Magnitude and Frequency of Floods in the United States

Part 12. PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

By G. L. BODHAINE *and* D. M. THOMAS

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1687

Prepared in cooperation with the Washington State Department of Highways

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1964

UNITED STATES DEPARTMENT OF THE INTERIOR

STEWART L. UDALL, *Secretary*

GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

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MAGNITUDE AND FREQUENCY OF FLOODS IN THE UNITED STATES

PART 12. PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

By G. L. Bodhaine and D. M. Thomas

ABSTRACT

The flood records for all stream-gaging stations with 5 or more years of annual peak record in the Pacific Slope basins of Washington and in the Columbia River basin above the mouth of the Snake River were listed for study and are published in this report.

These flood data were analyzed to provide a means of evaluating the flood probability of ungaged and gaged sites on streams in the study area. By using a regional analysis, the report area was divided into eight regions, each considered to have homogeneous flood characteristics. The variations among gaging-station frequency curves in a homogeneous region was considered to be the result of differences in drainage basin characteristics and of chance. After each gaging-station frequency curve was adjusted for differences in drainage basin characteristics, the chance variation was averaged to produce a composite flood-frequency curve. This composite curve relates magnitude, expressed as a ratio to mean annual flood, to frequency, expressed in recurrence intervals of 1.1–50 years. Each composite curve provides the most likely shape and slope of the flood-frequency curve for any site, gaged or ungaged, on any stream in the homogeneous region to which it applies.

The application of one of the composite curves to any specific site requires evaluation of the ratio scale by determination of the mean annual flood for that site. Empirical formulas for determining the mean annual flood from drainage basin characteristics were derived by multiple linear correlation. Drainage area, average annual runoff, area of lakes and ponds, and geographical location were the independent variables used. The standard error of estimate was about 24 percent. The derived formulas are applicable to any drainage area larger than 0.1 square mile in Pacific Slope basins and to any drainage area larger than 20 square miles in the upper Columbia River basin. Nomographs for solution of the mean annual flood formulas are presented.

INTRODUCTION

PURPOSE AND SCOPE

The objectives of this report are (1) to present flood records for all known stream-gaging stations with over 5 years of annual flood record

in the Pacific Slope basins of Washington and in the Columbia River basin above the mouth of the Snake River and (2) to present relationships derived from a regional analysis of these flood data whereby the flood magnitude and its probability of occurrence at any site on any stream in the area may be evaluated.

The evaluation of the flood potential of a site is of primary concern to persons engaged in the location and design of structures or installations subject to possible flooding. The design for certain structures must be such that the structure will not be damaged or destroyed by any probable flood. For a great majority of structures, however, economic considerations require a design that will balance the cost of damage by an occasional flood against the additional cost of a design that will withstand all flooding. The solution of this design problem requires knowledge of flood probabilities.

Within the present limits of hydrologic knowledge, the analysis of past flood experience presents the best method of evaluating future flood probabilities. Flood records obtained at all gaging stations with 5 or more years of annual flood peak record in the study area are presented with pertinent descriptive and historical material. The area in which these data were obtained is designated as part 12 on figure 1, and is the same area designated as part 12 in the annual reports on "Surface Water Supply of the United States." The present report also expands upon and supersedes U.S. Geological Survey Circular 191 "Floods in Western Washington, Frequency and Magnitude in Relation to Drainage-Basin Characteristics."

A gaging station is rarely located near a proposed construction or installation site, and the stream-gaging network is unlikely to become comprehensive enough to provide flood records at all sites where these data may be desired. Even where proposed construction may be anticipated, it is unlikely that enough time will be available in which to adequately define the long-term flood characteristics at the site. For these reasons, it is desirable to provide, by analysis of flood experience at gage sites, relationships that may be used to evaluate the flood magnitude and frequency at ungaged or short-term gaging sites.

Evaluation of the flood potential involves determination of the probability of occurrence of floods of a given magnitude. The probability is expressed as frequency in terms of the recurrence interval in years. For example, a flood magnitude with a probability of occurrence of 0.10 would be expected to occur 10 times in 100 years (a recurrence interval of 10 years) or a flood magnitude with a probability of 0.04 would be expected to occur 4 times in 100 years (a recurrence interval of 25 years). These recurrence intervals are the same as stating that these floods have a 10-percent or a 4-percent chance of occurring in

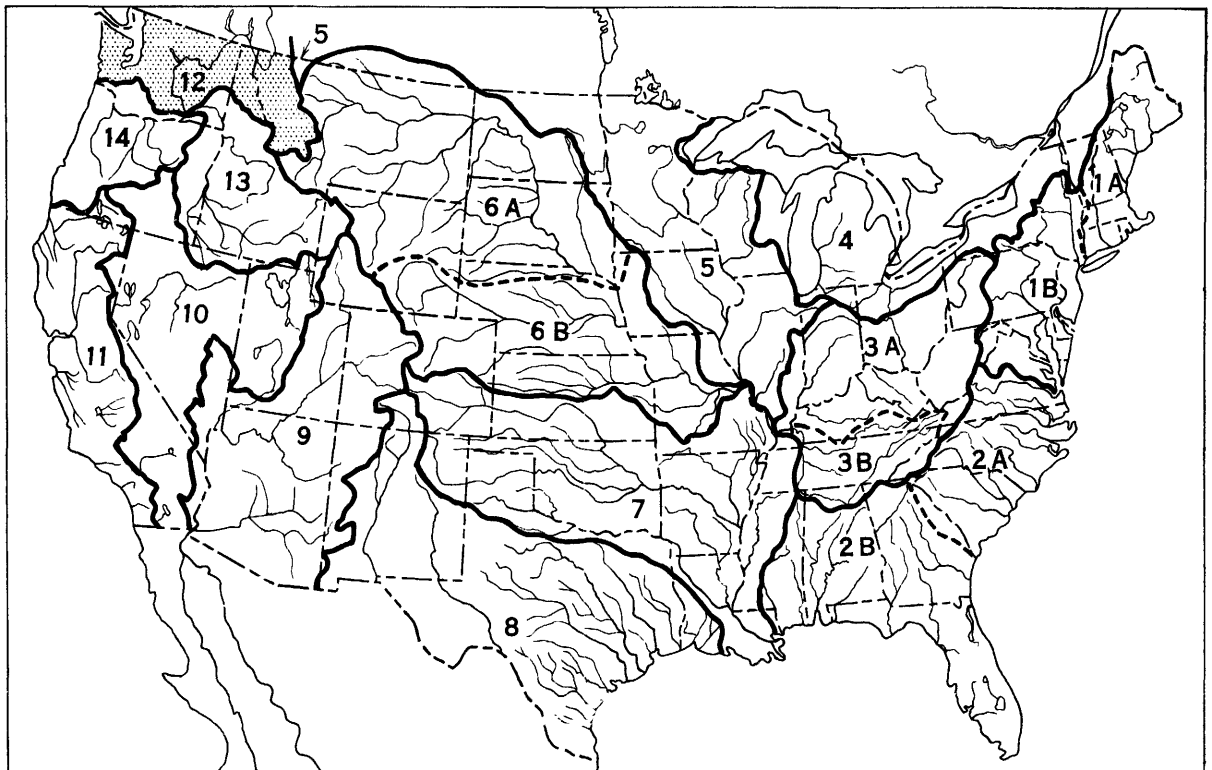

FIGURE 1.—Map of conterminous United States showing area covered by this report.

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any given year. A recurrence interval, however, should not be construed to indicate that floods occur on a regular schedule. A recurrence interval cannot be used to predict the time of occurrence. The magnitude of a flood is expressed as discharge rather than as elevation of water surface, or stage, because discharge is independent of local channel conditions. For example, channel changes, dikes, or structures in the stream channel may change the long-term relationship of stage to frequency but have a much smaller effect on the discharge-frequency relationship.

Past flood experience is described generally by means of a graph that relates magnitude along the vertical scale, or ordinate, to frequency along the horizontal scale. Because most hydrology textbooks and much engineering literature give detailed descriptions of flood-frequency curves and of their construction, further discussion will not be presented here.

An analysis was made of the individual flood-frequency curves drawn for 307 gaging stations in part 12 that had records of annual floods more than 5 years in length and at which the flood discharge was not substantially altered by manmade conditions. The analysis involved an evaluation of the causes of variation between individual gaging-station frequency curves. A set of eight composite frequency curves were constructed to cover the complete area of part 12. For any site in the study area, the applicable composite curve represents the most probable shape and slope of the flood-frequency curve for that site.

The specific flood magnitude for a site, known as the mean annual flood, must be known in order to apply a composite curve to the site. In this analysis, empirical formulas for determining the mean annual flood from drainage-basin characteristics were derived. These formulas are applicable to all natural-flow sites with drainage areas greater than 0.1 square mile in Pacific Slope basins and 20 square miles in the upper Columbia River basin.

ACKNOWLEDGMENTS

This report was prepared in the Tacoma District office of the U.S. Geological Survey, Water Resources Division, Surface Water Branch. Methods and procedures used were outlined by the U.S. Geological Survey office in Washington, D.C., and technical guidance was furnished by Tate Dalrymple, hydraulic engineer.

Financial cooperation was furnished by the Washington State Department of Highways, W. A. Bugge, director, and George Stevens, bridge engineer.

The records of flood discharge were assembled and reviewed by personnel of the U.S. Geological Survey, Water Resources Division, Surface Water Branch offices in Tacoma, Wash., Helena, Mont., and Boise, Idaho, under the supervision of district engineers F. M. Veatch, Frank Stermitz, and W. I. Travis (who succeeded T. R. Newell), respectively.

The geological Survey, acting through its district offices, cooperates with State, municipal, and Federal agencies in obtaining records of streamflow. Discharge records of gaging stations in Canada were obtained through the Vancouver, British Columbia, office of the Water Resources Branch of the Canadian Department of Northern Affairs and National Resources, H. T. Ramsden, district engineer. In addition to records collected cooperatively by the Geological Survey or from the Canadian Department of Northern Affairs and National Resources, basic data from which flood records have been obtained were gathered by the U.S. Army Corps of Engineers, the Bureau of Reclamation, the Bureau of Indian Affairs, Washington Water Power Co. and Puget Sound Power & Light Co.

NATURAL FEATURES

TOPOGRAPHY

The region under consideration covers an area of about 122,000 square miles and is composed of the Pacific Slope basins in Washington and of the Columbia River basin above the mouth of Snake River. The part of Montana west of the Continental Divide, the northern tip of Idaho, the northern three-fourths of Washington, and about 39,000 square miles of British Columbia, Canada, are included.

The dominant physical features of the area are the mountains. The Rocky Mountains (Continental Divide) form the eastern boundary of the area, and fairly high mountains in Canada form the northern boundary. From the Pacific Ocean on the west the land rises steeply into the coast range, which in western Washington consists of the Olympic Mountains and the Willapa Hills. Mountains or rolling hills border the area on the south. Several mountain ranges are interspersed in the interior of part 12; the most prominent ranges are the Cascades of central Washington, which separates the Pacific Slope basins from the upper Columbia River basin, and the Bitterroots, which are along the Idaho-Montana border. These dominant features of the terrain have a decided effect upon streamflow characteristics.

Puget Sound and the adjacent lowlands form a trough about 50 miles wide that is at or near sea level and that separates the Olympic Mountains from the Cascade Range. To the south, another lowland, the Chehalis River basin, separates the Willapa Hills from the Cascade Range and extends at low altitude to the Cowlitz River basin, where

the minimum altitude is about 450 feet. Some streams entering these lowlands have formed large flood plains, and in some areas dikes have been built to prevent flood damage.

East of the Cascade Range in south-central Washington is a large, flat to rolling desert area which is sporadically cut by large dry river channels formed by runoff from the melting glaciers of the ice ages. Streamflow in this area is intermittent. A great amount of this arid land lies within the Columbia Basin Project and is or will be irrigated with Columbia River water.

The mountainous areas of the remainder of part 12 are interspersed with large valleys down which the major Columbia River tributaries flow. With the exception of the Kootenai, Flathead, and Clark Fork Rivers, most streams do not have extensive flood plains.

CLIMATE

Great variations in climate exist in the area of part 12. Temperature in the Pacific Slope basins is subject to the moderating influence of the prevailing winds from the Pacific Ocean. The Rocky Mountains and Cascade Range effectively shield the Pacific Slope basins from the temperature extremes of the continental airmass, which affects the midwestern United States. The temperature in the western Washington lowlands seldom drops below 20° F or exceeds 90° F.

Diminishing protection from the continental airmass, lessening influence exerted by the moderating maritime air, and generally increasing altitudes result in a widening range of temperature extremes eastward across part 12. Near the Continental Divide in Montana the temperature ranges from −30° F to 100° F, and in eastern Washington the temperature ranges from about −10° F to 110° F.

The principal source of precipitation in part 12 is the water vapor carried inland from the Pacific Ocean by the eastward-moving maritime airmasses. As an airmass is forced upward over the mountains, it is cooled by expansion, reducing its ability to hold moisture and causing heavy precipitation along the Pacific Coast. As the airmass proceeds eastward, it enters the Puget Sound trough and is warmed by compression, thereby increasing its water-holding ability and tending to reduce the amount of precipitation over the low-lying land. In its continued eastward movement the airmass is again forced upward over the Cascade Range, producing another belt of heavy precipitation. This process is repeated as the airmass crosses each succeeding mountain range until it passes out of the region. The amounts of precipitation are greater along the Coast Range and the Cascade Range than at comparable altitudes to the east, because less moisture is available for precipitation after the airmasses cross these barriers.

In addition to the precipitation resulting from orographic uplift, the upper Columbia River basin occasionally receives localized high-intensity rainfall from convective storms. These thunderstorms usually occur in the summer months and occasionally cause extreme flood peaks on small drainage areas.

The combined effect of topography and prevailing storm direction results in a wide variation in precipitation between areas. The actual precipitation on the upper slopes of the Olympic Mountains is not known, but the annual runoff is known to average about 160 inches and occasionally to exceed 200 inches per year in the Wynoochee River basin. About 50 miles to the northeast near Sequim, Wash., in the rain shadow of these mountains, the precipitation averages less than 20 inches per year. Wide variations in precipitation patterns are also characteristic of eastern Washington, Idaho, and Montana. In the arid part of eastern Washington the annual runoff averages less than 0.5 inch from an average precipitation of about 10 inches, and in Montana measured annual runoff ranges from less than 5 inches to about 60 inches.

About 70 percent of the precipitation falling on the study area occurs during the period of October to March. In the mountain regions, especially, a large part of this precipitation falls as snow. Snowpacks as deep as 27 feet containing 150 inches of water have been measured in the Cascades, and snowpacks as deep as 10 feet containing over 48 inches of water have been measured in Montana and northern Idaho. The heavy winter precipitation and accumulation in the form of snow have a decided effect on flood-discharge characteristics.

CHARACTERISTICS OF FLOOD DISCHARGE

Three types of floods occur in the area included in part 12. Winter floods occur during the months of October to March as a result of relatively warm rainstorms. Floodwaters are primarily rainwater, often augmented by water from melted snow, especially if the snow mantle extends to low altitudes. Hydrographs of these peaks are characterized by relatively high magnitudes and short durations. Spring floods occur during April to June as a result of rising temperatures which melt the snowpacks that accumulated in winter. Hydrographs of spring floods are rounded and of long duration. Summer floods occur in July and August. They are the result of localized high-intensity rainfall and are capable of producing peaks of extreme magnitude and short duration on small drainage areas.

In the Pacific Slope basins, only winter floods occur as annual maximums, except in the high-altitude, deep-snow areas. In the high-altitude drainage basins, a spring peak will occasionally occur as an an-

nual maximum. Almost without exception, damaging floods in Pacific Slope basins occur in winter.

In the relatively flat, arid section of eastern Washington all three types of floods may occur. The most damaging floods usually result from rain or snow; frozen ground often increases the magnitude by reducing losses from seepage and decreasing concentration time. These peaks occur most often in February and March.

In the remainder of the area most annual floods result from spring snowmelt. Rainfall seldom adds materially to these spring floods. Occasionally a summer rainfall peak will occur on small drainage areas, and on rare occasions a winter flood will occur as a yearly maximum along the eastern slopes of the Cascade Range.

METHOD OF ANALYSIS

Two methods of analyzing flood data are (1) by annual flood series and (2) by partial-duration flood series. In the annual flood series, only the maximum peak discharge in each water year is used. In the partial-duration flood series, all peaks above a selected base discharge are used. The annual flood series was used for this report. The two methods have been shown to give virtually the same results for recurrence intervals greater than 10 years (Langbein, 1949). Also, a relationship has been shown to exist between the two series that allows a partial-duration flood series to be computed from an annual flood series. Comparative values of recurrence intervals, in years, by the two methods are shown below:

Annual flood series	*Partial-duration flood series*	*Annual flood series*	*Partial-duration flood series*
1.16	0.5	10.5	10
1.58	1.0	20.5	20
2.00	1.45	50.5	50
2.54	2.0	100.5	100
5.52	5.0		

An important distinction between the two flood series is in the meaning of recurrence interval. In the annual flood series, the recurrence interval is the average interval of time within which a given flood will be equaled or exceeded once as an annual maximum. In a partial-duration flood series, the recurrence interval is the average interval between floods of a given size without regard to their relationship to the water year or to any other period of time.

The analysis involves two steps. The first determines the average or composite relationship between the magnitude of floods and the recurrence interval. The second step relates a specific flood magnitude, the mean annual flood, to drainage-basin characteristics.

The magnitude-frequency relationship at a gaging station may be determined from flood records. The variation between individual gaging-station frequency curves constructed from concurrent records is considered to be the result of (1) differences in drainage-basin characteristics, (2) differences in regional flood characteristics, and (3) chance variation resulting from climatological vagaries and measurement errors. By adjusting for the effect of differences in regional flood characteristics and differences in drainage-basin characteristics, the remaining variation of the individual frequency curves may be attributed to chance causes. Each of the individual gaging-station curves, when adjusted for regional and basin characteristics, is considered to be a random sample of the true magnitude-frequency relationship for the region. By balancing or averaging the adjusted individual curves into a composite magnitude-frequency curve, the chance variation is averaged, and the composite curve is then the best possible estimate of the true relationship that existed during the period of time for which the curve was constructed. If the time period for which the curve was constructed is long enough to adequately sample the long-term flood regimen, then the composite curve is the best possible estimate of the future magnitude-frequency relationship adjusted for drainage-basin and regional flood characteristics.

Previous studies show that the adjustment for variation due to basin characteristics may be made by converting the magnitude scale of the gaging-station frequency curves from a discharge value to a dimensionless number. This dimensionless number is called the ratio to mean annual flood, or—more simply—the flood ratio. It is computed by dividing the flood-discharge values along the magnitude scale by the value of the mean annual flood of the gaging station. Several investigators have noted or found an additional effect based on size of drainage area. A significant effect on flood ratios was found to exist in parts of the area considered in this report, and adjustments for this effect were made where necessary.

To adjust for variation due to regional flood characteristics, all curves with similar slopes after adjustment for drainage-basin characteristics were grouped by area. Boundaries of areas of homogeneous regional flood characteristics were determined by a statistical test. A composite magnitude-frequency curve was constructed for each homogeneous region. For simplicity of use the composite frequency curves constructed for each region were kept separate and were not combined into a single composite curve for the entire study area, as this would have required a regional adjustment before the composite curve could be applied.

The composite curve defines the most likely magnitude-frequency relationship for any site in a homogeneous flood region, but the effect of the drainage-basin characteristics must be evaluated before the curve can be applied. In other words, the dimensionless magnitude scale must be converted to a discharge value and this conversion requires that the mean annual flood at the desired site be determined. One basin characteristic that has a major effect on the magnitude of the mean annual flood is the drainage area. In this report, other basin characteristics in addition to the drainage area have been evaluated and correlated with the mean annual flood. After the magnitude of the mean annual flood has been determined, the composite frequency curve applicable to the flood region may be used to construct a frequency curve for any site, gaged or ungaged, within that region.

Mean annual flood as used in this report is defined as the flood with a recurrence interval of 2.33 years in the annual flood series. It was determined graphically for gaging-station data used in the analysis. The graphical mean annual flood is more easily determined, and since it does not give full weight to extreme floods which may contain large sampling errors, it is a more dependable value than the arithmetical mean annual flood.

BASIC DATA

The basic data used in this analysis were obtained from the gaging stations in the study area that had 5 or more years of annual flood record during the period 1912–57 and for which the flood flows were not substantially altered by regulation or diversion. In some places where records of storage were adequate, the regulated peak discharges were adjusted to the probable natural peak discharges, and the adjusted values were used in the anlysis. In places where two flood records were obtained on the same stream at points where the drainage areas differed by less than 25 percent, either the records were combined to form one long record or the longer of the two records was used.

Table 1 is a list of gaging stations from which flood data for the analysis were obtained. The order of listing the stations and their numbers is explained later in the section under "Gaging-station records" (p. 33). The data in the last five columns of table 1 were obtained by methods explained later in this report (p. 24) and were used in defining the mean-annual-flood relationships.

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Naselle River basin					
100	Naselle River near Naselle, Wash.....	5,820	55.3	106	0.01	1.07
106	Lane Creek near Naselle, Wash.....	151	2.15	(70)	.01	.92
	Nemah River basin					
110	North Nemah River near South Bend, Wash...	1,260	18.0	84.5	0.01	0.92
111	North Nemah River tributary near South Bend, Wash.	47	.37	(70)	.01	.92
	Willapa River basin					
115	Willapa River at Lebam, Wash.....	2,430	41.4	59.1	0.01	1.11
122	Green Creek near Lebam, Wash.....	125	1.79	(60)	.01	.92
135	Willapa River near Willapa, Wash.....	6,980	130	66.1	.01	1.03
	North River basin					
167	Joe Creek near Cosmopolis, Wash.....	156	2.05	(65)	0.01	0.92
170	North River near Raymond, Wash.....	7,700	219	59.5	.01	.92
	Chehalis River basin					
196	Water Mill Creek near Pe Ell, Wash.....	87	1.98	(60)	0.01	0.92
200	Chehalis River near Doty, Wash.....	10,300	113	68.4	.01	1.25
205	Elk Creek near Doty, Wash.....	1,490	46.7	45.1	.01	.92
210	South Fork Chehalis River at Boistfort, Wash.	3,450	49.2	54.4	.01	1.35
250	Newaukum River near Chehalis, Wash.....	5,550	159	42.5	.02	1.35
260	Skookumchuck River near Centralia, Wash...	4,350	60.8	55.4	.01	1.35
270	Lincoln Creek near Rochester, Wash.....	769	20.9	44.5	.01	.92
275	Chehalis River near Grand Mound, Wash.....	25,200	895	42.0	.03	1.11
290	Black River at Little Rock, Wash.....	1,140	60	34.6	1.56	.92
300	Rock Creek at Cedarville, Wash.....	1,030	24.8	44.1	.01	.92
310	Chehalis River at Porter, Wash.....	23,600	1,300	40.3	.14	1.03
325	Cloquallum River at Elma, Wash.....	2,770	65.8	50.0	.61	1.15
350	Satsop River near Satsop, Wash.....	23,800	290	91.8	.25	1.43
355	Wynoochee River at Oxbow, near Aberdeen, Wash.	11,400	68	162	.01	1.01
375	Wynoochee River below Black Creek, near Montesano, Wash.	20,600	178	103	.01	1.31
	Humptulips River basin					
390	Humptulips River near Humptulips, Wash....	18,400	130	133	0.01	1.31
390.5	Big Creek near Hoquiam, Wash.....	72	.56	(70)	.01	.92
391	Big Creek tributary near Hoquiam, Wash....	16.5	.15	(70)	.01	.92
	Quinault River basin					
395	Quinault River at Quinault Lake, Wash.....	21,500	264	144	2.08	0.71
	Queets River basin					
400	Clearwater River near Clearwater, Wash....	17,800	140	125	0.01	1.43
405	Queets River near Clearwater, Wash.....	65,800	445	132	.01	1.20
	Hoh River basin					
410	Hoh River near Spruce, Wash.....	20,200	208	133	0.10	0.92
	Quillayute River basin					
415	Soleduck River near Fairholm, Wash.....	10,100	83.8	98.9	0.48	1.43
427	May Creek near Forks, Wash.....	377	2.35	(100)	.01	1.43
429	Grader Creek near Forks, Wash.....	274	1.67	(100)	.01	1.43
	Lyre River basin					
434.5	Cross Creek near Fairholm, Wash.....	43	0.92	(60)	0.01	0.60
440	Lyre River at Piedmont, Wash.....	714	49.5	59.3	16.4	.60
	Elwha River basin					
455	Elwha River at McDonald Bridge, near Port Angeles, Wash.	13,000	269	74.4	0.23	0.92
	Valley Creek basin					
468	East Valley Creek at Port Angeles, Wash...	19.5	0.69	(20)	0.01	1.43
	Lees Creek basin					
471	Lees Creek at Port Angeles, Wash.....	101	4.77	(18)	0.01	1.43
	Siebert Creek basin					
475	Siebert Creek near Port Angeles, Wash.....	895	17.12	17.0	0.01	1.43

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics--Continued

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Dungeness River basin					
480	Dungeness River near Sequim, Wash.....	3,100	156	33.3	0.06	0.92
	Dean Creek basin					
494	Dean Creek at Blyn, Wash.....	31	3.44	(15)	0.01	0.60
	Chimacum Creek basin					
515	Chimacum Creek near Chimacum, Wash.....	146	12.6	14.6	0.77	1.43
	Little Quilcene River basin					
520	Little Quilcene River near Quilcene, Wash.	450	19.6	34.9	0.22	0.77
	Big Quilcene River basin					
527	Penny Creek near Quilcene, Wash.....	250	6.78	(25)	1.03	1.43
	Dosewallips River basin					
530	Dosewallips River near Brinnon, Wash.....	4,200	93.5	68.0	0.11	0.85
534	Dosewallips River tributary near Brinnon, Wash.	42	.55	(25)	.01	1.43
	Duckabush River basin					
540	Duckabush River near Brinnon, Wash.....	4,600	66.5	83.8	0.30	0.92
	Hamma Hamma River basin					
545	Hamma Hamma River near Eldon, Wash.....	3,160	51.3	91.1	0.50	0.01
	Unnamed basin					
563	Annas Bay tributary near Potlatch, Wash...	91	1.03	(35)	0.01	1.43
	Skokomish River basin					
565	North Fork Skokomish River below Staircase Rapids, near Hoodsport, Wash.	2,800	58.1	115	0.17	0.60
575	North Fork Skokomish River near Hoodsport, Wash.	6,880	93.7	108	1.12	.77
580	Deer Meadow Creek near Hoodsport, Wash....	149	1.58	59.2	.01	1.43
605	South Fork Skokomish River near Union, Wash.	11,200	79.6	119	.25	1.31
	Union River basin					
630	Union River near Bremerton, Wash.....	280	3.16	48.6	0.01	1.43
635	Union River near Belfair, Wash.....	774	19.2	35.6	.21	1.43
	Mission Creek basin					
645	Mission Creek near Bremerton, Wash.....	63	1.91	44.1	5.27	1.43
650	Mission Creek near Belfair, Wash.....	182	4.37	35.4	4.55	1.43
	Tahuya River basin					
655	Gold Creek near Bremerton, Wash.....	128	1.54	49.0	0.01	1.43
660	Tahuya River near Bremerton, Wash.....	312	6.12	44.4	1.64	1.43
670	Panther Creek near Bremerton, Wash.....	46	1.00	38.6	20.00	1.43
675	Tahuya River near Belfair, Wash.....	680	16.1	36.6	3.3	1.43
	Dewatto Creek basin					
685	Dewatto Creek near Dewatto, Wash.....	1,040	17.5	48.7	0.74	1.43
	Dogfish Creek basin					
700	Dogfish Creek near Poulsbo, Wash.....	127	6.77	15.9	0.01	1.43
	Minter Creek basin					
735	Huge Creek near Wauna, Wash.....	129	5.51	26.4	0.21	0.92
	Goldsborough Creek basin					
765	Goldsborough Creek near Shelton, Wash.....	902	42	34.6	1.0	0.65
	Skookum Creek basin					
780	Skookum Creek at Kamilche, Wash.....	628	17.2	40.3	0.01	0.92
	Schneider Creek basin					
786	Schneider Creek tributary near Shelton, Wash.	70	1.12	(35)	0.01	0.92

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics--Continued

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Deschutes River basin					
790	Deschutes River near Rainier, Wash.....	3,140	89.8	38.0	0.63	1.35
800	Deschutes River near Olympia, Wash.....	3,370	160	32.3	.67	1.16
	Woodland Creek basin					
810	Woodland Creek near Olympia, Wash.....	108	24.3	14.5	6.93	0.52
	Nisqually River basin					
825	Nisqually River near National, Wash.....	5,810	133	75.0	0.38	0.94
830	Mineral Creek near Mineral, Wash.....	4,720	74.3	66.0	.07	1.20
840	Nisqually River near Alder, Wash.....	11,500	252	66.2	.33	1.08
845	Little Nisqually River near Alder, Wash...	1,870	28.0	60.6	.37	1.35
870	Mashel River near La Grande, Wash.....	2,920	80.7	38.7	.01	1.16
880	Ohop Creek near Eatonville, Wash.....	600	35.5	25.9	1.72	.92
890	Tanwax Creek near McKenna, Wash.....	250	26.6	15.6	1.84	.92
	Chambers Creek basin					
905	Clover Creek near Tillicum, Wash.....	161	70.3	8.1	0.51	0.52
915	Chambers Creek below Leach Creek, near Steilacoom, Wash.	355	104	14.5	1.68	.52
	Puyallup River basin					
920	Puyallup River near Electron, Wash.....	4,300	92.8	77.7	0.54	0.95
930	Kapowsin Creek near Kapowsin, Wash.....	350	23	29.2	3.04	.92
935	Puyallup River near Orting, Wash.....	6,700	172	54.7	.82	1.04
940	Carbon River near Fairfax, Wash.....	4,450	78.9	71.8	.25	1.04
950	South Prairie Creek at South Prairie, Wash.	3,000	78.6	38.5	.64	1.35
965	Puyallup River at Alderton, Wash.....	13,000	438	49.2	.39	1.04
970	White River at Greenwater, Wash.....	5,200	216	53.0	.46	.71
975	Greenwater River at Greenwater, Wash.....	1,290	73.9	38.0	.27	.73
977	Cyclone Creek near Enumclaw, Wash.....	133	2.35	(60)	.01	.92
985	White River near Buckley, Wash.....	9,300	401	49.5	.30	.92
1015	Puyallup River at Puyallup, Wash.....	22,700	948	47.7	.31	.95
1022	Swan Creek near Tacoma, Wash.....	90	2.15	(18)	.01	.52
	Hylebos Creek basin					
1028	South Fork Hylebos Creek near Puyallup, Wash.	4.1	0.48	(20)	0.01	0.52
	Duwamish River basin					
1035	Snow Creek near Lester, Wash.....	826	11.9	71.1	0.03	0.92
1040	Friday Creek near Lester, Wash.....	274	4.55	76.1	.34	.92
1045	Green River near Lester, Wash.....	4,560	104	50.9	.02	1.07
1050	Smay Creek near Lester, Wash.....	370	8.71	74.1	.01	.92
1055	Charley Creek near Eagle Gorge, Wash.....	1,080	11.0	81.8	.14	1.35
1060	Bear Creek near Eagle Gorge, Wash.....	482	4.25	75.1	.01	1.35
1065	Green River near Palmer, Wash.....	12,600	230	63.0	.09	1.25
1072	Deep Creek at Cumberland, Wash.....	60	2.28	(40)	.09	.52
1085	Newaukum Creek near Black Diamond, Wash...	869	25.5	32.5	.01	1.16
1125	Big Soos Creek near Auburn, Wash.....	598	49.4	30.5	2.56	.52
1130	Green River near Auburn, Wash.....	12,500	382	47.4	.60	1.04
1132	Dolloff Lake Outlet near Auburn, Wash.....	44	3.27	(25)	2.45	.52
	Lake Washington basin					
1135	North Fork Cedar River near Lester, Wash..	809	8.81	101	0.01	0.92
1140	South Fork Cedar River near Lester, Wash..	516	6.00	85.6	.01	.92
1145	Cedar River below Bear Creek, near Cedar Falls, Wash.	1,490	25.4	88.8	.01	.92
1150	Cedar River near Cedar Falls, Wash.....	2,660	41.8	83.2	.01	.92
1155	Rex River near Cedar Falls, Wash.....	1,400	13.0	100	.01	.92
1185	Rock Creek near Maple Valley, Wash.....	79	14.0	19.4	.01	.52
1195	May Creek near Renton, Wash.....	229	13.2	20.6	.77	.92
1198	North Branch Mercer Creek near Bellevue, Wash.	32	2.74	(18)	.01	.52
1210	Issaquah Creek near Issaquah, Wash.....	662	26.4	33.4	.38	.92
1233	Evans Creek tributary near Redmond, Wash..	24.8	2.46	(20)	.01	.52
1245	Bear Creek at Redmond, Wash.....	396	47.5	21.6	.69	.52
1250	Sammamish River near Redmond, Wash.....	790	144	27.2	5.93	.52
1260	North Creek near Bothell, Wash.....	302	24.1	18.8	2.14	.92
1265	Sammamish River at Bothell, Wash.....	1,210	205	24.3	4.24	.58
	Snohomish River basin					
1305	South Fork Skykomish River near Skykomish, Wash.	7,900	135	87.1	1.39	1.00
1310	Beckler River near Skykomish, Wash.....	6,000	96.5	87.6	.53	.95
1327	South Fork Skykomish River tributary at Baring, Wash.	79	1.25	(80)	.01	.52
1330	South Fork Skykomish River near Index, Wash.	24,400	355	92.9	.90	1.01

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics--Continued

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Snohomish River basin--Continued					
1335	Troublesome Creek near Index, Wash.	1,200	10.6	155	3.85	0.92
1340	North Fork Skykomish River at Index, Wash.	13,800	149	108	.40	1.07
1345	Skykomish River near Gold Bar, Wash.	42,000	535	99.4	.73	.97
1350	Wallace River at Gold Bar, Wash.	1,700	19.8	102	.79	.92
1355	Olney Creek near Gold Bar, Wash.	1,280	8.03	126	.01	.96
1365	May Creek near Gold Bar, Wash.	340	4.07	126	9.30	.69
1375	Sultan River near Startup, Wash.	14,400	75	143	.40	1.50
1410	Woods Creek near Monroe, Wash.	1,120	55.0	35.1	1.19	.92
1415	Middle Fork Snoqualmie River near North Bend, Wash.	14,600	169	95.6	1.27	1.41
1420	North Fork Snoqualmie River near Snoqualmie Falls, Wash.	7,620	65	109	.77	1.41
1430	North Fork Snoqualmie River near North Bend, Wash.	8,700	105	89.8	1.52	1.41
1433	South Fork Snoqualmie River tributary near North Bend, Wash.	23.2	.64	(90)	.01	.92
1440	South Fork Snoqualmie River at North Bend, Wash.	4,600	83	89.4	.36	.92
1455	Raging River near Fall City, Wash.	1,720	30.6	65.3	.01	.92
1470	Griffin Creek near Carnation, Wash.	316	17.1	31.1	.01	.69
1475	North Fork Tolt River near Carnation, Wash.	4,270	39.2	119	.01	.92
1480	South Fork Tolt River near Carnation, Wash.	2,660	19.7	120	.16	1.41
1485	Tolt River near Carnation, Wash.	9,400	79.7	112	.12	1.18
1490	Snoqualmie River near Carnation, Wash.	31,700	608	86.0	.69	1.12
1525	Pilchuck River near Granite Falls, Wash.	4,770	53.5	83.0	.19	1.36
1530	Little Pilchuck Creek near Lake Stevens, Wash.	237	17.5	22.6	.09	.92
1555	Snohomish River at Snohomish, Wash.	51,200	1,720	(76)	.63	.99
1564	Munson Creek near Marysville, Wash.	20.2	.97	(20)	.01	.92
1570	Quilceda Creek near Marysville, Wash.	136	13.9	22.7	.01	.92
	Stillaguamish River basin					
1595	South Fork Stillaguamish River near Silverton, Wash.	8,200	44.5	124	0.01	1.50
1610	South Fork Stillaguamish River near Granite Falls, Wash.	18,800	119	122	.08	1.50
1625	South Fork Stillaguamish River above Jim Creek, near Arlington, Wash.	21,300	199	110	.05	1.42
1640	Jim Creek near Arlington, Wash.	2,940	48.9	57.2	.82	1.50
1650	Squire Creek near Darrington, Wash.	3,830	18.8	122	.01	1.50
1655	North Fork Stillaguamish River near Darrington, Wash.	10,600	82.2	88.4	.01	1.50
1665	Deer Creek at Oso, Wash.	6,650	71	97.6	.01	1.17
1670	North Fork Stillaguamish River near Arlington, Wash.	21,500	269	91.3	.01	1.23
1685	Pilchuck Creek near Bryant, Wash.	3,440	49.7	67.8	2.60	1.50
1695	Fish Creek near Arlington, Wash.	57	7.5	11.9	3.46	.92
	Skagit River basin					
1705	Skagit River near Hope, British Columbia	6,000	357	38.2	0.05	0.75
1720	Beaver Creek near Newhalem, Wash.	2,930	52	112	.01	.75
1725	Skagit River near Newhalem, Wash.	15,000	765	47.4	.20	.75
1740	Ruby Creek near Newhalem, Wash.	4,650	210	42.9	.05	.75
1755	Thunder Creek near Newhalem, Wash.	4,350	98	84.6	.10	.75
1775	Stetattle Creek near Newhalem, Wash.	2,300	21.4	111	.47	.92
1780	Skagit River at Newhalem, Wash.	24,000	1,160	51.6	2.21	.75
1800	Bacon Creek near Marblemount, Wash.	5,160	50.9	115	.60	.92
1825	Cascade River at Marblemount, Wash.	7,800	171	81.1	.17	.78
1855	South Fork Sauk River near Barlow Pass, Wash.	4,290	32.7	131	.48	1.11
1860	Sauk River above Whitechuck River, near Darrington, Wash.	9,300	152	100	.13	.83
1875	Sauk River at Darrington, Wash.	16,000	239	96.8	.07	.87
1890	Suiattle River near Mansford, Wash.	12,800	335	80.2	.15	.78
1894	Sauk River tributary near Darrington, Wash.	86	1.11	(60)	.01	.92
1895	Sauk River near Sauk, Wash.	28,000	714	82.9	.01	.87
1915	Baker River below Anderson Creek, near Concrete, Wash.	19,400	211	131	.71	.92
1940	Skagit River near Concrete, Wash.	88,000	2,700	74.7	1.23	.81
1960	Alder Creek near Hamilton, Wash.	297	10.7	42.9	.01	.92
1965	Day Creek near Lyman, Wash.	3,750	36.3	94.7	.60	1.50
1972	Skagit River tributary near Lyman, Wash.	139	1.82	(40)	.01	1.50
2007	Skagit River tributary near Mount Vernon, Wash.	34	2.58	(20)	.01	.92

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics--Continued

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Samish River basin					
2008	Lake Creek near Bellingham, Wash.....	111	2.35	(35)	0.01	1.50
2010	Friday Creek near Burlington, Wash.....	753	37.1	29.7	4.04	1.50
2015	Samish River near Burlington, Wash.....	2,780	87.8	36.0	1.82	1.50
	Nooksack River basin					
2050	Nooksack River above Cascade Creek, near Glacier, Wash.	6,150	105	97.9	0.19	0.92
2085	Canyon Creek at Kulshan, Wash.....	1,480	8.70	75.1	.71	1.50
2090	South Fork Nooksack River near Wickersham, Wash.	10,300	103	95.9	.29	1.23
2095	Skookum Creek near Wickersham, Wash.....	1,380	23.1	71.1	.07	.92
2105	Nooksack River at Deming, Wash.....	27,000	580	77.5	.24	1.01
2120	Fishtrap Creek at Lynden, Wash.....	286	24.1	18.1	1.26	.92
2127	Tenmile Creek tributary near Bellingham, Wash.	28	.74	(25)	.01	1.50
	Dakota Creek basin					
2140	Dakota Creek near Blaine, Wash.....	445	15.2	26.0	0.01	1.50
	Kootenai River basin					
3000	Kootenay River at Newgate, British Columbia.	60,000	7,660	17.9	0.19	1.01
3005	Fortine Creek near Trego, Mont.....	791	112	8.55	.05	1.01
3020	Fisher River near Jennings, Mont.....	3,810	780	9.14	.21	1.01
3025	Granite Creek near Libby, Mont.....	780	23.6	42.8	1.06	1.26
3030	Kootenai River at Libby, Mont.....	65,500	10,240	15.7	.29	1.01
3035	Lake Creek at Troy, Mont.....	2,350	210	28.6	1.34	1.13
3055	Boulder Creek near Leonia, Idaho.....	1,330	53	29.7	.01	1.26
3065	Moyie River at Eastport, Idaho.....	5,350	570	16.7	1.05	1.26
3075	Moyie River at Eileen, Idaho.....	6,600	755	15.7	.82	1.26
3110	Deep Creek at Moravia, Idaho.....	1,010	133	14.6	.05	1.01
3205	Long Canyon Creek near Porthill, Idaho....	600	29	29.3	.01	1.26
3210	Smith Creek near Porthill, Idaho.....	2,030	70	36.5	.01	1.26
3215	Boundary Creek near Porthill, Idaho.....	1,920	97	26.5	.26	1.26
3220	Kootenai River at (near) Porthill, Idaho..	77,000	13,700	15.8	.31	1.04
	Columbia River main stem					
3230	Columbia River at Birchbank, British Columbia.	250,000	34,000	27.7	1.23	1.01
	Pend Oreille River basin					
3300	Boulder Creek at Maxville, Mont.....	372	71.3	8.64	0.28	0.73
3320	Middle Fork Rock Creek near Phillipsburg, Mont.	940	123	13.1	.46	.73
3350	Blackfoot River near Helmville, Mont.....	2,300	481	9.21	.04	.73
3355	Nevada Creek above reservoir, near Finn, Mont.	450	116	4.06	.01	.73
3385	Blackfoot River near Ovando, Mont.....	5,000	1,274	8.68	.32	.73
3400	Blackfoot River near Bonner, Mont.....	8,600	2,294	8.73	.62	.73
3405	Clark Fork above Missoula, Mont.....	15,400	5,999	6.28	.38	.73
3435	East Fork Bitterroot River at Conner, Mont.	1,830	405	8.38	.15	.73
3440	Bitterroot River near Darby, Mont.....	5,900	1,049	11.3	.15	.88
3475	Blodgett Creek near Corvallis, Mont.....	540	26.4	31.5	.33	1.46
3500	Bear Creek near Victor, Mont.....	670	26.8	34.1	.25	1.46
3505	Kootenai Creek near Stevensville, Mont....	688	28.9	30.9	.35	1.46
3510	Burnt Fork Creek near Stevensville, Mont..	325	74.0	8.87	.11	.73
3520	Lolo Creek above Sleeman Creek, near Lolo, Mont.	1,430	250	10.6	.01	.78
3540	St. Regis River near St. Regis, Mont.....	4,100	300	(21)	.01	1.01
3545	Clark Fork at St. Regis, Mont.....	41,000	10,709	9.31	.31	.78
3550	Flathead River at Flathead, British Columbia.	7,450	450	27.6	.01	1.01
3555	Flathead River near Columbia Falls, Mont..	20,200	1,553	25.5	1.03	1.29
3557	Middle Fork Flathead River at Essex, Mont.	9,850	510	27.4	.15	1.43
3560	Skyland Creek near Essex, Mont.....	179	8.09	26.7	.01	1.43
3565	Bear Creek near Essex, Mont.....	449	20.7	24.9	.19	1.43
3585	Middle Fork Flathead River near West Glacier, Mont.	21,200	1,128	32.9	.12	1.43
3590	South Fork Flathead River at Spotted Bear ranger station, near Hungry Horse, Mont.	13,900	958	23.8	.23	1.43
3595	Spotted Bear River near Hungry Horse, Mont.	3,160	184	23.6	.01	1.43
3600	Twin Creek near Hungry Horse, Mont.....	1,240	47.0	28.9	.10	1.43
3605	Lower Twin Creek near Hungry Horse, Mont..	533	22.4	35.4	.07	1.43
3610	Sullivan Creek near Hungry Horse, Mont....	1,500	71.3	34.1	.01	1.02
3615	Graves Creek near Hungry Horse, Mont.....	937	27.0	56.8	2.4	1.43
3625	South Fork Flathead River near Columbia Falls, Mont.	27,100	1,667	28.1	.28	1.43
3630	Flathead River at Columbia Falls, Mont....	68,500	4,464	29.1	.94	1.43

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics--Continued

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Pend Oreille River basin--Continued					
3640	Logan Creek at Tally Lake, near Whitefish, Mont.	775	183	6.44	15.3	0.98
3650	Stillwater River near Whitefish, Mont.....	1,880	325	14.8	.37	.78
3660	Whitefish Creek near Kalispell, Mont.....	950	170	16.1	2.94	.73
3700	Swan River near Bigfork, Mont.....	5,240	671	21.3	1.85	.96
3705	Big Creek near Polson, Mont.....	37	6.41	14.8	.09	.73
3720	Flathead River near Polson, Mont.....	56,000	7,096	21.6	3.40	1.09
3885	Revais Creek near Dixon, Mont.....	252	35.0	12.7	2.86	1.01
3890	Clark Fork near Plains, Mont.....	91,000	19,958	13.2	1.45	.92
3935	Priest River at outlet of Priest Lake, near Coolin, Idaho.	5,600	572	28.1	6.5	1.01
3950	Priest River near Priest River, Idaho.....	7,050	902	24.4	4.5	1.01
3960	Calispell Creek near Dalkena, Wash.....	525	67.8	13.6	.41	1.01
3975	Sullivan Creek near Metaline Falls, Wash..	1,090	122	20.6	1.7	1.01
3985	Pend Oreille River below Z Canyon, near Metaline Falls, Wash.	97,000	25,200	14.1	1.85	.95
3990	Salmo River near Waneta, British Columbia.	8,600	500	33.1	.01	1.01
	Sheep Creek basin					
4005	Sheep Creek near Northport, Wash.....	2,070	225	15.0	0.04	1.01
	Kettle River basin					
4015	Kettle River near Ferry, Wash.....	12,500	2,220	9.2	0.05	1.01
4030	Curlew Creek near Curlew, Wash.....	45	89.8	.90	1.77	.49
4045	Kettle River near Laurier, Wash.....	21,200	3,800	10.2	.33	.94
	Nancy Creek basin					
4054	Nancy Creek near Kettle Falls, Wash.....	84	11.9	(5)	0.25	1.01
	Columbia River main stem					
4055	Columbia River at Kettle Falls, Wash.....	362,000	64,500	21.1	1.39	1.04
	Colville River basin					
4085	Mill Creek near Colville, Wash.....	380	82	7.8	0.01	0.49
4090	Colville River at Kettle Falls, Wash.....	1,250	1,050	3.9	.61	.49
	Hall Creek basin					
4095	Hall Creek at Inchelium, Wash.....	640	170	6.3	0.02	0.49
	Stranger Creek basin					
4100	Stranger Creek at Meteor, Wash.....	127	20.4	10.7	7.2	0.49
	Spokane River basin					
4110	Coeur d'Alene River above Shoshone Creek, near Prichard, Idaho.	6,020	335	28.1	0.01	1.01
4120	Coeur d'Alene River near Prichard, Idaho..	10,200	583	30.4	.01	1.01
4130	Coeur d'Alene River at Enaville, Idaho....	17,000	895	28.1	.01	1.01
4135	Coeur d'Alene River near Cataldo, Idaho...	21,000	1,220	27.7	.02	1.01
4140	St. Joe River at Avery, Idaho.....	10,300	594	32.9	.01	1.01
4145	St. Joe River at Calder, Idaho.....	17,200	1,030	30.6	.01	1.01
4150	St. Maries River at Lotus, Idaho.....	5,000	437	15.9	.01	1.01
4160	Hayden Creek below North Fork, near Hayden Lake, Idaho.	490	22.0	21.4	.01	1.01
4225	Spokane River at Spokane, Wash.....	28,000	4,290	20.9	1.42	1.01
4240	Latah Creek at Spokane, Wash.....	6,790	619	5.2	.04	2.54
4270	Little Spokane River at Elk, Wash.....	95	115	6.0	1.33	.49
4310	Little Spokane River at Dartford, Wash....	1,480	665	6.0	.54	.49
	Sanpoil River basin					
4350	Sanpoil River at Keller, Wash.....	1,430	940	3.7	0.07	0.49
	Nespelem River basin					
4375	Nespelem River at Nespelem, Wash.....	327	107	5.2	0.23	0.49
	Okanogan River basin					
4385	Okanagan River at Okanagan Falls, British Columbia.	1,170	2,650	2.8	0.76	0.49
4425	Similkameen River near Nighthawk, Wash....	17,900	3,550	9.0	.22	1.09
4450	Okanogan River near Tonasket, Wash.....	17,300	7,270	5.5	.55	.81
	Methow River basin					
4495	Methow River at Twisp, Wash.....	12,100	1,330	14.4	0.13	1.33
4505	Methow River at Pateros, Wash.....	10,200	1,810	11.2	.11	.99

Table 1.--Factors used in the multiple correlation of mean annual flood to drainage basin characteristics--Continued

No.	Gaging station	Station mean annual flood (cfs)	Drainage area (sq mi)	Average annual runoff (inches)	Area of lakes (percent)	Geographic factor
	Chelan River basin					
4510	Stehekin River at Stehekin, Wash.....	9,400	372	51.3	0.28	1.33
4515	Railroad Creek at Lucerne, Wash.....	1,500	64.8	43.2	.42	1.33
	Entiat River basin					
4530	Entiat River at Entiat, Wash.....	3,230	419	15.7	0.05	0.81
	Wenatchee River basin					
4550	Wenatchee River below Wenatchee Lake, Wash.	6,800	277	63.1	2.26	1.33
4560	Phelps Creek near Plain, Wash.....	510	16.0	48.7	.01	1.33
4565	Chiwawa River near Plain, Wash.....	3,200	170	41.5	.41	1.33
4570	Wenatchee River at Plain, Wash.....	12,200	591	50.7	1.30	1.33
4580	Icicle Creek above Snow Creek, near Leavenworth, Wash.	4,360	193	43.1	.48	1.33
4590	Wenatchee River at Peshastin, Wash.....	17,000	1,000	41.6	.94	1.33
	Douglas Creek basin					
4630	Douglas Creek near Alstown, Wash.....	722	114	0.59	0.01	2.08
4640	Douglas Creek at Palisades, Wash.....	636	844	(.3)	.30	2.08
	Columbia River main stem					
4645	Columbia River at Trinidad, Wash.....	405,000	89,700	17.9	1.22	0.95
	Crab Creek basin					
4650	Crab Creek at Irby, Wash.....	1,840	974	1.2	0.42	2.08
4655	Wilson Creek at Wilson Creek, Wash.....	671	470	.40	.24	2.08
4670	Crab Creek near Moses Lake, Wash.....	1,030	2,040	(.3)	.62	2.08
4685	Park Creek below Park Lake, near Coulee City, Wash.	21	38.4	-	3.4	-
4705	Rocky Ford Creek near Ephrata, Wash.....	104	11.7	-	.01	-
	Yakima River basin					
4805	Teanaway River near Cle Elum, Wash.....	2,680	200	22.1	0.01	0.89
4880	Bumping River near Nile, Wash.....	1,700	68.6	58.2	1.95	1.33
4885	American River near Nile, Wash.....	1,360	78.9	40.3	.18	1.33
4895	Naches River at Oak Flat near Nile, Wash..	6,500	638	25.8	.03	1.20
5005	North Fork Ahtanum Creek near Tampico, Wash.	375	68.9	12.9	.01	.49
5010	South Fork Ahtanum Creek at Conrad Ranch, near Tampico, Wash.	104	24.8	10.3	.01	.49
5060	Toppenish Creek near Fort Simcoe, Wash....	880	120	10.4	.01	.76
5065	Simcoe Creek below Spring Creek, near Fort Simcoe, Wash.	305	81.5	4.5	.01	.66
5085	Satus Creek below Dry Creek, near Toppenish, Wash.	1,940	434	3.8	.01	1.01
	Esquatzel Coulee basin					
5130	Esquatzel Coulee at Connell, Wash.....	380	240	(.3)	0.01	2.08

Note.--Runoff figures in parentheses are estimates.

MAGNITUDE-FREQUENCY RELATIONSHIPS

To provide confidence in its applicability to future events, a flood-frequency relationship must be based on as long a period of flood experience as possible. Also, comparison of flood-frequency curves of individual stations must be made between curves constructed from concurrent data. Use of concurrent data is necessary to offset the effects of persistence, the phenomena that years of high annual floods or low anual floods tend to occur together in a series.

After a study of the length of available flood records, a base period of 46 years, 1912–57, was selected from which the composite magnitude-frequency relation was determined. Only a few scattered gaging stations have records that are complete for this base period. To meet the requirement of concurrent data, the flood records for all gaging stations had to be complete for the period 1912–57 before they could be adjusted for regional and drainage-basin characteristics and then averaged to form the composite magnitude-frequency relation. These records could have been extended by correlating peak flows for a gaging station having record for a part of the period with those of a nearby station having a complete record, but this correlation would have given more weight than was considered desirable to the few stations having a complete record. Actually, two supplementary base periods, 1929–57 and 1946–57, were used to reduce the number of correlations needed. All gaging-station records were completed for one or more of the base periods by obtaining synthetic flood values from graphical correlation curves for the years in which no record was available. The synthetic figures were not plotted as discharges in defining station frequency curves but were used only to determine the correct order number of the recorded peaks. The individual flood-frequency curves constructed from the records for these short, supplementary time periods were then directly comparable; they were expanded to cover the 1912–57 base period and were averaged into the 1912–57 composite curve by methods explained below.

Historic data are not available except in the Skagit River basin in northwestern Washington. Floods of about 1815 and 1856 mentioned in Indian tradition were investigated about 40 years ago (Stewart-Bodhaine, 1960), and their stages and discharges were fairly well established. Also, the historic floods of November 1897 and November 1909 were investigated and recorded. These data were used in conjunction with all other records in defining the flood-frequency relationship in the central part of the Skagit River basin.

After the record of peak discharge and synthetic peak discharge was complete for one or more of the time periods at each gaging station, the floods in each period were numbered in order of magnitude

beginning with the highest discharge as 1. The recurrence interval of each flood was computed by the formula $T=(n+1)/m$, where T is the recurrence interval in years, n is the number of years in the time period, and m is the order number.

The recurrence interval for each recorded flood was plotted against the discharge to define frequency curves for one or more time periods for each gaging station. A special plotting paper graduated on the basis of the theory of extreme values along the abscissa and linearly along the ordinate was used. Any type of graph paper could have been used, but the special paper is advantageous because the data tend to plot in a straight line or in a flatter curve than might be expected on rectangular graph paper.

A straight line or a curve was fitted to the plotted points by eye; the most weight was given to the points near the mean annual flood, because the plotting positions of these points are more accurately determined. A mathematically fitted curve was not used, as it would indicate a predetermined and, at the time, unknown type of statistical distribution. An example of a gaging-station flood-frequency curve is shown in figure 2.

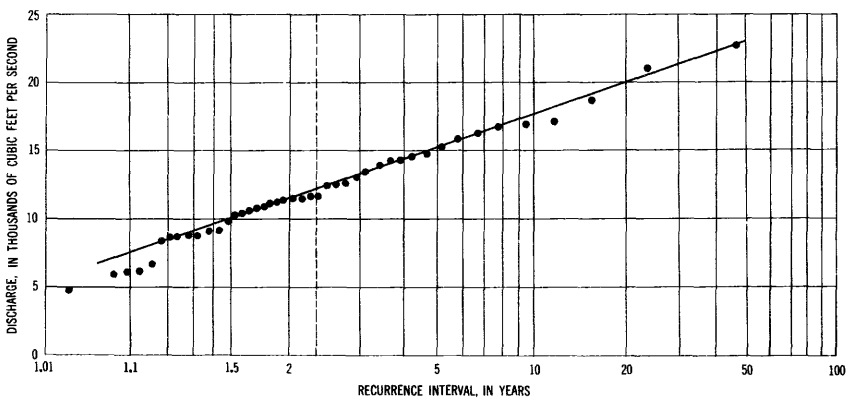

FIGURE 2.—Flood-frequency curve for Wenatchee River at Plain, Wash., for the base period 1912–57.

For ease in comparing the shapes of the station frequency curves, each curve was expressed in dimensionless terms by dividing the discharge at selected recurrence intervals (1.1, 2.33, 5, 10, 20, and 50 years) by the graphical mean annual flood. The resulting flood ratios were listed in tabular form, thus enabling the frequency relations for all stations to be readily compared, regardless of the wide differences in drainage areas.

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To evaluate the effect of regional variation, regions of homogeneous flood characteristics were tentatively defined by comparing the slopes of the individual gaging-station frequency curves. A region was considered homogeneous if the variation of the slopes of the curves was no more than could be expected to occur by chance. The ratio of the magnitude of the 10-year flood to the mean annual flood was used as a measure of slope. Delineation of the homogeneous flood regions was done by trial and error using a graphical statistical test as a guide. This test makes use of the chart shown in figure 3. The bands on the chart define the 95-percent confidence interval of the chance variation as determined statistically. The effective length of record for each gaging station was computed by giving every year of actual flood record a value of 1 year and every year of synthetic record obtained by correlation a value of one-half year. This effective length of record was plotted against the recurrence interval on a test graph. The recurrence interval was computed as follows: The median value of the 10-year flood ratios for the group being tested was determined; this median ratio was multiplied by the gaging-station mean annual flood, and the product was used as a flood magnitude to obtain the desired recurrence interval from the gaging-station frequency curve. When no more than 1 of 20 of the points plotted on figure 3 fell outside the bands, the group being tested was considered to be in a region having homogeneous flood characteristics. As previously stated, this test was used as a guide, and considerable judgment based on knowledge of the region was used in selecting the groups to be tested.

After a tentative definition of the regional variation had been determined, the possibility of secondary drainage-basin variation due to size of drainage area was investigated. Flood ratios for several recurrence intervals for each time period at all gaging stations in a tentative homogeneous flood region were plotted against drainage area to detect any effect. For streams on the west side of the Cascade Mountains (usually with less than 1,000 square miles of drainage area) a definite effect could not be determined, although a trend was noted on a few streams. This trend for western Washington possibly reflects reduction in peak discharge due to channel storage on flood plains rather than to the effect of drainage-area size. For many streams in the Columbia River basin, a definite effect was discernible for drainage areas larger than about 200 square miles. For two regions where size of drainage area had an effect, families of tentative correction curves were constructed.

The 10-year flood ratios, adjusted for size of drainage area where necessary, were used to re-evaluate the definition of the homogeneous flood regions. Actually, very little change was necessary to determine

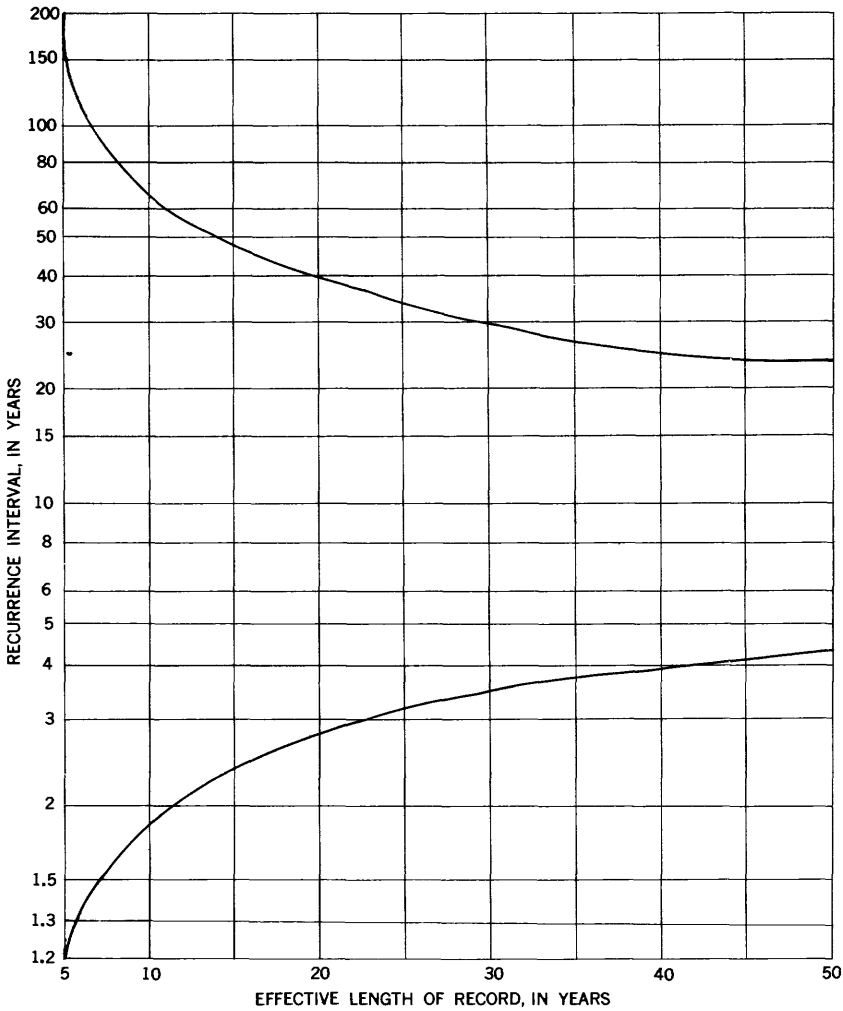

FIGURE 3.—Chart used in homogeneity test.

the final homogeneous regions. When the homogeneous regions were defined, the final correction curves for the effect of drainage-area size for the 10-, 20-, 30-, and 50-year recurrence intervals were constructed for the two affected regions, and corrections were made to the tabulated flood ratios.

The study area was divided into eight homogeneous regions as shown in plate 1. Adjustments for variations due to drainage-basin characteristics had been accounted for by converting magnitudes to flood ratios; further adjustments for size of drainage area were made where necessary. The variation that remained between gaging-

station flood ratios was attributed to chance. The chance variation was averaged by selecting the median ratio at each of the several recurrence intervals (1.1, 2.33, 5, 10, 20, 30, and 50 years) for each base period in each homogeneous region. The median flood ratios described a composite frequency curve for each homogeneous region for each of the three base periods 1912–57, 1929–57, and 1946–57.

