWER COLUMBIA RIVER BASIN

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	16.0	15.5	15.5	---	---	---	19.5	19.0	19.5	21.0	20.5	21.0
2	17.0	16.0	16.5	---	---	---	20.0	19.5	19.5	21.0	20.5	21.0
3	16.5	16.5	16.5	---	---	---	20.5	20.0	20.0	21.0	20.5	20.5
4	16.5	16.0	16.0	---	---	---	20.5	20.0	20.0	21.5	21.0	21.0
5	16.0	16.0	16.0	---	---	---	20.0	20.0	20.0	21.5	21.0	21.5
6	16.0	16.0	16.0	---	---	---	20.5	20.0	20.0	21.5	21.0	21.0
7	16.0	16.0	16.0	---	---	---	20.5	20.0	20.5	21.0	21.0	21.0
8	16.0	15.5	15.5	---	---	---	21.0	20.5	20.5	21.0	20.5	21.0
9	16.0	15.5	16.0	---	---	---	21.0	20.5	21.0	20.5	20.0	20.5
10	16.5	16.0	16.0	---	---	---	21.0	20.5	21.0	20.0	20.0	20.0
11	16.5	16.0	16.5	---	---	---	21.0	20.5	20.5	20.0	19.5	20.0
12	16.5	16.5	16.5	---	---	---	21.0	20.5	20.5	19.5	19.5	19.5
13	17.0	16.5	16.5	---	---	---	21.0	20.5	20.5	19.5	19.5	19.5
14	16.5	16.5	16.5	---	---	---	21.5	20.5	21.0	19.5	19.5	19.5
15	17.0	16.0	16.5	---	---	---	21.5	21.0	21.5	19.5	19.0	19.0
16	16.5	16.5	16.5	---	---	---	21.5	21.0	21.5	19.5	19.0	19.5
17	17.0	16.5	16.5	---	---	---	21.5	21.5	21.5	19.0	19.0	19.0
18	16.5	16.5	16.5	---	---	---	21.5	21.0	21.5	19.0	19.0	19.0
19	17.0	16.5	17.0	---	---	---	21.0	21.0	21.0	19.0	19.0	19.0
20	17.0	16.5	17.0	---	---	---	21.5	21.0	21.0	19.0	19.0	19.0
21	17.0	16.5	17.0	---	---	---	21.5	21.0	21.5	19.0	18.5	18.5
22	17.5	17.0	17.0	---	---	---	21.5	21.5	21.5	18.5	18.5	18.5
23	17.5	17.5	17.5	---	---	---	21.5	21.5	21.5	18.5	18.0	18.5
24	18.0	17.5	17.5	---	---	---	21.5	21.5	21.5	18.0	17.5	18.0
25	18.0	17.5	17.5	---	---	---	21.5	21.5	21.5	18.0	17.5	17.5
26	18.0	17.5	18.0	---	---	---	22.0	21.5	21.5	17.5	17.5	17.5
27	---	---	---	---	---	---	22.0	22.0	22.0	17.5	17.0	17.0
28	---	---	---	---	---	---	22.0	21.5	22.0	17.0	16.5	16.5
29	---	---	---	---	---	---	21.5	21.0	21.5	16.5	16.5	16.5
30	---	---	---	19.0	18.5	18.5	21.0	21.0	21.0	17.0	16.5	17.0
31	---	---	---	19.0	18.5	19.0	21.0	20.5	21.0	---	---	---
MONTH	---	---	---	---	---	---	22.0	19.0	21.0	21.5	16.5	19.0

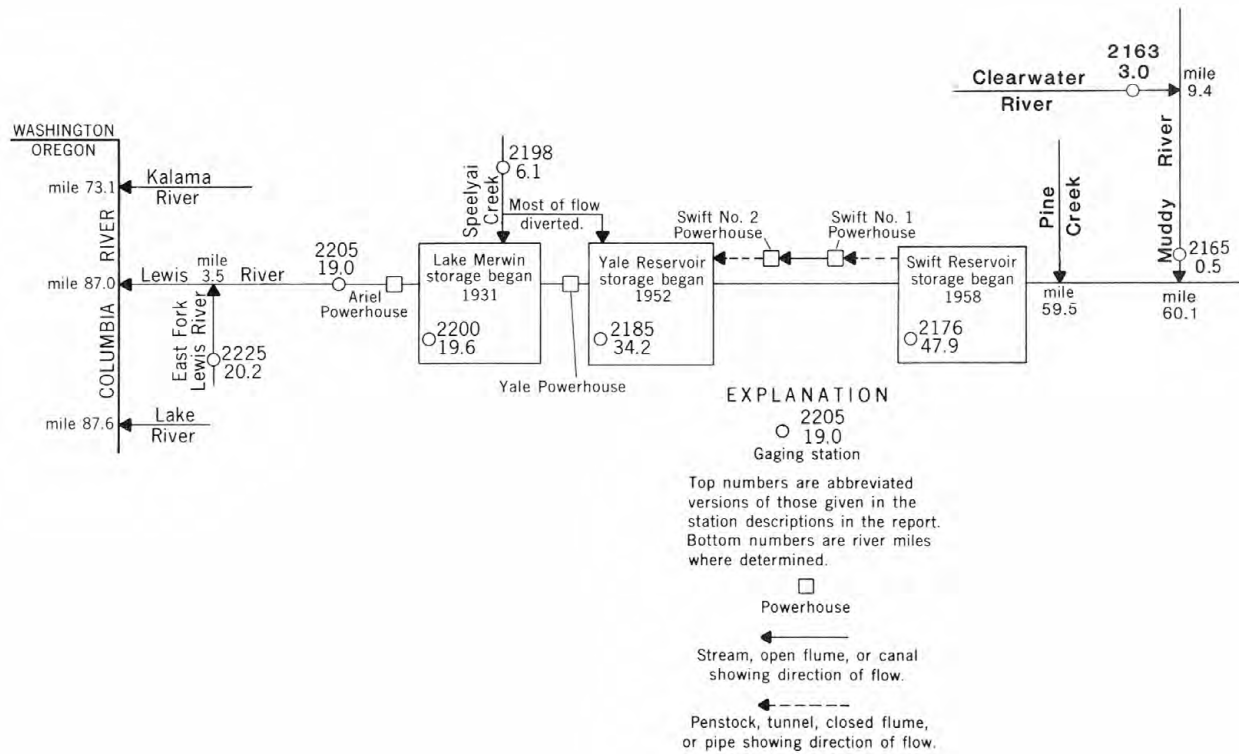


Figure 32.--Gaging stations in Lewis River basin.

LEWIS RIVER BASIN

14216300 CLEARWATER CREEK NEAR MOUTH, NEAR COUGAR, WA

LOCATION.--Lat 46°12'07", long 122°00'54", in SW¼NW¼ sec.1, T.8 N., R.6 E., Skamania County, Hydrologic Unit 17080002, Gifford Pinchot National Forest, 3 mi upstream from mouth, and 17.0 mi northeast of Cougar.

DRAINAGE AREA.--33 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year. Published as "Clearwater River near mouth, near Cougar" October 1981 through September 1984.

GAGE.--Water-stage recorder. Elevation of gage is 1,520 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 2, Jan. 21-23. Records good except for periods of estimated discharge, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--5 years, 245 ft³/s, 100.82 in/yr, 177,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,220 ft³/s Feb. 20, 1982, gage height, 16.67 ft; minimum daily, 23 ft³/s Sept. 5-8, 13-16, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,370 ft³/s Jan. 19, gage height, 16.11 ft; minimum daily, 23 ft³/s Sept. 5-8, 13-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	41	264	100	100	543	556	359	159	157	51	33	24		
2	41	256	101	96	594	481	312	170	147	51	32	24		
3	42	251	117	93	596	423	275	174	138	50	32	24		
4	42	268	120	88	541	386	247	182	133	53	31	24		
5	42	268	124	114	469	365	222	214	130	50	31	23		
6	42	332	145	126	393	357	207	203	125	48	32	23		
7	43	392	157	105	331	688	203	191	115	47	31	23		
8	42	398	139	140	277	831	213	183	97	46	31	23		
9	41	374	130	199	245	701	219	188	88	45	31	27		
10	42	340	124	229	224	583	221	192	83	48	30	25		
11	47	291	113	250	206	565	224	190	80	47	30	24		
12	48	254	108	238	191	549	211	188	76	44	30	24		
13	45	229	108	229	179	508	191	206	73	42	30	23		
14	48	210	106	223	176	445	173	199	72	41	29	23		
15	50	215	104	219	256	390	169	195	71	41	28	23		
16	53	210	104	284	318	344	177	193	71	44	27	23		
17	50	195	104	333	235	305	167	198	71	44	27	24		
18	49	180	108	1080	218	281	154	211	73	41	27	25		
19	59	174	102	1850	216	256	143	220	71	39	27	24		
20	98	167	96	1220	201	238	142	245	65	38	27	25		
21	90	155	97	630	195	243	151	245	62	37	26	25		
22	134	143	97	550	213	228	177	215	60	36	26	25		
23	145	131	102	500	875	283	185	186	57	36	26	30		
24	205	129	104	331	1710	375	184	174	56	36	26	34		
25	293	124	102	280	1560	359	183	176	55	35	26	36		
26	324	124	100	257	1160	386	177	191	54	34	25	42		
27	334	122	97	276	848	397	197	192	53	35	24	35		
28	346	115	97	257	651	417	182	184	53	35	24	35		
29	324	107	98	257	---	410	169	179	53	34	24	42		
30	312	104	95	374	---	424	160	174	52	34	24	40		
31	277	---	94	461	---	396	---	164	---	34	24	---		
TOTAL	3749	6522	3393	11389	13621	13170	5994	5981	2491	1296	871	822		
MEAN	121	217	109	367	486	425	200	193	83.0	41.8	28.1	27.4		
MAX	346	398	157	1850	1710	831	359	245	157	53	33	42		
MIN	41	104	94	88	176	228	142	159	52	34	24	23		
CFSM	3.67	6.58	3.30	11.1	14.7	12.9	6.06	5.85	2.52	1.27	.85	.83		
IN.	4.23	7.35	3.82	12.84	15.35	14.85	6.76	6.74	2.81	1.46	.98	.93		
AC-FT	7440	12940	6730	22590	27020	26120	11890	11860	4940	2570	1730	1630		
CAL YR 1985	TOTAL	57865	MEAN	159	MAX	868	MIN	32	CFSM	4.82	IN.	65.23	AC-FT	114800
WTR YR 1986	TOTAL	69299	MEAN	190	MAX	1850	MIN	23	CFSM	5.76	IN.	78.12	AC-FT	137500

14216300 CLEARWATER CREEK NEAR MOUTH, NEAR COUGAR, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: October 1981 to current year. Records for October 1981 to September 1983 published in U.S. Geological Survey Open-File Report 85-632, and records for October 1983 to September 1985 will be published subsequently in a U.S. Geological Survey open-file report.

INSTRUMENTATION.--Automatic pumping sediment sampler since January 1982.

REMARKS.--Sediment concentrations and corresponding sediment discharges reported as 0 mg/L or 0 tons should be interpreted as <1 due to the limitations of sampling equipment, analytical methods, rounding errors, and the likelihood of minor amounts of sediment transport occurring at even the lowest of discharges.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 14,200 mg/L Feb. 20, 1982; minimum, 1 mg/L on many days each year.

SEDIMENT DISCHARGE: Maximum daily, 170,000 tons Feb. 20, 1982; minimum, 0.06 tons Sept. 1-4, 8, 13, 16, 1986.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 5,650 mg/L Jan. 18; minimum, 1 mg/L on many days throughout the year.

SEDIMENT DISCHARGE: Maximum daily, 21,700 tons Jan. 18; minimum, 0.06 tons Sept. 1-4, 8, 13, 16.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NUMBER OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
OCT							
29...	1440	6.5	326	5	20.0	134	118
NOV							
13...	1335	3.0	229	--	10.0	41	25
DEC							
11...	1250	2.0	107	--	10.0	6	1.7
JAN							
07...	1220	3.5	104	--	10.0	6	1.7
24...	1445	4.5	331	5	20.0	336	300
FEB							
07...	1420	4.0	326	5	20.0	380	334
27...	1500	7.0	789	5	20.0	706	1500
28...	1415	7.5	633	5	20.0	438	749
MAR							
19...	1110	5.5	254	--	10.0	73	50
APR							
18...	1430	7.0	154	5	20.0	22	9.1
MAY							
23...	1310	8.5	185	--	10.0	28	14
JUN							
09...	1230	11.0	90	--	10.0	12	2.9
JUL							
09...	1350	12.0	46	--	10.0	4	0.5
AUG							
14...	1225	13.5	29	--	10.0	2	0.16

DATE	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 2.00 MM
OCT						
29...	37	--	--	--	--	--
NOV						
13...	51	--	--	--	--	--
DEC						
11...	33	--	--	--	--	--
JAN						
07...	52	--	--	--	--	--
24...	31	43	60	76	87	94
FEB						
07...	17	--	--	--	--	--
27...	--	--	--	--	--	--
28...	--	--	--	--	--	--
MAR						
19...	--	--	--	--	--	--
APR						
18...	--	--	--	--	--	--
MAY						
23...	38	--	--	--	--	--
JUN						
09...	--	--	--	--	--	--
JUL						
09...	--	--	--	--	--	--
AUG						
14...	--	--	--	--	--	--

LEWIS RIVER BASIN

14216300 CLEARWATER CREEK NEAR MOUTH, NEAR COUGAR WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER				NOVEMBER			DECEMBER		
1	41	---	.20	264	93	66	100	---	2.0
2	41	---	.20	256	84	58	101	---	1.0
3	42	1	.11	251	74	50	117	---	4.0
4	42	4	.45	268	92	67	120	---	4.0
5	42	1	.11	268	68	49	124	---	5.0
6	42	1	.11	332	140	125	145	---	10
7	43	1	.12	392	210	222	157	---	10
8	42	1	.11	398	144	155	139	---	5.0
9	41	2	.22	374	104	105	130	---	5.0
10	42	1	.11	340	124	114	124	---	2.0
11	47	2	.25	291	---	80	113	6	1.8
12	48	1	.13	254	---	50	108	---	1.0
13	45	1	.12	229	40	25	108	---	1.0
14	48	3	.39	210	---	24	106	---	1.0
15	50	2	.27	215	---	22	104	---	1.0
16	53	3	.43	210	---	21	104	---	1.0
17	50	4	.54	195	---	20	104	---	1.0
18	49	2	.26	180	---	18	108	---	1.0
19	59	8	1.3	174	---	17	102	---	1.0
20	98	73	19	167	---	16	96	---	1.0
21	90	---	10	155	---	15	97	---	1.0
22	134	---	40	143	---	14	97	---	1.0
23	145	---	20	131	---	12	102	---	1.0
24	205	---	100	129	---	11	104	---	1.0
25	293	---	150	124	---	10	102	---	1.0
26	324	---	150	124	---	8.0	100	---	1.0
27	334	---	140	122	---	7.0	97	---	1.0
28	346	---	130	115	---	6.0	97	---	1.0
29	324	133	116	107	---	4.0	98	---	1.0
30	312	116	98	104	---	4.0	95	---	1.0
31	277	112	84	---	---	---	94	---	1.0
TOTAL	3749	---	1062.43	6522	---	1395.0	3393	---	69.8
JANUARY				FEBRUARY			MARCH		
1	100	---	1.0	543	585	858	556	380	570
2	96	---	1.0	594	387	621	481	310	403
3	93	---	1.0	596	423	681	423	299	341
4	88	---	1.0	541	333	486	386	236	246
5	114	---	15	469	291	368	365	201	198
6	126	---	15	393	310	329	357	161	155
7	105	23	6.5	331	315	282	688	735	1370
8	140	45	18	277	221	165	831	442	992
9	199	125	72	245	132	87	701	314	594
10	229	109	72	224	122	74	583	268	422
11	250	60	40	206	117	65	565	242	369
12	238	34	22	191	145	75	549	204	302
13	229	32	20	179	172	83	508	208	285
14	223	18	11	176	136	65	445	202	243
15	219	32	19	256	---	150	390	197	207
16	284	190	172	318	---	150	344	162	150
17	333	180	171	235	---	100	305	126	104
18	1080	5650	21700	218	---	100	281	109	83
19	1850	3000	16100	216	---	90	256	75	52
20	1220	957	3150	201	---	80	238	60	39
21	630	716	1220	195	---	70	243	57	37
22	550	498	740	213	---	80	228	57	35
23	500	504	680	875	---	4100	283	221	213
24	331	356	318	1710	---	15000	375	211	214
25	280	334	253	1560	---	10000	359	102	99
26	257	326	226	1160	---	3000	386	90	94
27	276	319	238	848	860	1970	397	73	78
28	257	224	155	651	479	842	417	94	106
29	257	196	136	---	---	---	410	79	87
30	374	601	607	---	---	---	424	110	126
31	461	380	473	---	---	---	396	76	81
TOTAL	11389	---	46653.5	13621	---	39971	13170	---	8295

14216300 CLEARWATER CREEK NEAR MOUTH, NEAR COUGAR WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	359	88	85	159	23	9.9	157	27	11
2	312	56	47	170	27	12	147	21	8.3
3	275	52	39	174	34	16	138	28	10
4	247	49	33	182	24	12	133	19	6.8
5	222	44	26	214	50	29	130	20	7.0
6	207	38	21	203	36	20	125	17	5.7
7	203	39	21	191	24	12	115	15	4.7
8	213	40	23	183	20	9.9	97	13	3.4
9	219	29	17	188	22	11	88	15	3.6
10	221	34	20	192	27	14	83	14	3.1
11	224	27	16	190	22	11	80	10	2.2
12	211	27	15	188	21	11	76	7	1.4
13	191	28	14	206	32	18	73	10	2.0
14	173	26	12	199	23	12	72	18	3.5
15	169	18	8.2	195	21	11	71	6	1.2
16	177	21	10	193	16	8.3	71	5	.96
17	167	22	9.9	198	17	9.1	71	6	1.2
18	154	22	9.1	211	26	15	73	6	1.2
19	143	23	8.9	220	30	18	71	6	1.2
20	142	26	10	245	36	24	65	5	.88
21	151	33	13	245	30	20	62	5	.84
22	177	61	29	215	24	14	60	4	.65
23	185	30	15	186	20	10	57	6	.92
24	184	38	19	174	15	7.0	56	6	.91
25	183	36	18	176	14	6.7	55	8	1.2
26	177	30	14	191	17	8.8	54	4	.58
27	197	50	27	192	27	14	53	4	.57
28	182	31	15	184	14	7.0	53	4	.57
29	169	30	14	179	12	5.8	53	7	1.0
30	160	28	12	174	16	7.5	52	9	1.3
31	---	---	---	164	38	17	---	---	---
TOTAL	5994	---	621.1	5981	---	401.0	2491	---	87.88
JULY			AUGUST			SEPTEMBER			
1	51	8	1.1	33	3	.27	24	1	.06
2	51	6	.83	32	2	.17	24	1	.06
3	50	4	.54	32	2	.17	24	1	.06
4	53	4	.57	31	2	.17	24	1	.06
5	50	6	.81	31	1	.08	23	2	.12
6	48	8	1.0	32	2	.17	23	2	.12
7	47	7	.89	31	1	.08	23	2	.12
8	46	6	.75	31	2	.17	23	1	.06
9	45	5	.61	31	4	.33	27	2	.15
10	48	4	.52	30	8	.65	25	2	.14
11	47	2	.25	30	8	.65	24	2	.13
12	44	3	.36	30	5	.41	24	2	.13
13	42	1	.11	30	7	.57	23	1	.06
14	41	2	.22	29	3	.23	23	2	.12
15	41	1	.11	28	2	.15	23	2	.12
16	44	2	.24	27	3	.22	23	1	.06
17	44	2	.24	27	6	.44	24	2	.13
18	41	3	.33	27	4	.29	25	2	.14
19	39	3	.32	27	2	.15	24	2	.13
20	38	4	.41	27	2	.15	25	5	.34
21	37	3	.30	26	---	.20	25	---	.40
22	36	2	.19	26	4	.28	25	4	.27
23	36	2	.19	26	2	.14	30	8	.65
24	36	2	.19	26	2	.14	34	8	.73
25	35	2	.19	26	2	.14	36	8	.83
26	34	2	.18	25	2	.14	42	10	1.2
27	35	4	.38	24	2	.13	35	3	.33
28	35	3	.28	24	2	.13	35	3	.28
29	34	3	.28	24	2	.13	42	11	1.4
30	34	3	.28	24	2	.13	40	5	.50
31	34	4	.37	24	2	.13	---	---	---
TOTAL	1296	---	13.04	871	---	7.21	822	---	8.90

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA

LOCATION.-- Lat 46°04'33", long 121°59'51", in NE¼SE¼ sec.24, T.7 N., R.6 E., Skamania County, Hydrologic Unit 17080002, Gifford Pinchot National Forest, on left bank 3.9 mi downstream from Clear Creek, approximately 14 mi northeast of Cougar, and 0.5 mi upstream from mouth.

DRAINAGE AREA.--135 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1927 to September 1934, October 1954 to December 1973 (destroyed by flood of January 1974), October 1983 to current year. Published as "near Cougar" 1927-34. Records for August to October 1909, published in WSP 272 and 492, have been found to be unreliable and should not be used. Records for August 1980 to September 1981 (discharge measurements only), October 1981 to September 1983 at site 4.5 mi upstream published as "above Clear Creek" (station 14216350) is not equivalent due to inflow between sites.

GAGE.--Water-stage recorder. Elevation of gage is 1,080 ft, from topographic map.

AVERAGE DISCHARGE.--29 years (1928-34, 1954-73, 1984-86), 869 ft³/s, 87.41 in/yr, 629,600 acre-ft/yr.

REMARKS.--Estimated daily discharges: Jan. 18, 20, 24-28, June 4, 5. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s Dec. 21, 1933, gage height, 14.0 ft from high-water marks, site and datum then in use, from rating curve extended above 4,500 ft³/s; minimum recorded, 94 ft³/s Dec. 5-7, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood occurred about 0900 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0015	*8,700	*24.10	Feb. 24	0930	7,500	23.22

Minimum daily discharge, 120 ft³/s Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	167	926	415	496	2430	2500	1090	693	696	236	164	125		
2	167	913	420	469	2380	2120	1000	738	639	234	162	124		
3	165	935	457	479	2400	1880	917	736	586	231	160	123		
4	162	1040	474	444	2180	1780	860	743	532	237	158	122		
5	161	1040	496	561	1920	1620	808	821	474	227	156	122		
6	164	1310	697	713	1630	1490	778	771	444	222	155	121		
7	167	1480	791	572	1420	2350	778	739	428	222	153	120		
8	165	1440	687	708	1280	2460	796	732	411	221	152	122		
9	162	1310	611	1010	1180	2200	789	741	395	216	150	133		
10	163	1110	578	1150	1120	1940	779	743	382	228	150	126		
11	177	897	546	1330	1050	1990	779	720	370	236	147	124		
12	175	774	518	1250	980	1950	758	725	361	215	145	123		
13	166	709	495	1140	915	1840	704	893	350	209	143	122		
14	172	675	476	1080	853	1720	660	811	343	205	141	123		
15	174	761	464	1050	1130	1520	663	778	331	202	139	124		
16	188	777	460	1310	1860	1340	720	763	326	210	139	125		
17	176	710	465	1620	1370	1200	692	761	322	208	138	129		
18	170	668	476	4910	1140	1110	645	790	335	203	136	140		
19	214	670	465	6140	1040	1030	613	811	320	199	135	128		
20	419	653	447	3570	982	977	613	879	298	196	133	125		
21	310	614	435	2640	968	1010	651	840	289	192	132	123		
22	567	579	437	2290	1070	939	713	785	281	189	131	124		
23	545	526	457	2080	4120	1170	698	714	277	187	129	162		
24	1010	511	466	1880	6780	1510	674	690	270	185	129	193		
25	1490	516	468	1660	5770	1350	702	705	263	181	129	231		
26	1300	518	466	1450	4370	1370	702	755	257	178	128	236		
27	1240	510	456	1250	3460	1330	815	759	252	174	126	190		
28	1260	479	453	1100	2880	1310	780	747	250	174	126	183		
29	1100	447	456	1150	---	1290	734	744	245	170	126	196		
30	1010	433	447	1810	---	1300	701	766	241	168	128	183		
31	932	---	443	2020	---	1190	---	745	---	166	127	---		
TOTAL	14438	23931	15422	49332	58678	48786	22612	23638	10968	6321	4367	4322		
MEAN	466	798	497	1591	2096	1574	754	763	366	204	141	144		
MAX	1490	1480	791	6140	6780	2500	1090	893	696	237	164	236		
MIN	161	433	415	444	853	939	613	690	241	166	126	120		
CFSM	3.45	5.91	3.68	11.8	15.5	11.7	5.59	5.65	2.71	1.51	1.04	1.07		
IN.	3.98	6.59	4.25	13.59	16.17	13.44	6.23	6.51	3.02	1.74	1.20	1.19		
AC-FT	28640	47470	30590	97850	116400	96770	44850	46890	21760	12540	8660	8570		
CAL YR 1985	TOTAL	238030	MEAN	652	MAX	3380	MIN	151	CFSM	4.83	IN.	65.59	AC-FT	472100
WTR YR 1986	TOTAL	282815	MEAN	775	MAX	6780	MIN	120	CFSM	5.74	IN.	77.93	AC-FT	561000

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: October 1983 to current year. Records for October 1983 to September 1985 will be published subsequently in a U.S. Geological Survey open-file report.

INSTRUMENTATION.--Automatic pumping sediment sampler since October 1983.

REMARKS.--Sediment concentrations and corresponding sediment discharges reported as 0 mg/L or 0 tons should be interpreted as <1 due to the limitations of sampling equipment, analytical methods, rounding errors, and the likelihood of minor amounts of sediment transport occurring at even the lowest of discharges.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 23,800 mg/L Nov. 3, 1983; minimum, 15 mg/L Sept. 26, 29, 30, 1984.

SEDIMENT DISCHARGE: Maximum daily, 198,000 tons Nov. 3, 1983; minimum, 6.4 tons Sept. 29, 30, 1984.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 7,140 mg/L Jan. 19; minimum, 18 mg/L Dec. 27.

SEDIMENT DISCHARGE: Maximum daily, 150,000 tons Jan. 18; minimum, 10 tons July 18.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NUMBER OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	
OCT										
01...	1315	10.0	169	5	20.0	98	45	--	--	
21...	1345	8.0	292	5	20.0	483	381	--	--	
25...	1240	11.0	1390	3	20.0	2030	7620	--	--	
31...	1350	5.5	928	5	20.0	348	872	--	--	
NOV										
07...	1305	7.0	1550	5	20.0	896	3750	--	--	
26...	1405	3.0	517	5	20.0	39	54	--	--	
DEC										
10...	1350	2.0	575	5	20.0	64	99	--	--	
27...	1530	1.0	452	5	20.0	18	22	--	--	
JAN										
10...	1140	4.0	1060	5	20.0	456	1310	--	--	
10...	1355	4.0	1050	5	20.0	244	692	--	--	
14...	1450	4.5	1070	5	20.0	155	448	--	--	
19...	1115	4.5	6130	5	20.0	5960	98600	4	5	
19...	1330	5.0	5900	5	20.0	5030	80100	--	--	
19...	1545	4.5	5600	5	20.0	4700	71100	4	6	
21...	1240	4.5	2580	5	20.0	1480	10300	--	--	
21...	1500	5.0	2670	5	20.0	1430	10300	--	--	
28...	1355	6.0	1070	5	20.0	434	1250	--	--	
FEB										
23...	1300	3.5	4720	5	20.0	11600	148000	5	7	
23...	1435	3.5	5020	5	20.0	9320	126000	--	--	
23...	1550	3.5	5300	5	20.0	8340	119000	--	--	
23...	1815	3.5	6890	5	20.0	8420	157000	3	5	
24...	0835	4.5	7280	5	20.0	3920	77100	6	9	
24...	1150	6.0	6750	5	20.0	3880	70700	--	--	
25...	1240	6.5	5810	5	20.0	2650	41600	--	--	
DATE		SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM
OCT										
01...	--	--	--	31	--	--	--	--	--	--
21...	--	--	--	45	--	--	--	--	--	--
25...	--	--	--	22	--	--	--	--	--	--
31...	--	--	--	36	--	--	--	--	--	--
NOV										
07...	--	--	22	23	35	65	87	100	--	--
26...	--	--	--	49	--	--	--	--	--	--
DEC										
10...	--	--	--	41	--	--	--	--	--	--
27...	--	--	--	42	--	--	--	--	--	--
JAN										
10...	--	--	--	27	--	--	--	--	--	--
10...	--	--	--	28	--	--	--	--	--	--
14...	--	--	--	33	--	--	--	--	--	--
19...	16	23	33	29	50	77	93	99	100	100
19...	--	--	31	28	48	75	92	99	100	100
19...	16	23	32	29	49	77	96	100	100	--
21...	--	--	29	30	41	65	91	100	100	--
21...	--	--	--	31	--	--	--	--	--	--
28...	--	--	--	36	--	--	--	--	--	--
FEB										
23...	21	32	46	41	62	83	95	100	100	100
23...	--	--	38	37	53	76	90	97	100	100
23...	--	--	36	35	52	77	92	100	100	--
23...	17	27	37	36	55	77	92	99	100	100
24...	15	22	31	28	46	72	90	99	100	100
24...	--	--	28	23	42	70	92	99	100	100
25...	--	--	--	24	--	--	--	--	--	--

LEWIS RIVER BASIN

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NUMBER OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR								
11...	1345	6.5	2010	5	20.0	584	3170	51
25...	1420	6.5	1320	5	20.0	736	2620	33
APR								
28...	1545	7.0	748	5	20.0	163	329	28
MAY								
02...	1435	8.0	731	5	20.0	150	296	34
13...	1300	8.0	903	5	20.0	310	756	44
JUN								
05...	1630	16.0	456	5	20.0	22	27	44
24...	1440	18.0	267	5	20.0	42	30	90
JUL								
10...	1445	12.5	236	5	20.0	140	89	--
10...	1630	12.5	234	5	20.0	167	106	--
AUG								
15...	1355	17.5	140	5	20.0	236	89	--
29...	1155	12.5	128	5	20.0	628	217	--
29...	1410	13.0	126	5	20.0	570	194	--
SEP								
24...	1235	11.0	195	5	20.0	1000	527	60

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	167	99	45	926	357	893	415	---	25
2	167	99	45	913	303	747	420	---	30
3	165	101	45	935	321	810	457	---	40
4	162	88	38	1040	417	1170	474	---	40
5	161	95	41	1040	387	1090	496	---	50
6	164	114	50	1310	803	2840	697	---	175
7	167	119	54	1480	895	3580	791	---	275
8	165	92	41	1440	570	2220	687	---	160
9	162	71	31	1310	419	1480	611	---	110
10	163	97	43	1110	328	983	578	64	100
11	177	437	209	897	---	420	546	---	65
12	175	168	79	774	---	250	518	---	50
13	166	88	39	709	---	180	495	---	35
14	172	186	86	675	---	150	476	---	30
15	174	164	77	761	---	240	464	---	25
16	188	---	665	777	---	250	460	---	25
17	176	190	90	710	---	180	465	---	25
18	170	119	55	668	---	150	476	---	30
19	214	---	1420	670	---	150	465	---	25
20	419	---	8750	653	---	130	447	---	20
21	310	689	577	614	---	110	435	---	15
22	567	3630	5560	579	---	90	437	---	15
23	545	1460	2150	526	---	65	457	---	20
24	1010	---	22100	511	---	60	466	---	25
25	1490	---	15800	516	---	60	468	---	25
26	1300	1580	5550	518	39	55	466	---	25
27	1240	1290	4320	510	---	50	456	18	22
28	1260	980	3330	479	---	45	453	---	20
29	1100	654	1940	447	---	35	456	---	20
30	1010	498	1360	433	---	30	447	---	20
31	932	388	976	---	---	---	443	---	20
TOTAL	14438	---	75566	23931	---	18513	15422	---	1562
JANUARY			FEBRUARY			MARCH			
1	496	---	35	2430	2010	13200	2500	683	4610
2	469	---	30	2380	1320	8480	2120	566	3240
3	479	---	30	2400	1160	7520	1880	491	2490
4	444	---	20	2180	907	5340	1780	418	2010
5	561	---	100	1920	809	4190	1620	371	1620
6	713	---	310	1630	587	2580	1490	314	1260
7	572	---	65	1420	474	1820	2350	---	15000
8	708	---	310	1280	401	1390	2460	---	10000
9	1010	---	1100	1180	---	1100	2200	---	7000
10	1150	764	2370	1120	---	1000	1940	---	4100
11	1330	---	2300	1050	---	850	1990	755	4060
12	1250	---	1500	980	---	700	1950	690	3630
13	1140	---	760	915	---	600	1840	613	3050
14	1080	160	467	853	---	500	1720	501	2330
15	1050	104	295	1130	---	8000	1520	409	1680
16	1310	214	757	1860	---	6000	1340	354	1280
17	1620	---	1000	1370	---	2500	1200	301	975
18	4910	---	150000	1140	---	1500	1110	268	803
19	6140	7140	127000	1040	---	1000	1030	259	720
20	3570	3000	28900	982	---	800	977	241	636
21	2640	1560	11100	968	---	750	1010	293	799
22	2290	981	6070	1070	---	1500	939	248	629
23	2080	746	4190	4120	6470	86100	1170	1490	6580
24	1880	568	2880	6780	3940	72100	1510	1160	4730
25	1660	448	2010	5770	2740	42700	1350	559	2040
26	1450	---	1740	4370	1560	18400	1370	603	2230
27	1250	---	1630	3460	1210	11300	1330	464	1670
28	1100	519	1540	2880	915	7120	1310	402	1420
29	1150	492	1530	---	---	---	1290	360	1250
30	1810	1750	8550	---	---	---	1300	398	1400
31	2020	1150	6270	---	---	---	1190	335	1080
TOTAL	49332	---	365359	58678	---	309040	48786	---	94322

14216500 MUDDY RIVER BELOW CLEAR CREEK, NEAR COUGAR, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	1090	279	821	693	116	217	696	---	140
2	1000	253	683	738	171	341	639	---	100
3	917	229	567	736	127	252	586	---	75
4	860	198	460	743	157	315	532	---	50
5	808	175	382	821	446	989	474	33	42
6	778	159	334	771	201	418	444	22	26
7	778	171	359	739	---	375	428	19	22
8	796	223	479	732	---	350	411	21	23
9	789	188	400	741	---	350	395	26	28
10	779	207	435	743	---	350	382	56	58
11	779	186	391	720	---	300	370	91	91
12	758	---	350	725	---	300	361	98	96
13	704	---	300	893	297	716	350	92	87
14	660	---	250	811	177	388	343	95	88
15	663	---	250	778	111	233	331	50	45
16	720	---	300	763	97	200	326	44	39
17	692	---	275	761	99	203	322	25	22
18	645	---	225	790	117	250	335	37	33
19	613	---	200	811	98	215	320	40	35
20	613	---	200	879	191	453	298	---	50
21	651	---	250	840	116	263	289	---	50
22	713	---	300	785	102	216	281	---	50
23	698	---	275	714	73	141	277	---	50
24	674	---	250	690	56	104	270	70	51
25	702	---	300	705	60	114	263	105	75
26	702	---	300	755	71	145	257	161	112
27	815	---	425	759	61	125	252	62	42
28	780	237	499	747	62	125	250	110	74
29	734	144	285	744	105	211	245	53	35
30	701	132	250	766	155	321	241	63	41
31	---	---	---	745	---	170	---	---	---
TOTAL	22612	---	10795	23638	---	9150	10968	---	1730
JULY			AUGUST			SEPTEMBER			
1	236	112	71	164	---	100	125	821	277
2	234	86	54	162	---	100	124	1110	372
3	231	66	41	160	---	100	123	1600	531
4	237	50	32	158	---	100	122	927	305
5	227	30	18	156	---	100	122	594	196
6	222	36	22	155	---	100	121	503	164
7	222	103	62	153	---	100	120	555	180
8	221	201	120	152	---	100	122	486	160
9	216	144	84	150	---	100	133	---	180
10	228	147	90	150	---	100	126	---	200
11	236	250	159	147	---	100	124	---	200
12	215	68	39	145	---	100	123	---	200
13	209	67	38	143	---	120	122	---	200
14	205	96	53	141	---	140	123	---	200
15	202	37	20	139	444	167	124	---	200
16	210	45	26	139	457	172	125	---	200
17	208	27	15	138	293	109	129	---	200
18	203	19	10	136	285	105	140	---	200
19	199	72	39	135	398	145	128	---	200
20	196	183	97	133	483	173	125	---	200
21	192	148	77	132	709	253	123	---	200
22	189	155	79	131	746	264	124	---	200
23	187	264	133	129	683	238	162	---	300
24	185	271	135	129	676	235	193	935	487
25	181	339	166	129	606	211	231	2360	1580
26	178	203	98	128	632	218	236	1350	911
27	174	97	46	126	707	241	190	380	195
28	174	146	69	126	937	319	183	328	162
29	170	---	80	126	1740	592	196	484	256
30	168	---	100	128	---	340	183	257	127
31	166	---	100	127	1410	483	---	---	---
TOTAL	6321	---	2173	4367	---	5725	4322	---	8983

LEWIS RIVER BASIN

429

14219800 SPEELYAI CREEK NEAR COUGAR, WA

LOCATION.--Lat 46°00'28", long 122°20'46", in NW¼NW¼ sec.17, T.6 N., R.4 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 3.8 mi southwest of Cougar, and at mile 6.1.

DRAINAGE AREA.--12.6 mi².

PERIOD OF RECORD.--May 1959 to May 1978, October 1978 to current year.

REVISED RECORDS.--WSP 1718: 1959. WDR WA-81-1: 1978-80(P). WDR WA-84-1: 1983.

GAGE.--Water-stage recorder. Elevation of gage is 500 ft, from topographic map. Prior to Nov. 21, 1959, at site 250 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Oct. 16 to Nov. 5, Nov. 24 to Dec. 3, June 5 to July 21. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. A diversion structure 1,000 ft downstream from station diverts the flow into Yale Reservoir. At extreme high stages, some flow will overtop the diversion structure into the original channel.

AVERAGE DISCHARGE.--26 years (water years 1960-77, 1979-86), 105 ft³/s, 113.17 in/yr, 76,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,600 ft³/s probably Nov. 20, 1962 (by slope-area measurement, gage height not determined); minimum discharge observed, 1.8 ft³/s Sept. 24-29, 1967, gage height, 0.24 ft.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2145	1,160	4.59	Feb. 23	1715	*3,130	*6.52

Minimum discharge, 2.1 ft³/s Sept. 6-8, gage height, 1.04 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.3	135	36	95	164	129	61	120	22	10	5.8	3.6		
2	8.4	210	38	92	146	105	56	124	20	9.8	5.6	3.0		
3	8.3	221	41	167	158	89	51	119	19	9.9	5.5	2.8		
4	7.5	235	48	144	239	77	48	108	19	14	5.7	2.7		
5	7.0	249	62	190	241	68	44	161	19	13	5.2	2.5		
6	7.6	456	180	257	188	62	41	152	19	8.3	4.5	2.2		
7	9.4	443	293	186	146	107	38	126	19	8.3	4.3	2.1		
8	7.4	298	237	169	117	103	35	105	18	8.7	4.5	2.5		
9	6.7	224	173	187	96	126	33	92	17	8.7	4.5	3.3		
10	6.5	175	129	198	81	121	31	87	16	20	4.5	2.9		
11	12	134	101	186	71	131	34	92	15	28	4.7	3.0		
12	14	105	84	151	63	154	39	98	15	14	4.8	2.8		
13	10	87	73	124	59	163	39	156	14	12	4.4	2.7		
14	11	74	64	105	54	162	35	142	16	11	4.0	2.9		
15	11	100	58	104	96	135	39	117	16	11	3.7	2.8		
16	15	176	55	165	219	113	69	96	15	15	3.6	3.4		
17	13	149	54	198	159	97	98	83	16	17	3.5	3.8		
18	11	119	60	690	123	92	86	72	20	13	3.4	9.9		
19	24	103	63	681	99	85	73	64	15	11	3.4	4.9		
20	68	90	62	330	84	78	65	63	13	8.6	3.3	3.4		
21	76	79	59	209	88	77	58	54	12	7.6	3.0	2.9		
22	175	68	56	214	125	68	53	49	11	6.6	3.0	2.7		
23	137	60	59	491	1490	84	47	44	11	6.7	2.8	27		
24	283	53	65	333	1020	140	45	40	10	6.7	2.8	26		
25	488	48	66	216	529	133	57	37	10	6.6	2.8	74		
26	277	45	61	157	349	122	88	34	9.8	6.4	2.7	77		
27	229	42	56	131	226	106	202	32	11	6.4	2.7	47		
28	224	38	51	111	165	92	198	29	14	6.5	2.9	40		
29	165	36	47	106	---	80	164	27	12	6.3	3.6	68		
30	131	35	43	189	---	78	138	25	11	6.4	5.0	58		
31	113	---	41	182	---	67	---	23	---	5.9	4.5	---		
TOTAL	2564.1	4287	2515	6758	6595	3244	2065	2571	454.8	323.4	124.7	489.8		
MEAN	82.7	143	81.1	218	236	105	68.8	82.9	15.2	10.4	4.02	16.3		
MAX	488	456	293	690	1490	163	202	161	22	28	5.8	77		
MIN	6.5	35	36	92	54	62	31	23	9.8	5.9	2.7	2.1		
CFSM	6.56	11.3	6.44	17.3	18.7	8.33	5.46	6.58	1.21	.83	.32	1.29		
IN.	7.57	12.66	7.43	19.95	19.47	9.58	6.10	7.59	1.34	.95	.37	1.45		
AC-FT	5090	8500	4990	13400	13080	6430	4100	5100	902	641	247	972		
CAL YR 1985	TOTAL	26639.5	MEAN	73.0	MAX	719	MIN	3.0	CFSM	5.79	IN.	78.65	AC-FT	52840
WTR YR 1986	TOTAL	31991.8	MEAN	87.6	MAX	1490	MIN	2.1	CFSM	6.95	IN.	94.45	AC-FT	63460

LEWIS RIVER BASIN

RESERVOIRS IN LEWIS RIVER BASIN, WA

- 14217600 SWIFT RESERVOIR.--Lat 46°03'38", long 122°11'44", in NE¼SW¼ sec.28, T.7 N., R.5 E., Skamania County, Hydrologic Unit 17080002, at the intake structure near left bank on Swift Dam on Lewis River, 5.0 mi east of Cougar, and at mile 47.9. DRAINAGE AREA.--481 mi². PERIOD OF RECORD.--September 1958 to current year. GAGE.--water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Company). REMARKS.--Reservoir is formed by rock and earthfill dam; storage began Sept. 29, 1958; dam completed in December 1958. Usable capacity, 446,550 acre-ft between elevations 878 ft, lower limit for economic operation, and 1,000.5 ft, maximum operating limit. Dead storage unknown. Figures given herein represent total contents. Water is used by Pacific Power & Light Company for power development. COOPERATION.--Midnight elevations furnished by Pacific Power & Light Company and reviewed by Geological Survey. Capacity table furnished by Pacific Power & Light Company. EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 759,100 acre-ft Nov. 15, 1973, elevation, 1,000.77 ft; minimum contents since reservoir was first filled, 325,100 acre-ft May 1, 1967, elevation, 883.60 ft. EXTREMES FOR CURRENT YEAR.--Maximum contents, 751,600 acre-ft July 22, elevation, 999.13 ft; minimum contents, 489,600 acre-ft Dec. 20, elevation, 934.64 ft.
- 14218500 YALE RESERVOIR.--Lat 45°57'50", long 122°19'53", in SE¼NE¼ sec.32, T.6 N., R.4 E., Clark County, Hydrologic Unit 17080002, at left end of Yale Dam on Lewis River just upstream from intake, 500 ft upstream from powerhouse, 1.0 mi upstream from Canyon Creek, 3.2 mi southeast of Yale, and at mile 34.2. DRAINAGE AREA.--596 mi². PERIOD OF RECORD.--August 1952 to current year. GAGE.--water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Company). Prior to Feb. 1, 1954, nonrecording indicator gage at same site and datum. REMARKS.--Reservoir is formed by rock and earthfill dam; storage began July 31, 1952, dam completed in 1952. Usable capacity, 189,530 acre-ft between elevations 430 ft, lower limit for economic operation, and 490 ft, top of spillway gates. Dead storage below elevation 417 ft, 178,050 acre-ft. Figures given herein represent total contents. Water is used by Pacific Power & Light Company for power development. Capacity table furnished by Pacific Power & Light Company. EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 402,500 acre-ft May 13, 1961, elevation, 490.15 ft; minimum contents observed since reservoir was first filled, 227,600 acre-ft Feb. 22, 1957, elevation, 435.65 ft. EXTREMES FOR CURRENT YEAR.--Maximum contents, 401,600 acre-ft July 2, elevation, 489.94 ft; minimum contents, 320,500 acre-ft Oct. 22, elevation, 466.84 ft.
- 14220000 LAKE MERWIN.--Lat 45°57'23", long 122°33'13", in SW¼SW¼ sec.34, T.6 N., R.2 E., Clark County, Hydrologic Unit 17080002, on left end of dam on Lewis River at Ariel, and at mile 19.6. DRAINAGE AREA.--730 mi². PERIOD OF RECORD.--March 1931 to current year. GAGE.--water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Company). REMARKS.--Reservoir is formed by combination gravity-concrete-arch dam; some storage began March 1931; completed May 13, 1931. Usable capacity, 246,000 acre-ft between elevations 165 ft, lower limit of regulation set by Federal Energy Regulatory Commission, and 235 ft, top of spillway gates. Additional storage of 18,200 acre-ft is provided by flashboards to elevation 239.6 ft. Unused storage below elevation 165 ft, 159,000 acre-ft. Figures given herein represent total contents. Water is used by Pacific Power & Light Company for power development. Capacity table furnished by Pacific Power & Light Company. EXTREMES FOR PERIOD OF RECORD.--Maximum contents during the period 1931-52 not determined; maximum since 1953, 424,000 acre-ft Jan. 24, 1959, elevation, 239.86 ft; minimum contents observed since reservoir was first filled, 164,200 acre-ft Dec. 5, 1936, elevation, 166.7 ft. EXTREMES FOR CURRENT YEAR.--Maximum contents, 421,500 acre-ft May 22, 23, elevation, 239.28 ft; minimum contents, 350,900 acre-ft Mar. 10, elevation, 220.91 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
14217600 SWIFT RESERVOIR				14218500 YALE RESERVOIR			14220000 LAKE MERWIN		
Sept. 30.....	985.66	691,300	-	468.81	326,900	-	234.79	403,800	-
Oct. 31.....	987.85	701,000	+9,700	475.72	350,100	+23,200	234.71	403,500	-300
Nov. 30.....	960.21	585,700	-115,300	478.77	360,700	+10,600	233.36	398,200	-5,300
Dec. 31.....	937.35	499,400	-86,300	475.40	349,000	-11,700	235.68	407,300	+9,100
CAL YR 1985	-	-	-2,600	-	-	+12,300	-	-	+3,200
Jan. 31.....	978.42	660,300	+160,900	473.21	341,500	-7,500	233.66	399,400	-7,900
Feb. 28.....	989.48	708,100	+47,800	481.48	370,400	+28,900	227.66	376,300	-23,100
Mar. 31.....	986.98	697,100	-11,000	479.24	362,400	-8,000	233.02	396,900	+20,600
Apr. 30.....	989.46	708,000	+10,900	488.97	397,900	+35,500	236.67	411,200	+14,300
May 31.....	994.80	732,000	+24,000	487.88	393,800	-4,100	237.85	415,800	+4,600
June 30.....	993.70	727,100	-4,900	489.72	400,700	+6,900	238.05	416,600	+800
July 31.....	996.46	739,500	+12,400	485.46	384,800	-15,900	237.98	416,400	-200
Aug. 31.....	991.95	719,200	-20,300	486.64	389,200	+4,400	236.27	409,600	-6,800
Sept. 30.....	998.05	746,700	+27,500	470.42	332,200	-57,000	235.41	406,200	-3,400
WTR YR 1986	-	-	+55,400	-	-	+5,300	-	-	+2,400

a - From Pacific Power & Light Company.

14220500 LEWIS RIVER AT ARIEL, WA
(National stream quality accounting network station)

LOCATION.--Lat 45°57'07", long 122°33'46", in NW¼NE¼ sec.4, T.5 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 0.4 mi southeast of Ariel, 0.5 mi downstream from Ariel Dam and powerplant, 3.3 mi upstream from Cedar Creek, and at mile 19.0.

DRAINAGE AREA.--731 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" water years 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi downstream; low discharges not equivalent due to local inflow.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30(M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Power and Light Co.). July to November 1909, nonrecording gage at site 4 mi upstream at different datum. July 27 to Oct. 29, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi downstream at datums 3.90 ft and 0.90 ft higher respectively, than present datum.

REMARKS.--No estimated daily discharges. Water-discharge records excellent except for flows above 10,600 ft³/s, which are good. No diversion upstream from station. Flow regulated by Swift and Yale Reservoirs, and Lake Merwin (stations 14217600, 14218500, 14220000).

AVERAGE DISCHARGE.--63 years (water years 1924-86), 4,849 ft³/s, 90.08 in/yr, 3,513,000 acre-ft/yr, adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft³/s Dec. 22, 1933, gage height, 35.0 ft, from floodmarks, from rating curve extended above 56,000 ft³/s on basis of computation of peak flow over dam; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Ariel Dam); minimum daily discharge, 1 ft³/s July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,700 ft³/s Feb. 24, gage height, 13.06 ft; minimum discharge, 769 ft³/s Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1230	4390	6140	1660	8090	10200	5590	3990	2090	1390	1160	1230
2	1230	4390	8210	1670	6390	8070	5030	3990	2090	1380	1160	1240
3	1510	4390	7830	1660	8120	8000	5020	3990	2090	1380	1150	1240
4	2840	5320	5630	1650	6330	7010	4290	3990	2090	1370	1140	1230
5	1230	7630	3890	1670	6350	6140	3370	4690	2100	1370	1150	1230
6	1240	9540	5620	1660	6330	5910	3360	5700	2100	1340	1140	1240
7	2520	6880	5620	1670	8340	7280	3230	5720	2090	1280	1130	1240
8	2380	11900	3440	1670	8730	8960	3000	5190	2100	1260	1130	1240
9	1210	11900	4820	2460	7440	10700	2680	4600	2100	1260	1140	1240
10	1220	10200	6380	5310	7430	8790	2390	4580	2100	1260	1140	1240
11	1240	9120	8270	3160	3280	8720	2340	4570	2100	1260	1140	1240
12	1230	9170	6320	3100	5410	8900	2300	4530	2130	1260	1140	1240
13	1230	8510	8050	3090	5620	8800	2320	4600	2100	1240	1150	1250
14	1230	5410	6200	3110	7610	8430	2320	4600	2110	1240	1150	1240
15	1290	6280	2630	4830	8370	7960	2330	4570	2020	1240	1150	1250
16	2880	7620	5670	5420	6330	6710	2350	4230	1910	1240	1150	1240
17	2260	7780	8110	6010	7440	5890	2370	3300	1890	1240	1140	1250
18	2880	8400	8540	6410	8560	5530	2390	3310	1830	1240	1150	1140
19	2890	8580	9620	9230	7360	5050	2360	3580	1820	1240	1140	1250
20	2890	9500	8350	9390	8270	3680	2360	3960	1800	1240	1150	1240
21	2880	4240	1640	9440	8500	3440	2300	3970	1800	1230	1150	1250
22	2880	8330	1630	8400	5600	3780	2280	3970	1770	1230	1150	1250
23	2890	8480	1640	9410	9600	3800	2280	3730	1730	1230	1160	2220
24	2200	8560	1630	8890	26100	6120	2290	3340	1720	1230	1160	3030
25	4580	10200	1630	6370	19200	7930	2280	3340	1710	1230	1180	3060
26	6050	11400	1650	6340	13800	6900	2290	3340	1710	1230	1200	3050
27	6100	6740	1650	8480	11500	6100	2260	2810	1710	1230	1210	3050
28	4410	6200	1670	7800	11500	6070	3020	2220	1710	1230	1210	3050
29	4280	6170	1670	8410	---	3950	3990	2070	1710	1230	1230	3040
30	3850	6150	1660	8470	---	4460	3990	2070	1710	1210	1220	3050
31	2880	---	1670	8140	---	6070	---	2090	---	1190	1230	---
TOTAL	79630	233380	147480	164980	247600	209350	88380	120640	57940	39200	36000	50760
MEAN	2569	7779	4757	5322	8843	6753	2946	3892	1931	1265	1161	1692
MAX	6100	11900	9620	9440	26100	10700	5590	5720	2130	1390	1230	3060
MIN	1210	4240	1630	1650	3280	3440	2260	2070	1710	1190	1130	1140
AC-FT	157900	462900	292500	327200	491100	415200	175300	239300	114900	77750	71410	100700
MEAN†	3096	5932	3311	7688	9808	6778	3966	4292	1978	1203	792	1140
CFSM†	4.24	8.12	4.53	10.5	13.4	9.27	5.42	5.87	2.71	1.65	1.08	1.56
IN.†	4.88	9.06	5.22	12.13	13.98	10.69	6.05	6.77	3.02	1.90	1.25	1.74
AC-FT†	190400	353000	203600	472700	544700	416800	236000	263900	117700	73990	48700	67810

CAL YR 1985 TOTAL 1321740 MEAN 3621 MAX 17900 MIN 1150 AC-FT 2622000 MEAN† 3640 CFSM† 4.98 IN.† 67.60 AC-FT† 2635000
WTR YR 1986 TOTAL 1475340 MEAN 4042 MAX 26100 MIN 1130 AC-FT 2926000 MEAN† 4129 CFSM† 5.65 IN.† 76.69 AC-FT† 2989000

† Adjusted for change in contents of Lake Merwin, Swift Reservoir, and Yale Reservoir.

LEWIS RIVER BASIN

14220500 LEWIS RIVER AT ARIEL, WA--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1959 to June 1960, April 1979 to current year. Additional data from April to August 1980 are published in U.S. Geological Survey Open-File Report 81-1007.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1950 to September 1963.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB MG/L AS CAC03
OCT 29...	1200	3460	45	7.8	13.0	1.7	10.6	100	K1	K6	16	0
MAR 05...	1300	6320	44	8.0*	4.5	3.4	13.2	101	K1	<1	16	0
MAY 20...	1210	3960	44	7.2	8.5	1.9	11.4	97	K1	K2	14	0
SEP 03...	1100	1230	46	6.8	11.5	1.3	9.9	90	K2	K4	15	0
DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HC03)	CAR- BONATE IT-FLD (MG/L AS C03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 29...	4.4	1.1	3.1	29	0.4	0.5	16	20	0	2.6	1.9	<0.1
MAR 05...	4.4	1.1	3.1	30	0.4	0.3	16	20	0	2.9	1.9	<0.1
MAY 20...	3.9	0.93	2.8	30	0.3	0.5	15	19	0	--	1.6	<0.1
SEP 03...	4.2	1.0	2.9	29	0.3	0.6	17	20	0	2.8	1.9	<0.1
DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
OCT 29...	14	35	38	0.05	457	<0.01	<0.10	0.04	<0.2	<0.01	<0.01	0.02
MAR 05...	14	34	38	0.05	542	<0.01	0.11	0.02	0.2	0.01	0.02	<0.01
MAY 20...	14	40	--	--	--	<0.01	<0.10	0.03	0.2	<0.01	<0.01	<0.01
SEP 03...	13	46	36	0.06	153	<0.01	<0.10	<0.01	<0.2	<0.01	<0.01	<0.01

* - Laboratory value.

K - Results based on colony count outside the acceptable range (non-ideal colony count).

LEWIS RIVER BASIN

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14220500 LEWIS RIVER AT ARIEL, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 29...	20	<1	<2	<0.5	1	<1	<3	4	8	<1	<4
MAR 05...	10	<1	3	0.6	2	2	<3	1	13	<1	<4
MAY 20...	--	--	--	--	--	--	--	--	--	--	--
SEP 03...	<10	<1	6	<0.5	<1	<1	<3	1	8	<5	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
OCT 29...	14	<0.1	<10	3	<1	<1	19	<6	11	4	37
MAR 05...	<1	<0.1	<10	1	<1	<1	21	<6	4	5	85
MAY 20...	--	--	--	--	--	--	--	--	--	1	11
SEP 03...	2	0.2	<10	<1	<1	<1	19	<6	12	11	37

LEWIS RIVER BASIN

14222500 EAST FORK LEWIS RIVER NEAR HEISSON, WA

LOCATION.--Lat 45°40'13", long 122°27'54", in NE¼NW¼ sec.17, T.4 N., R.3 E., Clark County, Hydrologic Unit 17080002, on right bank 60 ft downstream from Basket Creek, 1.5 mi northeast of Heisson, 3.4 mi southwest of Yacolt, and at mile 20.2.

DRAINAGE AREA.--125 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 366.8 ft above National Geodetic Vertical Datum of 1929 (from river-profile survey).

REMARKS.--Estimated daily discharges: Nov. 24-28, Dec. 23 to Jan. 1. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--57 years, 751 ft³/s, 81.59 in/yr, 544,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Dec. 2, 1977, gage height, 12.95 ft; minimum discharge, 29 ft³/s Nov. 3, 1935, Sept. 27, 28, 1967; minimum gage height, 0.04 ft Nov. 3, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	1800	*15,200	*11.60	No other peak greater than base discharge.			
Minimum discharge, 38 ft ³ /s Sept. 7, gage height, 0.18 ft.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	86	583	338	550	1070	1240	501	821	254	102	70	52		
2	86	831	338	536	1010	1020	461	820	240	100	66	50		
3	88	978	356	1090	1130	872	428	747	227	101	63	49		
4	82	1170	434	865	1330	772	422	704	222	139	62	46		
5	78	1330	492	913	1410	696	392	1030	218	111	62	44		
6	79	2670	1220	1090	1150	644	370	948	212	98	62	41		
7	91	4190	1930	911	947	1050	353	816	210	91	58	39		
8	83	2910	1680	885	801	1030	343	708	197	91	57	44		
9	77	2100	1210	1000	698	999	330	647	185	88	56	64		
10	76	1550	957	1070	618	986	313	671	174	150	55	54		
11	124	1150	795	1050	557	1110	326	734	163	203	58	54		
12	121	904	684	871	517	1140	382	758	156	136	60	48		
13	107	742	601	735	496	1110	367	1150	148	114	58	45		
14	94	634	542	643	476	1160	341	1050	149	104	56	47		
15	97	820	498	630	663	976	361	838	153	101	54	46		
16	120	1500	465	885	2280	807	491	696	144	142	52	49		
17	120	1440	451	1050	1520	686	842	605	152	168	51	52		
18	104	1110	472	1970	1120	637	853	546	185	128	50	87		
19	185	970	478	2430	904	591	695	506	228	112	50	58		
20	387	867	453	1750	781	552	602	638	156	102	50	55		
21	351	746	421	1290	869	594	562	544	142	95	47	52		
22	799	649	399	1250	1730	536	520	488	131	92	47	48		
23	646	563	430	2360	9340	646	452	443	124	96	47	160		
24	705	505	450	1960	6870	1120	413	410	117	94	46	273		
25	1790	460	470	1430	3830	903	464	388	113	89	46	353		
26	1060	420	460	1110	2670	790	555	371	109	84	45	478		
27	755	390	390	966	1970	689	1150	348	105	83	44	247		
28	1160	360	350	853	1540	620	1450	324	106	83	45	263		
29	836	342	320	826	---	558	1140	306	136	77	48	404		
30	684	338	300	1130	---	591	935	290	114	75	56	358		
31	591	---	290	1100	---	508	---	272	---	72	63	---		
TOTAL	11662	33222	18674	35199	48297	25633	16814	19617	4970	3321	1684	3660		
MEAN	376	1107	602	1135	1725	827	560	633	166	107	54.3	122		
MAX	1790	4190	1930	2430	9340	1240	1450	1150	254	203	70	478		
MIN	76	338	290	536	476	508	313	272	105	72	44	39		
CFSM	3.01	8.86	4.82	9.08	13.8	6.62	4.48	5.06	1.33	.86	.43	.98		
IN.	3.47	9.89	5.56	10.48	14.37	7.63	5.00	5.84	1.48	.99	.50	1.09		
AC-FT	23130	65900	37040	69820	95800	50840	33350	38910	9860	6590	3340	7260		
CAL YR 1985	TOTAL	190814	MEAN	523	MAX	4190	MIN	52	CFSM	4.18	IN.	56.79	AC-FT	378500
WTR YR 1986	TOTAL	222753	MEAN	610	MAX	9340	MIN	39	CFSM	4.88	IN.	66.29	AC-FT	441800

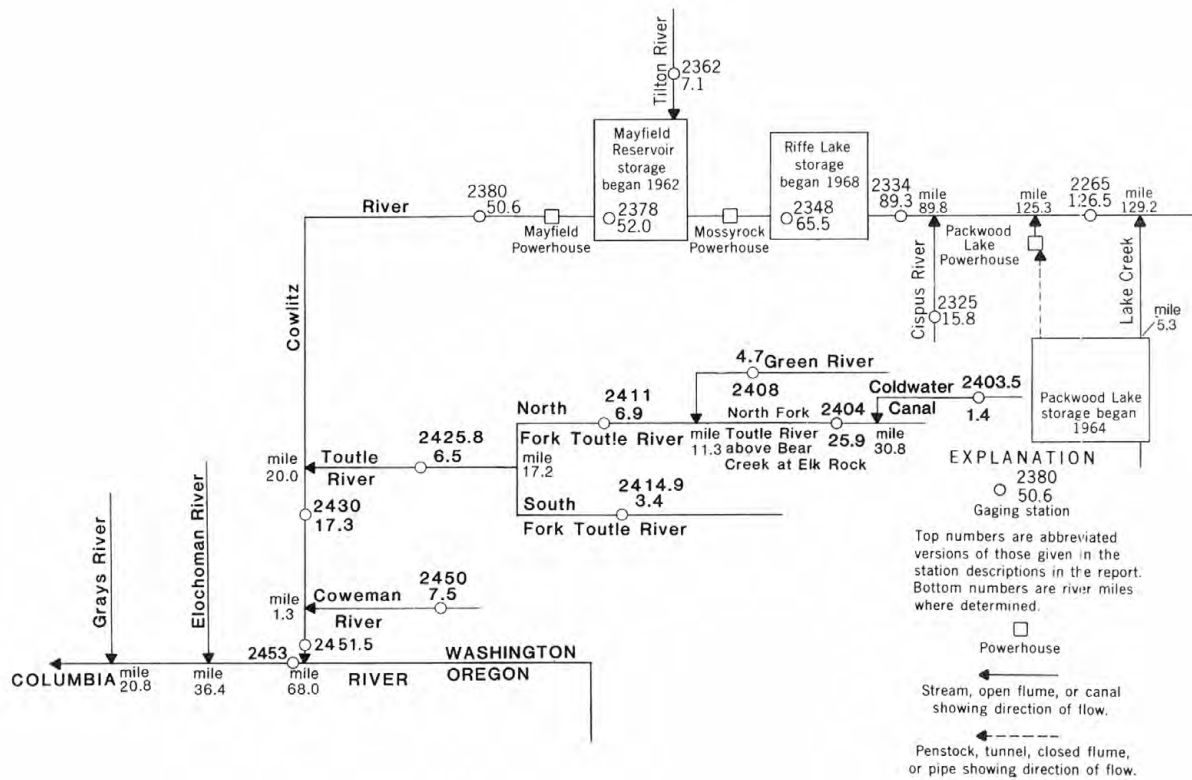


Figure 33.--Gaging stations in Cowlitz River basin and downstream to mouth of Columbia River.

14226500 COWLITZ RIVER AT PACKWOOD, WA

LOCATION.--Lat 46°36'47", long 121°40'41", in SE¼SE¼ sec.16, T.13 N., R.9 E., Lewis County, Hydrologic Unit 17080004, on right bank on upstream side of Forest Service bridge, 0.6 mi northwest of Packwood, 0.8 mi upstream from Skate Creek, and at mile 126.5.

DRAINAGE AREA.--287 mi².

PERIOD OF RECORD.--July 1911 to December 1919, September 1929 to current year. Published as "at Lewis" 1911-19.

REVISED RECORDS.--WSP 884: 1938. WSP 1348: 1916-18(M), 1934. WSP 1638: 1947(P).

GAGE.--Water-stage recorder. Datum of gage is 1,048.0 ft above National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). July 1, 1911, to Dec. 31, 1919, nonrecording gages at site about 1 mi upstream at different datums. Sept. 30, 1929, to Jan. 1, 1930, nonrecording gage at present site and datum. Feb. 8, 1978, to Jan. 5, 1981, on left bank downstream side of bridge at present datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 2. Records good except those discharges below 600 ft³/s, which are fair. Minor regulation by Packwood Lake beginning June 1964. Small diversions for domestic use. Water temperatures November 1970 to April 1971. U.S. Geological Survey satellite telemeter at station. Water is diverted from Packwood Lake for power generation and is discharged into Cowlitz River about 1 mi downstream from this station. Monthly mean diversion in cubic feet per second for the current water year, as furnished by the Washington Power Supply System, is as follows:

October.....	49.4	January.....	67.4	April.....	59.5	July.....	66.0
November.....	135	February.....	91.9	May.....	106	August.....	41.8
December.....	47.5	March.....	99.9	June.....	160	September.....	69.9

AVERAGE DISCHARGE.--65 years, (water years 1912-19, 1930-86), 1,612 ft³/s, 1,168,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s Dec. 21, 1933, gage height, 13.0 ft; maximum gage height, 13.73 ft Dec. 2, 1977; minimum discharge, 130 ft³/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 25	0515	8,930	8.36	Feb. 23	2300	*18,100	*10.62
Jan. 19	0400	10,800	8.92				

Minimum discharge, 262 ft³/s Oct. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	301	2380	410	576	1880	2940	1470	889	5070	922	611	493
2	303	5270	400	533	1780	2530	1300	918	4140	1010	643	514
3	315	5520	462	524	1570	2190	1190	1020	3200	906	657	554
4	318	5140	456	487	1410	2010	1110	1050	2770	777	645	571
5	329	3360	456	518	1310	1930	1040	1030	2460	683	620	544
6	330	3110	520	685	1160	1830	1020	1080	2130	672	617	502
7	313	3140	566	607	1040	3250	1120	1100	1720	723	632	474
8	281	2400	561	683	946	3640	1300	1160	1540	769	645	428
9	265	1860	530	844	877	2690	1310	1230	1480	766	646	376
10	262	1490	503	1160	816	2160	1260	1260	1750	819	627	368
11	352	1220	485	1330	778	1880	1200	1200	2000	986	600	340
12	335	1050	469	1190	718	1670	1110	1250	1960	829	565	353
13	299	939	457	1050	673	1490	1010	2600	1820	713	593	333
14	415	834	456	968	661	1360	934	2210	1770	688	610	305
15	595	878	456	893	732	1250	909	1760	1450	648	604	295
16	502	1080	456	918	1060	1150	895	1500	1310	648	579	293
17	438	955	456	1110	1020	1070	885	1440	1270	660	539	281
18	381	843	456	3770	934	1030	849	1790	1360	621	547	305
19	454	790	456	8160	841	1020	792	2320	1180	627	565	307
20	786	737	469	4430	788	1040	817	2930	1040	681	556	288
21	581	683	487	2950	766	1180	1150	2250	1020	729	557	277
22	599	624	507	2280	915	1140	1650	1700	1130	751	556	273
23	885	581	565	2000	7410	1120	1320	1420	1310	704	530	542
24	3140	552	641	1690	12500	1320	1140	1460	1370	656	511	789
25	6310	530	720	1430	9240	1240	1060	2540	1290	649	528	461
26	3650	510	744	1260	6650	1300	965	4110	1160	636	574	377
27	3470	485	720	1260	4270	1370	1030	4100	1050	593	605	346
28	2670	465	677	1260	3430	1520	1060	3960	1080	585	611	363
29	1660	445	635	1160	---	1540	971	4450	1030	558	552	682
30	1250	425	594	1490	---	1910	914	5300	912	558	500	594
31	984	---	557	1690	---	1700	---	5240	---	571	483	---
TOTAL	32773	48296	16327	48906	66175	53470	32781	66267	52772	22138	18108	12628
MEAN	1057	1610	527	1578	2363	1725	1093	2138	1759	714	584	421
MAX	6310	5520	744	8160	12500	3640	1650	5300	5070	1010	657	789
MIN	262	425	400	487	661	1020	792	889	912	558	483	273
AC-FT	65010	95800	32380	97010	131300	106100	65020	131400	104700	43910	35920	25050
CAL YR 1985	TOTAL	487067	MEAN	1334	MAX	13400	MIN	262	AC-FT	966100		
WTR YR 1986	TOTAL	470641	MEAN	1289	MAX	12500	MIN	262	AC-FT	933500		

14232500 CISPUS RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°26'50", long 121°51'46", in NW¼ sec.18, T.11 N., R.8 E., (unsurveyed), Lewis county, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 60 ft upstream from bridge to Tower Rock ranger station, 4.1 mi downstream from North Fork, 8.0 mi southeast of Randle, and at mile 15.8.

DRAINAGE AREA.--321 mi².

PERIOD OF RECORD.--October 1910 to February 1912, September 1929 to current year.

REVISED RECORDS.--WSP 794: 1934. WSP 1288: Drainage area. WSP 1935: 1950-53, 1954(M), 1955-56, 1957(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 1,221.60 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 1, 1912, nonrecording gage at site 1.0 mi upstream at different datum. Sept. 28, 1929, to Nov. 26, 1949, Oct. 1-24, 1950, water-stage recorder at site 450 ft upstream at datum 0.26 ft higher.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 2. Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station. Water temperatures May 1950 to September 1972.

AVERAGE DISCHARGE.--58 years (water years 1911, 1930-86), 1,339 ft³/s, 56.65 in/yr, 970,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft³/s Jan. 15, 1974, gage height, 12.58 ft, from rating curve extended above 8,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 183 ft³/s Dec. 30, 1936; minimum gage height, 2.55 ft Oct. 25, 1942, site and datum then in use.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0415	4,900	7.71	Feb. 23	2400	*9,120	*9.46
Minimum discharge, 355 ft ³ /s Sept. 17.							

REVISIONS.--Revised maximum discharges for water year 1985; daily discharges, in cubic feet per second, for high-water periods; and monthly and yearly discharges are given below. These figures supersede those published in the report for 1985.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 7	1315	*7,900	*9.03	No other peak greater than base discharge.			
May 17, 1985	2820	May 24	3500	May 31	2150	June 7	6650
18	3320	25	3310	June 1	2220	8	5150
19	3400	26	3070	2	2150	9	3610
20	3170	27	2840	3	2040	10	2960
21	2860	28	2610	4	2280	11	2640
22	3040	29	2450	5	2280	12	2530
23	3170	30	2310	6	2490	13	2430
MONTH	TOTAL	MEAN	MAX	MIN	CFSM	IN	AC-FT
May 1985	72060	2325	3500	1320	7.24	8.35	142900
June 1985	64325	2144	6450	924	6.68	7.45	127600
WTR YR 1985	373470	1023	6450	378	3.19	43.28	740800

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	395	926	455	677	1670	2980	1690	972	2800	637	462	401		
2	396	1330	440	649	1690	2640	1550	998	2510	661	465	402		
3	404	1430	593	650	1590	2370	1420	1050	2130	636	470	402		
4	399	1750	577	620	1460	2190	1340	1080	1890	622	462	399		
5	398	1590	583	686	1370	2080	1250	1110	1700	577	458	390		
6	399	1780	651	836	1250	2000	1210	1160	1550	552	459	386		
7	403	2150	739	750	1150	3030	1240	1150	1410	551	458	382		
8	398	1910	715	833	1060	3580	1340	1170	1270	548	460	383		
9	393	1610	664	1010	1010	3010	1350	1220	1180	549	457	388		
10	395	1380	634	1190	961	2590	1350	1300	1170	559	454	375		
11	412	1180	606	1300	918	2410	1300	1270	1190	623	443	371		
12	431	1050	602	1210	875	2230	1240	1250	1160	572	438	365		
13	427	973	588	1130	842	2050	1160	1630	1090	550	440	361		
14	433	907	575	1090	825	1870	1070	1680	1060	534	442	360		
15	492	904	567	1040	934	1700	1050	1580	956	524	438	360		
16	491	967	561	1120	1550	1550	1030	1490	958	527	426	362		
17	476	906	555	1290	1280	1420	1010	1470	974	547	416	362		
18	447	844	560	2650	1150	1350	977	1630	963	516	417	385		
19	456	813	593	4380	1050	1310	927	1820	882	507	418	376		
20	616	788	614	3040	990	1290	938	2110	797	513	416	376		
21	555	749	622	2290	968	1390	1100	1960	766	519	411	369		
22	609	708	638	1920	1040	1350	1440	1720	765	520	411	363		
23	762	647	678	1730	4230	1390	1320	1530	786	513	404	377		
24	983	615	730	1520	7910	1810	1210	1480	809	501	402	459		
25	1950	590	757	1360	6120	1680	1150	1790	783	498	409	418		
26	1420	575	757	1250	5030	1690	1070	2290	741	488	408	430		
27	1310	540	739	1210	3980	1740	1110	2420	705	476	418	412		
28	1450	515	715	1180	3390	1820	1140	2450	702	471	429	434		
29	1170	495	690	1130	---	1800	1060	2560	716	470	433	439		
30	1030	475	664	1250	---	1930	1000	2830	666	457	419	447		
31	923	---	646	1400	---	1830	---	2880	---	457	401	---		
TOTAL	20823	31097	19508	42391	56293	62080	36042	51050	35079	16675	13444	11734		
MEAN	672	1037	629	1367	2010	2003	1201	1647	1169	538	434	391		
MAX	1950	2150	757	4380	7910	3580	1690	2880	2800	661	470	459		
MIN	393	475	440	620	825	1290	927	972	666	457	401	360		
CFSM	2.09	3.23	1.96	4.26	6.26	6.24	3.74	5.13	3.64	1.68	1.35	1.22		
IN.	2.41	3.60	2.26	4.91	6.52	7.19	4.18	5.92	4.07	1.93	1.56	1.36		
AC-FT	41300	61680	38690	84080	111700	123100	71490	101300	69580	33070	26670	23270		
CAL YR 1985	TOTAL	370541	MEAN	1015	MAX	6450	MIN	378	CFSM	3.16	IN.	42.94	AC-FT	735000
WTR YR 1986	TOTAL	396216	MEAN	1086	MAX	7910	MIN	360	CFSM	3.38	IN.	45.92	AC-FT	785900

COWLITZ RIVER BASIN

14233400 COWLITZ RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°28'13", long 122°05'51", in NE¼ sec.6, T.11 N., R.6 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.5 mi downstream from Cispus River, 8.1 mi southwest of Randle, and at mile 89.3.

DRAINAGE AREA.--1,030 mi².

PERIOD OF RECORD.--October 1947 to current year. Prior to October 1967, published as "near Kosmos." Records published for both sites October 1967 to September 1968. Monthly discharge only for some period published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 799.42 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1948, nonrecording gage at site 0.9 mi downstream at different datum. Dec. 3, 1948, to September 1967, at site 1.4 mi downstream at datum 40.13 ft lower (levels by city of Tacoma).

REMARKS.--Estimated daily discharges: Nov. 25-30. Records excellent except for estimated daily discharges, which are good. Minor regulation by Packwood Lake (14225400) beginning June 1964. Small diversions for domestic use and irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Water temperatures November 1952 to August 1968, April 1969 to September 1982. Chemical analyses July 1959 to September 1970, December 1973 to September 1985.

AVERAGE DISCHARGE.--39 years, 4,929 ft³/s, 64.99 in/yr, 3,571,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,300 ft³/s Dec. 3, 1977, gage height, 26.54 ft; minimum discharge, 518 ft³/s Nov. 29, 1952, gage height, 2.34 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	1145	18,700	14.50	Feb. 24	1745	*33,800	*18.17
Minimum discharge, 860 ft ³ /s Oct. 10, 11, gage height, 6.00 ft.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1010	4370	1840	2430	5710	11600	5680	3540	10800	2450	1470	1140		
2	1020	9140	1780	2380	5910	10000	5180	3550	9710	2500	1510	1130		
3	1030	9730	2170	2420	5540	8770	4730	3750	8060	2510	1560	1160		
4	1030	11100	2010	2280	5100	7840	4430	3890	7070	2350	1560	1200		
5	1030	9500	2000	2300	4840	7360	4170	3950	6410	2120	1570	1240		
6	1040	9220	2270	2990	4420	6930	3960	4150	5910	1980	1550	1170		
7	1010	10400	2700	2830	4060	8660	3950	4200	5230	1970	1550	1080		
8	944	9360	2770	2900	3750	12100	4260	4290	4770	2000	1570	1080		
9	887	7780	2570	3470	3530	10300	4400	4420	4420	2020	1550	1050		
10	863	6480	2460	4280	3320	8690	4380	4670	4440	2030	1530	1010		
11	900	5440	2330	4850	3130	7830	4240	4660	4710	2430	1480	1000		
12	1090	4680	2250	4740	2950	7160	4120	4640	4740	2340	1430	991		
13	1010	4220	2150	4400	2820	6530	3840	6730	4480	2080	1420	973		
14	968	3840	2080	4160	2730	6030	3560	8020	4350	1960	1460	939		
15	1370	3700	2020	3930	2930	5500	3430	6900	4030	1860	1390	913		
16	1410	4110	1980	3950	4730	5030	3390	6070	3630	1820	1340	933		
17	1370	3930	1950	4570	4470	4670	3340	5640	3640	1970	1280	937		
18	1210	3630	1970	6980	4000	4440	3280	5820	3680	1900	1240	959		
19	1200	3380	2060	16800	3660	4390	3130	6620	3600	1770	1260	976		
20	1830	3240	2150	12300	3440	4290	3100	7980	3150	1790	1250	985		
21	1950	3040	2220	8850	3290	4430	3370	7660	2950	1860	1240	957		
22	1910	2870	2280	7190	3620	4540	4540	6510	2970	1920	1330	927		
23	2740	2630	2390	6600	12200	4410	4570	5580	3130	1910	1310	955		
24	3760	2510	2590	5960	32900	5390	4070	5110	3330	1790	1190	1780		
25	12300	2400	2750	5260	30800	5290	3870	5930	3290	1760	1170	1510		
26	8910	2300	2850	4780	24600	5340	3640	8390	3050	1710	1230	1300		
27	8350	2200	2860	4500	17200	5480	3730	9500	2800	1640	1300	1220		
28	7510	2100	2760	4450	13500	5790	4150	9240	2730	1570	1350	1280		
29	5900	2010	2630	4240	---	5810	3910	9390	2770	1510	1330	1440		
30	4980	1920	2490	4510	---	6180	3690	10600	2580	1460	1250	1930		
31	4370	---	2370	5210	---	6240	---	11000	---	1450	1150	---		
TOTAL	84902	151230	71700	156510	219150	207020	120110	192400	136430	60430	42820	34165		
MEAN	2739	5041	2313	5049	7827	6678	4004	6206	4548	1949	1381	1139		
MAX	12300	11100	2860	16800	32900	12100	5680	11000	10800	2510	1570	1930		
MIN	863	1920	1780	2280	2730	4290	3100	3540	2580	1450	1150	913		
CFSM	2.66	4.89	2.25	4.90	7.60	6.48	3.89	6.03	4.42	1.89	1.34	1.11		
IN.	3.07	5.46	2.59	5.65	7.91	7.48	4.34	6.95	4.93	2.18	1.55	1.23		
AC-FT	168400	300000	142200	310400	434700	410600	238200	381600	270600	119900	84930	67770		
CAL YR 1985	TOTAL	1419705	MEAN	3890	MAX	23200	MIN	863	CFSM	3.78	IN.	51.27	AC-FT	2816000
WTR YR 1986	TOTAL	1476867	MEAN	4046	MAX	32900	MIN	863	CFSM	3.93	IN.	53.34	AC-FT	2929000

14234800 RIFFE LAKE NEAR MOSSYROCK, WA

LOCATION.--Lat 46°32'07", long 122°25'25", in SE¼SW¼ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, in emergency generator room on top of Mossyrock Dam on Cowlitz River, 2.8 mi east of Mossyrock, and at mile 65.5.

DRAINAGE AREA.--1,154 mi².

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

REVISED RECORDS.--WDR WA-74-1: 1973.

GAGE.--Water-stage recorder; nonrecording gage prior to July 25, 1968. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REMARKS.--Reservoir is formed by concrete arch dam, completed in April 1968; storage began Apr. 3, 1968. Usable capacity, 1,297,400 acre-ft between elevations 600 ft, minimum operating level, and 770 ft, normal operating pool. Unused storage below elevation 600 ft, 288,900 acre-ft. Crest of spillway is at elevation 728.5 ft and top of taintor gates are at elevation 778.5 ft. Water used by city of Tacoma for power development. Elevation records collected in cooperation with city of Tacoma. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,686,300 acre-ft July 31, 1972, elevation, 778.63 ft; minimum contents since normal low operating level was attained, 658,503 acre-ft Mar. 17, 1977, elevation, 666.88 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,651,400 acre-ft June 7, elevation, 775.66 ft; minimum contents, 1,032,152 acre-ft Oct. 22, elevation, 714.10 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	722.75	1,109,703	--
Oct. 31.....	725.56	1,135,456	+25,753
Nov. 30.....	734.90	1,223,056	+87,600
Dec. 31.....	719.45	1,079,813	-143,243
CAL YR 1985.....	--	--	-14,717
Jan. 31.....	730.01	1,176,814	+97,001
Feb. 28.....	754.60	1,419,321	+242,507
Mar. 31.....	760.55	1,481,772	+62,881
Apr. 30.....	759.32	1,469,042	-13,160
May 31.....	773.70	1,628,638	+159,596
June 30.....	772.54	1,615,272	-13,366
July 31.....	770.34	1,590,142	-25,130
Aug. 31.....	765.44	1,535,394	-54,748
Sept. 30.....	757.07	1,445,192	-90,202
WTR YR 1986.....	--	--	+335,489

COWLITZ RIVER BASIN

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA

LOCATION.--Lat 46°35'44", long 122°27'30", in NE¼SW¼ sec.20, T.13 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.9 mi upstream from Bear Canyon Creek, 3.5 mi southeast of Cinebar, and at mile 7.1.

DRAINAGE AREA.--141 mi².

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

REVISED RECORDS.--WDR WA-72-1: 1957(M), 1959(P), 1960(P), 1961(M), 1963(P), 1964(M), 1965, 1967(P), 1971(P).

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

REMARKS.--Estimated daily discharges: June 18, 19. Water-discharge records good. Several small diversions for municipal and domestic use upstream from station. No regulation. U.S. Geological Survey satellite telemeter at station. Water temperatures May 1965 to September 1982.

AVERAGE DISCHARGE.--30 years, 839 ft³/s, 80.81 in/yr, 607,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s Dec. 2, 1977, gage height, 17.00 ft, from rating curve extended above 10,500 ft³/s on basis of slope-area measurement at gage height of 14.79 ft; minimum discharge, 52 ft³/s Sept. 27-29, 1967; minimum gage height, 1.96 ft Aug. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	2115	*16,600	*14.29	No other peak greater than base discharge.			
Minimum discharge, 61 ft ³ /s Sept. 6-8, gage height, 2.06 ft.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	117	1930	356	533	1170	1210	655	871	325	140	101	72		
2	118	3660	352	516	1010	1030	616	973	308	140	99	71		
3	117	2920	521	649	939	899	562	998	292	138	96	70		
4	111	3240	549	611	960	808	535	929	284	155	94	67		
5	107	2820	634	780	1080	737	500	933	273	144	92	65		
6	106	3950	1300	1750	927	679	464	924	266	134	90	63		
7	112	3440	1560	1120	816	812	437	871	265	128	88	61		
8	105	2410	1380	1080	726	1430	417	816	253	124	86	69		
9	100	1820	1070	1280	660	1190	399	773	241	120	84	84		
10	98	1440	883	1410	606	1030	379	769	229	158	83	82		
11	139	1160	763	1380	559	1070	394	833	217	251	83	73		
12	197	972	680	1100	519	1160	463	1030	208	193	84	69		
13	163	848	618	927	501	1050	439	2440	200	165	83	67		
14	148	747	563	821	491	1010	402	1780	200	151	80	67		
15	184	844	523	762	824	884	430	1300	201	146	78	67		
16	232	1330	497	819	2000	796	525	1030	192	166	77	75		
17	226	1120	484	938	1350	733	711	880	194	231	75	75		
18	196	941	508	2950	1040	746	773	781	215	192	74	93		
19	225	836	540	3540	863	730	662	718	230	169	73	85		
20	551	759	550	1850	754	676	599	763	200	154	73	76		
21	557	693	544	1320	718	696	558	697	191	144	72	72		
22	777	638	529	1280	1140	694	523	650	180	136	70	69		
23	1070	574	527	2450	8870	770	477	591	170	135	70	171		
24	2270	537	534	2060	8320	1540	443	544	162	134	69	395		
25	4420	509	527	1500	3840	1330	550	505	158	128	69	224		
26	3470	478	514	1210	2590	1340	661	473	153	123	67	252		
27	3050	455	460	1080	1860	1140	1020	449	149	120	67	215		
28	2240	426	443	979	1470	969	1220	418	146	116	67	403		
29	1520	402	411	907	---	846	1070	389	154	113	70	581		
30	1240	381	379	1380	---	787	945	367	148	109	75	491		
31	1070	---	358	1360	---	701	---	345	---	105	75	---		
TOTAL	25036	42280	19557	40342	46603	29493	17829	25840	6404	4562	2464	4324		
MEAN	808	1409	631	1301	1664	951	594	834	213	147	79.5	144		
MAX	4420	3950	1560	3540	8870	1540	1220	2440	325	251	101	581		
MIN	98	381	352	516	491	676	379	345	146	105	67	61		
CFSM	5.73	9.99	4.48	9.23	11.8	6.74	4.21	5.91	1.51	1.04	.56	1.02		
IN.	6.61	11.15	5.16	10.64	12.30	7.78	4.70	6.82	1.69	1.20	.65	1.14		
AC-FT	49660	83860	38790	80020	92440	58500	35360	51250	12700	9050	4890	8580		
CAL YR 1985	TOTAL	228381	MEAN	626	MAX	4420	MIN	66	CFSM	4.44	IN.	60.25	AC-FT	453000
WTR YR 1986	TOTAL	264734	MEAN	725	MAX	8870	MIN	61	CFSM	5.14	IN.	69.84	AC-FT	525100

COWLITZ RIVER BASIN

441

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'13", long 122°35'11", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005, on right bank at Mayfield Dam on Cowlitz River, 0.3 mi downstream from Silver Creek, 4 mi south of town of Silver Creek, and at mile 52.0.