The final composite curve used was constructed from the following curves: (a) a composite frequency curve for the period 1946–57 based on records for all stations; (b) a composite frequency curve for the period 1929–57 based on all records for the period; (c) a composite frequency curve for the period 1946–57 based on records used in "b"; (d) curve "a" adjusted to the period 1929–57 by use of the formula $d=a(b/c)$.

In a like manner, the composite curve for the period 1929–57 was adjusted to the base period 1912–57. The product of the factors for the adjustments for the short period to the intermediate period and the intermediate period to the long period was used in order to adjust the curve for the shortest base period to that for the longest base period. The resulting curve was based on all known significant flood-discharge records and represents the most likely magnitude-frequency relation throughout a homogeneous region.

A composite curve was constructed for each of the eight homogeneous regions; however, several of the composite curves were almost identical even though they represented completely different and non-contiguous areas. These curves were combined as shown on figure 4 to form the final curves. Regions 1, 3, and 7 are represented by one

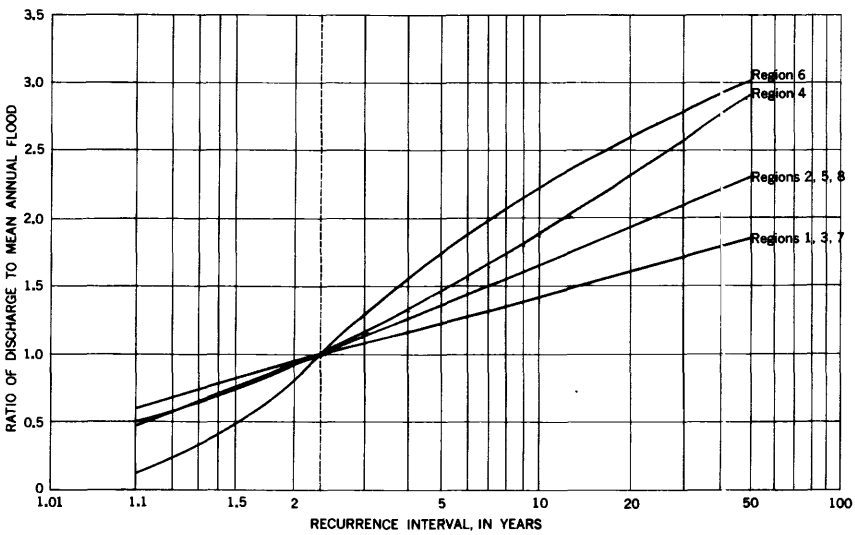

FIGURE 4.—Composite frequency curves for the period 1912–57.

curve and regions 2, 5, and 8 by a second curve. Regions 4 and 6 are represented by individual curves.

Adjustments to the composite frequency curves for size of drainage area were found necessary in regions 7 and 8. The amount of adjustment required varied with the magnitude of the flood. Figure 5 is a family of curves showing the required amounts of adjustment to the flood ratio in relation to drainage area for region 7, and figure 6 shows the required adjustments for region 8.

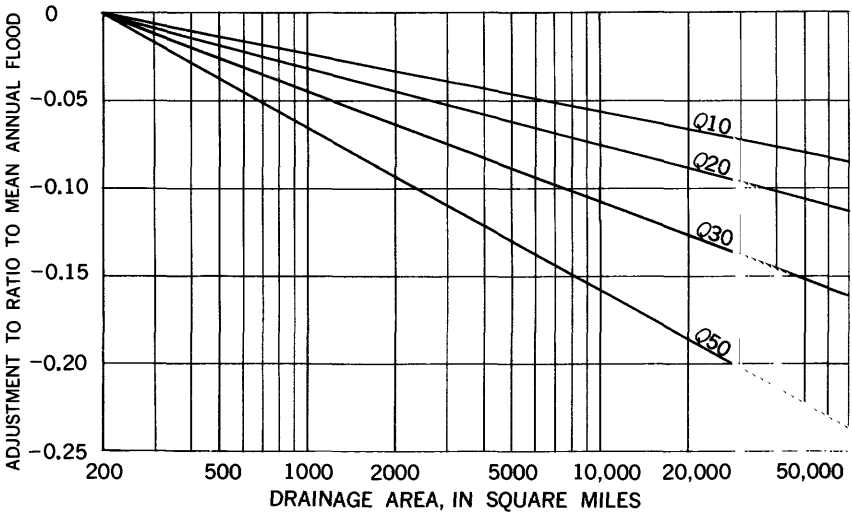

FIGURE 5.—Flood-ratio adjustment curves for region 7. No corrections applied to areas of less than 200 square miles. Adjust flood ratio by the amount indicated for size of drainage area.

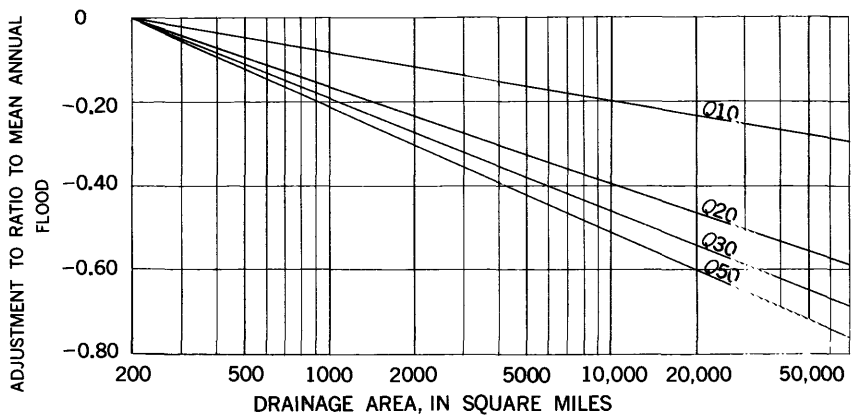

FIGURE 6.—Flood-ratio adjustment curves for region 8. No corrections applied to areas of less than 200 square miles. Adjust flood ratio by the amount indicated for size of drainage area.

MEAN-ANNUAL-FLOOD RELATIONSHIPS

To define the flood-frequency curve of a specific site from the composite frequency curve requires that the mean annual flood of the site be determined.

Previous studies in western Washington (Bodhaine and Robinson, 1952) and in eastern Montana (Berwick, 1958) and a preliminary study in western Oregon have shown that usable formulas for determination of mean annual flood may be derived by multiple correlation with measurable drainage-basin characteristics. These studies used various combinations of drainage area, mean basin altitude, area of lakes and ponds, slope of main channel, and graphical location as independent variables. Other factors, such as shape of drainage area, slope of drainage area, directional orientation of drainage area, and distance from rain-producing mountain barriers, appear as logical influences on mean annual floods and were investigated but not used in those studies. An unpublished study made in 1948 by W. O. Simons of the U.S. Geological Survey with a limited number of records for the upper Columbia River basin has shown the possibility of determining mean annual flood by multiple correlation of mean discharge with area of lakes and ponds. In the upper Columbia River basin study, drainage area, median elevation, average length of channel per square mile of drainage area, and mean annual precipitation were also tested as possible variables.

The large sample of flood experience available for this report and the apparent nonconsistency of variables used in previous investigations prompted the authors to investigate which of the several basin characteristics could best be used to determine the mean annual flood.

The first step in the process of determining mean annual flood from drainage-basin characteristics was to evaluate the various characteristics for each gaging station used in the study. The characteristics selected to be evaluated for use as independent variables were drainage area, area of lakes and ponds, mean elevation of basin, basin slope, main channel slope, and average annual runoff. These characteristics and the dependent variable, mean annual flood, were evaluated for each gaging station in the manner stated below.

Mean annual flood.—As previously stated, the mean annual flood for each gaging station was determined from the gaging-station frequency curve to be the magnitude of the flood with a recurrence interval of 2.33 years. An investigation of the mean annual floods for the stations having records for short-term supplementary periods, as well as for the long base period 1912–57, showed that there was little difference in the magnitude of the mean annual floods for the periods 1929–57 and 1912–57 and that the mean annual flood for the period 1946–57 was

14 percent greater than the mean annual flood for the period 1912–57. The values of the mean annual floods determined for stations having records only for the period 1946–57 were reduced 14 percent to place them on a comparable basis with the values of the mean annual floods for stations having longer records.

Drainage area.—The topographic map or maps covering all the area contributing surface runoff to the gaging site were selected, and the boundary of the drainage area was outlined. The area in square miles was determined by using a planimeter.

Area of lakes and ponds.—The area of lakes and ponds was determined from the same topographic map or maps on which the drainage area was outlined. This determination was made by laying a grid of very small squares of known size over any lake or pond in the area, counting the squares, and multiplying this total by the area of each square to obtain the area of lakes and ponds in square miles. For use in the analysis, area of lakes and ponds was expressed in percent of total drainage area. Because all drainage areas have some storage capacity in swamps, ponds, or channels, a lower limit of 0.01 percent (a ratio of 1:10,000) was set.

Mean altitude of basin.—The mean altitude of the basin was also determined from the topographic map or maps on which the drainage area was outlined. A grid of squares was placed over the outlined area. The altitude at the center of each square was determined and recorded. The mean of the sample of the recorded altitudes was used as the mean basin altitude. For determination of mean altitude, an attempt was made to keep the number of samples between 40 and 160.

Channel slope.—Channel slope was evaluated from a topographic map by determining the difference in altitudes at the source of the main channel (beginning of blue line on map) and at the gaging station and by dividing this difference by the length of the stream scaled from the map. The dimensional units of channel slope are feet per mile.

Basin slope.—As an index of basin slope, the difference between mean drainage-basin altitude and gaging-station altitude was divided by length of main channel. The dimensional units of basin slope are feet per mile.

Average annual runoff.—The average annual runoff expressed in inches was determined for continuous-record gaging stations from the gaging-station records. To make the runoff values comparable, a common base period, the 1930–57 water years, was used. For stations that had records for only a part of the 1930–57 period the record was adjusted to the 1930–57 period by use of a median ratio determined from records of several index stations in the area having complete records. For each of the several index stations, a ratio was computed

by dividing the average annual runoff, in inches, for the period 1930–57 by the average annual runoff, in inches, for the period of record of the short-term station. The average annual runoff of the short-term station was multiplied by the median ratio of the several index stations to adjust the runoff of the short-term station to the 1930–57 base period.

For crest-stage gaging stations or any other gaging stations without continuous discharge records, the 1930–57 average annual runoff, in inches, was determined from the runoff map in plate 2. This map was drawn by utilizing every usable stream-gaging record that was complete for 1 or more years. Wherever possible, adjustments were made for any diversion or regulation, and these adjusted records were used in the construction of the runoff map. Where one or more gaging stations were located on the same stream, the runoff from the area between gages was computed. All records were adjusted to the 1930–57 base period by the methods explained above. The drainage areas of every gaging station used were drawn on a map, and the adjusted average annual-runoff value was noted in the enclosed area. Using this map it was possible to draw the isopleths shown on plate 2. The isopleths are analogous to contour lines on a topographic map and indicate positions of equal average annual runoff. Other aids, such as precipitation records and topographic maps, were used in defining the shape and position of the isopleths. The accuracy of the map is related to the density of gaging stations and to the variation of precipitation or runoff experienced across each basin. Small drainage basins were, in general, more useful in positioning the isopleths than the large basins.

When the variables had all been evaluated, numerous graphical multiple-linear correlations were made to determine which variables or combinations of variables could best be used to determine mean annual flood. It was noted that certain variables appeared to have a different effect on mean annual floods in Pacific Slope basins than on the upper Columbia River basin. Drainage area, average annual runoff, and area of lakes and ponds were selected from the graphical correlations as independent variables to be used in a mathematical correlation in the Pacific Slope basins. The same three independent variables plus channel slope were selected for the upper Columbia River basin. It was also determined from the graphical correlations that an equation of the form $\log Q = a \log A + b \log B \ldots + \log M$ was most applicable. Two mathematical multiple linear correlations were made: one for Pacific Slope basins and one for the upper Columbia River basins. Channel slope did not prove to be statistically significant and was dropped from the upper Columbia River basin correlation. The residual deviations in the correlations were plotted on a map and used to define an additional parameter, a geographical factor.

Residuals of about the same amount were delineated into groups, and the median value of each group was used to represent a geographical factor. The zones of geographical factors are shown on the map in plate 3.

The standard error of estimate of the correlation before assigning geographical factors was 0.195 log units, about 46 percent, for the Pacific Slope basins, and 0.217 log units, about 52 percent, for the upper Columbia River basin; the coefficients of correlation were 0.97 and 0.95, respectively. After geographical factors were assigned, thereby reducing the degrees of freedom by one for each geographical factor defined, the standard errors were 0.1053 log units, about 24 percent, and 0.0994 log units, about 23 percent, and the coefficients of correlation were 0.99 and 0.99, respectively. These standard errors indicate, in effect, that about two-thirds of the time a mean annual flood computed by formula should be within about 24 percent of the correct value in the Pacific Slope basins and within about 23 percent in the upper Columbia River basin. The square of the coefficient of correlation is the coefficient of determination, which, in this case, indicates that about 98 percent of the variance of the mean annual floods has been accounted for by the independent variables used.

The values of the variables used in the mathematical correlations to derive the formulas for mean annual flood are listed in table 1. The values for average annual runoff, shown in parentheses, were determined from the runoff map in plate 2.

FORMULAS AND NOMOGRAPHS

The formula derived for determining mean annual flood in Pacific Slope basins is

$$Q = 0.638\, A^{.889}\, R^{1.135}\, L^{-.037}\, G,$$

and the formula for the upper Columbia River basin is

$$Q = 1.58\, A^{.928}\, R^{.696}\, L^{-.099}\, G,$$

where

Q = mean annual flood in cubic feet per second,
A = drainage area in square miles,
R = average annual runoff in inches for period 1930–57,
L = area of lakes and ponds in percent of total drainage area with 0.01 percent as a lower limiting value, and
G = geographical factor.

The formulas may be solved by use of logarithms or slide rule, but they have been presented in nomograph form for ease of application. Four nomographs are presented—two for Pacific Slope basins and two for upper Columbia River basins—that apply to the size of drainage area most likely to be studied. The Pacific Slope basins nomo-

graphs shown in plate 4 apply to areas of 0.1–10 square miles and 10–1,000 square miles, respectively. The upper Columbia River basin nomographs shown in plate 4 apply to areas of 20–400 square miles and 400–10,000 square miles, respectively.

APPLICATION OF REPORT DATA

DETERMINATION OF MEAN ANNUAL FLOOD

The first information needed to evaluate the flood potential at a site is the magnitude of the mean annual flood, which is determined from either the appropriate formula or the nomograph. The formula or the nomograph may be used for any site, gaged or ungage, within its stated applicable area.

The four basin characteristics—drainage area, average annual runoff in inches for the period 1930–57, area of lakes and ponds, and geographical factor—used as independent variables in the formulas are evaluated in the manner stated below.

Drainage area.—Select the best available topographic map or maps which cover the entire area contributing surface runoff to the site. Outline the area on the map or maps and determine the size in square miles, either by planimeter or by counting the number of squares of known size in a grid constructed over the area. If the grid method is used, care should be exercised to insure that the squares are small enough to accurately measure the area. The use of a minimum of 40 squares is recommended. Any areas within the basin that are known to be noncontributing to surface runoff should be subtracted from the total drainage area.

Average annual runoff.—If any records of streamflow have been obtained at the desired site, the average annual runoff may be estimated by correlating the records with those of a nearby gaging station at which records have been obtained for the period 1930–57. The average annual runoff for most sites must be estimated from the runoff maps in plate 2. This map is analogous to a topographic map with the isopleths of equal runoff corresponding to contour lines of equal altitude. The average annual runoff of a drainage area is the average of the integrated area and is not the value at a single point on the stream, such as a gaging station or proposed construction site. To determine the average annual runoff, outline the drainage area under consideration on plate 2. For small drainage areas, the average annual runoff can usually be estimated directly. For drainage areas which encompass many runoff lines, a sampling method can be used. With this method, a grid of squares is laid over the outlined area on plate 2, and the runoff value at the center of each square is recorded. The average of the recorded values is used as the estimate of average

annual runoff. The squares should be small enough to insure that a representative sample is obtained, but it is not necessary that they be constructed to a known size. The average annual runoff may also be determined by planimeter.

Area of lakes and ponds.—The area of lakes and ponds within the outlined drainage on the topographic map may be measured by using either a planimeter or a grid of squares of known size. For use in the flood formulas, the area of lakes and ponds is expressed as a percentage of the total drainage area with 0.01 percent (a ratio of 1:10,000) as a lower limiting value.

Geographical factor.—The geographical factor is obtained by sketching the drainage area under consideration on plate 3 and selecting the proper value. If the drainage area lies in more than one geographical factor zone, an average value for the area should be obtained using the logarithms of the geographical factors. Table 2 was prepared to aid in determining an average value. To use table 2, first estimate, to the nearest tenth of the total area, the area lying in each geographical zone. In the first column of table 2 find the value that corresponds to the geographical factor for one of the zones; then trace horizontally to the appropriate figure given in the column under the number of tenths of the total area of the basin lying in that zone and record the value. Repeat this process for each geographical factor zone. Multiply the values selected from table 2 for all the geographic factor zones in the drainage area; the product is the average geographical factor. The table is so constructed as to average the logarithms of the geographical factor on an areal basis. If the drainage area lies in more than one zone where the geographical factors are not greatly different, the values for the areas shown on plate 3 may be averaged directly, and a reasonable estimate may be obtained. However, where the geographical factors vary greatly, such as from 0.49 to 2.08, the averages computed by the two methods will vary appreciably, and the value computed by averaging the logarithms of the geographical factors is correct. The gaging stations used in the analysis are shown as black dots on plate 3 to show the paucity of data in certain areas. In general, there are very few small-area gages; so, the geographical factor zones are of necessity only approximately located. A small drainage area lying on one of the zone lines in an area where no small basins were used in the analysis may have a geographical factor equal to any value between those of the two zones. An average value may be used. As the areas become larger, the designated zone factors should be used.

TABLE 2.—*Values for obtaining an average geographical factor*

[Values are geographical factors arranged according to indicated portion (in tenths) of total drainage area in geographical zone]

1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
0.49	0.53	0.57	0.61	0.65	0.70	0.75	0.81	0.87	0.93
.52	.56	.59	.63	.68	.72	.77	.82	.88	.94
.60	.63	.66	.70	.74	.77	.82	.86	.90	.95
.73	.75	.78	.80	.83	.85	.88	.91	.94	.97
.75	.77	.79	.82	.84	.87	.89	.92	.94	.97
.92	.93	.94	.94	.95	.96	.97	.98	.98	.99
1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00
1.26	1.23	1.20	1.18	1.15	1.12	1.10	1.07	1.05	1.02
1.33	1.29	1.26	1.22	1.19	1.15	1.12	1.09	1.06	1.03
1.35	1.31	1.27	1.23	1.20	1.16	1.13	1.09	1.06	1.03
1.41	1.36	1.32	1.27	1.23	1.19	1.15	1.11	1.07	1.03
1.43	1.38	1.33	1.28	1.24	1.20	1.15	1.11	1.07	1.04
1.50	1.44	1.38	1.33	1.28	1.22	1.18	1.13	1.08	1.04
2.08	1.93	1.80	1.67	1.55	1.44	1.34	1.25	1.16	1.08
3.19	2.84	2.53	2.25	2.01	1.79	1.59	1.42	1.26	1.12

DETERMINATION OF A FLOOD-FREQUENCY CURVE

When the magnitude of the mean annual flood for a site has been determined, the frequency curve for that site can be constructed. Using plate 1, select the region in which the drainage area under consideration lies. Then, using figure 4, select the composite curve which applies to that region. Select flood ratios for enough recurrence intervals to describe the shape of the curve, and multiply these ratios by the mean annual flood. Plot these results on any type of graph paper, and draw a smooth curve through the points to form the frequency curve for the site.

If the drainage area is located in region 7 or 8 and is larger than 200 square miles, the flood ratios from figure 4 should be reduced by the amount indicated in figure 5 or 6 before being multiplied by the value for the mean annual flood.

If the drainage area under consideration lies in more than one flood region shown on plate 1, the curve for each region should be computed, and the final curve should be constructed by weighting the curves for each region on an areal basis.

LIMITATIONS AND COMMENTS

The relationships presented in this study can be used to predict the magnitude of floods of average return intervals on streams in the Pacific Slope basins in Washington and in the Columbia River basin above the mouth of the Snake River, but the relationships should be used with full knowledge of their limitations.

As previously stated, the term "recurrence interval" represents the average length of time, in years, over a long period between the occurrences of annual flood peaks of a given magnitude. It does not indicate that floods occur on a time schedule and so cannot be used to predict time of occurrence. A truer meaning of recurrence interval is obtained by viewing it as a probability of occurrence. For example, a flood having a 25-year recurrence interval has a 4-percent chance of occurrence in any future year or a flood having a 5-year recurrence interval has a 20-percent chance of occurrence in any future year.

The accuracy of the composite magnitude-frequency relationship for predicting future flood probabilities is based on, among other assumptions, the degree to which the 1912–57 period represents the long-term flood regime of the study area. Available records are not adequate to define this relationship for a longer time period; so, the results obtained from the relationships of 1912–57 period may be regarded as the best presently possible.

The relationships presented in this report were determined from data gathered on the natural flows of representative streams and should not be applied to streams on which the flood-flow potential has been materially altered by the works of man or to streams that are known to be unique with respect to their surrounding area. An example of such a unique stream is Rocky Ford Creek near Ephrata, Wash., where a relatively large perennial stream issues from the ground a short distance upstream from the gaging station in an area of predominantly intermittent streamflow.

Caution should be exercised in applying the relationships presented in this report to sites on streams which have extensive flood plains. The paucity of basic data on the lower reaches of the few streams having large flood plains precludes a general evaluation of this factor. The relationships presented will give a conservative estimate for design purposes on flood-plain sites; that is, the mean annual flood computed will be large, and the composite curve will probably give a larger flood ratio than may be expected.

Extrapolation beyond the limits of the basic data is not advised. The formulas for mean annual flood should be applied only to drainage areas larger than 0.1 square mile in Pacific Slope basins and to drainage areas larger than 20 square miles in the upper Columbia River basin. The lengths of flood-flow data available define the frequency curves only to approximately the 50-year recurrence interval. Extrapolation beyond this limit may introduce considerable error.

The confidence which may be placed in results obtained by use of this report is related to the areal density of the basic data available. The more densely distributed the gaging stations are, the more con-

fidently the composite frequency curves can be defined and the more accurately the geographical factor and average annual runoff for the flood formulas can be determined. A study of plates 3 and 5 gives an indication of the relative density of the distribution of gaging stations within the areas. For example, the user is cautioned that in the arid region of eastern Washington where the basic data are sparse (roughly the area enclosed within the 1-inch runoff line of plate 2), less confidence can be placed in the results than in more densely gaged areas. The geographical factors for small basins lying on zone lines in areas where there are no small-area gaging stations are less reliable than in heavily gaged areas.

The correct use of this report should facilitate the design of the type of structures commonly built in or along stream channels. Where design requires consideration of recurrence intervals longer than those presented in this report or is for a site otherwise outside the limitations stated, a special study of the site should be made.

GAGING-STATION RECORDS

One of the objectives of this report is the compilation and publication of flood records of all gaging stations with 5 or more years of record in the area shown as part 12 in figure 1. In addition to records obtained cooperatively by the Geological Survey, records obtained by other agencies are also presented. Records of lakes, reservoirs, and canals are not included.

For streams where flood flow is not substantially affected by manmade conditions, such as regulation or diversion, all peaks above a base magnitude are shown. In most instances the base is the magnitude which has approximately a 1.15-year recurrence interval in an annual flood series. For stations where the flood flow is altered by manmade conditions or where records are inadequate to define the secondary peaks, such as those obtained at crest-stage gage stations, only the annual-maximum-flood data are presented. Occasionally, a high stage was recorded at a time of less than maximum discharge owing to backwater from ice or debris. In these instances, the date of occurrence and stage are shown, but no discharge figure is shown.

A horizontal line in the water-year column indicates discontinuous records. A line across the gage-height column indicates a change in gage datum, which means that the gage heights above and below the line are not comparable. Lines across the date and discharge columns indicate a change in site of sufficient magnitude to affect the stage-discharge relation.

The older records for all stream-gaging stations were assembled and reviewed for accuracy and consistency. Where necessary, revisions

of previously published discharge figures were made and noted. At some gaging stations where stage had been obtained by observation, the gage readings were graphed, and a momentary maximum stage and discharge was determined. Unless otherwise noted, all flood stages and discharges are momentary maximums. Where a gage was located within a short distance of a former gaging station, the records were combined by adjusting the records of one station to those of the other on the basis of the 0.8 power of the drainage-area ratio.

Accompanying each list of flood data is descriptive and historical data pertaining to the gaging site. These data show the most recent gage location, type and history of gage, drainage area above gage, description of how the stage-discharge relation was defined, and—when available—area of lakes and ponds above gage, mean elevation of drainage basin, bankfull stage, historical flood data, and other miscellaneous information which could be of use in determining flood probabilities.

Table 3 contains pertinent data, including the maximum stage and discharge, for gaging stations used in the flood-frequency analysis. The gaging stations are listed in downstream order in each river basin. River basins are named for the main stream that terminates at the Pacific Ocean, in Puget Sound, or at the Columbia River and are listed in order beginning at the mouth of the Columbia River, proceeding north along the coast to the Canadian border on the western slope of the Cascade Range, and then in downstream order on the Columbia River. The number preceding each station name consists of the essential digits of an identification number assigned permanently by the Geological Survey. The prefix 12 denoting part 12 has been eliminated, as all stations listed are in part 12. The years shown under the heading "Period of known floods" are water years that begin on October 1 of the preceding calendar year and end on September 30.

Outstanding floods have been measured at many miscellaneous sites. Table 4 contains a list of the maximum discharge at miscellaneous sites and unusual peak discharges at short-term gaging stations.

The approximate locations of the gaging stations are shown in plate 5. The stations that were used in the analyses in this report are shown as black dots, and those that were not used are indicated by open circles. The records not used are generally those obtained at gaging stations on streams where the peak discharges are affected by the works of man, such as waterpower or flood-control dams. The identification numbers on the map correspond to those of table 3.

MAXIMUM KNOWN FLOODS

Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge				
						Date	Gage height (feet)	Discharge		Ratio to areal $Q_{2.33}$
								Cfs	Cfs per sq mi	
	Naselle River basin									
100	Naselle River near Naselle, Wash.	1	55.3	1930-60	5,720	Jan. 22, 1935	15.9	11,100	201	1.94
106	Lane Creek near Naselle, Wash.	1	2.15	1950-60	170	Jan. 20, 1950	15.96	-	-	-
						Nov. 22, 1959	-	211	98.1	1.24
	Nemah River basin									
110	North Nemah River near South Bend, Wash.	1	18.0	1946-60	1,390	Jan. 23, 1953	8.58	1,700	94.4	1.22
111	North Nemah River tributary near South Bend, Wash.	1	.46	1949-60	36	Dec. 9, 1956	10.82	68	148	1.89
	Willapa River basin									
115	Willapa River at Lebam, Wash.	1	41.4	1949-60	2,370	Feb. 22, 1949	17.53	4,930	119	2.08
122	Green Creek near Lebam, Wash.	1	1.79	1950-60	121	Feb. 9, 1951	-	224	125	1.85
						Dec. 9, 1956	18.54	-	-	-
135	Willapa River near Willapa, Wash.	1	130	1949-59	6,880	Feb. 22, 1949	24.22	11,400	87.7	1.66
	North River basin									
167	Joe Creek near Cosmopolis, Wash.	1	2.05	1949-60	150	Dec. 9, 1956	8.39	329	160	2.19
170	North River near Raymond, Wash.	1	219	1928-60	8,630	Dec. 10, 1933	15.8	35,000	160	4.06
	Chehalis River basin									
196	Water Mill Creek near Pe Ell, Wash.	2	1.98	1950-60	130	Nov. 26, 1949	-	140	70.7	1.08
						Dec. 11, 1955	20.72	-	-	-
200	Chehalis River near Doty, Wash.	2	113	1940-60	7,680	Feb. 7, 1945	17.80	18,100	160	2.36
205	Elk Creek near Doty, Wash.	2	46.7	1945-50, 1952-60	1,590	Dec. 15, 1959	-	2,430	52.0	1.53
						Feb. 22, 1949	8.21	-	-	-
210	South Fork Chehalis River at Boistfort, Wash.	2	48.0	1945-60	3,060	Feb. 7, 1945	11.57	7,250	151	2.37
250	Newaukum River near Chehalis, Wash.	2	155	1929-31, 1943-60	6,390	Dec. 9, 1953	13.62	7,400	47.7	1.16
260	Skookumchuck River near Centralia, Wash.	2	61.7	1930-33, 1940-60	3,760	Dec. 9, 1953	48.59	6,710	109	1.78
270	Lincoln Creek near Rochester, Wash.	2	20.9	1945-50	768	Dec. 28, 1949	15.65	990	47.4	1.29
275	Chehalis River near Grand Mound, Wash.	2	895	1929-60	23,700	Dec. 29, 1937	18.39	48,400	54.1	2.04
290	Black River at Little Rock, Wash.	2	60	1945-50	1,220	Dec. 28, 1949	7.40	1,700	28.3	1.39
300	Rock Creek at Cedarville, Wash.	2	24.8	1945-60	885	Feb. 9, 1951	13.77	1,660	66.9	1.88
310	Chehalis River at Porter, Wash.	2	1,294	1934, 1947-60	27,600	December 1933	23.13	-	-	-
						Feb. 11, 1951	-	36,100	27.9	1.31
325	Cloquallum River at Elma, Wash.	2	65.8	1945-60	2,620	Feb. 9, 1951	11.04	4,470	67.9	1.71
350	Satsop River near Satsop, Wash.	2	299	1930-60	25,200	Jan. 22, 1935	38.9	46,600	156	1.85
355	Wynoochee River at Oxbow, near Aberdeen, Wash.	2	68	1926-52	10,500	Jan. 22, 1935	30.3	18,000	265	1.71
375	Wynoochee River below Black Creek, near Aberdeen, Wash.	2	178	1943-51	19,200	Feb. 9, 1951	85.4	28,800	162	1.50

	Humptulips River basin									
390	Humptulips River near Humptulips, Wash.....	2	130	1934-35, 1943-60	19,400	Jan. 22, 1935	12.7	33,000	254	1.70
390.5	Big Creek near Hoquiam, Wash.....	2	.56	1949-60	51	Nov. 22, 1959	11.72	-	-	-
						Jan. 22, 1953	-	123	220	2.41
391	Big Creek tributary near Hoquiam, Wash.....	2	.15	1949-60	16	Nov. 22, 1959	6.01	24	160	1.50
	Quinault River basin									
395	Quinault River at Quinault Lake, Wash.....	2	264	1910,1912-22 1926-32, 1934-60	17,700	November 1909	22	52,600	199	2.97
	Queets River basin									
400	Clearwater River near Clearwater, Wash.....	2	140	1932,1935, 1938-60	21,100	Nov. 3, 1955	21.53	37,400	267	1.77
405	Queets River near Clearwater, Wash.....	2	445	1931-60	52,600	Jan. 22, 1935	27.0	130,400	293	2.48
	Hoh River basin									
410	Hoh River near Forks, Wash.....	2	208	1891-60	20,700	Nov. 26, 1949	22.2	-	-	-
				1927-60		Nov. 26, 1949	22.2	38,700	186	1.87
	Quillayute River basin									
415	Soleduck River near Fairholm, Wash.....	2	83.8	1918-21, 1934-60	8,880	Nov. 26, 1949	16.42	23,500	280	2.65
427	May Creek near Forks, Wash.....	2	2.03	1950-60	432	Nov. 18, 1954	27.96	624	307	1.44
429	Grader Creek near Forks, Wash.....	2	1.67	1950-60	319	Dec. 9, 1956	22.98	520	311	1.63
	Lyre River basin									
434.5	Cross Creek near Fairholm, Wash.....	2	0.92	1950-56	44	Nov. 3, 1955	18.37	208	226	4.73
440	Lyre River at Piedmont, Wash.....	2	49.5	1918-27	1,130	Jan 10,11, 1923	3.42	1,180	23.8	1.04
	Elwha River basin									
455	Elwha River at McDonald Bridge, near Port Angeles, Wash.	2	269	1898-1902, 1920-60	12,000	Nov. 18, 1897	14.5	41,600	155	3.47
	Valley Creek basin									
468	East Valley Creek at Port Angeles, Wash.....	2	0.69	1950-60	23	Jan. 5, 1954, Jan. 29, 1960	30.26	38	55.1	1.65
	Lees Creek basin									
471	Lees Creek at Port Angeles, Wash.....	2	4.77	1949-60	116	Jan. 29, 1960	18.56	321	67.3	2.77
	Siebert Creek basin									
475	Siebert Creek near Port Angeles, Wash.....	2	16.1	1953-60	339	Jan. 29, 1960	14.49	-	-	-
						Nov. 3, 1955	-	1,620	101	4.78
	Dungeness River basin									
480	Dungeness River near Sequim, Wash.....	2	156	1924-30, 1938-60	3,120	Nov. 27, 1949	7.3	6,820	43.7	2.19

† Period in water years for which the listed flood is the maximum.

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Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations--Continued

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge				
						Date	Gage height (feet)	Discharge		Ratio to areal $Q_{2.33}$
								Cfs	Cfs per sq mi	
	Dean Creek basin									
494	Dean Creek at Blyn, Wash.	2	2.96	1949-60	29	Feb. 24, 1957	10.32	108	36.5	3.72
	Chimacum Creek basin									
515	Chimacum Creek near Chimacum, Wash.	2	12.6	1953-57	184	Jan. 6, 1956	5.69	222	17.6	1.21
	Little Quilcene River basin									
520	Little Quilcene River near Quilcene, Wash.	2	19.6	1927, 1952-57	416	Feb. 13, 1954	4.40	820	41.8	1.97
	Big Quilcene River basin									
527	Penny Creek near Quilcene, Wash.	2	6.78	1949-60	194	Jan. 8, 1959	26.41	557	82.2	2.87
	Dosewallips River basin									
530	Dosewallips River near Brinnon, Wash.	2	93.5	1931-60	3,980	Nov. 26, 1949	9.92	13,200	141	3.32
534	Dosewallips River tributary near Brinnon, Wash.	2	.55	1951-60	25	Jan. 8, 1959	7.71	66	120	2.64
	Duckabush River basin									
540	Duckabush River near Brinnon, Wash.	2	66.5	1939-60	3,920	Nov. 26, 1949	10.06	8,960	135	2.29
	Hamma Hamma River basin									
545	Hamma Hamma River near Eldon, Wash.	2	51.3	1952-60	3,670	Nov. 3, 1955	6.58	5,810	113	1.58
	Unnamed basin									
563	Annas Bay tributary near Potlatch, Wash.	2	0.82	1950-60	63	Feb. 13, 1954	20.58	-	-	-
						Dec. 28, 1949	-	228	278	3.62
	Skokomish River basin									
565	North Fork Skokomish River below Staircase Rapids, near Hoodsport, Wash.	2	58.1	1925-60	3,280	Nov. 5, 1934	14.4	27,000	465	8.23
575	North Fork Skokomish River near Hoodsport, Wash.	2	93.7	1914-30	5,670	Jan. 6, 1914	23.5	14,000	149	2.47
580	Deer Meadow Creek near Hoodsport, Wash.	2	a1.83	1953-60	167	Nov. 3, 1955	2.98	b355	194	2.13
605	South Fork Skokomish River near Union, Wash.	2	79.6	1932-60	9,820	Jan. 22, 1935	11.00	21,600	271	2.20
						Nov. 26, 1949				
	Union River basin									
630	Union River near Bremerton, Wash.	2	3.16	1946-59	248	Feb. 22, 1949	3.85	476	151	1.92
635	Union River near Belfair, Wash.	2	19.2	1948-59	774	Feb. 22, 1949	7.81	1,610	83.9	2.08
	Mission Creek basin									
645	Mission Creek near Bremerton, Wash.	2	1.91	1946-53	113	Feb. 22, 1949	6.36	96	50.3	0.85
650	Mission Creek near Belfair, Wash.	2	4.37	1946-53	184	Feb. 22, 1949	6.10	403	92.2	2.19

	Tahuya River basin									
655	Gold Creek near Bremerton, Wash.	2	1.54	1946-60	132	Feb. 22, 1949	3.27	203	132	1.54
660	Tahuya River near Bremerton, Wash.	2	6.12	1946-56	334	Nov. 3, 1955	5.93	504	82.4	1.51
670	Panther Creek near Bremerton, Wash.	2	1.00	1946-53	52	Feb. 22, 1949	3.02	88	88.0	1.69
675	Tahuya River near Belfair, Wash.	2	16.1	1946-56	617	Nov. 3, 1955	8.43	1,210	75.2	1.96
	Dewatto Creek basin									
685	Dewatto Creek near Dewatto, Wash.	2	17.5	1948-61	971	Jan. 15, 1961	7.6	2,160	123	2.22
	Dogfish Creek basin									
700	Dogfish Creek near Poulsbo, Wash.	2	6.77	1948-60	137	Feb. 22, 1949	9.82	333	49.2	2.43
	Minter Creek basin									
735	Huge Creek near Wauna, Wash.	2	5.51	1948-60	116	Feb. 9, 1951	3.64	391	71.0	3.37
	Goldsborough Creek basin									
765	Goldsborough Creek near Shelton, Wash.	2	42	1952-60	976	Dec. 10, 1956	8.51	-	-	-
						Dec. 15, 1959	-	1,390	33.1	1.42
	Skookum Creek basin									
780	Skookum Creek at Kamilche, Wash.	2	17.2	1952-58	577	Dec. 10, 1956	11.14	-	-	-
						Jan. 31, 1953	-	795	46.2	1.38
	Schneider Creek basin									
786	Schneider Creek tributary near Shelton, Wash.	2	1.12	1924-60	43	Dec. 9, 1956	20.24	106	94.6	2.47
	Deschutes River basin									
790	Deschutes River near Rainier, Wash.	2	89.8	1950-60	2,980	Dec. 12, 1955	13.06	5,620	62.6	1.89
800	Deschutes River near Olympia, Wash.	2	160	1946-60	3,530	Dec. 13, 1955	8.46	6,080	38.0	1.72
	Woodland Creek basin									
810	Woodland Creek near Olympia, Wash.	2	24.3	1950-60	110	Feb. 9, 1951	4.46	204	8.40	1.85
	Nisqually River basin									
825	Nisqually River near National, Wash.	2	133	1943-60	6,440	Nov. 23, 1959	11.77	10,900	82.0	1.69
830	Mineral Creek near Mineral, Wash.	2	74.3	1943-60	4,540	Dec. 11, 1955	9.15	-	-	-
						Dec. 9, 1953	-	7,600	102	1.67
840	Nisqually River near Alder, Wash.	2	252	1932-44	11,500	Dec. 22, 1933	13.2	25,000	99.2	2.17
845	Little Nisqually River near Alder, Wash.	2	28.0	1921-43	1,830	Dec.20,21, 1933	6.8	2,920	104	1.60
870	Mashel River near La Grande, Wash.	2	80.7	1941-57	2,760	Dec. 11, 1946	9.30	7,980	98.9	2.89
880	Ohop Creek near Eatonville, Wash.	2	35.5	1928-32,	550	Dec. 11, 1946	5.97	-	-	-
				1942-60		Dec. 9, 1953	-	1,740	49.0	3.16
890	Tanwax Creek near McKenna, Wash.	2	26.6	1945-50	239	Dec. 15, 1946	3.20	328	12.3	1.37
	Chambers Creek basin									
905	Clover Creek near Tillicum, Wash.	2	70.3	1950-54	161	Feb. 12, 1951	4.64	568	8.08	3.53
915	Chambers Creek below Leach Creek, near Steilacoom, Wash.	2	104	1938-40, 1944-60	424	Jan. 5, 1956	3.58	792	7.62	1.87

† Period in water years for which the listed flood is the maximum.
a Includes portion of McTaggart Creek diverted.
b Does not include spill at McTaggart Creek diversion dam.

Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations--Continued

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge: Date	Gage height (feet)	Discharge: Cfs	Discharge: Cfs per sq mi	Ratio to areal $Q_{2.33}$
	Puyallup River basin									
920	Puyallup River near Electron, Wash.	2	92.8	1912-26, 1945-49, 1958-60	4,860	Nov. 22, 1959	11.9	10,800	116	2.22
930	Kapowsin Creek near Kapowsin, Wash.	2	23	1928-32, 1942-57	420	Dec. 12, 1946	5.83	-	-	-
						Dec. 12, 1955	-	610	26.5	1.45
935	Puyallup River near Orting, Wash.	2	172	1932-60	6,120	Nov. 22 1959	8.47	12,900	75.0	2.11
940	Carbon River near Fairfax, Wash.	2	78.9	1930-60	4,350	Dec. 9, 1933	10.2	11,000	139	2.53
950	South Prairie Creek at South Prairie, Wash.	2	78.6	1950-60	2,680	Dec. 11, 1955	9.78	6,850	87.2	2.56
965	Puyallup River at Alderton, Wash.	2	438	1906, 1916-27, 1944-57	12,800	1906	66.5	-	-	-
						Dec. 12, 1955	-	23,300	53.2	1.82
970	White River at Greenwater, Wash.	2	216	1930-60	5,040	Dec. 21, 1933	9.38	18,100	83.8	3.59
975	Greenwater River at Greenwater, Wash.	2	73.9	1912, 1930-60	1,400	Nov. 22, 1959	7.67	5,360	72.5	3.83
977	Cyclone Creek near Enumclaw, Wash.	2	2.35	1950-60	155	Dec. 9, 1953	25.04	286	122	1.85
985	White River near Buckley, Wash.	2	401	1929-34, 1939-60	10,600	December 1933	23.4	28,000	69.8	2.64
1015	Puyallup River at Puyallup, Wash.	2	948	1915-60	22,500	Dec. 10, 1933	31.0	57,000	60.1	2.53
1022	Swan Creek near Tacoma, Wash.	2	2.15	1951-60	21	Dec. 9, 1956	16.24	176	81.9	8.38
	Hylebos Creek basin									
1028	South Fork Hylebos Creek near Puyallup, Wash.	2	c0.48	1949-60	6	Jan. 31, 1953	7.26	-	-	-
						Dec. 11, 1955	-	7.4	25.5	1.23
	Duwamish River basin									
1035	Snow Creek near Lester, Wash.	2	11.9	1946-60	761	Nov. 23, 1959	8.0	3,400	286	4.47
1040	Friday Creek near Lester, Wash.	2	4.55	1946-60	320	Nov. 22, 1959	6.04	1,370	301	4.28
1045	Green River near Lester, Wash.	2	104	1946-60	4,250	Nov. 22, 1959	16.0	22,000	212	5.18
1050	Smay Creek near Lester, Wash.	2	8.71	1948, 1950-60	629	Nov. 23, 1959	8.14	2,380	273	3.78
1055	Charley Creek near Eagle Gorge, Wash.	2	11.0	1947-55	1,160	Dec. 9, 1953	6.6	2,440	222	2.10
1060	Bear Creek near Eagle Gorge, Wash.	2	4.10	1947-53, 1955-56	499	Dec. 11, 1955	4.46	1,010	246	2.02
1065	Green River near Palmer, Wash.	2	230	1918, 1932-60	12,100	Nov. 23, 1959	21.00	27,800	121	2.30
1072	Deep Creek at Cumberland, Wash.	2	2.28	1950-60	50	Feb. 10, 1951	10.64	109	47.8	2.18
1085	Newaukum Creek near Black Diamond, Wash.	2	25.5	1945-60	812	Feb. 9, 1951	3.73	-	-	-
						Feb. 17, 1949	-	1,820	71.4	2.24
1125	Big Soos Creek near Auburn, Wash.	2	49.4	1945-56	501	Feb. 10, 1951	5.57	1,570	31.8	3.13
1130	Green River near Auburn, Wash.	2	382	1937-60	10,600	Nov. 23, 1959	69.75	28,100	73.6	2.65
1132	Dolloff Lake Outlet near Auburn, Wash.	2	d3.27	1950-60	36	Feb. 9, 1951	16.63	112	35.6	3.11

	Cedar River basin									
1135	North Fork Cedar River near Lester, Wash.	2	8.81	1945-52, 1954-60	904	Nov. 22, 1959	8.4	3,160	359	3.50
1140	South Fork Cedar River near Lester, Wash.	2	6.00	1945-60	532	Dec. 9, 1956	10.41	2,340	390	4.40
1145	Cedar River below Bear Creek, near Cedar Falls, Wash.	2	25.4	1946-60	2,000	Nov. 22, 1959	-	7,620	300	3.81
						Dec. 9, 1956	7.08	-	-	-
1150	Cedar River near Cedar Falls, Wash.	2	41.8	1946-60	2,900	Nov. 22, 1959	11.34	9,490	227	3.27
1155	Rex River near Cedar Falls, Wash.	2	13.0	1946, 1948-60	1,260	Nov. 22, 1959	8.20	4,200	323	3.33
1185	Rock Creek near Maple Valley, Wash.	2	14.0	1946-60	120	Feb. 11, 1951	4.26	165	11.8	1.38
1195	May Creek near Renton, Wash.	2	12.5	1946-50, 1956-58	182	Feb. 17, 1949	3.98	401	32.1	2.20
1198	North Branch Mercer Creek near Bellevue, Wash.	2	2.74	1949-60	26	Feb. 10, 1951	11.59	241	88.0	9.27
1210	Issaquah Creek near Issaquah, Wash.	2	26.4	1946-60	597	Feb. 9 or 10, 1951	6.08	2,610	98.9	4.37
1233	Evans Creek tributary near Redmond, Wash.	2	2.46	1949-60	26	Feb. 9, 1951	7.98	60	24.4	2.31
1245	Bear Creek at Redmond, Wash.	2	47.5	1946-50, 1956-58	343	Mar. 5, 1950	6.52	654	13.8	1.91
1250	Sammamish River near Redmond, Wash.	2	148	1940-57	1,100	Feb. 11, 1951	9.17	1,520	10.3	1.38
1260	North Creek near Bothell, Wash.	2	23.7	1946-60	269	Mar. 5 or 6, 1950	7.0	680	28.7	2.53
1265	Sammamish River at Bothell, Wash.	2	209	1940-60	1,510	Jan. 6, 1956	32.22	1,910	9.14	1.26
	Snohomish River basin									
1305	South Fork Skykomish River near Skykomish, Wash.	2	135	1930-31, 1947-60	7,890	Nov. 22, 1959	13.14	20,000	148	2.53
1310	Beckler River near Skykomish, Wash.	2	96.5	1930-33, 1947-60	5,810	Dec. 15, 1959	11.9	17,100	177	2.94
1327	South Fork Skykomish River tributary at Baring, Wash.	2	1.25	1951-60	70	Dec. 15, 1959	16.26	-	-	-
						Dec. 9, 1956	-	217	174	3.10
1330	South Fork Skykomish River near Index, Wash.	2	355	1897, 1903-5, 1912, 1914-60	20,600	1897	27.6	70,000	197	3.40
1335	Troublesome Creek near Index, Wash.	2	10.6	1930-41	1,390	Feb. 26, 1932	7.54	-	-	-
						Dec. 21, 1933	-	2,300	217	1.65
1340	North Fork Skykomish River at Index, Wash.	2	149	(e)	12,300	Dec. 21, 1933	10.70	28,400	191	2.31
1345	Skykomish River near Gold Bar, Wash.	2	535	1929-60	31,000	Dec. 21, 1933	21.28	88,700	166	2.86
1350	Wallace River at Gold Bar, Wash.	2	19.8	1930-33, 1947-60	1,600	Dec. 14, 1959	-	3,220	163	2.01
						Feb. 9, 1951	8.75	-	-	-
1355	Olney Creek near Gold Bar, Wash.	2	8.03	1947-51, 1953-60	1,120	Oct. 25, 1946	6.30	4,020	501	3.59
1365	May Creek near Gold Bar, Wash.	2	4.07	1929-34, 1946-47	343	Oct. 25, 1946	4.9	726	178	2.12
1375	Sultan River near Startup, Wash.	2	74.5	1935-45, 1948-60	10,400	Feb. 9, 1951	17.22	34,600	464	3.33
1410	Woods Creek near Monroe, Wash.	2	55	1947-60	1,160	Nov. 21, 1959	-	2,220	40.4	1.31
						Feb. 26, 1950	7.18	-	-	-

† Period in water years for which the listed flood is the maximum.
c Contributing area 0.29 sq mi.
d 3.15 sq mi at site prior to 1958.
e Period of known floods, 1911-12, 1914-21, 1930-38, 1947-48.

Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations--Continued

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge				
						Date	Gage height (feet)	Discharge		Ratio to areal $Q_{2.33}$
								Cfs	Cfs per sq mi	
	Snohomish River basin--Continued									
1415	Middle Fork Snoqualmie River near North Bend, Wash.	2	169	1909-10, 1912-26, 1930-32,1960	15,100	Nov. 23, 1959	14.6	49,000	290	3.25
1420	North Fork Snoqualmie River near Snoqualmie Falls, Wash.	2	65	1930-60	7,620	Nov. 22, 1959	-	13,700	211	1.80
						Feb. 26, 1932	17.5	-	-	-
1430	North Fork Snoqualmie River near North Bend, Wash.	2	105	(f)	9,140	Nov.23 or 24,1909	15.5	15,800	150	1.73
1433	South Fork Snoqualmie River tributary near North Bend, Wash.	2	.15	1951-60	21	Nov. 22, 1959	14.52	44	293	2.10
1440	South Fork Snoqualmie River at North Bend, Wash.	2	83	(g)	5,070	Nov. 22, 1959	9.47	13,000	157	2.56
1455	Raging River near Fall City, Wash.....	2	30.6	1946-51, 1953-60	1,670	Feb. 9, 1951	6.76	3,420	112	2.05
1470	Griffin Creek near Carnation, Wash.....	2	17.1	1946-60	324	Feb. 10, 1951	5.03	738	43.2	2.28
1475	North Fork Tolt River near Carnation, Wash.....	2	39.2	1953-60	4,110	Dec. 15, 1959	13.15	9,560	244	2.33
1480	South Fork Tolt River near Carnation, Wash.....	2	19.7	1953-60	3,120	Dec. 15, 1959	7.45	6,500	330	2.08
1485	Tolt River near Carnation, Wash.....	2	79.7	1929,1931, 1938-60	8,500	Dec. 15, 1959	13.04	17,400	218	2.05
1490	Snoqualmie River near Carnation, Wash.....	2	608	1930-60	34,000	Nov. 13, 1932	59.93	-	-	-
						Feb. 27, 1932	-	59,500	97.9	1.75
1525	Pilchuck River near Granite Falls, Wash.....	2	53.5	1944-60	4,780	Oct. 25, 1945	10.4	10,500	196	2.20
1530	Little Pilchuck Creek near Lake Stevens, Wash..	2	17.5	1947-51, 1953-60	280	Nov. 21, 1959	6.02	625	35.7	2.23
1555	Snohomish River at Snohomish, Wash.....	2	1,720	1906-60	66,200	1906	35	-	-	-
				1942-60		Feb. 10, 1951	-	136,000	79.1	2.05
1564	Munson Creek near Marysville, Wash.....	2	.97	1949-60	20	Mar. 21, 1950	10.97	50	51.5	2.50
1570	Quilceda Creek near Marysville, Wash.....	2	13.9	1947-60	249	Nov. 21, 1959	6.38	240	17.3	.96
	Stillaguamish River basin									
1595	South Fork Stillaguamish River near Silverton, Wash.	3	44.5	1911-12, 1914-16, 1930-32	7,880	Nov. 18, 1911	8.5	-	-	-
						Feb. 26, 1932	-	13,300	299	1.69
1610	South Fork Stillaguamish River near Granite Falls, Wash.	3	119	1929-49, 1951-60	17,200	Feb. 26, 1932	19.7	38,800	324	2.26
1625	South Fork Stillaguamish River above Jim Creek, near Arlington, Wash.	3	199	1938-60	23,400	Nov. 22, 1959	27.84	28,800	145	1.23
1640	Jim Creek near Arlington, Wash.....	3	48.9	1938-51, 1953-60	3,020	Dec. 28, 1949	9.28	4,730	96.7	1.57
1650	Squire Creek near Darrington, Wash.....	3	18.8	1951-60	3,590	Feb. 10, 1951	10.52	6,440	343	1.79
1655	North Fork Stillaguamish River near Darrington, Wash.	3	82.2	1951-57	9,250	Feb. 10, 1951	10.63	-	-	-
						Nov. 3, 1955	-	17,500	213	1.89
1665	Deer Creek at Oso, Wash.....	3	71	1918-30, 1951	7,110	Oct. 10, 1950	5.85	11,500	162	1.62

1670	North Fork Stillaguamish River near Arlington, Wash.	3	269	1929-60	22,600	Feb. 9, 1951	13.30	30,600	114	1.35
1685	Pilchuck Creek near Bryant, Wash.	3	49.7	1930-31,1951, 1953-60	3,570	Dec. 9, 1956	7.60	6,240	126	1.75
1695	Fish Creek near Arlington, Wash.	3	7.6	1951-53, 1955-60	56	Dec. 20, 1955	12.09	h207	27.2	3.70
	Skagit River basin									
1705	Skagit River near Hope, British Columbia	5	357	1915-22, 1935-55	6,250	June 21, 1950	12.20	10,200	28.6	1.63
1720	Beaver Creek near Newhalem, Wash.	4	52	1941-48	4,060	Dec. 2, 1941	7.76	3,980	76.5	.98
1725	Skagit River near Newhalem, Wash.	5,4	765	1922, 1930-39	15,000	December 1921	17.8	33,000	43.1	2.20
1740	Ruby Creek near Newhalem, Wash.	5	210	1929-49	4,450	May 27, 1948	9.2	9,920	47.2	2.23
1755	Thunder Creek near Newhalem, Wash.	4	110	1931-60	5,230	Oct. 25, 1955	12.68	10,800	98.2	2.27
1775	Stetattle Creek near Newhalem, Wash.	4	21.4	1934-60	1,920	Nov. 26, 1949	9.70	8,580	401	4.47
1780	Skagit River at Newhalem, Wash.	5,4	1,160	1815-1960	21,800	1815	20.5	115,000	99.1	5.28
1800	Bacon Creek near Marblemount, Wash.	4	50.9	1944-50	4,280	Nov. 26, 1949	7.13	18,100	356	4.23
1825	Cascade River at Marblemount, Wash.	4	171	1815-1960	7,590	1815	22.0	46,000	269	6.06
1855	South Fork Sauk River near Barlow Pass, Wash.	4	32.7	1918-20,1922, 1929-31	4,110	Dec. 12, 1921	9.5	10,500	321	2.55
1860	Sauk River above Whitechuck River, near Darrington, Wash.	4	152	1918-22, 1929-60	9,280	Nov. 27, 1949	14.90	30,200	199	3.25
1875	Sauk River at Darrington, Wash.	4	293	1815-1960	17,200	1815	18.0	48,000	164	2.79
1890	Suiattle River near Mansford, Wash.	4	335	1939-50	13,700	Nov. 27, 1949	15.60	30,700	91.6	2.24
1894	Sauk River tributary near Darrington, Wash.	4	1.11	1951-60	79	Feb. 10, 1951	9.40	-	-	-
						Dec. 9, 1956	-	184	166	2.33
1895	Sauk River near Sauk, Wash.	4	714	1912, 1929-60	31,500	Nov. 27, 1949	16.93	82,400	115	2.62
1915	Baker River below Anderson Creek, near Concrete, Wash.	2	211	1815-1960	17,500	1815	16.0	50,000	237	2.86
1940	Skagit River near Concrete, Wash.	5,4,2	2,700	1815-1960	77,700	1815	69.3	500,000	185	6.44
1960	Alder Creek near Hamilton, Wash.	2	10.7	1944-60	406	Dec. 9, 1956	5.28	714	66.7	1.76
1965	Day Creek near Lyman, Wash.	3	36.3	1944-60	4,160	Dec. 28, 1949	-	5,570	153	1.34
						Dec. 9, 1956	8.80	-	-	-
1972	Skagit River tributary near Lyman, Wash.	3	1.82	1951-60	127	Dec. 9, 1956	21.90	233	128	1.83
2007	Skagit River tributary near Mount Vernon, Wash.	3	2.58	1949-60	48	January or February 1960	-	70	27.1	1.46
	Samish River basin									
2008	Lake Creek near Bellingham, Wash.	2	2.35	1949-60	137	Feb. 17, 1949	13.09	250	106	1.82
2010	Friday Creek near Burlington, Wash.	2	37.1	1944-48	1,060	Oct. 25, 1945	-	1,090	29.4	1.03
2015	Samish River near Burlington, Wash.	2	87.8	1944-60	2,920	Dec. 28, 1949	11.89	5,830	66.4	2.00

† Period in water years for which the listed flood is the maximum.
f Period of known floods, 1909-12, 1914-18, 1920, 1922-26, 1930-38.
g Period of known floods, 1909-12, 1914-26, 1930-38, 1946-50, 1960.
h Beaver dam upstream washed out.

Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations--Continued

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge: Date	Gage height (feet)	Discharge: Cfs	Discharge: Cfs per sq mi	Ratio to areal $Q_{2.33}$
	Nooksack River basin									
2050	Nooksack River below (above) Cascade Creek, near Glacier, Wash.	2	105	1938-60	5,590	Nov. 26, 1949	10.50	10,300	98.1	1.84
2085	Canyon Creek at Kulshan, Wash.	2	8.70	1949-53	892	Feb. 11, 1951	8.44	2,800	322	3.14
2090	South Fork Nooksack River near Wickersham, Wash.	2	103	1935-60	9,000	Nov. 3, 1955	13.40	19,300	187	2.14
2095	Skookum Creek near Wickersham, Wash.	2	23.1	1949-60	1,330	Nov. 27 or Dec. 1, 1949	9.0	3,050	132	2.29
2105	Nooksack River at Deming, Wash.	2	580	1908-9,1932, 1935-48, 1950-60	27,200	Mar. 15, 1908	20.0	-	-	-
						Feb. 27, 1932	-	49,300	85.0	1.81
2120	Fishtrap Creek at Lynden, Wash.	2	24.1	1949-60	263	Feb. 11, 1951	6.59	550	22.8	2.09
2127	Tenmile Creek tributary near Bellingham, Wash.	2	.74	1949-60	33	Feb. 10, 1951	10.86	56	75.7	1.70
	Dakota Creek basin									
2140	Dakota Creek near Blaine, Wash.	2	15.2	1949-53	514	Feb. 10, 1951	9.92	753	49.5	1.46
	Kootenai River basin									
3000	Kootenay River at Newgate, British Columbia	7	7,660	1931-60	56,500	May 28, 1948	15.02	98,200	12.8	1.74
3005	Fortine Creek near Trego, Mont.	8	112	1947-54	765	May 16, 1950, May 20, 1954	11.8	1,810	16.2	2.37
3020	Fisher River near Jennings, Mont.	8	780	1950-60	4,210	Apr. 17, 1956	7.32	6,320	8.10	1.50
3025	Granite Creek near Libby, Mont.	7	23.6	1933,1937-44, 1948,1954 1960	511	Apr. 18, 1938	4.40	1,960	83.1	3.84
3030	Kootenai River at Libby, Mont.	7,8	10,240	1911-60	64,800	June 21, 1916	20.7	121,000	11.8	1.87
3035	Lake Creek at Troy, Mont.	7	210	1945-57	2,560	May 30, 1948	8.28	3,250	15.5	1.27
3055	Boulder Creek near Leonia, Idaho	7	53	1929-60	1,330	Oct. 19, 1947	7.85	2,700	50.9	2.03
3065	Moyie River at Eastport, Idaho	7	570	1916-60	5,100	June 19, 1916	-	10,600	18.6	2.08
						May 20, 1954	10.55	-	-	-
3075	Moyie River at Eileen, Idaho	7	755	1916-60	5,600	June 19, 1916	-	12,000	15.9	2.14
3110	Deep Creek at Moravia, Idaho	7	133	1928-60	1,300	May 18, 1954	7.40	1,670	12.6	1.28
3205	Long Canyon Creek near Porthill, Idaho	7	29	1928-59	753	May 27, 1948	6.75	1,300	44.8	1.73
3210	Smith Creek near Porthill, Idaho	7	70	1928-60	1,990	June 23, 1955	9.34	3,810	54.4	1.91
3215	Boundary Creek near Porthill, Idaho	7	97	1929-60	1,560	June 23, 1955	5.80	3,280	33.8	2.10
3220	Kootenai River at (near) Porthill, Idaho	7,8	13,700	1894-60	86,700	June 1894	72.7	-	-	-
				1928-60		June 1, 1948	-	125,000	9.12	1.44
	Columbia River main stem									
3230	Columbia River at Birchbank, British Columbia	7	34,000	1913-60	254,000	June 11, 1948	50.62	370,000	10.9	1.46
	Pend Oreille River basin									
3300	Boulder Creek at Maxville, Mont.	8	71.3	1940-60	308	June 3, 1948	4.42	-	-	-
						June 13, 1953	-	764	10.7	2.48
3320	Middle Fork Rock Creek near Phillipsburg, Mont.	8	123	1938-60	650	June 13, 1953	3.92	1,430	11.6	2.20
3350	Blackfoot River near Helmville, Mont.	8	481	1941-53	2,300	June 5, 1953	9.10	6,040	12.6	2.63

3355	Nevada Creek above Reservoir, near Finn, Mont...	8	116	1950-60	398	June 2, 1953	6.00	1,800	15.5	4.52
3385	Blackfoot River near Ovando, Mont.....	8	1,274	1941-60	4,430	June 4, 1953	8.45	14,600	11.5	3.30
3400	Blackfoot River near Bonner, Mont.....	8	2,294	1899-1901, 1903-5, 1940-60	7,190	June 4, 1953	11.65	18,300	7.98	2.55
3405	Clark Fork above Missoula, Mont.....	8	5,999	1930-60	14,600	May 23, 1948	13.07	31,500	5.25	2.16
3435	East Fork Bitterroot River at Conner, Mont.....	8	405	1937-57	2,100	May 9, 1947	6.78	-	-	-
						May 29, 1948	-	3,760	9.28	1.79
3440	Bitterroot River near Darby, Mont.....	8	1,049	1937-60	6,250	May 9, 1947	8.18	11,500	11.0	1.84
3475	Blodgett Creek near Corvallis, Mont.....	8	26.4	1947-60	581	May 16, 1949	6.42	836	31.7	1.44
3500	Bear Creek near Victor, Mont.....	8	26.8	1938-59	622	June 16, 1950	5.04	1,340	50.0	2.15
3505	Kootenai Creek near Stevensville, Mont.....	8	28.9	1948-60	439	May-June 1948	-	1,250	43.3	2.85
3510	Burnt Fork Creek near Stevensville, Mont.....	8	74.0	1920,1922-24, 1938-60	356	May 28, 1938	-	641	8.66	1.80
						Feb. 1, 1956	4.74	-	-	-
3520	Lolo Creek above Sleeman Creek, near Lolo, Mont.	8	250	1951-60	1,690	May 24, 1956	6.24	2,430	9.72	1.44
3540	St. Regis River near St. Regis, Mont.....	8	303	1911-16,1933, 1948,1954, 1959-60	4,180	Dec. 20, 1933	14.5	-	-	-
						May 19, 1954	9.4	11,000	36.3	2.63
3545	Clark Fork at St. Regis, Mont.....	8	10,709	1911-23, 1929-60	35,900	May 24, 1948	19.96	68,900	6.43	1.92
3550	Flathead River at Flathead, British Columbia....	7	450	1929-60	7,360	May 23, 1948	9.1	14,600	32.4	1.98
3555	Flathead River near Columbia Falls, Mont.....	7	1,553	1911-17, 1929-60	17,800	May 21, 1954	12.25	31,500	20.3	1.77
3557	Middle Fork Flathead River at Essex, Mont.....	8	510	1940-54, 1956-60	8,910	May 1954	12.7	18,000	35.3	2.02
3560	Skyland Creek near Essex, Mont.....	8	8.09	1946-52	244	May 22, 1948	-	284	35.1	1.16
						Dec. 5, 1950	3.27	-	-	-
3565	Bear Creek near Essex, Mont.....	8	20.7	1946-52	416	May 22, 1948	3.01	696	33.6	1.67
3585	Middle Fork Flathead River near West Glacier, Mont.	8	1,128	1940-60	21,600	May 20, 1954	13.01	34,500	30.6	1.60
3590	South Fork Flathead River at Spotted Bear Ranger Station, near Hungry Horse, Mont.	8	958	1948-57,1960	13,900	May 22, 1948	14.00	22,000	23.0	1.58
3595	Spotted Bear River near Hungry Horse, Mont.....	8	184	1948-56	4,070	May 20, 1954	7.40	5,480	29.8	1.35
3600	Twin Creek near Hungry Horse, Mont.....	8	47.0	1948-56	1,050	May 19, 1954	8.33	2,790	59.4	2.66
3605	Lower Twin Creek near Hungry Horse, Mont.....	8	22.4	1948-56	631	May 22, 1948	5.25	1,200	53.6	1.90
3610	Sullivan Creek near Hungry Horse, Mont.....	8	71.3	1948-56,1960	1,560	May 19, 1954	5.29	2,750	38.6	1.76
3615	Graves Creek near Hungry Horse, Mont.....	8	27.0	1948-56	736	June 22, 1950	5.70	1,520	56.3	2.07
3625	South Fork Flathead River near Columbia Falls, Mont.	8	1,663	1911-60	25,600	June 19, 1916	16.6	46,200	27.7	1.80
3630	Flathead River at Columbia Falls, Mont.....	7,8	4,464	1894-1960	58,000	June 1894	22.7	135,000	30.2	2.33
3640	Logan Creek at Tally Lake, near Whitefish, Mont.	8	183	1933,1937-42, 1945-47	547	May 28,29, 1933	7.22	-	-	-
						May 11, 1947	-	1,380	7.54	2.52
3650	Stillwater River near Whitefish, Mont.....	8	325	1931-50	1,900	May 26, 1948	20.90	4,330	13.3	2.28
3660	Whitefish Creek near Kalispell, Mont.....	7	173	1929-50	844	May 30, 1948	-	1,290	7.46	1.53
						June 26, 1950	4.45	-	-	-
3700	Swan River near Bigfork, Mont.....	8	671	1922-60	5,020	May 24, 1948	7.12	8,400	12.5	1.67
3705	Big Creek near Polson, Mont.....	8	6.41	1918-32	54	June 9, 1917	2.4	104	16.2	1.93
3720	Flathead River near Polson, Mont.....	8	7,096	1908-60	48,800	May 29, 1928	17.2	82,800	11.7	1.70
3885	Revais Creek near Dixon, Mont.....	8	35.0	1911-16, 1918-19	230	June 19, 1916	3.7	512	14.6	2.23

† Period in water years for which the listed flood is the maximum.

Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations--Continued

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge: Date	Gage height (feet)	Discharge: Cfs	Discharge: Cfs per sq mi	Ratio to areal $Q_{2.33}$
	Pend Oreille River basin--Continued									
3890	Clark Fork near Plains, Mont.	7,8	19,958	1912-60	83,000	June 5, 1948	19.17	134,000	6.71	1.61
3995	Priest River at outlet of Priest Lake, near Coolin, Idaho.	7	572	1913-17, 1919-60	4,920	May 30, 1917	6.83	-	-	-
						May 29, 1948	-	8,560	15.0	1.74
3950	Priest River near Priest River, Idaho.	7	902	1931-60	7,050	May 29,30, 1948	8.97	10,500	11.6	1.49
3960	Calispell Creek near Dalkena, Wash.	8	67.8	1951-60	539	Feb. 25, 1958	-	1,070	15.8	1.99
						Mar. 30, 1960	7.33	-	-	-
3975	Sullivan Creek near Metaline Falls, Wash.	8	122	1913-24, 1954-60	1,080	June 12, 1955	-	3,150	25.8	2.92
3985	Pend Oreille River below Z Canyon, near Metaline Falls, Wash.	7,8	25,200	1894-1960	109,000	June 1894	69.0	-	-	-
				1913-60		June 13, 1948	60.25	171,300	6.80	1.57
3990	Salmo River near Waneta, British Columbia.	8	500	1936-46	9,210	May 30, 1945	14.95	9,600	19.2	1.04
	Sheep Creek basin									
4005	Sheep Creek near Northport, Wash.	8	225	1930-42, 1948	2,210	May 29, 1948	-	3,070	13.6	1.39
	Kettle River basin									
4015	Kettle River near Ferry, Wash.	7	2,220	1929-60	12,800	May 29, 1948	21.15	21,200	9.55	1.66
4030	Curlew Creek near Curlew, Wash.	6	89.8	1917-21, 1948	45	May-June 1948	-	139	1.55	3.09
4045	Kettle River near Laurier, Wash.	6,7	3,800	1894-1960	17,600	May or June 1894	22	-	-	-
				1930-60		May 29, 1948	17.25	35,000	9.21	1.99
	Nancy Creek basin									
4054	Nancy Creek near Kettle Falls, Wash.	6	11.9	1952-60	56	Apr. 19, 1952	20.98	160	13.4	2.86
	Columbia River main stem									
4055	Columbia River at Kettle Falls, Wash.	6,7,8	64,500	1894-1960	373,000	June 1894	‡44.7	700,000	10.9	1.88
	Colville River basin									
4085	Mill Creek near Colville, Wash.	8	85.1	1940-60	307	Apr. 22, 1956	7.16	609	7.16	1.98
4090	Colville River at Kettle Falls, Wash.	8	1,007	1923-60	1,340	Apr. 23, 1956	10.17	3,230	3.21	2.41
	Hall Creek basin									
4095	Hall Creek at Inchelium, Wash.	8	170	1913-20, 1948	433	May 3, 1943	-	1,770	10.4	3.33
	Stranger Creek basin									
4100	Stranger Creek at Meteor, Wash.	6	56	1917-29	140	Apr.19,20,1925	1.84	180	3.21	1.29
	Spokane River basin									
4110	Coeur d'Alene River above Shoshone Creek, near Prichard, Idaho.	8	335	1951-61	5,670	Feb. 26, 1957	9.09	-	-	-
						Feb. 22, 1961	-	11,000	32.8	1.94
4120	Coeur d'Alene River near Prichard, Idaho.	8	583	1945-53	10,000	Feb. 11, 1951	10.95	16,400	28.1	1.64

4130	Coeur d'Alene River at Enaville, Idaho.....	8	895	1933-61 1940-61	14,100	December 1933 Feb. 22, 1961	79.47 -	- 31,500	- 35.2	- 2.23
4135	Coeur d'Alene River near Cataldo, Idaho.....	8	1,220	1925-60	17,400	Dec.22 or 23, 1933	56.9	55,300	45.3	3.18
4140	St. Joe River at Avery, Idaho.....	8	594	1911-17	10,800	May 15, 1917	7.1	17,400	29.3	1.61
4145	St. Joe River at Calder, Idaho.....	8	1,030	1921-24, 1926-60	17,100	Dec. 23, 1933 Apr. 18, 1938	- 93.1	53,000 -	51.5 -	3.10 -
4150	St. Maries River at Lotus, Idaho.....	8	437	1912,1921-23, 1926-60	4,880	Dec.22,23, 1933 Feb. 1, 1951	- 13.4	23,800 -	54.5 -	4.88 -
4160	Hayden Creek below North Fork, near Hayden Lake, Idaho.	8	22.0	1948-53, 1959	375	Mar. 18, 1950 Feb. 11, 1951	- 4.93	774 -	35.2 -	2.06 -
4225	Spokane River at Spokane, Wash.....	8	4,290	1891-1960	30,200	May 31, 1894	12.42	49,000	11.4	1.62
4240	Latah Creek at Spokane, Wash.....	8	619	1948-60	6,770	Jan. 24, 1959	12.30	16,200	26.2	2.39
4270	Little Spokane River at Elk, Wash.....	8	115	1949-60	215	Apr. 7, 1956	1.87	148	1.29	.69
4310	Little Spokane River at Dartford, Wash.....	8	665	1929-32, 1947-60	1,200	Feb. 7, 1960	5.07	2,460	3.70	2.05
	Sanpoil River basin									
4350	Sanpoil River at Keller, Wash.....	6	940	1911-17	1,440	Apr. 17, 1914	4.25	2,310	2.46	1.60
	Nespelem River basin									
4375	Nespelem River at Nespelem, Wash.....	5	107	1911-29	208	Apr. 5, 1919	4.9	483	4.51	2.32
	Okanogan River basin									
4385	Okanagan River at Okanagan Falls, British Columbia.	7	2,650	1921,1923-60	2,460	Apr. 25, 1958	2.88	2,790	1.05	1.13
4425	Similkameen River near Nighthawk, Wash.....	5	3,550	1911-60	18,200	May 30, 1948	17.62	38,700	10.9	2.13
4450	Okanogan River near Tonasket, Wash.....	5,7	7,270	1929-60	17,000	May 31, 1948	21.79	40,900	5.63	2.41
	Methow River basin									
4495	Methow River at Twisp, Wash.....	5	1,330	1920-29, 1934-60	13,000	May 29, 1948	12.94	40,800	30.7	3.14
4505	Methow River at Pateros, Wash.....	5	1,810	1948,1904-20	11,000	May 1948	-	46,700	25.8	4.25
	Chelan River basin									
4510	Stehekin River at Stehekin, Wash.....	5	372	1911-15, 1927-60	8,960	May 29, 1948	29.00	18,900	50.8	2.11
4515	Railroad Creek at Lucerne, Wash.....	5	64.8	1911-13, 1927-49, 1951-57	1,510	May 28, 1948	8.1	3,900	60.2	2.58
	Entiat River basin									
4530	Entiat River at Entiat, Wash.....	5	419	1911-15,1948, 1952-58	3,170	May 29, 1948	-	10,800	25.8	3.41
	Wenatchee River basin									
4550	Wenatchee River below Wenatchee Lake, Wash.....	5	276	1932-58	6,400	May 29, 1948	79.65	13,700	49.6	2.14
4560	Phelps Creek near Plain, Wash.....	5	16.0	1927-30,1948	647	May 29, 1948	-	1,530	95.6	2.36
4565	Chiwawa River near Plain, Wash.....	5	170	1914,1937-49, 1955-57	3,600	May 29, 1948	9.17	5,880	34.6	1.63

† Period in water years for which the listed flood is the maximum.
j U.S. Weather Bureau gage at Marcus.

Table 3.--Inventory of data for gaging stations used to define regional flood-frequency relations--Continued

No.	Gaging station	Flood region	Drainage area (sq mi)	Period of known floods†	Areal $Q_{2.33}$ (cfs)	Maximum stage and discharge				
						Date	Gage height (feet)	Discharge		Ratio to areal $Q_{2.33}$
								Cfs	Cfs per sq mi	
	Wenatchee River basin--Continued									
4570	Wenatchee River at Plain, Wash.	5	591	1911-29, 1932-60	11,700	May 29, 1948	12.43	22,700	38.4	1.94
4580	Icicle Creek above Snow Creek, near Leavenworth, Wash.	5	193	1912-14, 1937-60	4,090	May 28, 1948	13.93	11,600	60.1	2.84
4590	Wenatchee River at Peshastin, Wash.	5	1,000	1929-60	17,200	May 28, 1948	15.88	32,300	32.3	1.88
	Douglas Creek basin									
4630	Douglas Creek near Alstown, Wash.	6	114	1948,1950-60	291	June 10, 1948	13.05	6,420	56.3	22.1
4640	Douglas Creek at Palisades, Wash.	6	844	1948,1951-55, 1957,1959	832	June 10, 1948	-	3,680	4.36	4.42
	Columbia River main stem									
4645	Columbia River at Trinidad, Wash.	5,6,7,8	89,700	1894-1960	433,000	June 7, 1894	-	740,000	8.25	1.71
	Crab Creek basin									
4650	Crab Creek at Irby, Wash.	6	974	1943-60	2,380	Feb. 27, 1957	11.94	8,370	8.59	3.52
4655	Wilson Creek at Wilson Creek, Wash.	6	470	1951-60	604	Feb. 26, 1957	20.74	k12,900	27.4	21.4
4670	Crab Creek near Moses Lake, Wash.	6	2,040	1943-60	1,760	Feb. 28, 1957	6.81	10,400	5.10	5.91
4685	Park Creek below Park Lake, near Coulee City, Wash.	6	38.4	1946-60	-	Jan. 28, 1950	3.05	-	-	-
						Feb. 9, 1951	-	47	1.22	-
4705	Rocky Ford Creek near Ephrata, Wash.	6	11.7	1943-60	-	Apr.15-18, 1956	3.58	212	18.1	-
	Yakima River basin									
4805	Teanaway River near Cle Elum, Wash.	5	200	1910-11, 1913-14, 1947-52	2,620	Mar. 20, 1910	-	4,330	21.6	1.65
4880	Bumping River near Nile, Wash.	5	68.6	1910-11, 1914-60	1,680	Dec. 29, 1917	9.33	5,180	75.5	3.08
4885	American River near Nile, Wash.	5	78.9	1909,1940-60	1,880	May 27, 1948	76.6	2,600	33.0	1.38
4895	Naches River at Oak Flat, near Nile, Wash.	5	638	1905-17	3,900	Nov. 15, 1906	10.3	21,900	34.3	5.62
5005	North Fork Ahtanum Creek near Tampico, Wash.	6	68.9	1908,1910-21, 1932-60	369	May 20, 1956	3.00	823	11.9	2.23
5010	South Fork Ahtanum Creek at Conrad Ranch, near Tampico, Wash.	6	24.8	1915-24, 1931-60	122	Dec. 23, 1933	3.10	424	17.1	3.48
5060	Toppenish Creek near Fort Simcoe, Wash.	6	120	1910-14. 1916-24	819	May 4, 1916	5.52	1,680	14.0	2.05
5065	Simcoe Creek below Spring Creek, near Fort Simcoe, Wash.	6	81.5	1909-23	278	Mar. 1, 1910	7.2	1,750	21.5	6.29
5085	Satus Creek below Dry Creek, near Toppenish, Wash.	6	434	1914-24	1,800	Dec. 22, 1915	9.15	3,870	8.92	2.15
	Esquatzel Coulee basin									
5130	Esquatzel Coulee at Connell, Wash.	6	240	1953-60	362	Feb. 21, 1956	12.68	5,560	23.2	15.4

† Period in water years for which the listed flood is the maximum.
k Result of dam break.

Table 4.--Peak discharge at miscellaneous sites and unusual floods at short-term gaging stations

Flood region	Stream and place of determination	Drainage area (sq mi)	Peak discharge		
			Date	Cfs	Cfs per sq mi
	Chehalis River basin				
2	Skookumchuck River tributary near Bucoda, Wash.	0.58	Nov. 22, 1959	64	110
2	Satsop River, West Fork tributary near Matlock, Wash.	.33	Apr. 29, 1959	70	212
	Quinault River basin				
2	Higley Creek near Amanda Park, Wash.....	0.77	Dec. 9, 1956	409	531
	Quillayute River basin				
2	Soleduck River tributary near Fairholm, Wash.	0.42	Dec. 9, 1956	52	124
	Lyre River basin				
2	Lake Crescent tributary near Piedmont, Wash.	0.79	Dec. 9, 1956	175	222
	Tumwater Creek basin				
2	Tumwater Creek at Port Angeles, Wash.....	5.59	Feb. 16, 1949	490	87.7
	Peabody Creek basin				
2	Peabody Creek at Port Angeles, Wash.....	2.55	Feb. 16, 1949	279	109
	Ennis Creek basin				
2	Ennis Creek at Port Angeles, Wash.....	7.92	Feb. 25, 1950	1,980	250
	Bagley Creek basin				
2	Bagley Creek near Sequim, Wash.....	5.32	Feb. 16, 1949	354	66.5
	Skokomish River basin				
2	Fir Creek tributary near Potlatch, Wash..	0.76	Dec. 9, 1956	280	368
2	Fir Creek near Potlatch, Wash.....	1.86	Nov. 18, 1954	460	247
	Nisqually River basin				
2	Tahoma Creek near Longmire, Wash.....	14.0	Nov. 22, 1959	3,130	224
2	East Creek near Elbe, Wash.....	11.5	Jan. 22, 1919	1,510	131
	Duwamish River basin				
2	Green River, North Fork near Eagle Gorge, Wash.	16.5	Nov. 23, 1959	2,000	121
	Lake Washington basin				
2	Green Point Creek near Cedar Falls, Wash.	0.89	Dec. 9, 1956, Nov. 18, 1958	119	134
	Snohomish River basin				
2	Foss River near Skykomish, Wash.....	55	Nov. 22, 1959	7,370	134
2	Tolt River, South Fork tributary near Carnation, Wash.	2.08	Dec. 15, 1959	223	107
	Stillaguamish River basin				
3	Stillaguamish River at Arlington, Wash...	546	Nov. 23, 1959	59,600	109
	Nooksack River basin				
2	Nooksack River tributary near Glacier, Wash.	1.15	Nov. 3, 1955	174	151
2	Tenmile Creek tributary No. 2 near Bellingham, Wash.	.24	Nov. 22, 1954	34	142
	Kootenai River basin				
8	Tobacco River near Eureka, Mont.....	485	May-June 1948	2,810	5.79
8	Fisher River near Jennings, Mont.....	840	May-June 1948	6,560	7.81
7	Flower Creek at Libby, Mont.....	20.5	May-June 1948	720	35.1
7	Yaak River near Troy, Mont.....	766	May 1954	13,400	17.5
7	Moyie River at Snyder, Idaho.....	656	June 19, 1916	10,800	16.5
7	Snow Creek near Moravia, Idaho.....	19.5	June 14,15,1933	572	29.3
7	Caribou Creek near Moravia, Idaho.....	14.0	June 15, 1933	376	26.9
7	Myrtle Creek near Bonners Ferry, Idaho...	37.0	June 5, 1933	1,260	34.1
7	Ball Creek near Bonners Ferry, Idaho.....	27	June 15, 1933	644	23.9
7	Trout Creek near Copeland, Idaho.....	20	June 16, 1933	533	26.6
7	Mission Creek near Copeland, Idaho.....	30	May 20, 1948	450	15.0
7	Parker Creek near Copeland, Idaho.....	16.5	June 15, 1933	400	24.2
	Pend Oreille River basin				
8	Clark Fork near Garrison, Mont.....	1,610	May-June 1948	6,130	3.81
8	Little Blackfoot River near Garrison, Mont.	407	May-June 1948	1,260	3.10
8	Lost Horse Creek near Hamilton, Mont.....	67	May-June 1948	2,020	30.1
8	Fred Burr Creek near Victor, Mont.....	18.6	May-June 1948	23,000	1,240
8	Kootenai Creek near Stevensville, Mont...	29.1	May-June 1948	1,250	43.0
8	Ninemile Creek near Ninemile, Mont.....	146	May-June 1948	1,870	12.8
8	Fish Creek near Tarkio, Mont.....	258	May-June 1948	3,400	13.2
8	Swan River at Rumble Creek, Mont.....	144	May-June 1948	1,350	9.38
8	North Crow Creek near Ronan, Mont.....	11	May 27, 1948	338	30.7
8	Crow Creek near Ronan, Mont.....	65	May 28, 1948	848	13.0

Table 4.--Peak discharge at miscellaneous sites and unusual floods at short-term gaging stations--Continued

Flood region	Stream and place of determination	Drainage area (sq mi)	Peak discharge		
			Date	Cfs	Cfs per sq mi
	Pend Oreille River basin--Continued				
8	Middle Crow Creek near Ronan, Mont.....	3.1	May 28, 1948	97	31.3
8	South Crow Creek near Ronan, Mont.....	7.1	May 28, 1948	175	24.6
8	Mission Creek near St. Ignatius, Mont....	14	May 28, 1948	670	47.9
8	Post Creek near Charlo, Mont.....	22	May 28, 1948	508	23.1
8	Post Creek near Ronan, Mont.....	28.4	June 10, 1908	2,800	98.6
8	Jocko River near Jocko, Mont.....	144	June 6, 1908	6,200	43.1
8	Jocko River near Ravalli, Mont.....	351	June 10, 1908	7,500	21.4
8	Thompson River near Thompson Falls, Mont.	642	May-June 1948	6,190	9.65
8	Prospect Creek at Thompson Falls, Mont...	145	May-June 1948	2,800	19.3
8	Bull River near Noxon, Mont.....	137	May-June 1948	2,790	20.4
8	Lightning Creek near Morris Creek, near Clark Fork, Idaho.	90	May 27 or 28, 1948	5,100	56.7
7	Indian Creek at mouth near Coolin, Idaho.	20	May 27 or 28, 1948	800	40.0
8	Little Muddy Creek at Ione, Wash.....	11.0	Apr. 22, 1956	257	23.4
	Sherman Creek basin				
8	Sherman Creek near Kettle Falls, Wash....	107	May-June 1948	740	6.92
	Colville River basin				
8	Thomas Lake tributary near Tiger, Wash...	1.65	Apr. 22, 1956	41	24.8
	Spokane River basin				
8	St. Joe River above North Fork, near Avery, Idaho.	472	May 29, 1948	13,400	28.4
8	North Fork St. Joe River near mouth, at Avery, Idaho.	111	May 28, 1948a/	3,500	31.5
8	Bigelow Creek near Spokane, Wash.....	2.0	June 11, 1950	1,510	755
8	Latah Creek at Tekoa, Wash.....	132	Jan. 24, 1959	3,900	29.5
8	Latah Creek tributary at Latah, Wash.....	.53	May 18, 1957	197	37.2
8	Rock Creek, South Fork tributary near Fairfield, Wash.	1.81	May 18, 1957	113	62.4
8	Spring Creek tributary near Reardon, Wash.	1.14	Jan. 11, 1959	102	89.5
	Hawk Creek basin				
6	Cottonwood Creek at Davenport, Wash.....	23.0	Feb. 26, 1957	2,200	95.7
6	Snook Canyon near Davenport, Wash.....	.45	Aug. 19, 1954	519	1,150
6	Snook Canyon tributary near Davenport, Wash.	.33	Aug. 19, 1954	467	1,420
	Foster Creek basin				
6	Foster Creek, East Fork tributary near Bridgeport, Wash.	4.75	May or June, 1957	982	207
6	Foster Creek, West Fork, near Bridgeport, Wash.	25	Feb. 26, 1957	756	30.2
6	Foster Creek, East Fork, near Bridgeport, Wash.	b142	Feb. 26, 1957	3,600	25.4
	Okanogan River basin				
7	Tonasket Creek near Oroville, Wash.....	63	Feb. 26, 1957	886	14.1
5	Sinlahekin Creek near Loomis, Wash.....	112	May-June 1948	2,020	18.0
5	Salmon Creek above Conconully, Wash.....	43	May-June 1948	3,020	70.2
	Methow River basin				
5	Methow River near Ventura, Wash.....	58	May-June 1948	4,130	71.2
5	Chewack Creek above Boulder Creek, near Winthrop, Wash.	390	May-June 1948	19,100	49.0
5	Chewack Creek at Winthrop, Wash.....	548	May-June 1948	18,100	33.0
5	Methow River near Winthrop, Wash.....	1,020	May-June 1948	35,000	34.3
5	Twisp River at Twisp, Wash.....	248	May-June 1948	9,440	38.1
5	Rainy Creek near Methow, Wash.....	6.6	May-June 1948	20,000	3,030
5	Methow River tributary near Methow, Wash.	1.17	Oct. 26, 1955	18	15.4
	Chelan River basin				
5	Prince Creek near Lucerne, Wash.....	35	May-June 1948	24,700	706
5	Twenty-five mile Creek near 25-mile ranger station, Wash.	39	May-June 1948	1,180	30.3
	Knapp Coulee basin				
5	Knapp Coulee tributary near Chelan, Wash.	0.28	Aug. 15, 1956	1,860	6,640
5	Knapp Coulee tributary near Chelan, Wash.	.28	Aug. 15, 1956	800	2,860
	Entiat River basin				
5	Entiat River near Brief, Wash.....	207	May-June 1948	7,260	35.1
5	Mad River near Ardenvoir, Wash.....	87	May-June 1948	1,550	17.8
	Pine Canyon Creek basin				
6	Pine Canyon Creek near Waterville, Wash.	10.4	May-June 1948	5,350	514
6	Pine Canyon Creek at U.S. Highway 2, near Waterville, Wash.	15.3	May 5, 1957	2,980	193
6	Pine Canyon Creek, South Fork, near Waterville, Wash.	5.4	May-June 1948	25,000	4,630

a About.
b Does not include about 15 sq mi which appears to be noncontributing.

Table 4.--Peak discharge at miscellaneous sites and unusual floods at short-term gaging stations--Continued

Flood region	Stream and place of determination	Drainage area (sq mi)	Peak discharge		
			Date	Cfs	Cfs per sq mi
	Wenatchee River basin				
5	Little Wenatchee River near Telma, Wash..	86	May-June 1948	5,270	61.3
5	Nason Creek near Nason, Wash.....	86	Nov. 22, 1959	6,850	79.7
5	Skinney Creek at Winton, Wash.....	2.48	Apr. 22, 1956	75	30.2
5	Peshastin Creek at Blewitt, Wash.....	40	Nov. 22, 1959	1,030	25.8
5	Sand Creek near Cashmere, Wash.....	18.8	Aug. 15, 1956	325	17.3
5	Wenatchee River tributary at Monitor, Wash.	.15	Aug. 25, 1956	903	6,020
5	Wenatchee River tributary near Wenatchee, Wash.	1.32	Aug. 25, 1956	1,950	1,480
	Blocker Creek Canyon				
6	Blocker Canyon Creek at East Wenatchee, Wash.	4.1	May 5, 1957	430	105
	Canyon No. 2 basin				
5	Canyon No. 2 at Wenatchee, Wash.....	8.8	May 5, 1957	1,470	167
	Douglas Creek basin				
6	Douglas Creek at Douglas, Wash.....	53.0	Mar. 18, 1957	1,840	34.7
6	Moses Creek at Douglas, Wash.....	18.4	Mar. 18, 1957	257	14.0
6	Pine Canyon tributary No. 1 at Farmer, Wash.	.17	July 29, 1958	37	218
6	Pine Canyon tributary No. 2 near Farmer, Wash.	.66	July 29, 1958	102	155
6	Douglas Creek near Trinidad, Wash.....	910	Jan. 24, 1959	4,800	5.27
	Willow Springs Creek basin				
6	Willow Springs Creek at Trinidad, Wash...	58	Feb. 27, 1957	3,900	67.2
	Crab Creek basin				
6	Crab Creek, South Fork tributary at Waukon, Wash.	0.68	Feb. 26, 1957	111	163
6	Crab Creek, South Fork tributary near Edwall, Wash.	4.3	Feb. 26, 1957	446	104
6	Crab Creek, South Fork near Edwall, Wash.	22.8	Jan. 24, 1959	1,520	66.7
6	Conniwai Creek tributary near Govan, Wash.	.25	Aug. 25, 1958	165	660
6	Goose Creek near Wilbur, Wash.....	48	Feb. 26, 1957	3,040	63.3
6	Broadax Draw tributary near Wilbur, Wash.	1.12	July 26, 1955	205	183
6	Corbett Draw tributary at Almira, Wash...	18.2	Jan. 11, 1959	1,000	54.9
6	Main Canal tributary No. 1 near Almira, Wash.	1.1	Jan. 11, 1959	82	74.5
6	Main Canal tributary No. 2 near Almira, Wash.	3.3	Jan. 11, 1959	257	77.9
6	Wilson Creek near Wilson Creek, Wash.....	460	Feb. 26, 1957	7,760	16.9
6	Crab Creek near Wilson Creek, Wash.....	1,680	Feb. 27, 1957	12,500	7.44
6	Crab Creek near Adrian, Wash.....	c1,740	Feb. 27, 1957	9,810	5.64
6	Grand Coulee tributary near Coulee City, Wash.	2.7	Jan. 12, 1959	154	57.0
6	Grand Coulee tributary No. 2 near Coulee City, Wash.	.5	Jan. 12, 1959	34	68.0
6	Iron Springs Creek near Winchester, Wash.	1.57	Jan. 24, 1959	127	80.9
6	Iron Springs Creek near Ephrata, Wash....	22.6	May-June 1948	3,080	138
6	Paha Coulee near Lind, Wash.....	16	May 8, 1956	826	51.6
6	Lind Coulee tributary near Lind, Wash....	.21	Feb. 21, 1956	60	286
6	Lind Coulee at Lind, Wash.....	138	Feb. 21, 1956	5,150	37.3
6	Lind Coulee above Weber Coulee near Warden, Wash.	299	Feb. 21, 1956	7,160	24.0
6	Bowers Coulee near Schrag, Wash.....	120	Feb. 21, 1956	5,000	41.7
6	Weber Coulee near Warden, Wash.....	265	Feb. 21, 1956	9,400	35.5
6	Warden Coulee near Warden, Wash.....	31.4	Feb. 21, 1956	1,120	35.6
	Scooteney Reservoir basin				
6	Kansas No. 1 near Othello, Wash.....	24.8	Feb. 21, 1956	1,360	54.8
6	Scooteney Reservoir tributary near Cunningham, Wash.	6.06	Feb. 21, 1956	175	28.9
6	Kansas No. 2 tributary near Cunningham, Wash.	3.16	Feb. 21, 1956	49	15.5
6	Scooteney Reservoir tributary near Othello, Wash.	120	Feb. 21, 1956	2,110	17.6
	Yakima River basin				
5	Gold Creek near Hyak, Wash.....	13.8	Nov. 23, 1959	5,000	362
5	Teanaway River, North Fork near Cle Elum, Wash.	84.0	Nov. 23, 1959	3,180	37.9
5	Manastash Creek, South Fork tributary near Ellensburg, Wash.	2.28	May 10, 1957	100	43.9
6	Johnson Canyon tributary near Kittitas, Wash.	.18	Mar. 23, 1956	17	94.4
6	McPherson Canyon at Wymer, Wash.....	5.48	Aug. 10, 1952	304	55.5
5	Roza Creek near Roza, Wash.....	6.7	Aug. 10, 1952	23,600	3,520

c Does not include 200 sq mi tributary to Long Lake from which flow is diverted for irrigation.

Table 4.--Peak discharge at miscellaneous sites and unusual floods at short-term gaging stations--Continued

Flood region	Stream and place of determination	Drainage area (sq mi)	Peak discharge		
			Date	Cfs	Cfs per sq mi
	Yakima River basin--Continued				
5	Roza Creek near Roza, Wash.....	13.2	Aug. 10, 1952	25,200	1,920
5	Cottonwood Creek near Selah, Wash.....	9.15	Aug. 10, 1952	12,800	1,400
5	Wenas Creek at Pomona, Wash.....	190	Aug. 10, 1952	8,510	44.7
5	Rattlesnake Creek near Nile, Wash.....	91	May-June 1948	1,810	19.9
6	Toppenish Creek tributary near Toppenish, Wash.	1.24	Dec. 21, 1955	33	26.6
6	Satus Creek tributary near Goldendale, Wash.	8.4	Dec. 21, 1955	955	114
6	Satus Creek below Bull Creek, near Toppenish, Wash.	97.2	Dec. 21, 1955	6,020	61.9
6	Satus Creek near Toppenish, Wash.....	270	Jan. 9, 1953	9,950	36.9
6	Yakima River tributary near Sunnyside, Wash.	1.91	Aug. 20, 1954	264	138
6	Weber Canyon near Kiona, Wash.....	3.33	Feb. 21, 1956	154	46.2
	Esquatzel Coulee basin				
6	Providence Coulee tributary near Providence, Wash.	0.19	May 8, 1956	24	126
6	Providence Coulee near Cunningham, Wash..	7.53	Feb. 21, 1956	2,800	372
6	Providence Coulee tributary No. 1 near Cunningham, Wash.	.47	Feb. 21, 1956	89	189
6	Providence Coulee tributary No. 2 near Cunningham, Wash.	2.74	Feb. 21, 1956	667	243
6	Providence Coulee at Cunningham, Wash....	27.5	Feb. 21, 1956	2,160	78.5
6	Providence Coulee tributary near Lind, Wash.	3.31	May 8, 1956	4,860	1,470
6	Providence Coulee tributary at Cunningham, Wash.	22.0	May 8, 1956	2,730	124
6	Providence Coulee tributary No. 3 near Cunningham, Wash.	.93	Feb. 21, 1956	169	182
6	Providence Coulee tributary at Hatton, Wash.	3.31	Feb. 21, 1956	76	23.0
6	Hatton Coulee tributary near Lind, Wash..	2.64	Feb. 21, 1956	117	44.3
6	Hatton Coulee tributary near Cunningham, Wash.	.72	Feb. 21, 1956	112	156
6	Hatton Coulee tributary near Hatton, Wash.	3.82	Feb. 21, 1956	186	48.7
6	Hatton Coulee near Hatton, Wash.....	49.6	Feb. 21, 1956	1,120	22.6
6	Kansas No. 3 near Hatton, Wash.....	13.5	Feb. 21, 1956	877	65.0
6	Kansas No. 3 near Connell, Wash.....	39.6	Feb. 21, 1956	1,180	29.8
6	Providence Coulee tributary near Connell, Wash.	54.2	Feb. 21, 1956	929	17.1
6	Providence Coulee above Connell, Wash....	235	Feb. 21, 1956	5,570	23.7
6	Providence Coulee tributary east of Connell, Wash.	1.96	May 8, 1956	3,720	1,900
6	Providence Coulee tributary at Connell, Wash.	5.53	May 8, 1956	260	47.0
6	Esquatzel Coulee at Connell, Wash.....	241	Feb. 21, 1956	5,560	23.1
6	Hardesty Coulee near Connell, Wash.....	10.4	Feb. 21, 1956	105	10.1
6	Rattlesnake Canyon near Lind, Wash.....	14.0	Feb. 21, 1956	1,380	98.6
6	Rattlesnake Canyon near Connell, Wash....	98.1	Feb. 21, 1956	1,350	13.8
6	Esquatzel Coulee at Mesa, Wash.....	293	Feb. 22, 1956	4,080	13.9
6	Old Maid Coulee near Connell, Wash.....	17.8	Feb. 21, 1956	171	9.61
6	Dunnigan Coulee near Connell, Wash.....	27.5	Feb. 21, 1956	465	16.9
6	Old Maid Coulee near Mesa, Wash.....	69.4	Feb. 21, 1956	456	6.57
6	Esquatzel Coulee at Eltopia, Wash.....	391	Feb. 22, 1956	3,740	9.57
6	Esquatzel Coulee near Pasco, Wash.....	493	Feb. 22, 1956	2,740	5.56
	Smith Canyon basin				
6	Smith Canyon tributary near Connell, Wash.	1.71	Feb. 21, 1956	46	26.9
6	Smith Canyon near Eltopia, Wash.....	46.2	Feb. 21, 1956	462	10.0
6	Rye Grass Coulee near Eltopia, Wash.....	17.6	Feb. 21, 1956	126	7.16

100. Naselle River near Naselle, Wash.

Location.--Lat 46°22'25", long 123°44'45", in SW¼ sec.1, T.10 N., R.9 W., on left bank 150 ft downstream from county bridge, 1½ miles upstream from Salmon Creek, and 3½ miles east of Naselle.

Drainage area.--55.3 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 910 ft.

Gage.--Nonrecording and, since Sept. 13, 1950, crest-stage gage. Altitude of gage is 24 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 4,000 cfs and extended on basis of slope-area measurement at 10,300 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Prior to 1950, peaks are from graphs based on gage readings; from crest-stage gage thereafter. Base for partial-duration series, 4,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Dec. 23, 1929	7.3	2,460	1945	Mar. 19, 1945	11.90	6,500
1931	Jan. 23, 1931	7.8	2,860	1946	Dec. 28, 1945	10.40	5,060
					Feb. 5, 1946	10.20	4,880
1932	Jan. 18, 1932	10.03	4,490		Apr. 11, 1946	9.40	4,220
	Feb. 26, 1932	10.60	5,030				
	Mar. 5, 1932	10.40	4,850	1947	Dec. 11, 1946	11.25	5,800
					Jan. 25, 1947	10.00	4,700
1933	Nov. 13, 1932	11.50	6,090		Feb. 2, 1947	10.30	4,970
	Dec. 2, 1932	11.40	6,000				
	Jan. 8, 1933	9.80	4,600	1948	Jan. 1, 1948	9.90	4,620
1934	Dec. 6, 1933	11.80	6,360	1949	Feb. 10, 1949	10.40	5,060
	Dec. 9, 1933	13.00	7,540		Feb. 17, 1949	12.36	7,030
	Dec. 12, 1933	11.04	5,640		Feb. 22, 1949	15.2	10,300
	Dec. 17, 1933	11.60	6,180				
	Dec. 22, 1933	10.14	4,840	1950	Nov. 27, 1949	10.50	5,350
	Jan. 21, 1934	12.80	7,340		Dec. 28, 1949	10.06	4,990
					Jan. 21, 1950	9.76	4,720
1935	Oct. 25, 1934	11.80	6,120		Feb. 15, 1950	9.20	4,230
	Jan. 22, 1935	15.9	11,100		Feb. 24, 1950	10.8	5,710
					Mar. 5, 1950	9.17	4,310
1936	Jan. 4, 1936	11.70	6,030				
	Jan. 12, 1936	11.60	5,940	1951	Dec. 22, 1950	9.46	4,470
	Feb. 27, 1936	11.90	6,210		Feb. 9, 1951	12.10	6,830
1937	Feb. 22, 1937	8.70	3,560	1952	Jan. 30, 1952	10.60	5,440
					Feb. 4, 1952	10.95	5,760
1938	Nov. 8, 1937	9.90	4,510				
	Nov. 25, 1937	11.40	5,760	1953	Jan. 23, 1953	12.24	6,890
1939	Feb. 12, 1939	10.80	5,230	1954	Dec. 9, 1953	10.34	5,080
					Jan. 5, 1954	9.25	4,150
1940	Dec. 16, 1939	11.5	5,850		Feb. 19, 1954	10.93	5,630
1941	Jan. 17, 1941	9.75	4,360	1955	Nov. 18, 1954	9.83	4,640
					Feb. 8, 1955	9.39	4,320
1942	Dec. 18, 1941	9.77	4,520				
				1956	Nov. 2, 1955	9.70	4,510
1943	Oct. 31, 1942	11.24	5,800		Dec. 11, 1955	11.59	5,990
	Feb. 6, 1943	9.22	4,030		Dec. 21, 1955	10.12	4,650
					Mar. 2, 1956	9.59	4,220
1944	Dec. 3, 1943	12.4	7,030				
				1957	Dec. 10, 1956	12.34	6,990
1945	Jan. 7, 1945	9.20	4,060		Feb. 26, 1957	9.64	4,450
	Feb. 8, 1945	11.20	5,780				

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106. Lane Creek near Naselle, Wash.

Location.--Lat 46°22'20", long 123°47'00", on line between secs. 3 and 10, T.10 N., R.9 W., at U.S. Highway 830, 1.5 miles northeast of Naselle.

Drainage area.--2.15 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 750 ft.

Gage.--Crest-stage gage. Datum of gage is 10.66 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through an 8- by 4-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Jan. 20, 1950	15.96	172	1954	Feb. 19, 1954	14.72	154
				1955	Nov. 18, 1954	15.09	185
1951	Feb. 9, 1951	14.96	142				
1952	Feb. 3, 1952	15.38	192	1956	Dec. 21, 1955	15.53	205
1953	Jan. 22, 1953	15.49	125	1957	Dec. 9, 1956	15.21	197

NEMAH RIVER BASIN

110. North Nemah River near South Bend, Wash.

Location.--Lat 46°29'25", long 123°49'55", in SE¼ sec.30, T.12 N., R.9 W., on right bank 500 ft downstream from Finn Creek, 5 miles upstream from mouth, and 12 miles south of South Bend.

Drainage area.--18.0 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 689 ft.

Gage.--Recording prior to October 1954; crest-stage gage thereafter. Altitude of gage is 60 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 900 cfs and extended on basis of slope-conveyance study.

Bankfull stage.--10.6 ft.

Remarks.--Only annual peaks since 1955; from high-water marks in well or crest-stage gage and computed from latest rating table. Base for partial-duration series, 930 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946 a/	Feb. 5, 1946	6.40	1,000	1951	Dec. 22, 1950	6.31	980
					Jan. 2, 1951	6.76	1,120
1947	Nov. 22, 1946	6.34	970		Feb. 9, 1951	7.78	1,420
	Dec. 11, 1946	8.21	1,550				
	Jan. 25, 1947	6.62	1,060	1952	Feb. 3, 1952	7.07	1,200
	Feb. 2, 1947	7.32	1,270				
				1953	Jan. 23, 1953	8.58	1,700
1948	Oct. 19, 1947	6.17	940				
	Jan. 1, 1948	7.00	1,180	1954	Dec. 9, 1953	7.72	1,490
	Mar. 21, 1948	6.70	1,090		Dec. 11, 1953	5.97	952
					Jan. 4, 1954	6.53	1,110
1949	Dec. 2, 1948	7.28	1,270		Jan. 21, 1954	6.13	996
	Dec. 9, 1948	7.49	1,360		Feb. 19, 1954	7.02	1,260
	Feb. 10, 1949	8.11	1,550				
	Feb. 17, 1949	8.08	1,510	1955	Nov. 18, 1954 or Feb. 7, 1955	8.02	1,610
	Feb. 22, 1949	6.97	1,180				
1950	Nov. 27, 1949	6.85	1,120	1956	Dec. 11 or 21, 1955	7.65	1,460
	Dec. 27, 1949	7.30	1,270				
	Jan. 20, 1950	6.27	980				
	Feb. 24, 1950	7.50	1,330	1957	Dec. 9, 1956	7.23	1,320

a Maximum for year not determined; partial year.

111. North Nemah River tributary near South Bend, Wash.

Location.--Lat 46°30'45", long 123°46'30", in NW¼ sec.24, T.12 N., R.10 W., at Nemah Road, 1¼ miles east of U.S. Highway 101 and 10¾ miles south of South Bend.

Drainage area.--0.46 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 250 ft.

Gage.--Crest-stage gage. Datum of gage is 0.88 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through 3-foot corrugated pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 16, 1949	10.39	60.0	1954	Jan. 21, 1954	7.31	49.4
1950	Dec. 27, 1949	8.50	50.0	1955	Feb. 8, 1955	5.71	32.7
1951	Feb. 9, 1951	9.78	56.8	1956	Dec. 11, 1955	10.32	61.7
1952	Feb. 3, 1952	8.17	49.6	1957	Dec. 9, 1956	10.82	68.4
1953	Jan. 23, 1953	10.35	54.6				

WILLAPA RIVER BASIN

115. Willapa River at Lebam, Wash.

Location.--Lat 46°33'50", long 123°33'50", in SW¼ sec.33, T.13 N., R.7 W., on left bank half a mile west of Lebam and 1 mile upstream from Walker Creek.

Drainage area.--41.4 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 754 ft.

Gage.--Recording. Datum of gage is 154.0 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 2,200 cfs and extended by logarithmic plotting.

Bankfull stage.--17.3 ft.

Remarks.--Base for partial-duration series, 1,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Nov. 28, 1948	9.15	1,840	1954	Jan. 5, 1954	11.91	2,790
	Dec. 2, 1948	10.82	2,400		Jan. 22, 1954	11.08	2,500
	Feb. 10, 1949	14.03	3,530		Feb. 13, 1954	11.03	2,490
	Feb. 17, 1949	13.34	3,280		Feb. 19, 1954	12.24	2,910
	Feb. 22, 1949	17.53	4,930				
				1955	Nov. 18, 1954	9.24	1,890
1950	Nov. 12, 1949	10.63	2,230		Feb. 8, 1955	9.06	1,830
	Nov. 27, 1949	12.90	3,040				
	Dec. 28, 1949	11.02	2,440	1956	Nov. 4, 1955	11.46	2,640
	Jan. 20, 1950	10.12	2,120		Nov. 24, 1955	10.32	2,240
	Feb. 25, 1950	9.19	1,840		Dec. 11, 1955	10.06	2,150
	Mar. 5, 1950	9.42	1,920		Dec. 21, 1955	12.06	2,850
					Jan. 6, 1956	11.36	2,600
1951	Feb. 9, 1951	13.80	3,460		Mar. 7, 1956	9.14	1,830
					Mar. 23, 1956	11.28	2,570
1952	Jan. 30, 1952	10.38	2,260				
	Feb. 4, 1952	10.19	2,190	1957	Dec. 9, 1956	13.47	3,340
					Feb. 24, 1957	10.73	2,380
1953	Jan. 8, 1953	11.87	2,780		Feb. 26, 1957	12.25	2,910
1954	Dec. 9, 1953	9.70	2,020				

122. Green Creek near Lebam, Wash.

Location.--Lat 46°35'15", long 123°35'30", in NE¼ sec.30, T.13 N., R.7 W., at a county road, 2.5 miles northwest of Lebam.

Drainage area.--1.79 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 340 ft.

Gage.--Crest-stage gage. Datum of gage is 12.73 ft below the upstream invert of left culvert.

Stage-discharge relation.--Defined by computations of discharge through three 3-foot corrugated pipe culverts.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 26, 1949	16.88	158	1954	Jan. 5, 1954	16.84	127
				1955	Feb. 8, 1955	16.34	94.9
1951	Feb. 9, 1951	17.62	224				
1952	Feb. 4, 1952	16.19	117	1956	Dec. 11, 1955	16.91	133
1953	Jan. 22, 1953	16.30	106	1957	Dec. 9, 1956	18.54	223

135. Willapa River near Willapa, Wash.

Location.--Lat 46°38'55", long 123°38'40", in NW¼ sec.2, T.13 N., R.8 W., on right bank 150 ft downstream from Mill Creek and 2½ miles southeast of Willapa.

Drainage area.--130 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 641 ft.

Gage.--Recording. Datum of gage is 5.69 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 7,300 cfs and extended by logarithmic plotting.

Bankfull stage.--18.0 ft.

Remarks.--Only annual peak for 1956. Base for partial-duration series, 5,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Nov. 28, 1948	14.63	5,210	1952	Jan. 30, 1952	16.47	6,330
	Dec. 2, 1948	17.71	7,100		Feb. 4, 1952	17.28	6,900
	Dec. 9, 1948	15.62	5,810				
	Feb. 10, 1949	19.52	8,280	1953	Jan. 8, 1953	17.25	6,880
	Feb. 17, 1949	20.23	8,730		Jan. 23, 1953	18.41	7,690
	Feb. 22, 1949	24.22	11,400				
				1954	Dec. 9, 1953	17.51	7,060
1950	Nov. 12, 1949	15.61	5,760		Jan. 5, 1954	18.13	7,490
	Nov. 27, 1949	19.45	8,380		Jan. 22, 1954	16.66	6,460
	Dec. 28, 1949	18.80	8,450		Feb. 13, 1954	16.11	6,080
	Jan. 20, 1950	16.78	7,050		Feb. 16, 1954	16.20	6,140
	Feb. 24, 1950	15.56	5,760		Feb. 19, 1954	19.20	8,240
	Feb. 26, 1950	15.61	5,760				
	Mar. 5, 1950	16.01	6,000	1955	Nov. 18, 1954	16.22	6,150
					Feb. 8, 1955	a16.38	6,270
1951	Dec. 23, 1950	14.73	5,220				
	Jan. 2, 1951	15.12	5,460	1956	Dec. 21, 1955	a16.92	8,040
	Jan. 17, 1951	14.93	5,340				
	Feb. 9, 1951	21.86	10,300				

a From high-water mark.

167. Joe Creek near Cosmopolis, Wash.

Location.--Lat 46°50'20", long 123°43'05", in SE¼ sec.30, T.16 N., R.8 W., at U.S. Highway 101, 8½ miles southeast of Cosmopolis.

Drainage area.--2.05 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 460 ft.

Gage.--Crest-stage gage. Datum of gage is 3.5 ft below the upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 10- by 5-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 17, 1949	6.94	193	1954	Jan. 6, 1954	6.38	147
1950	Nov. 25, 1949	7.38	232	1955	Feb. 8, 1955	6.72	179
1951	Feb. 9, 1951	7.13	212	1956	Dec. 11, 1955	6.66	171
1952	Feb. 4, 1952	5.55	88.0	1957	Dec. 9, 1956	8.39	329
1953	Jan. 22, 1953	6.43	138				

170. North River near Raymond, Wash.

Location.--Lat 46°48'30", long 123°51'00", in sec.6, T.15 N., R.9 W., on left bank 1¼ miles upstream from Salmon Creek and 10 miles northwest of Raymond.

Drainage area.--219 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 700 ft.

Gage.--Recording. Datum of gage is 7.39 ft above mean sea level (Western Washington Electric Light and Power Co. bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Considerable regulation prior to December 1933 due to splash dam operation in connection with logging operations. Discharge of 35,000 cfs, Dec. 10, 1933, caused by failure of crib dam. Natural discharge estimated about 25,000 cfs. Base for partial-duration series, 4,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	Oct. 4, 1927	5.58	4,130	1932	Jan. 12, 1932	6.45	6,330
	Oct. 20, 1927	6.64	6,060		Jan. 19, 1932	6.20	5,710
	Nov.16,17,1927	5.70	4,310		Feb. 22, 1932	6.11	5,470
	Nov. 24, 1927	7.80	8,610		Feb. 27, 1932	8.11	11,000
	Jan. 13, 1928	6.39	5,660		Mar. 6, 1932	6.97	7,800
	Mar. 11, 1928	5.78	4,500		Mar. 25, 1932	5.52	4,180
	Mar. 29, 1928	5.73	4,400				
	Apr. 1, 1928	5.96	4,780	1933	Nov. 6, 1932	6.70	4,090
					Nov. 17, 1932	8.12	5,750
1929	Mar. 27, 1929	a6.40	5,660		Dec. 2, 1932	8.44	6,450
	Apr. 15, 1929	5.57	4,040		Dec. 20, 1932	6.44	4,030
					Dec. 27, 1932	6.85	5,160
1930	Dec. 23, 1929	a6.05	4,900		Jan. 9, 1933	-	a7,240
	Feb. 14, 1930	5.70	4,340		Feb. 23, 1933	5.81	4,800
1931	Jan. 24, 1931	6.10	5,090	1934	Nov. 3, 1933	6.62	6,720
	Feb. 19, 1931	6.00	4,900		Dec. 10, 1933	15.8	35,000
	Mar. 20,21,1931	5.63	4,250		Jan. 22, 1934	8.65	11,400
	Apr. 1, 1931	6.25	5,280		Mar. 2, 1934	6.06	4,700
	Apr. 10, 1931	7.04	6,900				
	Apr. 13, 1931	a7.20	7,320	1935	Oct. 26, 1934	7.02	6,850
					Nov. 7, 1934	7.27	7,620
1932	Oct. 29, 1931	6.92	6,690		Dec. 22, 1934	6.32	5,220
	Nov. 14, 1931	5.55	4,070		Jan. 7, 1935	6.40	5,440
	Nov. 20, 1931	5.88	4,710		Jan. 23, 1935	12.5	24,000
	Dec. 19, 1931	7.40	7,750		Mar. 14, 1935	6.73	6,360

a Result of splash dam operation.

Peak stages and discharges of North River near Raymond, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Mar. 25, 1935	5.85	4,300
1936	Jan. 5, 1936	6.68	6,120
	Jan. 12, 1936	7.38	7,890
	Feb. 28, 1936	7.43	7,890
1937	Dec. 24, 1936	6.16	4,900
	Feb. 18, 1937	6.83	6,360
	Feb. 23, 1937	6.57	5,780
	Apr. 15, 1937	6.92	6,600
1938	Nov. 9, 1937	6.47	5,550
	Nov. 14, 1937	7.45	7,890
	Nov.25-26,1937	6.85	6,360
	Dec. 29, 1937	-	b23,000
	Mar. 19, 1938	5.70	4,020
1939	Jan. 2, 1939	6.32	5,220
	Feb. 13, 1939	7.10	7,100
1940	Dec. 16, 1939	7.20	7,360
	Feb.7,10,1940	6.53	5,780
1941	Jan. 18, 1941	6.39	5,440
1942	Dec. 20, 1941	7.37	7,890
1943	Nov. 24, 1942	5.80	4,290
	Feb.6 or 7,1943	6.41	5,410
	Mar. 29, 1943	5.88	4,470
	Apr. 2, 1943	6.41	5,410
1944	Dec. 4, 1943	7.32	7,230
1945	Feb. 8, 1945	6.99	6,600
	Mar.20-21,1945	6.22	5,030
1946	Dec. 7, 1945	5.72	4,110
	Dec. 30, 1945	7.32	7,230
	Jan. 5, 1946	6.42	5,410
	Jan. 25, 1946	5.66	4,020
	Feb. 3, 1946	5.86	4,380
	Feb. 7, 1946	6.38	5,410
	Feb. 28, 1946	5.91	4,470
	Apr. 12, 1946	6.11	4,840
1947	Nov. 24, 1946	6.21	5,030
	Dec. 12, 1946	7.11	6,810
	Jan. 27, 1947	7.46	7,660
	Feb. 3, 1947	7.10	6,810
	Feb. 15, 1947	6.31	5,220
1948	Oct. 19, 1947	6.30	5,220
	Jan.2-3, 1948	6.40	5,410
	Feb. 23, 1948	5.85	4,380
	Mar. 23, 1948	6.58	5,800
1949	Dec. 3, 1948	6.83	5,690
	Dec. 11, 1948	7.13	6,230
1949	Feb. 11, 1949	6.60	5,340
	Feb. 18, 1949	8.00	7,900
	Feb. 23, 1949	8.42	8,660
1950	Nov. 13, 1949	5.82	4,080
	Nov. 28, 1949	7.25	6,380
	Dec. 29, 1949	9.27	10,700
	Jan. 22, 1950	7.76	7,510
	Feb. 14, 1950	6.07	4,530
	Feb. 25, 1950	7.81	7,510
	Mar. 5, 1950	7.95	7,910
	Mar. 18, 1950	5.86	4,230
1951	Nov. 25, 1950	6.40	5,000
	Dec. 24, 1950	7.12	6,200
	Jan. 4, 1951	6.70	5,500
	Jan. 18, 1951	6.78	5,670
	Jan. 22, 1951	5.94	4,230
	Feb. 11, 1951	11.0	14,800
	Mar. 16, 1951	6.15	4,680
1952	Dec. 22, 1951	6.15	4,040
	Feb. 1, 1952	6.99	5,210
	Feb. 5, 1952	7.28	5,640
1953	Jan. 3, 1953	7.16	5,460
	Jan. 9, 1953	7.27	5,620
	Jan. 20, 1953	7.12	5,400
	Jan. 24, 1953	9.39	9,040
	Jan. 31, 1953	8.26	7,160
1954	Dec. 7, 1953	6.95	5,150
	Dec. 11, 1953	8.72	7,900
	Jan. 6, 1954	9.50	9,240
	Jan.22-23,1954	7.19	5,500
	Feb. 14, 1954	7.10	5,370
	Feb. 21, 1954	8.52	7,570
1955	Nov. 19, 1954	7.98	6,710
	Jan. 1, 1955	6.85	5,010
	Feb. 9, 1955	7.45	5,900
	Apr. 1, 1955	6.99	5,210
1956	Oct. 30, 1955	6.83	4,980
	Nov. 4, 1955	8.66	7,800
	Nov. 26, 1955	6.70	4,800
	Dec. 13, 1955	8.74	7,940
	Dec. 22, 1955	8.46	7,480
	Jan. 6, 1956	8.21	7,080
	Jan. 17, 1956	7.24	5,580
	Mar. 3, 1956	7.61	6,140
	Mar. 8, 1956	7.56	6,060
	Mar. 24, 1956	6.53	4,560
1957	Dec. 9, 1956	9.27	8,840
	Feb. 26, 1957	7.56	6,060
	Mar. 8, 1957	6.99	5,210

b Estimated.

196. Water Mill Creek near Pe Ell, Wash.
(Formerly published as Shield Creek)

Location.--Lat 46°33'50", long 123°18'30", in SE¼ sec.33, T.13 N., R.5 W., at State Highway 12, 1 mile southwest of Pe Ell.

Drainage area.--1.98 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 680 ft.

Gage.--Crest-stage gage. Datum of gage is 14.98 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 4- by 4-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 26, 1949	-	140	1954	Feb. 13, 1954	20.64	115
				1955	Dec. 30, 1954	17.74	50.7
1951	Feb. 9, 1951	19.55	112				
1952	Nov. 30, 1951	18.18	66.0	1956	Dec. 11, 1955	20.72	114
1953	Jan. 8, 1953	18.72	77.0	1957	Feb. 25, 1957	19.54	79.4

200. Chehalis River near Doty, Wash.

Location.--Lat 46°37'00", long 123°16'40", in NW¼ sec.14, T.13 N., R.5 W., on right bank 1½ miles upstream from Elk Creek, 1½ miles south of Doty, and 3½ miles north of Pe Ell.

Drainage area.--113 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,000 ft.

Gage.--Nonrecording and, since Sept. 1, 1950, crest-stage gage. Datum of gage is 302.1 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 8,300 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Peaks are either from graphs based on gage readings or crest-stage gage. Base for partial-duration series, 6,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Dec. 15, 1939	15.76	15,100	1950	Feb. 24, 1950	10.80	8,040
					Mar. 4, 1950	10.20	7,260
1941	Jan. 17 or 18, 1941	11.70	9,140				
				1951	Feb. 9, 1951	15.93	15,700
1942	Dec. 19, 1941	11.50	8,780				
				1952	Jan. 30, 1952	10.80	7,990
1943	Feb. 6, 1943	9.56	6,260		Feb. 4, 1952	11.80	9,320
1944	Dec. 3, 1943	9.07	5,670	1953	Jan. 8, 1953	10.15	7,540
1945	Feb. 7, 1945	17.80	18,100	1954	Dec. 9, 1953	10.04	7,410
	Mar. 20, 1945	13.72	11,900		Jan. 5, 1954	11.38	9,100
					Feb. 16, 1954	9.68	6,980
1946	Nov. 26, 1945	10.76	7,910		Feb. 19, 1954	10.85	8,420
	Dec. 28, 1945	10.95	8,170		Feb. 21, 1954	11.00	8,610
1947	Jan. 25, 1947	11.68	9,140	1955	Feb. 8, 1955	9.20	6,400
	Feb. 2, 1947	12.28	9,980				
				1956	Nov. 4, 1955	11.51	9,270
1948	Oct. 17, 1947	10.45	7,390		Nov. 24, 1955	11.06	8,690
	Jan. 2, 1948	11.35	8,720		Dec. 11, 1955	12.70	11,000
	Mar. 22, 1948	11.3	8,580		Dec. 21, 1955	12.05	10,000
					Jan. 5 or 6, 1956	9.6	6,880
1949	Feb. 17, 1949	14.10	12,500		Mar. 23, 1956	11.68	9,320
	Feb. 22, 1949	14.30	12,800				
				1957	Dec. 9, 1956	13.78	12,600
1950	Nov. 27, 1949	13.24	11,400		Feb. 26, 1957	10.55	8,020
	Dec. 28, 1949	9.90	6,880				

205. Elk Creek near Doty, Wash.

Location.--Lat 46°37'50", long 123°19'50", in NE¼ sec.8, T.13 N., R.5 W., half a mile upstream from Nine Creek, 1 mile upstream from Deer Creek, and 2½ miles west of Doty.

Drainage area.--46.7 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 810 ft.

Gage.--Recording prior to 1952; crest-stage gage thereafter. Altitude of gage is 360 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,600 cfs and extended by logarithmic plotting.

Remarks.--Only annual peaks since 1952.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Jan. 7, 1945	5.43	995	1949	Feb. 10, 1949	5.75	1,140
	Feb. 7, 1945	6.16	1,370		Feb. 17, 1949	7.51	2,020
					Feb. 22, 1949	8.21	2,380
1946	Dec. 28, 1945	6.88	1,720				
	Jan. 5, 1946	6.00	1,270	1950	Nov. 12, 1949	6.70	1,620
	Feb. 2, 1946	5.77	1,140		Nov. 27, 1949	5.83	1,200
	Feb. 6, 1946	5.85	1,200		Dec. 28, 1949	7.03	1,770
					Jan. 22, 1950	5.84	1,160
1947	Nov. 23, 1946	6.13	1,320		Feb. 8, 1950	-	-
	Dec. 11, 1946	7.06	1,820		Feb. 13, 1950	-	-
	Jan. 26, 1947	6.64	1,570		Feb. 15, 1950	-	-
	Feb. 2, 1947	6.63	1,570		Feb. 25, 1950	-	-
	Feb. 14, 1947	5.79	1,170		Mar. 5, 1950	-	-
1948	Nov. 8, 1947	5.38	970	1952	Feb. 4, 1952	5.85	1,160
	Jan. 2, 1948	5.42	970	1953	Jan. 8, 1953	5.83	1,190
	Mar. 21, 1948	6.12	1,320	1954	Jan. 5, 1954	7.73	2,240
				1955	Feb. 8, 1955	5.73	1,120
1949	Dec. 2, 1948	5.73	1,140				
	Dec. 9, 1948	7.00	1,770	1956	Dec. 11, 1955	6.84	1,640
	Dec. 12, 1948	5.87	1,200	1957	Dec. 9, 1956	5.95	1,220

210. South Fork Chehalis River at Boistfort, Wash.

Location.--Lat 46°32'45", long 123°07'55", in NW¼NW¼ sec.12, T.12 N., R.4 W., on left bank a quarter of a mile south of Boistfort and 6 miles upstream from mouth.