DRAINAGE AREA.--1,392 mi².

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam, completed April 1962; storage began Apr. 14, 1962. Usable capacity, 21,380 acre-ft between elevation 415 ft, lower limit of operation, and 425 ft, top of taintor gates. Dead storage below elevation 415 ft, 112,340 acre-ft. Crest of spillway is at elevation 385 ft. Water is used by city of Tacoma for power development. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,850 acre-ft Dec. 9, 1971, elevation, 425.50 ft; minimum contents since normal operating level was attained, 112,830 acre-ft June 4, 1969, elevation, 415.24 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,963 acre-ft Feb. 23, elevation, 425.11 ft; minimum contents, 125,418 acre-ft Oct. 11, elevation, 421.24 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	423.45	130,260	--
Oct. 31.....	422.26	127,642	-2,618
Nov. 30.....	423.74	130,902	+3,260
Dec. 31.....	424.17	131,861	+959
CAL YR 1985.....	--	--	-267
Jan. 31.....	423.43	130,216	-1,645
Feb. 28.....	422.74	128,698	-1,518
Mar. 31.....	423.64	130,678	+1,980
Apr. 30.....	423.28	129,886	-792
May 31.....	424.56	132,732	+2,846
June 30.....	424.22	131,974	-758
July 31.....	424.09	131,678	-296
Aug. 31.....	424.11	131,723	+45
Sept. 30.....	424.11	131,723	0
WTR YR 1986.....	--	--	+1,196

COWLITZ RIVER BASIN

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA

LOCATION.--Lat 46°30'38", long 122°36'54", in SE¼NE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, on right bank 1.1 mi upstream from fish barrier dam, 1.4 mi downstream from Mayfield Dam, 1.5 mi upstream from Mill Creek, 2.1 mi downstream from Winston Creek, and at mile 50.6.

DRAINAGE AREA.--1,400 mi².

PERIOD OF RECORD.--August to October 1910, December 1910 to September 1911, October to November 1911 (monthly discharge only), April 1934 to current year. Published as "at Mayfield" water years 1910-11 and "near Mayfield" water years 1934-61.

REVISED RECORDS.--WSP 1318: 1949(M). WSP 1348: Drainage area. WSP 1718: 1943, 1947.

GAGE.--Water-stage recorder. Datum of gage is 226.6 ft above National Geodetic Vertical Datum of 1929. August 1910 to November 1911 nonrecording gage at site 2.5 mi upstream at different datum. Apr. 27 to July 2, 1934, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Riffe Lake (station 14234800) at mile 65.5 and Mayfield Reservoir (station 14237800) at mile 52.0. Minor diversions for domestic and farm use upstream from station. U.S. Geological Survey satellite telemeter at station. Sediment records October 1978 to September 1982. Water temperatures October 1950 to September 1982.

AVERAGE DISCHARGE.--52 years (water years 1935-86), 6,290 ft³/s, 61.01 in/yr, 4,557,000 acre-ft/yr, adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft³/s Dec. 13, 1946; maximum gage height, 25.26 ft Dec. 4, 1975; minimum discharge, 37 ft³/s Apr. 16, 1962, gage height, 6.42 ft; minimum daily discharge, 451 ft³/s Apr. 16, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 is known to have exceeded that of Dec. 13, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,200 ft³/s Feb. 23, gage height, 17.82 ft; minimum discharge, 2,160 ft³/s Aug. 3, 8, gage height, 9.38 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2920	4240	5780	5790	5820	11900	5740	4780	7330	3360	2240	2780
2	2910	4210	6250	5790	5810	11800	5730	4790	7280	2760	2230	2760
3	3370	4250	7080	5810	5830	11800	5680	4790	6540	2400	2230	2750
4	2900	4260	5770	5810	5820	11600	5690	4800	6490	2400	2240	2740
5	2900	4320	5770	5800	5820	9300	5220	4790	5470	2400	2240	2750
6	3080	4280	5760	5810	5800	9480	5190	4780	5480	2400	2240	2760
7	3390	4260	5770	5790	5700	9190	5190	4750	5450	2400	2230	2770
8	3390	4270	5790	5810	5290	7780	5140	4760	5450	2410	2240	2760
9	3380	4280	5780	5800	5270	7780	4980	4760	5450	2410	2240	2760
10	3380	4290	5790	5780	5190	7740	4920	4750	4790	2390	2250	2760
11	3370	4510	5790	5780	5190	7700	4770	4750	4770	2410	2260	2760
12	3370	5130	5790	5800	5190	7680	4780	4730	4730	2410	2260	2760
13	3380	5130	5790	5780	5160	7690	4780	4480	4320	2400	2250	2760
14	3390	5120	5810	5780	4950	7570	4750	4760	4330	2400	2260	2750
15	3380	5130	5800	5770	4980	6970	4760	4770	4300	2390	2240	2760
16	3380	5110	5780	5780	4990	6960	4780	4770	4320	2400	2220	2760
17	3390	5120	5770	5770	4980	6920	4770	4330	4320	2400	2220	2760
18	3380	5530	5750	5770	4930	6930	4750	4310	4340	2400	2240	2780
19	3380	5840	5760	5800	5510	6720	4750	4320	4310	2390	2220	2810
20	3560	6490	5790	5900	5810	5630	4740	4330	4320	2400	2250	2810
21	3580	8480	5790	5940	5790	5650	4750	4350	4290	2410	2240	2810
22	3570	11200	5790	5840	4990	5680	4750	4340	4300	2400	2290	2810
23	3430	11200	5820	5790	11200	5710	4750	4330	4290	2390	2270	2810
24	3350	11200	5800	5760	15200	5740	4760	4330	4280	2400	2280	2800
25	5080	10800	5810	5790	10300	5800	4800	4320	3950	2390	2270	2800
26	5110	8680	5810	5790	14100	5790	4760	4330	3960	2400	2260	2790
27	4800	8390	5800	5800	14100	5760	4780	4320	4000	2400	2270	2760
28	4230	7910	5800	5810	14100	5710	4750	4310	3400	2400	2260	2760
29	4250	5790	5810	5830	---	5650	4760	4350	3420	2390	2260	2760
30	4250	5790	5810	5820	---	5630	4750	5710	3430	2380	2270	2750
31	4240	---	5800	5820	---	5600	---	7320	---	2390	2290	---
TOTAL	111490	185210	181210	179910	197820	231860	148720	145310	143110	75680	69760	83150
MEAN	3596	6174	5845	5804	7065	7479	4957	4687	4770	2441	2250	2772
MAX	5110	11200	7080	5940	15200	11900	5740	7320	7330	3360	2290	2810
MIN	2900	4210	5750	5760	4930	5600	4740	4310	3400	2380	2220	2740
AC-FT	221100	367400	359400	356900	392400	459900	295000	288200	283900	150100	138400	164900
MEAN†	3971	7704	5530	7354	11410	8533	4724	7327	4535	2028	1361	1256
CFSM†	2.84	5.50	2.52	5.25	8.15	6.10	3.37	5.23	3.24	1.45	0.97	0.90
IN.†	3.27	6.14	2.91	6.06	8.49	7.03	3.77	6.04	3.62	1.67	1.12	1.00
AC-FT†	244200	458300	217100	452300	633400	524800	281000	450600	269800	124700	83700	74700

CAL YR 1985 TOTAL 1852320 MEAN 5075 MAX 13100 MIN 2510 AC-FT 3674000 MEAN† 5053 CFSM† 3.61 IN.† 49.03 AC-FT† 3659000
WTR YR 1986 TOTAL 1753230 MEAN 4803 MAX 15200 MIN 2220 AC-FT 3478000 MEAN† 5269 CFSM† 3.76 IN.† 51.12 AC-FT† 3815000

† Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

COWLITZ RIVER BASIN

443

14240352 COLDWATER LAKE CANAL NEAR SPIRIT LAKE, WA

LOCATION.--Lat 46°17'16", long 122°16'10", in NW¼SE¼ sec.2, T.9 N., R.4 E., Cowlitz County, Hydrologic Unit 17080005, Mount St. Helens National Volcanic Monument, on right bank 1,000 ft downstream from outlet of Coldwater Lake, 5.8 mi west of Spirit Lake, and 1.5 mi upstream from mouth.

DRAINAGE AREA.--36.2 mi², since April 1985. Prior to April 1985, 17.5 mi².

PERIOD OF RECORD.--January 1985 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 2,500 ft, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 2, Jan. 5. Records good except for periods of estimated record, which are fair. Transbasin diversions upstream from station through Harrys Ridge through Spirit Lake Tunnel. Tunnel inlet regulated by gate valve. Diversion discharges not measured. Several measurements of water temperature were made during the year. Satellite telemeter at station. Recording rain gage at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,590 ft³/s Feb. 24, gage height, 29.95 ft; minimum daily, 57 ft³/s Sept. 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	151	252	186	143	300	291	336	259	425	147	84	64		
2	166	259	174	146	308	261	273	270	400	143	84	63		
3	164	282	161	148	300	279	151	262	372	141	82	63		
4	131	317	184	155	284	338	137	260	347	141	80	63		
5	109	357	206	152	279	272	173	285	317	135	79	63		
6	109	540	219	150	263	303	237	274	292	133	80	65		
7	112	625	237	163	245	465	233	269	278	129	80	63		
8	117	622	225	182	232	461	245	266	255	125	79	63		
9	119	489	210	193	220	440	289	268	244	121	77	64		
10	124	375	194	196	213	359	265	274	236	124	75	60		
11	141	295	183	198	203	406	273	277	232	121	74	59		
12	154	233	176	210	197	443	261	277	227	118	69	58		
13	153	230	170	236	182	446	228	346	222	115	72	57		
14	164	256	165	218	178	411	186	347	211	110	72	57		
15	160	319	161	202	213	372	268	354	201	112	71	62		
16	171	370	161	214	292	410	301	344	195	124	71	67		
17	156	304	161	225	292	431	280	325	191	119	70	68		
18	156	283	157	353	262	380	261	319	197	116	69	68		
19	179	260	157	726	226	406	248	333	190	111	68	69		
20	206	228	156	599	197	359	215	402	179	110	68	69		
21	200	226	154	416	196	327	344	429	175	107	69	68		
22	252	247	151	333	222	426	377	419	169	101	68	68		
23	257	225	150	322	837	444	359	366	169	97	67	76		
24	288	214	147	303	2100	477	327	337	167	95	66	80		
25	373	204	148	269	1370	499	341	334	164	93	66	83		
26	393	199	147	194	884	501	306	373	160	91	66	83		
27	374	191	148	190	599	507	348	392	154	88	66	84		
28	382	191	147	218	403	387	312	390	149	87	65	91		
29	345	188	143	240	---	395	301	393	146	85	63	99		
30	241	181	140	265	---	491	273	417	146	84	63	85		
31	229	---	136	282	---	470	---	433	---	85	64	---		
TOTAL	6276	8962	5254	7841	11497	12457	8148	10294	6810	3508	2227	2082		
MEAN	202	299	169	253	411	402	272	332	227	113	71.8	69.4		
MAX	393	625	237	726	2100	507	377	433	425	147	84	99		
MIN	109	181	136	143	178	261	137	259	146	84	63	57		
CFSM	5.58	8.26	4.67	6.99	11.4	11.1	7.51	9.17	6.27	3.12	1.98	1.92		
IN.	6.45	9.21	5.40	8.06	11.81	12.80	8.37	10.58	7.00	3.60	2.29	2.14		
AC-FT	12450	17780	10420	15550	22800	24710	16160	20420	13510	6960	4420	4130		
WTR YR 1986	TOTAL	85356	MEAN	234	MAX	2100	MIN	57	CFSM	6.46	IN.	87.71	AC-FT	169300

COWLITZ RIVER BASIN

14240400 NORTH FORK TOUTLE RIVER ABOVE BEAR CREEK, NEAR KID VALLEY, WA

LOCATION.--Lat 46°16'48", long 122°22'17", in SE¼SE¼ sec.7, T.9 N., R.4 E., Cowlitz County, Hydrologic Unit 17080005, Mount St. Helens National Volcanic Monument, on left bank, 14.6 mi southeast of Kid Valley.

DRAINAGE AREA.--79.2 mi².

PERIOD OF RECORD.--October 1984 to current year.

COOPERATION.--U.S. Corps of Engineers.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE (DEG C)	SEDIMENT CONCENTRATION (MG/L)	SEDIMENT DISCHARGE* (TONS/DAY)
OCT					
03...	1225	281	13.5	1320	1000
25...	1130	1020	10.0	29000	79900
25...	1500	1100	10.0	22000	65300
NOV					
04...	1355	1070	8.0	11200	32400
07...	1310	1500	8.0	21400	86700
13...	1110	592	6.0	5710	9130
DEC					
03...	1320	340	5.5	-----	-----
19...	1530	331	8.5	147	131
31...	1520	304	7.0	58	48
JAN					
16...	1300	420	7.5	590	669
21...	1415	980	6.0	18300	48400
MAR					
07...	1330	1680	7.0	24700	112000
19...	1135	1140	-----	-----	-----
APR					
03...	1000	785	7.0	6490	13800
18...	1235	558	-----	2110	3180
23...	1155	690	10.5	1310	2440
23...	1220	625	-----	1310	2210
MAY					
14...	1150	750	-----	4170	8440
JUN					
02...	1345	673	23.0	3110	5650
JUL					
17...	1445	270	16.0	1480	1080
SEP					
23...	1055	199	12.0	1290	693

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

14240800 GREEN RIVER ABOVE BEAVER CREEK, NEAR KID VALLEY, WA

LOCATION.--Lat 46°22'55", long 122°31'21", in SE¼NW¼ sec.2, T.10 N., R.2 E., Cowlitz County, Hydrologic Unit 17080005, on right bank 0.1 mi downstream from logging bridge, 4.5 mi northeast of Kid Valley.

DRAINAGE AREA.--129 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 824.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: May 29 to June 3, Aug. 7-12. Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Some quality of water data available for this station.

AVERAGE DISCHARGE.--6 years, 528 ft³/s, 55.58 in/yr, 382,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s Feb. 23, 1986, gage height, 12.43 ft from floodmark; minimum daily, 40 ft³/s Sept. 7, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 3,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 23	2000	*14,500	*12.43	No other peak greater than base discharge.			
Minimum daily discharge, 40 ft ³ /s Sept. 7.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	86	642	189	290	796	908	526	457	530	129	81	52		
2	83	778	211	266	731	746	508	493	485	129	78	49		
3	84	828	406	347	654	635	454	504	450	128	74	48		
4	78	1450	421	271	595	556	436	508	406	161	72	46		
5	72	1200	462	326	588	529	406	577	362	135	72	43		
6	72	1910	780	535	522	540	378	519	341	120	71	43		
7	99	2160	929	412	471	757	370	478	342	113	69	40		
8	81	1780	800	452	430	935	380	471	305	111	67	43		
9	72	1400	640	549	400	819	379	486	276	109	66	74		
10	69	1080	528	644	374	680	362	562	274	150	64	63		
11	84	831	450	652	353	703	373	625	276	183	62	57		
12	100	672	392	567	332	708	398	614	271	141	61	53		
13	89	571	351	510	322	676	369	1010	251	127	60	52		
14	81	492	321	469	354	661	334	1010	244	116	57	52		
15	106	566	295	441	761	590	351	881	230	125	52	52		
16	135	712	277	479	1260	539	365	774	210	243	51	57		
17	132	636	263	527	948	493	430	700	207	261	51	59		
18	113	556	257	1180	768	536	503	713	237	187	49	74		
19	160	509	250	1690	655	555	432	738	239	153	49	71		
20	324	465	246	1110	589	513	412	933	197	133	49	63		
21	351	410	240	876	596	557	432	864	188	123	48	60		
22	415	369	235	808	957	521	493	763	176	115	47	57		
23	680	327	236	957	7310	529	427	643	174	116	46	95		
24	932	310	246	835	5800	779	379	588	172	114	46	206		
25	1720	296	252	729	2650	658	417	669	165	106	46	134		
26	1220	267	247	638	2050	652	413	781	156	102	45	181		
27	1070	254	239	597	1390	614	481	716	147	100	43	137		
28	1310	239	226	548	1080	608	548	655	142	96	44	170		
29	936	220	220	546	---	566	531	666	146	90	46	262		
30	788	205	211	738	---	666	482	630	138	87	52	256		
31	668	---	202	731	---	580	---	580	---	83	58	---		
TOTAL	12210	22135	11022	19720	33736	19809	12769	20608	7737	4086	1776	2649		
MEAN	394	738	356	636	1205	639	426	665	258	132	57.3	88.3		
MAX	1720	2160	929	1690	7310	935	548	1010	530	261	81	262		
MIN	69	205	189	266	322	493	334	457	138	83	43	40		
CFSM	3.05	5.72	2.76	4.93	9.34	4.95	3.30	5.16	2.00	1.02	.44	.68		
IN.	3.52	6.38	3.18	5.69	9.73	5.71	3.68	5.94	2.23	1.18	.51	.76		
AC-FT	24220	43900	21860	39110	66920	39290	25330	40880	15350	8100	3520	5250		
CAL YR 1985	TOTAL	150062	MEAN	411	MAX	2480	MIN	54	CFSM	3.19	IN.	43.27	AC-FT	297600
WTR YR 1986	TOTAL	168257	MEAN	461	MAX	7310	MIN	40	CFSM	3.57	IN.	48.52	AC-FT	333700

14240800 GREEN RIVER ABOVE BEAVER CREEK, NEAR KID VALLEY, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	86	3	.70	642	168	308	189	---	2.0
2	83	---	.40	778	372	781	211	---	3.0
3	84	---	.50	828	199	445	406	---	19
4	78	---	.60	1450	219	857	421	---	21
5	72	---	.40	1200	101	327	462	---	28
6	72	---	.40	1910	326	1680	780	---	130
7	99	6	1.6	2160	367	2140	929	---	230
8	81	2	.44	1780	169	812	800	---	90
9	72	1	.19	1400	95	359	640	12	21
10	69	1	.19	1080	58	169	528	---	22
11	84	3	.68	831	25	56	450	---	20
12	100	7	1.9	672	---	45	392	---	18
13	89	3	.72	571	---	29	351	---	13
14	81	6	1.3	492	---	25	321	---	10
15	106	14	4.0	566	25	38	295	---	8.0
16	135	23	9.1	712	39	75	277	---	6.0
17	132	19	6.8	636	16	27	263	---	5.0
18	113	3	.92	556	13	20	257	---	5.0
19	160	78	42	509	10	14	250	---	5.0
20	324	214	187	465	10	13	246	---	4.0
21	351	56	53	410	---	8.0	240	---	4.0
22	415	190	213	369	---	6.0	235	---	4.0
23	680	252	463	327	---	5.0	236	---	4.0
24	932	218	619	310	---	5.0	246	---	4.0
25	1720	815	4090	296	---	3.0	252	---	5.0
26	1220	232	764	267	---	2.0	247	---	4.0
27	1070	175	539	254	---	2.0	239	---	4.0
28	1310	161	611	239	---	1.0	226	---	3.0
29	936	70	177	220	---	1.0	220	---	3.0
30	788	53	113	205	---	1.0	211	---	3.0
31	668	30	54	---	---	---	202	---	2.0
TOTAL	12210	---	7955.84	22135	---	8254.0	11022	---	700.0
JANUARY			FEBRUARY			MARCH			
1	290	---	7.0	796	67	144	908	---	180
2	266	8	5.7	731	49	97	746	---	95
3	347	8	7.5	654	32	57	635	---	50
4	271	1	.73	595	21	34	556	---	30
5	326	12	15	588	18	29	529	---	26
6	535	32	50	522	18	25	540	---	28
7	412	6	6.2	471	14	18	757	---	100
8	452	25	33	430	11	13	935	---	200
9	549	11	16	400	10	11	819	---	130
10	644	22	38	374	8	8.1	680	32	59
11	652	23	40	353	7	6.7	703	31	59
12	567	12	18	332	8	7.2	708	25	48
13	510	8	11	322	7	6.1	676	25	46
14	469	5	6.3	354	20	22	661	24	43
15	441	4	4.3	761	102	210	590	20	32
16	479	15	21	1260	209	744	539	19	28
17	527	---	36	948	43	110	493	22	29
18	1180	---	1300	768	20	41	536	19	27
19	1690	506	2510	655	14	25	555	19	28
20	1110	164	492	589	20	32	513	23	32
21	876	87	206	596	16	29	557	24	36
22	808	65	142	957	63	200	521	14	20
23	957	76	196	7310	5890	167000	529	14	22
24	835	54	122	5800	3710	67700	779	72	151
25	729	36	71	2650	1250	8940	658	23	41
26	638	29	50	2050	519	2870	652	19	33
27	597	26	42	1390	232	871	614	19	31
28	548	16	24	1080	---	330	608	21	34
29	546	18	27	---	---	---	566	16	24
30	738	46	92	---	---	---	666	42	76
31	731	40	79	---	---	---	580	27	42
TOTAL	19720	---	5668.73	33736	---	249580.1	19809	---	1780

COWLITZ RIVER BASIN

14240800 GREEN RIVER ABOVE BEAVER CREEK, NEAR KID VALLEY, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	526	15	21	457	8	9.9	530	52	74
2	508	14	19	493	10	13	485	33	43
3	454	14	17	504	9	12	450	23	28
4	436	12	14	508	9	12	406	19	21
5	406	12	13	577	13	20	362	16	16
6	378	11	11	519	10	14	341	13	12
7	370	10	10	478	7	9.0	342	12	11
8	380	8	8.2	471	8	10	305	9	7.4
9	379	20	20	486	10	13	276	8	6.0
10	362	8	7.8	562	14	21	274	8	5.9
11	373	17	17	625	17	29	276	7	5.2
12	398	14	15	614	13	22	271	8	5.9
13	369	10	10	1010	158	467	251	6	4.1
14	334	9	8.1	1010	90	245	244	7	4.6
15	351	6	5.7	881	44	105	230	7	4.3
16	365	3	3.0	774	30	63	210	6	3.4
17	430	9	10	700	22	42	207	6	3.4
18	503	11	15	713	23	44	237	11	7.5
19	432	6	7.0	738	26	52	239	11	7.9
20	412	4	4.4	933	109	275	197	4	2.1
21	432	10	12	864	54	126	188	4	2.0
22	493	20	27	763	31	64	176	4	1.9
23	427	12	14	643	17	30	174	5	2.3
24	379	8	8.2	588	14	22	172	4	1.9
25	417	9	10	669	28	51	165	3	1.3
26	413	7	7.8	781	58	122	156	3	1.3
27	481	12	16	716	37	72	147	2	.79
28	548	19	28	655	41	73	142	4	1.5
29	531	13	19	666	27	49	146	3	1.2
30	482	10	13	630	43	73	138	2	.75
31	---	---	---	580	66	103	---	---	---
TOTAL	12769	---	391.2	20608	---	2262.9	7737	---	287.64
JULY			AUGUST			SEPTEMBER			
1	129	2	.70	81	1	.22	52	1	.14
2	129	6	2.1	78	1	.21	49	---	.10
3	128	4	1.4	74	1	.20	48	---	.10
4	161	8	3.5	72	1	.19	46	---	.10
5	135	3	1.1	72	2	.39	43	---	.10
6	120	3	.97	71	1	.19	43	---	.10
7	113	3	.92	69	1	.19	40	---	.10
8	111	5	1.5	67	1	.18	43	---	.10
9	109	5	1.5	66	---	.20	74	---	.10
10	150	16	7.9	64	1	.17	63	---	.10
11	183	14	7.7	62	2	.33	57	1	.15
12	141	3	1.1	61	3	.49	53	---	.10
13	127	3	1.0	60	1	.16	52	1	.14
14	116	6	1.9	57	2	.31	52	---	.10
15	125	11	3.7	52	1	.14	52	1	.14
16	243	24	16	51	1	.14	57	1	.15
17	261	30	23	51	1	.14	59	1	.16
18	187	4	2.0	49	---	.10	74	4	.80
19	153	2	.83	49	1	.13	71	3	.58
20	133	2	.72	49	1	.13	63	4	.68
21	123	2	.66	48	1	.13	60	3	.49
22	115	2	.62	47	---	.10	57	---	.30
23	116	1	.31	46	1	.12	95	27	10
24	114	2	.62	46	1	.12	206	67	41
25	106	1	.29	46	1	.10	134	4	1.4
26	102	1	.28	45	---	.10	181	26	13
27	100	3	.81	43	---	.10	137	2	.74
28	96	1	.26	44	---	.10	170	3	1.4
29	90	1	.24	46	---	.10	262	64	53
30	87	1	.23	52	---	.10	256	22	16
31	83	1	.22	58	1	.16	---	---	---
TOTAL	4086	---	84.08	1776	---	5.44	2649	---	141.37

14241100 NORTH FORK TOUTLE RIVER AT KID VALLEY, WA

LOCATION.--Lat 46°21'55", long 122°37'40", in NE¼SW¼ sec.12, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank at downstream side of bridge on State Highway 504, 0.8 mi southwest of Kid Valley, and 6.9 mi upstream from confluence with South Fork.

DRAINAGE AREA.--284 mi², of which approximately 21 mi² is noncontributing. Prior to July 7, 1981, the noncontributing portion was approximately 40 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 575.80 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Estimated daily discharges: Feb. 21, 22. Records fair. No regulation or diversion upstream from station. Some quality of water data available from Washington office for this station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--6 years, 1,352 ft³/s, 64.65 in/yr, 979,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s Mar. 19, 1982, gage height, 30.47 ft, gage height was affected by backwater from mudflow caused by an eruption of Mount St. Helens; minimum daily, 114 ft³/s Oct. 17, 1980.

The peak discharges greater than base discharge of 5,500 ft³/s were not reported for water years 1981-85 and are shown below:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7, 1980	2230	5,780	16.64	Dec. 16	0145	12,000	25.84
Nov. 21	1600	5,760	16.63	Jan. 5, 1983	1315	10,600	24.83
Dec. 2	1530	*10,100	*18.53	Jan. 7	1330	8,280	24.85
Oct. 6, 1981	1800	8,780	21.03	Nov. 3	0815	9,500	25.42
Dec. 2	0830	6,950	20.44	Nov. 13	2000	6,340	24.24
Dec. 5	1300	12,500	21.98	Nov. 17	0400	7,640	24.34
Dec. 15	1400	5,520	20.99	Nov. 17	2100	8,080	24.39
Jan. 16, 1982	2000	9,200	21.90	Nov. 19	2330	5,830	24.22
Jan. 23	1015	14,200	23.41	Nov. 24	0800	7,200	23.94
Jan. 24	0345	23,100	25.81	Jan. 3, 1984	1000	9,250	25.33
Feb. 16	1030	10,600	21.93	Jan. 24	0300	13,500	26.05
Feb. 20	0730	33,900	28.90	Jan. 25	0315	*14,700	*26.09
Mar. 19	2215	*34,000	*27.30	Nov. 2	1330	5,680	24.58
Oct. 29	0200	7,440	24.01	Nov. 28	2000	5,770	24.00
Dec. 3	2115	*25,600	*27.30	June 7, 1985	1345	*6,890	*24.66

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 45.5 ft May 18, 1980 (1700 hours), from floodmarks, due to backwater from mudflow resulting from eruption of Mount St. Helens; discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,500 ft³/s and maximum(*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	0430	5,690	24.07	Feb. 23	1940	*21,800	*27.52
Jan. 19	0145	6,260	24.38				

Minimum daily discharge, 228 ft³/s Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	369	1590	960	1010	1520	2310	1330	1270	1190	448	383	249		
2	348	1430	1010	1020	1420	2140	1320	1310	1080	439	375	244		
3	340	1590	1300	1140	1370	2090	1150	1270	1010	430	359	238		
4	323	3030	1270	1060	1290	2110	1110	1270	949	469	349	233		
5	336	3660	1360	1160	1300	2050	1080	1530	917	425	342	231		
6	356	4700	2240	1530	1170	1920	1050	1440	904	404	343	229		
7	408	4450	3140	1310	1110	2300	1040	1410	877	395	329	228		
8	407	3980	2450	1350	1100	2550	1060	1460	825	384	327	251		
9	397	3010	1940	1440	1050	2430	1110	1590	776	388	332	314		
10	390	2320	1640	1520	1020	2040	1100	1480	748	445	338	276		
11	411	1850	1430	1450	958	2200	1120	1550	737	473	330	261		
12	413	1580	1250	1300	924	2070	1130	1530	716	427	316	253		
13	399	1330	1100	1230	921	2070	1120	2380	683	417	318	249		
14	399	1180	993	1180	998	1940	1040	2390	668	407	307	252		
15	415	1300	904	1180	2310	1760	1100	2220	632	415	299	251		
16	518	1620	862	1430	3190	1570	1180	1880	608	582	295	275		
17	484	1530	846	1630	2190	1480	1270	1700	613	607	290	276		
18	463	1380	825	3430	1780	1510	1270	1600	650	526	285	299		
19	518	1330	820	4610	1540	1490	1180	1610	639	484	283	285		
20	804	1320	823	3310	1490	1410	1120	1960	591	458	273	282		
21	1030	1240	819	2340	1530	1440	1130	1780	581	441	267	268		
22	1430	1200	820	2530	2460	1390	1170	1640	545	436	262	261		
23	1620	1130	820	3240	11200	1500	1140	1480	522	442	257	367		
24	2160	1090	843	2570	11500	2020	1150	1380	516	451	254	564		
25	3640	1100	862	2090	5890	1820	1230	1410	512	446	251	509		
26	2410	1080	873	1790	4720	1710	1210	1490	505	444	244	556		
27	2140	1100	882	1630	3490	1590	1290	1430	484	435	240	433		
28	3380	1080	868	1500	2740	1510	1450	1330	473	425	238	472		
29	2260	1050	863	1460	---	1400	1430	1310	473	408	241	589		
30	1840	1010	846	1640	---	1520	1340	1330	461	391	255	566		
31	1740	---	829	1420	---	1370	---	1300	---	382	260	---		
TOTAL	32148	55260	36488	55500	72181	56710	35420	48730	20885	13724	9242	9761		
MEAN	1037	1842	1177	1790	2578	1829	1181	1572	696	443	298	325		
MAX	3640	4700	3140	4610	11500	2550	1450	2390	1190	607	383	589		
MIN	323	1010	819	1010	921	1370	1040	1270	461	382	238	228		
CFSM	3.65	6.49	4.14	6.30	9.08	6.44	4.16	5.54	2.45	1.56	1.05	1.14		
IN.	4.21	7.24	4.78	7.27	9.45	7.43	4.64	6.38	2.74	1.80	1.21	1.28		
AC-FT	63770	109600	72370	110100	143200	112500	70260	96660	41430	27220	18330	19360		
CAL YR 1985	TOTAL	413556	MEAN	1133	MAX	4870	MIN	323	CFSM	3.99	IN.	54.17	AC-FT	820300
WTR YR 1986	TOTAL	446049	MEAN	1222	MAX	11500	MIN	228	CFSM	4.30	IN.	58.43	AC-FT	884700

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: June 1980 to current year. Records for June 1980 to September 1983 published in U.S. Geological Survey Open-File Report 85-632, and records for October 1983 to September 1985 will be published subsequently in a U.S. Geological Survey open-file report.

INSTRUMENTATION.--Automatic pumping sediment sampler since June 1981.

REMARKS.--Sediment concentrations and corresponding sediment discharges reported as 0 mg/L or 0 tons should be interpreted as <1 due to the limitations of sampling equipment, analytical methods, rounding errors, and the likelihood of minor amounts of sediment transport occurring at even the lowest of discharges.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 174,000 mg/L Mar. 20, 1982; minimum, 8 mg/L Sept. 18, 1981.
SEDIMENT DISCHARGE: Maximum daily, 4,130,000 tons Mar. 19, 1982; minimum, 3.8 tons Sept. 18, 1981.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 31,000 mg/L Feb. 23; minimum, 100 mg/L Aug. 28.
SEDIMENT DISCHARGE: Maximum daily, 1,100,000 tons Feb. 23; minimum, 55 tons Sept. 6, 7.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NUMBER OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT												
01...	1555	--	375	--	10.0	1800	1820	--	--	--	--	25
08...	1405	--	400	5	20.0	1760	1900	--	--	--	--	24
23...	1555	--	1610	5	20.0	6440	28000	--	--	--	--	28
25...	1505	--	3710	5	20.0	10100	101000	7	7	22	32	--
30...	1610	--	1770	5	20.0	5360	25600	--	--	--	--	32
NOV												
07...	1635	--	4440	5	20.0	7980	95700	--	--	--	--	39
08...	1420	--	3930	5	20.0	7820	83000	--	--	--	--	37
14...	1325	--	1160	5	20.0	3730	11700	--	--	--	--	23
20...	1300	--	1330	5	20.0	3740	13400	--	--	--	--	19
DEC												
04...	1550	--	1300	5	20.0	4010	14100	--	--	--	--	--
18...	1540	--	825	5	20.0	2390	5320	--	--	--	--	--
JAN												
06...	1425	--	1450	5	20.0	2820	11000	--	--	--	--	--
16...	1655	--	1460	5	20.0	3840	15100	--	--	--	--	26
19...	1115	--	4370	5	20.0	14600	172000	10	11	28	41	60
19...	1335	--	4360	5	20.0	15000	177000	--	--	--	--	53
21...	1550	--	2280	5	20.0	8940	55000	--	--	--	--	--
29...	1700	--	1460	5	20.0	5590	22000	--	--	--	--	--
FEB												
13...	1335	2.0	920	5	20.0	2980	7400	--	--	--	--	25
16...	1810	--	2760	5	20.0	6360	47400	--	--	--	--	--
18...	1335	5.0	1700	5	20.0	5020	23000	--	--	--	--	--
24...	1155	--	10200	5	20.0	31300	862000	--	--	--	--	--
24...	1455	--	9760	5	20.0	21900	577000	7	8	22	31	--
24...	1705	--	7150	5	20.0	22200	429000	--	--	--	--	--
26...	1345	8.5	4480	5	20.0	12500	151000	--	--	--	--	43
DATE		SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 2.00 MM
OCT												
01...		28	41	--	79	--	98	--	100	--	--	--
08...		31	40	--	81	--	99	--	100	--	--	--
23...		28	50	--	81	--	86	--	96	--	100	--
25...		41	--	56	--	83	--	96	--	99	--	100
30...		32	47	--	70	--	89	--	99	--	100	--
NOV												
07...		34	60	--	85	--	98	--	100	--	--	--
08...		37	55	--	77	--	91	--	99	--	100	--
14...		25	36	--	67	--	89	--	99	--	100	--
20...		18	32	--	61	--	89	--	98	--	100	--
DEC												
04...		20	--	--	--	--	--	--	--	--	--	--
18...		20	--	--	--	--	--	--	--	--	--	--
JAN												
06...		26	--	--	--	--	--	--	--	--	--	--
16...		29	41	--	65	--	90	--	99	--	100	--
19...		59	79	--	93	--	99	--	100	--	--	--
19...		53	70	--	86	--	97	--	100	--	--	--
21...		41	--	54	--	73	--	92	--	99	--	100
29...		24	--	37	--	61	--	86	--	98	--	100
FEB												
13...		24	40	--	74	--	95	--	99	--	100	--
16...		31	--	43	--	64	--	85	--	96	--	99
18...		27	--	38	--	58	--	85	--	98	--	100
24...		--	--	--	--	--	--	--	--	--	--	--
24...		42	--	61	--	83	--	95	--	99	--	100
24...		42	--	59	--	80	--	93	--	98	--	100
26...		41	65	--	88	--	97	--	100	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible]

COWLITZ RIVER BASIN

14241100 NORTH FORK TOUTLE RIVER AT KID VALLEY, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	369	1800	1790	1590	---	20000	960	---	8800
2	348	---	1600	1430	---	16000	1010	---	9600
3	340	---	1500	1590	---	19000	1300	---	15000
4	323	---	1400	3030	---	56000	1270	4000	13700
5	336	---	1500	3660	4720	46600	1360	3600	13200
6	356	---	1600	4700	6930	87900	2240	6330	38300
7	408	---	2000	4450	7790	93600	3140	7300	61900
8	407	1800	1980	3980	7220	77600	2450	5500	36400
9	397	---	1900	3010	6080	49400	1940	4200	22000
10	390	---	1800	2320	4750	29800	1640	3800	16800
11	411	---	2000	1850	---	23000	1430	3700	14300
12	413	---	2000	1580	---	19000	1250	3400	11500
13	399	---	2000	1330	---	14000	1100	3200	9500
14	399	---	2000	1180	3700	11800	993	2800	7510
15	415	---	2100	1300	---	14000	904	2500	6100
16	518	---	3000	1620	---	21000	862	2700	6280
17	484	---	2800	1530	---	19000	846	2700	6170
18	463	---	2700	1380	---	15000	825	2500	5570
19	518	---	3200	1330	---	14000	820	2500	5530
20	804	---	7300	1320	3900	13900	823	2500	5560
21	1030	---	12000	1240	---	13000	819	2200	4860
22	1430	---	22000	1200	---	12000	820	2200	4870
23	1620	6500	28400	1130	---	11000	820	2200	4870
24	2160	---	41000	1090	---	10000	843	2500	5690
25	3640	11500	113000	1100	---	10000	862	2500	5820
26	2410	7780	50600	1080	---	10000	873	2300	5420
27	2140	5600	38700	1100	---	10000	882	2200	5240
28	3380	7340	67000	1080	---	10000	868	2300	5390
29	2260	4940	30100	1050	---	10000	863	2000	4660
30	1840	5600	27800	1010	---	9600	846	1900	4340
31	1740	---	24000	---	---	---	829	1900	4250
TOTAL	32148	---	500770	55260	---	766200	36488	---	369130
JANUARY			FEBRUARY			MARCH			
1	1010	3300	9000	1520	4600	18900	2310	---	55000
2	1020	2800	7710	1420	4600	17600	2140	---	47000
3	1140	3300	10200	1370	4200	15500	2090	---	42000
4	1060	2200	6300	1290	3600	12500	2110	---	37000
5	1160	2500	7830	1300	4200	14700	2050	---	33000
6	1530	3460	14300	1170	3900	12300	1920	---	29000
7	1310	2500	8840	1110	3600	10800	2300	10800	67100
8	1350	2700	9840	1100	3600	10700	2550	9900	68200
9	1440	2700	10500	1050	3600	10200	2430	8140	53400
10	1520	2900	11900	1020	3300	9090	2040	6600	36400
11	1450	3300	12900	958	3000	7760	2200	10400	61800
12	1300	3100	10900	924	3000	7480	2070	10100	56400
13	1230	3000	9960	921	3000	7460	2070	9600	53700
14	1180	3100	9880	998	3300	8890	1940	8800	46100
15	1180	2900	9240	2310	5700	35600	1760	7200	34200
16	1430	3800	14700	3190	7630	65700	1570	6800	28800
17	1630	4400	19400	2190	5200	30700	1480	7600	30400
18	3430	11800	109000	1780	5400	26000	1510	8400	34200
19	4610	18200	128000	1540	6000	24900	1490	6800	27400
20	3310	11400	102000	1490	5500	22100	1410	6400	24400
21	2340	9990	63100	1530	6600	27300	1440	6400	24900
22	2530	10700	73100	2460	8300	55100	1390	6000	22500
23	3240	10700	93600	11200	31000	1100000	1500	6800	27500
24	2570	7900	54800	11500	29700	986000	2020	7000	38200
25	2090	7200	40600	5890	20200	321000	1820	5600	27500
26	1790	6800	32900	4720	13500	172000	1710	4600	21200
27	1630	5600	24600	3490	11600	109000	1590	4200	18000
28	1500	5600	22700	2740	9840	72800	1510	4000	16300
29	1460	5600	22100	---	---	---	1400	4700	17800
30	1640	5200	23000	---	---	---	1520	5400	22200
31	1420	4900	18800	---	---	---	1370	5100	18900
TOTAL	55500	---	991700	72181	---	3212080	56710	---	1120500

14241100 NORTH FORK TOUTLE RIVER AT KID VALLEY, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	1330	5100	18300	1270	3520	12100	1190	3440	11100
2	1320	4600	16400	1310	4400	15600	1080	2730	7960
3	1150	3900	12100	1270	3960	13600	1010	---	6600
4	1110	3300	9890	1270	4350	14900	949	---	6300
5	1080	3300	9620	1530	5220	21600	917	---	6100
6	1050	3300	9360	1440	3480	13500	904	---	5900
7	1040	3000	8420	1410	3040	11600	877	---	5800
8	1060	2700	7730	1460	3440	13600	825	---	5100
9	1110	3300	9890	1590	3220	13800	776	---	4700
10	1100	3300	9800	1480	3820	15300	748	---	4400
11	1120	3600	10900	1550	3610	15100	737	---	4400
12	1130	3300	10100	1530	3150	13000	716	---	4100
13	1120	3000	9070	2380	6720	43200	683	---	3800
14	1040	2400	6740	2390	4560	29400	668	---	3700
15	1100	2700	8020	2220	4100	24600	632	---	3300
16	1180	3600	11500	1880	3690	18700	608	1930	3170
17	1270	3600	12300	1700	3440	15800	613	---	3200
18	1270	4200	14400	1600	3200	13800	650	---	3600
19	1180	4200	13400	1610	2760	12000	639	---	3400
20	1120	3800	11500	1960	5070	26800	591	---	3000
21	1130	4000	12200	1780	3660	17600	581	---	2800
22	1170	4600	14500	1640	3230	14300	545	---	2300
23	1140	3800	11700	1480	2960	11800	522	---	2100
24	1150	3500	10900	1380	2520	9390	516	---	2100
25	1230	4400	14600	1410	2620	9970	512	---	2000
26	1210	4400	14400	1490	3740	15000	505	---	1800
27	1290	4400	15300	1430	2970	11500	484	---	1700
28	1450	4800	18800	1330	2400	8620	473	---	1600
29	1430	4400	17000	1310	2790	9870	473	---	1500
30	1340	3600	13000	1330	3420	12300	461	---	1400
31	---	---	---	1300	3300	11600	---	---	---
TOTAL	35420	---	361840	48730	---	489950	20885	---	118930
JULY			AUGUST			SEPTEMBER			
1	448	---	1400	383	---	510	249	---	75
2	439	---	1300	375	---	430	244	---	70
3	430	---	1100	359	---	390	238	---	65
4	469	---	1400	349	---	370	233	---	60
5	425	---	1100	342	---	310	231	---	60
6	404	---	950	343	---	310	229	---	55
7	395	---	950	329	290	258	228	---	55
8	384	---	870	327	---	250	251	---	130
9	388	---	920	332	---	260	314	575	487
10	445	---	1200	338	---	270	276	---	150
11	473	---	1400	330	---	250	261	---	120
12	427	---	1100	316	---	200	253	---	75
13	417	---	1090	318	---	200	249	---	60
14	407	899	968	307	---	180	252	---	60
15	415	---	1000	299	---	170	251	---	60
16	582	---	2400	295	---	160	275	---	75
17	607	---	2500	290	---	140	276	119	89
18	526	---	1900	285	---	130	299	376	304
19	484	---	1600	283	---	120	285	157	121
20	458	---	1400	273	---	110	282	381	290
21	441	---	1300	267	---	110	268	---	95
22	436	1120	1320	262	---	100	261	---	85
23	442	---	1300	257	---	90	367	---	740
24	451	---	1200	254	---	80	564	955	1450
25	446	---	1100	251	---	75	509	---	1100
26	444	---	1100	244	---	70	556	---	1300
27	435	---	1000	240	---	65	433	---	750
28	425	---	840	238	100	64	472	---	900
29	408	---	720	241	---	65	589	---	1500
30	391	---	580	255	---	80	566	---	1400
31	382	---	540	260	---	80	---	---	---
TOTAL	13724	---	37478	9242	---	5897	9761	---	11781

14241490 SOUTH FORK TOUTLE RIVER AT CAMP 12, NEAR TOUTLE, WA

LOCATION.--Lat 46°19'05", long 122°40'01", in NE¼SW¼ sec.35, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank 0.9 mi downstream from Johnson Creek, 1.2 mi southeast of Toutle, and at mile 3.4.

DRAINAGE AREA.--117 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1981 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 510 ft from topographic map. Prior to Dec. 22, 1982, gage located 1.6 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 24, Sept. 30. Records good. No regulation or diversion upstream from station. Quality of water data on file in Washington office. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--5 years, 626 ft³/s, 72.66 in/yr, 453,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft³/s Dec. 3, 1982, gage height, 16.60 ft, datum then in use, from floodmarks, from rating curve extended above 8,710 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 58 ft³/s Sept. 7, 1986.

The peak discharges greater than base discharge of 3,100 ft³/s were not reported for water years 1982-85 and are shown below:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 6, 1981	2200	4,060	14.57	Jan. 5, 1983	1515	6,850	15.45
Dec. 2	0730	3,140	14.25	Mar. 9	1100	4,150	14.40
Dec. 5	1445	6,660	15.07	Mar. 29	1800	4,210	14.57
Dec. 15	1400	3,480	13.70	Nov. 3	1600	4,240	14.67
Jan. 16, 1982	2130	4,810	14.42	Nov. 13	2230	4,180	14.53
Jan. 24	0200	*9,110	*16.31	Nov. 17	0430	5,490	*15.21
Feb. 14	1430	5,710	14.69	Nov. 19	2300	4,290	14.51
Feb. 20	0900	8,160	16.02	Jan. 24, 1984	0245	5,230	14.78
Oct. 30	1000	4,070	14.63	Jan. 25	0445	*5,590	15.09
Dec. 3	unknown	*13,500	*16.60	Nov. 2	1200	*3,860	*14.37
Dec. 16	0930	5,700	15.20	June 7, 1985	1015	3,550	14.34

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood occurred at about 1000 hours on May 18, 1980, from a mudflow caused by the eruption of Mount St. Helens. Another flood, on Dec. 26, 1980, reached a stage of 17.50 ft, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 18	2400	4,530	14.98	Feb. 23	1845	*7,110	*15.82

Minimum daily discharge, 58 ft³/s Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	656	342	391	1010	813	497	634	246	95	77	74
2	98	704	365	384	906	703	501	735	230	97	76	69
3	100	778	653	569	938	641	464	727	217	100	74	69
4	93	1310	669	432	902	610	458	660	211	149	73	67
5	89	1160	707	633	862	535	430	783	202	107	73	62
6	90	1690	1350	985	738	491	402	706	199	93	75	59
7	131	1770	1540	718	637	753	382	652	222	86	72	58
8	99	1520	1160	705	561	863	366	624	200	85	70	63
9	89	1280	845	809	504	956	358	599	180	85	70	115
10	89	1050	700	907	461	824	335	624	165	148	69	78
11	117	845	595	830	423	994	346	649	155	178	72	70
12	146	740	518	691	395	1130	384	648	147	118	77	62
13	120	657	458	596	380	1060	372	870	138	102	74	59
14	117	575	422	536	403	880	337	816	144	96	72	62
15	139	678	391	522	940	741	399	721	147	103	70	61
16	183	849	360	737	2010	646	513	587	134	177	67	81
17	163	783	346	838	1370	591	644	524	146	191	67	74
18	142	689	333	2490	1060	595	618	489	212	137	68	105
19	217	634	326	2940	883	596	547	467	220	114	69	75
20	570	604	321	1660	780	567	514	617	156	102	68	82
21	726	544	314	1080	782	613	501	567	145	97	64	68
22	1160	500	303	1070	1080	551	480	512	131	94	64	63
23	873	448	302	1600	4160	640	438	456	120	97	63	150
24	1180	440	300	1250	4200	1150	402	430	111	100	63	255
25	1760	432	302	978	2440	940	452	387	108	93	65	269
26	1340	392	301	818	1760	882	507	375	103	89	65	324
27	1280	384	286	771	1200	713	670	357	100	91	63	211
28	1420	377	270	721	976	632	786	347	103	89	65	210
29	1010	356	258	751	---	565	757	299	114	85	73	297
30	823	346	243	1120	---	602	683	273	103	82	83	300
31	704	---	232	1020	---	511	---	258	---	79	84	---
TOTAL	15166	23191	15512	29552	32761	22788	14543	17393	4809	3359	2185	3592
MEAN	489	773	500	953	1170	735	485	561	160	108	70.5	120
MAX	1760	1770	1540	2940	4200	1150	786	870	246	191	84	324
MIN	89	346	232	384	380	491	335	258	100	79	63	58
CFSM	4.18	6.61	4.27	8.15	10.0	6.28	4.15	4.79	1.37	.92	.60	1.03
IN.	4.82	7.37	4.93	9.40	10.42	7.25	4.62	5.53	1.53	1.07	.69	1.14
AC-FT	30080	46000	30770	58620	64980	45200	28850	34500	9540	6660	4330	7120

CAL YR 1985	TOTAL	152764	MEAN	419	MAX	2470	MIN	73	CFSM	3.58	IN.	48.57	AC-FT	303000
WTR YR 1986	TOTAL	184851	MEAN	506	MAX	4200	MIN	58	CFSM	4.32	IN.	58.77	AC-FT	366700

14241490 SOUTH FORK TOUTLE RIVER AT CAMP 12, NEAR TOUTLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: May 1981 to current year. Records for May 1981 to September 1983 published in U.S. Geological Survey Open-File Report 85-632, and records for October 1983 to September 1985 will be published subsequently in a U.S. Geological Survey open-file report.

INSTRUMENTATION.--Automatic pumping sediment sampler since May 1981.

REMARKS.--Sediment concentrations and corresponding sediment discharge reported as 0 mg/L or 0 tons should be interpreted as <1 due to the limitations of sampling equipment, analytical methods, rounding errors, and the likelihood of minor amounts of sediment transport occurring at even the lowest of discharges.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 34,100 mg/L Dec. 3, 1982; minimum, 1 mg/L on many days.

SEDIMENT DISCHARGE: Maximum daily, 470,000 tons Dec. 3, 1982; minimum, 0.17 tons Aug. 21-24, Sept. 22, 1986.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 4,100 mg/L Jan. 19; minimum, 1 mg/L on many days.

SEDIMENT DISCHARGE: Maximum daily, 55,900 tons Feb. 23; minimum, 0.17 tons Aug. 21-24, 27, Sept. 22.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NUMBER OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
OCT							
01...	1310	12.0	98	--	10.0	1	--
25...	1315	9.0	1700	5	20.0	711	3260
NOV							
04...	1415	8.5	1410	5	20.0	196	746
07...	1155	8.5	1860	5	20.0	246	1240
DEC							
09...	1255	2.0	835	--	10.0	14	32
26...	1255	2.5	302	--	10.0	0	--
JAN							
21...	1440	6.0	1030	5	20.0	204	567
29...	1350	9.0	718	5	20.0	169	328
FEB							
07...	1315	5.0	620	--	10.0	6	10
14...	1305	3.5	377	--	10.0	10	10
24...	0600	9.0	4800	5	20.0	2400	31100
27...	1350	10.0	1150	--	10.0	94	292
MAR							
07...	1315	10.5	917	--	10.0	100	248
31...	1305	10.0	522	--	10.0	2	2.8
APR							
28...	1300	--	646	--	10.0	8	14
MAY							
29...	1415	19.5	291	--	10.0	4	3.1
JUN							
19...	1350	--	202	--	10.0	4	2.2
JUL							
16...	1300	--	157	--	10.0	4	1.7
AUG							
19...	1250	19.0	70	--	10.0	1	0.19
SEP							
05...	1200	19.0	62	--	10.0	144	24
16...	1220	15.0	86	--	10.0	50	12

DATE	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM
OCT						
01...	--	--	--	--	--	--
25...	--	--	--	--	--	--
NOV						
04...	--	--	--	--	--	--
07...	--	--	--	--	--	--
DEC						
09...	--	--	--	--	--	--
26...	--	--	--	--	--	--
JAN						
21...	--	--	--	--	--	--
29...	--	--	--	--	--	--
FEB						
07...	--	--	--	--	--	--
14...	--	--	--	--	--	--
24...	33	30	50	82	98	100
27...	--	--	--	--	--	--
MAR						
07...	--	--	--	--	--	--
31...	--	--	--	--	--	--
APR						
28...	--	--	--	--	--	--
MAY						
29...	--	--	--	--	--	--
JUN						
19...	--	--	--	--	--	--
JUL						
16...	--	--	--	--	--	--
AUG						
19...	--	--	--	--	--	--

14241490 SOUTH FORK TOUTLE RIVER AT CAMP 12, NEAR TOUTLE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER				NOVEMBER				DECEMBER	
1	98	1	.26	656	18	32	342	---	1.9
2	98	---	.30	704	17	32	365	---	2.2
3	100	---	.30	778	22	46	653	---	27
4	93	---	.20	1310	176	688	669	---	33
5	89	---	.20	1160	---	50	707	---	49
6	90	---	.20	1690	---	1300	1350	---	660
7	131	---	2.0	1770	218	1040	1540	---	1000
8	99	---	.30	1520	---	480	1160	---	120
9	89	---	.20	1280	---	180	845	13	30
10	89	---	.20	1050	---	72	700	---	23
11	117	---	1.1	845	---	28	595	9	14
12	146	---	2.8	740	---	17	518	5	7.0
13	120	---	1.5	657	---	12	458	4	4.9
14	117	---	1.1	575	---	7.0	422	4	4.6
15	139	---	2.8	678	---	13	391	3	3.2
16	183	---	7.5	849	---	30	360	2	1.9
17	163	---	4.4	783	---	21	346	1	.93
18	142	---	2.6	689	---	14	333	2	1.8
19	217	---	18	634	---	10	326	2	1.8
20	570	223	343	604	---	8.5	321	1	.87
21	726	251	552	544	---	6.2	314	---	.85
22	1160	899	3200	500	---	5.0	303	2	1.6
23	873	210	495	448	---	3.6	302	2	1.6
24	1180	761	2840	440	---	3.4	300	1	.81
25	1760	1120	6080	432	---	3.2	302	1	.82
26	1340	556	2210	392	---	2.5	301	1	.81
27	1280	321	1320	384	---	2.4	286	---	.77
28	1420	1070	4390	377	---	2.3	270	---	.73
29	1010	238	649	356	---	2.0	258	3	2.1
30	823	87	193	346	---	1.9	243	2	1.3
31	704	63	120	---	---	---	232	1	.63
TOTAL	15166	---	22437.96	23191	---	4113.0	15512	---	1999.12
JANUARY				FEBRUARY				MARCH	
1	391	15	18	1010	42	115	813	20	44
2	384	6	8.2	906	23	56	703	14	27
3	569	27	46	938	26	66	641	7	12
4	432	2	2.3	902	18	44	610	5	8.2
5	633	35	93	862	16	37	535	5	7.2
6	985	77	219	738	15	30	491	10	13
7	718	9	17	637	8	14	753	55	132
8	705	16	30	561	5	7.6	863	43	100
9	809	17	41	504	4	5.4	956	54	139
10	907	18	44	461	2	2.5	824	17	38
11	830	12	27	423	2	2.3	994	46	123
12	691	6	11	395	1	1.1	1130	83	253
13	596	5	8.0	380	1	1.0	1060	34	97
14	536	4	5.8	403	3	3.3	880	20	48
15	522	6	8.5	940	98	334	741	10	20
16	737	38	87	2010	263	1520	646	6	10
17	838	54	122	1370	41	152	591	6	9.6
18	2490	2740	23100	1060	18	52	595	7	11
19	2940	4100	37600	883	12	29	596	10	16
20	1660	431	1930	780	6	13	567	4	6.1
21	1080	218	636	782	14	30	613	7	12
22	1070	385	1220	1080	56	163	551	4	6.0
23	1600	480	2070	4160	3590	55900	640	16	46
24	1250	172	580	4200	1760	22900	1150	47	146
25	978	67	177	2440	278	1830	940	22	56
26	818	41	91	1760	---	880	882	14	33
27	771	28	58	1200	75	243	713	5	9.6
28	721	17	33	976	43	113	632	5	8.5
29	751	20	41	---	---	---	565	3	4.6
30	1120	121	366	---	---	---	602	8	13
31	1020	43	118	---	---	---	511	2	2.8
TOTAL	29552	---	68807.8	32761	---	84544.2	22788	---	1451.6

14241490 SOUTH FORK TOUTLE RIVER AT CAMP 12, NEAR TOUTLE, WA--Continued
 SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	497	3	4.0	634	3	5.1	246	---	2.7
2	501	3	4.1	735	4	7.9	230	---	2.5
3	464	2	2.5	727	4	7.9	217	---	2.3
4	458	2	2.5	660	4	7.1	211	---	2.3
5	430	2	2.3	783	7	15	202	---	2.2
6	402	2	2.2	706	3	5.7	199	---	1.8
7	382	2	2.1	652	3	5.3	222	---	2.1
8	366	1	.99	624	2	3.4	200	---	1.6
9	358	4	3.9	599	6	9.7	180	---	1.5
10	335	1	.90	624	5	8.4	165	---	1.3
11	346	4	3.7	649	3	5.3	155	---	1.3
12	384	2	2.1	648	4	7.0	147	---	1.2
13	372	5	5.0	870	9	21	138	---	.75
14	337	1	.91	816	5	11	144	---	.78
15	399	3	3.2	721	2	3.9	147	---	.79
16	513	8	11	587	2	3.2	134	---	.72
17	644	10	17	524	2	2.8	146	---	.79
18	618	3	5.0	489	2	2.6	212	---	1.1
19	547	2	3.0	467	1	1.3	220	2	1.2
20	514	5	6.9	617	4	6.7	156	1	.42
21	501	2	2.7	567	4	6.1	145	1	.39
22	480	5	6.5	512	4	5.5	131	1	.35
23	438	1	1.2	456	2	2.5	120	1	.32
24	402	2	2.2	430	1	1.2	111	1	.30
25	452	3	3.7	387	3	3.1	108	---	.29
26	507	7	9.6	375	1	1.0	103	---	.28
27	670	11	20	357	2	1.9	100	---	.27
28	786	5	11	347	3	2.8	103	---	.28
29	757	5	10	299	2	1.6	114	1	.31
30	683	4	7.4	273	3	2.2	103	---	.28
31	---	---	---	258	6	4.2	---	---	---
TOTAL	14543	---	157.60	17393	---	172.4	4809	---	32.42
JULY			AUGUST			SEPTEMBER			
1	95	---	.26	77	---	.21	74	---	36
2	97	---	.26	76	---	.21	69	---	32
3	100	---	.27	74	---	.20	69	---	30
4	149	1	.40	73	---	.20	67	---	27
5	107	---	.29	73	---	.20	62	144	24
6	93	---	.25	75	---	.20	59	---	22
7	86	---	.23	72	---	.19	58	---	20
8	85	---	.23	70	---	.19	63	---	21
9	85	---	.23	70	---	.19	115	---	35
10	148	3	1.2	69	---	.19	78	---	22
11	178	1	.48	72	---	.19	70	---	18
12	118	---	.32	77	---	.21	62	---	14
13	102	---	.27	74	---	.20	59	---	12
14	96	---	.26	72	---	.19	62	---	11
15	103	---	.28	70	---	.19	61	---	10
16	177	1	.48	67	---	.18	81	50	11
17	191	1	.52	67	---	.18	74	---	8.2
18	137	1	.37	68	---	.18	105	---	9.1
19	114	---	.31	69	1	.19	75	---	4.7
20	102	---	.27	68	---	.18	82	---	3.1
21	97	---	.26	64	---	.17	68	---	.92
22	94	---	.25	64	---	.17	63	---	.17
23	97	---	.26	63	---	.17	150	827	720
24	100	---	.27	63	---	.17	255	2390	1900
25	93	---	.25	65	---	.18	269	1040	919
26	89	---	.24	65	---	.18	324	561	565
27	91	---	.25	63	---	.17	211	80	46
28	89	---	.24	65	---	.18	210	35	20
29	85	---	.23	73	---	.20	297	983	885
30	82	---	.22	83	---	44	300	177	143
31	79	---	.21	84	---	43	---	---	---
TOTAL	3359	---	9.86	2185	---	92.46	3592	---	5569.19

COWLITZ RIVER BASIN

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA

LOCATION.--Lat 46°20'02", long 122°50'20", in NW¼SW¼ sec.20, T.10 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 10 mi downstream from confluence of North and South Forks, 2.9 mi northwest of Silver Lake, and at mile 6.5.

DRAINAGE AREA.--496 mi², of which approximately 21 mi² is noncontributing. Prior to July 7, 1981, the noncontributing portion was approximately 40 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1981 to current year.

REVISED RECORDS.--WDR WA-83-1: 1983(M).

GAGE.--Water-stage recorder. Elevation of gage is 160 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 27, 28, 30, Dec. 1, 2, Mar. 6. Records fair. No regulation or diversion upstream from station. Some quality of water data available from Washington Office for this station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--5 years, 1,822 ft³/s, 59.74 in/yr, 1,581,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,200 ft³/s, revised, Feb. 20, 1982, gage height, 24.25 ft; maximum gage height, 28.03 ft Dec. 3, 1982; minimum daily, 286 ft³/s Sept. 15, 1981, Aug. 25, 1982.

The peak discharges greater than base discharge of 10,000 ft³/s were not reported for water years 1982-85 and are shown below:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 6, 1981	1930	11,000	19.83	Dec. 16	0400	22,400	24.63
Dec. 2	1115	11,500	19.47	Jan. 5, 1983	1515	23,400	25.55
Dec. 5	1400	19,700	21.17	Jan. 8	0700	18,500	24.75
Jan. 16, 1982	2400	16,300	19.51	Nov. 17	2400	13,200	21.96
Jan. 24	0445	36,800	23.95	Nov. 20	0200	11,100	21.32
Feb. 14	0130	18,500	19.38	Jan. 3, 1984	1230	13,700	21.86
Feb. 17	0630	21,000	19.79	Jan. 24	0530	15,700	23.06
Feb. 18	1900	14,800	18.04	Jan. 25	0645	*17,500	*23.55
Feb. 20	0845	*38,200	*24.25	Nov. 2, 1984	1530	(a)	*19.90
Oct. 29, 1982	0445	15,400	23.62	June 7, 1985	1415	*9,690	19.68
Dec. 3	2245	*38,000	*28.03				

(a) Backwater.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods occurred on May 18, 1980, from mudflows caused by the eruption of Mount St. Helens. A flood about 1200 hours was due to mudflow from South Fork Toutle River and a larger flood about 2100 hours was due to mudflow from North Fork Toutle River.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0215	10,400	18.90	Feb. 23	2130	*31,000	*23.76

Minimum daily discharge, 308 ft³/s Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	535	1960	1090	1240	2990	3310	2100	2030	1630	623	457	358		
2	540	2080	1150	1290	2740	2820	2090	2220	1500	627	452	347		
3	543	2140	2040	1950	2670	2410	1890	2210	1360	644	439	346		
4	526	3940	2050	1480	2490	2230	1760	2120	1270	720	428	336		
5	510	3720	2200	1570	2590	2210	1710	2500	1190	649	428	323		
6	517	5560	3620	2840	2260	2200	1630	2330	1130	612	428	320		
7	571	6200	4500	2260	2040	3270	1580	2170	1160	595	422	308		
8	533	5470	4030	2230	1850	4080	1530	2120	1080	595	416	321		
9	509	4290	3130	2500	1730	4050	1520	2010	1000	591	407	417		
10	515	3420	2450	2930	1630	3260	1440	2150	964	675	401	357		
11	575	3050	2120	2820	1530	3350	1430	2280	945	752	408	338		
12	625	2680	1870	2430	1440	3750	1550	2230	924	619	411	336		
13	598	2210	1760	2200	1430	3490	1460	3060	879	581	400	320		
14	594	2010	1630	2020	1520	3170	1340	3030	871	569	404	319		
15	653	2180	1590	1930	3200	2750	1450	2620	861	580	396	324		
16	702	2770	1330	2300	6180	2450	1640	2310	804	789	382	362		
17	762	2520	1240	2590	4620	2310	1830	2120	810	832	385	349		
18	690	2280	1180	5470	3600	2280	1940	2030	952	687	376	397		
19	787	2120	1140	8540	2960	2290	1740	2000	981	636	382	362		
20	1450	2050	1120	5700	2510	2200	1650	2530	828	627	381	364		
21	1860	2010	1110	4220	2230	2140	1630	2440	815	613	377	345		
22	2590	1910	1100	3990	2870	2000	1670	2370	772	592	371	344		
23	2570	1780	1110	4590	14800	2060	1590	2100	741	582	365	445		
24	3170	1670	1120	3830	18200	3460	1470	1950	720	573	359	847		
25	5510	1540	1150	3150	10300	2840	1630	1940	702	553	357	747		
26	3920	1390	1130	2720	7420	2820	1710	1990	683	528	358	875		
27	3390	1310	1090	2600	5290	2500	1980	1940	658	521	360	704		
28	4250	1240	1020	2440	4150	2300	2360	1810	649	508	352	743		
29	2930	1160	948	2360	---	2130	2370	1730	664	491	357	922		
30	2320	1120	919	3110	---	2380	2180	1730	648	479	378	942		
31	2120	---	903	2950	---	2250	---	1710	---	472	379	---		
TOTAL	47365	77780	52840	92250	117240	84760	51870	67780	28191	18915	12216	13818		
MEAN	1528	2593	1705	2976	4187	2734	1729	2186	940	610	394	461		
MAX	5510	6200	4500	8540	18200	4080	2370	3060	1630	832	457	942		
MIN	509	1120	903	1240	1430	2000	1340	1710	648	472	352	308		
CFSM	3.08	5.23	3.44	6.00	8.44	5.51	3.49	4.41	1.90	1.23	.79	.93		
IN.	3.55	5.83	3.96	6.92	8.79	6.36	3.89	5.08	2.11	1.42	.92	1.04		
AC-FT	93950	154300	104800	183000	232500	168100	102900	134400	55920	37520	24230	27410		
CAL YR 1985	TOTAL	597611	MEAN	1637	MAX	6720	MIN	412	CFSM	3.30	IN.	44.82	AC-FT	1185000
WTR YR 1986	TOTAL	665025	MEAN	1822	MAX	18200	MIN	308	CFSM	3.67	IN.	49.88	AC-FT	1319000

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: February 1981 to current year. Records for February 1981 to September 1983 published in U.S. Geological Survey Open-File Report 85-632, and records for October 1983 to September 1985 will be published subsequently in a U.S. Geological Survey open-file report.

INSTRUMENTATION.--Automatic pumping sediment sampler since February 1981.

REMARKS.--Sediment concentrations and corresponding sediment discharges reported as 0 mg/L or 0 tons should be interpreted as <1 due to the limitations of sampling equipment, analytical methods, rounding errors, and the likelihood of minor amounts of sediment transport occurring at even the lowest of discharges.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 232,000 mg/L Mar. 20, 1982; minimum, 130 mg/L Sept. 26, 1981.
SEDIMENT DISCHARGE: Maximum daily, 5,930,000 tons Feb. 20, 1982; minimum, 150 tons Sept. 14, 1986.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 17,000 mg/L Feb. 24; minimum, 173 mg/L Sept. 22.
SEDIMENT DISCHARGE: Maximum daily, 873,000 tons Feb. 24; minimum, 150 tons Sept. 14.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NUMBER OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT												
02...	1200	--	580	5	20.0	1720	2690	--	--	--	--	--
16...	1550	--	703	5	20.0	5400	10200	--	--	--	--	--
23...	1525	10.0	2760	5	20.0	5120	38200	--	--	--	--	--
25...	1235	11.0	6190	5	20.0	10600	177000	7	9	24	35	--
25...	1745	12.0	5240	5	20.0	7860	111000	--	--	--	--	42
NOV												
06...	1235	8.5	5590	5	20.0	5720	86300	--	--	--	--	33
08...	1210	7.0	5340	5	20.0	6290	90700	--	--	--	--	34
21...	1320	2.5	2010	5	20.0	1620	8790	--	--	--	--	27
29...	1315	0.5	1160	5	20.0	1250	3920	--	--	--	--	--
DEC												
09...	1335	3.5	3000	5	20.0	1980	16000	--	--	--	--	27
23...	1300	--	1110	5	20.0	664	1990	--	--	--	--	--
JAN												
03...	1255	4.5	2020	5	20.0	1240	6760	--	--	--	--	--
10...	1230	6.0	2880	5	20.0	1220	9490	--	--	--	--	--
16...	1215	8.0	2130	5	20.0	970	5580	--	--	--	--	--
19...	1140	7.5	8310	5	20.0	9780	219000	11	14	33	49	66
21...	1345	5.0	4080	5	20.0	4840	53300	--	--	--	--	53
29...	1210	6.5	2280	5	20.0	2570	15800	--	--	--	--	34
FEB												
11...	1345	4.0	1540	5	20.0	1480	6150	--	--	--	--	37
16...	1635	4.5	5780	5	20.0	4240	66200	--	--	--	--	33
18...	1545	5.0	3210	5	20.0	2420	21000	--	--	--	--	--
23...	1810	--	23700	5	20.0	25400	1630000	6	9	27	39	58
24...	1020	9.5	17700	5	20.0	17400	832000	9	9	26	32	--
26...	1530	11.0	7060	5	20.0	8180	156000	--	--	--	--	46

DATE	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM
OCT											
02...	27	--	--	--	--	--	--	--	--	--	--
16...	46	--	--	--	--	--	--	--	--	--	--
23...	36	--	--	--	--	--	--	--	--	--	--
25...	46	--	66	--	89	--	99	--	100	--	--
25...	44	64	--	87	--	98	--	100	--	--	--
NOV											
06...	33	57	--	83	--	94	--	99	--	100	--
08...	33	52	--	80	--	95	--	99	--	100	--
21...	27	39	--	62	--	83	--	98	--	100	--
29...	45	--	--	--	--	--	--	--	--	--	--
DEC											
09...	30	42	--	77	--	93	--	99	--	100	--
23...	45	--	--	--	--	--	--	--	--	--	--
JAN											
03...	35	--	46	--	71	--	92	--	100	--	--
10...	--	--	--	--	--	--	--	--	--	--	--
16...	41	--	59	--	83	--	96	--	99	--	100
19...	64	84	--	94	--	99	--	100	--	--	--
21...	52	73	--	92	--	99	--	99	--	100	--
29...	33	52	--	82	--	97	--	100	--	--	--
FEB											
11...	37	52	--	80	--	96	--	100	--	--	--
16...	37	50	--	69	--	83	--	98	--	100	--
18...	40	--	55	--	78	--	96	--	99	--	100
23...	56	81	--	96	--	99	--	100	--	--	--
24...	49	--	71	--	91	--	99	--	100	--	--
26...	44	69	--	93	--	100	--	--	--	--	--

COWLITZ RIVER BASIN

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	OF SAM- PLING POINTS	SAM- PLING METHOD, CODES	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- DIS- CHARGE, SUS- PENDED (T/DAY)	SED. FALL DIAM. % FINER THAN .002 MM	SED. FALL DIAM. % FINER THAN .004 MM	
MAR										
07...	1445	12.0	3360	5	20.0	7700	69900	7	10	
07...	1450	12.0	3330	5	20.0	7160	64400	8	10	
14...	1205	7.5	2980	5	20.0	4900	39400	--	--	
28...	1435	11.5	2300	5	20.0	2460	15300	--	--	
APR										
09...	1400	11.5	1480	5	20.0	2000	7990	--	--	
24...	1245	6.5	1430	5	20.0	2460	9500	--	--	
MAY										
09...	1315	10.0	1970	5	20.0	2310	12300	--	--	
21...	1315	14.0	2380	5	20.0	2640	17000	--	--	
JUN										
10...	1220	19.5	970	5	20.0	2030	5320	--	--	
JUL										
02...	1345	19.5	637	--	10.0	1020	1750	--	--	
22...	1230	17.5	584	--	10.0	895	1410	--	--	
AUG										
07...	1110	20.5	425	--	10.0	1060	1220	--	--	
21...	1215	--	371	--	10.0	726	727	--	--	
SEP										
08...	1210	16.0	302	--	10.0	312	254	--	--	
24...	1200	12.0	864	--	10.0	3170	7390	--	--	
DATE		SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM
MAR										
07...	24	35	49	--	67	88	98	100	--	--
07...	27	37	52	--	72	93	99	100	--	--
14...	--	--	49	47	73	95	100	--	--	--
28...	--	--	51	50	71	90	99	100	--	--
APR										
09...	--	--	--	43	--	--	--	--	--	--
24...	--	--	25	30	40	75	95	99	100	--
MAY										
09...	--	--	22	21	36	79	99	100	--	--
21...	--	--	24	28	39	75	98	100	--	--
JUN										
10...	--	--	--	34	--	--	--	--	--	--
JUL										
02...	--	--	--	37	--	--	--	--	--	--
22...	--	--	--	23	--	--	--	--	--	--
AUG										
07...	--	--	--	10	--	--	--	--	--	--
21...	--	--	--	4	--	--	--	--	--	--
SEP										
08...	--	--	--	13	--	--	--	--	--	--
24...	--	--	--	32	--	--	--	--	--	--

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	535	1460	2110	1960	4970	26300	1090	---	3000
2	540	1680	2450	2080	3220	18100	1150	---	3500
3	543	1840	2700	2140	4080	23600	2040	3120	17200
4	526	2070	2940	3940	7110	75600	2050	1780	9850
5	510	3140	4320	3720	4850	48700	2200	1890	11200
6	517	2110	2950	5560	5830	87500	3620	3760	36800
7	571	2300	3550	6200	6250	105000	4500	2930	35600
8	533	1940	2790	5470	6200	91600	4030	2140	23300
9	509	2170	2980	4290	5210	60300	3130	2000	16900
10	515	1820	2530	3420	5910	54600	2450	2220	14700
11	575	3380	5250	3050	4520	37200	2120	2540	14500
12	625	2470	4170	2680	3840	27800	1870	2010	10100
13	598	1620	2620	2210	3690	22000	1760	2270	10800
14	594	2210	3540	2010	3010	16300	1630	1550	6820
15	653	---	6000	2180	3120	18400	1590	1330	5710
16	702	4500	8530	2770	4870	36400	1330	910	3270
17	762	2650	5450	2520	3610	24600	1240	---	3000
18	690	1960	3650	2280	2970	18300	1180	1040	3310
19	787	2840	6030	2120	2460	14100	1140	---	3000
20	1450	7170	28100	2050	2030	11200	1120	---	3000
21	1860	5560	27900	2010	1610	8740	1110	---	2500
22	2590	7830	54600	1910	---	8000	1100	---	2500
23	2570	5000	34700	1780	---	7000	1110	664	1990
24	3170	6250	57700	1670	---	6000	1120	---	2000
25	5510	9580	143000	1540	---	5000	1150	---	2000
26	3920	5690	60200	1390	1140	4280	1130	624	1900
27	3390	4830	44200	1310	1460	5160	1090	---	1500
28	4250	6400	73400	1240	876	2930	1020	---	1500
29	2930	5910	46800	1160	1250	3920	948	---	1500
30	2320	5320	33300	1120	---	3500	919	451	1120
31	2120	4010	23000	---	---	---	903	---	1000
TOTAL	47365	---	701460	77780	---	872130	52840	---	255070
JANUARY			FEBRUARY			MARCH			
1	1240	1050	3800	2990	---	20000	3310	4770	42600
2	1290	---	3000	2740	---	15000	2820	3170	24100
3	1950	1270	6690	2670	2060	14900	2410	3180	20700
4	1480	894	3570	2490	---	15000	2230	---	20000
5	1570	1370	7540	2590	2500	17500	2210	3670	21900
6	2840	3720	30400	2260	2260	13800	2200	3200	19000
7	2260	1680	10300	2040	2180	12000	3270	5340	47100
8	2230	1670	10100	1850	1840	9190	4080	5140	56600
9	2500	1810	12200	1730	1630	7610	4050	4780	52300
10	2930	1790	14200	1630	1550	6820	3260	3930	34600
11	2820	1210	9210	1530	1410	5820	3350	4660	42100
12	2430	1050	6890	1440	1590	6180	3750	5160	52200
13	2200	1060	6300	1430	1630	6290	3490	4700	44300
14	2020	1110	6050	1520	1600	6570	3170	4180	35800
15	1930	1020	5320	3200	4150	35900	2750	3130	23200
16	2300	1460	9070	6180	6390	107000	2450	2900	19200
17	2590	1980	13800	4620	3840	47900	2310	2870	17900
18	5470	6440	101000	3600	2580	25100	2280	3400	20900
19	8540	9410	217000	2960	1800	14400	2290	2950	18200
20	5700	5800	89300	2510	1450	9830	2200	2580	15300
21	4220	4700	53600	2230	1480	8910	2140	2740	15800
22	3990	4410	47500	2870	3450	26700	2000	2000	10800
23	4590	6850	84900	14800	15000	816000	2060	2130	11800
24	3830	4810	49700	18200	17000	873000	3460	4610	43100
25	3150	4010	34100	10300	12700	353000	2840	3290	25200
26	2720	2950	21700	7420	9200	184000	2820	2660	20300
27	2600	2460	17300	5290	6760	96600	2500	2310	15600
28	2440	2630	17300	4150	6410	71800	2300	2470	15300
29	2360	3020	19200	---	---	---	2130	2000	11500
30	3110	---	30000	---	---	---	2380	---	15000
31	2950	2600	20700	---	---	---	2250	2550	15500
TOTAL	92250	---	961740	117240	---	2826820	84760	---	827900

COWLITZ RIVER BASIN

14242580 TOUTLE RIVER AT TOWER ROAD, NEAR SILVER LAKE, WA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	2100	---	15000	2030	2670	14600	1630	3160	13900
2	2090	3340	18800	2220	2930	17600	1500	2760	11200
3	1890	---	15000	2210	2780	16600	1360	2470	9070
4	1760	2140	10200	2120	2880	16500	1270	2330	7990
5	1710	---	9500	2500	3560	24000	1190	2240	7200
6	1630	---	9000	2330	2830	17800	1130	2150	6560
7	1580	2050	8750	2170	2420	14200	1160	2510	7860
8	1530	---	8500	2120	2360	13500	1080	1830	5340
9	1520	1890	7760	2010	2340	12700	1000	1540	4160
10	1440	1750	6800	2150	2780	16100	964	2010	5230
11	1430	2090	8070	2280	2970	18300	945	2130	5430
12	1550	2730	11400	2230	2430	14600	924	2100	5240
13	1460	2040	8040	3060	5020	41500	879	1950	4630
14	1340	1670	6040	3030	3860	31600	871	2060	4840
15	1450	2520	9870	2620	3720	26300	861	1470	3420
16	1640	3530	15600	2310	3040	19000	804	1480	3210
17	1830	3540	17500	2120	2460	14100	810	1390	3040
18	1940	3690	19300	2030	2480	13600	952	2580	6630
19	1740	2690	12600	2000	2340	12600	981	3090	8180
20	1650	2230	9930	2530	3590	24500	828	1220	2730
21	1630	2410	10600	2440	3080	20300	815	1100	2420
22	1670	2700	12200	2370	2730	17500	772	1470	3060
23	1590	2550	10900	2100	2550	14500	741	1440	2880
24	1470	2270	9010	1950	2230	11700	720	---	2500
25	1630	2970	13100	1940	2100	11000	702	---	2000
26	1710	2970	13700	1990	2970	16000	683	---	2000
27	1980	3630	19400	1940	2720	14200	658	795	1410
28	2360	4560	29100	1810	2490	12200	649	---	1500
29	2370	3340	21400	1730	2480	11600	664	---	2000
30	2180	2940	17300	1730	2710	12700	648	1240	2170
31	---	---	---	1710	3210	14800	---	---	---
TOTAL	51870	---	384370	67780	---	536200	28191	---	147800
JULY			AUGUST			SEPTEMBER			
1	623	---	2000	457	1340	1650	358	215	208
2	627	1020	1730	452	992	1210	347	235	220
3	644	726	1260	439	830	984	346	234	219
4	720	---	2500	428	828	957	336	262	238
5	649	---	2500	428	940	1090	323	288	251
6	612	---	2000	428	1100	1270	320	180	156
7	595	---	2000	422	1120	1280	308	182	151
8	595	996	1600	416	1240	1390	321	259	224
9	591	1030	1640	407	1270	1400	417	1050	1180
10	675	1820	3500	401	928	1000	357	410	395
11	752	2060	4180	408	1170	1290	338	419	382
12	619	1290	2160	411	1310	1450	336	227	206
13	581	1380	2160	400	951	1030	320	176	152
14	569	1340	2060	404	1070	1170	319	174	150
15	580	974	1530	396	769	822	324	193	169
16	789	2460	5240	382	664	685	362	282	276
17	832	2330	5230	385	636	661	349	209	197
18	687	1900	3520	376	492	499	397	477	511
19	636	1110	1910	382	478	493	362	267	261
20	627	---	1500	381	539	554	364	273	268
21	613	---	1500	377	515	524	345	204	190
22	592	965	1540	371	350	351	344	173	161
23	582	1180	1850	365	295	291	445	395	618
24	573	1050	1620	359	291	282	847	1940	4440
25	553	886	1320	357	215	207	747	808	1630
26	528	908	1290	358	175	169	875	1260	2980
27	521	1270	1790	360	187	182	704	578	1100
28	508	1390	1910	352	240	228	743	684	1370
29	491	980	1300	357	262	253	922	---	4000
30	479	1310	1690	378	441	450	942	---	3000
31	472	944	1200	379	468	479	---	---	---
TOTAL	18915	---	67230	12216	---	24301	13818	---	25303

14243000 COWLITZ RIVER AT CASTLE ROCK, WA

LOCATION.--Lat 46°16'N, long 122°54'48"W, in SW¼ sec.10, T.9 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, on left bank 40 ft downstream from Arkansas Valley Road bridge in Castle Rock, 2.7 mi downstream from Toutle River, and at mile 17.3.

DRAINAGE AREA.--2,238 mi², of which approximately 21 mi² is noncontributing. Prior to July 7, 1981, the noncontributing portion was approximately 40 mi².

PERIOD OF RECORD.--December 1926 to September 1985; October 1985 to current year (seasonal records only).

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1638: 1947(P), 1951.

GAGE.--Water-stage recorder. Datum of gage is 20.20 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 18, 1933, nonrecording gage at site 2 mi upstream at datum 14.93 ft higher. Dec. 18, 1933, to June 13, 1934, nonrecording gage, and June 14 to Sept. 30, 1934, water-stage recorder, at present site at datum 5.0 ft higher. Oct. 1, 1934, to May 21, 1980, water-stage recorder, on right bank at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Riffe Lake (station 14234800) at mile 65.5, and Mayfield Reservoir (station 14237800) at mile 52.0. Minor diversions for domestic and farm use upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--58 years (water years 1927-85), 9,263 ft³/s, 56.21 in/yr, 6,711,000 acre-ft/yr, adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 139,000 ft³/s Dec. 23, 1933, gage height, 31.6 ft present datum, from rating curve extended above 80,000 ft³/s; minimum, 998 ft³/s Nov. 7, 8, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge for period October to April, 62,700 ft³/s Feb. 24, gage height, 24.41 ft; minimum daily discharge, 3,520 ft³/s Oct. 1, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO APRIL 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	3520	7100	7420	7900	10700	16500	9320
2	3560	7350	7490	8130	10300	15400	9330
3	3880	7390	10300	9860	10100	14900	8930
4	3670	10200	9680	9260	9800	15200	8730
5	3520	10100	9720	9140	9990	13500	8020
6	3540	11600	12700	11500	9680	12900	7740
7	4110	12300	14200	10300	9300	13600	7670
8	4070	11500	12300	10100	8710	14900	7620
9	4040	10400	10800	10500	8400	14400	7300
10	4020	9400	9760	10900	8220	13500	7250
11	4080	8440	9090	10800	8000	13700	7160
12	4180	8300	8620	10100	7900	14300	7250
13	4130	7920	8300	9620	7980	13900	7180
14	4100	7630	8080	9290	7910	13600	7060
15	4190	7770	7910	9110	10600	11900	7190
16	4260	9000	7730	9750	16800	11100	7400
17	4330	8980	7620	10800	14100	10600	7560
18	4220	8840	7460	18300	11900	10700	7700
19	4270	8950	7430	25500	10800	10600	7500
20	5220	9240	7420	15700	10600	9370	7380
21	5930	10100	7390	12500	10200	9320	7330
22	6570	12700	7360	11700	11100	9020	7380
23	6670	12600	7360	13900	29200	9110	7300
24	7150	12600	7470	12600	46400	12200	7240
25	11100	12800	7480	11900	27800	11700	7440
26	10600	11000	7470	10900	26900	11600	7580
27	10200	10300	7430	10300	22200	10900	7880
28	11100	9800	7360	9960	19300	10400	8230
29	9130	7970	7440	9810	---	9790	8260
30	8030	7580	7440	11600	---	9880	8140
31	7440	---	7430	11300	---	9460	---
TOTAL	174830	289860	265660	353030	394790	377950	232070
MEAN	5640	9662	8570	11390	14100	12190	7736
MAX	11100	12800	14200	25500	46400	16500	9330
MIN	3520	7100	7360	7900	7900	9020	7060
AC-FT	346800	574900	526900	700200	783100	749700	460300
MEAN†	6016	11190	6255	12940	18440	13250	7500
CFSM†	2.69	5.00	2.79	5.78	8.24	5.92	3.35
IN.†	3.10	5.58	3.22	6.67	8.58	6.83	3.74
AC-FT†	369900	665800	384600	795600	1024100	814600	446300

CAL YR 1985 TOTAL 2659990 MEAN 7288 MAX 6600 MIN 3170 AC-FT 5276000 MEAN† 7267 CFSM† 3.25 IN.† 44.09 AC-FT† 5261000

† Adjusted for change in contents in Riffe Lake and Mayfield Reservoirs.