Drainage area.--49.2 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 830 ft.

Gage.--Recording prior to 1951; crest-stage gage thereafter. Altitude of gage is 255 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs and extended by logarithmic plotting.

Bankfull stage.--6.5 ft.

Remarks.--Only annual peaks since 1951. Base for partial-duration series, 2,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 7, 1945	11.57	7,250	1949	Feb. 17, 1949	10.78	6,250
	Mar. 20, 1945	8.03	3,100		Feb. 22, 1949	8.72	3,800
1946	Dec. 29, 1945	8.06	3,200	1950	Nov. 27, 1949	9.77	5,000
					Dec. 28, 1949	8.08	3,200
1947	Jan. 26, 1947	8.21	3,300		Feb. 24, 1950	8.14	3,200
	Feb. 2, 1947	8.39	3,500				
				1951	Feb. 9, 1951	9.36	4,460
1948	Jan. 2, 1948	8.20	3,300	1952	Feb. 4, 1952	7.70	2,830
	Mar. 22, 1948	7.91	3,010	1953	Jan. 8, 1953	7.36	2,550
				1954	Jan. 5, 1954	8.60	3,700
1949	Nov. 28, 1948	7.32	2,500	1955	Feb. 8, 1955	7.68	2,810
	Dec. 2, 1948	8.46	3,600				
	Dec. 9, 1948	7.77	2,920	1956	Dec. 11, 1955	9.40	4,500
	Feb. 10, 1949	8.59	3,700	1957	Dec. 9, 1956	9.68	4,850

250. Newaukum River near Chehalis, Wash.

Location.--Lat 46°37'10", long 122°56'40", on line between secs. 9 and 16, T.13 N., R.2 W., on left bank at highway bridge, 2½ miles southeast of Chehalis and 3½ miles upstream from mouth.

Drainage area.--159 sq mi. Area of lakes and ponds, 0.02 sq mi; mean altitude, 900 ft.

Gage.--Nonrecording and, since Sept. 14, 1950, crest-stage gage. Altitude of gage is 190 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,800 cfs and extended by logarithmic plotting.

Bankfull stage.--12.1 ft.

Remarks.--Peaks are from graphs based on gage readings or crest-stage gage. Base for partial-duration series, 4,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Mar. 27, 1929	8.70	3,090	1949	Feb. 22, 1949	12.08	5,140
1930	Mar. 24, 1930	8.74	3,090	1950	Nov. 27, 1949	11.00	4,760
					Dec. 28, 1949	11.66	5,320
1931	Apr. 1, 1931	12.90	6,120		Jan. 21, 1950	11.10	4,840
					Feb. 24, 1950	12.20	5,720
1943	Nov. 23, 1942	11.40	4,990				
	Feb. 6, 1943	10.40	4,290	1951	Dec. 23, 1950	10.70	4,550
	Feb. 12, 1943	10.65	4,430		Feb. 9, 1951	11.58	5,240
	Mar. 28, 1943	11.00	4,710				
				1952	Feb. 4, 1952	9.88	3,980
1944	Dec. 3, 1943	10.68	4,500				
				1953	Jan. 9, 1953	9.55	4,060
1945	Feb. 8, 1945	12.20	4,760		Jan. 23, 1953	10.25	4,540
1946	Nov. 18, 1945	10.76	4,040	1954	Dec. 6, 1953	10.43	4,680
	Jan. 5, 1946	10.80	4,040		Dec. 9, 1953	13.62	7,400
	Feb. 2, 1946	11.50	4,420		Dec. 12, 1953	9.73	4,180
	Feb. 6, 1946	12.00	4,700		Jan. 5, 1954	12.14	6,070
					Jan. 22, 1954	11.65	5,660
1947	Nov. 18, 1946	11.83	4,940		Feb. 20, 1954	9.72	4,170
	Dec. 11, 1946	12.50	5,400		Feb. 21, 1954	9.92	4,310
	Feb. 2, 1947	12.30	5,260				
				1955	Dec. 30, 1954	10.40	4,440
1948	Jan. 2, 1948	10.76	4,310		Feb. 8, 1955	10.83	4,780
	Feb. 26, 1948	10.40	4,070				
	Mar. 22, 1948	11.70	4,880	1956	Nov. 25, 1955	12.48	5,940
					Dec. 12, 1955	13.00	6,360
1949	Dec. 2, 1948	11.47	4,740		Dec. 20, 1955	11.93	5,550
	Dec. 9, 1948	12.20	5,200		Jan. 4, 1956	9.82	4,030
	Feb. 10, 1949	10.80	4,310				
	Feb. 17, 1949	13.06	6,440	1957	Dec. 10, 1956	10.20	4,300

260. Skookumchuck River near Centralia, Wash.

Location.--Lat 46°47'15", long 122°42'45", in SW¼NW¼ sec.17, T.15 N., R.1 E., on left bank half a mile upstream from Bloody Run Creek, 4¼ miles upstream from Thompson Creek, and 12 miles northeast of Centralia.

Drainage area.--60.8 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,700 ft.

Gage.--Recording; prior to Dec. 6, 1933, nonrecording at site a quarter of a mile downstream at different datum. Datum of gage is 300.00 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 3,400 cfs and extended by logarithmic plotting.

Bankfull stage.--45.6 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 2,000 cfs.

Peak stages and discharges of Skookumchuck River near Centralia, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Mar. 22, 1930	6.20	2,020	1948	Jan. 2, 1948	44.40	2,360
					Feb. 22, 1948	44.00	2,080
1931	Feb. 18, 1931	6.70	2,470		Mar. 22, 1948	46.27	3,880
	Mar. 31, 1931	7.50	3,240				
				1949	Dec. 2, 1948	44.64	2,520
1932	Feb. 26, 1932	8.40	4,180		Dec. 9, 1948	45.05	2,840
	Mar. 5, 1932	7.20	2,940		Feb. 10, 1949	45.22	3,000
					Feb. 17, 1949	48.39	5,770
1933	Nov. 13, 1932	8.30	4,070		Feb. 22, 1949	45.66	3,400
	Dec. 2, 1932	8.00	3,740				
	Dec. 20, 1932	6.80	2,560	1950	Nov. 27, 1949	45.39	3,160
	Jan. 5, 1933	6.40	2,200		Dec. 23, 1949	43.92	2,010
	Jan. 8, 1933	7.00	2,740		Dec. 28, 1949	47.28	5,350
					Jan. 22, 1950	45.17	3,150
1934 a/	Nov. 2, 1933	6.30	2,110		Feb. 24, 1950	46.20	4,080
	Dec. 6, 1933	8.20	3,960		Mar. 5, 1950	45.36	3,330
1940	Dec. 15, 1939	44.72	2,740	1951	Feb. 9, 1951	46.06	3,980
	Feb. 6, 1940	43.87	2,100				
				1952	Jan. 30, 1952	44.81	2,830
1941	Jan. 18, 1941	43.63	1,880		Feb. 4, 1952	44.84	2,850
1942	Dec. 19, 1941	46.18	3,800	1953	Jan. 9, 1953	44.47	2,680
					Jan. 19, 1953	43.61	2,000
1943	Nov. 23, 1942	45.19	2,930		Jan. 23, 1953	43.78	2,120
	Feb. 6, 1943	44.60	2,460		Jan. 31, 1953	44.21	2,470
	Mar. 28, 1943	45.00	2,770				
				1954	Dec. 9, 1953	48.59	6,710
1944	Dec. 3, 1943	44.97	2,780		Jan. 5, 1954	45.37	3,330
					Jan. 22, 1954	44.20	2,340
1945	Jan. 7, 1945	43.95	2,050		Feb. 13, 1954	44.15	2,300
	Feb. 7, 1945	45.31	3,080		Feb. 21, 1954	44.53	2,600
	Mar. 20, 1945	44.94	2,220				
				1955	Dec. 30, 1954	44.22	2,400
1946	Nov. 26, 1945	44.66	2,600		Feb. 8, 1955	46.11	4,010
	Dec. 28, 1945	45.33	3,080				
	Jan. 4, 1946	44.98	2,840	1956	Nov. 24, 1955	44.60	2,680
	Feb. 6, 1946	44.67	2,600		Dec. 11, 1955	48.19	6,230
					Dec. 20, 1955	45.73	3,660
1947	Nov. 18, 1946	44.39	2,360		Jan. 4, 1956	44.08	2,310
	Dec. 5, 1946	44.03	2,080		Mar. 23, 1956	45.01	3,010
	Dec. 11, 1946	46.27	3,880				
	Jan. 25, 1947	45.95	3,640	1957	Dec. 9, 1956	45.43	3,390
	Feb. 2, 1947	46.03	3,640		Feb. 26, 1957	44.00	2,250

a Maximum for year not determined; partial year.

270. Lincoln Creek near Rochester, Wash.

Location.--Lat 46°44'10", long 123°10'40", in SW¼SW¼ sec.34, T.15 N., R.4 W., on left bank 1¾ miles downstream from confluence of North and South Forks and 7 miles southwest of Rochester.

Drainage area.--20.9 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 785 ft.

Gage.--Nonrecording prior to Apr. 1, 1957; recording gage and wooden control thereafter. Altitude of gage is 190 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 650 cfs and extended by logarithmic plotting.

Bankfull stage.--16 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 450 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 7, 1945	11.86	830	1949	Nov. 28, 1948	10.33	537
	Mar. 19, 1945	9.30	550		Dec. 2, 1948	12.69	735
					Dec. 9, 1948	13.66	834
1946	Dec. 28, 1945	13.00	890		Dec. 12, 1948	11.84	665
	Jan. 4, 1946	11.30	710		Feb. 10, 1949	12.41	717
	Feb. 2, 1946	9.20	508		Feb. 17, 1949	14.73	930
					Feb. 22, 1949	14.31	890
1947	Nov. 24, 1946	11.60	730				
	Dec. 11, 1946	11.20	680	1950	Nov. 12, 1949	9.93	593
	Dec. 13, 1946	11.10	670		Nov. 27, 1949	12.89	741
	Jan. 25, 1947	13.60	934		Dec. 28, 1949	15.65	990
	Feb. 2, 1947	11.70	730		Jan. 22, 1950	11.56	604
					Feb. 8, 1950	-	-
1948	Jan. 2, 1948	9.64	481		Feb. 13, 1950	-	-
	Feb. 22, 1948	9.53	481		Feb. 25, 1950	-	-
	Mar. 22, 1948	12.20	699		Mar. 5, 1950	-	-

275. Chehalis River near Grand Mound, Wash.

Location.--Lat 46°46'35", long 123°02'05", in NE¼ sec.22, T.15 N., R.3 W., on left bank at downstream side of highway bridge at Meadows, 1½ miles southwest of Grand Mound and 6 miles downstream from Skookumchuck River.

Drainage area.--895 sq mi. Area of lakes and ponds, 0.27 sq mi; mean altitude, 800 ft.

Gage.--Nonrecording prior to Oct. 3, 1934, at datum 3.0 ft higher; recording thereafter. Datum of gage is 123.27 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--15.8 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 13,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Mar. 27, 1929	8.00	13,700	1943	Jan. 1, 1943	11.35	14,400
	Apr. 15, 1929	7.76	13,200		Feb. 7, 1943	13.23	20,200
					Feb. 12, 1943	11.42	13,800
1930	Feb. 8, 1930	7.26	12,200		Mar. 29, 1943	12.19	16,100
					Apr. 2, 1943	12.06	15,800
1931	Jan. 24, 1931	8.90	15,600				
	Feb. 20, 1931	9.60	17,400	1944	Dec. 4, 1943	12.30	16,400
	Apr. 1, 1931	10.39	19,400				
				1945	Jan. 8, 1945	11.56	14,400
1932	Dec. 19, 1931	8.60	15,000		Feb. 9, 1945	15.29	27,000
	Jan. 12, 1932	8.90	15,800		Mar. 21, 1945	13.48	20,200
	Jan. 20, 1932	9.20	16,500				
	Feb. 22, 1932	8.30	14,200	1946	Dec. 30, 1945	14.33	23,100
	Feb. 27, 1932	11.29	23,500		Jan. 5, 1946	-	-
	Mar. 7, 1932	10.70	20,900		Feb. 3, 1946	12.78	17,900
					Feb. 7, 1946	13.50	20,200
1933	Nov. 6, 1932	7.80	13,300				
	Nov. 14, 1932	11.50	24,400	1947	Nov. 19, 1946	11.34	13,600
	Dec. 3, 1932	11.55	24,900		Nov. 25, 1946	12.45	16,700
	Dec. 24, 1932	9.50	17,400		Dec. 12, 1946	13.98	22,000
	Jan. 9, 1933	11.00	22,100		Jan. 26, 1947	14.57	24,200
	Feb. 23, 1933	8.20	14,000		Feb. 3, 1947	14.35	24,100
					Feb. 15, 1947	11.16	13,300
1934	Nov. 3, 1933	8.30	14,200				
	Dec. 7, 1933	12.70	30,700	1948	Dec. 19, 1947	11.30	13,300
	Dec. 11, 1933	14.30	40,800		Jan. 3, 1948	13.57	20,000
	Dec. 21, 1933	15.00	45,700		Feb. 23, 1948	11.98	15,600
	Jan. 23, 1934	11.70	25,400		Feb. 27, 1948	11.77	15,000
					Mar. 23, 1948	13.32	19,600
1935	Oct. 26, 1934	12.79	18,200				
	Nov. 7, 1934	16.13	32,600	1949	Nov. 29, 1948	12.07	15,900
	Dec. 24, 1934	12.13	16,000		Dec. 3, 1948	14.22	23,400
	Jan. 7, 1935	11.73	14,900		Dec. 10, 1948	14.56	25,300
	Jan. 23, 1935	17.08	38,000		Feb. 11, 1949	12.78	18,000
	Mar. 13, 1935	11.00	13,400		Feb. 18, 1949	16.62	35,900
					Feb. 23, 1949	16.69	36,500
1936	Jan. 5, 1936	13.45	20,800				
	Jan. 15, 1936	16.77	36,300	1950	Nov. 28, 1949	13.42	19,600
	Feb. 23, 1936	12.24	16,800		Dec. 24, 1949	11.39	14,200
	Feb. 28, 1936	15.68	30,700		Dec. 29, 1949	14.79	24,200
					Jan. 23, 1950	14.64	23,500
1937	Dec. 23, 1936	11.88	15,900		Feb. 9, 1950	11.30	14,000
	Feb. 18, 1937	12.30	17,100		Feb. 16, 1950	11.78	15,200
	Feb. 23, 1937	11.96	16,200		Feb. 26, 1950	15.41	26,300
	Apr. 15, 1937	14.33	24,300		Mar. 6, 1950	14.14	21,800
1938	Nov. 9, 1937	11.27	14,600	1951	Nov. 23, 1950	12.35	16,600
	Nov. 14, 1937	11.86	16,200		Dec. 24, 1950	12.77	17,800
	Nov. 26, 1937	12.26	17,400		Jan. 3, 1951	12.38	16,600
	Dec. 29, 1937	18.39	48,400		Jan. 17, 1951	12.71	17,500
	Mar. 19, 1938	10.78	13,200		Feb. 10, 1951	16.96	38,000
					Mar. 16, 1951	11.77	15,200
1939	Dec. 3, 1938	11.06	14,000				
	Jan. 4, 1939	11.77	15,900	1952	Dec.5-6, 1951	12.37	16,500
	Feb. 16, 1939	14.39	24,800		Jan. 31, 1952	12.27	16,200
					Feb. 5, 1952	13.12	18,800
1940	Dec. 17, 1939	13.90	22,700				
	Feb. 7, 1940	12.08	16,800	1953	Jan. 10, 1953	13.69	20,500
	Mar. 31, 1940	10.78	13,200		Jan. 20, 1953	12.28	16,200
					Jan. 24, 1953	13.10	18,700
1941	Jan. 19, 1941	12.69	18,800		Feb. 1, 1953	12.86	18,000
1942	Nov. 16, 1941	11.22	13,500	1954	Dec. 7, 1953	12.40	16,600
	Dec. 20, 1941	15.30	26,900		Dec. 10, 1953	15.63	29,000

Peak stages and discharges of Chehalis River near Grand Mound, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1954	Jan. 6, 1954	16.53	34,700	1956	Nov. 27, 1955	14.76	24,000
	Jan. 23, 1954	13.05	18,600		Dec. 12, 1955	15.64	28,700
	Feb. 14, 1954	13.52	20,000		Dec. 22, 1955	16.58	35,100
	Feb. 22, 1954	14.79	24,700		Jan. 7, 1956	14.55	23,100
					Jan. 17, 1956	12.60	16,500
1955	Nov. 20, 1954	11.83	15,100		Mar. 4, 1956	12.41	15,900
	Jan. 1, 1955	12.59	17,200		Mar. 24, 1956	13.26	18,500
	Feb. 9, 1955	12.90	18,100				
	Apr. 13, 1955	11.21	13,500	1957	Dec. 11, 1956	13.57	19,700
					Feb. 27, 1957	13.89	20,900
1956	Nov. 5, 1955	13.69	19,900		Mar. 8, 1957	11.69	14,200
	Nov. 20, 1955	11.52	13,600				

290. Black River at Little Rock, Wash.

Location.--Lat 46°54'10", long 123°01'20", in NE¼SW¼ sec.2, T.16 N., R.3 W., at bridge crossing in Little Rock, 0.4 mile upstream from Beaver Creek.

Drainage area.--60 sq mi, approximately. Area of lakes and ponds, 1.0 sq mi; mean altitude, 420 ft.

Gage.--Recording. Altitude of gage is 125 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 730 cfs and extended by logarithmic plotting.

Remarks.--Black Lake at headwaters is tapped by artificial channel to Percival Creek which flows into Puget Sound. Records herein do not include inter-basin flow from Black Lake or area drained by this channel. Regulation of Black Lake, by artificial channel to Percival Creek, varies with stage of lake. Peak discharges probably affected. Base for partial-duration series, 600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 8, 1945	5.11	840	1948	Mar. 22, 1948	4.77	688
	Mar. 20, 1945	4.30	603				
				1949	Dec. 2, 1948	6.33	1,270
1946	Dec. 29, 1945	5.20	810		Dec. 12, 1948	6.15	1,230
	Jan. 4, 1946	5.23	840		Feb. 17, 1949	6.25	1,230
	Feb. 6, 1946	4.45	603		Feb. 23, 1949	6.50	1,350
1947	Dec. 13, 1946	5.58	920	1950	Nov. 27, 1949	5.61	990
	Jan. 25, 1947	6.44	1,220		Dec. 28, 1949	7.40	1,700
	Feb. 2, 1947	5.50	830		Jan. 22, 1950	6.21	1,190
	Feb. 14, 1947	4.96	665		Feb. 15, 1950	5.42	880
					Feb. 25, 1950	6.65	1,390
1948	Jan. 4, 1948	4.96	695		Mar. 5, 1950	5.83	1,070
	Feb. 22, 1948	4.66	621		Mar. 19, 1950	4.65	635

300. Rock Creek at Cedarville, Wash.

Location.--Lat 46°52'05", long 123°18'25", in SW¼SW¼ sec.15, T.16 N., R.5 W., on left bank 0.2 mile downstream from Williams Creek, 1 mile west of Cedarville, and 1¼ miles upstream from mouth.

Drainage area.--24.8 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 525 ft.

Gage.--Recording. Altitude of gage is 70 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 860 cfs and extended by logarithmic plotting.

Bankfull stage.--12.6 ft.

Remarks.--Base for partial-duration series, 800 cfs.

Peak stages and discharges of Rock Creek at Cedarville, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Jan. 7, 1945	9.07	856	1950	Feb. 24, 1950	9.99	1,000
	Feb. 7, 1945	12.55	1,440				
1946	Dec. 28, 1945	10.04	1,000	1951	Feb. 9, 1951	13.77	1,660
1947	Jan. 25, 1947	11.67	1,290	1952	Feb. 4, 1952	8.41	746
	Feb. 2, 1947	11.72	1,310	1953	Jan. 23, 1953	11.36	1,120
1948	Oct. 19, 1947	8.95	840		Jan. 31, 1953	9.77	888
	Mar. 22, 1948	10.76	1,140	1954	Dec. 9, 1953	10.65	1,020
1949	Dec. 2, 1948	10.00	1,000		Dec. 12, 1953	10.12	938
	Dec. 9, 1948	9.13	856		Jan. 6, 1954	10.16	944
	Feb. 10, 1949	10.13	1,020	1955	Feb. 8, 1955	9.70	878
	Feb. 17, 1949	12.22	1,370	1956	Nov. 3, 1955	10.90	1,060
	Feb. 22, 1949	11.36	1,240		Dec. 11, 1955	12.01	1,220
1950	Nov. 27, 1949	10.26	1,050		Dec. 21, 1955	10.29	964
	Dec. 28, 1949	12.31	1,390				
	Jan. 22, 1950	9.83	1,000	1957	Dec. 9, 1956	13.09	1,380

310. Chehalis River at Porter, Wash.

Location.--Lat 46°56'20", long 123°18'45", on line between secs. 21 and 28, T.17 N., R.5 W., in upstream end of right bank pier of Chehalis River bridge at mouth of Porter Creek, 700 ft west of Porter.

Drainage area.--1,300 sq mi, approximately; 1,420 sq mi, approximately, at site "at South Elma" prior to January 1952. Area of lakes and ponds at South Elma, 1.99 sq mi; mean altitude, 700 ft.

Gage.--Nonrecording prior to Apr. 9, 1947; recording thereafter. At site 10 miles downstream, at South Elma, at different datum prior to January 1952. Altitude of gage is 25 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--18.5 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Discharges for period 1947-51 at South Elma were adjusted to discharges at Porter by ratio of the eight-tenths power of the drainage areas. Base for partial-duration series, 20,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Dec. 14, 1946	-	26,200	1952	Feb. 6, 1952	18.70	21,900
	Jan. 26, 1947	-	26,300				
	Feb. 4, 1947	-	23,600	1953	Jan. 11, 1953	19.45	23,400
	Feb. 15, 1947	-	20,400		Jan. 20, 1953	18.30	20,300
					Jan. 25, 1953	19.33	23,000
1948	Jan. 5, 1948	-	23,000		Jan. 31, 1953	19.93	24,800
1949	Dec. 4, 1948	-	24,700	1954	Dec. 12, 1953	21.31	28,600
	Dec. 13, 1948	-	29,400		Jan. 7, 1954	22.27	31,700
	Feb. 19, 1949	-	31,400		Jan. 24, 1954	18.41	20,600
	Feb. 24, 1949	-	33,500		Feb. 15, 1954	19.05	22,200
					Feb. 23, 1954	20.33	25,700
1950	Dec. 28, 1949	-	30,500				
	Jan. 24, 1950	-	29,400	1955	Jan. 2, 1955	18.03	19,200
	Feb. 16, 1950	-	21,400				
	Feb. 27, 1950	-	32,500	1956	Nov. 6, 1955	19.06	21,200
	Mar. 7, 1950	-	26,800		Nov. 28, 1955	20.28	24,500
					Dec. 14, 1955	20.57	25,400
1951	Nov. 26, 1950	-	21,900		Dec. 23, 1955	22.04	30,200
	Dec. 25, 1950	-	23,600		Jan. 7, 1956	20.32	24,600
	Jan. 5, 1951	-	20,300		Jan. 17, 1956	18.67	20,200
	Jan. 20, 1951	-	22,600		Mar. 25, 1956	18.73	20,400
	Feb. 11, 1951	-	36,100				
				1957	Dec. 12, 1956	19.35	23,600
1952	December 1951	-	-		Feb. 28, 1957	19.10	22,800

325. Cloquallum River at Elma, Wash.
(Published as "Cloquallum Creek" 1942)

Location.--Lat 47°00'20", long 123°23'10", in S½NW¼ sec.36, T.18 N., R.6 W., on right bank 10 ft downstream from concrete bridge, half a mile east of Elma, and 1.8 miles downstream from Wildcat Creek.

Drainage area.--65.8 sq mi. Area of lakes and ponds, 0.40 sq mi; mean altitude, 410 ft.

Gage.--Recording. At site 200 ft upstream prior to Sept. 2, 1953. Altitude of gage is 20 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--8.5 ft.

Remarks.--Base for partial-duration series, 1,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Jan. 7, 1945	8.14	2,780	1951	Jan. 2, 1951	6.63	1,560
	Feb. 7, 1945	8.70	3,050		Jan. 17, 1951	6.88	1,760
					Jan. 21, 1951	6.44	1,510
1946	Dec. 28, 1945	7.80	2,440		Feb. 9, 1951	11.04	4,470
	Jan. 4, 1946	6.60	1,590		Mar. 15, 1951	6.51	1,560
	Jan. 24, 1946	7.12	1,900				
	Feb. 5, 1946	6.21	1,540	1952	Jan. 30, 1952	6.99	1,800
	Feb. 27, 1946	6.61	1,740				
	Apr. 11, 1946	7.00	1,950	1953	Jan. 23, 1953	9.55	3,360
					Jan. 31, 1953	9.60	3,390
1947	Dec. 11, 1946	6.80	1,680				
	Jan. 25, 1947	9.53	3,290	1954	Dec. 9, 1953	7.82	2,250
	Feb. 2, 1947	7.80	2,240		Dec. 12, 1953	8.76	2,820
	Feb. 14, 1947	7.24	1,900		Jan. 6, 1954	8.05	2,390
					Feb. 13, 1954	6.58	1,600
1948	Oct. 19, 1947	6.38	1,510		Feb. 21, 1954	7.50	2,080
	Mar. 22, 1948	6.95	1,810				
				1955	Nov. 18, 1954	6.88	1,650
1949	Dec. 2, 1948	8.16	2,480		Feb. 8, 1955	7.51	2,080
	Dec. 12, 1948	6.53	1,560				
	Feb. 10, 1949	-	-	1956	Oct. 29, 1955	7.56	2,110
	Feb. 17, 1949	8.85	2,840		Nov. 3, 1955	9.21	3,120
	Feb. 22, 1949	9.24	3,110		Dec. 11, 1955	9.61	3,400
					Dec. 21, 1955	7.99	2,350
1950	Nov. 27, 1949	7.79	2,130		Jan. 6, 1956	6.93	1,780
	Dec. 28, 1949	10.07	3,750		Jan. 16, 1956	6.81	1,720
	Jan. 22, 1950	6.97	1,760		Mar. 2, 1956	6.78	1,700
	Feb. 24, 1950	7.95	2,300		Mar. 7, 1956	7.02	1,820
	Mar. 4, 1950	7.76	2,240				
				1957	Dec. 9, 1956	10.43	4,010
1951	Nov. 25, 1950	6.84	1,810		Feb. 26, 1957	6.82	1,720
	Dec. 23, 1950	7.55	2,130		Mar. 7, 1957	6.82	1,720

350. Satsop River near Satsop, Wash.

Location.--Lat 47°00'05", long 123°29'40", in sec.36, T.18 N., R.7 W., in west pier of bridge on U.S. Highway 410, three-quarters of a mile west of Satsop, and 2 miles upstream from mouth.

Drainage area.--290 sq mi, approximately. Area of lakes and ponds, 0.72 sq mi; mean altitude, 500 ft.

Gage.--Nonrecording at datum 20.9 ft higher prior to Mar. 19, 1938; recording thereafter. Datum of gage is at mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--At 34.5 ft, water starts to bypass gage.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 13,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1910	November 1909	a37.1	-
1930	Dec. 23, 1929	10.0	11,300
1931	Jan. 23, 1931	13.2	19,200
	Jan. 27, 1931	11.1	13,900
	Feb. 18, 1931	11.1	13,900
1932	Nov. 13, 1931	11.3	14,400
	Dec. 19, 1931	14.0	23,700
	Jan. 11, 1932	13.4	21,500
	Jan. 18, 1932	11.2	14,100
	Feb. 26, 1932	15.8	30,900
	Mar. 5, 1932	11.1	13,900
1933	Nov. 13, 1932	11.4	14,600
	Jan. 8, 1933	11.5	15,300
1934	Dec. 9, 1933	14.0	23,200
	Dec. 21, 1933	14.4	24,500
	Dec. 22, 1933	14.2	23,800
	Jan. 21, 1934	12.1	17,100
	Jan. 23, 1934	13.3	20,900
1935	Nov. 5, 1934	11.6	15,600
	Jan. 22, 1935	18.0	46,600
	Mar. 13, 1935	11.0	16,000
1936	Jan. 4, 1936	11.0	16,600
	Jan. 12, 1936	10.9	16,300
	Feb. 27, 1936	10.9	16,300
1937	Apr. 14, 1937	10.5	15,200
1938	Nov. 8, 1937	10.1	14,200
	Nov. 14, 1937	10.3	14,800
	Nov. 25, 1937	11.9	19,400
	Dec. 28, 1937	14.3	30,100
1939	Jan. 1, 1939	33.91	25,600
1940	Dec. 15, 1939	32.14	18,700
	Feb. 10, 1940	31.51	16,800
1941	Jan. 18, 1941	33.81	25,200
1942	Dec. 19, 1941	30.23	13,200
1943	Apr. 1, 1943	29.96	13,100
1944	Dec. 3, 1943	32.64	19,900
1945	Jan. 7, 1945	31.38	16,400
	Jan. 12, 1945	31.02	15,300
	Feb. 7, 1945	35.30	28,000
1945	Mar. 20, 1945	33.21	21,600
1946	Dec. 28, 1945	30.42	13,600
	Apr. 11, 1946	31.73	17,200
1947	Jan. 25, 1947	34.00	24,000
	Feb. 2, 1947	30.97	14,400
	Feb. 14, 1947	33.21	20,400
1948	Oct. 19, 1947	32.06	17,300
	Jan. 2, 1948	31.88	16,800
	Mar. 22, 1948	30.76	14,000
1949	Nov. 28, 1948	30.77	14,000
	Dec. 2, 1948	32.82	19,200
	Feb. 17, 1949	32.69	19,700
	Feb. 22, 1949	34.90	27,000
1950	Nov. 27, 1949	34.63	27,200
	Dec. 28, 1949	34.80	27,600
	Jan. 21, 1950	31.48	16,100
	Feb. 16, 1950	31.13	14,900
	Feb. 26, 1950	33.03	21,400
	Mar. 4, 1950	33.52	22,800
1951	Nov. 25, 1950	31.30	15,500
	Dec. 23, 1950	30.72	13,700
	Jan. 26, 1951	31.77	17,000
	Feb. 9, 1951	36.91	36,200
1952	Jan. 30, 1952	32.01	15,800
	Feb. 4, 1952	31.46	13,900
1953	Dec. 12, 1952	31.96	16,100
	Jan. 3, 1953	32.97	19,600
	Jan. 16, 1953	31.66	15,200
	Jan. 23, 1953	34.79	26,700
	Jan. 31, 1953	34.16	24,100
1954	Dec. 12, 1953	34.20	24,300
	Jan. 5, 1954	33.48	21,400
	Feb. 13, 1954	31.66	15,200
	Feb. 17, 1954	31.92	16,000
	Feb. 20, 1954	33.01	19,800
1955	Nov. 18, 1954	35.37	29,300
	Feb. 8, 1955	32.96	19,900
1956	Nov. 3, 1955	35.14	27,800
	Dec. 12, 1955	31.82	16,400
	Jan. 16, 1956	30.97	14,000
	Mar. 23, 1956	31.10	14,300
1957	Dec. 10, 1956	35.99	32,000
	Feb. 26, 1957	31.92	16,700

a At railroad bridge 300 ft downstream.

355. Wynoochee River at Oxbow, near Aberdeen, Wash.

Location.--Lat 47°20'00", long 123°39'00", in SW¼SW¼ sec.1, T.21 N., R.8 W., on left bank at lower end of Oxbow, 600 ft upstream from head of canyon and 25 miles northeast of Aberdeen.

Drainage area.--68 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean altitude, 2,000 ft.

Gage.--Recording. Prior to Sept. 4, 1947, at site 1½ miles downstream at datum 444.0 ft above mean sea level (levels by city of Aberdeen). Altitude of gage is 492 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 5,400 cfs and extended on basis of slope-area measurement at 16,300 cfs.

Remarks.--Base for partial-duration series, 6,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1926	Dec. 11, 1925	20.0	8,350	1940	Feb. 9, 1940	18.69	6,890
1927	Oct. 16, 1926	19.32	7,790	1941	Oct. 18, 1940	19.68	7,590
					Jan. 17, 1941	23.47	10,600
1928	Jan. 12, 1928	21.90	9,910				
				1942	Oct. 9, 1941	18.80	6,960
1929	Mar. 28, 1929	16.30	5,560		Dec. 2, 1941	21.90	9,270
1930	Dec. 23, 1929	19.44	7,870	1943	April 1943	-	7,000
1931	Jan. 22, 1931	23.08	11,000	1944	Dec. 3, 1943	22.25	9,510
	Jan. 27, 1931	21.44	9,470				
	Feb. 18, 1931	19.80	8,190	1945	Jan. 7, 1945	19.15	7,240
					Jan. 12, 1945	20.70	8,310
1932	Nov. 13, 1931	19.68	8,110		Feb. 7, 1945	26.2	12,800
	Dec. 19, 1931	22.44	10,400				
	Jan. 11, 1932	20.07	8,430	1946	Feb. 24, 1946	18.60	6,820
	Feb. 26, 1932	25.20	12,900				
				1947	Jan. 24, 1947	20.00	7,800
1933	Nov. 12, 1932	21.10	9,230		Jan. 25, 1947	19.75	7,660
					Feb. 13, 1947	22.50	9,750
1934	Nov. 2, 1933	20.90	9,070				
	Dec. 5, 1933	20.26	8,590	1948	Oct. 2, 1947	11.36	8,210
	Dec. 9, 1933	20.30	8,590		Oct. 18, 1947	15.32	10,700
	Dec. 11, 1933	20.35	8,670		Dec. 23, 1947	11.62	8,420
	Dec. 17, 1933	20.10	8,430		Jan. 1, 1948	11.35	8,210
	Dec. 21, 1933	26.3	14,000				
	Dec. 29, 1933	18.38	7,070	1949	Nov. 28, 1948	10.76	7,860
	Jan. 23, 1934	-	-		Dec. 1, 1948	10.91	7,930
	Mar. 1, 1934	21.38	9,470		Feb. 17, 1949	9.27	6,810
					Feb. 22, 1949	11.94	8,630
1935	Oct. 24, 1934	20.17	8,510				
	Nov. 5, 1934	25.11	12,800	1950	Nov. 26, 1949	25.46	16,400
	Dec. 21, 1934	18.24	6,910		Dec. 1, 1949	14.93	10,600
	Jan. 22, 1935	30.3	18,000		Dec. 28, 1949	16.93	11,800
					Feb. 15, 1950	9.77	7,160
1936	Jan. 1, 1936	18.13	6,830		Feb. 25, 1950	15.61	11,000
					Mar. 3, 1950	12.73	9,260
1937	Dec. 22, 1936	20.55	8,830				
				1951	Oct. 10, 1950	9.60	7,020
1938	Oct. 28, 1937	23.20	11,100		Nov. 25, 1950	10.00	7,300
	Nov. 25, 1937	19.38	7,870		Dec. 9, 1950	11.07	8,070
	Dec. 29, 1937	19.10	7,630		Dec. 24, 1950	9.42	6,880
					Jan. 26, 1951	11.44	8,280
1939	Jan. 1, 1939	25.55	13,300		Feb. 9 or 10, 1951	21.1	14,200
1940	Dec. 14, 1939	21.90	9,270	1952	Jan. 30, 1952	10.51	7,660
	Dec. 15, 1939	24.60	11,400				

360. Wynoochee River above Save Creek, near Aberdeen, Wash.

Location.--Lat 47°18', long 123°39', in NW¼ sec.24, T.21 N., R.8 W., on left bank 1 mile upstream from Save Creek, 3 miles downstream from Oxbow, and 22 miles northeast of Aberdeen.

Drainage area.--69.5 sq mi.

Gage.--Recording. Datum of gage is 401 ft above mean sea level (stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 9,000 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 6,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Jan. 30, 1952	10.28	7,390	1954	Feb. 19, 1954	11.04	8,920
	Feb. 4, 1952	9.03	5,060		Mar. 9, 1954	10.01	7,040
1953	Dec. 12, 1952	11.06	8,950	1955	Nov. 18, 1954	15.83	20,400
	Jan. 3, 1953	12.53	11,900		Feb. 7, 1955	11.78	10,600
	Jan. 9, 1953	9.98	6,990				
	Jan. 12, 1953	10.15	7,290	1956	Oct. 25, 1955	10.16	7,150
	Jan. 15, 1953	10.92	8,690		Nov. 3, 1955	16.53	22,400
	Jan. 23, 1953	12.01	10,800				
	Jan. 31, 1953	11.83	10,500	1957	Oct. 20, 1956	10.69	8,230
					Dec. 9, 1956	16.95	23,600
1954	Dec. 11, 1953	12.73	12,300		Feb. 24, 1957	-	-
	Jan. 5, 1954	11.73	10,300		Feb. 26, 1957	11.69	10,200
	Feb. 17, 1954	10.24	7,450				

365. Wynoochee River near Montesano, Wash.

Location.--Lat 47°10'45", long 123°37'30", in sec.36, T.20 N., R.8 W., on left bank at Waters Ranch, 1¼ miles downstream from Schafer Creek and 14 miles north of Montesano. Records represent flow past measuring section 2½ miles downstream.

Drainage area.--110 sq mi, approximately, at measuring section 2½ miles downstream.

Gage.--Nonrecording. Altitude of gage is 210 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs and extended above.

Remarks.--Only annual peaks are shown; from graphs based on gage readings.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	Feb. 11, 1924	17.2	25,600	1927	Dec. 30, 1926	8.90	8,770
1925	Feb. 2, 1925	10.50	11,700	1928	Jan. 12, 1928	11.20	13,000
				1929	Mar. 28, 1929	7.50	6,400
1926	Dec. 11, 1925	9.60	10,000	1930	Apr. 5, 1930	7.90	7,040

375. Wynoochee River below Black Creek, near Montesano, Wash.

Location.--Lat 47°00'35", long 123°39'00", in NW¼NW¼ sec.35, T.18 N., R.8 W., on right bank 200 ft downstream from county bridge, 700 ft downstream from Black Creek, and 2½ miles northwest of Montesano.

Drainage area.--178 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 900 ft.

Gage.--Nonrecording at site 200 ft upstream prior to July 8, 1947; recording thereafter. Altitude of gage is 40 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--88 ft.

Remarks.--Base for partial-duration series, 8,900 cfs.

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Peak stages and discharges of Wynoochee River below Black Creek, near Montesano, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Mar. 28, 1943	77.12	8,930	1947	Jan. 25, 1947	81.10	15,600
	Apr. 2, 1943	77.90	10,000		Feb. 2, 1947	77.95	10,800
1944	Dec. 3, 1943	81.52	15,100		Feb. 14, 1947	81.19	15,800
1945	Jan. 7, 1945	78.15	10,500	1948	Oct. 19, 1947	79.78	13,400
	Jan. 12, 1945	77.76	9,910		Dec. 23, 1947	77.74	10,300
	Feb. 8, 1945	82.65	16,600		Jan. 1, 1948	78.41	12,300
	Mar. 20, 1945	78.65	11,000		Mar. 22, 1948	76.32	8,930
1946	Nov. 14, 1945	76.90	9,100	1949	Nov. 28, 1948	76.46	9,250
	Dec. 28, 1945	77.90	10,600		Dec. 2, 1948	78.91	13,200
	Mar. 24, 1946	77.70	10,300		Feb. 17, 1949	78.63	12,700
	Apr. 11, 1946	78.15	11,000		Feb. 22, 1949	80.74	16,200
1947	Dec. 11, 1946	77.40	9,850	1950	November 1949	a84.90	27,600
	Jan. 24, 1947	78.50	11,500	1951	Feb. 9, 1951	b85.4	28,800

a From reading by local observer.
b From high-water mark.

HUMPTULIPS RIVER BASIN

390. Humptulips River near Humptulips, Wash.

Location.--Lat 47°13'40", long 123°56'25", in NE¼ sec.17, T.20 N., R.10 W., on right bank 1 mile southeast of Humptulips, 2.5 miles upstream from Stevens Creek, and 3¼ miles downstream from confluence of East and West Forks.

Drainage area.--130 sq mi. Area of lakes and ponds, 0.01 sq mi; mean altitude, 1,000 ft.

Gage.--Recording prior to Jan. 14, 1935, and Mar. 1, 1950, to Jan. 15, 1953. Nonrecording July 1, 1942, to Feb. 28, 1950, and since Jan. 16, 1953. Crest-stage gage in use since December 1953. Datum of gage is 117.4 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 16,500 cfs and extended above.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings, and since December 1953 from crest-stage gage.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Dec. 4, 1933	8.68	14,800	1949	Feb. 22, 1949	9.80	19,200
	Dec. 9, 1933	9.69	18,800				
	Dec. 11, 1933	8.25	12,900	1950	Nov. 26, 1949	10.5	22,200
	Dec. 17, 1933	9.34	17,200		Dec. 2, 1949	8.20	13,200
	Dec. 20, 1933	8.74	14,800		Dec. 28, 1949	10.40	21,800
	Dec. 21, 1933	9.51	18,000		Jan. 21, 1950	8.60	14,600
	Mar. 1, 1934	8.89	15,600		Feb. 16, 1950	8.00	12,500
					Feb. 26, 1950	8.96	16,000
1935	Oct. 25, 1934	8.48	14,100		Mar. 3, 1950	8.26	13,600
	Nov. 5, 1934	8.71	14,800				
	Jan. 22, 1935	12.7	33,000	1951	Feb. 9, 1951	11.24	25,500
1943	Apr. 1, 1943	7.90	11,800	1952	Jan. 30, 1952	7.70	11,600
1944	Dec. 3, 1943	9.60	18,400	1953	Dec. 12, 1952	8.46	14,100
					Jan. 2, 1953	8.82	15,400
1945	Jan. 7, 1945	8.60	14,500		Jan. 15, 1953	9.00	16,000
	Jan. 12, 1945	8.40	13,700		Jan. 23, 1953	10.1	20,400
	Feb. 7, 1945	11.02	24,500		Jan. 31, 1953	8.40	14,600
	Mar. 19, 1945	8.50	14,100				
				1954	Dec. 11, 1953	8.40	14,600
1946	Feb. 24, 1946	8.22	12,900		Feb. 19, 1954	8.1	13,700
	Apr. 11, 1946	8.32	13,200				
				1955	Nov. 18, 1954	10.80	23,600
1947	Jan. 25, 1947	9.62	17,200		Feb. 8, 1955	9.28	17,500
	Feb. 14, 1947	8.99	15,200				
				1956	Nov. 3, 1955	11.09	25,000
1948	Dec. 23, 1947	8.24	11,800				
				1957	Dec. 9, 1956	12.68	32,900
1949	Feb. 16, 1949	8.58	13,900		Feb. 26, 1957	7.70	12,400

390.5. Big Creek near Hoquiam, Wash.

Location.--Lat 47°08'40", long 123°53'10", in SE¼ sec.11, T.19 N., R.10 W., at Larson Road, 300 ft east of U.S. Highway 101 and 11.4 miles north of Hoquiam.

Drainage area.--0.56 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 310 ft.

Gage.--Crest-stage gage. Datum of gage is 5.7 ft below upstream invert of culvert.

Stage-discharge relation.--Prior to 1956, stage-discharge relation defined by computations of discharge through two small wooden box culverts and computations of discharge over roadway. Since 1956, relationship is defined by computation of flow through 3½-foot corrugated pipe.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 22, 1949	11.08	72.0	1954	Dec. 11, 1953	11.24	82.7
1950	Dec. 28, 1949	11.29	95.4	1955	Nov. 18, 1954	11.14	67.2
1951	Feb. 9, 1951	11.20	81.5	1956	Nov. 3, 1955	11.42	110
1952	Jan. 30, 1952	8.18	25.2	1957	Dec. 9, 1956	11.69	120
1953	Jan. 22, 1953	11.41	123				

391. Big Creek tributary near Hoquiam, Wash.

Location.--Lat 47°08'55", long 123°53'10", in SE¼ sec.11, T.19 N., R.10 W., at U.S. Highway 101, 11.6 miles north of Hoquiam.

Drainage area.--0.15 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 290 ft.

Gage.--Crest-stage gage. Datum of gage is 2.80 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 2-foot concrete pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 22, 1949	5.31	20.5	1954	Dec. 11, 1953	5.27	19.7
1950	Dec. 28, 1949	5.11	13.8	1955	Nov. 18, 1954	4.95	16.2
1951	Feb. 9, 1951	5.47	20.8	1956	Nov. 3, 1955	5.87	22.9
1952	Jan. 30, 1952	4.07	6.7	1957	Dec. 9, 1956	5.56	23.2
1953	Jan. 22, 1953	5.50	20.8				

395. Quinault River at Quinault Lake, Wash.

Location.--Lat 47°27'30", long 123°53'30", in sec.25, T.23 N., R.10 W., on left bank at outlet of Quinault Lake, 50 ft downstream from Olympic Highway bridge, U.S. Highway 101, and 4 miles southwest of Quinault.

Drainage area.--264 sq mi. Area of lakes and ponds, 5.49 sq mi; mean altitude, 2,700 ft.

Gage.--Nonrecording prior to Oct. 1, 1916; recording thereafter. At site on south shore of Quinault Lake 3 miles northeast of present site prior to Jan. 1, 1913. At mouth of Canoe Creek 4 miles northeast of present site Jan. 1, 1913, to Sept. 30, 1916. At datum 1.06 ft higher prior to Oct. 1, 1916. At site 300 ft downstream at datum 0.36 ft higher Oct. 1, 1916, to May 2, 1935. Datum of gage is 184.60 ft above mean sea level (Washington State Highway bench mark).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--15 ft.

Remarks.--Natural regulation by Quinault Lake. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 12,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1910	November 1909	22	52,600
1912	Nov. 18, 1911	11.6	20,300
	Nov. 25, 1911	9.12	14,000
	Nov. 30, 1911	8.59	12,900
1913	Nov. 19, 1912	10.8	18,200
1914	Nov. 25, 1913	11.2	18,800
	Jan. 6, 1914	16.3	32,500
1915	Oct. 19, 1914	10.0	16,200
	Nov. 3, 1914	8.90	13,600
	Apr. 2, 1915	9.45	14,800
1916	Dec. 8, 1915	11.8	20,800
	Dec. 22, 1915	9.0	13,800
1917	Nov. 4, 1916	5.76	6,670
1918	Dec. 16, 1917	12.54	25,000
	Dec. 18, 1917	14.82	32,300
	Dec. 29, 1917	14.24	30,300
	Jan. 1, 1918	11.74	22,600
1919	Oct. 28, 1918	8.93	14,300
	Dec. 4, 1918	12.05	23,500
	Dec. 14, 1918	12.06	23,800
1920	Nov. 15, 1919	11.68	21,300
	Dec. 24, 1919	10.15	18,000
	Jan. 18, 1920	9.28	15,400
1921	Oct. 4, 1920	9.38	15,700
	Jan. 15, 1921	8.16	12,400
	Feb. 11, 1921	10.90	20,100
1922	Oct. 17, 1921	8.33	12,600
	Oct. 29, 1921	15.4	34,200
	Nov. 27, 1921	10.60	19,200
	Dec. 1, 1921	9.19	15,100
	Dec. 12, 1921	16.3	37,000
1925 a/	Oct. 25, 1924	8.99	14,600
1926	Dec. 11, 1925	8.86	14,300
	Dec. 23, 1925	9.14	14,800
1927	Oct. 16, 1926	9.10	14,800
	Dec. 2, 1926	8.84	14,000
	Jan. 1, 1927	8.71	13,700
1928	Nov. 25, 1927	8.40	12,900
	Jan. 4, 1928	8.76	14,000
	Jan. 12, 1928	9.87	17,100
1929	Nov. 13, 1928	7.44	10,300
1930	Feb. 5, 1930	7.95	11,800
1931	Jan. 23, 1931	11.20	21,000
	Jan. 28, 1931	10.80	19,800
1932	Feb. 27, 1932	13.5	28,100
1933	Nov. 13, 1932	9.62	16,300
1934	Dec. 21, 1933	-	35,000
	Jan. 23, 1934	10.70	19,500
	Mar. 2, 1934	8.32	12,400
1935	Oct. 25, 1934	9.40	15,600
	Nov. 5, 1934	14.0	29,700
	Jan. 24, 1935	16.0	36,100
1936	Jan. 4, 1936	9.17	11,200
1937	Dec. 22, 1936	10.79	15,200
1938	Oct. 29, 1937	10.50	14,400
	Nov. 25, 1937	11.06	16,000
	Nov. 27, 1937	9.90	12,900
	Dec. 29, 1937	12.86	21,500
1939	Jan. 1, 1939	14.06	25,400
1940	Dec. 8, 1939	10.90	15,400
	Dec. 15, 1939	12.91	21,500
	Jan. 2, 1940	10.60	14,600
	Feb. 10, 1940	9.65	12,200
1941	Oct. 19, 1940	11.12	16,000
	Jan. 18, 1941	10.80	15,200
1942	December 1941	-	15,500
1943	Apr. 2, 1943	9.97	13,100
1944	Dec. 3, 1943	12.32	19,600
	Jan. 18, 1944	10.67	14,900
1945	Jan. 7, 1945	10.30	13,800
	Jan. 12, 1945	10.02	13,100
	Feb. 8, 1945	14.69	27,500
1946	Nov. 15, 1945	10.37	14,100
	Dec. 29, 1945	9.97	13,100
1947	Dec. 4, 1946	10.33	13,800
	Dec. 11, 1946	10.01	13,100
	Jan. 25, 1947	11.00	15,700

a Maximum for year not determined.

Peak stages and discharges of Quinault River at Quinault Lake, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Feb. 14, 1947	14.63	27,100	1953	Jan. 3, 1953	11.30	17,100
					Jan. 9, 1953	11.74	18,300
1948	Oct. 19, 1947	11.54	17,100		Jan. 12, 1953	12.56	20,700
	Dec. 23, 1947	9.68	12,400		Jan. 16, 1953	10.50	15,000
					Jan. 23, 1953	12.46	20,400
1949	Feb. 23, 1949	10.78	15,200		Jan. 31, 1953	12.29	19,900
1950	Nov. 27, 1949	18.60	42,300	1954	Dec. 12, 1953	11.27	17,000
	Dec. 2, 1949	12.62	20,500		Dec. 20, 1953	9.82	13,200
	Dec. 28, 1949	13.85	24,400		Jan. 6, 1954	10.30	14,400
	Jan. 21, 1950	9.86	12,900		Feb. 17, 1954	9.92	13,500
	Feb. 26, 1950	10.95	15,700		Feb. 20, 1954	10.40	14,700
	Mar. 4, 1950	9.79	12,600				
				1955	Nov. 18, 1954	15.58	30,500
1951	Oct. 10, 1950	9.47	12,400		Feb. 8, 1955	9.87	13,400
	Nov. 27, 1950	11.18	16,800				
	Dec. 10, 1950	10.69	15,500	1956	Oct. 25, 1955	10.46	14,900
	Dec. 22, 1950	9.45	12,200		Nov. 4, 1955	20.51	50,200
	Dec. 24, 1950	11.15	16,800				
	Jan. 26, 1951	10.25	14,200	1957	Oct. 20, 1956	10.87	15,900
	Feb. 10, 1951	17.24	36,700		Dec. 10, 1956	16.10	32,400
					Feb. 26, 1957	13.14	22,400
1952	Jan. 31, 1952	9.11	11,500				

QUEETS RIVER BASIN

400. Clearwater River near Clearwater, Wash.

Location.--Lat 47°35'00", long 124°17'40", in lot 4, NW¼ sec.18, T.24 N., R.12 W., on left bank 1½ miles north of Clearwater and 3 miles upstream from mouth.

Drainage area.--140 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,500 ft.

Gage.--Nonrecording prior to Oct. 1, 1932, at site 600 ft upstream at datum 5.2 ft higher; recording thereafter until October 1949 when discontinued. Crest-stage gage since 1953. Datum of gage is 60.0 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs and extended on basis of slope-area measurements at 28,200 cfs and 21,500 cfs.

Bankfull stage.--21 ft.

Remarks.--Only annual peaks are shown for 1935 and since 1950; from high-water marks in well or crest-stage gage, and computed from rating table based on 2 high-water current-meter measurements. Base for partial-duration series, 10,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1932	Dec. 17, 1931	11.50	11,600	1942	Dec. 2, 1941	12.83	12,600
	Jan. 11, 1932	11.60	13,600				
	Feb. 26, 1932	15.5	21,000	1943	Oct. 31, 1942	12.24	11,200
					Mar. 27, 1943	12.05	10,800
1935	January 1935	20.1	30,400		Apr. 2, 1943	12.00	10,800
1938	Oct. 28, 1937	14.90	17,500	1944	Dec. 2, 1943	14.87	17,500
	Nov. 8, 1937	13.05	13,000		Jan. 16, 1944	12.84	12,600
	Nov. 25, 1937	12.03	10,800				
	Nov. 27, 1937	12.64	12,100	1945	Nov. 8, 1944	12.11	11,000
	Dec. 28, 1937	14.16	15,800		Jan. 7, 1945	14.2	15,800
					Jan. 12, 1945	13.98	15,300
1939	Oct. 12, 1938	12.04	10,800		Feb. 7, 1945	16.8	22,200
	Nov. 16, 1938	12.00	10,800				
	Dec. 30, 1938	13.80	14,800	1946	Oct. 25, 1945	12.62	12,100
	Jan. 1, 1939	14.44	16,300		Nov. 14, 1945	13.27	13,700
	Feb. 11, 1939	14.20	15,800		Feb. 24, 1946	12.76	12,600
					Mar. 26, 1946	12.1	11,000
1940	Dec. 14, 1939	13.88	15,100		Apr. 11, 1946	13.25	13,500
	Dec. 15, 1939	13.22	13,500				
				1947 a/	Dec. 3, 1946	11.99	10,800
1941	Oct. 18, 1940	13.61	14,400				
	Jan. 17, 1941	14.51	16,500	1948	Oct. 2, 1947	13.04	13,000
					Oct. 18, 1947	13.26	13,700
1942	Oct. 9, 1941	13.03	13,000		Dec. 17, 1947	11.96	10,800

a Maximum for year not determined.

Peak stages and discharges of Clearwater River near Clearwater, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Dec. 23, 1947	12.13	11,000	1951	Feb. 10, 1951	17.75	26,500
	Jan. 1, 1948	14.38	16,300	1952	Jan. 30, 1952	13.18	14,600
	Mar. 21, 1948	13.64	14,400	1953	Jan. 31, 1953	15.88	21,500
				1954	Dec. 12, 1953	15.63	20,800
1949	Nov. 28, 1948	-	-	1955	Nov. 18, 1954	19.92	32,600
	Dec. 19, 1948	12.31	11,500				
	Feb. 16, 1949	17.38	23,700	1956	Nov. 3, 1955	b21.53	37,400
	Feb. 22, 1949	14.56	16,700	1957	Dec. 9, 1956	21.22	36,500
1950	Nov. 26, 1949	19.2	28,200				

b Maximum stage known.

405. Queets River near Clearwater, Wash.

Location.--Lat 47°32'20", long 124°18'50", in SW¼ sec.36, T.24 N., R.13 W., on right bank on Quinault Indian Reservation, 2 miles downstream from Clearwater River, and 2¾ miles southwest of Clearwater.

Drainage area.--445 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean altitude, 1,700 ft.

Gage.--Recording prior to 1950; crest-stage gage thereafter. Datum of gage is 14.5 ft above mean sea level (river-profile survey). Prior to Jan. 23, 1935, at datum 4.0 ft higher. Gage heights adjusted to present datum.

Stage-discharge relation.--Defined by current-meter measurements below 31,000 cfs and extended on basis of slope-area measurement at 82,600 cfs.

Bankfull stage.--23.0 ft.

Remarks.--Only annual peaks since 1950.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	Jan. 23, 1931	18.07	47,000	1942	Oct. 9, 1941	17.04	39,700
	Jan. 27, 1931	17.96	46,300		Dec. 2, 1941	18.70	51,200
1932	Nov. 13, 1931	18.29	48,400	1943	Apr. 2, 1943	16.77	38,500
	Dec. 17, 1931	17.25	40,900				
	Jan. 11, 1932	18.52	49,800	1944	Dec. 3, 1943	19.65	58,000
	Feb. 26, 1932	22.30	80,700		Jan. 17, 1944	17.78	44,900
1933	Nov. 12, 1932	18.30	48,400	1945	Nov. 8, 1944	17.50	42,800
	Dec. 2, 1932	17.59	43,500		Jan. 7, 1945	19.18	54,800
	Feb. 25, 1933	17.32	41,500		Jan. 12, 1945	17.48	42,800
					Feb. 7, 1945	22.08	78,900
1934	Dec. 5, 1933	16.84	38,500		Mar. 19, 1945	18.50	49,800
	Dec. 9, 1933	17.58	43,500				
	Dec. 12, 1933	17.64	43,500	1946	Oct. 25, 1945	17.24	40,900
	Dec. 17, 1933	18.63	50,500		Nov. 14, 1945	17.60	43,500
	Dec. 21, 1933	19.20	54,800		Apr. 11, 1946	16.86	39,100
	Jan. 22, 1934	18.56	50,500				
	Mar. 1, 1934	17.76	44,900	1947	Jan. 24, 1947	16.90	39,100
					Jan. 25, 1947	20.02	61,200
1935	Nov. 5, 1934	20.85	67,600		Feb. 2, 1947	17.81	44,900
	Jan. 22, 1935	27.0	130,400		Feb. 13, 1947	18.50	49,800
1936	Jan. 4, 1936	16.81	38,500	1948	Oct. 18 or 19, 1947	20.42	64,400
					Mar. 21, 1948	17.20	40,900
1937	Dec. 22, 1936	17.80	44,900				
				1949	Nov. 28, 1948	18.95	53,300
1938	Oct. 28, 1937	19.90	60,400		Dec. 1, 1948	19.10	54,000
	Nov. 8, 1937	17.79	44,900		Feb. 17, 1949	20.15	62,800
	Nov. 25, 1937	17.00	39,700		Feb. 22, 1949	19.17	54,800
	Nov. 27, 1937	17.24	40,900				
	Dec. 28, 1937	20.50	65,200	1950	Nov. 26, 1949	23.57	93,000
1939	Dec. 30, 1938	17.13	40,300	1951	Feb. 10, 1951	22.90	86,100
	Jan. 1, 1939	20.29	63,600	1952	Jan. 30, 1952	17.92	45,700
	Feb. 12, 1939	17.61	43,500	1953	Jan. 31, 1953	20.40	64,400
				1954	Jan. 5, 1954	20.28	63,400
1940	Dec. 14, 1939	18.59	50,500	1955	Nov. 18, 1954	23.60	93,000
	Dec. 15, 1939	19.19	54,800				
				1956	Nov. 3, 1955	25.99	118,400
1941	Oct. 18, 1940	18.21	47,700	1957	Dec. 9, 1956	25.08	108,400
	Jan. 17, 1941	19.56	58,000				

410. Hoh River near Spruce, Wash.

Location.--Lat 47°48'20", long 124°06'20", in sec.34, T.27 N., R.11 W., on left bank 1 mile downstream from Maple Creek, 2¼ miles west of Spruce, and 5 miles downstream from South Fork.

Drainage area.--208 sq mi. Area of lakes and ponds, 0.21 sq mi; mear altitude, 3,000 ft.