COWLITZ RIVER BASIN

14244200 COWLITZ RIVER AT KELSO, WA
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 46°08'44", long 122°54'47", near center of SE¼ sec.27, T.8 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, at Main Street bridge between Kelso and West Kelso, 3.6 mi upstream from Coweman River, and at mile 4.9.

DRAINAGE AREA.--2,349 mi².

PERIOD OF RECORD.--Water years 1960-1966, 1971-75, 1977 to current year. Additional data from April to August 1980 are published in U.S. Geological Survey Open-File Report 81-1007 and miscellaneous quality of water data are available from the Washington Office.

REMARKS.--Water discharges obtained by routing flows from upstream station (station 14243000). Station is tidally-influenced, and discharge values are poor.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB MG/L AS CAC03
NOV 20...	1300	8990	103	7.4	6.0	28	12.2	97	150	110	31	9
JAN 16...	1300	--	109	7.6	6.0	23	12.5	101	92	360	31	9
MAY 13...	1225	9300	117	7.6	9.5	26	11.4	99	95	180	31	7
JUL 23...	1330	3410	174	7.1	13.5	4.0	9.9	95	K16	K18	44	19
SEP 23...	1325	E3150	150	7.4	11.5	6.5	10.5	98	640	740	37	10

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L AS CAC03)	BICAR- BONATE IT-FLD (MG/L AS HC03)	CAR- BONATE IT-FLD (MG/L AS C03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
NOV 20...	8.9	2.0	8.5	37	0.7	1.0	22	27	0	14	7.6	<0.1
JAN 16...	9.1	2.1	8.1	35	0.7	1.0	22	27	0	14	6.3	<0.1
MAY 13...	9.1	2.1	9.2	38	0.7	1.1	24	30	0	18	--	<0.1
JUL 23...	13	2.7	16	43	1	1.4	25	30	0	27	11	0.1
SEP 23...	11	2.3	13	42	1	1.3	27	33	0	21	10	<0.1

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
NOV 20...	15	65	72	0.09	1580	0.01	0.31	0.03	<0.2	0.05	0.04	0.02
JAN 16...	15	62	69	0.08	--	<0.01	0.24	0.04	0.3	0.04	<0.01	0.01
MAY 13...	15	108	--	--	--	<0.01	0.18	0.03	0.4	0.07	0.01	0.01
JUL 23...	16	109	100	0.15	1000	<0.01	0.12	0.04	0.4	0.04	<0.01	<0.01
SEP 23...	14	113	89	0.15	--	<0.01	<0.10	0.02	0.2	0.05	0.01	<0.01

K = Results based on colony count outside the acceptable range (non-ideal colony count).

14244200 COWLITZ RIVER AT KELSO, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE		ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
NOV	20...	230	<1	4	<0.5	<1	<1	<3	3	150	<1	7	21
JAN	16...	190	<1	4	0.5	<1	<1	<3	10	130	2	8	16
MAY	13...	--	--	--	--	--	--	--	--	--	--	--	--
JUL	23...	10	<1	3	<0.5	1	<1	<3	3	41	<5	14	20
SEP	23...	--	--	--	--	--	--	--	--	--	--	--	--
DATE		MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
NOV	20...	<0.1	<10	2	<1	<1	45	<6	9	580	14100	--	
JAN	16...	<0.1	<10	3	<1	<1	45	<6	14	384	--	33	
MAY	13...	--	--	--	--	--	--	--	--	486	12200	39	
JUL	23...	0.2	<10	1	<1	<1	56	<6	6	129	1190	--	
SEP	23...	--	--	--	--	--	--	--	--	132	--	46	

COWLITZ RIVER BASIN

14245150 COWLITZ RIVER AT LONGVIEW, WA

LOCATION.--Lat 46°06'13", long 122°53'30", in NE¼SE¼ sec.11, T.7 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, near left bank on downstream side of railroad bridge, 0.3 mi downstream from Coweman River, 3.2 mi southeast of Longview City Hall, and at mile 1.0.

DRAINAGE AREA.--2,480 mi², at mouth, 1.0 mi downstream.

PERIOD OF RECORD.--May 1984 to current year (gage heights only). Maximum and minimum gage heights only October 1985 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Reference to Columbia River Datum in WDR-OR-84-2, WDR-OR-85-2, WDR-WA-84-1, and WDR-WA-85-1 is incorrect.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 11.53 ft Mar. 10, 1986; minimum, 2.12 ft Aug. 26, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 11.53 ft Mar. 10; minimum, 2.42 ft Oct. 6.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	6.07	2.60	7.15	4.42	5.83	4.30	6.54	4.26			---	---
2	6.04	2.67	6.50	4.53	6.65	4.25	6.29	4.53			---	---
3	5.51	2.70	5.96	4.53	6.95	4.76	6.73	4.67			---	---
4	5.30	2.68	6.24	4.62	6.47	5.10	6.59	4.83			10.53	9.09
5	5.17	2.49	5.93	4.98	6.91	5.08	7.20	4.82			9.77	8.28
6	4.89	2.42	6.27	5.07	7.48	5.33	7.53	5.36			9.41	7.93
7	4.74	2.44	6.79	5.38	8.27	6.11	7.65	5.12			9.86	8.21
8	4.44	2.62	7.51	5.76	8.53	6.28	8.28	5.28			10.54	8.60
9	4.77	2.53	7.84	5.65	8.66	6.12	8.32	5.39			11.23	8.96
10	4.83	2.56	8.32	5.47	8.85	5.95	8.92	5.43			11.53	9.40
11	5.72	2.73	8.32	5.14	8.96	5.73	8.31	5.49			11.33	9.34
12	5.98	2.82	8.63	5.11	8.91	5.57	8.01	5.30			11.02	8.97
13	6.08	2.75	8.45	4.96	8.78	5.47	7.84	5.22			10.73	8.80
14	6.22	2.72	8.35	4.83	8.22	5.44	7.33	5.10			10.52	8.84
15	6.76	2.78	8.39	4.67	7.26	5.06	7.29	5.01			10.50	8.75
16	7.14	2.92	7.66	5.05	6.60	4.72	7.36	5.03			10.10	8.39
17	7.04	3.09	6.94	5.00	6.34	4.73	7.50	5.66			9.25	7.79
18	6.80	3.01	6.12	4.91	6.16	4.67	8.14	5.84			8.34	7.46
19	6.39	3.05	6.07	4.83	6.07	4.60	---	---			7.87	7.27
20	6.44	3.08	6.54	4.88	6.10	4.51	---	---			7.63	6.91
21	6.13	3.63	6.84	5.08	6.10	4.39	---	---			7.84	6.89
22	6.30	3.65	7.04	5.65	6.23	4.37	---	---			7.69	6.71
23	6.34	3.98	6.85	5.42	6.20	4.35	---	---			7.77	6.69
24	6.65	4.11	7.33	5.47	5.91	4.35	---	---			8.52	6.87
25	7.09	4.93	7.78	5.74	6.37	4.31	---	---			8.40	6.79
26	7.62	5.17	7.32	5.15	6.71	4.32	---	---			8.98	6.90
27	7.71	5.29	7.20	5.02	6.78	4.29	---	---			9.48	7.20
28	7.19	5.28	6.97	5.00	6.83	4.30	---	---			9.55	7.09
29	6.99	4.81	7.24	4.60	6.80	4.38	---	---			9.28	6.78
30	6.94	4.64	6.51	4.44	6.51	4.31	---	---			8.93	6.71
31	6.80	4.48	---	---	6.35	4.28	---	---			8.73	6.88
MONTH	7.71	2.42	8.63	4.42	8.96	4.25	---	---			---	---

COWLITZ RIVER BASIN

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14245150 COWLITZ RIVER AT LONGVIEW, WA--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	8.75	6.77	7.84	6.47	9.10	7.66	5.94	4.59	5.32	3.68	4.95	3.43
2	7.91	6.59	7.72	6.58	9.26	7.83	5.88	4.34	5.57	3.63	5.20	3.67
3	7.74	6.52	7.89	6.54	9.65	7.94	5.98	4.11	5.95	3.61	5.40	3.66
4	7.98	6.56	7.87	6.44	9.73	7.93	6.15	4.13	6.06	3.60	5.81	3.64
5	7.88	6.33	7.91	6.53	9.93	7.97	5.76	4.04	6.13	3.59	6.31	3.65
6	7.65	6.24	8.47	6.75	9.64	7.53	5.72	3.99	5.93	3.60	6.38	3.64
7	7.93	6.24	8.77	6.56	9.37	7.26	5.80	3.96	6.18	3.59	6.51	3.67
8	7.94	6.19	8.25	6.50	9.05	6.98	5.85	3.93	6.22	3.58	6.59	3.67
9	7.82	6.07	8.03	6.42	8.72	6.63	6.23	3.92	6.01	3.56	6.21	3.71
10	7.52	6.01	8.25	6.45	8.23	6.08	6.00	3.94	6.05	3.55	5.89	3.71
11	7.52	5.94	8.10	6.53	7.64	5.68	6.19	4.05	6.01	3.55	5.48	3.63
12	7.89	6.09	8.02	6.51	7.29	5.64	6.21	3.97	6.03	3.56	5.44	3.63
13	7.62	6.02	8.35	6.81	7.94	5.88	6.00	3.91	6.17	3.55	5.52	3.62
14	7.39	5.98	7.86	6.75	7.72	6.42	6.01	3.88	6.21	3.57	5.57	3.61
15	7.77	6.07	7.40	6.54	8.01	6.39	6.24	3.87	6.22	3.55	5.89	3.61
16	7.50	6.18	7.12	6.44	8.30	6.35	6.79	3.95	6.26	3.51	6.16	3.66
17	7.08	6.26	7.10	6.18	8.61	6.39	6.71	4.06	6.46	3.51	6.56	3.66
18	6.85	6.34	6.97	6.01	8.73	6.44	6.88	4.01	6.50	3.50	6.54	3.70
19	6.96	6.16	7.11	5.95	8.99	6.51	7.11	3.93	6.72	3.51	6.36	3.70
20	6.94	6.01	7.78	6.28	9.41	6.41	6.98	3.87	6.64	3.50	6.38	3.69
21	7.05	5.97	8.50	6.33	9.46	6.36	7.23	3.86	6.59	3.51	5.96	3.67
22	7.52	6.02	8.97	6.45	9.18	6.30	7.61	3.92	6.19	3.50	5.80	3.64
23	7.92	5.99	9.47	6.57	8.84	6.26	7.58	3.93	6.06	3.51	6.36	3.66
24	8.36	6.04	9.85	6.37	8.79	6.24	6.96	3.86	5.61	3.49	6.45	3.95
25	9.61	6.27	9.45	5.90	8.30	6.13	6.48	3.84	5.19	3.47	6.09	3.96
26	9.41	6.51	8.98	5.86	7.82	6.04	6.11	3.81	5.20	3.45	5.33	4.10
27	9.75	6.82	8.39	5.89	7.50	6.01	5.90	3.80	5.07	3.45	5.02	3.97
28	9.18	6.79	8.21	5.97	7.13	5.81	5.57	3.78	4.96	3.46	5.00	3.83
29	8.66	6.79	8.01	6.20	6.87	5.71	5.27	3.76	4.72	3.45	5.08	3.86
30	8.13	6.65	8.48	6.66	6.67	4.65	5.25	3.73	4.70	3.46	5.43	4.03
31	---	---	8.98	7.47	---	---	5.20	3.73	4.75	3.45	---	---
MONTH	9.75	5.94	9.85	5.86	9.93	4.65	7.61	3.73	6.72	3.45	6.59	3.43

14245300 COLUMBIA RIVER AT LONGVIEW, WA

LOCATION.--Lat 46°06'22", long 122°57'14", in SE1/4 sec.8, T.7 N., R.2 W., Cowlitz County, Hydrologic Unit 17080003, on right bank, at the Port of Longview, 2,000 ft upstream from Longview Bridge, 2.1 mi downstream from Cowlitz River and at mile 66.2.

DRAINAGE AREA.--256,700 mi², approximately.

PERIOD OF RECORD.--November 1983 to current year (gage heights only). Gage-height records collected at site on opposite bank, at different datum, published as "at Rainier" (station 14245295) November 1971 to May 1981. Maximum and minimum gage heights only October 1985 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Reference to Columbia River Datum in WDR-OR-84-2, WDR-OR-85-2, WDR-WA-84-1, and WDR-WA-85-1 is incorrect.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 16.52 ft Jan. 19, 1974; minimum, 0.46 ft July 6, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 13.01 ft Feb. 25; minimum not recorded because of equipment failure.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	5.91	1.32	6.78	2.02	---	1.68	---	1.20	---	3.44	11.70	9.50
2	---	1.46	6.06	2.33	6.21	1.47	---	1.24	---	3.61	11.01	8.74
3	5.35	1.49	5.43	1.69	6.33	3.05	---	1.79	7.91	3.53	10.36	8.13
4	4.85	---	4.84	1.24	---	2.58	---	1.64	7.89	3.60	9.69	7.50
5	4.85	1.06	4.89	1.08	---	2.65	---	1.95	7.58	2.90	8.97	---
6	4.70	---	4.87	1.54	---	2.91	---	2.02	---	2.87	8.68	---
7	4.46	---	5.63	1.94	7.57	3.30	---	2.25	---	---	9.31	---
8	4.12	---	6.70	3.06	---	3.84	---	2.50	---	---	9.86	---
9	4.56	---	---	3.38	8.09	4.04	---	2.49	---	---	10.45	7.68
10	4.66	---	7.91	3.58	8.40	4.10	---	2.98	---	---	10.80	8.04
11	---	1.17	---	3.47	---	3.90	---	2.56	---	---	10.60	8.00
12	---	---	---	3.45	8.60	3.65	---	2.43	7.36	3.40	10.24	7.52
13	---	1.04	---	3.15	8.46	3.58	---	2.29	7.01	3.44	9.97	---
14	5.42	1.04	---	3.10	7.88	3.65	---	2.43	6.98	3.48	9.68	---
15	---	1.11	---	2.88	6.83	2.89	---	2.42	7.88	4.20	9.65	---
16	---	1.48	7.32	3.21	6.04	1.89	---	2.61	7.82	4.74	9.29	---
17	---	1.65	---	2.24	---	2.31	---	3.17	7.62	5.27	8.34	---
18	---	1.61	---	1.81	---	2.22	---	3.28	7.91	5.65	---	---
19	6.23	1.74	---	1.83	---	1.98	---	4.11	7.90	5.67	---	---
20	---	1.47	---	1.98	---	1.75	6.77	3.75	8.35	5.85	---	4.43
21	---	1.70	---	2.66	---	1.88	6.62	3.27	8.54	5.77	6.89	4.21
22	5.96	1.98	---	2.88	---	1.64	---	3.44	9.26	6.23	6.69	3.79
23	---	1.94	---	2.55	---	1.20	---	3.81	10.99	6.54	---	3.53
24	---	2.04	---	3.06	---	---	---	3.64	12.68	9.80	---	3.93
25	---	2.39	6.85	3.31	---	1.19	---	---	13.01	10.93	---	3.58
26	---	2.58	6.74	2.44	---	1.25	---	---	12.72	11.14	7.77	4.14
27	---	2.84	6.68	2.17	---	1.43	---	3.10	12.51	10.61	8.41	4.93
28	---	2.05	---	1.78	---	1.45	---	---	12.14	10.03	8.35	4.71
29	---	1.98	---	1.77	---	1.37	---	2.62	---	---	8.12	4.02
30	---	2.00	6.08	2.01	---	1.28	---	2.74	---	---	---	3.77
31	6.49	1.82	---	---	---	1.24	---	3.32	---	---	7.42	4.41
MONTH	---	---	---	1.08	---	---	---	---	---	---	---	---

14245300 COLUMBIA RIVER AT LONGVIEW, WA--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.46	4.39	7.23	4.24	8.55	6.51	5.61	1.65	5.22	1.22	---	---
2	6.39	3.64	7.00	4.26	8.72	6.68	5.65	1.36	5.51	1.29	---	---
3	6.21	3.66	7.23	4.16	9.16	6.91	5.87	1.41	5.94	1.33	---	---
4	6.55	3.86	7.26	3.94	9.29	6.92	6.13	1.29	6.07	1.25	5.79	1.08
5	6.53	3.69	7.39	4.10	9.49	6.99	5.71	1.22	6.14	.99	6.31	1.52
6	6.24	3.44	7.86	4.62	9.27	6.49	5.67	1.22	5.96	1.05	6.39	1.64
7	6.64	3.42	7.98	4.54	9.01	6.18	5.78	1.22	6.21	1.41	6.52	1.81
8	6.56	3.23	7.76	4.25	8.65	5.87	5.82	1.22	6.24	1.51	6.60	1.89
9	---	---	7.55	4.21	8.32	5.47	6.22	1.42	6.00	1.49	6.22	1.74
10	---	---	7.80	4.21	7.83	4.79	6.00	1.22	6.08	1.56	5.87	1.51
11	---	---	7.60	4.20	7.28	4.12	6.14	1.72	6.02	1.59	5.41	1.08
12	---	---	7.45	4.31	6.91	3.93	6.13	2.02	6.03	1.49	5.39	.76
13	---	---	7.84	4.75	6.59	3.66	5.94	1.57	6.18	1.76	5.54	.74
14	---	---	6.91	3.92	6.33	3.42	5.96	1.61	6.22	1.71	5.53	.70
15	---	---	6.36	3.91	6.75	2.98	6.21	1.80	6.27	1.42	5.90	.89
16	---	---	6.07	3.92	7.10	3.26	6.76	2.26	6.28	1.24	6.18	1.18
17	---	3.98	6.18	3.71	7.52	3.60	6.79	2.33	6.51	1.25	6.59	1.76
18	5.86	3.88	6.39	3.24	7.55	3.62	6.88	2.11	6.57	1.26	6.55	1.66
19	6.04	3.72	6.80	3.58	7.84	3.48	7.11	1.81	---	---	6.35	1.46
20	6.13	2.98	7.34	4.31	8.29	3.58	7.00	1.60	---	---	6.40	1.72
21	6.45	3.24	8.15	4.43	8.41	3.19	7.26	1.89	---	---	5.99	1.44
22	7.10	3.72	8.72	4.87	8.10	2.72	7.64	2.27	---	---	5.80	1.27
23	7.62	3.86	9.29	5.18	7.74	2.39	7.52	2.34	---	---	6.37	1.31
24	8.13	4.26	9.72	5.03	7.70	2.49	6.96	2.03	---	---	6.39	2.11
25	9.50	5.00	9.38	4.03	7.16	2.23	6.46	1.96	---	---	5.98	2.11
26	9.25	5.00	8.90	3.63	6.62	2.10	6.08	1.74	---	---	5.06	2.06
27	9.54	5.30	8.22	3.61	6.27	2.18	5.87	1.71	---	---	4.72	1.52
28	8.89	4.93	7.95	4.36	5.91	1.71	5.52	1.73	---	---	4.85	.86
29	8.23	4.75	7.61	4.88	5.59	1.43	5.16	1.63	---	---	4.84	.69
30	7.55	4.48	7.99	5.46	5.69	1.52	5.15	1.34	---	---	5.21	.95
31	---	---	8.49	6.24	---	---	5.17	1.22	---	---	---	---
MONTH	---	---	9.72	3.24	9.49	1.43	7.64	1.22	---	---	---	---

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are 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 1986

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis-charge (ft ³ /s)
Quillayute River basin							
12042900	Grader Creek near Forks, WA	Lat 47°55'40", long 124°24'25", in SW¼ sec.17, T.28 N., R.13 W., Clallam County, at U.S. Highway 101, 2 mi southwest of Forks.	1.67	1950-86	2-24-86	20.44	279
McAllister Creek basin							
12081300	Eaton Creek near Yelm, WA	Lat 46°58'05", long 122°43'30", in S1/2 sec.7, T.17 N., R.1 E., Thurston County, at county road, 6 mi northwest of Yelm.	2.28	1960-86	1-18-86	5.44	40
Lake Washington basin							
12115300	Green Point Creek near Cedar Falls, WA	Lat 47°23'20", long 121°40'30", in SE¼ sec.17, T.22 N., R.9 E., King County, at road crossing near mouth, 5 mi southeast of Cedar Falls.	0.89	1957-86	2-24-86	14.12	97
Skagit River basin							
12189400	Sauk River tributary near Darrington, WA	Lat 48°20'30", long 121°33'00", in SE¼ sec.18, T.33 N., R.10 E., Skagit County, at old country road, 6.5 mi northeast of Darrington.	1.30	1951-70, 1978-86	1-19-86	78.24	156
Nooksack River basin							
12204400	Nooksack River tributary near Glacier, WA	Lat 48°54'30", long 121°48'20", in SW¼ sec.32, (unsurveyed), T.40 N., R.8 E., Whatcom County, at State Highway 542, 6.5 mi east of Glacier.	1.15	1956-60, 1962-86	10-27-85	16.28	62
12212800	Tenmile Creek tributary no. 2 near Bellingham, WA	Lat 48°50'35", long 122°24'30", 0.2 mi north from center of sec.27, T.39 N., R.3 E., Whatcom County, at Starry Road, 2.8 mi northwest of Noon, and 7 mi northeast of Bellingham.	0.24	1956-86	10-27-85	6.20	12
Pend Oreille River basin							
12396000	Calispell Creek near Dalkena, WA	Lat 48°14'40", long 117°20'26", in NE¼SW¼ sec.26, T.32 N., R.43 E., Pend Oreille County, 2.4 mi upstream from Calispell Lake, and 4.8 mi west of Dalkena.	68.3	1950-73†, 1974-86	5-30-86	6.97	395
12396100	Winchester Creek near Cusick, WA	Lat 48°16'52", long 117°21'44", in NW¼ sec.15, T.32 N., R.43 E., Pend Oreille County, at county road around Calispell Lake, and 4.8 mi southwest of Cusick.	16.8	1954-86	4-17-85*, 3- 8-86	10.71 10.64	90 86
Methow River basin							
12447380	Pine Creek near Mazama, WA	Lat 48°34'48", long 120°37'33", in NE¼ sec.32, T.36 N., R.18 E., Okanogan County, at State Highway 20, 10 mi west of Mazama.	4.63	1966-86	5-31-86	19.53	132
Wenatchee River basin							
12461200	East Branch Mission Creek tributary near Cashmere, WA	Lat 47°22'50", long 120°29'20", in SW¼ sec.20, T.22 N., R.19 E., Chelan County, at U.S. Forest Service road, 9.7 mi south of Cashmere.	2.49	1955-86	2-25-86	11.17	7.5

† Operated as a continuous-record gaging station.

* Revised.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Crest-stage partial-record stations--Continued

Annual maximum discharge at crest-stage partial-record stations during water year 1986

Station no.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis- charge (ft ³ /s)
Yakima River basin							
12491700	Hause Creek near Rimrock, WA	Lat 46°40'33", long 121°04'49", in NE¼ sec.28, T.14 N., R.14 E., Yakima County, at State Highway 14, 0.1 mi west of Tieton Ranger Station, and 2.5 mi east of Rimrock.	3.91	1955-86	2-26-86	6.82	35
Palouse River basin							
13349300	Palouse River tributary at Colfax, WA	Lat 46°53'22", long 117°22'59", in SE¼SW¼ sec.10, T.16 N., R.43 E., Whitman County, at U.S. Highway 295, about 1 mi west of Colfax.	2.10	1955-86	2-23-86	16.79	14
Klickitat River basin							
14112200	Little Klickitat River tributary near Goldendale, WA	Lat 45°50'15", long 120°47'50", in NW¼ sec.15, T.4 N., R.16 E., Klickitat County, at county at county road, 1.5 mi northeast of Goldendale.	0.71	1960-86	2-22-86	9.03	22
Groeneveld Creek basin							
14144600	Groeneveld Creek near Camas, WA	Lat 45°35'10", long 122°27'28", sec.41, T.1 N., R.3 E., Clark County, at private road 15 ft east of county road, 0.4 mi upstream from mouth, and 2.5 mi west of Camas city center.	0.51	1958-81, 1986	1-17-86	12.42	42
Cowlitz River basin							
14226900	Skate Creek trib- utary no. 2 near Packwood, WA	Lat 46°40'30", long 121°45'10", in NE¼ sec.26, T.14 N., R.8 E., Lewis County, at Skate Creek Road, 6 mi northwest of Packwood.	1.82	1959-75, 1978-86	2-23-86	11.32	117

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1986

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Willapa River basin						
12011500 Willapa River	Willapa Bay	Lat 46°33'50", long 123°33'49", in SW¼SW¼ sec.33, T.13 N., R.7 W., Pacific County, 0.2 mi downstream from bridge on State Highway 6, 0.5 mi west of Lebam, and at mile 33.9.	41.4	1948-71†, a 1972-74, 1978-85	10-10-85 12-18-85 2-13-86 3-21-86 6-12-86 8- 4-86	8.5 97 132 152 *28 *7.5
Chehalis River basin						
12020565 Chehalis River	Grays Harbor	Lat 46°37'54", long 123°14'51", in NW¼NE¼ sec.12, T.13 N., R.5 W., Lewis County, at Chandler Road bridge, 1.0 mi west of Rainbow Falls State Park bridge, 1.3 mi east of Doty, and at mile 97.8.	---	1978-85	10-11-85 12-18-85 2-12-86 3-21-86 6-12-86 8- 4-86	72 437 589 629 *144 *51
12022250 Chehalis River	do.....	Lat 46°37'40", long 123°03'35", in SW¼NE¼ sec.9, T.13 N., R.3 W., Lewis County, at State Highway 6 bridge at Adna, and at mile 81.3.	383	1972, 1975-85	7-10-86 7-16-86 9- 2-86	*133 132 *52
12024100 South Fork Newaukum River	Newaukum River	Lat 46°36'14", long 122°51'15", in NW¼NE¼ sec.19, T.13 N., R.1 W., Lewis County, at county bridge 0.3 mi northeast of Forest, 0.2 mi upstream from North Fork Newaukum River, and at mile 11.1.	66.2	1976-85	7-10-86 9- 2-86	*50 *26
12024500 North Fork Newaukum River	do.....	Lat 46°39'17", long 122°46'45", in NW¼SW¼ sec.35, T.14 N., R.1 W., Lewis County, at county road 1.4 mi upstream from Lucas Creek, 5.5 mi northeast of Forest, and at mile 6.6.	31.5	1942-43, 1944-45†, 1957-66†, 1967, 1976-85	7- 9-86 9- 2-86	*40 *3.7
12029500 Garrard Creek	Chehalis River	Lat 46°48'34", long 123°16'15", in SW¼SE¼ sec. 2, T.15 N., R.5 W., Grays Harbor County, at county road 2.8 mi southwest of Oakville, and at mile 2.6.	26.5	1942-43, 1944-45†, 1958,1961, 1976-85	7-10-86 9- 2-86	*8.2 *1.8
12032500 Cloquallum Creek	do.....	Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, 10 ft downstream from State Highway 12 bridge, 1.7 mi east of Elma, 1.9 mi downstream from Wildcat Creek, and at mile 1.9.	64.9	1942-43†, 1944-72†, a 1973-79, 1974-85	7- 9-86 8-22-86	*50 *27
12038005 Wishkah River	do.....	Lat 47°04'20", long 123°46'09", in NE¼SW¼ sec.2, T.18 N., R.9 W., Grays Harbor County, at Wishkah Road, 0.1 mi upstream from East Fork, 1.0 mi north of Aberdeen Gardens, and at mile 12.3.	59.9	1956, 1962-64, 1966, 1976-85	7- 9-86 8-22-86	*87 *45
Hoquiam River basin						
12038660 East Fork Hoquiam River	Hoquiam River	Lat 47°03'32", long 123°50'04", in NW¼SW¼ sec.8, T.18 N., R.9 W., Grays Harbor County, 0.2 mi upstream from Berryman Creek, 3.0 mi west of Aberdeen Gardens, and at mile 7.3.	25.8	1942-43, 1976-85	7- 9-86 8-22-86	*37 *21
Humtulpis River basin						
12039000 Humtulpis River	Grays Harbor	Lat 47°13'42", long 123°56'23", in NE¼NE¼ sec.17, T.20 N., R.10 W., Grays Harbor County, on right bank, 1.0 mi southeast of Humtulpis, 2.3 mi upstream from Stevens Creek, 3.3 mi downstream from confluence of East and West Forks, and at mile 24.8.	130	1933-35†, 1942, 1942-79†, 1980-82, 1985	10- 9-85 12-16-85 3-19-86 6-12-86 8- 4-86	165 622 1,240 379 *182
Hamma Hamma River basin						
12054500 Hamma Hamma River	Hood Canal	Lat 47°35'18", long 123°06'57", in SE¼NW¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, 0.3 mi downstream from Watson Creek, 4.6 mi northwest of Eldon, and at mile 6.2.	51.3	1952-71†, a 1972-79, 1977, 1981-85	7-10-86 8-27-86	128 *50
Skokomish River basin						
12062500 Purdy Creek	Skokomish River	Lat 47°17'56", long 123°10'50", in NW¼NW¼ sec.22, T.21 N., R.4 W., Mason County, 0.2 mi upstream from State Fish Hatchery, 5.5 mi southwest of Union, and at mile 1.4.	---	1954-60†, 1981-85	7-10-86 8-27-86	*19 *16

† Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Deschutes River basin					
1207004 Deschutes River	Budd Inlet	Lat 46°52'23", long 122°43'44", in SE1/4 sec.18, T.16 N., R.1 E., Thurston County, at State High- way 507, 2.2 mi southwest of Rainier, and at mile 21.6.	101	1980-85	10-31-85 289 1-28-86 409 3-20-86 230 5-21-86 174 6-11-86 *74 8- 5-86 *40
1208010 Deschutes River	do.....	Lat 47°00'42", long 122°54'07", in NW1/4 Land Grant 60, T.18 N., R.2 W., Thurston County, at "E" Avenue Bridge in Tumwater, 0.2 mi upstream from Capitol Boulevard, and at mile 2.4.	162	1971-72, 1975, 1977-85	11- 7-85 563 1-28-86 585 3-21-86 388 5-22-86 292 6-11-86 *150 8- 5-86 *90
Chambers Creek basin					
12091500 Chambers Creek	Puget Sound	Lat 47°11'55", long 122°31'45", in NE1/4 sec.27, T.20 N., R.2 E., Pierce County, 300 ft downstream from Leach Creek, 1.5 mi downstream from outlet of Steilacoom Lake, and 4.0 mi northeast of Steilacoom.	104	1938-40; 1941, 1943-65; 1966, 1972, 1973, 1975, 1976, 1985	10-30-85 75 12-31-85 63 3- 4-86 190 6-19-86 33 8- 5-86 *43
Nisqually River basin					
Nisqually River	Nisqually River	Lat 46°43'42", long 121°50'42", at Rainier National Park boundary.	---	-----	7-14-86 *178
Puyallup River basin					
12093900 Carbon River	Puyallup River	Lat 47°00'47", long 122°00'42", in SW1/4 sec.26, T.18 N., R.6 E., Pierce County, at Fairfax, 0.7 mi downstream from Evans Creek, and at mile 17.7.	76.2	1906, 1911-12; 1966-78; 1979-85	10-16-85 480 1-27-86 338 2-24-86 2,930 2-25-86 2,680 3-10-86 422 4-22-86 410 6- 4-86 628 8-15-86 *251
12094500 Puyallup River	Commencement Bay	Lat 47°11'07", long 122°13'42", on line between sec.25, T.20 N., R.4 E., and sec.30, T.20 N., R.5 E., Pierce County, at State Highway 162, 1.0 mi north of Alderton, 1.0 mi south of Sumner, and at mile 12.2.	438	1914, 1915-27; 1944-57, 1982-85	11- 6-85 3,830 1-18-86 5,700 2-24-86 11,100 6-12-86 1,700 8-22-86 1,030
White River	Puyallup River	Lat 47°08'12", long 121°37'48", at Greenwater.	---	-----	7-15-86 *534
Greenwater Creek	do.....	Lat 47°08'00", long 121°06'00", near Greenwater.	---	-----	7-15-86 *62.9
12101110 White River	do.....	Lat 47°12'15", long 122°14'10", in NW1/4 sec.24, T.20 N., R.4 E., Pierce County, at Main Street bridge on northwest edge of Sumner, and at mile 0.7.	494	1972, 1977-85	10-16-85 734 12-12-85 551 2- 7-86 1,840 4-22-86 1,220 6-19-86 2,830 7-30-86 755
Duwamish River basin					
Mill Creek	Black River	Lat 47°25'16", long 122°14'54", NE1/4 sec.2, T.22 N., R.4 E., King County, at State Highway 181 bridge, at Kent.	---	1985	10-18-85 1.8 11- 5-85 0.1 12-12-85 7.4 2- 7-86 0.6 4-15-86 35 6-10-86 *3.2 8- 5-86 *2.4
.....do.....	do.....	Lat 47°26'26", long 122°14'26", in SE1/4 sec.36, T.23 N., R.4 E., King County, 15 ft upstream from railroad crossing, at Orillia.	---	1985	10-18-85 1.8 11- 5-85 11 12-12-85 8.1 2- 7-86 12 4-15-86 29 6-10-86 *3.3 8- 5-86 *2.7
Lake Washington basin					
12124500 Sammish River	Lake Washington	Lat 47°45'20", long 122°11'35", in NW1/4 sec.8, T.26 N., R.5 E., on left bank in Bothell, 0.25 mi downstream from North Creek, and 3.5 mi upstream from mouth.	212	1940-63; 1964, 1982-85	10- 1-85 94 11-14-85 325 12-13-85 407 2- 6-86 656 4- 7-86 311 5- 8-86 310 6-19-86 192 7-17-86 230 8-14-86 *83

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Snohomish River basin					
Tye River	South Fork Skykomish River	Lat 47°42'38", long 121°09'22", in SW¼SW¼ sec.29, T.26 N., R.13 E., King County, Snoqualmie National Forest, at road bridge, 0.2 mi upstream from Surprise Creek at Scenic, and at mile 77.3.	---	1983-85	10-14-85 110 11-15-85 71 12-15-85 25 1-15-86 25 2-16-86 32 3-14-86 105 4-15-86 76 5-17-86 101 6-15-86 114 7-15-86 40 8-15-86 *18 9-15-86 *13
12141100 Skykomish River	Snohomish River	Lat 47°51'08", long 121°57'29", in NE¼NE¼ sec.12, T.27 N., R.6 E., Snohomish County, at State High- way 203 bridge, at south city limits of Monroe.	834	1922, 1951, 1955, 1958-67, 1959, 1967-85	10-29-85 11,800 12-18-85 1,640 4-16-86 3,560 6-15-86 4,580 8- 6-86 *1,230
12143100 North Fork Snoqualmie River	Snoqualmie River	Lat 47°31'19", long 121°46'07", in SE¼NW¼ sec.34, T.24 N., R.8 E., King County, at highway bridge 2 mi northeast of North Bend, and 0.3 mi upstream from confluence with Middle Fork Snoqualmie River.	103	1907, 1908-26, 1929-38, 1939, 1981-85	7- 7-86 189 8-19-86 *94
12145000 Tokul Creek	do.....	Lat 47°33'13", long 121°50'09", in SW¼NW¼ sec.19, T.24 N., R.8 E., King County, 200 ft upstream from fish hatchery diversion, 600 ft downstream from State Highway 522, and 1.8 mi northeast of Snoqualmie.	32.2	1907-14, 1926,1927, 1929-31, 1945,1957, a1959-61, 1962-85	10-23-85 47 2-13-86 66 9- 4-86 *25
12147000 Griffin Creek	do.....	Lat 47°36'58", long 121°54'15", in SW¼SW¼ sec.27, T.25 N., R.7 E., King County, on left bank 0.2 mi upstream from bridge on State Highway 203, 2.3 mi south of Carnation, and at mile 0.9.	17.1	1946-70, a1972-79, 1978-79, 1981	5- 1-84 c20 6-25-84 c30 7-26-84 c4.6 8-16-84 *c5.9 6-10-85 c74 8-16-85 *c2.2 10-29-85 c42 6-16-86 5.6 9- 3-86 *1.5
12149500 Harris Creek	do.....	Lat 47°40'42", long 121°54'22", in NE¼SE¼ sec.4, T.25 N., R.7 E., King County, at State Highway 203 bridge, 1.7 mi upstream from mouth, and 1.8 mi north of Carnation. (Formerly published as "near Tolt.")	b8.39	1945, 1957-58, 1973, 1978-79, 1981	5- 1-84 c15 6-22-84 c25 7-26-84 c3.8 8-16-84 *c3.3 6-10-85 c33 8-16-85 *c2.8 10-29-85 c27 6-16-86 5.6 9- 3-86 *3.2
12150700 Snoqualmie River	Snohomish River	Lat 47°48'14", long 122°00'07", in NE¼NW¼ sec.26, T.27 N., R.6 E., Snohomish County, at county bridge 4.5 mi southeast of Monroe, 4.5 mi north of Duvall, and 1.5 mi upstream from confluence with Skykomish River.	688	1981-85	9-10-86 601
12155400 Pilchuck River	do.....	Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, at bridge on U.S. Highway 2 at east city limits of Snohomish, and at mile 1.9.	132	1971-74, 1978-85	10-16-85 896 12-11-85 368 2-12-86 341 4- 8-86 260 6-17-86 129 8- 6-86 *72
Skykomish River	Skykomish River	Lat 47°53'48", long 121°24'00", at Troublesome Campground, near Sultan.	---	-----	7-16-86 *290
Stillaguamish River basin					
12164200 Jim Creek	South Fork Stillaguamish River	Lat 48°11'02", long 122°04'30", in NE¼SE¼ sec.7, T.31 N., R.6 E., Snohomish County, at Jordan Road bridge 2.3 mi southeast of Arlington, and 300 ft upstream from confluence with mouth.	46.8	1981-85	7- 9-86 22 9- 3-86 *13
12164510 South Fork Stillaguamish River	Stillaguamish River	Lat 48°12'03", long 122°07'04", in NE¼SE¼ sec.2, T.31 N., R.5 E., Snohomish County, at State High- way 530 bridge near northeast corner of Arlington, 0.4 mi upstream from the confluence with the North Fork Stillaguamish River, and at mile 18.2.	255	1966, 1973-75, 1978-85	11-17-85 1,240 1-28-86 2,710 3-17-86 796 5-23-86 1,410 6-17-86 507 8- 6-86 *265

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Stillaguamish River basin--Continued						
12167700 Stillaguamish River	Port Susan	Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, at Interstate 5, 1.5 mi east of Silvana, 6.7 mi downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1.	557	1975†, 1976-85	11-22-85 1-28-86 3-17-86 5-23-86 6-17-86 8- 7-86	1,860 5,960 1,940 3,230 1,120 *639
Skagit River basin						
Baker River Tributary	Skagit River	Lat 48°45'48", long 121°40'06", at Baker Hot Springs, near Concrete.	---	-----	7-18-86	*0.054
Boulder Creek	do.....	Lat 48°43'00", long 121°41'48", near Concrete.	---	-----	7-18-86	*96.3
Sulphur Creek	Baker River	Lat 48°39'42", long 121°42'48", near Concrete.	---	-----	7-18-86	*29.7
Sulphur Creek	Suiattle River	Lat 48°14'42", long 121°11'30", near Darrington.	---	-----	7-17-86	*229
Suiattle River	Skagit River	Lat 48°14'06", long 121°10'48", near Sulphur Creek, near Darrington.	---	-----	7-17-86	*518
Whitechuck River	do.....	Lat 48°10'18", long 121°28'12", at Sauk River, near Darrington.	---	-----	7-17-86	*676
Samish River basin						
12201500 Samish River	Samish Bay	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, 500 ft downstream from bridge on old U.S. Highway 99, 0.5 mi downstream from Friday Creek, 5.0 mi north of Burlington, and at mile 10.3.	87.8	1944-71†, a 1972-79, 1972-74, 1976-85	11-20-85 1-31-86 3-21-86 5-22-86 6-17-86 8- 7-86	285 410 228 402 68 *49
Minor basins between Samish and Nooksack Rivers						
12203000 Whatcom Creek	Bellingham Bay	Lat 48°45'10", long 122°25'40", in NW¼SE¼ sec.28, T.38 N., R.3 E., Whatcom County, in Whatcom Falls Park, 0.7 mi downstream from Lake Whatcom, and 2 mi east of Bellingham.	56.0	1910-14†, 1939-46†, 1973-75, 1981-85	7- 9-86 8-28-86	15 *15
Nooksack River basin						
12208000 Middle Fork Nooksack River	North Fork Nooksack River	Lat 48°47'06", long 122°06'39", in SW¼NW¼ sec.13, T.38 N., R.5 E., Whatcom County, at county bridge (Mosquito Lake Road) 800 ft downstream from Heislars Creek, 5.6 mi southeast of Deming, and at mile 5.0.	75.4	1911,1920, 1920-21†, 1934,35†, 1955,1959, 1973, 1979-85	7-10-86 8-28-86	287 *335
Pend Oreille River basin						
12396000 Calispell Creek	Pend Oreille River	Lat 48°14'40", long 117°20'26", in NE¼SW¼ sec.26, T.32 N., R.43 E., Pend Oreille County, 2.4 mi upstream from Calispell Lake, and 4.8 mi west of Dalkena.	68.3	1950-73†, 1974, 1976-83 a 1974-85	4-22-86 6-12-86 8-21-86	140 37 *6.6
12396100 Winchester Creek	Calispell Creek	Lat 48°16'52", long 117°21'44", in NW¼ sec.15, T.32 N., R.43 E., Pend Oreille County, at county road around Calispell Lake, 4.8 mi southwest of Cusick.	16.8	1957†, 1964-68, 1975,1977, 1980-83 a 1954-85	4-27-86	29
Colville River basin						
12408000 Colville River	Franklin D. Roosevelt Lake	Lat 48°19'11", long 117°49'05", in NW¼NW¼ sec.31, T.33 N., R.40 E., Stevens County, upstream from county road bridge, just downstream from mouth of Blue Creek at town of Blue Creek, and 5.5 mi northwest of Chewelah.	428	1923-24†, 1926, 1958-59, 1960-65†, 1975-77, 1979†, 1980-85	8-11-86	*18
Spokane River basin						
12427000 Little Spokane River	Spokane River	Lat 48°01'01", long 117°16'32", in NW¼NE¼ sec.17, T.29 N., R.44 E., Spokane County, at county road crossing at Elk.	115	1980-82, 1984-85	8-11-86	*32
12429500 Little Spokane River	do.....	Lat 47°53'22", long 117°21'16", in NE¼ sec.34, T.28 N., R.43 E., Spokane County, at county road crossing at Chattaroy.	301	1948†, 1952, 1955-58, 1960-70, 1973, 1977, 1979-81, 1984-85	8-11-86	*58

† Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Spokane River basin--Continued					
12432000 Little Spokane River	Spokane River	Lat 47°46'59", long 117°31'43", in SE¼NW¼ sec.5, T.26 N., R.42 E., Spokane County, at State Highway 291 crossing, 1.1 mi upstream from mouth, and 5.3 mi west of Dartford.	700	1903-05, 1912, 1913-14, 1920-21, 1923-24, 1930-32, 1947-48, 1953, 1955-58, 1960-73, 1977-85	4-24-86 603 8-12-86 *357
Hangman Creek basin					
Hangman Creek	Spokane River	Lat 47°13'26", long 117°04'32", in NE¼NW¼ sec.24, T.20 N., R.45 E., Whitman County, 0.2 mi west of Tekoa.	---	-----	8-15-85 *c0.22
Little Hangman Creek	Hangman Creek	Lat 47°13'33", long 117°04'23", in NW¼NE¼ sec.24, T.20 N., R.45 E., Whitman County, 0.2 mi north of Tekoa.	---	-----	8-15-85 *c0.25
Hangman Creek	Spokane River	Lat 47°23'50", long 117°15'53", in NW¼SE¼ sec.17, T.22 N., R.44 E., Spokane County, 5.8 mi southeast of Spangle.	---	-----	8-15-85 *c1.7
Rock Creek	Hangman Creek	Lat 47°29'46", long 117°19'18", in SW¼SW¼ sec.12, T.23 N., R.43 E., Spokane County, 5.4 mi northeast of Spangle.	---	-----	8-15-85 *c1.1
Hangman Creek	Spokane River	Lat 47°29'57", long 117°20'31", in NW¼SW¼ sec.11, T.23 N., R.43 E., Spokane County, 5.0 mi northeast of Spangle.	---	-----	8-15-85 *c4.7
Hawk Creek basin					
Hawk Creek	Hawk Creek	Lat 47°43'01", long 118°18'41", in SW¼SW¼ sec.29, T.26 N., R.36 E., Lincoln County, 6.4 mi northwest of Rocklyn.	---	-----	8-16-85 *c2.0
Hawk Creek	do.....	Lat 47°45'33", long 118°17'02", in NE¼NW¼ sec.16, T.26 N., R.36 E., Lincoln County, immediately downstream from Stock Creek, 9.0 mi north of Rocklyn.	---	-----	8-16-85 *c5.5
Indian Creek	do.....	Lat 47°48'13", long 118°17'44", in SE¼SE¼ sec.29, T.27 N., R.36 E., Lincoln County, 0.2 mi upstream from mouth, and 12.4 mi northwest of Davenport.	---	-----	8-16-85 *c1.3
Hawk Creek	do.....	Lat 47°48'54", long 118°18'51", in NE¼NE¼ sec.30, T.27 N., R.36 E., Lincoln County, 0.7 mi upstream from mouth, and 13.5 mi northwest of Davenport.	---	-----	8-16-85 *c9.4
Sanpoil River basin					
12434590 Sanpoil River	Franklin D. Roosevelt Lake	Lat 48°05'04", long 118°41'25", in NW¼SW¼ sec.20, T.30 N., R.33 E., Ferry County, Colville Indian Reservation, at county highway bridge 0.4 mi upstream from Jack Creek, and 0.5 mi north of Keller.	900	1963, 1975-77, 1980-85	10- 7-85 *42 4- 7-86 425 8-12-86 *27
Nespelem River basin					
12437505 Nespelem River	do.....	Lat 48°09'55", long 118°58'46", on south line of SE¼SE¼ sec.24, T.31 N., R.30 E., Okanogan County, Colville Indian Reservation, at county bridge at Nespelem, 0.2 mi downstream from millpond, and 3.9 mi upstream from Little Nespelem River.	123	1972-74, a 1975-79, 1981-85	10- 7-85 *11 4- 7-86 67 8-12-86 *7.8
Foster Creek basin					
East Foster Creek	Foster Creek	Lat 47°55'08", long 119°23'31", in SW¼SE¼ sec.14, T.28 N., R.27 E., Douglas County, 0.2 mi west of Leahy.	---	-----	8-16-85 *c0.71
East Foster Creek	do.....	Lat 47°56'37", long 119°33'16", in NW¼NW¼ sec.10, T.28 N., R.26 E., Douglas County, 6.6 mi southeast of Bridgeport.	---	-----	8-16-85 *c0.91

i Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

b Not previously published.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Foster Creek basin--Continued					
West Foster Creek	Foster Creek	Lat 47°56'08", long 119°40'24", in NW¼SE¼ sec.10, T.28 N., R.25 E., Douglas County, 4.5 mi south of Bridgeport.	---	-----	8-16-85 *c0.13
Middle Foster Creek	West Foster Creek	Lat 47°56'08", long 119°40'20", in NW¼SE¼ sec.10, T.28 N., R.25 E., Douglas County, 4.5 mi south of Bridgeport.	---	-----	8-16-85 *c0.12
West Foster Creek	Foster Creek	Lat 47°57'51", long 119°39'18", in SW¼SE¼ sec.35, T.29 N., R.25 E., Douglas County, 2.5 mi south of Bridgeport.	---	-----	8-16-85 *c1.0
Foster Creek	do.....	Lat 47°59'41", long 119°38'45", in NW¼SW¼ sec.24, T.29 N., R.25 E., Douglas County, 0.7 mi east of Bridgeport.	---	-----	8-16-85 *c0.86
Okanogan River basin					
12443600 Similkameen River at Oroville	Okanogan River	Lat 48°56'05", long 119°26'27", in NE¼SW¼ sec.28, T.40 N., R.27 E., Okanogan County, at Twelfth Avenue bridge in Oroville.	3,590	1929-30, 1935, 1937, 1939-40, 1943-44, 1975-85	4- 1-86 2,120 8- 6-86 *927 9-18-86 *465
12446000 Okanogan River	Columbia River	Lat 48°21'48", long 119°34'36", in SW¼NW¼ sec.16, T.33 N., R.26 E., Okanogan County, at Oak Street (formerly U.S. Highway 97) bridge in Okanogan, 150 ft northwest of Burlington Northern Railway depot, and 0.3 mi upstream from Salmon Creek.	b7,900	1911-25†, 1976, 1979-85	3-27-86 2,550 6- 4-86 25,500 8-20-86 *1,670
Methow River basin					
12447374 Methow River	Columbia River	Lat 48°35'23", long 120°24'20", in NE¼SE¼ sec.25, T.36 N., R.19 E., Okanogan County, Okanogan National Forest, at State Highway 20 bridge 0.2 mi southwest of Mazama, and at mile 65.3.	363	1942, 1967, 1970-72, 1975-85	10- 9-85 *34 8-14-86 *117
12447382 Early Winters Creek	Methow River	Lat 48°35'55", long 120°26'31", in NE¼NE¼ sec.26, T.10 N., R.19 E., Okanogan National Forest, Okanogan County, at State Highway 20 bridge at Early Winters Ranger Station, 0.3 mi upstream from mouth, and 1.7 mi northwest of Mazama. Note.--New bridge is at slightly different location than Mazama quad sheet indicates.	---	1975-85	10- 9-85 *15 8-14-86 *32
12447500 Chewack River	Methow River	Lat 48°33'53", long 120°10'35", in SE¼NW¼ sec.2, T.35 N., R.21 E., Okanogan County, at road crossing 0.9 mi downstream from Boulder Creek, and 5.4 mi north of Winthrop.	466	1942, 1978-85	10- 8-85 *61 8-13-86 *77
12448500 Methow River	Columbia River	Lat 48°28'26", long 120°10'35", in NE¼SW¼ sec.2, T.34 N., R.21 E., Okanogan County, at state highway road crossing, 1,500 ft downstream from Chewack River, and at south end of Winthrop.	1,007	1912†, 1948, 1971-72†, 1977-85	10- 8-85 *249 8-13-86 *312
12448998 Twisp River	Methow River	Lat 48°22'12", long 120°08'51", in SE¼SE¼ sec.12, T.33 N., R.21 E., Okanogan County, at county road crossing 0.8 mi west of Twisp city limits, and at mile 1.6.	245	1975-79†, 1980-85	10- 7-85 *50 8-14-86 *37
12449510 Methow River	do.....	Lat 48°21'55", long 120°06'54", in NE¼NW¼ sec.17, T.33 N., R.22 E., Okanogan County, 1,300 ft down- stream from mouth of Twisp River, 0.3 mi east of center of Twisp, and at mile 40.0	1,301	1919-62†, 1967, 1970, d1975-76, d1978-79, 1980-85	10- 9-85 *290 6- 3-86 7,940 8-12-86 *314
Entiat River basin					
12452990 Entiat River	Columbia River	Lat 47°39'48", long 120°14'58", in NW¼SE¼ sec.18, T.25 N., R.21 E., Chelan County, at bridge 1.2 mi west of Entiat High School, and at mile 1.5.	419	1971-72, 1975-85	10- 4-85 *91 2- 5-86 107 3-25-86 314 5-22-86 1,020
Wenatchee River basin					
12457800 Wenatchee River	do.....	Lat 47°40'34", long 120°43'58", in NE¼SW¼ sec.9, T.25 N., R.17 E., Chelan County, Wenatchee National Forest, at U.S. Highway 2 crossing and Tumwater Campground, 0.4 mi downstream from mouth of Chiwaukum Creek, 4.1 mi south of Winton, and at mile 35.5.	---	1977-85	10- 8-85 *432 3-27-86 2,470 6- 4-86 10,900

† Operated as a continuous-record gaging station.

* Base flow.

b Approximately.

c Not previously published.

d Published these years as at a site 2.7 miles farther downstream, in error.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Colockum Creek basin						
Colockum Creek	Colockum Creek	Lat 47°17'53", long 120°06'11", in NE¼SW¼ sec.20, T.21 N., R.22 E., Kittitas County, 5 mi south of Malaga.	---	-----	8-15-85	*c0.06
Douglas Creek basin						
Douglas Creek	Douglas Creek	Lat 47°38'30", long 119°57'13", in NE¼NW¼ sec.28, T.25 N., R.23 E., Douglas County, 2.5 mi northeast of Douglas.	---	-----	8-15-85	no flow
Douglas Creek Tributary	do.....	Lat 47°37'22", long 120°00'05", in SW¼NW¼ sec.31, T.25 N., R.23 E., Douglas County, 0.1 mi northeast of Douglas.	---	-----	8-15-85	*c0.26
Douglas Creek	do.....	Lat 47°37'03", long 120°00'27", in NE¼SE¼ sec.36, T.25 N., R.22 E., Douglas County, 0.3 mi southwest of Douglas.	---	-----	8-15-85	*c0.53
12463000 Douglas Creek	do.....	Lat 47°35'00", long 120°00'50", in SW¼SW¼ sec.12, T.24 N., R.22 E., Douglas County, 2.9 mi south of Douglas.	99.9	1949-55; a 1956-60, 1963-68; 1977	8-15-85	*c1.2
Douglas Creek	do.....	Lat 47°33'33", long 119°59'22", in NW¼SE¼ sec.19, T.24 N., R.23 E., Douglas County, 0.4 mi southeast of Alstown.	---	-----	8-15-85	*c1.6
Douglas Creek	do.....	Lat 47°27'03", long 119°53'05", in NW¼SE¼ sec.36, T.23 N., R.23 E., Douglas County, 2.5 mi northeast of Palisades.	---	-----	8-15-85	*c4.8
Rattlesnake Creek Tributary	Rattlesnake Creek	Lat 47°27'23", long 119°42'14", in SE¼SE¼ sec.29, T.23 N., R.25 E., Douglas County, 13.6 mi northwest of Ephrata.	---	-----	8-14-85	no flow
Rattlesnake Creek Tributary	do.....	Lat 47°27'10", long 119°42'14", in NE¼NE¼ sec.32, T.23 N., R.25 E., Douglas County, 13.1 mi northwest of Ephrata.	---	-----	8-14-85	no flow
Rattlesnake Creek Tributary	do.....	Lat 47°26'50", long 119°42'14", in SE¼NE¼ sec.32, T.23 N., R.25 E., Douglas County, 12.5 mi northwest of Ephrata.	---	-----	8-14-85	no flow
Sulphur Springs	McCarteney Creek	Lat 47°36'47", long 119°40'17", in SW¼SE¼ sec.34, T.25 N., R.25 E., Douglas County, 15.0 mi east of Douglas.	---	-----	8-14-85	no flow
McCarteney Creek	Rattlesnake Creek	Lat 47°35'40", long 119°40'32", in SE¼NW¼ sec.10, T.24 N., R.25 E., Douglas County, at U.S. Highway 2 crossing, 7.5 mi east of Farmer.	---	-----	8-14-85	no flow
McCarteney Creek	do.....	Lat 47°31'00", long 119°40'32", in NW¼SE¼ sec.6, T.23 N., R.25 E., Douglas County, 7.7 mi southeast of Farmer.	---	-----	8-14-85	no flow
Coyote Canyon	McCarteney Creek	Lat 47°30'04", long 119°43'19", in SW¼SW¼ sec.8, T.23 N., R.25 E., Douglas County, 8.8 mi southeast of Farmer.	---	-----	8-14-85	no flow
Douglas Creek	Douglas Creek	Lat 47°22'47", long 119°56'29", in SE¼SE¼ sec.21, T.23 N., R.23 E., Douglas County, 3.1 mi southwest of Palisades.	---	-----	8-14-85	*c3.9
Douglas Creek	do.....	Lat 47°20'47", long 119°59'14", in NE¼NE¼ sec.6, T.21 N., R.23 E., Douglas County, 0.8 mi southwest of Appledale.	---	-----	8-15-85	*c2.1
Douglas Creek	do.....	Lat 47°18'45", long 120°02'04", in NW¼SE¼ sec.14, T.21 N., R.22 E., Douglas County, 3.9 mi southwest of Appledale.	---	-----	8-15-85	*c1.6
Rocky Coulee basin						
Rocky Coulee	Rocky Coulee	Lat 46°57'14", long 119°59'49", in NE¼NW¼ sec.19, T.17 N., R.23 E., Kittitas County, 0.7 mi northwest of Vantage.	---	-----	8-15-85	no flow

1. Operated as a continuous-record gaging station.

* Base flow.

a. Operated as a crest-stage gage.

c. Not previously published.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Crab Creek basin						
Crab Creek	Crab Creek	Lat 47°27'58", long 118°05'59", in SE¼SE¼ sec.23, T.23 N., R.37 E., Lincoln County, 4.1 mi southwest of Canby.	---	-----	8-12-85	*c5.0
Rock Creek	do.....	Lat 47°24'18", long 118°04'22", in NE¼NW¼ sec.18, T.22 N., R.38 E., Lincoln County, 11.8 mi east of Mohler.	---	-----	8-12-85	no flow
Crab Creek	do.....	Lat 47°21'38", long 118°06'26", in NW¼NE¼ sec.35, T.22 N., R.37 E., Lincoln County, 10.6 mi southeast of Mohler.	---	-----	8-12-85	*c6.2
Crab Creek Tributary	do.....	Lat 47°18'22", long 118°12'09", in SW¼SW¼ Sec.18, T.21 N., R.36 E., Lincoln County, 9.0 mi southeast of Mohler.	---	-----	8-12-85	*c0.19
Crab Creek	do.....	Lat 47°18'03", long 118°15'06", in NE¼NE¼ sec.22, T.21 N., R.36 E., Lincoln County, 8.2 mi southeast of Mohler.	---	-----	8-12-85	*c8.5
Crab Creek	do.....	Lat 47°18'10", long 118°22'05", in NW¼NE¼ sec.23, T.21 N., R.35 E., Lincoln County, 6.8 mi southeast of Lamona.	---	-----	8-12-85	*c12
South Fork Crab Creek	do.....	Lat 47°18'06", long 118°22'08", in NE¼NW¼ sec.23, T.21 N., R.35 E., Lincoln County, 6.7 mi southeast of Lamona.	---	-----	8-12-85	*c2.3
Crab Creek	do.....	Lat 47°18'33", long 118°29'57", in NE¼SW¼ sec.14, T.21 N., R.34 E., Lincoln County, 3.5 mi south of Lamona.	---	-----	8-13-85	*c8.1
12464800 Coal Creek	do.....	Lat 47°24'25", long 118°19'04", in SE¼SE¼ sec.7, T.22 N., R.36 E., Lincoln County, 0.3 mi east of Mohler.	64.7	1963-74†, a1975,1977	8-13-85	*c0.16
Coal Creek	do.....	Lat 47°21'41", long 118°28'35", in NE¼NW¼ sec.36, T.22 N., R.34 E., Lincoln County, 0.1 mi east of Lamona.	---	-----	8-13-85	*c0.44
Crab Creek	do.....	Lat 47°19'51", long 118°39'46", in NW¼NE¼ sec.9, T.21 N., R.33 E., Lincoln County, 1.2 mi east of Odessa.	---	-----	8-12-85	no flow
Duck Creek basin						
Duck Creek	do.....	Lat 47°25'45", long 118°32'43", in NW¼NW¼ sec.9, T.22 N., R.34 E., Lincoln County, 5.0 mi northwest of Lamona.	---	-----	8-13-85	no flow
Duck Creek	do.....	Lat 47°23'53", long 118°35'10", in NE¼SE¼ sec.13, T.22 N., R.33 E., Lincoln County, 6.2 mi northeast of Odessa.	---	-----	8-13-85	*c0.05
Duck Creek Tributary	Duck Creek	Lat 47°27'56", long 118°23'53", in NE¼NE¼ sec.28, T.23 N., R.35 E., Lincoln County, 5.4 mi northwest of Mohler.	---	-----	8-13-85	no flow
Duck Creek Tributary	do.....	Lat 47°25'12", long 118°29'08", in NE¼NE¼ sec.11, T.22 N., R.34 E., Lincoln County, 4.4 mi north of Lamona.	---	-----	8-13-85	no flow
Duck Creek Tributary	do.....	Lat 47°23'44", long 118°32'11", in SW¼SE¼ sec.16, T.22 N., R.34 E., Lincoln County, 3.5 mi northwest of Lamona.	---	-----	8-13-85	no flow
Duck Creek East Fork Tributary	Duck Creek Tributary	Lat 47°24'59", long 118°23'58", in SE¼NE¼ sec.9, T.22 N., R.35 E., Lincoln County, 3.8 mi west of Mohler.	---	-----	8-13-85	no flow
Duck Creek East Fork Tributary	do.....	Lat 47°22'41", long 118°32'23", in SE¼SW¼ sec.21, T.22 N., R.34 E., Lincoln County, 3.0 mi northwest of Lamona.	---	-----	8-13-85	no flow
Duck Creek Tributary	Duck Creek	Lat 47°22'45", long 118°32'59", in SE¼SE¼ sec.20, T.22 N., R.34 E., Lincoln County, 3.3 mi northwest of Lamona.	---	-----	8-13-85	no flow
Duck Creek	Crab Creek	Lat 47°22'18", long 118°39'21", in SE¼NE¼ sec.28, T.22 N., R.33 E., Lincoln County, 3.1 mi northeast of Odessa.	---	-----	8-13-85	no flow

† Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

c Not previously published.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Duck Creek basin--Continued						
Duck Creek	Crab Creek	Lat 47°20'16", long 118°41'05", in NW¼SE¼ sec.5, T.21 N., R.33 E., Lincoln County, 0.3 mi northeast of Odessa.	---	-----	8-13-85	no flow
Crab Creek	do.....	Lat 47°24'38", long 118°58'56", in SE¼SE¼ sec.12, T.22 N., R.30 E., Grant County, 0.2 mi northeast of Marlin.	---	-----	8-14-85	*c3.6
12465400 Wilson Creek	do.....	Lat 47°39'47", long 118°55'46", in SW¼NW¼ sec.16, T.25 N., R.31 E., Lincoln County, 3.5 mi south of Almira.	327	1969-71†, a1972,1977	8-14-85	*c2.6
Wilson Creek	do.....	Lat 47°33'45", long 118°59'28", in SE¼NW¼ sec.24, T.24 N., R.30 E., Grant County, 11.4 mi northeast of Wilson Creek.	---	-----	8-14-85	*c1.6
Yakima River basin						
Bumping Creek	Yakima River	Lat 46°56'48", long 121°11'18".	---	-----	7-15-86	*161
Satus Creek	do.....	Lat 46°01'07", long 120°43'58", in NW¼SW¼ sec.7, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, 0.3 mi upstream from Telephone Canyon, and 16 mi northeast of Goldendale.	---	-----	8- 6-85	*c4.2
Telephone Canyon	Satus Creek	Lat 46°01'10", long 120°43'35", in NW¼SE¼ sec.7, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, at road 0.1 mi upstream from mouth, and 16 mi northeast of Goldendale.	---	-----	8- 6-85	*c0.67
Satus Creek Tributary	do.....	Lat 46°00'45", long 120°42'43", in SW¼SW¼ sec.8, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, at mouth 0.9 mi downstream from Telephone Canyon, and 16 mi northeast of Goldendale.	---	-----	8- 6-85	*ce0.05
Satus Creek Tributary	do.....	Lat 46°00'58", long 120°40'57", in NW¼SE¼ sec.9, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, at mouth 2.3 mi downstream from Telephone Canyon, and 16 mi northeast of Goldendale.	---	-----	8- 5-85	*ce0.03
Satus Creek	Yakima River	Lat 46°01'11", long 120°37'57", in SW¼NW¼ sec.12, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, 200 ft upstream from Shinando Creek, and 17 mi northeast of Goldendale.	---	-----	8- 6-85	*c5.7
Shinando Creek	Satus Creek	Lat 46°01'10", long 120°37'54", in NW¼SW¼ sec.12, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, at mouth at U.S. Highway 97 bridge, and 17 mi northeast of Goldendale.	---	-----	8- 6-85	*c0.34
Wilson Charley Canyon	do.....	Lat 46°01'37", long 120°37'31", in SE¼SW¼ sec.1, T.6 N., R.17 E., Klickitat County, Hydrologic Unit 17030003, at mouth 18 mi northeast of Goldendale.	---	-----	8- 6-85	no flow
Kusshi Creek	do.....	Lat 46°02'13", long 120°35'08", in SW¼NW¼ sec.5, T.6 N., R.18 E., Klickitat County, Hydrologic Unit 17030003, at mouth at Highway 97 crossing, 20 mi northeast of Goldendale.	---	-----	8- 6-85	*ce0.08
Bull Creek	do.....	Lat 46°02'50", long 120°34'09", in NW¼SW¼ sec.33, T.7 N., R.18 E., Yakima County, Hydrologic Unit 17030003, at mouth 21 mi northeast of Goldendale.	---	-----	8- 6-85	*ce0.13
Satus Creek Tributary	do.....	Lat 46°05'27", long 120°32'52", in NW¼SW¼ sec.15, T.7 N., R.18 E., Yakima County, Hydrologic Unit 17030003, at mouth at Highway 97 crossing, and 24.5 mi southwest of Toppenish.	---	-----	8- 6-85	no flow
Satus Creek	Yakima River	Lat 46°05'45", long 120°32'51", in NW¼NW¼ sec.15, T.7 N., R.18 E., Yakima County, Hydrologic Unit 17030003, 3.7 mi downstream from Bull Creek at U.S. Highway 97, and 23 mi south of Toppenish.	97.9	1955	8- 6-85	*c6.3
Satus Creek	do.....	Lat 46°07'26", long 120°31'53", in SE¼NE¼ sec.3, T.7 N., R.18 E., Yakima County, Hydrologic Unit 17030003, 0.15 mi upstream from Lizzy Canyon, upstream from diversion on Satus Creek, and 20 mi southwest of Toppenish.	---	-----	8- 6-85	*c5.6
Unnamed Diversion	Satus Creek	Lat 46°07'28", long 120°31'48", in SE¼NE¼ sec.3, T.7 N., R.18 E., Yakima County, Hydrologic Unit 17030003, 30 ft downstream from diversion on Satus Creek, and 20 mi southwest of Toppenish Creek.	---	-----	8- 6-85	*c3.8

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Yakima River basin--Continued					
Satus Creek	Yakima River	Lat 46°12'19", long 120°28'32", in NW¼SE¼ sec.6, T.8 N., R.19 E., Yakima County, Hydrologic Unit 17030003, 100 ft upstream from Log Creek, 300 ft downstream from U.S. Highway 97, and 13.5 mi southwest of Toppenish.	---	-----	8- 7-85 *c2.2
Log Creek	Satus Creek	Lat 46°12'22", long 120°28'33", in NW¼SE¼ sec.6, T.8 N., R.19 E., Yakima County, Hydrologic Unit 17030003, 100 ft upstream from mouth, and 13.5 mi southwest of Toppenish.	---	-----	8- 7-85 *c15
12508480 Dry Creek	do.....	Lat 46°15'12", long 120°24'35", in SE¼NW¼ sec.23, T.9 N., R.19 E., Yakima County, Hydrologic Unit 17030003, at U.S. Highway 97, 0.8 mi upstream from mouth, and 10 mi southwest of Toppenish.	157	1971-74†, 1977	8- 7-85 *c0.47
Satus Creek	Yakima River	Lat 46°15'07", long 120°22'42", in SE¼NW¼ sec.24, T.9 N., R.19 E., Yakima County, Hydrologic Unit 17030003, at U.S. Bureau of Indian Affairs gage, 1.2 mi downstream from Dry Creek, and 10 mi southwest of Toppenish.	---	-----	8- 7-85 *c17
12511520 Yakima River	Columbia River	Lat 46°21'32", long 119°23'42", in NW¼NE¼ sec.14, T.10 N., R.27 E., Benton County, 2.4 mi downstream from Horn Rapids Dam, 4.0 mi northwest of Richland, and at mile 16.15.	---	1978-85	8- 8-86 857
Esquatzel Coulee basin					
Providence Coulee	Esquatzel Coulee	Lat 46°43'06", long 118°51'58", in NE¼NW¼ sec.12, T.14 N., R.31 E., Franklin County, Hydrologic Unit 17020016, at Cogan Road crossing, 4 mi north of Connell.	---	-----	8- 9-85 no flow
Providence Coulee	do.....	Lat 46°52'50", long 118°46'12", in NW¼NW¼ sec.14, T.16 N., R.32 E., Adams County, Hydrologic Unit 17020016, at Herman Road crossing, at Beatrice.	---	-----	8- 9-85 no flow
Hatton Coulee	Providence Coulee	Lat 46°45'24", long 118°49'50", in NW¼SW¼ sec.29, T.15 N., R.32 E., Adams County, Hydrologic Unit 17020016, at mouth 1.3 mi south of Hatton.	---	-----	8- 9-85 no flow
Esquatzel Coulee	Columbia River	Lat 46°35'16", long 119°00'00", in NE¼NW¼ sec.25, T.13 N., R.30 E., Franklin County, Hydrologic Unit 17020016, 300 ft upstream from county road crossing, and 1 mi north of Mesa.	---	-----	8- 9-85 *c9.8
Asotin Creek basin					
13334700 Asotin Creek	Snake River	Lat 46°19'35", long 117°09'06", in SW¼SE¼ sec.22, T.10 N., R.45 E., Asotin County, Hydrologic Unit 17060103, 0.3 mi downstream from Kearney Gulch, 2.5 mi upstream from George Creek, 5.0 mi west of Asotin, and at mile 5.3.	170	1959-82‡	8-13-85 *c38
George Creek	Asotin Creek	Lat 46°18'24", long 117°06'47", in NE¼NW¼ sec.36, T.10 N., R.45 E., Asotin County, Hydrologic Unit 17060103, at county road bridge, 1.5 mi upstream from mouth, and 3.8 mi southwest of Asotin.	---	-----	8-13-85 *c2.1
Alpowa Creek basin					
13343510 Alpowa Creek	Snake River	Lat 46°19'03", long 117°29'28", in SW¼NE¼ sec.25, T.10 N., R.42 E., Garfield County, Hydrologic Unit 17060107, at State Highway 128, 0.8 mi northwest of Peola.	0.50	a1972-76, 1977	8-13-85 *ce0.01
Alpowa Creek	do.....	Lat 46°24'43", long 117°21'38", in NW¼NE¼ sec.25, T.11 N., R.43 E., Garfield County, Hydrologic Unit 17060107, 0.9 mi downstream from Horsebend Canyon, 2.5 mi upstream from Megginson Gulch, and 15 mi west of Clarkston.	---	-----	8-13-85 *c8.3
Megginson Gulch	Alpowa Creek	Lat 46°25'51", long 117°18'55", in NE¼SE¼ sec.17, T.11 N., R.44 E., Garfield County, Hydrologic Unit 17060107, at county road bridge, 0.3 mi upstream from mouth, and 12.5 mi northwest of Clarkston.	---	-----	8-13-85 no flow
13343520 Clayton Gulch	do.....	Lat 46°26'52", long 117°17'36", in NE¼SE¼ sec.9, T.11 N., R.44 E., Garfield County, Hydrologic Unit 17060107, at private road, 1.5 mi northeast of Alpowa, and 10 mi northwest of Clarkston.	5.60	a1961-76	8-13-85 no flow

‡ Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

c Not previously published.

e Estimate.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Alpowa Creek basin--Continued					
Pow Wah Kee Gulch	Alpowa Creek	Lat 46°24'12", long 117°15'04", in NE¼SE¼ sec.26, T.11 N., R.44 E., Asotin County, Hydrologic Unit 17060107, at mouth 10 mi west of Clarkston.	---	-----	8-13-85 no flow
Alpowa Creek	Snake River	Lat 46°24'44", long 117°12'44", in SW¼SE¼ sec.19, T.11 N., R.45 E., Asotin County, Hydrologic Unit 17060103, 0.9 mi upstream from mouth, 200 ft downstream from State Highway 12, and 7.3 mi west of Clarkston.	---	-----	8-13-85 *c6.7
Deadman Creek basin					
13343680 Deadman Creek	do.....	Lat 46°37'05", long 117°45'06", in SE¼SW¼ sec.11, T.13 N., R.40 E., Garfield County, Hydrologic Unit 17060107, 0.2 mi upstream from Willow Gulch, and 7.2 mi northeast of Dodge.	---	1970, 1977	8-12-85 *c2.2
13343800 Meadow Creek	Deadman Creek	Lat 46°35'51", long 117°46'54", in SE¼NW¼ sec.22, T.13 N., R.40 E., Garfield County, Hydrologic Unit 17060107, at county road bridge, 1.3 mi upstream from mouth, 2.0 mi southeast of Central Ferry, and 5.4 mi north of Dodge.	66.2	1963-74; a1975-76	8-12-85 *c0.92
Tucannon River basin					
Panjab Creek	Tucannon River	Lat 46°12'15", long 117°42'20", in SE¼NE¼ sec.5, T.8 N., R.41 E., Columbia County, Hydrologic Unit 17060107, 150 ft upstream from mouth, and 21 mi southeast of Dayton.	---	-----	8-13-85 *c7.6
Tucannon River	Snake River	Lat 46°12'17", long 117°42'19", in NW¼NE¼ sec.5, T.8 N., R.41 E., Columbia County, Hydrologic Unit 17060107, 150 ft downstream from Panjab Creek, 4 mi upstream from Camp Wooten, and 21 mi southeast of Dayton.	---	-----	8-13-85 *c45
Little Tucannon River	Tucannon River	Lat 46°13'42", long 117°43'17", in NW¼SE¼ sec.30, T.9 N., R.41 E., Columbia County, Hydrologic Unit 17060107, at mouth 1.3 mi southwest of Camp Wooten, and 19.5 mi southeast of Dayton.	---	-----	8-13-85 *c1.3
Tucannon River	Snake River	Lat 46°14'36", long 117°41'15", in NE¼SW¼ sec.21, T.9 N., R.41 E., Columbia County, Hydrologic Unit 17060107, 2.0 mi downstream from Little Tucannon River, and 14 mi southeast of Dayton.	---	1964-69, 1973, 1977	8-13-85 *c52
Tucannon River	do.....	Lat 46°22'08", long 117°41'25", in NW¼NW¼ sec.9, T.10 N., R.41 E., Columbia County, Hydrologic Unit 17060107, at county road bridge, 0.7 mi downstream from Tumalum Creek.	---	-----	8-13-85 *c60
Tucannon River	do.....	Lat 46°29'20", long 117°57'39", in SE¼SW¼ sec.29, T.12 N., R.39 E., Columbia County, Hydrologic Unit 17060107, at U.S. Highway 12 bridge, 0.3 mi downstream from Willow Creek.	---	-----	8-14-85 *c51
Dry Pataha	Pataha Creek	Lat 46°21'40", long 117°35'19", in SW¼NE¼ sec.9, T.10 N., R.42 E., Garfield County, Hydrologic Unit 17060107, at mouth, at Columbia Center, and 8.5 mi south of Pomeroy.	---	-----	8-13-85 *ce0.01
Pataha Creek	Tucannon River	Lat 46°21'39", long 117°30'49", in SW¼NE¼ sec.9, T.10 N., R.42 E., Garfield County, Hydrologic Unit 17060107, 15 ft upstream from Dry Pataha Creek, at Columbia Center, and 8.5 mi south of Pomeroy.	---	-----	8-13-85 *c0.85
Benjamin Gulch	Pataha Creek	Lat 46°28'17", long 117°35'15", in NW¼NW¼ sec.5, T.11 N., R.42 E., Garfield County, Hydrologic Unit 17060107, 400 ft upstream from mouth, at Pomeroy.	---	-----	8-13-85 *ce0.05
Pataha Creek	Tucannon River	Lat 46°28'21", long 117°35'21", in SE¼SE¼ sec.31, T.12 N., R.42 E., Garfield County, Hydrologic Unit 17060107, 0.1 mi downstream from Benjamin Gulch, and 15 ft downstream from 15th Street bridge in Pomeroy.	---	-----	8-13-85 *c3.6
Pataha Creek	do.....	Lat 46°31'32", long 117°49'33", in SW¼NE¼ sec.17, T.12 N., R.40 E., Garfield County, Hydrologic Unit 17060107, 4.5 mi upstream from Chard Gulch, at U.S. Highway 12, and at Dodge.	---	-----	8-12-85 *c2.0

: Operated as a continuous-record gaging station.

* Base flow.

: Operated as a crest-stage gage.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Tucannon River basin--Continued						
Pataha Creek	Tucannon River	Lat 46°30'44", long 117°58'16", in NW¼NE¼ sec.19, T.12 N., R.39 E., Columbia County, Hydrologic Unit 17060107, at State Highway 261, at Delancy, 1.2 mi upstream from mouth, and 7.5 mi east of Starbuck.	---	1977	8-12-85	*c0.93
Kellogg Creek	do.....	Lat 46°25'07", long 118°04'24", in NE¼SE¼ sec.20, T.11 N., R.38 E., Columbia County, Hydrologic Unit 17060107, 20 ft downstream from county bridge, and 7.7 mi southeast of Starbuck.	---	-----	8-12-85	*c0.49
Kellogg Creek	do.....	Lat 46°30'06", long 118°07'46", in SE¼SW¼ sec.24, T.12 N., R.37 E., Columbia County, Hydrologic Unit 17060107, 1.0 mi upstream from mouth, and 1.2 mi south of Starbuck.	---	-----	8-12-85	*c3.3
13344520 Tucannon River	Snake River	Lat 46°31'18", long 118°09'18", in SW¼NW¼ sec.11, T.12 N., R.37 E., Columbia County, Hydrologic Unit 17060107, at county road bridge, at Powers, and 2 mi northwest of Starbuck.	---	-----	8-12-85	*c77
Alkali Flat Creek basin						
Alkali Flat Creek	Snake River	Lat 46°47'38", long 117°30'53", in NE¼NW¼ sec.15, T.15 N., R.42 E., Whitman County, 1.7 mi southwest of Wilcox.	---	-----	8-13-85	*c0.09
Alkali Flat Creek	do.....	Lat 46°48'48", long 117°36'29", in SE¼SE¼ sec.2, T.15 N., R.41 E., Whitman County, 1.0 mi east of Dusty.	---	-----	8-13-85	*c0.08
Alkali Flat Creek	do.....	Lat 46°46'21", long 117°42'06", in NW¼SE¼ sec.19, T.15 N., R.41 E., Whitman County, 0.2 mi upstream from Little Alkali Flat Creek, and 3.5 mi southwest of Dusty.	---	-----	8-13-85	*c0.003
Little Alkali Flat Creek	Alkali Flat Creek	Lat 46°46'12", long 117°42'07", in SW¼SE¼ sec.19, T.15 N., R.41 E., Whitman County, 0.1 mi upstream from mouth, and 3.7 mi southwest of Dusty.	---	-----	8-13-85	no flow
Alkali Flat Creek	Snake River	Lat 46°42'47", long 117°47'59", in NE¼SW¼ sec.9, T.14 N., R.40 E., Whitman County, 5.7 mi northeast of Hay.	---	-----	8-13-85	no flow
Alkali Flat Creek	do.....	Lat 46°40'48", long 117°54'32", in SW¼SW¼ sec.22, T.14 N., R.39 E., Whitman County, in Hay.	---	-----	8-13-85	*c0.25
Mud Flat Creek	Alkali Flat Creek	Lat 46°40'52", long 117°54'33", in NW¼SW¼ sec.22, T.14 N., R.39 E., Whitman County, in Hay.	---	-----	8-13-85	*c0.92
Alkali Flat Creek	Snake River	Lat 46°38'56", long 118°01'28", in SE¼SE¼ sec.34, T.14 N., R.38 E., Whitman County, 5.6 mi southwest of Hay.	---	-----	8-13-85	*c2.4
Alkali Flat Creek	do.....	Lat 46°35'13", long 118°05'19", in NE¼NE¼ sec.30, T.13 E., R.38 E., Whitman County, 0.6 mi north of Riparia.	---	-----	8-13-85	*c2.1
Palouse River basin						
13348000 South Fork Palouse River	Palouse River	Lat 46°43'57", long 117°10'48", in NE¼NE¼ sec.6, T.14 N., R.45 E., Whitman County, on right bank at State Street crossing in Pullman, 600 ft upstream from Missouri Flat Creek, and at mile 22.2.	132	1934-42†, 1948, 1954, 1958-59, 1959-82†, 1983-85	5- 7-86 7- 9-86	20 *3.9
Palouse River	Snake River	Lat 46°54'35", long 117°04'13", in NW¼SW¼ sec.6, T.16 N., R.46 E., Whitman County, in Palouse.	---	-----	8-12-85	*c16
Cedar Creek	Palouse River	Lat 46°57'45", long 117°06'22", in SE¼SE¼ sec.15, T.17 N., R.45 E., Whitman County, 3.9 mi northwest of Palouse.	---	-----	8-12-85	no flow
Palouse River	Snake River	Lat 46°58'51", long 117°13'04", in NE¼SE¼ sec.11, T.17 N., R.44 E., Whitman County, in Elberton.	---	-----	8-12-85	*c14
Silver Creek	Palouse River	Lat 46°58'57", long 117°13'08", in NW¼SE¼ sec.11, T.17 N., R.44 E., Whitman County, in Elberton.	---	-----	8-12-85	*c0.64
Brush Creek	do.....	Lat 46°57'31", long 117°14'30", in NW¼NE¼ sec.22, T.17 N., R.44 E., Whitman County, 1.9 mi southwest of Elberton.	---	-----	8-12-85	*ce0.5

† Operated as a continuous-record gaging station.

* Base flow.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Palouse River basin--Continued					
Palouse River	Snake River	Lat 46°57'22", long 117°14'36", in SW¼ sec.22, T.17 N., R.44 E., Whitman County, 2.1 mi southwest of Elberton.	---	-----	8-12-85 *c13
Palouse River	do.....	Lat 46°54'28", long 117°20'14", in NW¼ sec.1, T.16 N., R.43 E., Whitman County, 2.0 mi northeast of Colfax.	---	-----	8-12-85 *c11
South Fork Palouse River	Palouse River	Lat 46°43'07", long 117°09'49", in NE¼ sec.8, T.14 N., R.45 E., Whitman County, 1.1 mi southeast of Pullman.	---	-----	10-24-84 *c1.4
Paradise Creek	South Fork Palouse River	Lat 46°43'14", long 117°09'47", in SE¼ sec.5, T.14 N., R.45 E., Whitman County, 1.0 mi southeast of Pullman.	---	-----	10-24-84 *c4.0
Missouri Flat Creek	do.....	Lat 46°45'56", long 117°04'21", in SW¼ sec.19, T.15 N., R.46 E., Whitman County, 5.6 mi northeast of Pullman.	---	-----	10-24-84 *c0.02
13348500 Missouri Flat Creek	do.....	Lat 46°43'59", long 117°10'47", on line between sec.5 and sec.6, T.14 N., R.45 E., Whitman County, in Pullman, 600 ft upstream from mouth.	27.1	1934-40; 1954,1958, 1959,1960;	10-24-84 *c0.53
South Fork Palouse River	Palouse River	Lat 46°46'47", long 117°14'47", in SE¼ sec.15, T.15 N., R.44 E., Whitman County, 0.8 mi south of Albion.	---	-----	10-24-84 *c10 8-12-85 *c8.2
Fourmile Creek	South Fork Palouse River	Lat 46°50'08", long 117°09'51", in NW¼ sec.32, T.16 N., R.45 E., Whitman County, 5.0 mi northeast of Albion.	---	-----	10-24-84 *c0.46 8-12-85 *c0.15
Fourmile Creek Tributary	Fourmile Creek	Lat 46°50'10", long 117°09'54", in NW¼ sec.32, T.16 N., R.45 E., Whitman County, 5.0 mi northeast of Albion.	---	-----	10-24-84 *c0.36 8-12-85 no flow
Rose Creek	do.....	Lat 47°49'51", long 117°13'08", in SW¼ sec.36, T.16 N., R.44 E., Whitman County, 3.1 mi northeast of Albion.	---	-----	10-24-84 *c0.07 8-12-85 *c0.004
Fourmile Creek	South Fork Palouse River	Lat 46°49'49", long 117°16'28", in NW¼ sec.33, T.16 N., R.44 E., Whitman County, 0.4 mi north of Shawnee.	---	-----	8-12-85 *c0.12
Fourmile Creek	do.....	Lat 46°50'18", long 117°10'13", in SW¼ sec.25, T.16 N., R.44 E., Whitman County, 3.5 mi northeast of Albion.	---	-----	10-24-84 *c0.96 8-12-85 *c0.13
South Fork Palouse River	Palouse River	Lat 46°52'18", long 117°17'59", in SE¼ sec.17, T.16 N., R.44 E., Whitman County, 3.0 mi east of Colfax.	---	-----	8-12-85 *c9.6
South Fork Palouse River	do.....	Lat 46°52'34", long 117°21'50", in NE¼ sec.14, T.16 N., R.43 E., Whitman County, 0.3 mi south of Colfax.	---	-----	10-24-84 *c17 8-12-85 *c14
Spring Flat Creek	South Fork Palouse River	Lat 46°46'06", long 117°16'20", in NW¼ sec.21, T.15 N., R.44 E., Whitman County, 2.9 mi southwest of Albion.	---	-----	10-24-84 no flow 8-12-85 no flow
Spring Flat Creek	do.....	Lat 46°47'34", long 117°18'42", in SE¼ sec.7, T.15 N., R.44 E., Whitman County, 6.1 mi southeast of Colfax.	---	-----	10-24-84 *c0.11 8-12-85 no flow
Spring Flat Creek	do.....	Lat 46°52'24", long 117°21'34", in SW¼ sec.14, T.16 N., R.43 E., Whitman County, in Colfax.	---	-----	10-24-84 *c0.44 8-12-85 *c0.02
Palouse River	Snake River	Lat 46°57'10", long 117°30'12", in NE¼ sec.22, T.17 N., R.42 E., Whitman County, 2.7 mi northeast of Thera.	---	-----	8-12-85 *c30
Palouse River	do.....	Lat 46°59'09", long 117°39'32", in NW¼ sec.9, T.17 N., R.41 E., Whitman County, 4.2 mi north of Endicott.	---	-----	8-12-85 *c21
Downing Creek	Palouse River	Lat 47°01'52", long 117°39'47", in NE¼ sec.29, T.18 N., R.41 E., Whitman County, in Willada.	---	-----	8-13-85 *c1.0
Downing Creek	do.....	Lat 47°00'16", long 117°43'24", in SW¼ sec.36, T.18 N., R.40 E., Whitman County, 3.4 mi southwest of Willada.	---	-----	8-13-85 *c1.8

† Operated as a continuous-record gaging station.