Gage.--Recording. Altitude of gage is 320 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs and extended on basis of slope-area measurement at 38,700 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 10,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Oct. 16, 1926	12.6	15,600	1940	Dec. 1, 1939	10.39	10,400
	Dec. 1, 1926	11.12	12,000		Dec. 7, 1939	11.68	12,900
	Dec. 30, 1926	11.32	12,400		Dec. 8, 1939	11.84	13,100
	Jan. 1, 1927	10.70	11,100		Dec. 14, 1939	11.94	13,300
					Dec. 15, 1939	15.08	20,700
1928	Oct. 18, 1927	11.96	14,200		Jan. 2, 1940	10.36	10,400
	Nov. 24, 1927	10.70	11,300		May 1, 1940	10.28	10,200
	Jan. 3, 1928	11.40	12,800				
	Jan. 5, 1928	10.18	10,200	1941	Oct. 10, 1940	10.15	10,100
	Jan. 12, 1928	13.13	16,800		Oct. 18, 1940	12.90	15,300
	Mar. 22, 1928	10.29	10,400		Oct. 19, 1940	12.32	14,100
					Jan. 17, 1941	13.24	16,000
1929	Oct. 8, 1928	11.04	11,900				
				1942	Oct. 9, 1941	11.74	12,900
1930	Dec. 22, 1929	10.42	10,600		Nov. 13, 1941	10.15	10,100
	Feb. 4, 1930	10.87	11,700		Nov. 30, 1941	10.17	10,100
	Feb. 18, 1930	10.96	11,900		Dec. 2, 1941	15.48	21,800
					Dec. 18, 1941	10.64	10,800
1931	Jan. 22, 1931	14.12	19,400				
	Jan. 27, 1931	12.32	14,900	1943	Oct. 31, 1942	10.68	11,000
	Feb. 18, 1931	10.74	11,300		Apr. 2, 1943	10.38	10,400
1932	Nov. 6, 1931	11.22	12,400	1944	Dec. 3, 1943	13.85	17,400
	Nov. 13, 1931	11.32	12,600		Jan. 17, 1944	11.38	12,300
	Dec. 19, 1931	10.36	10,600				
	Jan. 11, 1932	11.38	12,800	1945	Nov. 8, 1944	11.27	12,100
	Feb. 26, 1932	15.4	22,800		Dec. 5, 1944	10.28	10,200
					Feb. 7, 1945	-	31,200
1933	Nov. 12, 1932	13.36	17,600				
	Dec. 2, 1932	12.00	14,200	1946	Nov. 15, 1945	9.79	9,580
	Jan. 8, 1933	10.41	10,600				
				1947	Dec. 3, 1946	10.32	10,500
1934	Oct. 24, 1933	10.68	11,300		Dec. 11, 1946	10.32	10,500
	Oct. 28, 1933	10.45	10,600		Jan. 24, 1947	10.63	11,100
	Nov. 2, 1933	13.02	16,600		Jan. 25, 1947	10.78	11,500
	Dec. 5, 1933	11.53	11,700		Feb. 13, 1947	12.79	15,700
	Dec. 21, 1933	17.3	28,600				
	Jan. 22, 1934	12.88	16,800	1948	Oct. 18, 1947	14.39	19,400
	Mar. 1, 1934	10.33	10,400		Dec. 16, 1947	10.70	11,300
					Dec. 18, 1947	10.20	10,300
1935	Oct. 24, 1934	11.90	14,000		Dec. 23, 1947	11.15	12,300
	Nov. 5, 1934	21.2	36,100		Jan. 1, 1948	10.55	11,100
	Dec. 21, 1934	10.56	11,100				
	Jan. 22, 1935	16.05	25,000	1949	Dec. 1, 1948	10.54	11,200
	Jan. 24, 1935	15.75	24,400		Feb. 22, 1949	10.86	12,200
1936	Jan. 4, 1936	9.75	9,840	1950	Nov. 25, 1949	10.41	10,900
					Nov. 26, 1949	a22.2	38,700
1937	Dec. 18, 1936	10.52	11,400		Dec. 1, 1949	13.78	18,300
	Dec. 22, 1936	12.23	15,000		Dec. 28, 1949	13.80	18,300
	Apr. 14, 1937	10.32	10,900		Feb. 26, 1950	13.18	16,900
1938	Oct. 28, 1937	15.36	21,500	1951	Oct. 10, 1950	10.88	12,000
	Nov. 8, 1937	12.04	13,200		Nov. 25, 1950	11.36	13,000
	Nov. 25, 1937	12.12	13,400		Dec. 9, 1950	10.95	12,200
	Nov. 27, 1937	11.21	11,600		Dec. 24, 1950	11.21	12,600
	Dec. 28, 1937	15.24	21,000		Jan. 25, 1951	11.48	13,200
					Feb. 10, 1951	15.17	22,400
1939	Oct. 12, 1938	10.34	10,200				
	Dec. 4, 1938	10.66	11,000	1952	Oct. 19, 1951	9.78	10,600
	Dec. 30, 1938	10.18	10,100		Nov. 27, 1951	9.50	10,000
	Jan. 1, 1939	14.92	20,200		Nov. 30, 1951	9.71	10,400

a Maximum stage known since at least 1891.

Peak stages and discharges of Hoh River near Spruce, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Jan. 30, 1952	10.2	11,400	1954	Feb. 19, 1954	11.21	13,400
					Feb. 21, 1954	-	-
1953	Dec. 12, 1952	10.74	12,500				
	Jan. 2, 1953	12.70	16,400	1955	Oct. 8, 1954	9.50	10,000
	Jan. 9, 1953	12.26	15,500		Nov. 18, 1954	16.57	25,800
	Jan. 12, 1953	12.37	15,700		Nov. 26, 1954	9.83	10,700
	Jan. 15, 1953	10.51	12,000		Feb. 7, 1955	10.91	12,800
	Jan. 23, 1953	11.95	14,900				
	Jan. 31, 1953	12.95	16,900	1956	Oct. 25, 1955	12.30	15,600
	Sept.30, 1953	9.58	10,200		Oct. 29, 1955	10.14	11,300
					Nov. 3, 1955	19.70	33,600
1954	Oct. 31, 1953	11.40	13,800				
	Dec. 9, 1953	11.28	13,600	1957	Oct. 17, 1956	11.01	13,000
	Dec. 11, 1953	13.16	17,300		Oct. 20, 1956	13.40	17,900
	Dec. 20, 1953	11.02	13,000		Dec. 9, 1956	16.80	26,400
	Jan. 2, 1954	-	-		Feb. 24, 1957	13.16	17,300
	Jan. 5, 1954	13.28	17,600		Feb. 26, 1957	11.88	14,800
	Feb. 17, 1954	-	-				

QUILLAYUTE RIVER BASIN

415. Soleduck River near Fairholm, Wash.

Location.--Lat 48°02'40", long 123°57'35", in lot 4, SW¼ sec.35, T.30 N., R.10 W., on right bank 300 ft downstream from South Fork, 2.5 miles southwest of Fairholm, and 17 miles east of Beaver.

Drainage area.--83.8 sq mi. Area of lakes and ponds, 0.40 sq mi; mean altitude, 2,900 ft.

Gage.--Recording. Altitude of gage is 1,060 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	Dec. 14, 1917	8.98	8,100	1939	Jan. 1, 1939	9.73	9,430
	Dec. 16, 1917	11.7	13,400				
	Dec. 18, 1917	12.9	15,800	1940	Dec. 15, 1939	9.74	9,430
	Dec. 22, 1917	8.00	6,330				
	Dec. 29, 1917	12.35	14,800	1941	Jan. 17, 1941	8.97	8,100
	Dec. 31, 1917	8.84	7,740				
	Feb. 10, 1918	8.20	6,670	1942	Dec. 2, 1941	9.48	9,050
1919	Oct. 27, 1918	8.49	7,200	1943	Nov. 23, 1942	7.04	4,710
	Dec. 4, 1918	11.6	13,200				
	Dec. 13, 1918	10.68	11,400	1944	Dec. 3, 1943	8.17	6,670
	Jan. 18, 1919	8.65	7,380				
	Jan. 23, 1919	8.26	6,840	1945	Jan. 7, 1945	8.82	7,740
					Feb. 7, 1945	12.34	14,600
1920	Nov. 15, 1919	10.0	10,000				
				1946	Nov. 14, 1945	8.00	6,330
1921	Oct. 3, 1920	9.85	9,620				
	Jan. 14, 1921	8.20	6,670	1947	Feb. 13, 1947	8.60	7,380
	Feb. 11, 1921	10.7	11,400				
	Sept.26, 1921	8.40	7,020	1948	Oct. 18, 1947	8.89	7,920
1934	Dec. 5, 1933	8.55	7,380	1949	Dec. 1, 1948	7.02	4,810
	Dec. 12, 1933	8.54	7,200				
	Dec. 21, 1933	14.9	19,800	1950	Nov. 26, 1949	16.42	23,500
	Jan. 22, 1934	9.30	8,670		Dec. 1, 1949	9.47	9,150
					Dec. 28, 1949	9.40	8,980
1935	Nov. 5, 1934	14.4	18,800		Feb. 26, 1950	8.93	8,130
	Jan. 21, 1935	11.48	13,000				
	Jan. 24, 1935	12.20	14,400	1951	Jan. 25, 1951	7.97	6,670
					Feb. 9, 1951	10.40	10,800
1936	Jan. 4, 1936	6.48	3,960				
				1952	Jan. 30, 1952	6.76	4,740
1937	Dec. 22, 1936	9.26	8,670				
				1953	Dec. 12, 1952	7.64	6,090
1938	Oct. 28, 1937	9.16	8,480		Jan. 2, 1953	8.87	8,080
	Dec. 28, 1937	11.06	12,200		Jan. 9, 1953	9.20	8,640

Peak stages and discharges of Soleduck River near Fairholm Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Jan. 12, 1953	8.10	6,830	1956	Nov. 3, 1955	14.25	18,000
	Jan. 31, 1953	8.15	6,910	1957	Oct. 19, 1956	8.78	7,920
1954	Dec. 11, 1953	8.35	7,230		Dec. 9, 1956	13.40	16,300
	Jan. 5, 1954	8.87	8,080		Feb. 24, 1957	9.76	9,490
1955	Nov. 17, 1954	10.57	10,800		Feb. 26, 1957	7.98	6,640
	Feb. 7, 1955	7.60	6,030				

420. Soleduck River at Snider ranger station, near Beaver, Wash.

Location.--Lat 48°04'00", long 124°07'00", in E½ sec.28, T.30 N., R.11 W., on right bank 1,250 ft upstream from Snider ranger station, 4 miles downstream from Camp Creek, 9 miles downstream from South Fork, and 11 miles east of Beaver.

Drainage area.--116 sq mi.

Gage.--Nonrecording. Nov. 13 to Dec. 16, 1921, at site 250 ft upstream. Altitude of gage is 730 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,600 cfs and extended by logarithmic plotting.

Remarks.--Peaks are from graphs based on gage readings. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1922	Dec. 12, 1921	14.7	23,500	1925	Feb. 3, 1925	8.4	7,430
1923	Dec. 24, 1922	10.3	11,800				
1924	Jan. 31, 1924	11.8	15,600	1928	Jan. 12, 1928	8.4	7,430

427. May Creek near Forks, Wash.

Location.--Lat 47°52'55", long 124°21'00", in SW¼ sec.35, T.28 N., R.13 W., at U.S. Highway 101, 5.0 miles south of Forks.

Drainage area.--2.03 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 650 ft.

Gage.--Crest-stage gage. Datum of gage is 14.98 ft below upstream invert of left culvert.

Stage-discharge relation.--Defined by computations of discharge through two concrete box culverts.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Dec. 28, 1949	23.75	475	1954	Feb. 17-21, 1954	22.62	428
				1955	Nov. 18, 1954	27.96	624
1951	Feb. 10, 1951	22.87	439				
1952	Jan. 30, 1952	19.62	278	1956	Nov. 3, 1955	26.02	554
1953	Jan. 2, 1953	22.60	427	1957	Dec. 9, 1956	27.82	617

429. Grader Creek near Forks, Wash.

Location.--Lat 47°55'40", long 124°24'25", in SW¼ sec.17, T.28 N., R.13 W., at U.S. Highway 101, 2.0 miles southwest of Forks.

Drainage area.--1.67 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 530 ft.

Gage.--Crest-stage gage. Datum of gage is 16.13 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computation of discharge through a 10- by 10-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 26, 1949	20.94	235	1954	Feb. 19, 1954	20.58	288
				1955	Nov. 18, 1954	21.98	407
1951	Feb. 10, 1951	20.49	265				
1952	Nov. 30, 1951	19.94	210	1956	Nov. 3, 1955	22.48	503
1953	Jan. 31, 1953	21.04	335	1957	Dec. 9, 1956	22.98	520

LYRE RIVER BASIN

434.5. Cross Creek near Fairholm, Wash.

Location.--Lat 48°03'20", long 123°52'35", in NE¼ sec.31, T.30 N., R.9 W., at U.S. Highway 101, 2.1 miles east of Fairholm.

Drainage area.--0.92 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,110 ft.

Gage.--Crest-stage gage. Datum of gage is 13.46 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 6- by 6-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 26, 1949	16.74	112	1954	Jan. 5, 1954	15.50	55.0
				1955	Nov. 18, 1954	14.75	27.1
1951	Feb. 9, 1951	15.60	59.7				
1952	Nov. 27, 1951	14.37	15.8	1956	Nov. 3, 1955	18.37	208
1953	Jan. 9, 1953	15.00	36.0				

440. Lyre River at Piedmont, Wash.

Location.--Lat 48°05'35", long 123°47'30", in NE¼ sec.14, T.30 N., R.9 W., on north shore of Crescent Lake, on dock at Log Cabin Hotel at Piedmont, and half a mile upstream from lake outlet.

Drainage area.--49.5 sq mi. Area of lakes and ponds, 8.11 sq mi; mean altitude, 2,190 ft.

Gage.--Recording gage Oct. 15, 1917, to Oct. 16, 1922, and Oct. 1, 1923, to Dec. 16, 1925, at site three-quarters of a mile downstream at different datums; nonrecording thereafter. Altitude of gage is 580 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 640 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Peaks for 1923, 1926, and 1927 are from Lake Crescent gage. Lake gage-height record furnished by Northwestern Power & Manufacturing Co. Base for partial-duration series, 400 cfs.

Peak stages and discharges of Lyre River at Piedmont, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	Jan. 4, 1918	5.91	1,080	1923	Jan. 11, 1923	3.42	1,180
	Feb. 12, 1918	4.58	701	1924	Dec. 18, 1923	6.10	485
	Mar. 25, 1918	4.05	548		Feb. 12, 1924	8.31	862
1919	Dec. 14, 1918	7.04	692	1925	Nov. 8, 1924	7.57	530
	Jan. 27, 1919	-	-		Nov. 22, 1924	7.58	541
1920	Jan. 30, 1920	4.81	320		Feb. 5, 1925	8.88	827
1921	Jan. 15, 1921	6.41	580	1926	Feb. 10, 1926	1.46	376
	Feb. 14, 1921	7.12	718	1927	Jan. 3,4, 1927	2.00	560
1922	Oct. 31, 1921	5.96	527		Feb. 22-28,1927	1.65	420
	Dec. 13, 1921	8.45	985				

ELWHA RIVER BASIN

455. Elwha River at McDonald Bridge, near Port Angeles, Wash.
(Published as "Elwha River at McDonald", 1897-1901)

Location.--Lat 48°03'20", long 123°34'55", in NE¼NW¼ sec.33, T.30 N., R.7 W., on right bank 300 ft upstream from site of McDonald Bridge (now removed), half a mile upstream from Little River, 7 miles upstream from mouth, and 8 miles southwest of Port Angeles.

Drainage area.--269 sq mi. Area of lakes and ponds, 0.62 sq mi; mean altitude, 3,700 ft.

Gage.--Nonrecording prior to Dec. 9, 1918, at different datum; recording thereafter. At McDonald Bridge prior to May 2, 1936. At datum 7.4 ft higher Dec. 9, 1918, to May 1, 1936. Datum of gage is 200.00 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 27,000 cfs and extended on basis of measurements of peak flow over dam.

Bankfull stage.--Not subject to overflow.

Remarks.--Partial regulation by Lake Mills on Elwha River since 1927. Total capacity, 37,790 acre-ft at gage height 608 ft (top of gates). Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1898	Nov. 18, 1897	14.5	41,600	1936	Jan. 4, 1936	5.47	4,680
1899	Feb. 16, 1899	6.1	5,820	1937	Dec. 22, 1936	16.10	8,870
1900	Mar. 11, 1900	12.6	30,200	1938	Dec. 28, 1937	19.6	18,600
				1939	Jan. 1, 1939	19.00	17,100
1901	Dec. 20, 1900	10.7	20,600	1940	Dec. 15, 1939	18.44	15,600
1902	Nov. 27, 1901	13.2	33,600				
				1941	Jan. 17, 1941	16.29	10,800
1920	Nov. 15, 1919	6.7	11,000	1942	Dec. 2, 1941	19.05	17,100
				1943	Apr. 2, 1943	14.20	6,770
1921	Feb. 11, 1921	6.9	11,700	1944	Dec. 3, 1943	15.93	10,000
1922	Dec. 12, 1921	9.4	21,400	1945	Feb. 7, 1945	17.70	14,000
1923	Dec. 24, 1922	6.3	9,880				
1924	Jan. 31, 1924	7.7	14,200	1946	Dec. 28, 1945	13.68	5,910
1925	Nov. 19, 1924	6.1	9,500	1947	Feb. 13, 1947	17.48	13,000
				1948	Oct. 18, 1947	19.31	18,000
1926	Dec. 11, 1925	5.15	6,550	1949	Nov. 28, 1948	13.40	5,370
1927	Dec. 2, 1926	5.7	7,600	1950	Nov. 26, 1949	24.20	30,000
1928	Jan. 12, 1928	6.9	10,700				
1929	Oct. 9, 1928	6.65	9,800	1951	Feb. 9, 1951	17.87	14,300
1930	Feb. 18, 1930	5.7	7,150	1952	Oct. 19, 1951	13.08	5,380
				1953	Jan. 31, 1953	16.41	11,100
1931	Jan. 23, 1931	7.3	12,100	1954	Dec. 11, 1953	15.75	9,820
1932	Feb. 26, 1932	8.37	16,200	1955	Nov. 18, 1954	17.90	14,300
1933	Nov. 12, 1932	7.3	12,100				
1934	Dec. 21, 1933	10.5	26,700	1956	Nov. 3, 1955	20.91	21,400
1935	Nov. 5, 1934	10.17	25,200	1957	Dec. 9, 1956	21.20	22,100

468. East Valley Creek at Port Angeles, Wash.

Location.--Lat 48°06'10", long 123°26'20", in SW¼ sec.15, T.30 N., R. 6 W., at Hister Road, three-quarters of a mile south of city limits of Port Angeles.

Drainage area.--0.69 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,110 ft.

Gage.--Crest-stage gage. Datum of gage is 24.16 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 2-foot concrete pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Feb. 24, 1950	28.52	31.7	1954	Jan. 5, 1954	30.04	38.0
				1955	Feb. 7, 1955	27.70	27.5
1951	Feb. 10, 1951	26.21	15.0				
1952	Dec. 18, 1951	25.48	7.0	1956	Nov. 3, 1955	28.96	23.1
1953	Jan. 8, 1953	26.28	15.7	1957	Dec. 9, 1956	28.26	30.4

LEES CREEK BASIN

471. Lees Creek at Port Angeles, Wash.

Location.--Lat 48°06'20", long 123°22'55", in SE¼ sec.12, T.30 N., R.6 W., at U.S. Highway 101, 1 mile east of Port Angeles city limits.

Drainage area.--4.77 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 780 ft.

Gage.--Crest-stage gage. Datum of gage is 7.54 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 4.1- by 6-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 16, 1949	16.62	316	1954	Jan. 5, 1954	14.24	205
1950	Feb. 25, 1950	11.70	98.8	1955	Feb. 7, 1955	13.10	157
1951	Feb. 9, 1951	11.67	99.0	1956	Nov. 3, 1955	12.03	114
1952	Dec. 5, 1951	10.82	70.0	1957	Dec. 9, 1956	12.78	141
1953	Jan. 31, 1953	11.42	90.8				

SIEBERT CREEK BASIN

475. Siebert Creek near Port Angeles, Wash.

Location.--Lat 48°05'35", long 123°17'00", in SE¼ sec.14, T.30 N., R.5 W., on left bank 2½ miles upstream from mouth and 6½ miles east of Port Angeles.

Drainage area.--17.2 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,550 ft.

Gage.--Recording. Prior to Jan. 10, 1957, at site 200 ft upstream at datum 0.76 ft higher. Altitude of gage is 225 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 260 cfs and extended on basis of computations of peak flow through culvert, at 487 cfs and 1,400 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 300 cfs.

Peak stages and discharges of Siebert Creek near Port Angeles, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Jan. 9, 1953	3.45	303	1955	Feb. 7, 1955	4.23	480
1954	Jan. 2, 1954	3.74	375	1956	Nov. 3, 1955	9.50	1,620
	Jan. 5, 1954	8.12	1,400		Dec. 22, 1955	6.35	313
	Feb. 6, 1954	-	-		Mar. 23, 1956	5.61	438
	Feb. 13, 1954	5.12	735				
	Feb. 17, 1954	3.99	364	1957	Dec. 9, 1956	9.83	1,230
	Feb. 19, 1954	4.16	428		Feb. 24, 1957	4.66	1,000

DUNGENESS RIVER BASIN

480. Dungeness River near Sequim, Wash.

Location.--Lat 48°00'55", long 123°07'50", in SW¼SE¼ sec.12, T.29 N., R.4 W., on right bank three-quarters of a mile upstream from Canyon Creek, 4½ miles southwest of Sequim, and 11½ miles upstream from mouth.

Drainage area.--156 sq mi. Area of lakes and ponds, 0.09 sq mi; mean altitude, 4,500 ft.

Gage.--Nonrecording gage prior to Oct. 1, 1930, just above fish-hatchery diversion half a mile downstream at different datum; recording thereafter. Datum of gage is 569.3 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs and extended on basis of slope-area measurement at 7,120 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 1,700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	Dec. 6, 1923	4.7	2,080	1948	Oct. 19, 1947	5.65	2,790
	Jan. 31, 1924	6.9	5,530		Dec. 23, 1947	5.15	1,830
	Feb. 11, 1924	7.0	6,340		May 28, 1948	5.59	2,530
1925	Nov. 19, 1924	4.6	3,120	1949	Dec. 1, 1948	5.73	2,820
					Feb. 16, 1949	5.52	2,380
1926	Dec. 23, 1925	3.0	740		Feb. 22, 1949	5.31	2,060
1927	Dec. 1, 1926	4.3	2,860	1950	Nov. 27, 1949	7.3	6,820
	Jan. 2, 1927	3.40	1,820		Dec. 1, 1949	5.31	2,310
	June 8, 1927	3.30	1,710		Dec. 28, 1949	4.92	1,750
					Feb. 26, 1950	5.35	2,340
1928	Jan. 12, 1928	3.45	1,400				
				1951	Nov. 26, 1950	5.57	2,730
1929	June 15, 1929	2.90	1,000		Dec. 10, 1950	5.23	2,080
					Dec. 24, 1950	5.29	2,230
1930	Feb. 20, 1930	3.20	920		Feb. 9, 1951	6.53	4,600
1938	Oct. 28, 1937	5.10	1,830	1952	Apr. 30, 1952	5.35	1,860
	Dec. 28, 1937	6.85	5,380				
				1953	Jan. 2, 1953	5.48	2,190
1939	Jan. 1, 1939	6.17	3,850		Jan. 9, 1953	5.49	2,200
					Jan. 12, 1953	5.65	2,480
1940	Dec. 8, 1939	5.15	1,940		Jan. 31, 1953	5.48	2,190
	Dec. 15, 1939	6.27	4,010				
	Jan. 2, 1940	5.29	2,160	1954	Dec. 11, 1953	5.46	2,160
					Jan. 5, 1954	6.36	3,990
1941	Jan. 17, 1941	5.47	2,400		Feb. 13, 1954	5.46	2,160
					Feb. 19, 1954	5.18	1,730
1942	Dec. 2, 1941	6.28	4,120		Feb. 21, 1954	5.27	1,860
1943	May 26, 1943	4.39	1,010	1955	Nov. 18, 1954	6.18	3,570
1944	Dec. 3, 1943	4.84	1,520	1956	Nov. 3, 1955	7.28	6,750
					June 3, 1956	4.97	1,820
1945	Feb. 7, 1945	5.96	3,380		June 10, 1956	5.00	1,860
1946	June 14, 1946	4.57	1,200	1957	Dec. 9, 1956	6.36	4,270
					Feb. 24, 1957	5.87	3,220
1947	Feb. 2, 1947	4.98	1,730		May 18, 1957	5.02	1,830
	Feb. 12, 1947	5.48	2,530				

494. Dean Creek at Blyn, Wash.

Location.--Lat 48°01'30", long 123°00'35", in NW¼ sec.12, T.29 N., R.3 W., at old highway, 50 ft east of U.S. Highway 101 and at the west edge of Blyn.

Drainage area.--3.44 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,490 ft.

Gage.--Crest-stage gage. Datum of gage is 5.90 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 5-foot concrete pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 22, 1949	8.68	47.3	1954	Feb. 13, 1954	8.60	45.0
1950	Feb. 25, 1950	8.18	33.2	1955	Feb. 8, 1955	8.31	34.0
1951	Dec. 24, 1950	8.26	35.1	1956	Mar. 3, 1956	8.67	49.1
1952	Dec. 5, 1951	8.16	32.3	1957	Feb. 24, 1957	10.32	108
1953	Jan. 8, 1953	7.70	21.4				

CHIMACUM CREEK BASIN

515. Chimacum Creek near Chimacum, Wash.

Location.--Lat 47°58'25", long 122°46'35", in SW¼ sec.26, T.29 N., R.1 W., on right bank 100 ft downstream from culvert, 3 miles south of Chimacum, and 3¼ miles upstream from mouth of East Fork.

Drainage area.--12.6 sq mi. Area of lakes and ponds, 0.90 sq mi; mean altitude, 412 ft.

Gage.--Recording. Altitude of gage is 140 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 150 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 90 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Dec. 7, 1952	3.86	91	1956	Dec. 21, 1955	5.19	180
	Dec. 30, 1952	4.01	99		Dec. 25, 1955	5.34	192
	Jan. 9, 1953	4.07	102		Jan. 6, 1956	5.69	222
					Jan. 9, 1956	4.28	117
1954	Jan. 6, 1954	4.83	146		Jan. 15, 1956	4.06	104
	Feb. 13, 1954	5.54	213		Feb. 20, 1956	3.97	98
	Feb. 17, 1954	4.65	150		Mar. 3, 1956	4.13	108
	Feb. 21, 1954	3.72	94				
				1957	Feb. 26, 1957	5.01	167
1955	Nov. 19, 1954	3.80	96		Mar. 15, 1957	4.29	119
	Dec. 6, 1954	3.67	90				
	Apr. 12, 1955	4.23	125				

520. Little Quilcene River near Quilcene, Wash.

Location.--Lat 47°50'15", long 122°53'15", in NE¼ sec.14, T.27 N., R.2 W., on left bank 60 ft downstream from bridge on U.S. Highway 101, 1¼ miles northwest of Quilcene, and 1½ miles upstream from mouth.

Drainage area.--19.6 sq mi. Area of lakes and ponds, 0.04 sq mi; mean altitude, 2,170 ft.

Gage.--Nonrecording gage prior to Oct. 5, 1947, at site 120 ft upstream at different datum; recording thereafter. Altitude of gage is 90 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 600 cfs and extended by logarithmic plotting.

Bankfull stage.--10 ft.

Remarks.--Maximum for 1927 water year is from graph based on gage readings. Base for partial-duration series, 500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	Jan. 2, 1927	3.1	271	1954	Feb. 13, 1954	-	820
					Feb. 17, 1954	3.84	643
1952	Feb. 1, 1952	3.89	542				
	Apr. 30, 1952	4.10	565	1955	Nov. 19, 1954	3.22	407
1953	Jan. 9, 1953	4.01	524	1956	Jan. 5, 1956	3.60	545
1954	Jan. 5, 1954	4.33	695	1957	Feb. 24, 1957	3.54	480

QUILCENE RIVER BASIN

527. Penny Creek near Quilcene, Wash.

Location.--Lat 47°48'40", long 122°54'50", in SE¼ sec.22, T.27 N., R.2 W., 1,000 ft west of the Big Quilcene River bridge at U.S. Highway 101 and 2 miles southwest of Quilcene.

Drainage area.--6.78 sq mi. Area of lakes and ponds, 0.07 sq mi; mean altitude, 1,450 ft.

Gage.--Crest-stage gage above concrete dam. Datum of gage is 8.02 ft below crest of dam.

Stage-discharge relation.--Defined by computations of flow over dam.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 22, 1949	10.29	332	1954	Feb. 13, 1954	11.64	456
1950	Feb. 25, 1950	9.97	232	1955	Nov. 18, 1954	10.68	191
1951	Dec. 16, 1950	10.65	352	1956	Jan. 6, 1956	11.36	348
1952	Nov. 27, 1951	11.18	376	1957	Feb. 24, 1957	10.87	281
1953	Jan. 9, 1953	10.38	223				

530. Dosewallips River near Brinnon, Wash.

Location.--Lat 47°43'35", long 123°00'30", in SW¼ sec.24, T.26 N., R.3 W., on left bank half a mile upstream from Corrigenda ranger station, 5½ miles northwest of Brinnon, and 7½ miles upstream from mouth.

Drainage area.--93.5 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 4,700 ft.

Gage.--Recording prior to October 1949; crest-stage gage thereafter. Altitude of gage is 295 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 4,500 cfs and extended on basis of slope-area measurement at 13,200 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Only annual peaks since 1950. Base for partial-duration series, 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	Jan. 23, 1931	6.70	4,860	1941	Oct. 20, 1940	6.06	3,400
	Jan. 28, 1931	5.34	2,400		Oct. 23, 1940	5.80	2,990
					Jan. 17, 1941	5.70	2,830
1932	Nov. 6, 1931	5.23	2,260				
	Dec. 19, 1931	5.15	2,260	1942	Nov. 13, 1941	5.72	2,830
	Feb. 26, 1932	6.74	4,790		Nov. 30, 1941	5.98	3,310
					Dec. 2, 1941	7.64	6,370
1933	Nov. 13, 1932	6.30	4,050				
	June 14, 1933	5.16	2,200	1943	Apr. 2, 1943	4.62	1,580
1934	Nov. 2, 1933	6.54	4,310	1944	Dec. 3, 1943	5.99	3,410
	Dec. 12, 1933	5.90	3,210				
	Dec. 21, 1933	7.42	5,980	1945	Jan. 7, 1945	5.16	2,230
	Dec. 29, 1933	5.16	2,160		Feb. 7, 1945	6.91	4,950
	Jan. 23, 1934	5.50	2,620				
	May 4, 1934	5.05	2,040	1946	June 14, 1946	4.76	1,780
1935	Oct. 24, 1934	5.98	3,370	1947	Dec. 4, 1946	5.09	2,170
	Oct. 31, 1934	5.47	2,550		Feb. 12, 1947	6.14	3,650
	Nov. 5, 1934	9.57	10,900		Feb. 13, 1947	5.94	3,340
	Nov. 14, 1934	5.54	2,690				
	Jan. 25, 1935	7.26	5,780	1948	Oct. 18, 1947	7.27	5,740
					Dec. 23, 1947	4.99	2,040
1936	June 16, 1936	5.35	2,460		May 28, 1948	5.34	2,480
1937	Dec. 22, 1936	4.96	1,980	1949	May 12, 1949	4.81	1,830
1938	Oct. 28, 1937	6.20	3,700	1950	Nov. 26, 1949	9.92	13,200
	Nov. 8, 1937	5.12	2,150				
	Nov. 25, 1937	5.52	2,670	1951	Feb. 9, 1951	6.36	3,990
	Dec. 28, 1937	6.30	3,870	1952	Apr. 30, 1952	5.15	2,230
				1953	Jan. 9, 1953	5.86	3,200
1939	Jan. 1, 1939	6.50	4,220	1954	Nov. 13, 1953	5.88	3,230
	May 28, 1939	5.17	2,210	1955	Nov. 19, 1954	7.10	5,330
1940	Dec. 8, 1939	6.56	4,310	1956	Nov. 3, 1955	8.26	8,050
	Dec. 10, 1939	5.46	2,600	1957	Dec. 9, 1956	7.15	5,430
	Dec. 15, 1939	6.50	4,220				
	Jan. 1, 1940	5.96	3,300				

534. Dosewallips River tributary near Brinnon, Wash.

Location.--Lat 47°43'00", long 122°56'20", in NW¼ sec.28, T.26 N., R.2 W., at the Dosewallips River road, 2.9 miles from U.S. Highway 101 and 3¼ miles northwest of Brinnon.

Drainage area.--0.55 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,770 ft.

Gage.--Crest-stage gage. Datum of gage is 4.15 ft below upstream invert of culvert. Prior to November 1954, crest-stage gage at site 8 ft upstream at same datum.

Stage-discharge relation.--Defined by computations of discharge through a 4-foot concrete pipe culvert.

Remarks.--Prior to November 1954, upstream invert of culvert was 1.53 ft higher. Only annual peaks are shown.

Peak stages and discharges of Dosewallips River tributary near Brinnon, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 10, 1951	8.76	52.0	1955	Nov. 19, 1954	7.16	53.0
1952	Jan. 30, 1952	7.94	30.0				
1953	Jan. 9, 1953	7.74	25.5	1956	Jan. 5, 1956	6.98	47.0
1954	Feb. 13, 1954	8.82	53.2	1957	Feb. 24, 1957	7.33	57.3

DUCKABUSH RIVER BASIN

540. Duckabush River near Brinnon, Wash.
(Published as "near Duckabush", 1910-11)

Location.--Lat 47°41'00", long 123°00'40", in SW¼SW¼ sec.1, T.25 N., R.3 W., on left bank 4½ miles upstream from mouth and 5 miles west of Brinnon.

Drainage area.--66.5 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 4,100 ft.

Gage.--Recording. Datum of gage is 241.49 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 4,300 cfs and extended on basis of slope-area measurement at 8,480 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	Oct. 30, 1938	6.04	3,300	1948	Oct. 18 or 19, 1947	7.90	5,970
	Jan. 1, 1939	7.31	4,960		Oct. 31, 1947	5.73	2,900
					Dec. 23, 1947	5.74	2,900
1940	Dec. 7, 1939	7.95	5,940				
	Dec. 8, 1939	7.99	5,940	1949	Mar. 19, 1949	5.37	2,410
	Dec. 10, 1939	6.63	4,050				
	Dec. 15, 1939	8.07	6,080	1950	Nov. 26, 1949	10.06	8,960
	Jan. 2, 1940	7.24	4,750		Dec. 1, 1949	6.90	3,890
					Feb. 26, 1950	6.55	3,500
1941	Oct. 20, 1940	6.59	3,910				
	Oct. 23, 1940	7.22	4,750	1951	Feb. 9, 1951	7.21	4,190
	Dec. 19, 1940	5.97	3,070				
	Jan. 17, 1941	6.78	4,190	1952	Apr. 30, 1952	6.17	2,940
	May 17, 1941	5.66	2,880				
				1953	Jan. 2, 1953	6.45	3,140
1942	Nov. 13, 1941	6.77	4,310		Jan. 9, 1953	6.53	3,240
	Nov. 30, 1941	6.16	3,540		Jan. 12, 1953	6.35	3,040
	Dec. 2, 1941	8.07	6,080				
	Dec. 16, 1941	5.60	2,820	1954	Nov. 13, 1953	6.80	3,560
					Feb. 13, 1954	5.94	2,590
1943	Apr. 2, 1943	5.50	2,700		Feb. 17, 1954	5.85	2,500
					Mar. 9, 1954	6.19	2,860
1944	Oct. 24, 1943	6.40	3,790				
	Dec. 3, 1943	6.42	3,790	1955	Nov. 14, 1954	7.23	4,190
	Jan. 17, 1944	5.37	2,520		Nov. 19, 1954	8.02	5,260
					Feb. 7, 1955	5.93	2,680
1945	Nov. 4, 1944	5.75	2,900				
	Nov. 8, 1944	6.25	3,500	1956	Nov. 3, 1955	8.39	5,800
	Feb. 7, 1945	-	5,500				
				1957	Oct. 17, 1956	5.90	2,710
1946	Dec. 3, 1945	5.47	2,530		Oct. 20, 1956	5.68	2,490
					Dec. 9, 1956	7.30	4,290
1947	Feb. 12, 1947	7.54	5,370		Feb. 24, 1957	6.95	3,860
	Feb. 13, 1947	6.95	4,620		Feb. 26, 1957	7.08	4,020
					May 18, 1957	5.95	2,760
1948	Oct. 15, 1947	5.46	2,530				

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545. Hamma Hamma River near Eldon, Wash.

Location.--Lat 47°35'20", long 123°07'00", in NW¼ sec.7, T.24 N., R.3 W., on left bank a quarter of a mile downstream from Watson Creek, 4½ miles northwest of Eldon, and 6 miles upstream from mouth.

Drainage area.--51.3 sq mi. Area of lakes and ponds, 0.25 sq mi; mean altitude, 3,830 ft.

Gage.--Recording. Altitude of gage is 510 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,800 cfs and extended above.

Remarks.--Base for partial-duration series, 1,700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Nov. 30, 1951	4.38	1,940	1955	Nov. 14, 1954	5.61	3,220
					Nov. 19, 1954	6.53	4,280
1953	Jan. 3, 1953	4.84	2,410				
	Jan. 9, 1953	5.25	2,780	1956	Nov. 3, 1955	6.58	4,980
	Jan. 12, 1953	4.71	2,290		June 8, 1956	3.44	1,770
	Jan. 31, 1953	4.01	1,710				
				1957	Oct. 17, 1956	3.63	1,920
1954	Nov. 13, 1953	4.75	2,320		Oct. 20, 1956	3.65	2,000
	Feb. 13, 1954	4.37	2,000		Dec. 9, 1956	4.83	3,100
	Feb. 17, 1954	4.25	1,900		Feb. 24, 1957	5.07	3,340
	Feb. 21, 1954	4.00	1,700		Feb. 26, 1957	4.97	3,240
	Mar. 9, 1954	4.68	2,260				

UNNAMED BASIN

563. Annas Bay tributary near Potlatch, Wash.

Location.--Lat 47°20'50", long 123°09'35", in SW¼ sec. 35, T.22 N., R.4 W., at U.S. Highway 101, 2.5 miles south of Potlatch.

Drainage area.--0.82 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 500 ft.

Gage.--Crest-stage gage. Datum of gage is 14.62 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 6- by 4-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Dec. 28, 1949	19.98	228	1954	Feb. 13, 1954	20.58	(a)
				1955	Nov. 18, 1954	16.57	52.5
1951	Feb. 10, 1951	17.97	113				
1952	Jan. 30, 1952	17.57	92.6	1956	Nov. 3, 1955	16.36	44.5
1953	Jan. 9, 1953	17.39	87.0	1957	Dec. 9, 1956	19.04	173

a Discharge not determined.

565. North Fork Skokomish River below Staircase Rapids, near Hoodsport, Wash.

Location.--Lat 47°30'55", long 123°18'45", in NW¼ sec.4, T.23 N., R.5 W., on left bank 1¼ miles upstream from Lake Cushman, 2 miles upstream from Dry Creek, and 11½ miles northwest of Hoodsport.

Drainage area.--58.1 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 3,700 ft.

Gage.--Recording prior to Nov. 1, 1934, and since Nov. 11, 1941; nonrecording Nov. 1, 1934, to Nov. 10, 1941. Datum of gage is 762.26 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 9,800 cfs and extended on basis of slope-area measurement at 24,400 cfs.

Bankfull stage.--12 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 3,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1925	Oct. 14, 1924	6.47	3,720	1940	Dec. 8, 1939	-	-
	Oct. 25, 1924	6.79	4,250		Dec. 15, 1939	-	9,000
	Nov. 19, 1924	6.57	3,950		Dec. 29, 1939	5.90	3,160
	Jan. 22, 1925	6.10	3,220		Jan. 2, 1940	7.60	6,410
	Feb. 2, 1925	6.88	4,400		Jan. 27, 1940	5.85	3,020
1926	Dec. 11, 1925	6.80	4,250	1941	Oct. 19, 1940	7.20	5,570
	Dec. 23, 1925	6.10	3,220		Dec. 19, 1940	6.20	3,610
					Jan. 17, 1941	7.77	6,830
1927	Oct. 11, 1926	6.12	3,220				
	Oct. 14, 1926	6.57	3,950	1942	Nov. 13, 1941	7.20	4,820
	Oct. 16, 1926	7.20	4,870		Nov. 29, 1941	6.30	3,350
	Nov. 24, 1926	6.28	3,500		Dec. 2, 1941	9.18	9,700
	Dec. 1, 1926	7.50	5,350		Dec. 18, 1941	6.05	3,070
	Dec. 30, 1926	6.16	3,290				
	Jan. 1, 1927	6.26	3,430	1943	Mar. 27, 1943	6.47	3,580
					Apr. 2, 1943	7.02	4,400
1928	Oct. 18, 1927	6.25	3,430				
	Jan. 3, 1928	6.70	4,100	1944	Oct. 24, 1943	7.19	4,720
	Jan. 12, 1928	6.70	4,100		Dec. 3, 1943	7.66	5,540
	Mar. 21, 1928	6.20	3,360		Jan. 17, 1944	6.49	3,650
1929	Nov. 9, 1928	5.49	2,540	1945	Nov. 8, 1944	7.34	5,040
					Jan. 7, 1945	6.47	3,580
1930	Dec. 14, 1929	6.62	4,050		Jan. 12, 1945	6.30	3,350
					Feb. 7, 1946	10.10	12,900
1931	Jan. 22, 1931	8.67	8,830				
	Feb. 18, 1931	6.10	3,450	1946	Nov. 14, 1945	6.20	3,140
1932	Dec. 19, 1931	7.38	5,950	1947	Nov. 22, 1946	6.09	3,070
	Feb. 26, 1932	6.97	5,040		Nov. 27, 1946	6.71	3,960
					Dec. 3, 1946	7.34	5,020
1933	Nov. 1, 1932	5.96	3,220		Jan. 24, 1947	6.10	3,070
	Nov. 12, 1932	6.90	4,940		Feb. 13, 1947	8.02	6,500
1934	Nov. 2, 1933	6.80	4,740	1948	Oct. 15, 1947	6.07	3,000
	Dec. 5, 1933	5.88	3,050		Oct. 18, 1947	9.30	10,100
	Dec. 9, 1933	6.02	3,200		Oct. 31, 1947	6.90	4,280
	Dec. 11, 1933	7.31	5,630		Dec. 16, 1947	6.12	3,050
	Dec. 21, 1933	9.8	10,900		Dec. 23, 1947	6.60	3,800
	Dec. 29, 1933	7.05	5,030				
	Jan. 22, 1934	6.78	4,630	1949	Feb. 22, 1949	5.69	2,530
	Mar. 1, 1934	6.32	3,690				
				1950	Nov. 25, 1949	6.21	3,110
1935	Nov. 5, 1934	14.4	27,000		Nov. 26, 1949	12.20	24,200
	Nov. 14, 1934	5.90	3,150		Dec. 1, 1949	7.54	6,540
	Dec. 19, 1934	5.80	3,010		Dec. 28, 1949	6.63	4,740
	Jan. 22, 1935	10.0	11,700		Feb. 26, 1950	6.59	4,640
	Jan. 24, 1935	8.30	7,350				
				1951	Oct. 10, 1950	6.04	3,660
1936	June 17, 1936	5.32	2,410		Nov. 25, 1950	7.15	5,850
					Dec. 9, 1950	7.04	5,420
1937	Dec. 22, 1936	7.0	5,150		Dec. 21, 1950	5.91	3,410
					Dec. 24, 1950	5.73	3,180
1938	Oct. 28, 1937	9.3	10,200		Feb. 10, 1951	7.69	7,030
	Nov. 16, 1937	5.80	3,020				
	Nov. 25, 1937	6.34	3,780	1952	Oct. 19, 1951	5.72	3,030
	Dec. 28, 1937	6.98	5,150		Nov. 30, 1951	6.14	3,810
1939	Jan. 1, 1939	8.60	8,580	1953	Jan. 2, 1953	6.83	5,080

Peak stages and discharges of North Fork Skokomish River below Staircase Rapids, near Hoodsport, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Jan. 9, 1953	7.58	6,730	1955	Nov. 14, 1954	6.45	4,200
	Jan. 12, 1953	6.94	5,300		Nov. 18, 1954	8.71	9,400
	Jan. 15, 1953	5.92	3,440		Feb. 7, 1955	5.76	3,120
	Jan. 23, 1953	5.77	3,200				
	Jan. 31, 1953	6.18	3,880	1956	Oct. 25, 1955	6.03	3,520
	Sept.30, 1953	5.70	3,030		Nov. 3, 1955	10.00	13,600
					June 8, 1956	5.98	3,470
1954	Nov. 13, 1953	5.92	3,440				
	Nov. 30, 1953	5.69	3,090	1957	Oct. 17, 1956	6.48	4,290
	Dec. 11, 1953	6.33	4,140		Oct. 19, 1956	7.25	5,760
	Dec. 19, 1953	5.97	3,520		Dec. 9, 1956	8.75	9,430
	Jan. 5, 1954	5.98	3,540		Feb. 24, 1957	7.87	7,140
	Feb. 13, 1954	5.78	3,220		Feb. 26, 1957	7.62	6,560
	Mar. 9, 1954	6.53	4,510				

575. North Fork Skokomish River near Hoodsport, Wash.

Location.--Lat 47°24'50", long 123°12'40", in NE¼ sec.8, T.22 N., R.4 W., on left bank 1 mile downstream from Lake Cushman Dam No. 1 and 3½ miles west of Hoodsport.

Drainage area.--93.7 sq mi. At site October 1923 to November 1930, 94.8 sq mi. Area of Lakes and ponds, 1.05 sq mi; mean altitude, 3,100 ft.

Gage.--Recording. Prior to Sept. 2, 1918, at site 1 mile upstream at datum 486.4 ft above mean sea level (levels by city of Tacoma), and Sept. 2, 1918, to Sept. 30, 1923, at datum 5.00 ft higher. Altitude of gage is 430 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 5,600 cfs and extended above.

Remarks.--Flow regulated by storage in Lake Cushman Reservoir near Hoodsport since October 1925. Peak discharges affected thereafter. Only annual peaks are shown since 1925. Base for partial-duration series, 2,200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913 a/	Sept. 4, 1913	14.02	3,770	1919	Nov. 10, 1918	7.68	3,010
					Dec. 4, 1918	12.8	7,530
1914	Oct. 13, 1913	12.34	2,580		Dec. 14, 1918	12.4	7,090
	Nov. 16, 1913	13.03	3,070		Jan. 18, 1919	11.04	5,680
	Nov. 24, 1913	17.78	7,480		Jan. 23, 1919	11.46	6,180
	Jan. 6, 1914	23.5	14,000		Feb. 9, 1919	10.60	5,320
	Mar. 1, 1914	12.04	2,490				
	Apr. 5, 1914	12.59	2,900	1920	Nov. 15, 1919	11.7	6,380
	Apr. 15, 1914	11.80	2,370		Dec. 20, 1919	9.57	4,450
	Sept.19, 1914	13.63	3,610		Dec. 24, 1919	11.7	6,380
					Jan. 28, 1920	8.52	3,570
1915	Oct. 19, 1914	16.4	6,030		Sept.13, 1920	8.94	3,890
	Nov. 2, 1914	15.2	4,920				
	Mar. 15, 1915	13.5	3,530	1921	Oct. 4, 1920	10.84	5,500
	Apr. 1, 1915	15.8	5,460		Oct. 11, 1920	7.20	2,660
					Nov. 18, 1920	9.10	4,050
1916	Oct. 31, 1915	11.90	2,430		Nov. 27, 1920	6.80	2,400
	Dec. 4, 1915	12.66	2,970		Dec. 30, 1920	7.07	2,590
	Dec. 8, 1915	18.26	8,030		Jan. 15, 1921	8.34	3,430
	Dec. 21, 1915	13.97	3,930		Feb. 11, 1921	11.00	5,680
	Feb. 10, 1916	12.13	2,550				
	Feb. 15, 1916	13.20	3,320	1922	Oct. 15, 1921	9.78	4,500
	Mar. 20, 1916	12.21	2,620		Oct. 28, 1921	14.7	9,570
					Nov. 24, 1921	8.25	3,220
1917	Nov. 4, 1916	11.61	2,260		Nov. 27, 1921	12.5	7,070
					Dec. 1, 1921	8.78	3,680
1918	Dec. 14, 1917	15.11	4,830		Dec. 12, 1921	16.7	12,100
	Dec. 16, 1917	18.99	8,800				
	Dec. 18, 1917	19.60	9,580	1923	Oct. 26, 1922	8.01	3,220
	Dec. 22, 1917	12.51	2,870		Dec. 24, 1922	11.15	5,880
	Dec. 29, 1917	17.43	7,090		Dec. 27, 1922	13.1	7,860
	Dec. 31, 1917	16.15	5,880		Jan. 3, 1923	8.29	3,430
	Jan. 17, 1918	13.38	3,500		Jan. 7, 1923	9.33	4,210
	Feb. 6, 1918	12.58	2,940		Jan. 10, 1923	10.06	4,870
	Feb. 10, 1918	12.59	2,940		Jan. 15, 1923	7.27	2,730
	Mar. 24, 1918	14.26	4,210				
				1924	Dec. 6, 1923	11.88	4,990
1919	Oct. 27, 1918	9.02	3,970		Dec. 18, 1923	9.09	2,810

a Maximum for year not determined; partial year.

Peak stages and discharges of North Fork Skokomish River near Hoodsport, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	Jan. 31, 1924	19.0	12,400	1925	Jan. 23, 1925	9.48	3,300
	Feb. 5, 1924	10.41	4,020		Jan. 30, 1925	8.79	2,530
	Feb. 12, 1924	16.18	9,400		Feb. 2, 1925	12.2	5,530
	Sept.23, 1924	10.45	4,020		Feb. 23, 1925	8.67	2,740
1925	Oct. 14, 1924	11.0	4,260	1926	Sept.30, 1926	8.2	2,250
	Oct. 25, 1924	12.20	5,260	1927	Dec. 9, 1926	9.65	3,190
	Oct. 29, 1924	11.03	4,260	1928	Nov. 25, 1927	10.2	3,640
	Nov. 4, 1924	9.56	3,160	1929	Nov. 26, 1928	8.40	2,370
	Nov. 7, 1924	9.00	2,740	1930	Oct. 3, 1929	8.0	2,130
	Nov. 19, 1924	10.20	3,620				

580. Deer Meadow Creek near Hoodsport, Wash.

Location.--Lat 47°25'00", long 123°13'30", in NW¼ sec.8, T.22 N., R.4 W., on left bank a quarter of a mile upstream from mouth and 4 miles west of Hoodsport.

Drainage area.--1.58 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,380 ft.

Gage.--Recording. Datum of gage is 688.28 ft above mean sea level, datum of 1929, supplementary adjustment of 1947 (levels by city of Tacoma).

Stage-discharge relation.--Defined by current-meter measurements below 183 cfs and extended above.

Remarks.--Since October 1953, records include large part of flow of McTaggart Creek, from which water is diverted at city of Tacoma diversion dam. When flow of McTaggart Creek exceeds about 80 cfs, there is undiverted spill over dam. Base for partial-duration series for 1953 is 20 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Jan. 2, 1953	1.23	26	1955	Nov. 19, 1954	2.63	244
	Jan. 9, 1953	1.29	21				
	Jan. 23, 1953	1.28	20	1956	Nov. 3, 1955	2.98	355
1954	Jan. 5, 1954	2.42	167	1957	Feb. 26, 1957	2.20	150

595. North Fork Skokomish River near Potlatch, Wash.

Location.--Lat 47°19'40", long 123°14'30", in NE¼NW¼ sec.7, T.21 N., R.4 W., on left bank 1 mile upstream from mouth, 6 miles southwest of Potlatch, and 7 miles downstream from city of Tacoma's Cushman Dam No. 2.

Drainage area.--117 sq mi, includes 99 sq mi above Cushman Dam No. 2, which is normally noncontributing.

Gage.--Recording. At site 200 ft downstream prior to Nov. 27, 1949. Datum of gage is 63.49 ft above mean sea level (levels by city of Tacoma).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Entire flow of river normally diverted at Cushman Dam No. 2. Flow regulated by Lake Cushman and by pondage in Cushman Reservoir No. 2. Flow at station includes infrequent releases and spillage from dams above station. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 7, 1945	6.49	2,160	1952	Oct. 19, 1951	8.20	2,920
				1953	Jan. 23, 1953	7.77	2,580
1946	June 3, 1946	5.75	1,530	1954	Feb. 21, 1954	8.08	2,770
1947	Feb. 14, 1947	6.00	1,730	1955	Nov. 19, 1954	9.99	6,100
1948	Oct. 19, 1947	6.85	2,500				
1949	Feb. 22, 1949	6.47	2,030	1956	Nov. 4, 1955	10.45	7,740
1950	Nov. 27, 1949	9.66	4,800	1957	Dec. 9, 1956	7.47	3,060
1951	Feb. 10, 1951	8.64	3,280				

600. South Fork Skokomish River near Potlatch, Wash.

Location.--Lat 47°23'10", long 123°18'30", in NW¼ sec.22, T.22 N., R.5 W., on right bank at head of canyon, 1 mile upstream from Rock Creek, 3 miles downstream from Brown Creek, and 7½ miles west of Potlatch.

Drainage area.--65.6 sq mi.

Gage.--Recording. Altitude of gage is 456 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 7,800 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 3,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1924	Dec. 6, 1923	10.98	5,550
	Jan. 31, 1924	14.86	9,950
	Feb. 11, 1924	14.40	9,140
1925	Oct. 14, 1924	8.76	4,260
	Oct. 24, 1924	9.38	4,860
	Nov. 19, 1924	8.90	4,360
	Jan. 22, 1925	8.62	4,060
	Feb. 1, 1925	12.0	7,700
	Feb. 3, 1925	9.68	5,170
1926	Dec. 11, 1925	9.12	4,560
1927	Oct. 16, 1926	9.06	4,560
	Nov. 26, 1926	8.40	3,960
	Dec. 1, 1926	9.30	4,960
	Dec. 30, 1926	8.30	3,960
	Jan. 2, 1927	9.10	4,760
1928	Jan. 3, 1928	9.0	4,470
	Jan. 12, 1928	9.6	5,070
1929	Mar. 28, 1929	7.64	3,010
1930	Dec. 22, 1929	9.33	4,570
1931	Jan. 22, 1931	13.0	9,110
	Jan. 27, 1931	10.15	5,830
	Feb. 18, 1931	9.86	5,500
	Apr. 6, 1931	8.78	4,370
1932	Nov. 13, 1931	8.94	4,470
	Dec. 19, 1931	12.24	8,200
	Jan. 11, 1932	8.44	3,970
	Feb. 26, 1932	15.1	11,500
1947	Nov. 27, 1946	9.00	5,330
	Dec. 3, 1946	9.18	5,550
	Jan. 24, 1947	8.74	5,000
	Feb. 2, 1947	8.59	4,890
	Feb. 13, 1947	11.13	7,800
1948	Oct. 17, 1947	7.80	4,040
	Oct. 18, 1947	11.93	8,760
	Oct. 31, 1947	8.52	4,780
	Dec. 23, 1947	9.30	5,660
	Jan. 1, 1948	8.10	4,340
	Mar. 21, 1948	7.59	3,840
1949	Nov. 28, 1948	7.64	3,840
	Dec. 1, 1948	7.88	4,140
	Feb. 17, 1949	7.77	4,040
1949	Feb. 22, 1949	9.05	5,330
1950	Nov. 26, 1949	17.75	19,300
	Dec. 1, 1949	11.14	7,940
	Dec. 28, 1949	11.02	7,780
	Jan. 21, 1950	8.70	5,000
	Feb. 15, 1950	8.07	4,310
	Feb. 26, 1950	11.77	8,820
	Mar. 3, 1950	9.38	5,750
1951	Oct. 10, 1950	8.20	4,980
	Nov. 25, 1950	10.20	7,180
	Dec. 9, 1950	9.25	6,000
	Dec. 20, 1950	7.60	4,100
	Dec. 24, 1950	7.34	3,840
	Jan. 25, 1951	8.65	5,280
	Feb. 9, 1951	13.30	11,500
1952	Oct. 19, 1951	7.32	3,720
	Nov. 27, 1951	8.39	4,790
	Nov. 30, 1951	8.97	5,300
	Jan. 30, 1952	8.93	6,120
1953	Dec. 12, 1952	9.05	6,290
	Jan. 2, 1953	12.13	10,000
	Jan. 9, 1953	10.06	7,240
	Jan. 12, 1953	9.36	6,330
	Jan. 15, 1953	9.35	6,320
	Jan. 23, 1953	9.45	6,440
	Jan. 31, 1953	9.68	6,740
	Feb. 7, 1953	7.43	4,070
1954	Dec. 11, 1953	9.75	6,840
	Dec. 20, 1953	7.74	4,410
	Jan. 5, 1954	11.01	8,470
	Feb. 13, 1954	8.82	5,680
	Feb. 17, 1954	8.70	5,540
	Feb. 19, 1954	9.57	6,600
	Mar. 9, 1954	9.95	7,100
1955	Nov. 14, 1954	7.62	4,280
	Nov. 18, 1954	14.96	14,800
	Feb. 7, 1955	10.05	7,420
1956	Oct. 25, 1955	7.86	4,560
	Nov. 3, 1955	16.80	17,800
	Dec. 11, 1955	7.26	4,220
	Jan. 16, 1956	7.13	4,070
1957	Oct. 20, 1956	-	-
	Dec. 9, 1956	16.17	16,700
	Feb. 24, 1957	-	-

605. South Fork Skokomish River near Union, Wash.

Location.--Lat 47°20'30", long 123°16'30", in NE¼ sec.2, T.21 N., R.5 W., on right bank 3½ miles upstream from confluence with North Fork and Vance Creek and 8 miles west of Union.

Drainage area.--79.6 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 2,100 ft.

Gage.--Recording. Altitude of gage is 110 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--13.6 ft.

Remarks.--Base for partial-duration series, 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1932	Dec. 19, 1931	9.00	11,100
	Feb. 26, 1932	9.27	13,000
1933	Nov. 13, 1932	8.16	6,740
1934	Nov. 2, 1933	8.52	6,920
	Dec. 5, 1933	8.52	6,920
	Dec. 11, 1933	8.62	7,240
	Dec. 21, 1933	10.90	20,800
	Dec. 29, 1933	8.30	6,290
	Jan. 22, 1934	8.48	6,920
	Mar. 1, 1934	8.32	6,290
1935	Oct. 24, 1934	8.26	6,140
	Nov. 5, 1934	10.67	18,800
	Jan. 22, 1935	11.0	21,600
	Jan. 24, 1935	10.15	14,800
1936	Feb. 27, 1936	8.21	5,830
1937	Dec. 22, 1936	9.46	10,000
1938	Oct. 28, 1937	9.54	10,500
	Nov. 25, 1937	8.52	6,570
	Dec. 28, 1937	10.31	16,000
1939	Jan. 1, 1939	9.86	13,900
1940	Dec. 8, 1939	8.35	7,740
	Dec. 14, 1939	8.57	8,580
	Dec. 15, 1939	10.3	17,200
1941	Oct. 18, 1940	7.92	6,630
	Jan. 17, 1941	9.73	12,500
1942	Oct. 10, 1941	8.51	6,730
	Nov. 13, 1941	8.66	6,230
	Dec. 2, 1941	10.43	17,600
	Dec. 19, 1941	8.29	6,390
1943	Mar. 27, 1943	8.74	8,540
1944	Dec. 3, 1943	8.79	8,470
1945	Feb. 7, 1945	10.70	19,400
1946	Feb. 24, 1946	7.65	4,920
1947	Nov. 27, 1946	7.85	6,230
	Feb. 13, 1947	8.47	8,160
1948	Oct. 18, 1947	8.95	9,730
	Dec. 23, 1947	7.76	6,100
1949	Feb. 22, 1949	8.00	6,290
1950	Nov. 26, 1949	11.00	21,600
	Dec. 1, 1949	8.62	8,460
	Dec. 28, 1949	8.76	9,080
	Feb. 26, 1950	8.76	8,770
	Mar. 3, 1950	8.01	6,620
1951	Nov. 25, 1950	8.02	7,930
	Dec. 9, 1950	7.54	7,220
	Jan. 25, 1951	7.28	6,440
	Feb. 9, 1951	9.02	12,300
1952	Jan. 30, 1952	7.25	8,080
1953	Dec. 12, 1952	-	-
	Jan. 2 or 3, 1953	8.61	13,600
	Jan. 9, 1953	7.56	9,160
	Jan. 12, 1953	7.36	8,700
	Jan. 15, 1953	7.34	8,640
	Jan. 23, 1953	7.48	9,660
	Jan. 31, 1953	7.32	9,300
1954	Dec. 11, 1953	7.20	8,930
	Jan. 5, 1954	7.64	10,600
	Feb. 13, 1954	6.63	6,840
	Feb. 17, 1954	6.50	6,530
	Feb. 19, 1954	6.88	7,780
	Mar. 9, 1954	6.31	6,220
1955	Nov. 18, 1954	8.74	15,500
	Feb. 7, 1955	6.60	8,420
1956	Nov. 3, 1955	8.76	17,900
1957	Oct. 20, 1956	6.23	7,140
	Dec. 9, 1956	8.11	14,700
	Feb. 24, 1957	7.38	11,500
	Feb. 26, 1957	6.95	9,720

615. Skokomish River near Potlatch, Wash.

Location.--Lat 47°19'00", long 123°11'05", in NW¼NW¼ sec.15, T.21 N., R.4 W., on left bank half a mile upstream from U.S. Highway 101, 2.8 miles downstream from confluence of North and South Forks, 4.7 miles southwest of Potlatch, and 5.5 miles upstream from mouth.

Drainage area.--230 sq mi.

Gage.--Recording or nonrecording gages about 200 ft upstream prior to Mar. 24, 1956; recording thereafter. Oct. 1, 1947, to Apr. 18, 1951, at datum 2.87 ft lower. Datum of gage is 19.35 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--10.5 ft.

Remarks.--Flow partially regulated by Lake Cushman Reservoir No. 2. Practically entire flow of North Fork is diverted at Dam No. 2 and returned to sea through Cushman powerplant No. 2. Peak discharges are affected. Base for partial-duration series, 8,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	December 1933	14.3	18,600	1951	Dec. 20, 1950	9.71	8,120
					Dec. 24, 1950	9.71	8,120
1944	Dec. 3, 1943	8.85	11,400		Jan. 25, 1951	10.95	10,700
					Feb. 10, 1951	14.31	19,200
1945	Feb. 7, 1945	11.21	16,700				
	Mar. 20, 1945	7.98	9,610	1952	Jan. 30, 1952	8.33	11,300
1946	Apr. 11, 1946	7.33	9,320	1953	Dec. 12, 1952	7.47	9,540
					Jan. 3, 1953	10.28	15,500
1947	Nov. 27, 1946	7.25	9,130		Jan. 9, 1953	7.92	10,400
	Jan. 25, 1947	7.34	9,130		Jan. 12, 1953	7.78	10,200
	Feb. 2, 1947	7.15	8,750		Jan. 16, 1953	8.05	10,700
	Feb. 14, 1947	9.59	14,100		Jan. 23, 1953	9.08	12,800
					Jan. 31, 1953	8.73	12,100
1948	Oct. 19, 1947	12.97	15,100				
	Dec. 23, 1947	10.04	8,830	1954	Dec. 12, 1953	9.20	13,000
	Jan. 1, 1948	10.64	9,920		Jan. 5, 1954	10.07	15,000
					Feb. 13, 1954	8.10	10,800
1949	Dec. 1, 1948	10.00	9,010		Feb. 17, 1954	8.03	10,700
	Feb. 17, 1949	10.44	9,550		Feb. 19, 1954	9.44	13,600
	Feb. 22, 1949	11.57	11,900				
				1955	Nov. 18, 1954	12.21	20,000
1950	Nov. 27, 1949	14.51	19,200		Feb. 8, 1955	9.13	13,400
	Dec. 2, 1949	12.67	14,300				
	Dec. 28, 1949	12.76	15,300	1956	Nov. 3, 1955	12.6	22,100
	Jan. 21, 1951	9.64	8,650				
	Feb. 26, 1950	12.74	14,300	1957	Oct. 20, 1956	8.67	12,300
	Mar. 3, 1950	12.15	13,200		Dec. 9, 1956	11.46	17,200
					Feb. 24, 1957	10.29	15,100
1951	Nov. 25, 1950	11.36	11,700		Feb. 26, 1957	10.06	14,600
	Dec. 9, 1950	10.48	9,660				

UNION RIVER BASIN

630. Union River near Bremerton, Wash.

Location.--Lat 47°31'45", long 122°47'05", in SW¼NE¼ sec.34, T.24 N., R.1 W., on right bank 400 ft upstream from highway bridge, 1¾ miles upstream from Hazel Creek, and 7 miles west of Bremerton.