* Base flow.

c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Palouse River basin--Continued						
Palouse River	Snake River	Lat 46°56'43", long 117°48'11", in SE¼SW¼ sec.20, T.17 N., R.40 E., Whitman County, 0.1 mi west of Winona.	---	-----	8-13-85	*c29
Rebel Flat Creek	Palouse River	Lat 46°51'54", long 117°25'48", in SW¼NW¼ sec.20, T.16 N., R.43 E., Whitman County, 0.1 mi downstream from Highway 295, and 0.6 mi southeast of Mockonema.	---	-----	8-13-85	*c0.004
Rebel Flat Creek	do.....	Lat 46°55'19", long 117°31'31", in NE¼SW¼ sec.33, T.17 N., R.42 E., Whitman County, 1.6 mi southeast of Thera.	---	-----	8-13-85	*c0.10
Rebel Flat Creek	do.....	Lat 46°55'12", long 117°39'27", in NW¼SW¼ sec.33, T.17 N., R.41 E., Whitman County, 1.3 mi east of Endicott.	---	-----	8-13-85	*c0.97
Rebel Flat Creek	do.....	Lat 46°56'38", long 117°48'03", in NE¼NW¼ sec.29, T.17 N., R.40 E., Whitman County, 0.1 mi upstream from mouth, and 0.1 mi south of Winona.	---	-----	8-13-85	*c1.2
Rock Creek	do.....	Lat 47°32'44", long 117°23'54", in SE¼NE¼ sec.11, T.22 N., R.42 E., Spokane County, 6.6 mi south of Cheney.	---	-----	8-15-85	no flow
Rock Creek	do.....	Lat 47°21'16", long 117°33'57", in NE¼SE¼ sec.36, T.22 N., R.41 E., Spokane County, 9.5 mi south of Cheney.	---	-----	8-15-85	*c0.22
Rock Creek	do.....	Lat 47°14'24", long 117°35'42", in SE¼SW¼ sec.12, T.20 N., R.41 E., Whitman County, 4.2 mi northwest of Pine City.	---	-----	8-15-85	*c3.5
North Fork Pine Creek	Pine Creek	Lat 47°05'34", long 117°02'50", in NW¼NE¼ sec.6, T.18 N., R.46 E., Whitman County, 0.4 mi upstream from South Fork Pine Creek, in Farmington.	---	-----	8-14-85	*c0.005
South Fork Pine Creek	do.....	Lat 47°05'16", long 117°02'47", in SW¼NE¼ sec.6, T.18 N., R.46 E., Whitman County, 0.4 mi upstream from North Fork Pine Creek, in Farmington.	---	-----	8-14-85	*c0.02
Pine Creek	Rock Creek	Lat 47°06'32", long 117°07'23", in SW¼SW¼ sec.27, T.19 N., R.45 E., Whitman County, 3.8 mi northwest of Farmington.	---	-----	8-14-85	*c0.01
Pine Creek	do.....	Lat 47°07'38", long 117°07'41", in SE¼SE¼ sec.21, T.19 N., R.45 E., Whitman County, 2.0 mi upstream from Willow Creek, and 3.9 mi east of Oakesdale.	---	-----	8-14-85	*c0.06
Pine Creek	do.....	Lat 47°10'40", long 117°11'25", in SW¼NW¼ sec.6, T.19 N., R.45 E., Whitman County, 4.2 mi northeast of Oakesdale.	---	-----	8-14-85	*c0.56
Pine Creek	do.....	Lat 47°14'18", long 117°16'05", in NE¼NW¼ sec.16, T.20 N., R.44 E., Whitman County, 0.2 mi upstream from Cabbage Creek, and 4.9 mi east of Rosalia.	---	-----	8-14-85	*c0.50
Pine Creek	do.....	Lat 47°12'58", long 117°19'54", in NW¼SE¼ sec.24, T.20 N., R.43 E., Whitman County, 2.3 mi southeast of Rosalia.	---	-----	8-14-85	*c0.61
Pine Creek	do.....	Lat 47°16'03", long 117°22'00", in SW¼NW¼ sec.34, T.21 N., R.43 E., Spokane County, 0.2 mi upstream from mouth of North Pine Creek, and 2.3 mi north of Rosalia.	---	-----	8-14-85	*c0.92
North Pine Creek	Pine Creek	Lat 47°16'19", long 117°21'45", in NE¼SW¼ sec.27, T.21 N., R.43 E., Spokane County, 0.65 mi upstream from confluence with Pine Creek, and 3.2 mi north of Rosalia.	---	-----	8-14-85	*c0.06
Pine Creek	Rock Creek	Lat 47°16'56", long 117°26'07", in SW¼NE¼ sec.7, T.20 N., R.43 E., Whitman County, less than 0.1 mi downstream from Squaw Creek, and 2.2 mi northeast of Malden.	---	-----	8-14-85	*c1.4
Pine Creek	do.....	Lat 47°13'33", long 117°26'50", in NW¼NW¼ sec.19, T.20 N., R.43 E., Whitman County, 1.1 mi east of Malden.	---	-----	8-14-85	*c1.4
Cache Creek	Pine Creek	Lat 47°13'02", long 117°28'17", in NW¼SW¼ sec.24, T.20 N., R.42 E., Whitman County, 1.1 mi upstream from Pine Creek, and 0.8 mi south of Malden.	---	-----	8-14-85	*c0.61

* Base flow.

c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Palouse River basin--Continued					
Pine Creek	Rock Creek	Lat 47°12'10", long 117°31'27", in SW¼NE¼ sec.28, T.20 N., R.42 E., Whitman County, 1.0 mi upstream from Thorn Creek, and 0.1 mi north of Pine City.	---	-----	8-14-85 *c4.6
Thorn Creek	Pine Creek	Lat 47°11'19", long 117°31'50", in SE¼NW¼ sec.33, T.20 N., R.42 E., Whitman County, 0.6 mi upstream from Pine Creek, and 1.0 mi south of Pine City.	---	-----	8-14-85 *c0.74
Pine Creek	Rock Creek	Lat 47°13'33", long 117°34'27", in SE¼SW¼ sec.18, T.20 N., R.42 E., Whitman County, 2.9 mi upstream from mouth, and 2.9 mi northwest of Pine City.	---	-----	8-14-85 *c5.3
Cottonwood Creek	do.....	Lat 47°04'43", long 117°22'55", in NW¼NW¼ sec.10, T.18 N., R.43 E., Whitman County, 3.0 mi south of Thornton.	---	-----	8-14-85 *c0.03
Cottonwood Creek	do.....	Lat 47°07'12", long 117°29'03", in NE¼NW¼ sec.26, T.19 N., R.42 E., Whitman County, 0.1 mi south of Sunset.	---	-----	8-14-85 *c0.85
Cottonwood Creek	do.....	Lat 47°06'25", long 117°35'35", in SW¼SW¼ sec.25, T.19 N., R.41 E., Whitman County, 1.3 mi northwest of St. John.	---	-----	8-14-85 *c0.86
Pleasant Valley Creek	Cottonwood	Lat 47°06'20", long 117°37'50", in NE¼NW¼ sec.34, T.19 N., R.40 E., Whitman County, 4.9 mi east of Ewan.	---	-----	8-14-85 *c0.96
Cottonwood Creek	Rock Creek	Lat 47°06'52", long 117°43'01", in SW¼NE¼ sec.26, T.19 N., R.40 E., Whitman County, 0.2 mi south of Ewan.	---	-----	8-14-85 *c3.2
Kamiasche Creek	Cottonwood Creek	Lat 47°06'56", long 117°43'01", in SW¼NE¼ sec.26, T.19 N., R.40 E., Whitman County, 0.1 mi south of Ewan.	---	-----	8-14-85 no flow
Packer Creek	Rock Creek	Lat 47°05'10", long 117°50'24", in SW¼NE¼ sec.1, T.18 N., R.39 E., Whitman County, 5.5 mi southwest of Ewan.	---	-----	8-14-85 *c0.17
Rock Creek	Palouse River	Lat 47°04'57", long 117°51'02", in NW¼SE¼ sec.1, T.18 N., R.39 E., Whitman County, 6.1 mi southwest of Ewan.	---	-----	8-14-85 *c5.7
Imbler Creek	Rock Creek	Lat 47°05'15", long 117°54'47", in NW¼NW¼ sec.4, T.18 N., R.39 E., Whitman County, 8.9 mi southwest of Ewan.	---	-----	8-14-85 *c1.3
Rock Creek	Palouse River	Lat 47°04'26", long 117°56'02", in NW¼NW¼ sec.8, T.18 N., R.39 E., Whitman County, 10.0 mi southwest of Ewan.	---	-----	8-14-85 *c6.0
Rock Creek	do.....	Lat 46°54'52", long 117°55'35", in NE¼NE¼ sec.5, T.16 N., R.39 E., Whitman County, 6.1 mi southwest of Winona.	---	-----	8-14-85 *c12
Palouse River	Snake River	Lat 46°54'44", long 117°55'35", in NE¼NE¼ sec.5, T.16 N., R.39 E., Whitman County, 6.2 mi southwest of Winona.	---	-----	8-13-85 *c26
Union Flat Creek	Palouse River	Lat 46°34'20", long 117°07'39", in NE¼NE¼ sec.34, T.13 N., R.45 E., Whitman County, 0.3 mi north of Colton.	---	-----	8-12-85 *c1.9
Union Flat Creek Tributary	Union Flat Creek	Lat 46°34'21", long 117°07'44", in NE¼NE¼ sec.34, T.13 N., R.45 E., Whitman County, 0.3 mi north of Colton.	---	-----	8-12-85 no flow
Union Flat Creek	Palouse River	Lat 46°38'19", long 117°16'03", in NW¼SW¼ sec.3, T.13 N., R.44 E., Whitman County, 7.5 mi southwest of Pullman.	---	-----	10-24-84 *c3.9 8-12-85 *c1.8
Union Flat Creek	do.....	Lat 46°41'27", long 117°16'32", in SW¼SE¼ sec.16, T.14 N., R.44 E., Whitman County, 1.5 mi southeast of Ewartsville.	---	-----	10-24-84 *c3.8 8-12-85 *c1.8
Union Flat Creek	do.....	Lat 46°43'28", long 117°19'04", in NE¼SW¼ sec.6, T.14 N., R.44 E., Whitman County, 0.7 mi upstream from Wilbur Creek, and 1.7 mi northwest of Ewartsville.	---	-----	8-12-85 *c1.8
Wilbur Creek	Union Flat Creek	Lat 46°43'50", long 117°18'20", in SW¼NW¼ sec.5, T.14 N., R.44 E., Whitman County, 0.7 mi upstream from confluence with Union Flat Creek, and 1.9 mi north of Ewartsville.	---	-----	10-24-85 *c0.11 8-12-85 *c0.01

* Base flow.

c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Palouse River basin--Continued					
Union Flat Creek	Palouse River	Lat 46°47'07", long 117°23'25", in NW¼SW¼ sec.15, T.15 N., R.43 E., Whitman County, 7.0 mi south of Colfax.	---	-----	10-24-84 *c5.1 8-12-85 *c2.0
Union Flat Creek	do.....	Lat 46°48'37", long 117°25'52", in NW¼NW¼ sec.8, T.15 N., R.43 E., on right bank upstream from county highway bridge, 5.5 mi southwest of Colfax, and at mile 32.3.	---	-----	10-24-84 *c4.7
Union Flat Creek	do.....	Lat 46°50'41", long 117°37'22", in NW¼SW¼ sec.26, T.16 N., R.41 E., Whitman County, 2.9 mi northeast of Dusty.	---	-----	8-12-85 *c3.4
Union Flat Creek	do.....	Lat 46°51'32", long 117°51'25", in NE¼SW¼ sec.24, T.16 N., R.39 E., Whitman County, 3.1 mi northeast of LaCrosse.	---	-----	8-12-85 *c5.0
Union Flat Creek	do.....	Lat 46°49'42", long 117°59'09", in NE¼SW¼ sec.36, T.16 N., R.38 E., Whitman County, 0.6 mi upstream from mouth, and 4.8 mi west of LaCrosse.	---	-----	8-12-85 *c7.4
Willow Creek	do.....	Lat 46°46'10", long 118°02'03", in NE¼SW¼ sec.22, T.15 N., R.38 E., Whitman County, 0.6 mi northwest of Gordon.	---	-----	8-12-85 *c1.7
Cow Creek	do.....	Lat 47°13'27", long 118°06'53", in NW¼SE¼ sec.4, T.20 N., R.37 E., Adams County, 8.7 mi southwest of Sprague.	---	-----	8-14-85 *c5.8
Cow Creek	do.....	Lat 47°05'13", long 118°14'26", in NW¼NE¼ sec.2, T.19 N., R.36 E., Adams County, 7.0 mi southeast of Ritzville.	---	-----	8-14-85 *c1.0
Cow Creek	do.....	Lat 46°57'28", long 118°13'13", in SW¼SE¼ sec.13, T.17 N., R.36 E., Adams County, 6.6 mi northwest of Bengé.	---	-----	8-13-85 *c3.6
Cow Creek	do.....	Lat 46°53'04", long 118°10'15", in SW¼SE¼ sec.9, T.16 N., R.37 E., Adams County, 3.6 mi southwest of Bengé.	---	-----	8-13-85 *c1.3
Cow Creek	do.....	Lat 46°51'17", long 118°09'45", in NW¼NW¼ sec.27, T.16 N., R.37 E., Adams County, 6.5 mi north of Hooper.	---	-----	8-13-85 *c5.8
Cow Creek	do.....	Lat 46°45'57", long 118°08'57", in NW¼NW¼ sec.26, T.15 N., R.37 E., Adams County, 0.5 mi north of Hooper.	---	-----	8-13-85 *c0.94
Walla Walla River basin					
Mill Creek	Walla Walla River	Lat 45°59'25", long 118°02'47", unsurveyed, T.6 N, R.38 E., Umatilla County, Oregon, Hydrologic Unit 17070102, 400 ft upstream from city of Walla Walla intake at mile 25.4.	---	-----	8-23-85 *c36
14013500 Blue Creek	Mill Creek	Lat 46°03'28", long 118°08'21", in SE¼NE¼ sec.26, T.7 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, 0.2 mi upstream from Nightingale Canyon, 0.8 mi upstream from mouth, and 9.5 mi east of Walla Walla.	17.0	1939-71†, 1973, 1977	8-23-85 *c0.71
14013600 Mill Creek	Walla Walla River	Lat 46°04'53", long 118°11'20", in SE¼SW¼ sec.16, T.7 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, 2.4 mi downstream from Blue Creek, and 6.0 mi east of Walla Walla.	91.0	1966-68, 1970-71, 1973, 1977	8-23-85 *c26
Dry Creek	do.....	Lat 46°08'22", long 118°09'18", in NW¼SW¼ sec.26, T.8 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, 50 ft downstream from Mud Creek, at Dixie.	---	-----	8-15-85 *c1.6
Spring Creek	Dry Creek	Lat 46°07'07", long 118°12'54", in NW¼NW¼ sec.5, T.7 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, 50 ft upstream from Highway 12, and 0.2 mi upstream from mouth.	---	-----	8-15-85 *c0.76
14016000 Dry Creek	Walla Walla River	Lat 46°07'20", long 118°14'10", on south line SW¼ sec.31, T.8 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, 1 mi downstream from Spring Creek, 6 mi northeast of Walla Walla, and at mile 22.0.	48.4	1949-67†, 1977	8-15-85 *c2.3

† Operated as a continuous-record gaging station.

* Base flow.

c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Walla Walla River basin--Continued						
Dry Creek	Walla Walla River	Lat 46°09'04", long 118°20'42", in SW¼SW¼ sec.20, T.8 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, at county road, 0.5 mi east of Valley Grove.	---	-----	8-15-85	*c1.1
Spring Valley Creek	Dry Creek	Lat 46°10'11", long 118°22'59", in NW¼SW¼ sec.13, T.8 N., R.35 E., Walla Walla County, Hydrologic Unit 17070102, 0.5 mi downstream from Hadley, and 2.7 mi upstream from Dry Creek.	---	-----	8-15-85	no flow
Dry Creek Tributary	do.....	Lat 46°07'41", long 118°24'14", in NW¼SW¼ sec.35, T.8 N., R.35 E., Walla Walla County, Hydrologic Unit 17070102, at county road, 0.2 mi upstream from mouth at Dry Creek, and 2.8 mi west of Russell.	---	-----	8-15-85	*c0.27
Dry Creek	Walla Walla River	Lat 46°06'13", long 118°27'55", in SW¼NW¼ sec.8, T.7 N., R.35 E., Walla Walla County, Hydrologic Unit 17070102, 1.1 mi upstream from Mud Creek, and 5 mi northwest of College Place.	---	-----	8-15-85	*c0.74
Mud Creek	Dry Creek	Lat 46°05'33", long 118°28'41", in NW¼NE¼ sec.18, T.7 N., R.35 E., Walla Walla County, Hydrologic Unit 17070102, 0.2 mi upstream from mouth, at Sudbury.	---	-----	8-15-85	c1.2
14016050 Dry Creek	Walla Walla River	Lat 46°03'25", long 118°35'23", in SE¼NW¼ sec.29, T.7 N., R.34 E., Walla Walla County, Hydrologic Unit 17070102, at bridge crossing on U.S. Highway 12, 0.4 mi upstream from mouth, and 0.1 mi west of Lowden.	246	1962-65, 1973, 1977	8-15-85	*c2.6
Robinson Fork Wolf Creek	Wolf Fork	Lat 46°14'15", long 117°53'42", in SW¼SE¼ sec.23, T.9 N., R.39 E., Columbia County, Hydrologic Unit 17070102, 100 ft upstream from mouth at Mountain Home Park, and 7 mi southwest of Dayton.	---	-----	8-14-85	*c0.74
Wolf Creek	East Fork Touchet River	Lat 46°14'18", long 117°53'42", in SW¼SE¼ sec.23, T.9 N., R.39 E., Columbia County, Hydrologic Unit 17070102, 200 ft downstream from Robinson Fork, and 7.0 mi southeast of Dayton.	---	1973, 1977	8-14-85	*c23
14016600 Hatley Creek	do.....	Lat 46°16'52", long 117°53'37", on line between secs.2 and 11, T.9 N., R.39 E., Columbia County, Hydrologic Unit 17070102, at North Fork Touchet River road, and 5 mi southeast of Dayton.	4.12	1955-74	8-14-85	no flow
14016500 East Fork Touchet River	Touchet River	Lat 46°16'46", long 117°54'04", in NW¼NW¼ sec.11, T.9 N., R.39 E., Columbia County, Hydrologic Unit 17070102, 100 ft upstream from Dayton water supply headworks, 3 mi upstream from confluence with South Fork Touchet River, and 4 mi southeast of Dayton.	102	1941-51; 1956-68; 1973, 1977	8-14-85	*c39
South Fork Touchet River	do.....	Lat 46°16'55", long 117°57'24", in SW¼SE¼ sec.5, T.9 N., R.39 E., Columbia County, Hydrologic Unit 17070102, at county road bridge, 1.5 mi upstream from mouth, and 2.9 mi southeast of Dayton.	---	-----	8-14-85	*c3.6
Patit Creek	do.....	Lat 46°19'38", long 117°58'22", in SE¼SE¼ sec.19, T.10 N., R.39 E., Columbia County, Hydrologic Unit 17070102, at U.S. Highway 12 crossing in Dayton, and 0.9 mi upstream from mouth.	---	1977	8-14-85	no flow
Touchet River	Walla Walla	Lat 46°17'26", long 118°02'40", in SE¼NW¼ sec.3, T.9 N., R.38 E., Columbia County, Hydrologic Unit 17070102, at county road bridge, 0.5 mi downstream from Payne Hollow, 3.8 mi west of Dayton, and at mile 49.5.	247	1962-65, 1972, 1973	8-14-85	*c44
Whiskey Creek	Hogeye Hollow	Lat 46°15'12", long 118°04'50", in NW¼NE¼ sec.17, T.9 N., R.38 E., Columbia County, Hydrologic Unit 17070102, at county road crossing, 1.2 mi upstream from Hogeye Hollow, and 3.9 mi southeast of Waitsburg.	---	-----	8-15-85	*ce0.08
Hogeye Hollow	Touchet River	Lat 46°15'20", long 118°04'53", in SW¼SE¼ sec.17, T.9 N., R.38 E., Columbia County, Hydrologic Unit 17070102, at county road bridge, 0.6 mi upstream from Whiskey Creek, and 2.2 mi upstream from mouth.	---	-----	8-14-85	*ce0.10
Wilson Creek	do.....	Lat 46°15'53", long 118°08'38", in NW¼NE¼ sec.14, T.9 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, at county road bridge, 0.3 mi upstream from mouth, in Waitsburg.	---	-----	8-14-85	*ce0.07
Coppei Creek	do.....	Lat 46°19'38", long 117°58'22", in SW¼NW¼ sec.14, T.9 N., R.37 E., Walla Walla County, Hydrologic Unit 17070102, at U.S. Highway 12 crossing, 0.5 mi south of Waitsburg, and 1.3 mi upstream from mouth.	34.1	1962-65, 1972, 1977	8-14-85	*c1.4

: Operated as a continuous-record gaging station.

* Base flow.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Walla Walla River basin--Continued					
Whetstone Hollow	Touchet River	Lat 46°18'13", long 118°10'15", in SE¼NW¼ sec.34, T.10 N., R.37 E., Columbia County, Hydrologic Unit 17070102, at county road, 2.4 mi northwest of Waitsburg, and 0.4 mi upstream from mouth of McKay Creek.	---	-----	8-12-85 *c0.09
East Fork McKay Creek	Whetstone Hollow	Lat 46°21'29", long 118°08'40", in NW¼SE¼ sec.11, T.10 N., R.37 E., Columbia County, Hydrologic Unit 17070102, 6.2 mi northeast of Waitsburg, and 20 ft upstream from mouth.	---	-----	8-12-85 *c0.51
West Fork McKay Hollow	McKay Hollow	Lat 46°21'30", long 118°08'41", in NW¼SE¼ sec.11, T.10 N., R.37 E., Columbia County, Hydrologic Unit 17070102, 6.2 mi northeast of Waitsburg, and 150 ft upstream from mouth.	---	-----	8-12-85 *c0.90
Whetstone Hollow	Touchet River	Lat 46°18'12", long 118°11'03", in SW¼NE¼ sec.33, T.10 N., R.37 E., Columbia County, Hydrologic Unit 17070102, 2.9 mi northwest of Waitsburg, and 50 ft upstream from Weller Canyon.	---	-----	8-12-85 *c0.74
Weller Canyon	Whetstone Hollow	Lat 46°18'12", long 118°11'04", in SW¼NE¼ sec.33, T.10 N., R.37 E., Columbia County, Hydrologic Unit 17070102, at mouth 2.9 mi northwest of Waitsburg.	---	-----	8-12-85 no flow
Whetstone Hollow	Touchet River	Lat 46°18'47", long 118°13'52", in SE¼SW¼ sec.30, T.10 N., R.37 E., Columbia County, Hydrologic Unit 17070102, at county road, 2.6 mi downstream from Weller Canyon.	---	-----	8-14-85 *c0.39
Colville Springs Hollow	Whetstone Hollow	Lat 46°18'52", long 118°17'06", in NE¼SE¼ sec.27, T.10 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, 1.8 mi northeast of Prescott, at mouth.	---	-----	8-14-85 no flow
Whetstone Hollow	Touchet River	Lat 46°17'57", long 118°19'39", in NE¼SE¼ sec.32, T.10 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, at State Highway 124, 0.5 mi upstream from mouth, and 0.7 mi west of Prescott.	---	-----	8-14-85 *ce0.02
Touchet River	Walla Walla River	Lat 46°17'41", long 118°20'22", in NE¼NW¼ sec.5, T.9 N., R.36 E., Walla Walla County, Hydrologic Unit 17070102, at State Highway 125, 1.3 mi southwest of Prescott, and at mile 34.2	---	-----	8-14-85 *c36
Touchet River	do.....	Lat 46°17'15", long 118°29'15", in NW¼SW¼ sec.6, T.9 N., R.35 E., Walla Walla County, Hydrologic Unit 17070102, at county road bridge, 1.2 mi east of Lamar.	---	1962-65	8-14-85 *c28
Winnett Canyon	Touchet River	Lat 46°17'28", long 118°32'02", in SW¼NE¼ sec.3, T.9 N., R.34 E., Walla Walla County, Hydrologic Unit 17070102, at State Highway 124, 0.2 mi upstream from mouth.	---	-----	8-14-85 no flow
Touchet River	Walla Walla River	Lat 46°13'24", long 118°34'33", in NE¼NE¼ sec.32, T.9 N., R.34 E., Walla Walla County, Hydrologic Unit 17070102, at Luckenbill bridge, at mile 19.7.	---	-----	8-15-85 *c28
Touchet River	do.....	Lat 46°07'22", long 118°38'56", in NE¼NW¼ sec.2, T.7 N., R.33 E., Walla Walla County, Hydrologic Unit 17070102, at County road bridge, 5 mi north of Touchet, and at mile 7.3.	---	-----	8-15-85 c25
Touchet River	do.....	Lat 46°05'05", long 118°39'25", in SW¼SW¼ sec.14, T.7 N., R.33 E., Walla Walla County, Hydrologic Unit 17070102, 200 ft downstream from diversion dam, 3 mi north of Touchet, and at mile 4.1.	---	-----	8-15-85 ce0.50
14017600 Touchet River	do.....	Lat 46°02'29", long 118°40'59", in NE¼NE¼ sec.33, T.7 N., R.33 E., Walla Walla County, at U.S. High- way 12 crossing, 0.5 mi west of Touchet, and 0.6 mi upstream from mouth.	747	1962-65, 1972-75, 1977-85	10- 7-85 34 12- 9-85 158 1-29-86 320 5-20-86 98 7-17-86 10 9- 8-86 1.6
Glade Creek basin					
14034250 Glade Creek Tributary	Glade Creek	Lat 46°04'07", long 120°12'23", in N-1/2 sec.29, T.7 N., R.21 E., Yakima County, Hydrologic Unit 17070101, at intersection of Mabton-Bickleton Highway and Naught Road, 7 mi northeast of Bickleton.	20.5	a1961-76	8-20-85 *ce0.06

* Base flow.

a Operated as a crest-stage gage.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Glade Creek basin--Continued					
Glade Creek	Columbia River	Lat 46°07'11", long 120°00'58", in NW¼SE¼ sec.2, T.7 N., R.22 E., Yakima County, Hydrologic Unit 17070101, at county road, 6.5 mi southwest of Mabton.	---	-----	8-20-85 no flow
Glade Creek Tributary	Glade Creek	Lat 45°59'18", long 119°47'17", unsurveyed, T.6 N., R.25 E., Benton County, Hydrologic Unit 17070101, at Glade Creek road, 1.2 mi upstream from mouth.	---	-----	3- 6-85 *ce2.5 9-25-85 no flow
Alder Creek basin					
14034350 Alder Creek	Columbia River	Lat 45°50'30", long 119°55'30", in NE¼SW¼ sec.20, T.4 N., R.23 E., Klickitat County, Hydrologic Unit 17070101, 1 mi upstream from mouth, and 0.5 mi north of Alderdale.	197	1962-68i, 1980-82i	8-20-85 *c0.78
Sixprong Creek	Alder Creek	Lat 45°52'03", long 119°55'22", in SW¼SW¼ sec.34, T.5 N., R.23 E., Klickitat County, Hydrologic Unit 17070101, on Sand Ridge Road, 2.5 mi north of Alderdale, and 0.1 mi upstream from mouth.	---	-----	8-20-85 *c0.33
Tule Canyon	do.....	Lat 45°54'34", long 119°59'44", in SE¼SE¼ sec.13, T.5 N., R.22 E., Klickitat County, Hydrologic Unit 17070101, at Peterson Road crossing, 0.1 mi upstream from mouth, and 9.3 mi northwest of Alderdale.	---	-----	9-25-85 *ce0.005
Alder Creek	Columbia River	Lat 45°54'33", long 119°59'50", in NW¼NE¼ sec.24, T.5 N., R.22 E., Klickitat County, Hydrologic Unit 17070101, 0.15 mi upstream from Tule Canyon, on Sand Ridge Road, and 6.3 mi northwest of Alderdale.	---	-----	8-20-85 *c0.05
Willow Creek	Alder Creek	Lat 45°54'30", long 120°00'42", in NE¼NE¼ sec.23, T.5 N., R.22 E., Klickitat County, Hydrologic Unit 17070101, 0.1 mi upstream from mouth, and 8.8 mi northwest of Alderdale on Alder Creek road.	---	-----	8-20-85 *ce0.02
14034325 Alder Creek	Columbia River	Lat 45°59'49", long 120°16'31", in NE¼NW¼ sec.23, T.6 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at county road 1.3 mi east of Bickleton.	8.35	a1963-77	8-20-85 no flow
Alder Creek	do.....	Lat 46°00'36", long 120°16'51", in NW¼NW¼ sec.14, T.6 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at bridge on county highway, 1.0 mi northeast of Bickleton.	---	-----	8-20-85 *ce0.01
Pine Creek basin					
Pine Creek	do.....	Lat 45°59'40", long 120°19'18", in NW¼NW¼ sec.21, T.6 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at Bickleton-Goldendale Highway, 1.0 mi west of Bickleton.	---	-----	8-20-85 *ce0.01
Pine Creek	do.....	Lat 45°59'09", long 120°18'19", in SE¼SE¼ sec.21, T.6 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at Middle Road, 0.8 mi south of Bickleton.	---	-----	8-20-85 no flow
Pine Creek	do.....	Lat 45°49'33", long 120°11'17", in SW¼SE¼ sec.16, T.4 N., R.21 E., Klickitat County, Hydrologic Unit 17070101, at East Road, 5.7 mi northeast of Roosevelt.	---	-----	8-20-85 no flow
Wood Gulch basin					
Wood Gulch	do.....	Lat 45°58'13", long 120°21'04", in SW¼SE¼ sec.30, T.6 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at Bickleton-Goldendale Highway, 3.0 mi southwest of Bickleton.	---	-----	8-20-85 *ce0.01
Wood Gulch	do.....	Lat 45°45'00", long 120°11'58", in SW¼SW¼ sec.9, T.3 N., R.21 E., Klickitat County, Hydrologic Unit 17070101, 0.2 mi upstream from mouth, and 0.7 mi northeast of Roosevelt.	60.0	1977	8-20-85 no flow
Old Lady Canyon basin					
Old Lady Canyon	do.....	Lat 45°43'37", long 120°16'58", in NW¼SW¼ sec.23, T.3 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at State Highway 14, 1.5 mi east of Sundale, and 0.1 mi upstream from mouth.	---	-----	8-20-85 no flow

i Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Chapman Creek basin						
Chapman Creek	Columbia River	Lat 45°43'22", long 120°18'49", in SW¼SE¼ sec.21, T.3 N., R.20 E., Klickitat County, Hydrologic Unit 17070101, at State Highway 14, at Sundale, and 0.4 mi upstream from mouth.	---	-----	8-20-85	*c0.42
Rock Creek basin						
Rock Creek	do.....	Lat 45°50'31", long 120°31'49", in SW¼SW¼ sec.11, T.4 N., R.18 E., Klickitat County, Hydrologic Unit 17070101, at county road crossing on Bickleton-Goldendale Highway, 15 mi northeast of Goldendale.	67.6	1953, 1955, 1977	8-20-85	*c0.25
Rock Creek	do.....	Lat 45°43'18", long 120°27'28", in NW¼NE¼ sec.29, T.3 N., R.19 E., Klickitat County, Hydrologic Unit 17070101, 1.4 mi upstream from mouth.	---	-----	8-20-85	*ce0.07
Klickitat River basin						
North Fork Dairy Creek	Klickitat River	Lat 46°06'04", long 121°16'35", in SE¼NW¼ sec.14, T.7 N., R.12 E., Yakima County, Hydrologic Unit 17070106, 0.8 mi upstream from mouth, and 7.5 mi north of Glenwood.	---	-----	8-20-85	*c0.73
14110000 Klickitat River	Columbia River	Lat 46°05'20", long 121°15'30", in SE¼ sec.14, T.7 N., R.12 E., Yakima County, Hydrologic Unit 17070106, 0.5 mi downstream from Dairy Creek, 5 mi north of Glenwood, 7 mi upstream from Trout Creek, and at mile 50.3	360	1909-71†, a1972-76, 1977	8-20-85	*c334
Bacon Creek	Klickitat River	Lat 46°04'39", long 121°17'11", in NW¼SE¼ sec.22, T.7 N., R.12 E., Yakima County, Hydrologic Unit 17070106, 1.7 mi upstream from mouth, 1.1 mi south of Parrott Crossing, and 4 mi north of Glenwood.	---	-----	8-20-85	*c0.34
Trout Creek	do.....	Lat 46°02'23", long 121°11'50", in SE¼NE¼ sec.5, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 0.2 mi upstream from mouth, 0.7 mi west of Klickitat State Fish Hatchery, and 4.7 mi east of Glenwood.	42.2	1974-75, 1977	8-21-85	*c2.5
Elk Creek	do.....	Lat 46°02'22", long 121°11'35", in SW¼NW¼ sec.4, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at road crossing, 1.5 mi west of Klickitat State Fish Hatchery, and 0.1 mi upstream from mouth.	12.3	1975, 1977	8-21-85	*c0.07
Klickitat River	Columbia River	Lat 46°02'23", long 121°11'08", in SW¼NW¼ sec.4, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 0.3 mi upstream from dam, at Klickitat State Fish Hatchery, and at mile 42.8.	---	-----	8-20-85	*c368
Klose Butte Canyon	Klickitat River	Lat 46°02'53", long 121°10'43", in SE¼SE¼ sec.33, T.7 N., R.13 E., Yakima County, Hydrologic Unit 17070106, at road crossing, 0.4 mi upstream from mouth, and 0.4 mi north of Klickitat State Fish Hatchery.	---	-----	8-21-85	*ce0.05
Klickitat River Tributary	do.....	Lat 46°02'46", long 121°10'34", in SE¼SE¼ sec.33, T.7 N., R.13 E., Yakima County, Hydrologic Unit 17070106, 0.4 mi upstream from mouth, at county road crossing, and 0.5 mi northeast of Klickitat State Fish Hatchery.	---	-----	8-21-85	no flow
Unnamed Spring	do.....	Lat 46°01'05", long 121°09'22", in SE¼SE¼ sec.10, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, on right bank of Klickitat River, 0.02 mi upstream from mouth, and 7 mi east of Glenwood.	---	-----	8-21-85	*ce3.0
Bird Creek	Outlet Creek	Lat 46°01'06", long 121°17'29", in SE¼SW¼ sec.10, T.6 N., R.12 E., Klickitat County, Hydrologic Unit 17070106, at county road, at Glenwood.	---	-----	8-20-85	*ce10
Frasier Creek	do.....	Lat 46°01'16", long 121°16'48", in NW¼SW¼ sec.11, T.6 N., R.12 E., Klickitat County, Hydrologic Unit 17070106, 0.1 mi north of Glenwood-Goldendale Highway, and 0.5 mi east of Glenwood.	---	-----	8-20-85	*c10

† Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Discharge Date (ft ³ /s)
Klickitat River basin--Continued					
Outlet Creek	Klickitat River	Lat 46°00'00", long 121°12'28", in SE¼SW¼ sec.8, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 1.8 mi upstream from Outlet Falls, at highway crossing, and 4 mi east of Glenwood.	---	-----	8-20-85 *c1.1
Outlet Creek	do.....	Lat 46°00'53", long 121°09'11", in SW¼SW¼ sec.11, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at mouth, 7 mi east of Glenwood.	---	-----	8-21-85 *ce15
White Creek	do.....	Lat 46°00'54", long 121°08'51", in SE¼SW¼ sec.11, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 0.2 mi upstream from mouth, and 6.8 mi east of Glenwood.	130	1974-75, 1977	8-21-85 no flow
Summit Creek	do.....	Lat 45°59'19", long 121°07'23", in SW¼SE¼ sec.24, T.6 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, 0.2 mi upstream from mouth, and 9.6 mi southeast of Glenwood.	44.8	1974-75, 1977	8-21-85 *c12
Klickitat River	Columbia River	Lat 45°56'14", long 121°07'03", in NE¼NE¼ sec.12, T.5 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at bridge, 11.5 mi southeast of Glenwood, and 0.9 mi upstream from Dean Canyon.	758	1915, 1918	8-21-85 *c645
Dead Canyon	Klickitat River	Lat 45°56'17", long 121°07'47", in NW¼NW¼ sec.12, T.5 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at mouth, 9.7 mi north of Wahkiacus.	---	-----	8-21-85 no flow
Sheep Canyon	do.....	Lat 45°56'26", long 121°05'38", in NE¼NE¼ sec.7, T.5 N., R.14 E., Klickitat County, Hydrologic Unit 17070106, at Glenwood-Goldendale Highway, 0.75 mi upstream from mouth.	---	-----	8-21-85 no flow
Reeks Canyon	do.....	Lat 45°54'01", long 121°06'27", in SE¼SW¼ sec.19, T.5 N., R.14 E., Klickitat County, Hydrologic Unit 17070106, at mouth, 5.2 mi north of Wahkiacus.	---	-----	8-21-85 no flow
East Prong Little Klickitat River	Little Klickitat River	Lat 45°55'16", long 120°41'16", in SE¼NW¼ sec.16, T.5 N., R.17 E., Klickitat County, Hydrologic Unit 17070106, 1.3 mi from confluence of Butler Creek, and 8.5 mi northeast of Goldendale.	---	-----	8-12-85 *c0.10
Butler Creek	do.....	Lat 45°54'51", long 120°04'18", in NW¼SE¼ sec.17, T.5 N., R.17 E., Klickitat County, Hydrologic Unit 17070106, 0.1 mi upstream from mouth, at U.S. Highway 97, and 8.1 mi northeast of Goldendale.	---	-----	8-12-85 *c1.1
Highland Canyon	Butler Creek	Lat 45°55'26", long 120°42'31", in NE¼NW¼ sec.17, T.5 N., R.17 E., Klickitat County, Hydrologic Unit 17070106, 0.7 mi north of U.S. Highway 97, and 0.6 mi upstream from mouth.	---	-----	8-12-85 *ce0.05
West Prong Little Klickitat River	Little Klickitat River	Lat 45°54'42", long 120°42'26", in SW¼SE¼ sec.17, T.5 N., R.17 E., Klickitat County, Hydrologic Unit 17070106, at U.S. Highway 97, 0.1 mi upstream from confluence with East Prong Little Klickitat River, and 8.7 mi northeast of Goldendale.	---	-----	8-12-85 *c1.4
Jenkins Creek	do.....	Lat 45°53'04", long 120°44'40", in SW¼SE¼ sec.25, T.5 N., R.16 E., Klickitat County, Hydrologic Unit 17070106, at U.S. Highway 97, 3.1 mi upstream from mouth, and 6.2 mi northeast of Goldendale.	---	-----	8-12-85 no flow
Little Klickitat River Tributary	do.....	Lat 45°52'15", long 120°45'20", in SE¼SW¼ sec.36, T.5 N., R.16 E., Klickitat County, Hydrologic Unit 17070106, at U.S. Highway 97 crossing, 0.8 mi upstream from mouth, and 4.2 mi northeast of Goldendale.	---	-----	8-12-85 *c0.32
Cozy Nook Creek	do.....	Lat 45°51'43", long 120°46'08", in SE¼NW¼ sec.2, T.4 N., R.16 E., Klickitat County, Hydrologic Unit 17070106, at U.S. Highway 97 crossing, 0.35 mi upstream from mouth.	---	-----	8-12-85 *c0.32
14112000 Little Klickitat River	Klickitat River	Lat 45°50'40", long 120°47'42", in NE¼SW¼ sec.10, T.4 N., R.16 E., Klickitat County, Hydrologic Unit 17070106, 400 ft upstream from U.S. Highway 97 bridge, and 2.1 mi northeast of Goldendale.	83.5	1911-12, 1947-51, 1958-70, 1971-78, 1973, 1975-78	8-12-85 *c2.0

i Operated as a continuous-record gaging station.

* No flow.

a Operated as a crest-stage gage.

c Not previously published.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Klickitat River basin--Continued						
Bloodgood Creek	Little Klickitat River	Lat 45°49'40", long 120°49'45", in NW¼SE¼ sec.17, T.4 N., R.16 E., Klickitat County, Hydrologic Unit 17070106, at north side of Goldendale, at county road crossing, and 0.4 mi upstream from mouth.	---	-----	8-12-85	*c4.4
Blockhouse Creek	do.....	Lat 45°50'21", long 120°56'16", in SE¼SW¼ sec.9, T.4 N., R.15 E., Klickitat County, Hydrologic Unit 17070106, at Blockhouse, at State Highway 142 crossing.	---	-----	8-12-85	no flow
14112400 Mill Creek	do.....	Lat 45°51'34", long 120°57'49", in NW¼SW¼ sec.5, T.4 N., R.15 E., Klickitat County, Hydrologic Unit 17070106, 1.9 mi northwest of Blockhouse, and 3.5 mi upstream from mouth.	26.9	1964-72†, a1973-78, 1973, 1975, 1977	8-12-85	*c3.3
14112490 Bowman Creek	do.....	Lat 45°50'56", long 121°02'27", in SE¼NW¼ sec.10, T.4 N., R.14 E., Klickitat County, Hydrologic Unit 17070106, at road crossing, 0.5 mi downstream from Canyon Creek, 0.5 mi upstream from mouth, and 3.2 mi northeast of Wahkiacus.	60.1	1961, 1965, a1974-75, 1975, 1976, 1977	8-12-85	*c4.5
Little Klickitat River	Klickitat River	Lat 45°50'34", long 121°03'27", in SW¼SE¼ sec.9, T.4 N., R.14 E., Klickitat County, Hydrologic Unit 17070106, 450 ft upstream from State Highway 142 bridge, 1.1 mi downstream from Bowman Creek, 2.3 mi northwest of Wahkiacus, and at mile 0.4.	280	1944-81†	8-12-85	*c22
Klickitat River	Columbia River	Lat 45°50'03", long 121°04'41", in SW¼NE¼ sec.17, T.4 N., R.14 E., Klickitat County, Hydrologic Unit 17070106, at State Highway 142, 1.4 mi downstream from Little Klickitat River, and 1.1 mi northwest of Wahkiacus.	---	-----	8-22-85	*c805
Swale Canyon	Klickitat River	Lat 45°49'26", long 121°05'37", in NE¼NE¼ sec.19, T.4 N., R.14 E., Klickitat County, Hydrologic Unit 17070106, at State Highway 142, 0.2 mi upstream from mouth, and at Wahkiacus.	---	-----	8-22-85	no flow
Wahkiacus Canyon	do.....	Lat 45°49'37", long 121°06'47", in SE¼SE¼ sec.13, T.4 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at State Highway 142, 2.2 mi northeast of Klickitat, and 0.1 mi upstream from mouth.	---	-----	8-22-85	no flow
Skookum Canyon	do.....	Lat 45°49'17", long 121°07'26", in SE¼NW¼ sec.24, T.4 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at State Highway 142, 1.3 mi east of Klickitat, and at mouth.	---	-----	8-22-85	no flow
Snyder Canyon	do.....	Lat 45°49'14", long 121°08'53", in SE¼NW¼ sec.23, T.4 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at State Highway 142, at Klickitat, and 0.1 mi upstream from mouth.	---	-----	8-22-85	*c3.9
Klickitat River	Columbia River	Lat 45°47'51", long 121°11'24", in SW¼SW¼ sec.28, T.4 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at State Highway 142, 0.2 mi upstream from Wheeler Canyon, and 0.4 mi east of Pitt.	---	-----	8-22-85	*c658
Wheeler Canyon	Klickitat River	Lat 45°47'42", long 121°11'30", in NW¼NW¼ sec.33, T.4 N., R.13 E., Klickitat County, Hydrologic Unit 17070106, at mouth, 0.2 mi east of Pitt.	---	-----	8-22-85	no flow
Cowlitz River basin						
Summit Creek	Cowlitz River	Lat 46°42'36", long 121°32'06".	---	-----	7-15-86	*9.65
Ohanapecosh	do.....	Lat 46°42'36", long 121°34'42".	---	-----	7-15-86	*151

† Operated as a continuous-record gaging station.