Drainage area.--3.16 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 924 ft.

Gage.--Recording. Prior to Jan. 30, 1952, at site 100 ft upstream at datum 398.0 ft above mean sea level (closed stadia traverse). Altitude of gage is 395 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 160 cfs and extended by logarithmic plotting.

Bankfull stage.--7 ft.

Remarks.--Since 1956 entire flow stored 1 mile above station and released in small quantities for water supply. Base for partial-duration series, 150 cfs.

Peak stages and discharges of Union River near Bremerton, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Apr. 11, 1946	2.43	142	1952	Jan. 30, 1952	-	a190
					Feb. 4, 1952	-	-
1947	Jan. 25, 1947	2.55	141				
	Feb. 2, 1947	3.01	218	1953	Jan. 3, 1953	4.18	212
	Feb. 14, 1947	2.71	170		Jan. 8, 1953	3.94	154
					Jan. 11, 1953	4.10	191
1948	Oct. 18, 1947	3.39	332		Jan. 15, 1953	3.83	131
	Jan. 1, 1948	2.40	120				
				1954	Jan. 5, 1954	4.30	254
1949	Feb. 17, 1949	3.37	326		Feb. 13, 1954	3.76	123
	Feb. 22, 1949	3.85	476		Feb. 19, 1954	4.18	220
1950	Nov. 26, 1949	3.82	465	1955	Nov. 19, 1954	4.62	348
	Dec. 28, 1949	2.74	179				
	Jan. 21, 1950	3.53	375	1956	Nov. 3, 1955	7.50	386
	Feb. 13, 1950	2.53	141		Nov. 24, 1955	-	-
	Feb. 15, 1950	2.53	141		Dec. 21, 1955	5.53	186
					Jan. 4, 1956	-	-
1951	Jan. 25, 1951	2.77	184				
	Feb. 9, 1951	3.50	378	1957	Oct. 1, 1956	3.74	52

a Daily mean discharge.

635. Union River near Belfair, Wash.

Location.--Lat 47°28'20", long 122°49'40", in NE¼ sec.20, T.23 N., R.1 W., on left bank at highway bridge 1½ miles north of Belfair and 2 miles upstream from mouth.

Drainage area.--19.2 sq mi. Area of lakes and ponds, 0.04 sq mi; mean altitude, 518 ft.

Gage.--Recording. Datum of gage is 45.6 ft above mean sea level (closed stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 700 cfs and extended by logarithmic plotting.

Bankfull stage.--8 ft.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Oct. 19, 1947	6.40	1,090	1953	Jan. 8, 1953	4.80	613
	Jan. 1, 1948	4.55	545		Jan. 11, 1953	4.78	608
	Mar. 21, 1948	4.13	444		Jan. 16, 1953	4.32	492
1949	Dec. 1, 1948	4.86	626	1954	Jan. 5, 1954	5.58	834
	Feb. 17, 1949	7.01	1,300		Feb. 13, 1954	3.95	406
	Feb. 22, 1949	7.81	1,610		Feb. 16, 1954	3.93	402
					Feb. 19, 1954	5.33	762
1950	Nov. 27, 1949	6.33	1,060				
	Dec. 28, 1949	4.12	419	1955	Nov. 19, 1954	4.99	665
	Jan. 21, 1950	6.62	1,160				
	Feb. 13, 1950	4.12	441	1956	Nov. 3, 1955	6.25	1,040
					Nov. 24, 1955	4.14	450
1951	Jan. 25, 1951	4.34	509		Dec. 21, 1955	4.69	584
	Feb. 9, 1951	6.77	1,230		Jan. 4, 1956	4.14	438
					Mar. 23, 1956	4.40	526
1952	Jan. 30, 1952	4.81	616				
				1957	Dec. 9, 1956	5.42	788
1953	Jan. 3, 1953	5.12	702		Feb. 26, 1957	4.16	454

645. Mission Creek near Bremerton, Wash.

Location.--Lat 47°32'00", long 122°50'05", in NE¼NW¼ sec.32, T.24 N., R.1 W., on west shore of Mission Lake 300 ft upstream from lake outlet and 9½ miles southwest of Bremerton.

Drainage area.--1.91 sq mi. Area of lakes and ponds, 0.01 sq mi; mean altitude, 810 ft.

Gage.--Recording. Datum of gage is 513.0 ft above mean sea level (closed stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Base for partial-duration series, 35 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Jan. 4-5, 1946	4.72	38	1950	Feb. 26, 1950	3.48	35
					Mar. 5, 1950	3.60	40
1947	Feb. 2, 1947	4.80	38				
	Feb. 14, 1947	5.11	51	1951	Nov. 26, 1950	3.68	43
					Dec. 24, 1950	3.51	36
1948	Jan. 2, 1948	4.71	38		Jan. 26, 1951	3.95	54
					Feb. 9, 1951	4.62	90
1949	Dec. 2, 1948	4.93	44				
	Feb. 17, 1949	4.85	42	1952	Dec. 1-2, 1951	3.96	55
	Feb. 22, 1949	6.36	96		Jan. 31, 1952	4.31	69
1950	Nov. 27, 1949	4.54	87	1953	Jan. 3, 1953	4.25	51
	Dec. 29, 1949	3.65	43		Jan. 9, 1953	4.64	67
	Jan. 22, 1950	4.51	90		Jan. 12, 1953	4.33	54
	Feb. 15-16, 1950	3.9[illegible]	52		Jan. 16, 1953	4.17	48

650. Mission Creek near Belfair, Wash.

Location.--Lat 47°29'20", long 122°51'45", in NW¼NW¼ sec.18, T.23 N., R.1 W., on left bank 3 miles northwest of Belfair and 5 miles upstream from mouth.

Drainage area.--4.37 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 650 ft.

Gage.--Recording. Datum of gage is 330.0 ft above mean sea level (closed stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 130 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 60 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 6, 1945	3.65	90	1950	Dec. 29, 1949	3.60	94
	Dec. 29, 1945	3.63	90		Jan. 22, 1950	4.95	230
	Jan. 4, 1946	3.71	93		Feb. 15 or 16, 1950	4.12	137
	Feb. 27, 1946	3.32	63		Feb. 26, 1950	-	-
	Apr. 11, 1946	3.47	77		Mar. 5, 1950	-	-
1947	Jan. 26, 1947	3.76	96	1951	Nov. 25, 1950	3.78	108
	Feb. 2, 1947	3.71	93		Dec. 10, 1950	3.23	69
	Feb. 14, 1947	4.30	140		Dec. 24, 1950	3.40	80
					Jan. 26, 1951	4.04	142
1948	Oct. 19, 1947	3.24	66		Feb. 9, 1951	5.20	278
	Jan. 2, 1948	3.71	96				
				1952	Dec. 1, 1951	3.70	72
1949	Dec. 2, 1948	3.92	114		Dec. 5, 1951	3.68	72
	Feb. 22, 1949	6.10	403		Feb. 1, 1952	3.99	120
1950	Nov. 27, 1949	4.89	224	1953	Jan. 3, 1953	4.50	110
	Dec. 2, 1949	3.45	84		Jan. 9, 1953	4.72	159

655. Gold Creek near Bremerton, Wash.

Location.--Lat 47°33'20", long 122°48'35", in NE¼SW¼ sec.21, T.24 N., R.1 W., on right bank 1¼ miles upstream from mouth and 8 miles west of Bremerton.

Drainage area.--1.54 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,120 ft.

Gage.--Recording. Datum of gage is 750.9 ft above mean sea level (closed stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements belcw 60 cfs and extended on basis of velocity-area study.

Bankfull stage.--2.5 ft.

Remarks.--Base for partial-duration series, 100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Apr. 11, 1946	2.28	65	1952	Jan. 30, 1952	2.48	97
1947	Feb. 2, 1947	2.74	122	1953	Jan. 2, 1953	2.54	106
1948	Oct. 18, 1947	2.95	148	1954	Jan. 5, 1954	2.86	149
					Feb. 19, 1954	2.54	112
1949	Feb. 17, 1949	2.94	150				
	Feb. 22, 1949	3.27	203	1955	Nov. 19, 1954	2.48	97
1950	Nov. 26, 1949	3.17	194	1956	Nov. 3, 1955	2.97	175
	Jan. 21, 1950	2.88	141				
				1957	Dec. 10, 1956	2.87	157
1951	Dec. 23, 1950	2.74	140				
	Feb. 9, 1951	2.81	153				

660. Tahuya River near Bremerton, Wash.
(Published as "Tahuyeh Creek", 1945, and as "Tahuya Creek", 1946)

Location.--Lat 47°33'00", long 122°50'50", in SE¼ sec.19, T.24 N., R.1 W., on right bank 100 ft downstream from bridge, 1½ miles downstream from Tahuya Lake, and 10 miles west of Bremerton.

Drainage area.--6.16 sq mi. Prior to Sept. 16, 1954, 6.12 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 930 ft.

Gage.--Recording. Prior to Sept. 16, 1954, at site a quarter of a mile upstream at datum 539 ft above mean sea level (closed stadia traverse). Altitude of gage is 540 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--5.8 ft.

Remarks.--Base for partial-duration series, 130 cfs.

Peak stages and discharges of Tahuya River near Bremerton, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 28, 1945	3.15	143	1951	Nov. 26, 1950	3.96	157
	Jan. 4, 1946	3.08	132		Dec. 23, 1950	3.84	135
	Apr. 11, 1946	3.26	161		Jan. 25, 1951	4.32	226
					Feb. 9, 1951	5.44	460
1947	Nov. 27, 1946	3.08	132				
	Jan. 25, 1947	3.62	218	1952	Nov. 27, 1951	3.68	150
	Feb. 2, 1947	3.67	243		Dec. 1, 1951	3.88	197
	Feb. 14, 1947	4.04	314		Jan. 30, 1952	4.33	265
1948	Oct. 19, 1947	3.94	248	1953	Jan. 3, 1953	-	-
	Jan. 2, 1948	3.40	177		Jan. 8, 1953	4.12	224
	Feb. 17, 1948	3.17	147		Jan. 11, 1953	3.96	197
	Mar. 22, 1948	3.08	135		Jan. 16, 1953	4.03	161
					Jan. 22, 1953	4.04	163
1949	Dec. 2, 1948	3.47	184				
	Feb. 17, 1949	3.82	229	1954	Jan. 5, 1954	5.32	424
	Feb. 22, 1949	5.28	424		Feb. 13, 1954	4.91	318
					Feb. 17, 1954	4.73	274
1950	Nov. 27, 1949	5.58	424		Feb. 19, 1954	5.02	346
	Dec. 2, 1949	3.59	170				
	Dec. 29, 1949	3.78	177	1955	Nov. 19, 1954	4.98	330
	Jan. 21, 1950	5.34	431				
	Jan. 22, 1950	5.34	431	1956	Nov. 3, 1955	5.93	504
	Feb. 15, 1950	4.38	237		Nov. 25, 1955	4.33	214
	Feb. 26, 1950	3.86	139		Dec. 21, 1955	4.50	251
	Mar. 5, 1950	3.88	142		Jan. 4, 1956	4.16	201
					Jan. 16, 1956	3.65	138
1951	Nov. 17, 1950	3.89	144		Mar. 23, 1956	4.64	273
	Nov. 21, 1950	3.90	146				

670. Panther Creek near Bremerton, Wash.

Location.--Lat 47°31'50", long 122°51'30", in NW¼ sec.31, T.24 N., R.1 W., on left bank half a mile downstream from Panther Lake and 11 miles southwest of Bremerton.

Drainage area.--1.00 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 520 ft.

Gage.--Recording. Datum of gage is 486 ft above mean sea level (closed stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 40 cfs and extended by logarithmic plotting.

Bankfull stage.--5.5 ft.

Remarks.--Base for partial-duration series, 20 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 6, 1945	1.78	23	1950	Jan. 22, 1950	2.44	36
	Dec. 29, 1945	1.91	29		Feb. 14 or 15, 1950	2.12	26
	Jan. 4, 1946	1.84	26		Mar. 5, 1950	1.97	21
	Apr. 11, 1946	1.94	30				
				1951	Nov. 25, 1950	2.12	26
1947	Jan. 25, 1947	1.96	35		Jan. 25, 1951	2.12	26
	Feb. 2, 1947	2.11	41		Feb. 9, 1951	2.78	63
	Feb. 14, 1947	2.14	43				
				1952	Nov. 30, 1951	2.04	22
1948	Oct. 18, 1947	1.98	43		Dec. 3, 1951	1.95	21
	Jan. 1, 1948	1.92	35		Jan. 30, 1952	2.24	31
					Feb. 4, 1952	2.00	22
1949	Dec. 1, 1948	1.96	25				
	Feb. 17, 1949	2.09	30	1953	Jan. 2, 1953	2.33	34
	Feb. 22, 1949	3.02	88		Jan. 8, 1953	2.38	36
					Jan. 11, 1953	2.36	35
1950	Nov. 26, 1949	2.50	49		Jan. 15, 1953	2.37	36
	Dec. 1, 1949	1.78	20		Jan. 22, 1953	2.20	29

675. Tahuya River near Belfair, Wash.
(Published as "Tahuyeh Creek", 1945, and as "Tahuya Creek", 1946)

Location.--Lat 47°29'40", long 122°54'20", in SE¼SE¼ sec.10, T.23 N., R.2 W., on left bank 3½ miles downstream from Panther Creek and 5 miles northwest of Belfair.

Drainage area.--16.1 sq mi. Area of lakes and ponds, 0.53 sq mi; mean altitude, 684 ft.

Gage.--Recording. Datum of gage is 353 ft above mean sea level (by closed stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7.0 ft.

Remarks.--Base for partial-duration series, 450 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Apr. 11, 1946	5.14	428	1952	Jan. 30, 1952	6.78	642
1947	Jan. 25, 1947	5.42	472	1953	Jan. 3, 1953	6.24	534
	Feb. 2, 1947	5.50	487		Jan. 8, 1953	6.45	616
	Feb. 14, 1947	6.23	622		Jan. 11, 1953	6.01	528
1948	Oct. 19, 1947	5.81	544		Jan. 16, 1953	5.68	462
	Jan. 2, 1948	5.39	468	1954	Jan. 5, 1954	7.25	845
1949	Dec. 2, 1948	5.85	544		Feb. 13, 1954	6.22	569
	Feb. 17, 1949	6.24	543		Feb. 16, 1954	6.04	526
	Feb. 22, 1949	7.97	900		Feb. 19, 1954	6.48	633
1950a/	Nov. 27, 1949	7.27	760	1955	Nov. 19, 1954	7.08	794
	Jan. 21 or 22, 1950	-	-	1956	Nov. 3, 1955	8.43	1,210
	Feb. 15, 1950	5.68	450		Nov. 24, 1955	6.32	595
					Dec. 21, 1955	6.50	639
1951	Jan. 25, 1951	5.75	505		Jan. 4, 1956	5.88	494
	Feb. 9, 1951	7.41	780		Mar. 23, 1956	6.41	616

a Maximum for year not determined.

DEWATTO CREEK BASIN

685. Dewatto Creek near Dewatto, Wash.

Location.--Lat 47°28'10", long 123°01'30", in sec.23, T.23 N., R.3 W., on right bank at county road bridge 1½ miles upstream from mouth and 2 miles northeast of Dewatto.

Drainage area.--17.5 sq mi. Area of lakes and ponds, 0.13 sq mi; mean altitude, 376 ft.

Gage.--Recording prior to 1955; crest-stage gage thereafter. Altitude of gage is 55 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 780 cfs and extended by logarithmic plotting.

Bankfull stage.--6.2 ft.

Remarks.--Only annual peaks since 1955. Base for partial-duration series, 350 cfs.

Peak stages and discharges of Dewatto Creek near Dewatto, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Oct. 19, 1947	4.70	660	1952	Dec. 1, 1951	3.96	408
	Dec. 18, 1947	3.82	363		Dec. 3, 1951	3.71	339
	Dec. 23, 1947	3.75	350		Jan. 30, 1952	5.42	968
	Jan. 1, 1948	4.57	600		Feb. 4, 1952	3.95	406
1949	Nov. 28, 1948	4.06	435	1953	Jan. 3, 1953	4.75	680
	Dec. 2, 1948	4.72	660		Jan. 9, 1953	4.66	644
	Feb. 17, 1949	-	-		Jan. 11, 1953	4.22	486
	Feb. 22, 1949	6.39	1,430		Jan. 16, 1953	4.11	453
					Jan. 23, 1953	4.22	486
1950	Nov. 27, 1949	6.75	1,630				
	Dec. 2. 1949	4.10	440	1954	Dec. 12, 1953	3.90	383
	Dec. 28, 1949	4.30	528		Dec. 20, 1953	3.97	411
	Jan. 22, 1950	5.27	880		Jan. 5, 1954	6.09	1,280
	Feb. 15, 1950	4.54	600		Feb. 13, 1954	5.05	810
	Feb. 26, 1950	4.55	600		Feb. 16, 1954	4.97	778
	Mar. 5, 1950	3.84	371		Feb. 19, 1954	4.98	782
1951	Nov. 25, 1950	4.19	475	1955	Nov. 19, 1954	5.88	1,170
	Jan. 26, 1951	4.23	495				
	Feb. 9, 1951	5.86	1,160	1956	Nov. 3, 1955	7.42	2,110
1952	Nov. 28, 1951	3.80	363	1957	Dec. 9, 1956	6.91	1,750

DOGFISH CREEK BASIN

700. Dogfish Creek near Poulsbo, Wash.

Location.--Lat 47°45'10", long 122°38'30", in SW¼ sec.11, T.26 N., R.1 E., on left bank half a mile upstream from mouth and 1 mile north of Poulsbo.

Drainage area.--6.77 sq mi.

Gage.--Recording. Prior to Nov. 2, 1950, at site 200 ft downstream at datum 1.75 ft lower. Altitude of gage is 40 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 60 cfs and extended on basis of contracted-opening measurement at 1,730 cfs.

Bankfull stage.--4.1 ft.

Remarks.--Base for partial-duration series, 70 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Oct. 18, 1947	3.86	85	1953	Jan. 8, 1953	3.89	154
	Jan. 1, 1958	4.42	108		Jan. 11, 1953	2.82	94
					Jan. 15, 1953	3.06	115
1949	Nov. 28, 1948	4.17	98				
	Feb. 16, 1949	5.38	148	1954	Jan. 4, 1954	3.45	129
	Feb. 22, 1949	9.82	333		Jan. 5, 1954	4.33	176
					Feb. 13, 1954	4.17	168
1950	Nov. 26, 1949	4.08	93		Feb. 17, 1954	3.64	140
	Dec. 1, 1949	3.67	76		Feb. 19, 1954	3.66	142
	Jan. 21, 1950	4.81	127		Feb. 21, 1954	4.51	186
	Jan. 22, 1950	4.36	111		Mar. 9, 1954	2.62	72
	Feb. 13 or 15, 1950	3.79	89				
	Mar. 5, 1950	3.61	83	1955	Nov. 19, 1954	3.39	121
1951	Nov. 15, 1950	2.82	95	1956	Nov. 3, 1955	3.04	102
	Jan. 15, 1951	2.76	91		Nov. 24, 1955	3.53	128
	Jan. 21, 1951	3.11	112		Dec. 20, 1955	6.37	269
	Feb. 9, 1951	3.44	127		Dec. 24, 1955	2.86	82
					Dec. 26, 1955	2.77	76
1952	Nov. 27, 1951	2.64	86		Jan. 4, 1956	3.89	153
	Nov. 30, 1951	2.90	100		Mar. 4, 1956	2.79	75
	Dec. 3, 1951	2.68	86		Mar. 23, 1956	3.30	113
	Jan. 9, 1952	2.57	78				
	Feb. 1, 1952	2.80	94	1957	Dec. 9, 1956	3.16	100
					Feb. 25, 1957	3.97	154
1953	Jan. 2, 1953	3.41	130				

735. Huge Creek near Wauna, Wash.

Location.--Lat 47°23'20", long 122°41'50", at north line sec.20, T.22 N., R.1 E., on right bank at downstream side of bridge an eighth of a mile upstream from mouth and 2½ miles west of Wauna.

Drainage area.--5.51 sq mi. Area of lakes and ponds, 0.01 sq mi; mean altitude, 316 ft.

Gage.--Recording. Prior to June 26, 1951, at datum 0.86 ft higher. Altitude of gage is 100 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--6.1 ft.

Remarks.--Base for partial-duration series, 50 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Mar. 22, 1948	2.14	59	1954	Jan. 6, 1954	1.97	160
					Jan. 22, 1954	1.63	87
1949	Feb. 22, 1949	2.65	115		Feb. 19, 1954	1.92	147
					Feb. 21, 1954	2.08	191
1950	Nov. 27, 1949	2.12	62				
	Dec. 28, 1949	2.21	73	1955	Nov. 19, 1954	1.59	79
	Jan. 21, 1950	3.37	286		Feb. 8, 1955	1.63	87
	Feb. 13, 1950	-	-				
	Mar. 3, 1950	2.72	140	1956	Nov. 4, 1955	1.62	79
					Nov. 26, 1955	1.54	64
1951	Dec. 23, 1950	2.27	71		Dec. 11, 1955	1.82	114
	Feb. 9, 1951	3.64	391		Dec. 21, 1955	2.19	206
					Jan. 5, 1956	1.99	164
1952	Feb. 4, 1952	2.00	68		Jan. 16, 1956	1.45	64
1953	Jan. 12, 1953	1.68	89	1957	Dec. 10, 1956	1.83	118
	Jan. 23, 1953	1.69	97		Feb. 25, 1957	1.73	96
	Jan. 31, 1953	2.00	168		Mar. 9, 1957	1.45	51
1954	Dec. 20, 1953	1.62	85				

GOLDSBOROUGH CREEK BASIN

765. Goldsborough Creek near Shelton, Wash.

Location.--Lat 47°12'50", long 123°10'50", in SW¼ sec.15, T.20 N., R.4 W., on right bank 3½ miles west of Shelton and 5½ miles upstream from mouth.

Drainage area.--42 sq mi, approximately. Area of lakes and ponds, 0.42 sq mi; mean altitude, 420 ft.

Gage.--Recording. Altitude of gage is 205 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 750 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges of Goldsborough Creek near Sheltor, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Jan. 31, 1952	5.05	468	1955	Dec. 31, 1954	5.29	446
	Feb. 4, 1952	4.85	434		Feb. 6, 1955	6.28	608
1953	Jan. 12, 1953	4.78	423	1956	Nov. 3, 1955	7.82	712
	Jan. 19, 1953	4.75	418		Nov. 25, 1955	6.32	523
	Jan. 23, 1953	6.76	774		Dec. 12, 1955	7.55	676
	Jan. 31, 1953	8.33	1,090		Dec. 22, 1955	7.63	687
					Jan. 6, 1956	6.70	569
1954	Dec. 12, 1953	6.27	664		Jan. 16, 1956	6.48	543
	Dec. 20, 1953	6.16	662		Mar. 4, 1956	5.95	479
	Jan. 6, 1954	7.08	832		Mar. 8, 1956	5.63	441
	Feb. 13, 1954	6.44	676		Mar. 24, 1956	6.32	523
	Feb. 22, 1954	8.00	972				
	Mar. 10, 1954	4.99	412	1957	Dec. 10, 1956	8.51	977
					Feb. 26, 1957	6.59	630
1955	Nov. 19, 1954	7.25	775		Mar. 10, 1957	5.39	432

SKOOKUM CREEK BASIN

780. Skookum Creek at Kamilche, Wash.

Location.--Lat 47°07'30", long 123°06'50", in NW¼ sec.19, T.19 N., R.3 W., on right bank three-quarters of a mile southwest of Kamilche and 3 miles upstream from mouth.

Drainage area.--17.2 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 371 ft.

Gage.--Recording. Altitude of gage is 35 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--9.0 ft.

Remarks.--Base for partial-duration series, 350 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Feb. 4, 1952	5.84	294	1954	Feb. 21, 1954	7.89	532
1953	Jan. 12, 1953	6.99	423	1955	Feb. 8, 1955	8.16	429
	Jan. 19, 1953	6.66	385				
	Jan. 23, 1953	9.54	752	1956	Oct. 30, 1955	7.31	358
	Jan. 31, 1953	9.85	795		Nov. 3, 1955	9.78	590
					Dec. 12, 1955	10.21	621
1954	Dec. 9, 1953	8.32	576				
	Dec. 12, 1953	9.00	676		Dec. 22, 1955	8.32	444
	Jan. 6, 1954	8.91	664				
	Feb. 19, 1954	6.42	358	1957	Dec. 10, 1956	11.14	715

786. Schneider Creek tributary near Shelton, Wash.

Location.--Lat 47°05'25", long 123°04'30", in SE¼ sec.32, T.19 N., R.3 W., at U.S. Highway 101, 8.5 miles south of Shelton.

Drainage area.--1.12 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 470 ft.

Gage.--Crest-stage gage. Datum of gage is 16.06 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 4- by 4-foot concrete box culvert.

Historical data.--Peak of Dec. 9, 1956, appears to be the highest since at least 1924.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Dec. 28, 1949	20.00	97.4	1954	Jan. 6, 1954	18.70	55.2
				1955	Feb. 8, 1955	18.46	47.2
1951	Feb. 10, 1951	19.96	96.3				
1952	Dec. 4, 1951	17.48	24.1	1956	Dec. 11, 1955	19.28	73.2
1953	Jan. 31, 1953	18.67	54.2	1957	Dec. 9, 1956	20.24	106

DESCHUTES RIVER BASIN

790. Deschutes River near Rainier, Wash.

Location.--Lat 46°51'10", long 122°40'00", in SW¼ sec.22, T.16 N., R.1 E., on right bank 75 ft upstream from county road crossing, half a mile downstream from mouth of outlet from Reichel Lake, and 2½ miles southeast of Rainier.

Drainage area.--89.8 sq mi. Area of lakes and ponds, 0.56 sq mi; mean altitude, 1,340 ft.

Gage.--Recording. Altitude of gage is 350 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 2,900 cfs and extended by logarithmic plotting.

Bankfull stage.--12.8 ft.

Remarks.--Base for partial-duration series, 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 27, 1949	10.08	3,220	1954	Jan. 22, 1954	9.10	2,600
	Dec. 28, 1949	11.06	3,940		Feb. 12, 1954	9.29	2,710
	Jan. 20, 1950	10.57	3,570		Feb. 21, 1954	9.55	2,860
	Feb. 24, 1950	9.88	3,080				
	Mar. 5, 1950	10.46	3,500	1955	Feb. 8, 1955	10.15	3,260
1951	Feb. 9, 1951	10.60	3,570	1956	Nov. 25, 1955	9.16	2,650
					Dec. 12, 1955	13.06	5,620
1952	Jan. 30, 1952	10.01	3,160		Dec. 20, 1955	11.23	4,030
	Feb. 4, 1952	9.59	2,860		Jan. 5, 1956	8.75	2,400
					Mar. 23, 1956	9.29	2,720
1953	Jan. 9, 1953	9.44	2,770				
	Jan. 11, 1953	8.88	2,440	1957	Dec. 10, 1956	10.00	3,160
					Feb. 24, 1957	10.87	3,760
1954	Dec. 9, 1953	12.07	4,740		Mar. 7, 1957	8.33	2,150
	Jan. 6, 1954	9.92	3,120				

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800. Deschutes River near Olympia, Wash.

Location.--Lat 47°00'05", long 122°53'40", in NW¼SE¼ sec.35, T.18 N., R.2 W., on left bank 1½ miles upstream from mouth and 2½ miles south of Olympia.

Drainage area.--160 sq mi. Area of lakes and ponds, 1.1 sq mi; mean altitude, 950 ft.

Gage.--Recording prior to 1955; crest-stage gage thereafter. Altitude of gage is 95 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,700 cfs and extended above.

Bankfull stage.--6 ft.

Remarks.--Only annual peaks since 1955. Base for partial-duration series, 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Nov. 27, 1945	7.07	2,560	1950	Feb. 26, 1950	7.31	3,280
	Dec. 29, 1945	7.32	2,800		Mar. 6, 1950	7.68	4,080
	Jan. 5, 1946	7.16	2,640				
	Feb. 6, 1946	7.10	2,600	1951	Jan. 3, 1951	6.49	2,250
1947	Nov. 19, 1946	6.45	2,020		Jan. 22, 1951	6.41	2,140
	Dec. 5, 1946	6.55	2,180		Feb. 10, 1951	7.92	4,600
	Dec. 12, 1946	7.35	2,870	1952	Jan. 31, 1952	7.08	2,990
	Jan. 26, 1947	7.95	3,560		Feb. 5, 1952	7.05	2,960
	Feb. 2, 1947	7.24	2,870				
				1953	Jan. 10, 1953	6.98	2,870
1948	Jan. 3, 1948	6.57	2,400		Jan. 12, 1953	6.83	2,640
	Feb. 22, 1948	5.99	2,010		Jan. 19, 1953	6.26	2,020
	Mar. 22, 1948	7.12	2,950		Jan. 23, 1953	6.57	2,340
					Feb. 1, 1953	6.65	2,420
1949	Dec. 2, 1948	6.91	2,570				
	Dec. 10, 1948	6.94	2,660	1954	Dec. 10, 1953	7.96	4,780
	Feb. 11, 1949	6.34	2,160		Jan. 6, 1954	7.55	3,750
	Feb. 18, 1949	8.00	3,860		Jan. 22, 1954	7.12	2,980
	Feb. 23, 1949	7.60	3,380		Feb. 13, 1954	7.21	3,130
					Feb. 22, 1954	7.31	3,300
1950	Nov. 27, 1949	6.86	2,660				
	Dec. 24, 1949	-	-	1955	Feb. 9, 1955	7.44	3,540
	Dec. 28, 1949	7.66	3,960				
	Jan. 21, 1950	7.56	3,740	1956	Dec. 13, 1955	8.46	6,080
	Feb. 16, 1950	6.36	2,090	1957	Feb. 25, 1957	7.78	4,210

WOODLAND CREEK BASIN

810. Woodland Creek near Olympia, Wash.

Location.--Lat 47°04'20", long 122°49'00", in SW¼ sec.4, T.18 N., R.1 W., on left bank 1½ miles upstream from mouth and 4.4 miles northeast of Olympia.

Drainage area.--24.3 sq mi. Area of lakes and ponds, 1.68 sq mi; mean altitude, 189 ft.

Gage.--Recording. Altitude of gage is 25 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 110 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Dec. 28, 1949	3.40	120	1953	Jan. 31, 1953	2.63	68
	Feb. 25, 1950	3.46	113				
	Mar. 5, 1950	3.58	120	1954	Feb. 21, 1954	3.18	105
	Mar. 17, 1950	3.40	113				
				1955	Feb. 8, 1955	2.54	64
1951	Jan. 21, 1951	3.23	110				
	Feb. 9, 1951	4.46	204	1956	Dec. 21, 1955	3.77	150
	Mar. 12, 1951	3.28	113		Jan. 6, 1956	3.60	133
					Jan. 15, 1956	3.33	111
1952	Feb. 4, 1952	2.51	59				
				1957	Dec. 9, 1956	2.97	91

825. Nisqually River near National, Wash.

Location.--Lat 46°45'10", long 122°05'00", in SW¼SW¼ sec.29, T.15 N., R.6 E., on right bank 100 ft downstream from railroad bridge, 1 mile west of National, 2½ miles west of Ashford, and 3 miles upstream from Mineral Creek.

Drainage area.--133 sq mi. Area of lakes and ponds, 0.51 sq mi; mean altitude, 4,020 ft.

Gage.--Recording. Altitude of gage is 1,450 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 4,800 cfs and extended by logarithmic plotting.

Bankfull stage.--14.3 ft.

Remarks.--Base for partial-duration series, 2,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Oct. 31, 1942	7.60	3,200	1951	Dec. 23, 1950	7.50	4,350
	Nov. 23, 1942	9.96	6,870		Feb. 11, 1951	8.75	7,170
	Mar. 28, 1943	7.17	2,770				
				1952	Feb. 4, 1952	6.43	2,700
1944	Dec. 3, 1943	8.74	4,830				
				1953	Jan. 11, 1953	7.15	3,640
1945	Jan. 7, 1945	9.0	5,280		Jan. 19, 1953	6.65	2,960
	Jan. 13, 1945	7.66	3,460		Jan. 31, 1953	7.88	4,760
	Feb. 7, 1945	9.0	5,280				
				1954	Dec. 9, 1953	8.95	6,640
1946	Dec. 28, 1945	8.76	5,000		Dec. 12, 1953	6.59	2,800
					Dec. 20, 1953	6.92	3,280
1947	Oct. 25, 1946	8.78	6,350				
	Nov. 18, 1946	7.72	4,500	1955	Nov. 18, 1954	6.48	2,750
	Dec. 11, 1946	10.34	9,560		Feb. 8, 1955	6.68	2,990
	Mar. 27, 1947	6.39	2,610		June 10, 1955	7.24	3,740
1948	Oct. 2, 1947	7.3	3,730	1956	Oct. 10, 1955	6.40	2,650
	Oct. 19, 1947	-	-		Oct. 25, 1955	-	6,080
	Nov. 8, 1947	8.46	5,560		Oct. 29, 1955	7.53	4,180
	May 27, 1948	6.68	3,010		Nov. 4, 1955	7.55	4,210
					Nov. 10, 1955	8.80	6,410
1949	May 13, 1949	6.78	3,010		Nov. 27, 1955	6.41	2,660
					Dec. 12, 1955	9.70	8,280
1950	Oct. 28, 1949	6.54	2,740		Dec. 22, 1955	7.49	4,120
	Nov. 27, 1949	9.60	8,160		May 20, 1956	6.85	3,200
	Jan. 21, 1950	6.38	2,610				
	Feb. 25, 1950	6.48	2,740	1957	Dec. 11, 1956	7.10	3,550
	Mar. 5, 1950	6.96	3,420		Dec. 17, 1956	6.61	2,890
					Feb. 26, 1957	7.19	3,680
1951	Nov. 24, 1950	7.26	3,920		Mar. 7, 1957	6.61	2,890
	Nov. 27, 1950	7.06	3,590				

830. Mineral Creek near Mineral, Wash.

Location.--Lat 46°44'20", long 122°08'40", in SW¼ sec.35, T.15 N., R.5 E., on right bank three-eighths of a mile downstream from railroad bridge, 1 mile upstream from mouth, and 2½ miles northeast of Mineral.

Drainage area.--74.3 sq mi. Area of lakes and ponds, 0.5 sq mi; mean altitude, 2,740 ft.

Gage.--Recording. Altitude of gage is 1,340 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,500 cfs and extended by logarithmic plotting.

Bankfull stage.--8.6 ft.

Remarks.--Base for partial-duration series, 2,700 cfs.

Peak stages and discharges of Mineral Creek near Mineral, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Nov. 23, 1942	7.52	4,750	1952	Jan. 30, 1952	5.94	2,700
	Mar. 28, 1943	6.10	2,860		Feb. 4, 1952	6.57	3,420
1944	Dec. 3, 1943	6.06	2,860	1953	Jan. 9, 1953	5.92	2,700
					Jan. 11, 1953	6.30	3,150
1945	Feb. 7, 1945	7.43	4,610		Jan. 19, 1953	5.93	2,860
					Jan. 23, 1953	6.07	3,070
1946	Dec. 28, 1945	6.76	4,130		Jan. 31, 1953	6.74	4,070
1947	Nov. 18, 1946	6.63	3,380	1954	Dec. 9, 1953	9.02	7,600
	Dec. 11, 1946	8.25	5,240		Feb. 21, 1954	6.60	3,650
	Jan. 25, 1947	6.49	4,040				
	Feb. 2, 1947	5.80	2,840	1955	Nov. 18, 1954	6.19	3,110
					Dec. 31, 1954	5.85	2,550
1948	Jan. 1, 1948	5.91	2,640		Feb. 8, 1955	7.59	5,000
1949	Feb. 17, 1949	6.49	3,340	1956	Nov. 4, 1955	6.42	3,190
					Nov. 26, 1955	6.27	2,980
1950	Nov. 27, 1949	7.38	4,790		Dec. 11, 1955	9.15	7,400
	Dec. 28, 1949	6.59	3,460		Dec. 22, 1955	7.20	4,370
	Jan. 21, 1950	6.38	3,100				
	Feb. 24, 1950	6.38	2,880	1957	Dec. 10, 1956	7.80	5,360
	Mar. 4, 1950	6.62	3,340		Feb. 26, 1957	6.77	3,700
					Mar. 7, 1957	6.60	3,450
1951	Nov. 24, 1950	6.10	2,880				
	Feb. 9, 1951	7.65	5,390				

835. East Creek near Elbe, Wash.

Location.--Lat 46°44'40", long 122°12'00", in NW¼ sec.32, T.15 N., R.5 E., on right bank 1½ miles upstream from mouth and 1½ miles south of Elbe.

Drainage area.--11.5 sq mi.

Gage.--Nonrecording prior to Sept. 30, 1922; recording gage and wooden control thereafter. Datum of gage is 1,225 ft above mean sea level (levels by city of Tacoma).

Stage-discharge relation.--Defined by current-meter measurements below 740 cfs and extended on basis of slope-area measurement at 1,120 cfs.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 650 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1919	Nov. 10, 1918	4.40	655	1921	Mar. 17, 1921	6.80	792
	Dec. 14, 1918	6.00	990				
	Jan. 18, 1919	7.00	1,190	1922	Dec. 11, 1921	6.40	736
	Jan. 22, 1919	8.60	1,510				
	Feb. 9, 1919	4.70	718	1950	Nov. 27, 1949	6.24	1,120
					Jan. 21, 1950	-	-
1920	Dec. 24, 1919	5.80	949				
	Mar. 13, 1920	4.80	739				

840. Nisqually River near Alder, Wash.

Location.--Lat 46°46'05", long 122°16'05", in SW¼ sec.23, T.15 N., R.4 E., on right bank 2½ miles southeast of Alder, 3½ miles upstream from Alder Dam, and 8 miles downstream from Mineral Creek.

Drainage area.--252 sq mi. Area of lakes and ponds, 0.83 sq mi; mean altitude, 3,300 ft.

Gage.--Recording. Datum of gage is 1,013.9 ft above mean sea level (stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 6,000 cfs.

Peak stages and discharges of Nisqually River near Alder, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1932	Jan. 11, 1932	6.70	6,190	1936	Jan. 12, 1936	6.85	6,230
	Feb. 26, 1932	9.75	14,600				
				1937	Dec. 22, 1936	7.34	7,350
1933	Nov. 13, 1932	9.32	12,600		Apr. 14, 1937	7.65	8,100
	Nov. 17, 1932	7.72	8,480				
	Dec. 2, 1932	7.47	8,000	1938	Nov. 25, 1937	7.59	8,100
	Jan. 8, 1933	7.53	8,000		Dec. 30, 1937	7.90	8,850
					Jan. 15, 1938	6.82	6,230
1934	Oct. 28, 1933	6.66	6,030		Apr. 18, 1938	8.20	9,620
	Nov. 3, 1933	7.98	9,100				
	Dec. 6, 1933	8.34	9,880	1939	Jan. 2, 1939	6.98	6,660
	Dec. 10, 1933	12.42	22,300				
	Dec. 18, 1933	9.02	11,700	1940	Dec. 15, 1939	8.27	9,880
	Dec. 22, 1933	13.2	25,000				
	Jan. 23, 1934	9.22	12,300	1941	Jan. 18, 1941	6.17	5,010
1935	Oct. 25, 1934	9.88	14,400	1942	Dec. 19, 1941	8.19	9,520
	Nov. 5, 1934	9.41	12,900				
	Dec. 21, 1934	7.06	6,880	1943	Nov. 23, 1942	9.42	12,900
	Jan. 22, 1935	7.94	8,850		Mar. 28, 1943	7.36	7,540
1936	Jan. 4, 1936	6.79	6,230	1944	Dec. 3, 1943	7.81	8,500

845. Little Nisqually River near Alder, Wash.

Location.--Lat 46°47'20", long 122°18'45", in NW¼ sec.16, T.15 N., R.4 E., on left bank 1,500 ft upstream from mouth and 1½ miles southwest of Alder.

Drainage area.--28.0 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 2,600 ft.

Gage.--Nonrecording at different datums prior to Apr. 19, 1921; recording thereafter. Datum of gage is 977.9 ft above mean sea level (stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 1,400 cfs and extended on basis of velocity-area study.

Bankfull stage.--Inundated by reservoir.

Remarks.--Some regulation by splash dam, 1925-30. Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 1,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1921	Oct. 4, 1920	5.0	1,460	1929	Dec. 10, 1928	4.43	1,210
	Dec. 30, 1920	6.15	2,390				
	Feb. 11, 1921	6.00	2,230	1930	Dec. 14, 1929	4.55	1,270
	Mar. 17, 1921	6.1	2,310				
				1931	Feb. 18, 1931	5.50	1,880
1922	Nov. 30, 1921	5.30	1,670		Mar. 31, 1931	4.83	1,450
	Dec. 11, 1921	6.4	2,560				
				1932	Dec. 18, 1931	5.00	1,540
1923	Dec. 24, 1922	5.26	1,640		Jan. 11, 1932	4.93	1,510
	Jan. 2, 1923	4.85	1,360		Feb. 26, 1932	6.6	2,740
	Jan. 6, 1923	5.85	2,070				
	Jan. 7, 1923	6.38	2,560	1933	Nov. 13, 1932	5.10	1,600
	Jan. 10, 1923	5.00	1,460				
				1934	Dec. 6, 1933	5.90	2,170
1924	Dec. 6, 1923	5.69	1,990		Dec. 9, 1933	6.40	2,570
	Jan. 31, 1924	4.86	1,360		Dec. 17, 1933	6.57	2,740
	Feb. 12, 1924	5.07	1,500		Dec. 20, 1933	6.8	2,920
					Dec. 21, 1933	6.8	2,920
1925	Nov. 19, 1924	5.10	1,530		Jan. 19, 1934	4.93	1,510
					Jan. 23, 1934	5.2	1,670
1926	Dec. 23, 1925	4.15	925				
				1935	Oct. 25, 1934	5.80	2,090
1927	Jan. 2, 1927	5.4	1,750		Nov. 5, 1934	4.90	1,480
	Feb. 1, 1927	4.97	1,420		Jan. 22, 1935	5.90	2,170
1928	Nov. 24, 1927	5.45	1,790	1936	Jan. 4, 1936	4.80	1,420
	Jan. 4, 1928	4.78	1,320		Jan. 12, 1936	4.93	1,510

Peak stages and discharges of Little Nisqually River near Alder, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	Dec. 22, 1936	5.20	1,670	1940	Dec. 15, 1939	6.0	2,250
	Apr. 14, 1937	5.75	2,090		Dec. 16, 1939	5.20	1,670
1938	Nov. 25, 1937	5.05	1,540	1941	Jan. 18, 1941	4.93	1,510
	Dec. 28, 1937	5.6	1,950				
	Dec. 29, 1937	5.6	1,950	1942	Dec. 19, 1941	5.35	1,810
1939	Jan. 2, 1939	4.9	1,480	1943	Nov. 23, 1942	5.95	2,250

865. Nisqually River at La Grande, Wash.
(Published as "below Little Nisqually River near La Grande", 1906, 1910, and as "near La Grande", 1912, 1919-31)

Location.--Lat 46°50'30", long 122°19'35", in SE¼ sec.29, T.16 N., R.4 E., on right bank half a mile downstream from city of Tacoma powerplant, half a mile northwest of La Grande, and three-quarters of a mile upstream from Mashel River.

Drainage area.--292 sq mi. At sites 1906-11, 1919-31, 286 sq mi.

Gage.--Nonrecording prior to 1920; recording thereafter. Prior to Sept. 8, 1910, just below diversion dam, 4 miles upstream at different datum. Sept. 9, 1910, to December 1911, at La Grande powerhouse at mean sea level datum (levels by city of Tacoma). January 1920 to September 1931, at approximately same site as that of first gage at datum 921.17 ft above mean sea level (levels by city of Tacoma). Dec. 7, 1943, to Feb. 8, 1945, 600 ft downstream from La Grande powerhouse at different datum. Altitude of present gage is 490 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs.

Bankfull stage.--12.5 ft.

Remarks.--Peak discharges for 1920-31 include flow which was diverted above station through Tacoma power conduit and returned to river below station. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir since November 1944, and by La Grande Reservoir since February 1945. All peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	Nov. 15, 1906	19.1	16,600	1931	Mar. 31, 1931	11.7	10,700
1908	Apr. 19, 1908	11.0	a7,020				
				1945	Feb. 8, 1945	7.4	12,000
1910	Mar. 2, 1910	14.2	10,600				
1911	Nov. 21, 1910	522.8	10,500	1946	Dec. 31, 1945	7.15	10,600
				1947	Dec. 14, 1946	7.97	11,600
1920	Dec. 24, 1919	-	11,500	1948	Jan. 2, 1948	6.66	8,360
				1949	May 13, 1949	6.17	6,640
1921	Dec. 30, 1920	12.8	12,500	1950	May 14, 1950	8.12	15,000
1922	Dec. 12, 1921	15.6	19,500				
1923	Jan. 7, 1923	14.2	16,800	1951	Feb. 10, 1951	8.50	15,400
1924	Feb. 12, 1924	12.7	13,100	1952	Dec. 28, 1951	6.99	9,350
1925	Feb. 3, 1925	11.0	9,410	1953	Feb. 1, 1953	7.35	10,600
				1954	Dec. 12, 1953	8.29	14,500
1926	Dec. 23, 1925	9.54	6,700	1955	Nov. 21, 1954	6.28	6,740
1927	Jan. 2, 1927	11.19	9,200				
1928	Nov. 25, 1927	13.3	13,900	1956	Dec. 12, 1955	9.37	19,200
1929	Dec. 10, 1928	7.95	4,590	1957	Mar. 4, 1957	6.12	6,160
1930	Dec. 14, 1929	8.95	6,070				

870. Mashel River near La Grande, Wash.

Location.--Lat 46°51'25", long 122°18'05", in SW¼SE¼ sec.21, T.16 N., R.4 E., on right bank 50 ft below bridge, 1¾ miles northeast of La Grande, and 3¼ miles upstream from mouth.

Drainage area.--80.7 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,300 ft.

Gage.--Recording. Datum of gage is 619.53 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 3,200 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 1,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	Jan. 18, 1941	5.81	1,320	1950	Dec. 23, 1949	5.94	1,700
					Dec. 28, 1949	6.04	1,780
1942	Dec. 19, 1941	7.16	4,040		Jan. 22, 1950	-	-
					Feb. 15, 1950	5.78	1,580
1943	Nov. 23, 1942	6.66	2,580		Feb. 24, 1950	7.25	2,770
	Feb. 6, 1943	6.07	1,630		Mar. 5, 1950	7.19	2,770
	Mar. 28, 1943	6.68	2,660				
				1951	Nov. 22, 1950	6.31	2,080
1944	Dec. 3, 1943	6.14	1,720		Jan. 2, 1951	5.85	1,620
					Feb. 11, 1951	7.19	2,880
1945	Feb. 7, 1945	6.28	1,910				
	Mar. 20, 1945	6.00	1,550	1952	Oct. 23, 1951	5.73	1,530
					Jan. 30, 1952	6.39	2,070
1946	Nov. 26, 1945	6.59	2,460		Feb. 4, 1952	6.34	2,030
	Dec. 28, 1945	6.42	2,100				
	Dec. 29, 1945	6.44	2,190	1953	Jan. 9, 1953	5.89	1,550
	Jan. 5, 1946	6.22	1,800		Jan. 23, 1953	5.71	1,520
	Jan. 24, 1946	6.02	1,840		Jan. 31, 1953	6.19	1,890
	Feb. 6, 1946	5.80	1,650				
				1954	Dec. 9, 1953	8.30	4,640
1947	Nov. 18, 1946	8.18	5,420		Jan. 5, 1954	7.14	2,810
	Dec. 11, 1946	9.30	7,980		Jan. 22, 1954	6.40	1,870
	Dec. 15, 1946	6.68	3,230		Feb. 12, 1954	6.34	1,740
	Jan. 25, 1947	7.05	3,720		Feb. 21, 1954	6.72	2,180
	Feb. 2, 1947	6.64	3,160				
				1955	Feb 8, 1955	7.25	2,960
1948	Nov. 7, 1947	7.14	3,800				
	Dec. 17, 1947	5.51	1,710	1956	Nov. 19, 1955	6.08	1,530
	Jan. 1, 1948	6.02	2,290		Nov. 27, 1955	6.73	2,270
	Jan. 7, 1948	6.33	2,740		Dec. 11, 1955	7.69	3,600
	Feb. 22, 1948	5.63	1,880		Dec. 21, 1955	7.80	3,760
	Feb. 26, 1948	6.37	2,740		Mar. 23, 1956	6.70	1,990
	Mar. 22, 1948	6.39	2,080				
				1957	Dec. 11, 1956	6.51	1,770
1949	Dec. 9, 1948	6.90	2,560		Feb. 26, 1957	7.32	3,060
	Feb. 17, 1949	7.00	2,660		Mar. 7, 1957	7.36	3,110
	Feb. 22, 1949	6.63	2,310				

880. Ohop Creek near Eatonville, Wash.

Location.--Lat 46°52'50", long 122°16'45", in SE¼ sec.10, T.16 N., R.4 E., on left bank 400 ft downstream from Lynch Creek, 500 ft downstream from outlet of Ohop Lake, and 1 mile northwest of Eatonville.

Drainage area.--35.5 sq mi. Area of lakes and ponds, 0.61 sq mi; mean altitude, 1,600 ft.

Gage.--Recording prior to Oct. 1, 1932, and since Mar. 18, 1942; nonrecording Sept. 6, 1941, to Mar. 17, 1942. Concrete control after July 20, 1948. At datum 2.79 ft higher prior to Oct. 1, 1932. Datum of gage is 519.8 ft above mean sea level (stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 270 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	Oct. 4, 1927	2.92	498	1948	Jan. 2, 1948	3.00	270
	Nov. 6, 1927	2.42	368		Jan. 7, 1948	3.39	372
	Nov. 25, 1927	2.90	498		Feb. 22, 1948	3.14	304
	Jan. 3, 1928	2.97	511		Feb. 26, 1948	3.62	429
	Jan. 13, 1928	2.81	472				
	Mar. 11, 1928	2.39	368	1949	Dec. 2, 1948	3.43	433
	Mar. 31, 1928	2.28	342		Dec. 7, 1948	3.42	433
	Apr. 12, 1928	2.11	294		Dec. 9, 1948	4.56	892
					Feb. 17, 1949	3.83	510
1929	Dec. 10, 1928	2.05	288		Feb. 22, 1949	3.43	376
	Mar. 28, 1929	2.00	273				
				1950	Nov. 27, 1949	3.11	276
1930	Feb. 1, 1930	2.29	355		Dec. 28, 1949	3.46	349
	Feb. 7, 1930	2.20	325		Jan. 21, 1950	3.67	433
	Feb. 13, 1930	2.37	382		Feb. 25, 1950	3.89	615
	Mar. 24, 1930	2.49	416		Mar. 5, 1950	3.86	543
1931	Apr. 1, 1931	3.28	666	1951	Nov. 22, 1950	3.64	480
					Dec. 4, 1950	3.53	428
1932	Oct. 28, 1931	2.23	331		Dec. 23, 1950	3.29	326
	Jan. 11, 1932	2.23	331		Jan. 2, 1951	3.48	406
	Feb. 26, 1932	2.69	473		Jan. 21, 1951	3.34	346
	Mar. 5, 1932	3.52	732		Feb. 11, 1951	4.55	1,020
					Mar. 16, 1951	3.47	402
1942	Nov. 15, 1941	3.52	279				
	Dec. 20, 1941	4.80	840	1952	Oct. 23, 1951	3.35	350
	June 16, 1942	3.58	327		Feb. 4, 1952	3.31	334
1943	Nov. 23, 1942	4.05	485	1953	Jan. 23, 1953	3.52	408
	Nov. 27, 1942	3.61	302		Jan. 31, 1953	3.64	456
	Dec. 10, 1942	3.65	317		June 13, 1953	3.14	269
	Feb. 6, 1943	3.73	348				
	Mar. 28, 1943	3.62	306	1954	Dec. 9, 1953	5.66	1,740
					Dec. 20, 1953	3.32	332
1944	Dec. 3, 1943	3.66	286		Jan. 6, 1954	4.07	655
					Jan. 22, 1954	3.36	353
1945	Apr. 12, 1945	3.78	344		Feb. 12, 1954	3.18	298
1946	Nov. 19, 1945	3.73	310	1955	Dec. 31, 1954	3.26	325
	Nov. 26, 1945	3.57	359		Feb. 8, 1955	3.66	480
	Dec. 29, 1945	4.39	581		Apr. 10, 1955	3.13	280
	Jan. 5, 1946	4.54	659				
	Jan. 24, 1946	3.72	278	1956	Oct. 10, 1955	3.26	308
	Feb. 2, 1946	3.77	324		Nov. 27, 1955	4.02	645
	Feb. 6, 1946	3.65	284		Dec. 12, 1955	4.29	824
	Feb. 28, 1946	3.77	324		Dec. 21, 1955	3.88	610
	June 14, 1946	4.15	470		Jan. 6, 1956	3.22	311
					Mar. 3, 1956	3.16	276
1947	Nov. 18, 1946	4.70	746		Mar. 25, 1956	3.51	404
	Nov. 22, 1946	3.96	393				
	Dec. 11, 1946	5.97	1,600	1957	Nov. 17, 1956	3.27	314
	Dec. 15, 1946	4.30	660		Dec. 11, 1956	3.52	408
	Jan. 25, 1947	3.79	490		Dec. 18, 1956	3.41	364
	Feb. 2, 1947	3.15	306		Feb. 25, 1957	3.63	452
					Mar. 7, 1957	3.97	605
1948	Nov. 7, 1947	3.50	400		May 22, 1957	3.23	300

885. Nisqually River near McKenna, Wash.

Location.--Lat 46°51'20", long 122°27'10", in SW¼ sec.20, T.16 N., R.3 E., on right bank 800 ft downstream from Elbow Creek, three-quarters of a mile upstream from Tanwax Creek, and 7.4 miles southeast of McKenna.

Drainage area.--445 sq mi. Area of lakes and ponds, 6.59 sq mi; mean altitude, 2,740 ft.

Gage.--Recording. Datum of gage is 373.6 ft above mean sea level (stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--14 ft.

Remarks.--Yelm Irrigation District Canal has diverted up to 70 cfs during summer season, 3.6 miles above station for irrigation below. Major portion of flow regulated by Alder Reservoir and city of Tacoma powerplant at La Grande. All peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	Dec. 19, 1941	10.60	16,000	1951	Feb. 11, 1951	11.37	17,700
1943	Nov. 23, 1942	10.67	16,400	1952	Dec. 18, 1951	8.14	6,520
1944	Dec. 3, 1943	9.30	10,800	1953	Feb. 1, 1953	9.50	10,700
1945	Feb. 8, 1945	10.22	14,400	1954	Dec. 9, 1953	11.13	16,700
				1955	Jan. 1, 1955	8.01	6,620
1946	Dec. 31, 1945	9.13	10,500				
1947	Dec. 11, 1946	11.45	17,000	1956	Dec. 12, 1955	12.06	20,800
1948	Jan. 2, 1948	9.31	10,300	1957	Mar. 7, 1957	7.70	5,890
1949	Dec. 9, 1948	8.69	8,460				
1950	Nov. 27, 1949	9.56	11,100				

890. Tanwax Creek near McKenna, Wash.

Location.--Lat 46°51'55", long 122°27'05", in NW¼NE¼ sec.20, T.16 N., R.3 E., on left bank a quarter of a mile upstream from mouth and 7 miles southeast of McKenna.

Drainage area.--26.6 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 640 ft.

Gage.--Recording. Altitude of gage is 390 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Base for partial-duration series, 130 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Apr. 11, 1945	2.41	181	1948	Mar. 22, 1948	2.24	135
1946	Dec. 29, 1945	2.99	282	1949	Dec. 3, 1948	2.39	162
					Dec. 10, 1948	3.12	310
1947	Nov. 19, 1946	2.48	179				
	Nov. 23, 1946	2.25	137	1950	Dec. 28, 1949	2.35	145
	Dec. 15, 1946	3.20	328		Jan. 7, 1950	2.30	134
	Jan. 26, 1947	2.33	151		Jan. 23, 1950	3.03	288
					Feb. 25, 1950	2.99	276
1948	Jan. 3, 1948	2.39	162		Mar. 5, 1950	2.95	265
	Feb. 26, 1948	2.62	206				

895. Nisqually River at McKenna, Wash.

Location.--Lat 46°56'00", long 122°33'35", in SE¼NW¼ sec.28, T.17 N., R.2 E., on left bank 100 ft downstream from highway bridge at McKenna and 9.0 miles downstream from Tanwax Creek.

Drainage area.--517 sq mi.

Gage.--Recording. Altitude of gage is 275 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 10,000 cfs and extended by logarithmic plotting.

Bankfull stage.--14.7 ft.

Remarks.--Yelm Irrigation District canal has diverted up to 70 cfs 12.9 miles above station, and Centralia power canal diverts an average of 360 cfs 4.4 miles above station for irrigation and power below station. Major portion of flow regulated by storage reservoirs upstream. Considerable effect on peak discharges. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Jan. 2, 1948	8.18	11,500	1953	Feb. 1, 1953	8.63	9,990
1949	Dec. 9, 1948	7.53	9,170	1954	Dec. 10, 1953	11.04	16,200
1950	Nov. 28, 1949	8.41	12,200	1955	Jan. 1, 1955	6.68	6,020
1951	Feb. 11, 1951	11.30	16,900	1956	Dec. 12, 1955	12.38	20,200
1952	Dec. 5, 1951	6.36	5,280	1957	Mar. 7, 1957	6.19	5,190

CHAMBERS CREEK BASIN

905. Clover Creek near Tillicum, Wash.

Location.--Lat 47°08'40", long 122°30'10", on west line sec.12, T.19 N., R.2 E., on right bank 1½ miles upstream from mouth and 2½ miles northeast of Tillicum.

Drainage area.--70.3 sq mi. Area of lakes and ponds, 0.36 sq mi; mean altitude, 420 ft.

Gage.--Recording. Altitude of gage is 270 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 440 cfs and extended above.

Bankfull stage.--9.0 ft.

Remarks.--Base for partial-duration series, 60 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Jan. 23, 1950	4.15	275	1952	Feb. 4, 1952	2.65	66
	Mar. 6, 1950	4.20	290				
	Mar. 20, 1950	4.04	245	1953	Feb. 5, 1953	3.57	164
1951	Dec. 25, 1950	3.58	165	1954	Dec. 19, 1953	3.55	155
	Jan. 4, 1951	3.62	171		Jan. 7, 1954	4.11	263
	Jan. 24, 1951	3.87	210		Jan. 24, 1954	3.90	215
	Feb. 12, 1951	4.64	568		Feb. 21, 1954	3.62	171
	Mar. 15, 1951	3.87	252				

915. Chambers Creek below Leach Creek, near Steilacoom, Wash.

Location.--Lat 47°11'55", long 122°31'40", in NE¼NE¼ sec.27, T.20 N., R.2 E., on left bank a quarter of a mile downstream from Leach Creek, 1½ miles downstream from outlet of Steilacoom Lake, and 4 miles northeast of Steilacoom.

Drainage area.--104 sq mi. Area of lakes and ponds, 1.75 sq mi; mean altitude, 385 ft.

Gage.--Recording. Altitude of gage is 100 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--3.2 ft.

Remarks.--Minor diversions. Partly regulated at outlet of Steilacoom Lake. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges of Chambers Creek below Leach Creek, near Steilacoom, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Dec. 29, 1937	3.32	461	1950	Mar. 4, 1950	3.06	611
1939	(a)	2.34	278				
1940	(b)	2.29	263	1951	Feb. 11, 1951	3.12	661
				1952	Feb. 4, 1952	1.00	. 2
1944	Feb. 6, 1944	2.17	128	1953	Feb. 8, 1953	2.02	347
1945	Apr. 8, 1945	2.38	166	1954	Jan. 27, 1954	2.37	418
				1955	Feb. 8, 1955	1.91	245
1946	Jan. 7, 1946	3.00	348				
1947	Feb. 2, 1947	2.92	323	1956	Jan. 5, 1956	3.58	792
1948	Jan. 14, 1948	2.47	281	1957	Mar. 12, 1957	2.47	320
1949	Feb. 17 or 18, 1949	2.46	321				

a Between Mar. 2 and 4, 1939.
b Between Nov. 8 and 12, 1939.

PUYALLUP RIVER BASIN

920. Puyallup River near Electron, Wash.

Location.--Lat 46°54'10", long 122°02'00", in NW¼ sec.3, T.16 N., R.6 E., on left bank 1,000 ft upstream from Puget Sound Power and Light Co.'s flume headworks, a quarter of a mile downstream from Mowich River, and 10 miles southeast of Electron.

Drainage area.--92.8 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 4,100 ft.