* Base flow.

a Operated as a crest-stage gage.

c Not previously published.

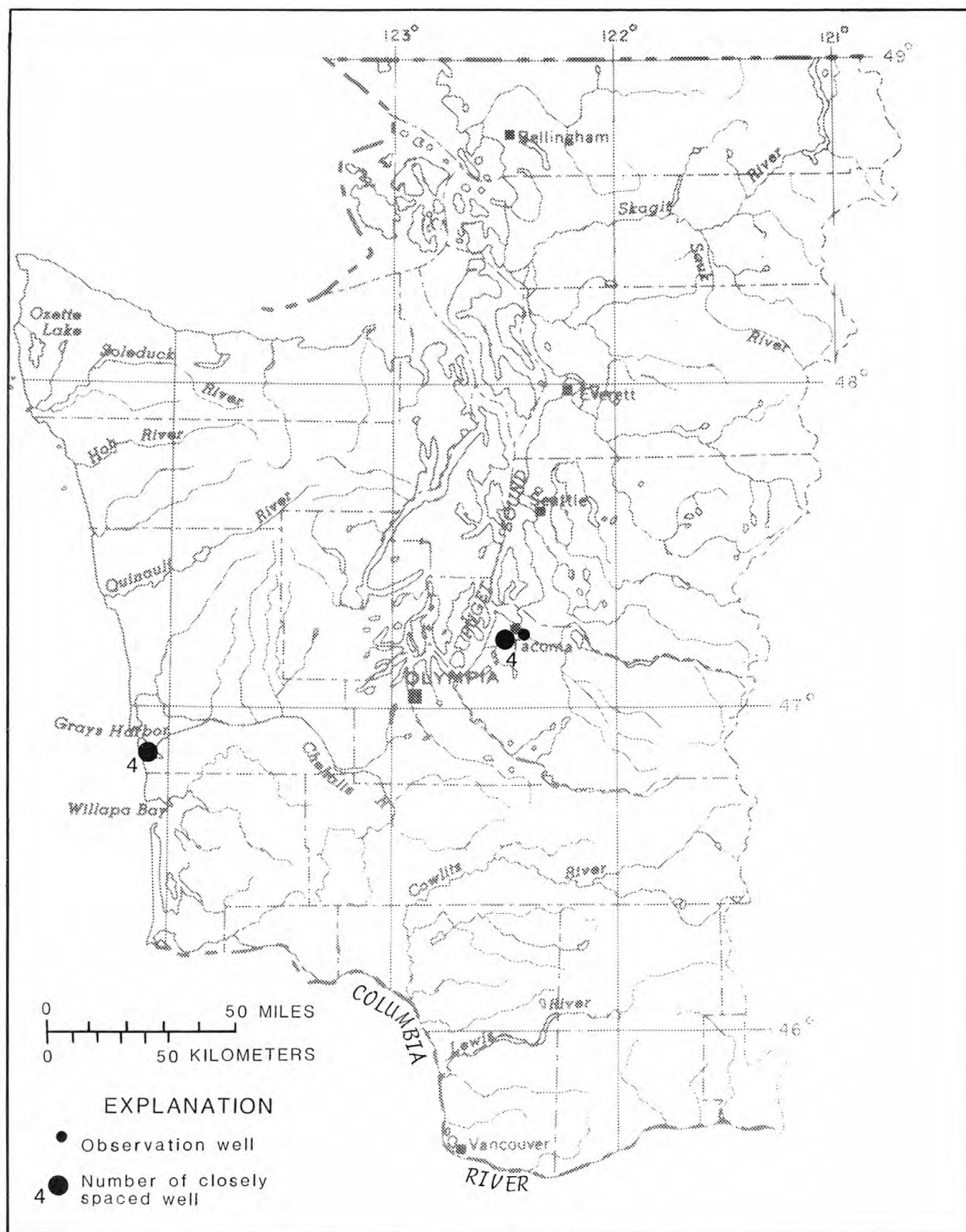


Figure 34a.--Map of Western Washington showing locations of ground-water level observations.

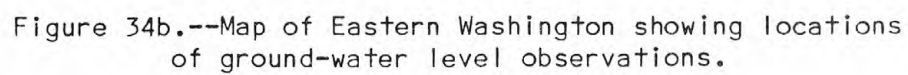


Figure 34b.--Map of Eastern Washington showing locations of ground-water level observations.

GROUND-WATER LEVELS

ADAMS COUNTY

464445118461002. Local number, 15/32-35E2.

LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.

Owner: REHCO

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe to 845 ft in 12-in diameter plugged off open section of drilled artesian well, total depth 966 ft, uncased depth interval from 840 to 966 ft.

DATUM.--Elevation of land-surface datum is 1,242 ft.

PERIOD OF RECORD.--October 1980 to current year.

REMARKS.--Water level measured in one of five piezometers.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 578.0 ft below land-surface datum, Jan. 26, 1983; lowest measured, 607 ft below land-surface datum, Sept. 27, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 20	584.6

464445118461003. Local number, 15/32-35E3.

LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.

Owner: REHCO

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe to 719 ft in 16- to 12-in diameter plugged off open section of drilled artesian well, total depth 825 ft, uncased depth interval from 714 to 825 ft.

REMARKS.--Water level measured in one of five piezometers.

DATUM.--Elevation of land-surface datum is 1,242 ft.

PERIOD OF RECORD.--October 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 579.7 ft below land-surface datum, May 26, 1982; lowest measured, 608.0 ft below land-surface datum, Sept. 23, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 SEPTEMBER 1986

Date	Water Level
MAR 20	587.3

464445118461005. Local number, 15/32-35E5.

LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.

Owner: REHCO

AQUIFER.--Wanapum Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe to 583 ft in plugged off open section of 16-in diameter drilled artesian well, total depth 573 ft, uncased depth interval from 378 to 573 ft.

DATUM.--Elevation of land-surface datum is 1,242 ft.

REMARKS.--Water level measured in one of five piezometers.

PERIOD OF RECORD.--October 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 295.2 ft below land-surface datum, Nov. 30, 1982; lowest measured, 355.3 ft below land-surface datum, Oct. 31, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 20	297.6

464445118461006. Local number, 15/32-35E6.

LOCATION.--Lat 46°44'34", long 118°46'05", Hydrologic Unit 17020016, near Connell.

Owner: REHCO

AQUIFER.--Wanapum Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe to 295 ft inside a 16-in diameter drilled water-table well, cased to 36.5 ft, total depth 362 ft, uncased depth interval from 36.5 to 362 ft.

DATUM.--Elevation of land-surface datum is 1,242 ft.

REMARKS.--Water level measured in one of five piezometers.

PERIOD OF RECORD.--November 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 290.5 ft below land-surface datum, Sept. 23, 1985; lowest measured, 324.9 ft below land-surface datum, Mar. 23, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 20	292.4

GROUND-WATER LEVELS

497

ADAMS COUNTY--Continued

471347118410101. Local number, 20/33-16E1.

LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test water-table well, diameter 10 in, total depth 750 ft, uncased depth interval from 70 to 94 ft.

DATUM.--Elevation of land-surface datum is 1,670 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 80.34 ft below land-surface datum, June 20, 1975; lowest measured, 93.38 ft below land-surface datum, Apr. 23, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 20, 1985	83.0	FEB 25, 1986	84.1

471347118410102. Local number, 20/33-16E2.

LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 158 to 183 ft.

DATUM.--Elevation of land-surface datum is 1,670 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 107.35 ft below land-surface datum, Mar. 23, 1972; lowest measured, 142.2 ft below land-surface datum, June 23, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 20, 1985	134.2	FEB 25, 1986	134.0

471347118410103. Local number, 20/33-16E3.

LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 282 to 299 ft.

DATUM.--Elevation of land-surface datum is 1,670 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 109.89 ft below land-surface datum, Feb. 23, 1972; lowest measured, 153.1 ft below land-surface datum, Dec. 12, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 20, 1985	143.7	FEB 25, 1986	143.3

471347118410104. Local number, 20/33-16E4.

LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 352 to 401 ft.

DATUM.--Elevation of land-surface datum is 1,670 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 106.46 ft below land-surface datum, Mar. 23, 1972; lowest measured, 138.32 ft below land-surface datum, Mar. 7, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 20, 1985	131.2	FEB 25, 1986	132.0

GROUND-WATER LEVELS

ADAMS COUNTY--Continued

471347118410105. Local number, 20/33-16E5.

LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 586 to 616 ft.

DATUM.--Elevation of land-surface datum is 1,670 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 112.35 ft below land-surface datum, Feb 23, 1972; lowest measured, 299.9 ft below land-surface datum, June 25, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 20, 1985	294.9	FEB 25, 1986	206.1

471347118410106. Local number, 20/33-16E6.

LOCATION.--Lat 47°13'47", long 118°41'01", Hydrologic Unit 17020015, near Odessa.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 750 ft, uncased depth interval from 676 to 701 ft.

DATUM.--Elevation of land-surface datum is 1,670 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 279.19 ft below land-surface datum, Apr. 21, 1971; lowest measured, 413.2 ft below land-surface datum, June 29, 1982, Sept. 20, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 20, 1985	413.2	FEB 25, 1986	373.0

BENTON COUNTY

460237119383001. Local number, 7/25-36N1.

LOCATION.--Lat 46°02'37", long 119°38'30", Hydrologic Unit 17070101, near Paterson.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, total depth 860 ft, uncased depth interval from 105 to 185 ft.

DATUM.--Elevation of land-surface datum is 730 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 84.2 ft below land-surface datum, Mar. 14, 1986; lowest measured, 133.50 ft below land-surface datum, Nov. 1, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	84.2

460237119383003. Local number, 7/25-36N3.

LOCATION.--Lat 46°02'37", long 119°38'30", Hydrologic Unit 17070101, near Paterson.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 860 ft, uncased depth interval from 720 to 755 ft.

DATUM.--Elevation of land-surface datum is 730 ft.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 362.5 ft below land-surface datum, Jan. 18, 1979; lowest measured, 389.7 ft below land-surface datum, Oct. 29, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	384.3

GROUND-WATER LEVELS

499

BENTON COUNTY--Continued

460237119383004. Local number, 7/25-36N4.

LOCATION.--Lat 46°02'37", long 119°38'30", Hydrologic Unit 17070101, near Paterson.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 860 ft, uncased depth interval from 770 to 860 ft.

DATUM.--Elevation of land-surface datum is 730 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 361.9 ft below land-surface datum, Jan. 18, 1979; lowest measured, 391.32 ft below land-surface datum, Nov. 10, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	382.9

DOUGLAS COUNTY

472741119402202. Local number, 23/25-27L2.

LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Sagebrush Flat

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 1,260 ft, screened 1,260 to 1,265 ft in a 16-in to 10-inch diameter drilled artesian observation-test well, depth interval 1,205 to 1,300 ft.

DATUM.--Elevation of land-surface datum is 1,700 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 415.8 ft below land-surface datum, Sept. 17, 1985; lowest measured, 440.33 ft below land-surface datum, Sept. 29, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	415.8	FEB 25, 1986	415.9

472741119402203. Local number, 23/25-27L3.

LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Sagebrush Flat.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 1,155 ft, screened 1,155 to 1,160 ft in a 16-in to 10-in diameter drilled artesian observation-test well, depth interval 1,039 to 1,196 ft.

DATUM.--Elevation of land-surface datum is 1,700 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 387.1 ft below land-surface datum, Mar. 22, 1983; lowest measured, 441.0 ft below land-surface datum, Oct. 19, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	434.8	FEB 25, 1986	436.8

472741119402204. Local number, 23/25-27L4.

LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Sagebrush Flat

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 987 ft, screened 987 to 992 ft in a 16-in to 10-in diameter drilled artesian observation-test well, depth interval 963 to 1,030 ft.

DATUM.--Elevation of land-surface datum is 1,700 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 390.3 ft below land-surface datum, Mar. 22, 1983; lowest measured, 441.40 ft below land-surface datum, Sept. 19, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	436.2	FEB 25, 1986	435.9

GROUND-WATER LEVELS

DOUGLAS COUNTY--Continued

472741119402205. Local number, 23/25-27L5.

LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Sagebrush Flat.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 850 ft, screened 850 to 855 ft in a 16-in to 10-in diameter drilled artesian observation-test well, depth interval 834 to 958 ft.

DATUM.--Elevation of land-surface datum is 1,700 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 436.2 ft below land-surface datum, Sept. 17, 1985; lowest measured, 441.42 ft below land-surface datum, Sept. 29, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	436.2	FEB 25, 1986	438.3

472741119402206. Local number, 23/25-27L6.

LOCATION.--Lat 47°27'41", long 119°40'22", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Sagebrush Flat.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled artesian observation-test well, casing diameter 16 in to 12 in, cased to 801 ft, depth 827 ft.

DATUM.--Elevation of land-surface datum is 1,700 ft.

REMARKS.--Water level measured in casing.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 436.6 ft below land-surface datum, Sept. 17, 1985; lowest measured, 441.32 ft below land-surface datum, Sept. 29, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	436.6	FEB 25, 1986	438.3

472857119354004. Local number, 23/26-20D2.

LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Pixlee.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 1,260 ft, screened 1,260 to 1,265 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 1,207 to 1,315 ft.

DATUM.--Elevation of land-surface datum is 1,920 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 595.9 ft below land-surface datum, Mar. 6, 1984; lowest measured, 603.0 ft below land-surface datum, Jan. 28, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	600.8	FEB 24, 1986	600.9

472857119354005. Local number, 23/26-20D3..

LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Pixlee.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 935 ft, screened 935 to 940 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 856 to 992 ft.

DATUM.--Elevation of land-surface datum is 1,920 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 488.1 ft below land-surface datum, Feb. 24, 1986; lowest measured, 516.20 ft below land-surface datum, Oct. 1, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	488.5	FEB 24, 1986	488.1

GROUND-WATER LEVELS

501

DOUGLAS COUNTY--Continued

472857119354006. Local number, 23/26-20D4.

LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Pixlee.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 798 ft, screened 798 to 803 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 693 to 846 ft.

DATUM.--Elevation of land-surface datum is 1,920 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 490.0 ft below land-surface datum, Feb. 24, 1986; lowest measured, 523.35 ft below land-surface datum, Oct. 1, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	490.4	FEB 24, 1986	490.0

472857119354007. Local number, 23/26-20D5.

LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Pixlee.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 588 ft, screened 588 to 593 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 551 to 615 ft.

DATUM.--Elevation of land-surface datum is 1,920 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 528.6 ft below land-surface datum, Feb. 24, 1986; lowest measured, 567.1 ft below land-surface datum, Oct. 1, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	530.7	FEB 24, 1986	528.6

472857119354008. Local number, 23/26-20D6.

LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Pixlee.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Casing diameter 1.25 in to 504 ft, screened 504 to 509 ft in a 16-in to 8-in diameter drilled artesian well, depth interval 479 to 541 ft.

DATUM.--Elevation of land-surface datum is 1,920 ft.

REMARKS.--Water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--All readings are dry.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	dry	FEB 24, 1986	dry

472857119354009. Local number, 23/26-20D7.

LOCATION.--Lat 47°28'57", long 119°35'48", Hydrologic Unit 17020012, near Ephrata.

Owner: Washington Department of Ecology - Pixlee.

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled artesian well, casing diameter 16 in to 55 ft, depth 466 ft.

DATUM.--Elevation of land-surface datum is 1,920 ft.

REMARKS.--Water level measured in casing.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 355.1 ft below land-surface datum, Feb. 24, 1986; lowest measured, 373.5 ft below land-surface datum, Oct. 1, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 17, 1985	356.2	FEB 24, 1986	355.1

GROUND-WATER LEVELS

DOUGLAS COUNTY--Continued

474855119303901. Local number, 27/26-25D1.

LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, total depth 760 ft, completed depth interval from 38 to 53 ft.

DATUM.--Elevation of land-surface datum is 2,215 ft.

REMARKS.--Water level measured in casing.

PERIOD OF RECORD.--April 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.97 ft below land-surface datum, May 27, 1983; lowest measured, 22.95 ft below land-surface datum, Oct. 4, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 2	16.22	MAR 17	15.86

474855119303902. Local number, 27/26-25D2.

LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 760 ft, completed depth interval from 70 to 152 ft, uncased.

DATUM.--Elevation of land-surface datum is 2,215 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 80.23 ft below land-surface datum, May 27, 1983; lowest measured, 102.48 ft below land-surface datum, Jan. 20, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 2	84.17	MAR 17	86.26

474855119303904. Local number, 27/26-25D4.

LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 760 ft, completed depth interval from 490 to 610 ft, uncased, and perforated from 465 to 485 ft.

DATUM.--Elevation of land-surface datum is 2,215 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 277.40 ft below land-surface datum, Apr. 20, 1974; lowest measured, 324.95 ft below land-surface datum, July 23, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 2	312.9	MAR 17	316.8

474855119303905. Local number, 27/26-25D5.

LOCATION.--Lat 47°48'55", long 119°30'39", Hydrologic Unit 17020012, near Mansfield.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, total depth 760 ft, completed depth interval from 630 to 687 ft uncased, and screened from 750 to 760 ft.

DATUM.--Elevation of land-surface datum is 2,215 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--April 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 309.45 ft below land-surface datum, Sept. 17, 1985; lowest measured, 327.90 ft below land-surface datum, Apr. 20, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 2	314.2	MAR 17	313.8

GROUND-WATER LEVELS

503

GRANT COUNTY

470308119405801. Local number, 18/25-15E1.

LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Wanapum basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation-test well, diameter 10 in, total depth 976 ft, cased to 976 ft, perforated at intervals from 350 to 900 ft.

DATUM.--Elevation of land-surface datum is 1,156.69 ft.

PERIOD OF RECORD.--August 1975 to December 1977, February 1979 to current year.

REMARKS.--Well deepened to 1,610 ft in February 1978, then backfilled when piezometers 18/25-15E6, 7, & 8 were installed in the well.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 69.1 ft below land-surface datum, Mar. 12, 1981; lowest measured, 231.40 ft below land-surface datum, June 27, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 22, 1985	191.5	FEB 24, 1986	73.9

470308119405802. Local number, 18/25-15E6.

LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Grand Ronde basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation-test well, total depth 1,610 ft, casing diameter 1.25 in, casing depth 1,168 ft, screened 1,163 to 1,168 ft.

DATUM.--Elevation of land-surface datum is 1,156.69 ft.

PERIOD OF RECORD.--March 1979 to current year.

REMARKS.--Water level measured in piezometer.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 375.35 ft below land-surface datum, Feb. 26, 1985; lowest measured, 382.39 ft below land-surface datum, Mar. 22, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 22, 1985	381.0	FEB 24, 1986	375.5

470308119405803. Local number, 18/25-15E7.

LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Grande Ronde basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation-test well, total depth 1,610 ft, casing diameter 1.25 in, casing depth 1,411 ft, screened 1,406 to 1,411 ft.

DATUM.--Elevation of land-surface datum is 1,156.69 ft.

PERIOD OF RECORD.--March 1979 to current year.

REMARKS.--Water level measured in piezometer.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 375.9 ft below land-surface datum, Feb. 24, 1986; lowest measured, 383.0 ft below land-surface datum, June 27, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 22, 1985	381.1	FEB 24, 1986	375.9

470308119405804. Local number, 18/25-15E8.

LOCATION.--Lat 47°03'08", long 119°40'58", Hydrologic Unit 17020015, near George.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Grande Ronde basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation-test well, total depth 1,610 ft, casing diameter 1.25 in, casing depth 1,546 ft, screened 1,541 to 1,546 ft.

DATUM.--Elevation of land-surface datum is 1,156.69 ft.

PERIOD OF RECORD.--March 1979 to current year.

REMARKS.--Water level measured in piezometer.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 379.5 ft below land-surface datum, Feb. 24, 1986; lowest measured, 383.9 ft below land-surface datum, Sept. 22, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 22, 1985	383.9	FEB 24, 1986	379.5

GROUND-WATER LEVELS

GRAYS HARROR COUNTY

465123124062201. Local number, 16/12W-24J4.

LOCATION.--Lat 46°51'23", Long 124°06'22", Hydrologic Unit 17100106, near Westport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Glacial sand of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 578 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.

DATUM.--Elevation of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Monitored depth interval from 187 to 192 ft, water level measured in 12-in diameter casing.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.63 ft below land-surface datum, Jan. 20, 1982; lowest measured, 11.05 ft below land-surface datum, Oct. 4, 1974, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 19	9.56	SEP 3	9.78

465123124062202. Local number, 16/12W-24J5.

LOCATION.--Lat 46°51'23", Long 124°06'22", Hydrologic Unit 17100106, near Westport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.

DATUM.--Elevation of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Monitored depth interval from 269 to 279 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.30 ft below land-surface datum, Jan. 10, 1978; lowest measured, 14.37 ft below land-surface datum, Jan. 20, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 19	10.00	SEP 3	10.56

465123124062203. Local number, 16/12W-24J6.

LOCATION.--Lat 46°51'23", Long 124°06'22", Hydrologic Unit 17100106, near Westport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.

DATUM.--Elevation of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Monitored depth interval from 327 to 332 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.36 ft below land-surface datum, Jan. 20, 1982; lowest measured, 10.37 ft below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 19	9.68	SEP 3	10.24

465123124062204. Local number, 16/12W-24J7.

LOCATION.--Lat 46°51'23", Long 124°06'22", Hydrologic Unit 17100106, near Westport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Sandy clay of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 700 ft, 12-in diameter casing to 398 ft, 8-in diameter casing 378 to 678 ft, perforated 187 to 192 ft, 269 to 279 ft, 327 to 332 ft, and 516 to 521 ft.

DATUM.--Elevation of land-surface datum is 15.65 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Monitored depth interval from 516 to 521 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.68 ft below land-surface datum, Jan. 27, 1983; lowest measured, 20.28 ft below land-surface datum, Aug. 19, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 19	10.60	SEP 3	11.38

GROUND-WATER LEVELS

505

KITITITAS COUNTY

46511120272701. Local number, 16/19-28C1.

LOCATION.--Lat 46°51'11", long 120°27'27", Hydrologic Unit 17030001, near Ellensburg.

Owner: State of Washington

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, 10- to 8-in diameter, cased to 474 ft, total depth 1,019 ft, uncased depth interval from 474 to 1,019 ft.

REMARKS.--Well 16/19-28C1 is inside well 16/19-28C2.

DATUM.--Elevation of land-surface datum is 1,425 ft.

PERIOD OF RECORD.--February 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.79 ft below land-surface datum, Aug. 20, 1980; lowest measured, 24.33 ft below land-surface datum, Sept. 23, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 11	20.57	SEP 23	20.40

46511120272702. Local number, 16/19-28C2.

LOCATION.--Lat 46°51'11", long 120°27'27", Hydrologic Unit 17030001, near Ellensburg.

Owner: State of Washington

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--Drilled 12-in diameter observation artesian well, total depth 474 ft, uncased depth interval from 169 to 474 ft.

DATUM.--Elevation of land-surface datum is 1,425 ft.

REMARKS.--Well 16/19-28C1 is inside well 16/19-28C2.

PERIOD OF RECORD.--March 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.12 ft below land-surface datum, Mar. 1, 1978; lowest measured, 51.62 ft below land-surface datum, June 3, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 11	46.0	SEP 23	47.16

465538120204801. Local number, 17/20-29R1.

LOCATION.--Lat 46°55'38", long 120°20'48", Hydrologic Unit 17030001, near Ellensburg.

Owner: State of Washington

AQUIFER.--Sand and gravel of Ellensburg Formation of Miocene Age.

WELL CHARACTERISTICS.--Drilled 10-in diameter observation water-table well, depth 400 ft, cased to 400 ft.

DATUM.--Elevation of land-surface datum is 1,830 ft.

PERIOD OF RECORD.--October 1978 to March 1983, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.9 ft below land-surface datum, Oct. 5, 1978; lowest measured, 80.7 ft below land-surface datum, Feb. 5, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
MAR 11	78.34	SEP 23	55.96

KLICKITAT COUNTY

455008120561301. Local number, 4/15-16F1.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Elevation of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 40 to 210 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.1 ft below land-surface datum, Apr. 12, 1976; lowest measured, 43.22 ft below land-surface datum, Sept. 24, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 12	37.53

GROUND-WATER LEVELS

KLICKITAT COUNTY--Continued

455008120561302. Local number, 4/15-16F2.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Elevation of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 215 to 330 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.0 ft below land-surface datum, Apr. 12, 1976; lowest measured, 43.14 ft below land-surface datum, Sept. 24, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 12	37.50

455008120561303. Local number, 4/15-16F3.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Elevation of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 500 to 580 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.6 ft below land-surface datum, Apr. 12, 1976; lowest measured, 44.09 ft below land-surface datum, Sept. 24, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 12	39.72

455008120561304. Local number, 4/15-16F4.

LOCATION.--Lat 45°50'08", long 120°56'13", Hydrologic Unit 17070106, near Blockhouse.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 in, depth 595 ft, 12-in diameter casing to 331 ft, perforated 40 to 331 ft.

DATUM.--Elevation of land-surface datum is 1,590 ft.

REMARKS.--Monitored depth interval from 335 to 440 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 195.6 ft below land-surface datum, Mar. 16, 1982; lowest measured, 223.60 ft below land-surface datum, Apr. 30, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 12	199.76

455458120112702. Local number, 5/21-16L2.

LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 1,459 to 1,474 ft.

DATUM.--Elevation of land-surface datum is 2,304 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 677.25 ft below land-surface datum, Mar. 1, 1982; lowest measured, 683.5 ft below land-surface datum, Sept. 24, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	683.2

GROUND-WATER LEVELS

507

KLICKITAT COUNTY--Continued

455458120112704. Local number, 5/21-16L4.

LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 1,092 to 1,097 ft.

DATUM.--Elevation of land-surface datum is 2,304 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 679.0 ft below land-surface datum, Mar. 1, 1982; lowest measured, 683.2 below land-surface datum, Oct. 29, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	682.6

455458120112705. Local number, 5/21-16L5.

LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 966 to 971 ft.

DATUM.--Elevation of land-surface datum is 2,304 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 679.05 ft below land-surface datum, Dec. 9, 1981, Mar. 1, 1982; lowest measured, 683.4 ft below land-surface datum, Sept. 24, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	683.1

455458120112706. Local number, 5/21-16L6.

LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 802 to 807 ft.

DATUM.--Elevation of land-surface datum is 2,304 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 679.05 ft below land-surface datum, Dec. 9, 1981, Mar. 1, 1982; lowest measured, 683.3 ft below land-surface datum, Oct. 29, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	682.7

455458120112707. Local number, 5/21-16L7.

LOCATION.--Lat 45°54'58", long 120°11'27", Hydrologic Unit 17070101, near Bickleton.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 8 in, total depth 1,500 ft, uncased depth interval from 423 to 598 ft.

DATUM.--Elevation of land-surface datum is 2,304 ft.

REMARKS.--Water level measured in piezometer.

PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 580.0 ft below land-surface datum, Dec. 9, 1981, Feb. 17, 1984; lowest measured, dry, Oct. 29, 1984, Mar. 14, 1985, Sept. 24, 1985, Mar. 14, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
MAR 14	dry

GROUND-WATER LEVELS

LINCOLN COUNTY

471937118544402. Local number, 21/31-10M2.

LOCATION.--Lat 47°19'37", long 118°54'44", Hydrologic Unit 17020015, near Odessa.

Owner: Mrs. Robert Schell.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled oil-test well, diameter 10 in, depth 4,682 ft, cased to 98 ft.

DATUM.--Elevation of land-surface datum is 1,610 ft.

REMARKS.--Monitored depth interval from 98 to 735 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 230.25 ft below land-surface datum, Jan. 8, 1973; lowest measured, 292.0 ft below land-surface datum, FEB. 25, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 18, 1985	231.0	FEB 25, 1986	292.0

471937118544403. Local number, 21/31-10M3.

LOCATION.--Lat 47°19'37", long 118°54'44", Hydrologic Unit 17020015, near Odessa.

Owner: Mrs. Robert Schell.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled oil-test well, diameter 10 in, depth 4,682 ft, cased to 98 ft.

DATUM.--Elevation of land-surface datum is 1,610 ft.

REMARKS.--Monitored depth interval from 742 to 1,480 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 231.32 ft below land-surface datum, Jan. 8, 1973; lowest measured, 338.3 ft below land-surface datum, Oct. 4, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 18, 1985	332.8	FEB 25, 1986	309.5

471937118544404. Local number, 21/31-10M4.

LOCATION.--Lat 47°19'37", long 118°54'44", Hydrologic Unit 17020015, near Odessa.

Owner: Mrs. Robert Schell.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled oil-test well, diameter 10 in, depth 4,682 ft, cased to 98 ft.

DATUM.--Elevation of land-surface datum is 1,610 ft.

REMARKS.--Monitored depth interval from 1,488 to 2,300 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 224.56 ft below land-surface datum, May 24, 1976; lowest measured, 241.9 ft below land-surface datum, Oct. 4, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 18, 1985	241.5	FEB 25, 1986	237.4

473433118560301. Local number, 24/31-16E1.

LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, depth 750 ft, cased to 60 ft.

DATUM.--Elevation of land-surface datum is 1,845 ft.

REMARKS.--Monitored depth interval from 60 to 316 ft, water level measured in 10 in diameter casing.

PERIOD OF RECORD.--May 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 175.20 ft below land-surface datum, Sept. 1, 1975, Feb. 25, 1986; lowest measured, 185.4 ft below land-surface datum, Mar. 18, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 19, 1985	175.0	FEB 25, 1986	175.2

GROUND-WATER LEVELS

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LINCOLN COUNTY--Continued

473433118560302. Local number 24/31-16E2.

LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 60 ft.

DATUM.--Elevation of land-surface datum is 1,845 ft.

REMARKS.--Monitored depth interval from 424 to 456 ft, water level measured in piezometer.

PERIOD OF RECORD.--May 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 345.65 ft below land-surface datum, Jan. 31, 1977; lowest measured, 393.1 ft below land-surface datum, Feb. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 19, 1985	368.7	FEB 25, 1986	364.3

473433118560303. Local number, 24/31-16E3.

LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft cased to 60 ft.

DATUM.--Elevation of land-surface datum is 1,845 ft.

REMARKS.--Monitored depth interval from 494 to 556 ft, water level measured in piezometer.

PERIOD OF RECORD.--May 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 345.53 ft below land-surface datum, Jan. 31, 1977; lowest measured, 393.6 ft below land-surface datum, Feb. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 19, 1985	368.6	FEB 25, 1986	364.9

473433118560304. Local number, 24/31-16E4.

LOCATION.--Lat 47°34'33", long 118°56'03", Hydrologic Unit 17020013, near Almira.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 60 ft.

DATUM.--Elevation of land-surface datum is 1,845 ft.

REMARKS.--Monitored depth interval 650 to 698 ft, water level measured in piezometer.

PERIOD OF RECORD.--May 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 346.50 ft below land-surface datum, Jan. 31, 1977; lowest measured, 393.5 ft below land-surface datum, Feb. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 19, 1985	368.6	FEB 25, 1986	365.7

473442118162201. Local number, 24/36-16A1.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 75 to 116 ft, water level measured in 10-in casing.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.52 ft below land-surface datum, May 1, 1974; lowest measured, 46.10 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	37.17	FEB 25, 1986	35.5

GROUND-WATER LEVELS

LINCOLN COUNTY--Continued

473442118162202. Local number, 24/36-16A2.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 123 to 160 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.38 ft below land-surface datum, May 1, 1974; lowest measured, 46.22 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	36.97	FEB 25, 1986	35.4

473442118162203. Local number, 24/36-16A3.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 208 to 224 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.24 ft below land-surface datum, May 1, 1974; lowest measured, 46.25 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	36.97	FEB 25, 1986	35.4

473442118162204. Local number, 24/36-16A4.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 242 to 261 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.47 ft below land-surface datum, May 1, 1974; lowest measured, 46.45 ft below land-surface datum, Nov. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	37.13	FEB 25, 1986	35.5

473442118162205. Local number, 24/36-16A5.

LOCATION.--47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 315 to 365 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.90 ft below land-surface datum, May 1, 1974; lowest measured, 50.53 ft below land-surface datum, Sept. 6, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	41.97	FEB 25, 1986	37.3

GROUND-WATER LEVELS

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LINCOLN COUNTY--Continued

473442118162206. Local number, 24/36-16A6.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 451 to 491 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.93 ft below land-surface datum, Mar. 2, 1976; lowest measured, 66.34 ft below land-surface datum, Sept. 20, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	40.98	FEB 25, 1986	36.2

473442118162207. Local number, 24/36-16A7.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 590 to 635 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 162.47 ft below land-surface datum, Mar. 2, 1972; lowest measured, 213.6 ft below land-surface datum, Aug. 23, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	209.4	FEB 25, 1986	189.9

473442118162208. Local number, 24/36-16A8.

LOCATION.--Lat 47°34'42", long 118°16'22", Hydrologic Unit 17020013, near Davenport.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 10 in, depth 750 ft, cased to 75 ft.

DATUM.--Elevation of land-surface datum is 2,372 ft.

REMARKS.--Monitored depth interval from 728 to 750 ft, water level measured in piezometer.

PERIOD OF RECORD.--September 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 162.82 ft below land-surface datum, Mar. 2, 1972; lowest measured, 214.77 ft below land-surface datum, Aug. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 11, 1985	209.3	FEB 25, 1986	190.3

473758118325205. Local number, 25/34-29J1.

LOCATION.--Lat 47°38'00", long 118°32'53", Hydrologic Unit 17020013.

Owner: Richard Dreger

AQUIFER.--Wanapum Basalt of Miocene Age.

WELL CHARACTERISTICS.--16-in diameter pipe to 476-700 ft, 12-in diameter pipe 700-780 ft, and 10-in diameter pipe 780-1,225 ft.

DATUM.--Elevation of land-surface datum is 2,285 ft.

PERIOD OF RECORD.--March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 45.2 ft below land-surface datum, Mar. 2, 1984; lowest measured, 50.5 ft below land-surface datum, Sept. 10, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 10, 1985	50.5	FEB 25, 1986	48.3

GROUND-WATER LEVELS

LINCOLN COUNTY--Continued

473758118325207. Local number, 25/34-29J3.

LOCATION.--Lat 47°38'00", long 118°32'53", Hydrologic Unit 17020013.

Owner: Richard Dreger

AQUIFER.--Wanapum Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe to 944 ft in 16-in diameter drilled water-table well, uncased open section 944-949 ft.

DATUM.--Elevation of land-surface datum is 2,284 ft.

PERIOD OF RECORD.--March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 548.7 ft below land-surface datum, Mar. 2, 1984; lowest measured, 550.8 ft below land-surface datum, Mar. 2, 1984.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 10, 1985	OBSTRUCTION	FEB 25, 1986	548.9

473758118325204. Local number, 25/34-29J4.

LOCATION.--Lat 47°38'00", long 118°32'53", Hydrologic Unit 17020013.

Owner: Richard Dreger

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe to 715 ft in 12-in diameter plugged off drilled artesian well, uncased gravel-filled section 700-747 ft.

DATUM.--Elevation of land-surface datum is 2,284 ft.

PERIOD OF RECORD.--March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 547.6 ft below land-surface datum, Mar. 2, 1984; lowest measured, 547.9 ft below land-surface datum, Mar. 1, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level
FEB 25	547.8

473758118325205. Local number, 25/34-29J5.

LOCATION.--Lat 47°38'00", long 118°32'53", Hydrologic Unit 17020013.

Owner: Richard Dreger

AQUIFER.--Grande Ronde Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter pipe to 408 ft, screened 408-413 ft in 16-in diameter plugged off drilled artesian well, uncased gravel-filled section 364-463 ft.

DATUM.--Elevation of land-surface datum is 2,284 ft.

PERIOD OF RECORD.--March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.1 ft below land-surface datum, Mar. 2, 1984; lowest measured, 155.2 ft below land-surface datum, Sept. 10, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 10, 1985	155.2	FEB 25, 1986	63.4

473758118325206. Local number, 25/34-29J6.

LOCATION.--Lat 47°38'00", long 118°32'53", Hydrologic Unit 17020013.

Owner: Richard Dreger

AQUIFER.--Wanapum Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter pipe to 314 ft screened 314-319 ft in 16-in diameter plugged off section drilled artesian well, uncased gravel-filled section 259-352 ft.

DATUM.--Elevation of land-surface datum is 2,284 ft.

PERIOD OF RECORD.--March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.1 ft below land-surface datum, Mar. 2, 1984; lowest measured, 155.3 ft below land-surface datum, Sept. 10, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 10, 1985	155.3	FEB 25, 1986	63.7

GROUND-WATER LEVELS

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LINCOLN COUNTY--Continued

473758118325207. Local number, 25/34-29J7.

LOCATION.--Lat 47°38'00", long 118°32'53", Hydrologic Unit 17020013.

Owner: Richard Dreger

AQUIFER.--Wanapum Basalt of Miocene Age.

WELL CHARACTERISTICS.--1½-in diameter open-ended pipe in 16-in diameter drilled water-table well, uncased open section 22-259 ft.

DATUM.--Elevation of land-surface datum is 2,284 ft.

PERIOD OF RECORD.--March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 45.5 ft below land-surface datum, Feb. 25, 1986; lowest measured, 51.3 ft below land-surface datum, Sept. 10, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, SEPTEMBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
SEP 10, 1985	51.3	FEB 25, 1986	45.5

PIERCE COUNTY

471338122282201. Local number, 20/3-18C1.

LOCATION.--Lat 47°13'38", long 122°28'22", Hydrologic Unit 17110019.

Owner: City of Tacoma.

AQUIFER.--Glacial sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled unused test artesian well, diameter 12 in, depth 185 ft, cased to 152 ft.

DATUM.--Elevation of land-surface datum is 310 ft.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.85 ft below land-surface datum, Oct. 5, 1954; lowest measured, 127.38 ft below land-surface datum, Mar. 27, 1974. Water level measurements are affected by nearby pumpage.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 1	103.63	JAN 24	101.98	APR 25	100.10	JUL 25	112.03
OCT 31	102.98	FEB 28	100.98	MAY 23	99.78	AUG 25	113.68
NOV 26	102.70	MAR 25	100.64	JUN 25	111.58	SEP 25	103.68
DEC 27	101.96						

SPOKANE COUNTY

474011117072901. Local number, 25/45-16C1.

LOCATION.--Lat 47°40'11", long 117°07'29", Hydrologic Unit 17010305, near Greenacres.

Owner: Inland Empire Paper Company.

AQUIFER.--Glacial sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Dug unused irrigation water-table well, diameter 96 in, depth 129 ft, lined with gunite cement to 129 ft.

DATUM.--Elevation of land-surface datum is 2,060.4 ft National Geodetic Vertical Datum of 1929.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 84.56 ft below land-surface datum, June 17, 1953; lowest measured, 114.53 ft below land-surface datum, Dec. 8, 1931.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 31	104.32	JAN 21	105.60	APR 23	100.58	JUL 23	106.22
NOV 22	103.12	FEB 26	103.64	MAY 22	101.94	AUG 22	108.10
DEC 24	104.03	MAR 20	100.11	JUN 23	104.06	SEP 24	107.54

WALLA WALLA COUNTY

460014118281801. Local number, 6/35-18A1.

LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.

DATUM.--Elevation of land-surface datum is 670 ft.

REMARKS.--Monitored depth interval from 90 to 230 ft, water level measured in 12-in diameter casing.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.7 ft below land-surface datum, Mar. 17, 1980; lowest measured, 45.70 ft below land-surface datum, Jan. 27, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 8	29.52	MAR 19	24.32

GROUND-WATER LEVELS

WALLA WALLA COUNTY--Continued

460014118281802. Local number, 6/35-18A2.

LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, water-table well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.

DATUM.--Elevation of land-surface datum is 670 ft.

REMARKS.--Monitored depth interval from 710 to 730 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 144.20 ft below land-surface datum, Apr. 1, 1974; lowest measured, 200.8 ft below land-surface datum, Oct. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 8	178.27	MAR 19	151.68

460014118281803. Local number, 6/35-18A3.

LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.

DATUM.--Elevation of land-surface datum is 670 ft.

REMARKS.--Monitored depth interval from 740 to 1,204 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 145.10 ft below land-surface datum, Apr. 1, 1974; lowest measured, 201.0 ft below land-surface datum, Oct. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 8	179.18	MAR 19	152.85

460014118281804. Local number, 6/35-18A4.

LOCATION.--Lat 46°00'14", long 118°28'18", Hydrologic Unit 17070102, near Walla Walla.

Owner: State of Washington, Department of Ecology.

AQUIFER.--Basalt of Miocene to Pliocene Age.

WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in, depth 1,308 ft, 12-in diameter casing from 0 to 273 ft, 10-in diameter casing from 250 to 680 ft, 8-in diameter casing from 670 to 730 ft, perforations from 90 to 230 ft and from 710 to 730 ft.

DATUM.--Elevation of land-surface datum is 670 ft.

REMARKS.--Monitored depth interval from 1,216 to 1,308 ft, water level measured in piezometer.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 145.60 ft below land-surface datum, Apr. 1, 1974; lowest measured, 201.9 ft below land-surface datum, Oct. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Water Level	Date	Water Level
OCT 8	180.04	MAR 19	152.86

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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