Gage.--Nonrecording prior to Jan. 1, 1913; recording thereafter. At different datums prior to 1945. Altitude of gage is 1,640 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Records for October 1923 to September 1926 furnished by Puget Sound Power and Light Co. Base for partial-duration series, 2,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910 a/	Nov. 29, 1909	3.8	2,490	1921	Dec. 30, 1920	5.72	3,750
					Jan. 2, 1921	5.55	3,540
1911 a/	Nov. 10, 1910	4.6	3,200		Feb. 10, 1921	5.15	3,010
	Nov. 21, 1910	3.6	2,590				
				1922	Nov. 30, 1921	5.83	3,890
1912	Nov. 19, 1911	4.95	4,300		Dec. 12, 1921	6.65	6,980
	Jan. 13, 1912	3.6	2,590				
				1923	Dec. 24, 1922	4.70	3,720
1913	Nov. 13, 1912	3.4	2,390		Jan. 6, 1923	6.45	5,810
	Dec. 29, 1912	3.40	2,390				
				1924	Jan. 31, 1924	5.38	3,350
1914	Jan. 4, 1914	4.05	2,610				
				1925	Dec. 11, 1924	5.18	2,830
1915	Nov. 2, 1914	3.25	2,070				
				1926	Dec. 23, 1925	4.98	2,740
1916	Dec. 21, 1915	4.4	3,440				
	Mar. 9, 1916	4.1	3,040	1945	Jan. 7, 1945	7.94	5,060
	July 2, 1916	3.88	2,780		Jan. 13, 1945	6.92	3,360
					Feb. 7, 1945	7.64	4,590
1917	July 16, 1917	3.3	2,080				
				1946	Nov. 2, 1945	6.44	2,680
1918	Dec. 13, 1917	4.57	3,720		Dec. 28, 1945	7.15	3,830
	Dec. 18, 1917	7.4	7,700				
	Dec. 27, 1917	6.1	5,270	1947	Oct. 25, 1946	7.92	5,710
	Jan. 1, 1918	4.3	2,620		Nov. 18, 1946	6.97	3,280
					Dec. 11, 1946	8.75	9,160
1919	Dec. 14, 1918	5.2	3,780		Jan. 24, 1947	6.35	2,610
	Jan. 18, 1919	4.86	3,260				
	Jan. 23, 1919	6.8	6,540	1948	Oct. 3, 1947	6.70	3,030
					Oct. 17, 1947	6.65	2,960
1920	Nov. 15, 1919	4.27	2,460		Oct. 19, 1947	7.25	4,040
	Dec. 17, 1919	4.17	2,340		Nov. 7, 1947	8.16	6,580
	Dec. 24, 1919	4.47	2,720		June 21, 1948	6.54	2,610
1921	Oct. 4, 1920	4.73	2,540	1949	Nov. 23, 1948	7.02	3,320

a Maximum for year not determined; observed discharges only.

930. Kapowsin Creek near Kapowsin, Wash.

Location.--Lat 46°59'30", long 122°11'30", in NE¼ sec.5, T.17 N., R.5 E., on right bank half a mile downstream from Kapowsin Lake and 1½ miles east of Kapowsin.

Drainage area.--23 sq mi, approximately. Area of lakes and ponds, 0.7 sq mi; mean altitude, 1,500 ft.

Gage.--Recording at datum 3.23 ft higher prior to Oct. 8, 1932; nonrecording Oct. 1, 1941, to Mar. 31, 1942; recording thereafter. Log control after Feb. 24, 1942. Datum of gage is 561 ft above mean sea level (stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 160 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	Nov. 26, 1927	3.24	284	1950	Dec. 28, 1949	4.49	357
	Jan. 4, 1928	3.31	302		Jan. 23, 1950	4.60	407
	Jan. 14, 1928	2.86	222		Feb. 26, 1950	4.68	430
	Mar. 12, 1928	2.65	188		Mar. 5, 1950	4.60	407
	Mar. 31, 1928	3.12	266		Mar. 18, 1950	3.43	161
1929	Mar. 29, 1929	2.56	149	1951	Nov. 25, 1950	4.05	286
					Dec. 7, 1950	3.97	269
1930	Feb. 8, 1930	2.67	188		Dec. 24, 1950	3.57	187
	Feb. 15, 1930	2.68	189		Jan. 3, 1951	3.86	246
					Jan. 17, 1951	3.48	170
1931	Apr. 2, 1931	3.20	283		Jan. 22, 1951	3.49	172
					Jan. 26, 1951	3.59	191
1932	Feb. 27, 1932	3.65	364		Feb. 12, 1951	5.37	582
	Mar. 6, 1932	3.78	393		Mar. 16, 1951	3.70	213
1942	Nov. 14, 1941	4.10	299	1952	Feb. 5, 1952	3.43	176
	Dec. 16, 1941	3.90	255				
	Dec. 19, 1941	5.09	546	1953	Jan. 23, 1953	3.63	215
	June 16, 1942	3.59	172		Feb. 1, 1953	3.97	285
1943	Nov. 24, 1942	4.34	324	1954	Dec. 6, 1953	3.38	169
	Feb. 7, 1943	3.93	236		Dec. 10, 1953	5.23	574
	Mar. 28-29, 1943	3.80	210		Dec. 21, 1953	3.63	216
	Apr. 3, 1943	3.75	200		Jan. 6, 1954	4.32	359
					Jan. 22, 1954	3.55	200
1944	Dec. 4, 1943	3.56	168		Feb. 13, 1954	3.51	187
					Feb. 22, 1954	3.43	173
1945	Apr. 11, 1945	3.44	160		Apr. 5, 1954	3.36	162
1946	Nov. 19, 1945	3.54	180	1955	Dec. 31, 1954	3.83	256
	Dec. 29, 1945	4.22	298		Feb. 8, 1955	4.18	293
	Jan. 5, 1946	4.68	397		Apr. 1, 1955	3.66	216
	Jan. 24-25, 1946	3.48	171		Apr. 10, 1955	3.56	197
	Feb. 2, 1946	3.64	197				
	Feb. 7, 1946	3.53	179	1956	Oct. 10, 1955	3.37	171
	Feb. 28, 1946	4.05	270		Oct. 30, 1955	3.56	206
					Nov. 3, 1956	3.39	175
1947	Nov. 19, 1946	4.37	327		Nov. 27, 1955	4.38	377
	Dec. 12, 1946	5.69	605		Dec. 12, 1955	5.37	610
	Jan. 26, 1947	4.39	337		Dec. 22, 1955	4.07	306
	Feb. 2, 1947	3.73	212		Jan. 7, 1956	3.85	260
					Jan. 15, 1956	3.44	180
1948	Jan. 7, 1948	3.88	238		Mar. 3, 1956	3.52	195
	Feb. 26, 1948	4.02	260		Mar. 26, 1956	4.01	293
1949	Nov. 25, 1948	3.62	184	1957	Dec. 11, 1956	3.63	222
	Dec. 3, 1948	4.00	260		Dec. 18, 1956	3.80	256
	Dec. 10, 1948	4.78	417		Feb. 25, 1957	3.69	254
	Feb. 17, 1949	4.35	357		Mar. 7, 1957	4.18	364
	Feb. 23, 1949	4.03	288				

935. Puyallup River near Orting, Wash.

Location.--Lat 47°02'20", long 122°12'25", in SW¼SW¼ sec.17, T.18 N., R.5 E., on right bank 600 ft downstream from highway bridge, 4 miles south of Orting, and 9 miles upstream from Carbon River.

Drainage area.--172 sq mi. Area of lakes and ponds, 1.41 sq mi; mean altitude, 3,000 ft.

Gage.--Recording. At site 600 ft upstream at datum 3.93 ft higher prior to Feb. 6, 1946. Supplementary recording gage at site 200 ft upstream at datum 2.1 ft higher used at times during period 1942-46. Datum of gage is 357.5 ft above mean sea level (unadjusted).

Stage-discharge relation.--Defined by current-meter measurements below 9,500 cfs.

Bankfull stage.--8 ft.

Remarks.--Water diverted for Electron plant of Puget Sound Power & Light Co., returned to river above gage. Discharge obtained from supplemental gage for most peaks 1943-46 water years, when stage-discharge relation at base gages was unreliable. Base for partial-duration series, 4,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1932	Feb. 26, 1932	8.98	6,950	1945	Jan. 7, 1945	-	5,240
	Mar. 5, 1932	7.77	4,720		Feb. 7, 1945	-	4,910
1933	Nov. 13, 1932	11.3	11,800	1946	Dec. 28, 1945	-	5,530
	Nov. 17, 1932	7.28	4,550				
	Dec. 2, 1932	7.70	5,190	1947	Oct. 25, 1946	6.90	7,040
	Jan. 8, 1933	7.93	5,530		Nov. 18, 1946	6.90	7,040
					Dec. 11, 1946	7.87	11,200
1934	Nov. 2, 1933	8.12	5,870		Jan. 25, 1947	6.14	5,790
	Dec. 10, 1933	11.87	12,800				
	Dec. 20, 1933	8.60	6,720	1948	Nov. 7, 1947	7.66	8,300
	Dec. 21, 1933	9.58	8,480				
	Jan. 22, 1934	7.77	5,360	1949	Feb. 17 1949	6.60	4,720
1935	Oct. 25, 1934	8.95	5,250	1950	Nov. 27, 1949	7.80	9,720
	Nov. 5, 1934	9.02	8,900		Feb. 24, 1950	7.02	6,640
	Jan. 22, 1935	7.26	5,050		Mar. 4, 1950	6.82	5,970
1936	June 7, 1936	6.95	4,850	1951	Feb. 11, 1951	8.03	6,250
1937	Apr. 14, 1937	7.37	4,640	1952	Oct. 3, 1951	6.15	3,060
1938	Nov. 8, 1937	7.80	5,850	1953	Jan. 31, 1953	7.48	4,730
	Apr. 18, 1938	9.14	8,680				
				1954	Dec. 9, 1953	9.15	10,100
1939	Feb. 15, 1939	7.64	5,110		Dec. 12, 1953	6.35	5,000
1940	Dec. 15, 1939	8.04	5,600	1955	Feb. 8, 1955	6.54	4,420
1941	Nov. 29, 1940	7.90	5,600	1956	Oct. 29, 1955	7.65	4,840
					Nov. 9, 1955	7.66	4,860
1942	Dec. 19, 1941	8.22	6,700		Dec. 11, 1955	9.12	12,100
1943	Oct. 31, 1942	-	4,900	1957	Dec. 9,11, 1956	7.08	4,360
	Nov. 23, 1942	9.18	7,450				
1944	Dec. 3, 1943	-	5,800				

940. Carbon River near Fairfax, Wash.
(Published as "at Fairfax", 1910-12)

Location.--Lat 47°01'40", long 122°01'50", in SW¼SW¼ sec.22, T.18 N., R.6 E., on left bank 1¼ miles upstream from highway bridge, 1¼ miles northwest of Fairfax, and 2¼ miles downstream from Evans Creek.

Drainage area.--78.9 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 4,000 ft.

Gage.--Recording. Datum of gage is 1,212.6 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 4,200 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Diversions by lumber industry returned to river above gage. Base for partial-duration series, 1,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 5, 1930	5.13	1,770	1945	Jan. 13, 1945	5.00	2,990
					Feb. 7, 1945	4.92	2,870
1931	Mar. 31, 1931	6.29	2,950				
				1946	Nov. 2, 1945	4.50	2,400
1932	Oct. 28, 1931	6.94	3,850		Dec. 28, 1945	6.25	4,500
	Jan. 11, 1932	5.92	2,200				
	Feb. 26, 1932	7.74	5,500	1947	Oct. 25, 1946	6.10	4,480
					Nov. 18, 1946	4.68	2,490
1933	Nov. 13, 1932	8.5	7,100		Dec. 11, 1946	6.97	5,960
	Nov. 16, 1932	6.00	2,800		Jan. 23, 1947	4.45	2,320
	Dec. 2, 1932	6.15	3,550		Jan. 25, 1947	4.16	2,010
1934	Oct. 19, 1933	4.95	2,050	1948	Oct. 3, 1947	4.65	2,780
	Oct. 22, 1933	6.10	3,420		Oct. 19, 1947	4.30	2,490
	Oct. 28, 1933	4.69	1,800		Nov. 7, 1947	6.15	4,330
	Nov. 3, 1933	6.00	2,800		Feb. 26, 1948	3.90	1,810
	Dec. 6, 1933	5.30	2,170		June 21, 1948	3.99	1,910
	Dec. 9, 1933	10.2	11,000				
	Dec. 18, 1933	5.46	3,610	1949	Nov. 23, 1948	4.60	2,440
	Dec. 21, 1933	8.10	7,480				
	Jan. 23, 1934	6.20	4,410	1950	Oct. 28, 1949	4.70	2,540
	Mar. 2, 1934	4.59	2,200		Nov. 24, 1949	4.88	1,810
					Nov. 27, 1949	5.40	3,750
1935	Oct. 25, 1934	7.75	6,500		Feb. 24, 1950	4.18	1,960
	Nov. 5, 1934	6.16	4,130		Mar. 4, 1950	4.89	2,490
	Dec. 20, 1934	4.50	2,200				
	Jan. 22, 1935	5.45	3,140	1951	Oct. 10, 1950	4.85	2,840
					Nov. 24, 1950	5.84	4,130
1936	Jan. 4, 1936	3.84	1,840		Dec. 6, 1950	4.82	2,450
	June 7, 1936	4.51	2,550		Dec. 22, 1950	4.62	2,090
					Jan. 26, 1951	4.28	1,860
1937	Apr. 14, 1937	3.98	1,810		Feb. 9, 1951	6.20	4,770
1938	Nov. 8, 1937	5.83	3,900	1952	Oct. 3, 1951	4.74	2,610
	Nov. 20, 1937	4.25	1,860				
	Nov. 25, 1937	4.64	2,300	1953	Jan. 11, 1953	4.61	2,430
	Nov. 27, 1937	5.50	3,300		Jan. 23, 1953	4.65	2,480
	Jan. 14, 1938	4.68	2,490		Jan. 31, 1953	5.95	4,580
	Apr. 18, 1938	6.98	5,560				
				1954	Dec. 9, 1953	7.12	6,860
1939	Dec. 7, 1938	4.73	2,640		Dec. 11, 1953	4.83	2,980
	May 28, 1939	4.19	2,030		Dec. 20, 1953	4.10	2,030
1940	May 1, 1940	3.87	1,810	1955	Feb. 8, 1955	4.47	2,490
					June 11, 1955	4.25	2,210
1941	Nov. 29, 1940	5.80	4,040				
				1956	Oct. 10, 1955	3.91	1,810
1942	Dec. 19, 1941	4.75	2,580		Oct. 25, 1955	4.26	2,220
	June 15, 1942	4.40	2,160		Oct. 29, 1955	5.55	4,060
					Nov. 2, 1955	4.57	2,620
1943	Oct. 31, 1942	5.20	3,230		Nov. 10, 1955	5.10	3,370
	Nov. 23, 1942	6.35	4,760		Nov. 27, 1955	4.01	1,920
	Nov. 29, 1942	4.00	1,850		Dec. 11, 1955	7.25	6,320
1944	Dec. 3, 1943	6.57	5,020	1957	Nov. 17, 1956	4.90	2,980
					Dec. 10, 1956	6.55	5,280
1945	Dec. 5, 1944	4.30	2,180		Dec. 13, 1956	4.85	2,920
	Jan. 7, 1945	6.10	4,370		Dec. 18, 1956	4.77	2,820
	Jan. 12, 1945	4.58	2,510		Mar. 7, 1957	4.18	2,150

950. South Prairie Creek at South Prairie, Wash.

Location.--Lat 47°08'30", long 122°05'30", in NE¼NW¼ sec.18, T.19 N., R.6 E., on right bank 0.3 mile northeast of South Prairie and 5 miles upstream from mouth.

Drainage area.--78.6 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 2,300 ft.

Gage.--Recording. Altitude of gage is 430 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,000 cfs and extended by logarithmic plotting.

Bankfull stage.--6.3 ft.

Remarks.--Base for partial-duration series, 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 27, 1949	6.10	2,450	1954	Dec. 9, 1953	8.84	5,470
	Dec. 28, 1949	6.49	2,930		Dec. 12, 1953	6.25	2,230
	Feb. 24, 1950	6.01	2,360				
	Mar. 4, 1950	6.64	2,930	1955	Feb. 8, 1955	7.35	3,440
1951	Nov. 24, 1950	5.85	2,220	1956	Dec. 11, 1955	9.78	6,850
	Dec. 6, 1950	5.67	2,090				
	Feb. 11, 1951	7.23	3,550	1957	Nov. 17, 1956	5.96	2,000
					Dec. 9, 1956	6.74	2,750
1952	Feb. 4, 1952	4.92	1,460		Dec. 11, 1956	5.97	2,030
					Mar. 7, 1957	6.44	2,470
1953	Jan. 31, 1953	6.33	2,660				

965. Puyallup River at Alderton, Wash.

Location.--Lat 47°11'05", long 122°13'45", on line between sec.25, T.20 N., R.4 E., and sec.30, T.20 N., R.5 E., on right bank at highway bridge No. 30205-A on State Highway 5E, 1 mile north Alderton, 1 mile south of Sumner, and 2 miles upstream from Stuck River.

Drainage area.--438 sq mi. Area of lakes and ponds, 1.7 sq mi; mean altitude, 2,000 ft.

Gage.--Nonrecording prior to Feb. 2, 1927; recording thereafter. At datum 49.77 ft higher prior to Aug. 5, 1918; at datum 48.77 ft higher Aug. 5, 1918, to Feb. 1, 1927; at datum 0.23 ft lower Oct. 1, 1943, to Sept 30, 1955. Datum of gage is at mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--60 ft.

Remarks.--Peaks for period of nonrecording gage from graphs based on gage readings. Base for partial-duration series, 6,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1906	-	66.5	-	1921	Dec. 30, 1920	8.30	12,900
					Jan. 2, 1921	6.80	10,800
1916	Nov. 19, 1915	7.1	9,280		Feb. 10, 1921	6.60	9,120
	Dec. 22, 1915	8.6	12,800		Feb. 12, 1921	5.98	7,920
	Mar. 9, 1916	8.10	11,600		Mar. 18, 1921	5.90	7,720
	July 2, 1916	6.90	8,820				
				1922	Nov. 30, 1921	8.40	12,900
1917	Dec. 13, 1916	7.40	9,970		Dec. 12, 1921	11.0	20,000
1918	Dec. 14, 1917	9.60	13,100	1923	Dec. 24, 1922	6.60	9,580
	Dec. 18, 1917	12.6	19,300		Jan. 6, 1923	9.40	16,600
	Dec. 29, 1917	8.50	14,100				
				1924	Feb. 5, 1924	4.80	6,670
1919	Dec. 3, 1918	7.70	7,890		Feb. 12, 1924	7.20	11,700
	Dec. 14, 1918	8.00	8,790				
	Jan. 23, 1919	11.7	17,200	1925	Dec. 11, 1924	7.30	11,500
1920	Jan. 17, 1920	6.90	8,900	1926	Dec. 23, 1925	6.00	8,820
	Jan. 19, 1920	6.00	7,280				
	Jan. 28, 1920	7.30	9,440	1927	Oct. 16, 1926	5.90	8,600

Peak stages and discharges of Puyallup River at Alderton, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	54.39	14,600	1951	Dec. 6, 1950	52.02	8,120
					Dec. 23, 1950	51.85	7,560
1945	Jan. 7, 1945	53.59	12,700		Feb. 11, 1951	54.89	17,100
	Jan. 13, 1945	52.76	10,100		Mar. 15, 1951	51.50	6,760
	Feb. 8, 1945	52.68	10,800				
				1952	Oct. 3, 1951	51.31	6,280
1946	Dec. 29, 1945	54.23	13,900				
				1953	Jan. 11, 1953	52.00	8,120
1947	Oct. 25, 1946	53.43	11,500		Jan. 23, 1953	-	9,000
	Nov. 18, 1946	53.48	11,800		Feb. 1, 1953	53.36	11,700
	Dec. 11, 1946	56.80	22,600				
	Jan. 26, 1947	52.84	9,740	1954	Dec. 9, 1953	56.52	21,900
					Dec. 12, 1953	52.86	10,000
1948	Oct. 3, 1947	51.89	7,310		Dec. 20, 1953	51.55	6,690
	Oct. 19, 1947	52.39	8,090		Jan. 6, 1954	51.45	6,470
	Nov. 8, 1947	54.42	14,600				
	Feb. 26, 1948	52.25	8,090	1955	Feb. 8, 1955	52.60	9,550
1949	Nov. 24, 1948	52.42	8,630	1956	Oct. 10, 1955	51.13	6,670
	Dec. 9, 1948	52.25	8,090		Oct. 25, 1955	51.18	6,780
	Feb. 17, 1949	53.12	10,600		Oct. 29, 1955	52.29	9,430
					Nov. 10, 1955	51.30	7,040
1950	Oct. 28, 1949	52.13	7,830		Nov. 27, 1955	51.25	6,930
	Nov. 27, 1949	53.74	12,400		Dec. 12, 1955	56.84	23,300
	Dec. 28, 1949	52.58	9,460		Dec. 22, 1955	51.58	7,680
	Jan. 20, 1950	52.28	8,630				
	Feb. 24, 1940	52.84	10,300	1957	Nov. 17, 1956	51.47	7,430
	Mar. 4, 1940	53.40	11,500		Dec. 10, 1956	52.86	11,000
					Dec. 13, 1956	51.66	7,870
1951	Oct. 10, 1950	51.99	7,830		Dec. 18, 1956	51.84	8,310
	Nov. 24, 1950	52.83	10,500		Mar. 7, 1957	51.89	8,500

970. White River at Greenwater, Wash.
(Published as "near Enumclaw", 1911-12)

Location.--Lat 47°08'50", long 121°38'50", in SE¼ sec.10, T.19 N., R.9 E., on right bank three-quarters of a mile southeast of Greenwater, three-quarters of a mile upstream from Greenwater River, 18½ miles east of and 35 miles upstream from Buckley.

Drainage area.--216 sq mi. Area of lakes and ponds, 0.99 sq mi; mean altitude, 4,700 ft.

Gage.--Nonrecording prior to May 6, 1912, at site 2 miles upstream at different datum; recording thereafter. Altitude of gage is 1,725 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 4,300 cfs and extended by logarithmic plotting.

Bankfull stage.--12.5 ft.

Remarks.--Base for partial-duration series, 2,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912a/	Jan. 14, 1912	5.7	2,120	1933	Nov. 13, 1932	6.88	6,460
					Nov. 17, 1932	6.91	6,460
1930	Feb. 19, 1930	-	2,000		Dec. 2, 1932	5.31	3,090
					June 8,9, 1933	5.32	3,090
1931	Mar. 31, 1931	4.81	2,740		June 15, 1933	6.07	4,510
	June 26, 1931	5.00	2,440		July 15, 1933	5.20	2,920
1932	Jan. 11, 1932	5.85	3,610	1934	Oct. 22, 1933	5.52	3,440
	Feb. 26, 1932	7.73	8,600		Nov. 2, 1933	6.16	4,730
	Mar. 5, 1932	5.07	2,680		Dec. 6, 1933	5.59	3,620
	June 14, 1932	5.07	2,680		Dec. 9, 1933	8.90	13,000

a Maximum for year not determined; partial year.

Peak stages and discharges of White River at Greenwater, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Dec. 17, 1933	6.00	6,460
	Dec. 21, 1933	9.38	18,100
	Jan. 23, 1934	6.18	5,440
	Mar. 2, 1934	4.34	2,430
1935	Oct. 25, 1934	5.54	4,340
	Nov. 5, 1934	6.15	5,440
	Dec. 21, 1934	4.44	2,570
	Jan. 23, 1935	6.08	5,270
1936	May 14, 1936	4.59	2,470
	May 28, 1936	4.58	2,470
	June 7, 1936	4.59	2,470
1937	June 3, 1937	4.50	2,600
	June 21, 1937	5.08	4,210
1938	Nov. 8, 1937	4.20	2,420
	Nov. 25, 1937	4.50	3,000
	Nov. 28, 1937	4.84	3,700
	Apr. 18, 1938	5.66	5,440
1939	May 29, 1939	4.59	2,470
1940	Dec. 16, 1939	4.16	1,780
1941	Nov. 29, 1940	4.80	2,690
1942	Dec. 2, 1941	4.69	2,500
1943	Nov. 23, 1942	5.79	4,770
1944	Dec. 3, 1943	4.66	2,500
1945	Jan. 7, 1945	5.45	4,080
	Jan. 13, 1945	4.89	3,060
	Feb. 8, 1945	5.33	3,880
1946	Dec. 29, 1945	6.17	5,620
1947	Dec. 11, 1946	6.98	7,460
	Dec. 13, 1946	6.33	5,400
	Jan. 25, 1947	5.02	3,420
1948	Oct. 19, 1947	5.34	4,600
	Nov. 7, 1947	4.90	3,530
	May 28, 1948	5.52	5,000
	June 11, 1948	5.32	4,470
1949	May 13, 1949	5.22	4,220
	June 7, 1949	4.74	3,200
1950	Nov. 27, 1949	6.57	8,270
	Mar. 4, 1950	4.55	2,800
	May 14, 1950	4.46	2,620
	June 4, 1950	4.80	3,310
	June 20, 1950	5.18	4,220
	June 30, 1950	5.00	3,750
1951	Oct. 10, 1950	4.28	2,440
	Nov. 25, 1950	5.51	5,270
	Dec. 6, 1950	4.28	2,530
	Dec. 23, 1950	4.45	2,800
	Feb. 9, 1951	5.92	5,550
	May 11, 1951	5.00	3,160
1952	May 20, 1952	4.49	2,190
1953	Jan. 11, 1953	5.02	3,100
	Jan. 23, 1953	4.94	2,870
	Jan. 31, 1953	5.47	4,020
	July 8, 1953	4.48	2,550
1954	Dec. 9, 1953	5.87	5,560
	Dec. 12, 1953	5.65	4,780
	Dec. 20, 1953	4.53	2,460
	May 19, 1954	4.63	2,650
1955	Feb. 8, 1955	5.27	3,940
	June 11, 1955	5.56	5,160
	June 22, 1955	4.60	2,900
	July 15, 1955	4.66	3,020
1956	Oct. 29, 1955	5.20	3,770
	Nov. 4, 1955	5.10	3,560
	Nov. 10, 1955	5.47	4,440
	Dec. 12, 1955	7.48	11,400
	Dec. 22, 1955	4.53	2,870
	Apr. 22, 1956	4.71	3,010
	May 20, 1956	5.64	5,050
	June 1, 1956	5.34	4,320
	June 10, 1956	4.43	2,540
	June 19, 1956	4.53	2,700
	July 10, 1956	4.49	2,650
1957	Nov. 17, 1956	4.57	2,770
	Dec. 10, 1956	6.29	6,860
	Dec. 13, 1956	5.08	3,730
	Dec. 18, 1956	4.70	2,990
	May 7, 1957	4.34	2,430
	June 6, 1957	4.42	2,540

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975. Greenwater River at Greenwater, Wash.
(Published as "near Enumclaw", 1911-12)

Location.--Lat 47°09'15", long 121°38'00", in NW¼NW¼ sec.11, T.19 N., R.9 E., on left bank 1 mile upstream from mouth, 1 mile east of Greenwater, and 19 miles east of Buckley.

Drainage area.--73.9 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 4,200 ft.

Gage.--Nonrecording prior to Aug. 10, 1912; recording thereafter. At site 900 ft upstream May 1, 1929, to Aug. 14, 1934. At different datums prior to Aug. 15, 1934. Altitude of gage is 1,725 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs and extended by logarithmic plotting.

Bankfull stage.--10 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1912	Nov. 19, 1911	5.0	2,800
	Jan. 14, 1912	4.20	1,670
	Jan. 29, 1912	3.70	1,080
	Feb. 18, 1912	3.36	758
1929a/	May 23, 1929	4.35	780
1930	Mar. 25, 1930	4.16	753
1931	Apr. 1, 1931	4.37	850
1932	Jan. 11, 1932	4.63	950
	Feb. 26, 1932	5.33	1,490
	Mar. 5, 1932	4.32	930
	Mar. 18, 1932	4.02	785
1933	Nov. 13, 1932	5.90	1,900
	Nov. 16, 1932	6.40	2,200
	Dec. 2, 1932	4.13	878
	Jan. 8, 1933	5.20	1,470
	Apr. 29, 1933	3.83	720
	June 9, 1933	4.32	960
	June 15, 1933	4.62	1,120
1934	Nov. 2, 1933	5.04	1,390
	Dec. 6, 1933	4.18	915
	Dec. 9, 1933	9.24	4,140
	Dec. 23, 1933	8.23	3,440
	Jan. 23, 1934	6.00	1,960
1935	Oct. 25, 1934	5.03	1,190
	Nov. 6, 1934	4.76	1,050
	Dec. 20, 1934	4.25	762
	Jan. 23, 1935	5.20	1,320
1936	Apr. 18, 1936	4.45	812
	May 5, 1936	4.48	840
	May 14, 1936	4.40	785
1937	Apr. 15, 1937	4.28	709
	May 4, 1937	4.34	748
	June 4, 1937	4.33	748
1938	Nov. 28, 1937	-	-
	Apr. 18, 1938	5.33	1,410
	May 28, 1938	4.24	762
1939	Dec. 8, 1938	4.80	1,110
	Mar. 24, 1939	4.41	871
	May 16, 1939	4.13	714
1940	Feb. 10, 1940	4.02	567
1941	Nov. 29, 1940	4.40	773
1942	Dec. 19, 1941	4.51	860
	June 11, 1942	4.61	924
1943	Nov. 23, 1942	4.60	920
1944	Dec. 3, 1943	4.01	575
1945	Jan. 7, 1945	4.75	990
	Jan. 13, 1945	4.60	850
	May 4, 1945	4.65	880
1946	Dec. 28, 1945	5.64	1,760
	Apr. 26, 1946	4.30	750
	May 10, 1946	4.26	722
	May 27, 1946	4.31	750
1947	Dec. 11, 1946	7.50	4,280
	Jan. 25, 1947	4.67	1,100
1948	Nov. 7, 1947	4.70	1,140
	Nov. 11, 1947	4.64	1,100
	May 28, 1948	5.52	1,890
1949	May 13, 1949	5.09	1,540
1950	Nov. 27, 1949	4.40	815
	Feb. 24, 1950	4.37	794
	Mar. 4, 1950	4.46	860
	May 13, 1950	4.61	978
	May 27, 1950	4.64	1,010
	June 4, 1950	4.82	1,170
	June 17, 1950	4.85	1,210
	June 30, 1950	4.37	845
1951	Nov. 22, 1950	4.52	962
	Feb. 11, 1951	4.78	1,130
	May 11, 1951	4.69	1,130
1952	May 20, 1952	4.02	576
1953	Jan. 23, 1953	4.42	830
	Feb. 1, 1953	5.01	1,370
1954	Dec. 9, 1953	5.68	2,000
	Dec. 12, 1953	5.26	1,590
	Dec. 20, 1953	4.19	744
	May 19, 1954	4.54	992
1955	Feb. 8, 1955	5.03	1,390
	May 20, 1955	4.28	806
	June 11, 1955	5.25	1,580
1956	Oct. 29, 1955	4.37	869
	Nov. 4, 1955	4.28	806
	Nov. 10, 1955	4.82	1,230
	Dec. 12, 1955	5.91	2,230
	Apr. 22, 1956	4.66	1,090
	May 20, 1956	5.26	1,590
	June 1, 1956	4.49	953
1957	Dec. 13, 1956	4.55	1,000
	Dec. 18, 1956	4.48	956
	Apr. 5, 1957	4.12	712
	May 1, 1957	4.23	781

a Maximum for year not determined; partial year.

977. Cyclone Creek near Enumclaw, Wash.

Location.--Lat 47°10'30", long 121°46'40", in SW¼ sec.34, T.20 N., R.8 E., at U.S. Highway 410, 10 miles east of Enumclaw.

Drainage area.--2.35 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,810 ft.

Gage.--Crest-stage gage. Datum of gage is 20.30 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through an 8.1- by 8-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Mar. 4, 1950	22.65	109	1954	Dec. 9, 1953	25.04	286
				1955	Feb. 8, 1955	22.64	108
1951	Feb. 10, 1951	22.70	112				
1952	Feb. 4, 1952	22.23	87.5	1956	Dec. 11, 1955	24.58	246
1953	Jan. 23, 1953	22.62	107	1957	Dec. 18, 1956	22.96	127

985. White River near Buckley, Wash.

Location.--Lat 47°09'05", long 121°57'00", in SW¼NW¼ sec.8, T.19 N., R.7 E., on right bank 0.7 mile upstream from Red Creek, 1 mile downstream from Mud Mountain Dam, 4 miles east of Buckley, and 8 miles downstream from Clearwater River.

Drainage area.--401 sq mi. At site prior to 1934, 400 sq mi. Area of lakes and ponds, 1.20 sq mi; mean altitude, 3,800 ft.

Gage.--Recording. At site 3 miles upstream at different datum Dec. 9, 1928, to Nov. 30, 1938. Datum of gage is at mean sea level, datum of 1929 (Corps of Engineers bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Flow regulated by Mud Mountain Reservoir for flood control since 1942 and peak discharges are affected thereafter. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 24, 1929	8.95	4,350	1946	Dec. 29, 1945	807.22	10,600
1930	Mar. 25, 1930	9.43	4,870	1947	Dec. 11, 1946	807.70	12,300
				1948	Nov. 8, 1947	805.76	7,580
1931	Mar. 31, 1931	12.74	9,850	1949	May 12, 1949	805.54	6,950
1932	Feb. 26, 1932	17.5	17,000	1950	Nov. 28, 1949	805.63	7,580
1933	Nov. 13, 1932	17.2	16,500				
1934	December 1933	a23.4	28,000	1951	Feb. 12, 1951	806.70	9,650
				1952	Feb. 4, 1952	805.18	5,550
1939	Mar. 24, 1939	803.18	4,270	1953	Feb. 3, 1953	805.93	9,000
1940	Feb. 10, 1940	803.48	4,060	1954	Dec. 9, 1953	806.89	10,100
				1955	June 10, 1955	805.76	7,210
1941	Nov. 29, 1940	805.67	7,600				
1942	Dec. 19, 1941	805.94	7,550	1956	Dec. 12, 1955	808.16	13,700
1943	Nov. 23, 1942	806.77	9,950	1957	Dec. 10, 1956	805.60	6,910
1944	Dec. 3, 1943	805.45	7,320				
1945	Jan. 7, 1945	806.30	8,820				

a Maximum stage known.

1000. White River at Buckley, Wash.

Location.--Lat 47°10'30", long 122°01'10", in SE¼ sec.34, T.20 N., R.6 E., on left bank 40 ft downstream from Northern Pacific Railway bridge and 1 mile northeast of Buckley.

Drainage area.--427 sq mi. At site 1899-1903, 415 sq mi, excluding Boise Creek.

Gage.--Nonrecording prior to Sept. 1, 1903, at site 550 ft upstream at different datum, and June 8, 1910, to Nov. 30, 1911, at site 50 ft upstream at datum 624.92 ft above mean sea level (Stone & Webster Engineering Corp. bench mark), record supplemented by nonrecording gage 5 miles upstream; recording thereafter. Datum of gage is at mean sea level (levels by Puget Sound Power & Light Co.).

Stage-discharge relation.--Defined by current-meter measurements below 12,000 cfs and extended above.

Remarks.--Records since February 1913 include flow of White River flume which diverts from left bank in NE¼ sec.2, T.19 N., R.5 E., half a mile upstream and carries an average flow of 780 cfs. Records collected by Puget Sound Power & Light Co. under general supervision of the Geological Survey, 1914-23. Complete record furnished by power company thereafter. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1900	Dec. 1, 1899	5.8	14,200	1918	Dec. 18, 1917	31.05	23,100
1901	Jan. 13, 1901	5.0	11,200	1919	Jan. 22, 1919	29.68	19,000
1902	Nov. 22, 1901	5.9	14,600	1921	Dec. 30, 1920	29.00	12,400
1911	Nov. 10, 1910	4.30	12,600	1922	Dec. 13, 1921	29.40	16,600
1912	Nov. 19, 1911	4.50	13,000	1923	Jan. 6, 1923	29.03	13,300
1914	Jan. 6, 1914	28.4	6,050	1935	Oct. 25, 1934	28.60	14,300
1915	Nov. 3, 1914	27.4	4,160	1936	Jan. 4, 1936	26.50	8,990
				1937	Apr. 14, 1937	26.75	7,170
1916	July 2-3, 1916	28.62	9,330	1938	Apr. 18, 1938	28.50	12,400
1917	June 17, 1917	28.24	6,760				

1005. Stuck River near Sumner, Wash.

Location.--Lat 47°14'55", long 122°14'35", in NE¼SW¼ sec.1, T.20 N., R.4 E., on right bank 300 ft downstream from county bridge, 3 miles north of Sumner, and 4½ miles upstream from mouth.

Drainage area.--470 sq mi, excludes that of Lake Tapps.

Gage.--Recording. Datum of gage is at mean sea level (Inter-County River Improvement Commission bench mark).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--64 ft.

Remarks.--White River flume diverts 22 miles upstream for storage in Lake Tapps and for power development at Dieringer powerplant below this station. Flood flow regulated by Mud Mountain Reservoir. All peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 29, 1945	58.73	11,400	1952	May 1, 1952	55.18	2,660
1947	Dec. 14, 1946	59.74	13,100	1953	Feb. 4, 1953	57.35	6,700
1948	Oct. 19, 1947	57.36	7,950	1954	Dec. 9, 1953	59.33	11,700
1949	May 14, 1949	57.36	7,190	1955	June 12, 1955	57.87	7,380
1950	Mar. 6, 1950	56.90	6,010	1956	Dec. 12, 1955	61.40	15,100
1951	Feb. 11, 1951	59.47	12,200	1957	Dec. 18, 1956	57.29	6,460

1015. Puyallup River at Puyallup, Wash.

Location.--Lat 47°12'30", long 122°19'35", in NW¼ sec.20, T.20 N., R.4 E., on left bank 0.8 mile upstream from bridge at Clark Creek, 1 mile northwest of Puyallup, and 7 miles upstream from mouth.

Drainage area.--948 sq mi. Area of lakes and ponds, 2.94 sq mi; mean altitude, 2,500 ft.

Gage.--Recording. Prior to Dec. 3, 1919, at sites 1¼ miles 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 than present datum. Datum of gage is at mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 35,000 cfs and extended by logarithmic plotting.

Bankfull stage.--About 31.5 ft.

Remarks.--All diverted water returned to river above gage. Large part of flow of White River diverted into Lake Tapps (usable capacity, 50,400 acre-ft) and returned via Stuck River above station. Flood flow regulated since 1942 by Mud Mountain Reservoir on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melts above station. Base for partial-duration series, 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Nov. 3, 1914	26.60	9,390	1928	Nov. 18, 1927	8.66	12,800
					Nov. 25, 1927	13.54	25,400
1916	Nov. 19, 1915	29.12	15,200		Nov. 28, 1927	9.88	15,000
	Dec. 22, 1915	31.84	22,300		Dec. 2, 1927	9.36	13,500
	Mar. 10, 1916	31.20	21,100		Jan. 3, 1928	11.69	18,600
	July 3, 1916	30.10	17,800		Jan. 13, 1928	12.70	20,700
1917	Dec. 13, 1916	28.12	15,000	1929	June 14, 1929	7.17	8,610
	June 9, 1917	24.06	12,000				
	June 16, 1917	24.38	12,800	1930	Mar. 25, 1930	6.92	8,390
1918	Dec. 18, 1917	34.15	40,500	1931	Apr. 1, 1931	11.13	19,800
	Dec. 22, 1917	26.50	19,100				
	Dec. 30, 1917	29.93	30,100	1932	Oct. 28, 1931	9.70	16,200
	Jan. 12, 1918	23.92	12,900		Dec. 18, 1931	7.72	11,200
					Jan. 11, 1932	10.64	18,500
1919	Dec. 14, 1918	26.92	20,100		Feb. 26, 1932	16.0	33,000
	Jan. 19, 1919	25.85	16,500		Mar. 5, 1932	11.35	20,500
	Jan. 23, 1919	32.03	36,500		Mar. 18, 1932	8.88	14,200
1920	Jan. 28, 1920	10.4	16,500	1933	Nov. 13, 1932	17.1	37,800
					Nov. 17, 1932	12.16	22,600
1921	Oct. 4, 1920	9.47	13,800		Dec. 2-3, 1932	9.46	15,600
	Dec. 30, 1920	13.60	24,900		Jan. 8, 1933	13.22	25,300
	Jan. 2, 1921	11.73	19,900				
	Feb. 11, 1921	11.55	19,700	1934	Oct. 23, 1933	8.30	15,900
	Feb. 23, 1921	8.15	11,000		Nov. 3, 1933	11.02	22,900
	Mar. 17,18, 1921	10.14	15,800		Dec. 10, 1933	a31.0	57,000
	Apr. 22, 1921	9.53	14,200		Dec. 18, 1933	11.42	25,300
	June 7, 1921	8.54	11,200		Dec. 22, 1933	17.85	45,700
					Jan. 23, 1934	12.16	28,600
1922	Dec. 1, 1921	14.34	27,000				
	Dec. 13, 1921	17.05	35,600	1935	Oct. 25, 1934	15.82	39,500
					Nov. 5, 1934	12.75	30,400
1923	Dec. 24, 1922	9.59	17,100		Dec. 20, 1934	7.00	14,300
	Jan. 6, 1923	14.98	31,000		Dec. 21, 1934	6.70	13,600
					Jan. 23, 1935	11.36	26,200
1924	Dec. 6, 1923	9.92	16,500				
	Jan. 10, 1924	8.00	11,800	1936	Jan. 5, 1936	15.97	12,800
	Feb. 1, 1924	8.88	13,800		May 14, 1936	15.53	11,400
	Feb. 12, 1924	12.0	21,700		June 8, 1936	16.49	14,000
1925	Dec. 11, 1924	10.70	18,600	1937	Dec. 23, 1936	15.95	13,000
	Feb. 3, 1925	8.48	12,800		Apr. 15, 1937	18.12	17,800
					June 21, 1937	16.41	13,300
1926	Dec. 21, 1925	8.70	14,000				
	Dec. 23, 1925	9.40	15,800	1938	Nov. 8, 1937	18.53	19,500
	Jan. 6, 1926	8.56	13,800		Nov. 14, 1937	15.71	11,700
					Nov. 25, 1937	15.67	11,700
1927	Oct.16-17, 1926	9.43	14,500		Nov. 28, 1937	18.70	19,500
					Dec. 29, 1937	18.60	19,000
1928	Oct. 10, 1927	10.82	18,100		Jan. 15, 1938	17.73	16,400
	Nov. 6, 1927	8.72	12,800		Apr. 18, 1938	23.64	33,900

a Present datum.

Peak stages and discharges of Puyallup River at Puyallup, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	Feb. 15, 1939	16.68	13,000	1949	Feb. 17, 1949	17.86	14,000
1940	Feb. 10, 1940	15.86	11,500	1950	Nov. 27, 1949	17.95	16,400
					Dec. 28, 1949	16.66	13,100
1941	Nov. 29, 1940	18.80	18,400		Jan. 21, 1950	16.39	12,400
					Feb. 24, 1950	17.06	14,100
1942	Dec. 19, 1941	20.48	22,500		Mar. 4, 1950	18.40	17,400
	June 15, 1942	16.41	11,000				
				1951	Nov. 27, 1950	17.50	15,100
1943	Nov. 1, 1942	16.96	12,500		Dec. 23, 1950	16.83	13,400
	Nov. 12, 1942	21.56	25,700		Feb. 11, 1951	22.98	29,800
	Mar. 28, 1943	16.52	11,600				
				1952	Feb. 4, 1952	14.72	9,110
1944	Dec. 3, 1943	19.67	19,900				
				1953	Jan. 23, 1953	16.47	13,100
1945	Jan. 7, 1945	20.23	21,800		Feb. 1, 1953	18.10	16,900
	Jan. 13, 1945	17.96	15,700		Feb. 4, 1953	16.66	13,300
	Feb. 8, 1945	18.36	16,700				
				1954	Dec. 9, 1953	24.64	34,500
1946	Dec. 29, 1945	22.14	23,800				
	Jan. 5, 1946	16.39	11,000	1955	Feb. 8, 1955	17.38	15,000
	Feb. 28, 1946	16.68	11,600		June 10, 1955	17.06	14,200
	June 15, 1946	16.64	11,400				
				1956	Oct. 29, 1955	16.29	12,600
1947	Oct. 25, 1946	18.10	14,400		Nov. 4, 1955	15.76	11,500
	Nov. 18, 1946	17.72	13,600		Nov. 10, 1955	15.61	11,200
	Dec. 11, 1946	25.78	33,800		Nov. 27, 1955	16.97	14,100
	Jan. 26, 1947	19.42	17,300		Dec. 12, 1955	25.73	37,600
					Dec. 22, 1955	16.41	12,900
1948	Oct. 19, 1947	17.62	13,400				
	Nov. 8, 1947	19.60	17,700	1957	Dec. 11, 1956	18.33	17,300
	Feb. 26, 1948	17.16	12,600		Dec. 18, 1956	17.00	14,200
	May 28, 1948	16.80	11,800		Mar. 7, 1957	16.48	13,000

1022. Swan Creek near Tacoma, Wash.

Location.--Lat 47°11'30", long 122°23'35", in center of W½ sec.26, T.20 N., R.3 E., at South 72d Street, 1.8 miles east of Pacific Avenue and 4.8 miles southeast of Tacoma city center.

Drainage area.--2.15 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 430 ft.

Gage.--Crest-stage gage. Datum of gage is 12.62 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through an 8- by 6-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 9, 1951	16.10	170	1955	Feb. 8, 1955	14.58	71.8
1952	Feb. 4, 1952	14.30	58.1				
1953	Jan. 31, 1953	14.20	53.0	1956	Dec. 11, 1955	15.41	119
1954	Jan. 6, 1954	14.90	91.0	1957	Dec. 9, 1956	16.24	176

1028. South Fork Hylebos Creek near Puyallup, Wash.

Location.--Lat 47°15'35", long 122°17'40", in SE¼ sec.33, T.21 N., R.4 E., at State Highway 5D, 5.0 miles north of Puyallup.

Drainage area.--0.48 sq mi, of which 0.29 sq mi appears to contribute to flow past the gage. Measurable area of lakes and ponds, 0 sq mi. At peak stages there is considerable effect from pondage that cannot be measured; mean altitude, 350 ft.

Gage.--Crest-stage gage. Datum of gage is 2.85 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of flow through a 2-foot concrete culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Dec. 8, 1948	3.80	3.7	1954	Jan. 6, 1954	3.84	4.8
1950	Mar. 17, 1950	3.91	4.8	1955	Feb. 8, 1955	3.86	4.7
1951	Feb. 9, 1951	4.11	6.8	1956	Dec. 11, 1955	4.13	7.4
1952	Feb. 4, 1952	3.69	3.3	1957	Dec. 10, 1956	3.82	4.6
1953	Jan. 31, 1953	7.26	(a)				

a Discharge not determined.

DUWAMISH RIVER BASIN

1035. Snow Creek near Lester, Wash.

Location.--Lat 47°15'00", long 121°24'00", in NW¼NW¼ sec.3, T.20 N., R.11 E., on right bank at road crossing a quarter of a mile upstream from mouth and 5½ miles northeast of Lester.

Drainage area.--11.9 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,370 ft.

Gage.--Recording and, since Aug. 7, 1947, concrete and woven-wire control. Altitude of gage is 1,950 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 350 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Oct. 25, 1945	3.27	369	1952	May 13, 1952	3.72	298
	Dec. 28, 1945	3.46	443	1953	Jan. 23, 1953	4.38	724
1947	Oct. 25, 1946	3.58	492		Jan. 31, 1953	4.87	1,210
	Dec. 11, 1946	3.89	988	1954	Dec. 9, 1953	4.80	1,130
	Dec. 13, 1946	3.58	701		Dec. 11, 1953	4.58	902
	Jan. 23, 1947	3.13	470		May 18, 1954	3.90	404
1948	Nov. 8, 1947	4.39	930	1955	Feb. 8, 1955	4.63	950
	May 21, 1948	3.70	466		June 9, 1955	4.13	537
	May 28, 1948	3.96	593	1956	Oct. 29, 1955	4.34	692
1949	Nov. 23, 1948	3.73	455		Nov. 4, 1955	4.08	505
	May 12, 1949	3.79	488		Nov. 10, 1955	4.33	684
1950	Oct. 28, 1949	3.82	360		Dec. 11, 1955	4.87	1,210
	Nov. 27, 1949	4.36	692		Apr. 21, 1956	3.99	452
	Mar. 4, 1950	3.87	385		May 19, 1956	4.16	558
					May 30, 1956	3.86	385
1951	Oct. 10, 1950	3.94	382	1957	Dec. 9, 1956	4.00	1,730
	Nov. 22, 1950	3.99	405		Dec. 12, 1956	-	-
	Nov. 25, 1950	3.94	382		Dec. 15, 1956	-	-
	Dec. 23, 1950	4.18	504		Dec. 17, 1956	-	-
	Feb. 9, 1951	4.69	842				
	May 11, 1951	4.07	445				

1040. Friday Creek near Lester, Wash.

Location.--Lat 47°13'10", long 121°27'10", in SE¼NW¼ sec.18, T.20 N., R.11 E., on left bank 0.4 mile upstream from mouth and 2 miles northeast of Lester.

Drainage area.--4.55 sq mi. Area of lakes and ponds, 0.02 sq mi; mean altitude, 3,190 ft.

Gage.--Recording and, since Aug. 9, 1951, concrete control. Altitude of gage is 1,760 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 290 cfs and extended by logarithmic plotting.

Bankfull stage.--5.5 ft.

Remarks.--Base for partial-duration series, 150 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Oct. 25, 1945	4.04	181	1952	May 20, 1952	3.68	125
	Dec. 28, 1945	4.09	194				
				1953	Jan. 23, 1953	4.10	290
1947	Oct. 25, 1946	3.96	160		Jan. 31, 1953	4.12	300
	Dec. 11, 1946	4.90	497				
	Jan. 25, 1947	4.10	191	1954	Dec. 9, 1953	4.31	412
					Dec. 11, 1953	4.15	315
1948	Nov. 7, 1947	4.15	210		Dec. 28, 1953	3.76	158
	Nov. 10, 1947	4.14	219				
	May 28, 1948	4.06	196	1955	Feb. 8, 1955	4.34	424
1949	Nov. 23, 1948	3.90	156	1956	Oct. 29, 1955	4.08	291
	May 12, 1949	3.97	173		Nov. 4, 1955	3.70	150
					Nov. 10, 1955	4.22	360
1950	Nov. 27, 1949	4.53	228		Dec. 11, 1955	4.31	406
	Dec. 28, 1950	4.29	156		May 19, 1956	3.75	165
1951	Nov. 22, 1950	4.57	242	1957	Dec. 10, 1956	4.42	474
	Dec. 23, 1950	4.09	188		Dec. 13, 1956	3.97	243
	Feb. 11, 1951	4.27	262		Dec. 17, 1956	3.99	251
	May 11, 1951	4.06	178				

1045. Green River near Lester, Wash.

Location.--Lat 47°12'30", long 121°33'10", in NE¼SE¼ sec.20, T.20 N., R.10 E., on right bank three-eighths of a mile downstream from Champion Creek, 1¼ miles downstream from McCain Creek and 3 miles west of Lester.

Drainage area.--104 sq mi. Area of lakes and ponds, 0.02 sq mi; mean altitude, 3,190 ft.

Gage.--Recording. Altitude of gage is 1,480 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 4,500 cfs and extended by logarithmic plotting.

Bankfull stage.--9.5 ft.

Remarks.--Base for partial-duration series, 1,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 28, 1945	9.07	4,010	1949	Nov. 23, 1948	8.12	2,780
	Apr. 26, 1946	7.52	2,070		Feb. 17, 1949	7.45	1,940
	May 4, 1946	7.29	1,860		Apr. 18, 1949	7.19	1,690
	May 29, 1946	6.98	1,560		Apr. 29, 1949	7.02	1,510
					May 13, 1949	8.26	2,840
1947	Oct. 25, 1946	7.07	1,610				
	Dec. 11, 1946	12.7	10,200	1950	Nov. 27, 1949	8.62	3,610
	Jan. 25, 1947	7.64	2,200		Dec. 28, 1949	8.03	2,600
					Feb. 24, 1950	7.21	1,690
1948	Oct. 19, 1947	7.37	1,900		Mar. 4, 1950	7.81	2,310
	Nov. 8, 1947	9.00	3,920		May 13, 1950	7.76	2,260
	May 28, 1948	8.81	3,430		May 22, 1950	7.08	1,600

Peak stages and discharges of Green River near Lester, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	May 27, 1950	7.29	1,790	1954	May 19, 1954	7.48	2,120
	June 5, 1950	7.33	1,840				
	June 12, 1950	7.01	1,510	1955	Feb. 8, 1955	9.91	5,280
	June 17, 1950	7.24	1,740		May 19, 1955	7.34	1,980
					June 9, 1955	7.86	2,520
1951	Nov. 22, 1950	8.37	3,140				
	Dec. 23, 1950	7.95	2,620	1956	Oct. 29, 1955	9.41	4,500
	Feb. 9, 1951	9.60	4,790		Nov. 4, 1955	7.60	2,240
	May 11, 1951	7.77	2,400		Nov. 10, 1955	8.46	3,210
					Dec. 12, 1955	11.3	7,630
1952	Feb. 4, 1952	6.92	1,600		Apr. 15, 1956	7.24	1,890
	Apr. 19, 1952	6.92	1,680		Apr. 22, 1956	8.51	3,270
	May 13, 1952	6.77	1,570		May 10, 1956	7.39	2,030
					May 18, 1956	8.65	3,460
1953	Jan. 18, 1953	7.25	1,900		May 31, 1956	7.47	2,110
	Jan. 23, 1953	9.41	4,500				
	Jan. 31, 1953	9.73	4,990	1957	Nov. 17, 1956	7.44	2,080
	Feb. 7, 1953	6.92	1,600		Dec. 9, 1956	11.17	7,400
	May 6, 1953	6.80	1,500		Dec. 13, 1956	8.74	3,620
					Dec. 16, 1956	8.08	2,840
1954	Dec. 9, 1953	10.37	6,020		Dec. 18, 1956	8.45	3,260
	Dec. 12, 1953	9.77	5,050		Apr. 5, 1957	7.09	1,890
	Dec. 20, 1953	6.94	1,620		Apr. 30, May 1, 1957	7.28	2,060
	May 9, 1954	7.04	1,710				

1050. Smay Creek near Lester, Wash.

Location.--Lat 47°15'40", long 121°33'50", in SW¼ sec.32, T.21 N., R.10 E., on right bank 3½ miles upstream from mouth and 4½ miles northwest of Lester.

Drainage area.--8.71 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,220 ft.

Gage.--Recording and, since Aug. 7, 1947, rock or concrete control. Prior to Dec. 12, 1946, at site 200 ft upstream at datum 4.28 ft higher. Altitude of gage is 1,900 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 370 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947 a/	Oct. 25, 1946	3.15	250	1953	Jan. 23, 1953	4.32	375
	Dec. 11, 1946	-	-		Jan. 31, 1953	4.47	447
	Jan. 24, 1947	-	-				
				1954	Dec. 9, 1953	4.63	534
1948	Nov. 8, 1947	4.27	412		Dec. 12, 1953	4.18	315
	Nov. 10, 1947	4.04	336				
	May 28, 1948	3.95	308	1955	Feb. 8, 1955	4.43	422
					June 10-11, 1955	4.10	283
1950	Nov. 27, 1949	4.22	332				
	Mar. 4, 1950	3.89	211	1956	Oct. 29, 1955	4.05	265
	June 4, 1950	3.88	208		Nov. 4, 1955	3.89	211
	June 17, 1950	3.93	224		Nov. 10, 1955	4.26	349
					Dec. 12, 1955	4.53	478
1951	Nov. 22, 1950	4.13	295		Apr. 22, 1956	3.93	224
	Dec. 23, 1950	4.11	287		May 18-19, 1956	4.13	295
	Feb. 9, 1951	4.49	457		May 31, 1956	3.86	202
	May 11, 1951	3.91	217				
				1957	Dec. 10, 1956	4.77	617
1952	May 21, 1952	3.66	147		Dec. 13, 1956	4.25	344
					Dec. 16, 1956	4.21	327
1953	Jan. 18, 1953	3.87	205		Dec. 18, 1956	4.21	327

a Maximum for year not determined; partial year.

1055. Charley Creek near Eagle Gorge, Wash.

Location.--Lat 47°15'00", long 121°47'00", in SW¼NW¼ sec.3, T.20 N., R.8 E., on left bank 300 ft downstream from Beaverdam Lake Creek, 1½ miles southwest of Eagle Gorge, and 1¾ miles upstream from mouth.

Drainage area.--11.0 sq mi. Area of lakes and ponds, 0.02 sq mi; mean altitude, 2,820 ft.

Gage.--Recording. Altitude of gage is 1,350 ft (from topographic map)

Stage-discharge relation.--Defined by current-meter measurements below 570 cfs and extended by logarithmic plotting.

Bankfull stage.--7.0 ft.

Remarks.--Base for partial-duration series, 300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Nov. 26, 1946	3.56	306	1951	Nov. 23, 1950	4.21	640
	Dec. 11, 1946	6.17	1,380		Dec. 6, 1950	3.31	315
	Jan. 23, 1947	4.00	425		Dec. 23, 1950	3.61	410
					Jan. 2, 1951	3.46	361
1948	Oct. 3, 1947	3.83	381		Jan. 25, 1951	3.60	407
	Oct. 19, 1947	3.62	316		Feb. 11, 1951	5.71	1,510
	Nov. 7, 1947	4.40	559				
	Nov. 10, 1947	3.62	316	1952	Feb. 4, 1952	3.78	468
	Feb. 26, 1948	3.91	395				
	May 6, 1948	3.59	316	1953	Jan. 17, 1953	3.96	539
	June 21, 1948	3.76	367		Jan. 23, 1953	5.00	1,070
					Jan. 31, 1953	4.50	785
1949	Nov. 20, 1948	3.80	367		Feb. 6, 1953	3.67	427
	Nov. 23, 1948	3.7[illegible]	354				
	Feb. 17, 1949	4.0[illegible]	440	1954	Dec. 5, 1953	3.65	416
	May 2, 1949	3.58	311		Dec. 9, 1953	6.6	2,440
					Dec. 12, 1953	3.94	486
1950	Oct. 28, 1949	-	-		June 6, 1954	3.56	353
	Nov. 27, 1949	4.06	440				
	Dec. 28, 1949	-	-	1955	Dec. 31, 1954	3.77	460
	Feb. 24, 1950	4.38	710		Feb. 8, 1955	5.32	1,280
	Mar. 4, 1950	4.55	810		June 9, 1955	3.29	302
	Mar. 17, 1950	3.42	348				
	Apr. 16, 1950	3.50	374	1956a/	Oct. 29, 1955	3.47	356
1951	Oct. 10, 1950	4.12	595		Nov. 26, 1955	3.60	400

a Maximum for year not determined; partial year.

1060. Bear Creek near Eagle Gorge, Wash.

Location.--Lat 47°17'00", long 121°48'10", in NW¼ sec.28, T.21 N., R.8 E., on left bank a quarter of a mile upstream from mouth and 2½ miles northwest of Eagle Gorge.

Drainage area.--4.25 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,370 ft.

Gage.--Recording. At site 25 ft upstream at same datum prior to Sept. 8, 1949. Altitude of gage is 1,000 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 240 cfs and extended on basis of slope-area measurement at 830 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 180 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Dec. 10 or 11, 1946	4.00	605	1950	Mar. 4, 1950	2.82	384
	Jan. 23 or 24, 1947	3.30	264				
				1951	Oct. 10, 1950	2.20	192
1948	Oct. 3, 1947	3.17	219		Nov. 24, 1950	2.15	182
	Oct. 19, 1947	3.18	223		Feb. 11, 1951	4.00	830
	Nov. 7, 1947	3.29	275				
	Jan. 1, 1948	3.07	194	1952	Feb. 4, 1952	2.18	188
	Feb. 22, 1948	3.13	197				
	Feb. 26, 1948	3.27	250	1953	Jan. 17, 1953	2.17	186
	Mar. 21, 1948	3.13	207		Jan. 23, 1953	2.54	275
					Jan. 31, 1953	2.51	267
1949	Nov. 20, 1948	3.22	200				
	Nov. 24, 1948	3.18	185	1955	Dec. 30, 1954	2.17	261
	Feb. 17, 1949	3.68	367		Feb. 7, 1955	2.69	432
1950	Nov. 27, 1949	2.20	192	1956	Dec. 11, 1955	4.46	1,010
	Dec. 27, 1949	2.25	203		Dec. 22, 1955	1.85	234
	Feb. 24, 1950	2.38	233				

1065. Green River near Palmer, Wash.

Location.--Lat 47°17'40", long 121°49'20", in SW¼NW¼ sec.20, T.21 N., R.8 E., on right bank 1½ miles upstream from diversion dam and intake of Tacoma water-supply system, 2½ miles downstream from North Fork, and 3½ miles southeast of Palmer.

Drainage area.--230 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 3,100 ft.

Gage.--Recording. Datum of gage is 912.6 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	December 1917	20.0	25,000	1944	Dec. 3, 1943	16.18	14,600
1932	Jan. 11, 1932	16.55	15,100	1945	Jan. 7, 1945	15.8	13,600
	Feb. 26, 1932	17.65	17,400		Jan. 13, 1945	12.41	7,020
	Mar. 5, 1932	15.02	11,800		Feb. 8, 1945	12.20	6,710
	Mar. 18, 1932	12.00	6,410	1946	Dec. 28, 1945	14.84	11,400
1933	Nov. 13, 1932	16.54	14,900	1947	Dec. 11, 1946	19.95	23,200
	Nov. 16, 1932	14.42	10,600		Dec. 13, 1946	15.08	12,000
	Dec. 2, 1932	14.03	9,790		Jan. 26, 1947	13.27	8,510
	Jan. 8, 1933	15.60	13,000	1948	Nov. 7, 1947	13.29	8,510
1934	Oct. 22, 1933	13.51	8,870	1949	Nov. 24, 1948	11.75	6,150
	Nov. 3, 1933	15.62	13,000		Feb. 17, 1949	12.61	7,340
	Dec. 6, 1933	14.12	9,980	1950	Nov. 27, 1949	13.14	8,170
	Dec. 9, 1933	19.4	21,700		Dec. 28, 1949	12.92	7,830
	Dec. 18, 1933	13.03	8,000		Feb. 24, 1950	11.95	6,430
	Dec. 22, 1933	17.82	17,800		Mar. 4, 1950	13.64	9,050
	Jan. 23, 1934	16.29	14,500	1951	Nov. 22, 1950	13.10	8,170
1935	Oct. 25, 1934	15.75	13,400		Dec. 23, 1950	11.86	6,290
	Nov. 5, 1934	12.57	7,340		Feb. 9, 1951	16.28	14,500
	Dec. 20, 1934	12.28	6,860	1952	Feb. 4, 1952	11.50	5,940
	Jan. 25, 1935	14.80	11,400	1953	Jan. 23, 1953	15.29	12,700
1936	Jan. 4, 1936	12.37	7,080		Jan. 31, 1953	15.08	12,300
1937	Apr. 14, 1937	11.40	5,580	1954	Dec. 9, 1953	17.45	17,600
1938	Nov. 8, 1937	12.90	7,900		Dec. 12, 1953	14.89	12,000
	Nov. 25, 1937	12.57	7,400	1955	Feb. 8, 1955	15.93	14,100
	Nov. 28, 1937	15.07	12,800	1956	Oct. 29, 1955	13.15	8,640
	Apr. 18, 1938	15.74	13,200		Dec. 11, 1955	17.71	18,300
1939	Dec. 7, 1938	11.89	6,300	1957	Dec. 10, 1956	16.14	14,500
1940	Feb. 10, 1940	10.93	5,040		Dec. 13, 1956	13.41	9,120
1941	Nov. 29, 1940	13.05	8,070		Dec. 16, 1956	12.06	6,810
1942	Dec. 19, 1941	12.92	7,900		Dec. 18, 1956	12.63	7,730
1943	Nov. 23, 1942	14.68	11,200				

1072. Deep Creek at Cumberland, Wash.

Location.--Lat 47°17'25", long 121°55'00", in SE¼ sec.21, T.21 N., R.7 E., at the Northern Pacific Railroad, 0.6 mile northeast of Cumberland.

Drainage area.--2.28 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,330 ft.

Gage.--Crest-stage gage. Datum of gage is 5.13 below upstream invert of right bank culvert.

Stage-discharge relation.--Defined by computations of discharge through two 3-foot cast iron pipe culverts.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Mar. 4, 1950	8.96	82.0	1954	Dec. 9, 1953	10.37	93.2
				1955	Feb. 8, 1955	8.59	59.8
1951	Feb. 10, 1951	10.64	109				
1952	Oct. 22, 1951	6.83	12.0	1956	Dec. 11, 1955	10.52	102
1953	Jan. 23, 1953	7.98	43.0	1957	Oct. 21, 1956	10.03	61.0

1075. Green River near Black Diamond, Wash.

Location.--Lat 47°17'00", long 122°03'10", in NW¼ sec.28, T.21 N., R.6 E., on left bank at highway bridge, three-quarters of a mile upstream from Newaukum Creek and 3 miles southwest of Black Diamond.

Drainage area.--281 sq mi. Area of lakes and ponds, 0.20 cfs; mean altitude, 2,900 ft.

Gage.--Nonrecording prior to Nov. 11, 1944; recording thereafter. Datum of gage is 158.5 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 5,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Feb. 10, 1940	5.32	4,710	1945	Feb. 8, 1945	6.21	7,050
					Apr. 23, 1945	5.75	5,870
1941	Nov. 29, 1940	6.55	8,680	1946	Dec. 29, 1945	7.85	11,100
1942	Dec. 19, 1941	6.46	8,360	1947	Dec. 11, 1946	11.24	21,100
1943	Nov. 23, 1942	7.38	11,000		Dec. 13, 1946	8.56	13,300
					Jan. 26, 1947	6.95	8,990
1944	Dec. 3, 1943	8.17	13,900	1948	Nov. 8, 1947	6.89	8,730
1945	Jan. 7, 1945	8.22	14,400		Nov. 11, 1947	5.88	6,230
	Jan. 13, 1945	6.33	7,490				

1085. Newaukum Creek near Black Diamond, Wash.

Location.--Lat 47°16'30", long 122°03'30", in SW¼ sec.28, T.21 N., R.6 E., on right bank three-quarters of a mile upstream from mouth and 3½ miles southwest of Black Diamond.

Drainage area.--25.5 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 883 ft.

Gage.--Recording. Altitude of gage is 310 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 600 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 350 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 7, 1945	3.1	477	1953	Jan. 31, 1953	2.86	704
					Feb. 4, 1953	2.60	500
1946	Dec. 28, 1945	3.40	510		Mar. 24, 1953	2.46	406
	Jan. 5, 1946	3.02	570				
	Jan. 24, 1946	2.67	365	1954	Nov. 25, 1953	2.55	465
					Dec. 6, 1953	2.65	535
1947	Dec. 14, 1946	3.29	803		Dec. 9, 1953	3.38	1,260
	Jan. 25, 1947	2.76	456		Dec. 12, 1953	2.56	536
	Feb. 2, 1947	2.95	576		Dec. 19, 1953	2.30	390
					Jan. 6, 1954	2.65	595
1948	Jan. 4, 1948	2.59	360		Jan. 22, 1954	2.27	376
	Feb. 16, 1948	2.64	387		Apr. 4, 1954	2.25	368
	Feb. 25, 1948	2.88	528				
	Mar. 22, 1948	2.78	480	1955	Dec. 30, 1954	2.26	390
					Feb. 7, 1955	3.00	860
1949	Dec. 9, 1948	2.98	856				
	Dec. 19, 1948	2.51	397	1956	Oct. 25, 1955	2.32	380
	Feb. 17, 1949	3.54	1,820		Nov. 2, 1955	2.26	350
	Feb. 22, 1949	2.62	496		Nov. 19, 1955	2.55	510
					Nov. 26, 1955	2.59	534
1950	Nov. 27, 1949	2.74	590		Dec. 1, 1955	2.46	456
	Dec. 23, 1949	2.45	358		Dec. 11, 1955	3.43	1,320
	Dec. 27, 1949	3.20	1,160		Dec. 20, 1955	2.57	522
	Jan. 22, 1950	3.29	1,240		Jan. 4, 1956	2.48	468
	Mar. 4, 1950	3.35	1,320		Jan. 15, 1956	2.30	370
	Mar. 17, 1950	2.77	636		Mar. 23, 1956	2.30	370
	Apr. 15, 1950	2.62	506				
				1957	Dec. 9, 1956	2.53	498
1951	Feb. 9, 1951	3.73	a1,810		Dec. 13, 1956	2.31	375
					Dec. 17, 1956	2.42	432
1952	Feb. 3, 1952	2.61	a507		Mar. 7, 1957	2.62	554
1953	Jan. 22, 1953	2.78	634				

a Annual peak only.

1125. Big Soos Creek near Auburn, Wash.

Location.--Lat 47°19'00", long 122°08'40", in SE¼ sec.10, T.21 N., R.5 E., on right bank three-quarters of a mile downstream from Covington Creek, 2 miles upstream from mouth, and 4 miles east of Auburn.

Drainage area.--49.4 sq mi (exlcudes 3.95 sq mi in vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935). Area of lakes and ponds, 1.27 sq mi; mean altitude, 496 ft.

Gage.--Recording prior to Dec. 23, 1955; nonrecording thereafter. At site 700 ft upstream at different datum prior to Feb. 11, 1951. Altitude of gage is 170 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges of Big Soos Creek near Auburn, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Feb. 8, 1945	3.70	493	1951	Dec. 24, 1950	3.43	478
					Jan. 3, 1951	3.53	560
1946	Jan. 8, 1946	3.61	488		Feb. 10, 1951	5.57	1,570
	Feb. 7, 1946	3.27	402				
				1952	Feb. 4, 1952	3.41	281
1947	Dec. 15, 1946	4.22	748				
	Jan. 26, 1947	3.63	480	1953	Feb. 1, 1953	4.13	580
	Feb. 2, 1947	3.82	567				
				1954	Dec. 12, 1953	4.18	505
1948	Jan. 4, 1948	3.61	486		Dec. 20, 1953	3.94	396
	Feb. 26, 1948	3.59	496		Jan. 6, 1954	4.54	764
					Jan. 22, 1954	3.96	462
1949	Dec. 10, 1948	3.56	518				
	Feb. 17, 1949	3.86	733	1955	Feb. 8, 1955	4.11	545
	Feb. 23, 1949	3.47	522				
				1956 a/	Dec. 2, 1955	4.50	495
1950	Jan. 22, 1950	4.08	744		Dec. 12, 1955	5.15	841
	Feb. 16, 1950	3.35	415		Dec. 23, 1955	5.16	630
	Feb. 26, 1950	3.65	570		Jan. 7, 1956	5.26	932
	Mar. 5, 1950	4.11	869		Jan. 16, 1956	4.55	518
	Mar. 19, 1950	3.53	550		Jan. 23, 1956	4.30	415
1951	Dec. 7, 1950	3.45	443				

a Partial year.

1130. Green River near Auburn, Wash.

Location.--Lat 47°18'15", long 122°12'10", in lot 3, sec.17, T.21 N., R.5 E., on left bank 1½ miles east of Auburn and 2 miles downstream from Big Soos Creek.

Drainage area.--382 sq mi (excludes 4 sq mi in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935). Area of lakes and ponds, 2.29 sq mi; mean altitude, 2,400 ft.

Gage.--Recording. Datum of gage is at mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--65 ft.

Remarks.--Base for partial-duration series, 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	Apr. 15, 1937	61.37	6,820	1949	Nov. 24, 1948	60.65	6,420
					Feb. 17, 1949	62.51	9,470
1938	Nov. 9, 1937	62.21	7,950				
	Nov. 26, 1937	62.13	7,800	1950	Nov. 27, 1949	62.16	9,130
	Nov. 28, 1937	64.90	12,400		Dec. 28, 1949	62.59	9,810
	Apr. 18, 1938	65.88	14,400		Feb. 24, 1950	61.43	7,650
					Mar. 4, 1950	63.82	11,800
1939	Dec. 8, 1938	60.25	5,420				
				1951	Nov. 23, 1950	62.13	9,000
1940	Feb. 10, 1940	59.90	5,150		Dec. 23, 1950	61.30	7,700
					Feb. 10, 1951	67.02	18,400
1941	Nov. 29, 1940	61.59	7,290				
				1952	Feb. 4, 1952	60.34	6,280
1942	Dec. 19, 1941	62.43	9,310				
				1953	Jan. 18, 1953	60.28	6,190
1943	Nov. 23, 1942	63.42	10,900		Jan. 23, 1953	64.67	13,300
					Feb. 1, 1953	64.71	13,400
1944	Dec. 3, 1943	64.60	12,900				
				1954	Dec. 10, 1953	67.07	18,300
1945	Jan. 7, 1945	64.98	13,600		Dec. 12, 1953	64.29	12,300
	Jan. 13, 1945	61.51	7,930				
	Feb. 8, 1945	61.57	8,080	1955	Dec. 31, 1954	60.44	6,320
	Apr. 24, 1945	60.18	6,080		Feb. 8, 1955	65.91	15,500
1946	Dec. 29, 1945	64.31	12,800	1956	Oct. 30, 1955	62.03	8,600
					Dec. 12, 1955	67.73	20,300
1947	Dec. 11, 1946	68.16	22,000				
	Dec. 14, 1946	65.74	15,800	1957	Dec. 10, 1956	65.13	13,900
	Jan. 26, 1947	62.82	9,990		Dec. 13, 1956	62.24	8,910
					Dec. 16, 1956	60.79	6,810
1948	Nov. 8, 1947	62.21	8,960		Dec. 18, 1956	61.41	7,670
	Nov. 11, 1947	60.70	6,570				

1132. Dolloff Lake Outlet near Auburn, Wash.

Location.--Lat 47°18'15", long 122°16'15", in SE¼SE¼ sec.15, T.21 N., R.4 E., at county road 50 ft south of State Highway 5 and 2.2 miles west of Auburn.

Drainage area.--3.15 sq mi. Area of lakes and ponds, 0.08 sq mi; mean altitude, 420 ft.

Gage.--Crest-stage gage. Datum of gage is 12.96 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 5- by 5-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Jan. 20, 1950	15.50	62.0	1954	Jan. 6, 1954	15.03	47.5
				1955	Feb. 8, 1955	14.70	36.6
1951	Feb. 9, 1951	16.63	112				
1952	Apr. 27, 1952	14.59	33.0	1956	Dec. 11 or 21, 1955	15.20	53.7
1953	Jan. 31, 1953	14.62	35.0	1957	Feb. 24, 1957	14.99	46.9

LAKE WASHINGTON BASIN

1135. North Fork Cedar River near Lester, Wash.

Location.--Lat 47°19'00", long 121°30'00", in SW¼ sec.11, T.21 N., R.10 E., on right bank 120 ft downstream from falls, 1 mile upstream from confluence with South Fork, and 7½ miles north of Lester.

Drainage area.--8.81 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 3,830 ft.

Gage.--Recording. At datum 2 ft higher prior to Sept. 24, 1953. Altitude of gage is 2,320 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 500 cfs and extended on basis of slope-area measurement at 2,310 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Jan. 7, 1945	7.37	1,180	1951	Oct. 10, 1950	6.20	515
	Jan. 13, 1945	6.16	672		Dec. 23, 1950	6.56	725
	Feb. 7, 1945	5.96	605		Feb. 9, 1951	7.60	1,200
					May 11, 1951	6.14	620
1946	Oct. 25, 1945	5.85	575				
	Dec. 28, 1945	5.72	530	1952	May 13, 1952	5.25	363
1947	Oct. 25, 1946	5.90	590	1954	Dec. 9, 1953	3.67	858
	Dec. 11, 1946	7.08	1,050		Dec. 11, 1953	3.64	810
	Dec. 13, 1946	6.92	910				
				1955	Feb. 8, 1955	3.18	465
1948	Oct. 19, 1947	6.21	645		June 9, 1955	3.63	754
	Nov. 7, 1947	5.58	465		June 21, 1955	3.17	460
	May 28, 1948	6.19	645				
	June 9, 1948	5.77	505	1956	Oct. 29, 1955	3.61	738
					Nov. 4, 1955	3.49	653
1949	May 12, 1949	5.91	590		Nov. 9, 1955	3.66	778
	June 6, 1949	5.30	420		Dec. 11, 1955	4.20	1,280
					May 20, 1956	3.39	584
1950	Oct. 28, 1949	6.12	655				
	Nov. 27, 1949	6.92	960	1957	Dec. 9, 1956	4.95	2,320
	June 16, 1950	5.55	485		Dec. 12, 1956	3.38	578
	June 19, 1950	5.57	485		Dec. 15, 1956	3.08	416
	June 29, 1950	5.44	458		Dec. 17, 1956	3.39	584

1140. South Fork Cedar River near Lester, Wash.

Location.--Lat 47°18'30", long 121°31'00", in SW¼NE¼ sec.15, T.21 N., R.10 E., on left bank about half a mile upstream from confluence with North Fork and 7 miles northwest of Lester.

Drainage area.--6.0 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,500 ft.

Gage.--Recording and, since Aug. 31, 1951, concrete control. Altitude of gage is 2,300 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 230 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	Dec. 5, 1944	3.22	269	1950	June 17, 1950	5.29	346
	Jan. 7, 1945	4.86	878		June 29, 1950	4.87	224
	Jan. 13, 1945	3.61	388	1951	Oct. 10, 1950	5.04	281
	Feb. 7, 1945	3.25	278		Nov. 25, 1950	4.89	227
	May 3-4, 1945	3.05	222		Dec. 23, 1950	5.53	441
1946	Oct. 25, 1945	3.56	372		Feb. 9, 1951	6.07	664
	Dec. 28, 1945	3.64	398		May 11, 1951	5.07	284
	Apr. 26, 1946	3.04	215				
	May 4, 1946	3.10	232	1952	May 13, 1952	4.65	199
	May 28-29, 1946	3.25	276	1953	Jan. 18, 1953	4.74	230
1947	Oct. 25, 1946	3.97	523		Jan. 23, 1953	5.48	380
	Dec. 11, 1946	4.79	630		Jan. 31, 1953	5.95	520
	Dec. 14, 1946	4.56	540				
	Jan. 23, 1947	3.78	305	1954	Dec. 9, 1953	6.19	596
	Jan. 25, 1947	3.52	249		Dec. 11, 1953	5.44	370
					May 18-19, 1954	4.80	225
1948	Oct. 19, 1947	3.49	233				
	Nov. 7, 1947	4.58	540	1955	Feb. 8, 1955	5.74	497
	Nov. 10, 1947	3.58	259		June 9, 1955	5.25	337
	May 28, 1948	4.06	368		June 21, 1955	4.73	223
	June 3, 1948	3.35	206				
	June 7, 1948	3.45	226	1956	Oct. 29, 1955	5.14	295
					Nov. 4, 1955	4.86	237
1949	Nov. 23, 1948	3.42	224		Nov. 10, 1955	5.07	279
	Feb. 17, 1949	-	-		Dec. 11, 1955	5.92	511
	May 13, 1949	3.82	305		May 18, 1956	5.18	305
	June 6, 1949	3.38	212				
				1957	Dec. 9, 1956	10.41	2,340
1950	Oct. 28, 1949	5.67	476		Dec. 13, 1956	5.20	310
	Nov. 27, 1949	5.92	585		Dec. 15, 1956	5.09	283
	Dec. 28, 1949	4.91	222		Dec. 17, 1956	5.14	295
	Mar. 4, 1950	4.98	241		Apr. 29, 1957	4.98	261
	June 5, 1950	4.88	214				

1145. Cedar River below Bear Creek, near Cedar Falls, Wash.

Location.--Lat 47°20'40", long 121°33'00", in SE¼SE¼ sec.32, T.22 N., R.10 E., on right bank 500 ft downstream from Bear Creek and 12 miles southeast of Cedar Falls.

Drainage area.--25.4 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 3,460 ft.

Gage.--Recording. Altitude of gage is 1,880 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,300 cfs and extended by logarithmic plotting.

Bankfull stage.--15 ft.

Remarks.--Base for partial-duration series, 1,000 cfs.

Peak stages and discharges of Cedar River below Bear Creek, near Cedar Falls, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 28, 1945	5.40	1,110	1952	May 13, 1952	5.04	764
1947	Oct. 25, 1946	5.27	1,040	1953	Jan. 23, 1953	5.91	1,430
	Dec. 11, 1946	6.32	1,940		Jan. 31, 1953	6.38	1,900
	Dec. 13, 1946	6.10	1,640				
	Jan. 24, 1947	5.46	1,050	1954	Dec. 9, 1953	6.26	1,770
	Jan. 25, 1947	5.47	1,050		Dec. 11, 1953	5.96	1,470
1948	Oct. 19, 1947	5.58	1,170	1955	Feb. 9, 1955	6.02	1,530
	Nov. 7, 1947	5.65	1,250		June 9, 1955	5.68	1,210
	May 28, 1948	5.70	1,250				
	June 9, 1948	5.52	1,090	1956	Oct. 29, 1955	5.69	1,270
					Nov. 4, 1955	5.56	1,110
1949	May 13, 1949	5.50	1,090		Nov. 9, 1955	5.53	1,080
					Dec. 12, 1955	6.47	2,000
1950	Oct. 28, 1949	5.38	1,010		May 19, 1956	5.59	1,130
	Nov. 27, 1949	6.00	1,510				
				1957	Dec. 9, 1956	7.08	2,720
1951	Oct. 10, 1950	5.38	1,010		Dec. 17, 1956	5.30	1,020
	Dec. 23, 1950	5.63	1,170				
	Feb. 9, 1951	6.30	1,800				

1150. Cedar River near Cedar Falls, Wash.

Location.--Lat 47°22'20", long 121°37'30", in SE¼SW¼ sec.23, T.22 N., R.9 E., on right bank 2 miles upstream from Cedar Lake and 8 miles southeast of Cedar Falls.

Drainage area.--41.8 sq mi. Area of lakes and ponds, 0.60 sq mi; mean altitude, 3,230 ft.

Gage.--Recording. Altitude of gage is 1,560 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,900 cfs and extended above.

Bankfull stage.--8.5 ft.

Remarks.--Peaks during periods of backwater from Cedar Lake computed by stage-ratio method. Base for partial-duration series, 1,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Oct. 25, 1945	5.97	1,520	1951	May 11, 1951	5.94	1,500
	Dec. 28, 1945	7.18	2,600				
	May 29, 1946	a5.22	1,120	1952	Feb. 4, 1952	5.58	1,250
					May 21, 1952	5.25	1,040
1947	Oct. 25, 1946	6.08	1,660				
	Dec. 11, 1946	9.34	4,930	1953	Jan. 9, 1953	5.61	1,130
	Jan. 24, 1947	6.73	2,150		Jan. 11, 1953	6.07	1,590
	Jan. 25, 1947	6.50	1,800		Jan. 18, 1953	5.73	1,350
	Apr. 19, 1947	4.99	1,020		Jan. 23, 1953	8.09	3,500
					Jan. 31, 1953	a9.29	3,860
1948	Oct. 3, 1947	5.44	1,240				
	Oct. 19, 1947	6.57	2,070	1954	Dec. 9, 1953	9.13	4,710
	Nov. 7, 1947	6.73	2,150		Dec. 12, 1953	7.68	3,160
	Nov. 10, 1947	a5.89	1,270		May 19, 1954	a5.77	1,250
	May 28, 1948	6.25	1,620				
	June 9, 1948	a5.85	1,140	1955	Nov. 18, 1954	5.52	1,230
	June 21, 1948	a5.22	1,040		Feb. 8, 1955	8.20	3,620
					June 9, 1955	6.33	1,770
1949	Nov. 23, 1948	5.86	1,420		June 22, 1955	5.13	1,010
	Feb. 17, 1949	5.14	1,070				
	May 13, 1949	5.93	1,470	1956	Oct. 29, 1955	6.60	2,070
					Nov. 4, 1955	6.22	1,770
1950	Oct. 28, 1949	5.94	1,470		Nov. 9, 1955	5.61	1,330
	Nov. 27, 1949	7.63	2,460		Dec. 11, 1955	9.80	5,590
	Dec. 28, 1949	5.65	1,390		Dec. 22, 1955	5.65	1,210
	Mar. 4, 1950	a7.50	1,960		Apr. 21, 1956	5.44	1,220
	June 20, 1950	a6.56	1,090		May 19, 1956	7.32	1,720
					May 31, 1956	6.40	1,190
1951	Oct. 10, 1950	6.20	1,720				
	Nov. 24, 1950	5.28	1,190	1957	Nov. 17, 1956	5.16	1,060
	Dec. 23, 1950	a7.49	1,720		Dec. 10, 1956	10.16	6,090
	Feb. 9, 1951	a9.75	3,620		Apr. 30, 1957	5.49	1,240

a Backwater from Cedar Lake.

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1155. Rex River near Cedar Falls, Wash.

Location.--Lat 47°21'10", long 121°39'50", in NE¼NW¼ sec.33, T.22 N., R.9 E., on right bank 2½ miles upstream from mouth and Cedar Lake and 7 miles southeast of Cedar Falls.

Drainage area.--13.0 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,360 ft.

Gage.--Recording. Altitude of gage is 1,600 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,100 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 700 cfs.

Peak stages and dischargea

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Oct. 25, 1945	5.76	1,320	1951	Nov. 24, 1950	5.08	763
	Dec. 28, 1945	6.20	1,580		Dec. 23, 1950	5.21	840
					Feb. 9, 1951	6.25	1,620
1947a/	Dec. 14, 1946	-	-		Feb. 11, 1951	6.27	1,660
	Jan. 23, 1947	-	-				
	Jan. 25, 1947	5.50	1,090	1952	Feb. 4, 1952	5.00	702
1948	Oct. 3, 1947	5.20	860	1953	Jan. 23, 1953	6.27	1,640
	Oct. 17, 1947	5.04	748		Jan. 31, 1953	6.01	1,570
	Oct. 19, 1947	5.20	860				
	Nov. 7, 1947	5.48	1,090	1954	Dec. 9, 1953	6.55	1,870
	Nov. 10, 1947	5.20	860		Dec. 11, 1953	5.76	1,290
1949	Nov. 23, 1948	5.31	938	1955	Feb. 8, 1955	6.24	1,570
1950	Oct. 28, 1949	5.46	1,010	1956	Dec. 11, 1955	6.80	2,160
	Nov. 27, 1949	5.98	1,560				
	Dec. 28, 1949	5.05	776	1957	Nov. 16, 1956	5.30	900
	Feb. 24, 1950	5.07	769		Dec. 9, 1956	7.19	2,550
	Mar. 4, 1950	5.45	1,050		Dec. 12, 1956	5.65	1,140
					Dec. 15, 1956	5.46	1,010
1951	Oct. 10, 1950	5.43	1,110		Dec. 17, 1956	5.52	1,050

a Maximum for year not determined.

1165. Cedar River at Cedar Falls, Wash.

Location.--Lat 47°25'10", long 121°47'20", in SE¼ sec.4, T.22 N., R.8 E., on right bank three-quarters of a mile downstream from Seattle municipal powerplant at Cedar Falls and 3 miles downstream from Cedar Lake.

Drainage area.--84.2 sq mi. Area of lakes and ponds, 2.74 sq mi; mean altitude, 2,800 ft.

Gage.--Recording. Altitude of gage is 910 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 3,900 cfs and extended above.

Bankfull stage.--17 ft.

Remarks.--All artificially diverted water returned to river above station. Regulated by Cedar Lake Reservoir for power. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Apr. 15, 1915	6.65	1,160	1926	Jan. 21, 1926	6.22	765
				1927	June 10, 1927	6.90	1,210
1916	Mar. 11, 1916	7.51	1,830	1928	Jan. 13, 1928	9.33	3,430
1917	June 17, 1917	7.78	1,980	1929	Apr. 29, 1929	6.14	714
1918	Dec. 19, 1917	11.4	6,290	1930	May 4, 1930	6.56	964
1919	Jan. 23, 1919	6.90	1,280				
1920	Jan. 31, 1920	6.06	776	1931	Mar. 14, 1931	6.30	802
				1932	Mar. 19, 1932	7.25	1,740
1921	Jan. 5, 1921	6.02	748	1933	Nov. 17, 1932	8.7	3,050
1922	Dec. 12, 1921	10.52	4,500	1934	Dec. 22, 1933	11.5	6,440
1923	Jan. 10, 1923	8.72	2,790	1935	Jan. 25, 1935	9.61	3,270
1924	Feb. 12, 1924	6.44	915				
1925	Feb. 7, 1925	7.61	1,880	1936	May 16, 1936	7.96	1,940

Peak stages and discharges of Cedar River at Cedar Falls, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	June 20, 1937	7.64	1,600	1948	Nov. 12, 1947	7.77	1,380
1938	Nov. 29, 1937	8.07	2,020	1949	May 16, 1949	7.72	1,340
1939	Jan. 25, 1939	7.07	1,100	1950	Mar. 6, 1950	8.57	2,050
1940	Mar. 8, 1940	7.44	1,310				
				1951	Feb. 11, 1951	10.86	3,860
1941	Nov. 28, 1940	6.75	742	1952	Dec. 21, 1951	7.30	800
1942	June 15, 1942	6.85	822	1953	Feb. 1, 1953	9.18	2,250
1943	June 10, 1943	6.98	924	1954	June 7, 1954	8.11	1,370
1944	May 24, 1944	6.92	866	1955	July 1, 1955	7.95	1,240
1945	Jan. 7, 1945	7.02	946				
				1956	May 20, 1956	8.57	1,760
1946	May 29, 1946	7.32	1,140	1957	Dec. 18, 1956	9.06	2,140
1947	Dec. 14, 1946	9.45	2,880				

1175. Cedar River near Landsburg, Wash.

(Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12)

Location.--Lat 47°23'35", long 121°56'50", in NE¼SW¼ sec.17, T.22 N., R.7 E., on left bank 2 miles upstream from Landsburg and intake of Seattle water-supply system, 4¾ miles east of Maple Valley, 5 miles downstream from Taylor Creek, and 12 miles downstream from Cedar Lake.

Drainage area.--125 sq mi, excludes that of Rock Creek. At site 1895-1900, 140 sq mi; at Seattle municipal water-supply intake 1901-13, 139 sq mi; at site 1914-28, 135 sq mi; at present site 1928-32, 134 sq mi, includes that of Rock Creek. Area of lakes and ponds, 2.71 sq mi; mean altitude, 2,400 ft.

Gage.--Nonrecording prior to Apr. 30, 1954; recording thereafter. At site 2¼ miles downstream at different datum prior to Oct. 1, 1898. At site 2 miles downstream Mar. 24, 1901, to May 15, 1913, at datum 535.84 ft above mean sea level (levels by city of Seattle). At site a quarter of a mile downstream at different datum Apr. 30, 1914, to Oct. 22, 1928. Altitude of gage is 600 ft (from river-profile map).

Bankfull stage.--12 ft.

Remarks.--Rock Creek entered naturally just above station prior to 1932 and has been diverted past the station since that time. Beginning in 1952 during the approximate period from middle of November to middle of April a part of the flow of Rock Creek has been allowed to enter Cedar River between station and headworks. Some regulation by Cedar Lake. Peak discharges are affected. Records for daily mean discharges only are available for periods 1897-98 and 1902-12 at sites about 2 miles downstream. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1896	Jan. 9 or 10, 1896	8.2	3,420	1929	Mar. 31, 1929	3.07	1,180
1897	Nov. 14 or 15, 1896	11.0	5,380	1930	Jan. 4, 1930	3.16	1,350
1898	Nov. 19, 1897	10.5	5,030				
				1931	Mar. 31, 1931	2.92	1,200
1902	Dec. 24, 1901	4.1	3,790	1932	Feb. 26, 1932	5.9	4,860
1903	Jan. 5, 1903	8.0	10,200	1933	Jan. 8, 1933	5.5	4,300
1904	Jan. 15, 1904	2.70	2,020	1934	Dec. 22, 1933	7.7	7,520
1905	May 24, 1905	2.75	2,080	1935	Jan. 25, 1935	5.45	4,160
1906	Jan. 25, 1906	2.70	2,020	1936	May 17, 1936	3.44	1,900
1907	Nov. 15, 1906	9.10	12,400	1937	June 20, 1937	3.34	1,800
1908	Mar. 16, 1908	5.00	5,100	1938	Nov. 29, 1937	3.91	2,360
1909	Jan. 20, 1909	3.10	2,480	1939	Feb. 15, 1939	3.04	1,500
1910	Nov. 23, 1909	7.00	8,370	1940	Mar. 7, 1940	3.43	1,880
1911	Nov. 21, 1910	4.60	4,520	1941	Nov. 28, 1940	2.52	1,050
1912	Nov. 19, 1911	10.0	a14,200	1942	Dec. 19, 1941	3.42	1,830
1913	Jan. 3, 1913	4.10	3,790	1943	Nov. 23, 1942	3.70	2,140
1915	Apr. 4, 1915	7.47	1,330	1944	May 24, 1944	2.92	1,380
				1945	Feb. 7, 1945	3.55	1,970
1916	Mar. 10, 1916	9.74	2,630				
1917	June 17, 1917	9.04	2,240	1946	Dec. 28, 1945	3.60	2,040
1918	Dec. 29, 1917	13.55	7,500	1947	Dec. 14, 1946	5.44	4,190
1919	Jan. 22, 1919	9.6	3,160	1948	Nov. 11, 13, 1947	3.50	1,940
1920	Jan. 28, 1920	7.8	1,860	1949	Feb. 17, 1949	3.30	1,750
				1950	Mar. 5, 1950	4.56	3,050
1921	Feb. 11-12, 1921	7.9	1,920				
1922	Dec. 12, 1921	12.03	5,960	1951	Feb. 11, 1951	6.94	6,200
1923	Jan. 10, 1923	10.3	4,160	1952	Feb. 4, 1952	3.29	1,740
1924	Feb. 12, 1924	9.2	3,100	1953	Feb. 1, 1953	4.84	3,370
1925	Feb. 8, 1925	8.83	2,740	1954	Dec. 9, 1953	4.31	2,770
				1955	Feb. 8, 1955	4.26	2,720
1926	Jan. 5, 1926	8.56	1,720				
1927	Jan. 2, 1927	7.67	1,820	1956	Dec. 11, 1955	4.77	3,280
1928	Jan. 13, 1928	10.95	4,860	1957	Dec. 18, 1956	4.73	3,240

a Caused by failure of flashboards at Cedar Lake.

1185. Rock Creek near Maple Valley, Wash.

Location.--Lat 47°22'50", long 122°01'10", in NE¼ sec.22, T.22 N., R.6 E., on left bank 650 ft upstream from mouth and 2 miles southeast of Maple Valley.

Drainage area.--14.0 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 690 ft.

Gage.--Recording gage and wood box culvert control. Prior to Mar. 16, 1953, at site 50 ft downstream at datum 0.816 ft higher. Altitude of gage is 425 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 110 cfs and extended above.

Bankfull stage.--4 ft.

Remarks.--Base for partial-duration series, 50 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Jan. 7, 1946	2.32	72	1951	Jan. 4, 1951	2.10	79
	Feb. 8, 1946	2.12	68		Feb. 11, 1951	4.26	165
1947	Dec. 14, 1946	2.82	105	1952	Feb. 9,10, 1952	1.00	24
	Feb. 3, 1947	1.86	67	1953	Jan. 30, 1953	1.77	70
1948	Jan. 6, 1948	2.05	83		Feb. 3, 1953	1.67	63
	Feb. 27, 1948	2.12	87	1954	Dec. 13, 1953	2.12	62
1949	Dec. 12, 1948	1.86	72		Jan. 9, 1954	2.26	75
	Feb. 18, 1949	1.78	67	1955	Apr. 21, 1955	1.92	39
1950	Dec. 30, 1949	1.73	61	1956	Dec. 3, 1955	2.26	75
	Jan. 22, 1950	2.00	75		Dec. 12, 1955	2.72	146
	Feb. 26, 1950	2.78	106		Dec. 24, 1955	2.52	112
	Mar. 5, 1950	3.84	138		Jan. 8, 1956	2.60	125
	Mar. 19, 1950	2.42	92				
1951	Dec. 9, 1950	1.46	53	1957	Mar. 12, 1957	2.15	59

1190. Cedar River at Renton, Wash.

Location.--Lat 47°28'50", long 122°12'10", in NW¼ sec.17, T.23 N., R.5 E., on left bank 125 ft downstream from bridge on U.S. Highway 10 at Renton, 2 miles upstream from mouth.

Drainage area.--197 sq mi; includes 4 sq mi in vicinity of Youngs Lake in Big Soos Creek basin.

Gage.--Nonrecording within 1 mile of present site at datum 10.67 ft below mean sea level (unadjusted) prior to Jan. 1, 1908; recording thereafter. At site 700 ft upstream Aug. 7, 1945, to Dec. 7, 1950. At datum 4.93 ft higher Aug. 7, 1945, to Aug. 15, 1947, and at datum 3.93 ft higher Aug. 16, 1947, to Dec. 7, 1950. Datum of gage is 15.20 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 6,700 cfs and extended by logarithmic plotting.

Bankfull stage.--20 ft.

Remarks.--Flow partly regulated by Cedar Lake reservoir for power. More than 250 cfs is diverted at Landsburg at times by the city of Seattle. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	Nov. 15, 1906	50.0	5,650	1952	Feb. 4, 1952	6.18	2,190
				1953	Feb. 1, 1953	7.62	4,110
1946	Dec. 29, 1945	4.53	2,680	1954	Dec. 9, 1953	6.97	3,250
1947	Dec. 15, 1946	6.70	5,510	1955	Feb. 8, 1955	7.15	3,480
1948	Feb. 26, 1948	4.82	2,750				
1949	Feb. 17, 1949	4.85	2,780	1956	Dec. 11, 1955	7.37	3,640
1950	Mar. 4, 1950	6.03	4,160	1957	Dec. 18, 1956	7.13	3,460

1195. May Creek near Renton, Wash.

Location.--Lat 47°31'25", long 122°11'45", in SW¼SE¼ sec.32, T.24 N., R.5 E., on left bank 1 mile upstream from mouth and 2½ miles north of Renton.

Drainage area.--12.5 sq mi. At site prior to 1955, 13.2 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 540 ft.

Gage.--Recording. At different datum prior to June 1955. Altitude of gage is 60 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--5 ft.

Remarks.--Base for partial-duration series, 130 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 29, 1945	3.14	131	1950	Jan. 21, 1950	3.91	339
					Mar. 4, 1950	3.97	354
1947	Dec. 14, 1946	3.45	198		Mar. 19, 1950	3.16	139
	Feb. 2, 1947	3.28	152	1956	Dec. 12, 1955	2.66	184
1948	Oct. 19, 1947	-	-		Dec. 21, 1955	2.90	240
	Jan. 2, 1948	3.01	148		Jan. 6, 1956	2.57	184
	Feb. 26, 1948	2.98	144				
1949	Feb. 17, 1949	3.98	401	1957	Feb. 26, 1957	2.58	194
	Feb. 23, 1949	2.98	187				

1198. North Branch Mercer Creek near Bellevue, Wash.

Location.--Lat 47°37'45", long 122°09'05", in NE¼ sec.27, T.25 N., R.5 E., on a county road 0.2 mile north of Bellevue-Redmond Highway and 2.5 miles northeast of Bellevue.

Drainage area.--2.74 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 360 ft.

Gage.--Crest-stage gage. Datum of gage is 6.24 ft below upstream invert of right bank culvert.

Stage-discharge relation.--Prior to 1955, stage-discharge relation is defined by computations of discharge through a 2½-foot concrete pipe culvert and of flow over road above 10.6 ft. Since 1955, relationship is defined by computation of flow through two concrete pipe culverts.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 16, 1949	10.68	47.0	1954	Jan. 6, 1954	9.61	33.0
1950	Mar. 4, 1950	10.52	45.1	1955	Feb. 8, 1955	8.81	27.1
1951	Feb. 10, 1951	11.59	241	1956	Dec. 20, 1955	9.72	46.3
1952	Feb. 4, 1952	8.36	17.4	1957	Feb. 25, 1957	9.21	33.8
1953	Jan. 31, 1953	8.38	19.0				

1210. Issaquah Creek near Issaquah, Wash.

Location.--Lat 47°28'55", long 122°02'10", in NW¼ sec.15, T.23 N., R.6 E., on left bank 3½ miles south of Issaquah and 4 miles upstream from East Fork.

Drainage area.--26.4 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 940 ft.

Gage.--Recording. Prior to Oct. 1, 1948, at datum 0.99 ft higher. Oct. 1, 1948, to July 6, 1952, at site 70 ft upstream at datum 0.41 ft lower. Altitude of gage is 210 ft (from topograhic map).

Stage-discharge relation.--Defined by current-meter measurements below 590 cfs and extended above.

Bankfull stage.--6 ft.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 28, 1945	2.68	452	1951	Jan. 2, 1951	2.82	468
					Feb. 9, 1951	6.08	2,610
1947	Dec. 14, 1946	3.45	675				
	Jan. 25, 1947	2.81	452	1952	Feb. 4, 1952	3.20	342
	Feb. 2, 1947	3.10	555				
				1953	Jan. 22, 1953	2.75	500
1948	Oct. 19, 1947	2.93	525		Jan. 31, 1953	2.98	580
	Jan. 3, 1948	2.56	410				
	Feb. 26, 1948	3.02	540	1954	Nov. 1, 1953	2.60	405
					Dec. 9, 1953	3.33	781
1949	Nov. 20, 1948	3.17	570		Dec. 11, 1953	2.66	432
	Nov. 28, 1948	3.19	600		Jan. 6, 1954	3.10	640
	Dec. 9, 1948	3.40	675				
	Feb. 10, 1949	3.03	585	1955	Feb. 8, 1955	3.37	740
	Feb. 17, 1949	4.64	1,120				
				1956	Nov. 26, 1955	2.80	474
1950	Nov. 27, 1949	2.84	495		Dec. 1, 1955	2.65	413
	Dec. 28, 1949	3.17	582		Dec. 11, 1955	3.90	1,050
	Jan. 22, 1950	3.36	650		Dec. 22, 1955	2.58	443
	Feb. 25, 1950	2.89	436		Jan. 4, 1956	2.54	429
	Mar. 4, 1950	3.60	800				
				1957	Dec. 9, 1956	2.39	454
1951	Nov. 24, 1950	2.71	404		Feb. 25, 1957	2.66	596

1233. Evans Creek tributary near Redmond, Wash.

Location.--Lat 47°39'05", long 122°02'45", in NW¼ sec.16, T.25 N., R.6 E., at Redmond-Fall City highway, 3¾ miles southeast of Redmond.

Drainage area.--2.46 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 450 ft.

Gage.--Crest-stage gage with artificial log control.

Stage-discharge relation.--Defined by computations of discharge over a log weir.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Jan. 1, 1949	7.50	20.9	1954	Jan. 6, 1954	5.57	32.2
1950	Jan. 22, 1950	7.68	32.2	1955	Feb. 8, 1955	5.23	20.8
1951	Feb. 9, 1951	7.98	59.7	1956	Dec. 11 or 21, 1955	5.39	27.8
1952	Feb. 4, 1952	4.86	7.7	1957	Feb. 25, 1957	5.43	30.7
1953	Jan. 31, 1953	4.92	9.2				

1245. Bear Creek at Redmond, Wash.

Location.--Lat 47°40'10", long 122°06'30", in SW¼NE¼ sec.12, T.25 N., R.5 E., on right bank 300 ft downstream from State Highway 2 crossing, half a mile east of Redmond, and three-quarters of a mile upstream from mouth.

Drainage area.--47.5 sq mi. Area of lakes and ponds, 0.33 sq mi; mean altitude, 355 ft.

Gage.--Recording. At different datum prior to June 1955. Altitude of gage is 30 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Base for partial-duration series, 300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Jan. 7, 1946	5.05	302	1949	Feb. 22, 1949	6.44	555
	Feb. 6, 1946	5.57	363				
	Feb. 28, 1946	5.56	362	1950	Jan. 22, 1950	6.53	627
					Feb. 13, 1950	5.16	335
1947	Dec. 5, 1946	5.27	340		Feb. 26, 1950	5.92	502
	Dec. 13, 1946	5.74	378		Mar. 5, 1950	6.52	654
	Jan. 26, 1947	5.16	330		Mar. 19, 1950	5.50	375
	Feb. 2, 1947	6.10	460				
	Feb. 14, 1947	5.34	340	1956	Dec. 12, 1955	4.72	318
					Dec. 22, 1955	5.96	560
1948	Jan. 4, 1948	5.44	349		Jan. 6, 1956	5.86	537
	Jan. 10, 1948	5.00	310		Jan. 15, 1956	5.04	373
	Feb. 17, 1948	5.00	310				
	Feb. 26, 1948	5.45	349	1957	Feb. 26, 1957	5.84	578
					Mar. 9, 1957	4.78	380
1949	Feb. 17, 1949	6.17	472				

1250. Sammamish River near Redmond, Wash.

Location.--Lat 47°40'10", long 122°07'50", in NE¼ sec.11, T.25 N., R.5 E., on right bank at highway crossing, 500 ft downstream from Bear Creek, half a mile west of Redmond, and 1¼ miles downstream from outlet of Sammamish Lake.

Drainage area.--144 sq mi. Area of lakes and ponds, 8.54 sq mi; mean altitude, 600 ft.

Gage.--Nonrecording at sites 1¾ miles or 2 miles uplake on west shore of lake at datum approximately 2.0 ft higher, prior to Nov. 14, 1946; recording thereafter at present site. At datum 1.52 ft higher Nov. 14, 1946, to July 8, 1947. Datum of gage is 23.08 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939a/	Feb. 19, 1939	5.11	605	1947	Dec. 15-16, 1946	6.40	924
					Feb. 3, 1947	5.85	748
1940	Jan. 6, 1940	4.29	470		Apr. 10, 1947	3.00	402
	Mar. 9, 10, 1940	6.05	689				
				1948	Jan. 10, 1948	7.63	860
1941	Jan. 26, 1941	3.59	370		Feb. 27, 1948	6.72	780
					May 29, 1948	4.74	503
1942	Dec. 24, 25, 1941	6.85	672				
				1949	Dec. 12, 1948	6.01	673
1943	Dec. 14, 16, 1942	5.44	502		Feb. 24, 1949	7.30	846
	Feb. 12, 1943	5.59	489				
	Apr. 5, 1943	5.77	541	1950	Dec. 31, 1949	5.09	545
					Jan. 23, 1950	7.75	1,170
1944	Feb. 17, 1944	3.35	307		Mar. 6, 1950	8.35	1,360
1945	Feb. 14, 15, 1945	6.18	502	1951	Jan. 4, 1951	7.11	950
	Apr. 12, 1945	6.32	620		Feb. 11, 1951	9.17	1,520
1946	Jan. 11, 1946	7.17	704	1952	Dec. 22, 1951	4.11	445

a Maximum for year not determined; partial year.

Peak stages and discharges of Sammamish River near Redmond, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Feb. 4, 1952	4.63	524	1955	Apr. 12, 1955	4.35	476
	Mar. 11, 1952	3.90	416				
				1956	Dec. 23, 1955	8.21	1,200
1953	Feb. 7, 1953	6.07	683		Jan. 7, 1956	8.55	1,340
	Mar. 31, 1953	3.90	407				
				1957	Dec. 20, 1956	4.45	478
1954	Dec. 12, 1953	6.23	684		Feb. 11, 1957	4.28	456
	Jan. 8, 1954	7.27	858		Feb. 27, 1957	6.66	787
					Mar. 10, 1957	7.09	878
1955	Feb. 9, 1955	5.35	602				

1260. North Creek near Bothell, Wash.

Location.--Lat 47°47'30", long 122°11'45", on line between secs. 29 and 32, T.27 N., R.5 E., on left bank 2 miles north of Bothell and 2½ miles upstream from mouth.

Drainage area.--23.7 sq mi. Area of lakes and ponds, 0.51 sq mi; mean altitude, 390 ft.

Gage.--Recording. At datum 0.59 ft higher Apr. 5, 1950, to Sept. 30, 1951. Altitude of gage is 70 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 250 cfs and extended on basis of slope-area measurement at 448 cfs.

Bankfull stage.--3 ft. Flooding of low ground caused by bridge constriction which serves as control. Water will flow over road at 6 ft.

Remarks.--Base for partial-duration series, 250 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Feb. 5, 1946	3.92	274	1951	Feb. 9, 1951	4.02	320
	Feb. 27, 1946	3.87	280				
				1952	Feb. 1, 1952	3.20	177
1947	Feb. 2, 1947	5.29	420				
				1953	Jan. 8, 1953	3.09	172
1948	Oct. 19, 1947	4.47	323				
	Jan. 1, 1948	3.76	252	1954	Jan. 6, 1954	4.83	346
	Mar. 21, 1948	3.88	257		Feb. 21, 1954	4.21	284
	May 29, 1948	3.88	257				
				1955	Feb. 8, 1955	4.03	258
1949	Feb. 17, 1949	5.99	455				
	Feb. 22, 1949	6.04	455	1956	Dec. 21, 1955	4.95	358
					Jan. 6, 1956	4.90	360
1950	Jan. 22, 1950	5.08	365				
	Mar. 5 or 6, 1950	7.0	680	1957	Feb. 24, 1957	5.23	387

1265. Sammamish River at Bothell, Wash.

Location.--Lat 47°45'20", long 122°11'35", in NW¼SE¼ sec.8, T.26 N., R.5 E., on left bank in Bothell, a quarter of a mile downstream from North Creek and 3½ miles upstream from mouth.

Drainage area.--205 sq mi. Area of lakes and ponds, 9.0 sq mi; mean altitude, 500 ft.

Gage.--Nonrecording prior to Dec. 28, 1939; recording thereafter. Datum of gage is at mean lower low water at Seattle (Corps of Engineers bench mark), or 6.54 ft below mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 1,800 cfs and extended by logarithmic plotting.

Bankfull stage.--34 ft.

Remarks.--Minor diversions. Slight regulation. Peak discharges are affected. Peak for December 1939 is from graph based on gage readings. Base for partial-duration series, 700 cfs.

Peak stages and discharges of Sammamish River at Bothell, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Dec. 16, 1939	29.50	776	1949	Feb. 22, 1949	32.12	1,570
	Jan. 2, 1940	29.96	861		Mar. 19, 1949	29.21	901
	Mar. 5, 1940	30.10	878				
				1950	Dec. 31, 1949	28.07	791
1941	Jan. 18, 1941	29.75	752		Jan. 10, 1950	28.48	879
					Jan. 22, 1950	31.39	1,600
1942	Dec. 23, 1941	31.07	1,030		Mar. 5, 6, 1950	31.60	1,630
	Feb. 4, 1942	29.24	701		Mar. 19, 1950	30.45	1,360
1943	Dec. 30, 1942	29.37	778	1951	Dec. 7, 1950	28.80	1,040
	Mar. 28, 1943	30.04	872		Jan. 3, 1951	29.78	1,280
					Jan. 21, 1951	29.60	1,220
1944	Apr. 25, 1944	27.74	510		Feb. 12, 1951	32.05	1,900
1945	Feb. 8, 1945	30.36	922	1952	Feb. 4, 1952	27.63	779
	Mar. 22, 1945	29.56	808				
				1953	Feb. 4, 1953	28.20	889
1946	Dec. 7, 1945	28.99	751				
	Jan. 8, 1946	30.14	956	1954	Nov. 25, 1953	27.58	759
	Jan. 24, 1946	29.57	861		Dec. 6, 1953	28.36	924
	Feb. 6, 1946	30.68	1,070		Dec. 20, 1953	28.64	988
	Feb. 28, 1946	30.63	1,050		Jan. 6, 1954	30.70	1,500
					Feb. 21, 1954	29.88	1,300
1947	Dec. 17, 1946	30.81	1,090				
	Feb. 2, 1947	31.81	1,290	1955	Nov. 19, 1954	27.67	814
	Feb. 14, 1947	30.98	1,130		Dec. 30, 1954	27.79	838
					Feb. 8, 1955	29.10	1,100
1948	Jan. 8, 1948	31.40	1,210		Apr. 12, 1955	27.17	718
	Mar. 22, 1948	30.10	956				
	May 6, 1948	28.80	715	1956	Dec. 1, 1955	28.88	1,060
	May 29, 1948	29.85	899		Dec. 23, 1955	31.55	1,710
					Jan. 6, 1956	32.22	1,910
1949	Dec. 9, 1948	28.80	813		Mar. 4, 1956	27.79	840
	Dec. 31, 1948	29.62	993				
	Feb. 10, 1949	29.21	924	1957	Feb. 26, 1957	30.81	1,530
	Feb. 17, 1949	31.30	1,360				

SNOHOMISH RIVER BASIN

1305. South Fork Skykomish River near Skykomish, Wash.

Location.--Lat 47°42'20", long 121°18'30", in NW¼NE¼ sec.31, T.26 N., R.12 E., on left bank a quarter of a mile downstream from confluence of Tye and Foss Rivers and 2½ miles east of Skykomish.

Drainage area.--135 sq mi. At site 1929-31, 137 sq mi. Area of lakes and ponds, 1.88 sq mi; mean altitude, 3,870 ft.

Gage.--Nonrecording about 1,000 ft downstream at different datum prior to Oct. 1, 1931; recording thereafter until 1950; crest-stage gage since 1953. Altitude of gage is 1,030 ft (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 6,600 cfs and extended by logarithmic plotting.

Bankfull stage.--15 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Since 1952 only annual peaks are shown. Base for partial-duration series, 3,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 5, 1930	8.00	2,440	1950	Oct. 28, 1949	7.36	4,850
					Nov. 27, 1949	10.51	12,400
1931	Jan. 28, 1931	9.1	3,060		June 20, 1950	7.31	4,680
					June 29, 1950	7.16	4,510
1947	Oct. 25, 1946	7.24	4,510				
	Dec. 11, 1946	8.23	6,410	1951	Oct. 10, 1950	7.33	4,680
	Dec. 14, 1946	7.08	4,350		Feb. 9, 1951	a11.00	14,000
	Jan. 24, 1947	7.06	4,350				
				1952	Oct. 3, 1951	a7.75	5,500
1948	Oct. 19, 1947	9.04	8,290	1953	Jan. 31, 1953	9.28	9,020
	Nov. 8, 1947	-	-	1954	May 19, 1954	7.33	4,730
	May 28, 1948	-	-	1955	June 11, 1955	7.88	5,750
1949	May 13, 1949	7.45	4,850	1956	(b)	9.43	9,420
	June 6, 1949	6.80	3,890	1957	Dec. 9, 1956	9.93	10,800

a From floodmarks. b Occurred Nov. 4 or Dec. 11, 1955.

1310. Beckler River near Skykomish, Wash.

Location.--Lat 47°44'20", long 121°19'10", in SW¼ sec.18, T.26 N., R.12 E., on left bank a quarter of a mile downstream from Eagle Creek, 2¼ miles upstream from mouth, and 3 miles northeast of Skykomish.

Drainage area.--96.5 sq mi. Area of lakes and ponds, 0.51 sq mi; mean altitude, 3,600 ft.

Gage.--Recording prior to 1950; crest-stage gage since 1953. Altitude of gage is 1,080 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 4,500 cfs and extended by logarithmic plotting.

Bankfull stage.--11 ft.

Remarks.--Only annual peaks since 1951. Base for partial-duration series, 3,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 5, 1930	5.71	2,380	1948	June 9, 1948	7.22	4,490
1931	Jan. 28, 1931	7.15	4,620	1949	May 13, 1949	7.01	4,140
					June 6, 1949	6.39	3,170
1932	Jan. 11, 1932	6.55	3,920				
	Feb. 26, 1932	9.10	10,000	1950	Oct. 28, 1949	6.34	3,100
					Nov. 27, 1949	9.4	9,600
1933	Nov. 13, 1932	9.6	10,900				
	Nov. 17, 1932	8.29	7,180	1951	Feb. 9, 1951	a10.10	11,800
	Dec. 2, 1932	8.20	6,930	1952	Oct. 3, 1951	a7.20	4,500
				1953	Jan. 31, 1953	8.15	6,430
1947	Oct. 25, 1946	7.18	4,410	1954	May 19, 1954	6.43	3,220
	Dec. 11, 1946	7.88	5,790	1955	June 11, 1955	7.12	4,360
	Dec. 14, 1946	6.48	3,300				
	Jan. 24, 1947	6.78	3,790	1956	Nov. 4 or Dec. 11, 1955	8.77	7,900
1948	Oct. 19, 1947	8.33	6,580	1957	Dec. 10, 1956	8.32	6,820
	May 28, 1948	7.22	4,490				

a From floodmark.

1327. South Fork Skykomish River tributary at Baring, Wash.

Location.--Lat 47°46'10", long 121°28'50", in NE¼ sec.2, T.26 N., R.10 E., a quarter of a mile east of Baring Post Office, at Great Northern Railroad crossing, 200 ft north of U.S. Highway 2.

Drainage area.--1.25 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,260 ft.

Gage.--Crest-stage gage. Datum of gage is 10.76 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 3- by 6-foot concrete arch culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 10, 1951	15.43	143	1955	Feb. 8, 1955	14.22	107
1952	Feb. 4, 1952	12.89	40.0				
1953	Jan. 23, 1953	13.82	87.0	1956	Dec. 11, 1955	15.03	157
1954	Dec. 9, 1953	13.91	89.0	1957	Dec. 9, 1956	16.02	217

1330. South Fork Skykomish River near Index, Wash.

Location.--Lat 47°48'20", long 121°32'40", in NE¼ sec.29, T.27 N., R.10 E., on right bank 600 ft upstream from Sunset Falls, 1 mile southeast of Index, and 2 miles upstream from confluence with North Fork.

Drainage area.--355 sq mi. Area of lakes and ponds, 3.20 sq mi; mean altitude, 3,800 ft.

Gage.--Nonrecording prior to Sept. 14, 1920, and Jan. 23, 1922, to Mar. 14, 1934; recording Sept. 14, 1920, to Oct. 1, 1921, and since Mar. 15, 1934. Datum of gage is 574.80 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 18,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 10,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1897	-	27.6	70,000
1903	Jan. 3, 1903	19.7	32,800
1904	Nov. 30, 1903	12.4	12,400
1905	Nov. 22, 1904	11.4	10,200
1912	Nov. 19, 1911	17.4	26,000
1914	Oct. 11, 1913	13.6	15,400
	Jan. 6, 1914	17.0	24,800
1915	Nov. 3, 1914	13.5	15,800
	Apr. 2, 1915	13.4	15,600
1916	Oct. 31, 1915	12.7	14,200
	Dec. 8, 1915	11.0	11,000
	Dec. 21, 1915	12.1	13,100
	Feb. 16, 1916	10.6	10,300
	Mar. 12, 1916	11.0	11,000
	June 16, 1916	12.4	13,700
1917	Nov. 9, 1916	12.3	14,300
	June 2, 1917	12.0	13,700
	June 16, 1917	12.2	14,100
	June 24, 1917	11.6	12,800
	July 2, 1917	11.0	11,500
1918	Dec. 14, 1917	16.5	28,300
	Dec. 18, 1917	22.6	54,100
	Dec. 22, 1917	13.7	19,100
	Dec. 29, 1917	21.50	49,200
1919	Oct. 27, 1918	15.0	23,000
	Dec. 4, 1918	13.0	17,000
	Dec. 14, 1918	16.0	26,500
	Jan. 17, 1919	12.0	14,500
	Jan. 22, 1919	13.6	18,800
	May 27, 1919	12.4	15,500
1920	Nov. 15, 1919	17.9	33,900
	Dec. 17, 1919	11.0	12,200
	Dec. 24, 1919	14.0	20,000
	Jan. 18, 1920	12.6	16,000
	Jan. 28, 1920	13.8	19,400
	Sept.14, 1920	11.30	12,900
1921	Oct. 4, 1920	12.53	15,800
	Dec. 30, 1920	13.70	19,100
	Jan. 2, 1921	10.84	11,800
	Feb. 11, 1921	14.70	22,100
	June 7, 1921	11.07	12,400
1922	Oct. 28, 1921	-	-
	Dec. 12, 1921	22.8	55,000
	May 17, 1922	10.8	11,800
1923	Dec. 24, 1922	15.0	23,000
	Jan. 6, 1923	15.7	25,400
1924	Dec. 6, 1923	14.2	20,600
	Jan. 31, 1924	14.0	20,000
	Feb. 5, 1924	11.2	12,600
	Feb. 12, 1924	21.8	50,500
	May 13, 1924	11.1	12,400
1925	Dec. 11, 1924	14.6	21,800
	Jan. 31, 1925	12.4	15,500
	Feb. 2, 1925	14.8	22,400
1926	Dec. 11, 1925	13.4	18,200
	Dec. 23, 1925	14.8	22,400
	Jan. 5, 1926	11.4	13,100
1927	Oct. 16, 1926	14.5	21,500
	May 17, 1927	11.1	12,400
	June 7, 1927	11.3	12,900
1928	Nov. 4, 1927	12.1	14,800
	Nov. 16, 1927	12.0	14,500
	Nov. 25, 1927	14.4	21,200
	Dec. 2, 1927	15.9	26,200
	Jan. 12, 1928	18.0	34,300
1929	Oct. 9, 1928	10.2	10,500
1930	Feb. 5, 1930	10.4	10,900
	Feb. 19, 1930	10.0	10,100
1931	Jan. 27, 1931	13.8	19,400
	Feb. 18, 1931	11.5	13,300
1932	Nov. 13, 1931	10.5	11,200
	Jan. 11, 1932	15.2	23,700
	Feb. 26, 1932	21.7	50,000
	Mar. 18, 1932	12.0	14,500
1933	Nov. 5, 1932	11.1	12,400
	Nov. 13, 1932	21.0	46,900
	Nov. 17, 1932	17.0	30,300
	Dec. 2, 1932	16.9	29,900
	Jan. 7, 1933	11.8	14,000
	May 26, 1933	10.4	10,900
	June 15, 1933	12.4	15,500
1934	Oct. 18, 1933	11.7	13,800
	Oct. 23, 1933	16.8	29,500
	Oct. 28, 1933	11.4	13,100
	Nov. 2, 1933	20.0	42,400
	Dec. 6, 1933	12.9	16,800
	Dec. 10, 1933	15.7	25,400
	Dec. 18, 1933	16.4	27,900
	Dec. 21, 1933	22.4	53,200
	Dec. 29, 1933	10.4	10,900

Peak stages and discharges of South Fork Skykomish River near Index, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Jan. 3, 1934	10.7	11,600	1948	Oct. 3, 1947	10.97	10,500
	Jan. 22, 1934	11.2	12,600		Oct. 19, 1947	17.14	26,900
	Mar. 2, 1934	11.6	13,600		Nov. 8, 1947	13.86	17,300
	Mar. 29, 1934	10.80	11,800		May 28, 1948	13.42	16,000
					June 9, 1948	13.00	15,000
1935	Oct. 25, 1934	19.26	35,400				
	Nov. 5, 1934	15.77	22,500	1949	Nov. 23, 1948	12.26	13,300
	Dec. 21, 1934	13.00	14,700		May 13, 1949	12.52	13,800
	Jan. 24, 1935	18.01	30,200		June 7, 1949	10.80	10,100
1936	May 16, 1936	11.60	11,800	1950	Oct. 28, 1949	13.12	15,200
	May 27, 1936	10.84	10,400		Nov. 27, 1949	19.20	33,700
					Dec. 2, 1949	12.17	13,000
1937	Dec. 18, 1936	12.85	14,400		Dec. 28, 1949	12.12	12,800
	Dec. 22, 1936	11.40	11,400		Mar. 4, 1950	15.06	20,700
	June 3, 1937	10.66	10,200		June 17, 1950	12.06	12,800
	June 19, 1937	10.59	10,000				
				1951	Oct. 10, 1950	14.12	17,900
1938	Nov. 8, 1937	15.63	21,800		Nov. 25, 1950	12.86	14,800
	Nov. 25, 1937	15.05	20,000		Dec. 23, 1950	12.97	15,000
	Nov. 27, 1937	14.78	19,400		Feb. 9, 1951	19.10	33,300
	Dec. 28, 1937	11.02	10,700		May 11, 1951	-	-
	Apr. 18, 1938	17.32	27,700				
				1952	Oct. 3, 1951	9.28	7,600
1939	Nov. 16, 1938	11.30	11,200				
	Dec. 5, 1938	11.00	10,700	1953	Jan. 9, 1953	13.43	16,100
	Jan. 1, 1939	14.00	17,200		Jan. 11, 1953	14.61	19,300
	May 29, 1939	13.14	14,900		Jan. 23, 1953	15.82	22,900
					Jan. 31, 1953	16.53	25,100
1940	Dec. 15, 1939	13.28	15,400				
				1954	Oct. 31, 1953	10.86	10,200
1941	Nov. 29, 1940	12.22	13,000		Dec. 9, 1953	14.03	17,800
					Dec. 12, 1953	13.68	16,900
1942	Dec. 2, 1941	12.00	12,600		May 19, 1954	11.14	10,900
1943	Oct. 31, 1942	13.99	17,200	1955	Nov. 18, 1954	12.80	14,500
	Nov. 23, 1942	15.37	21,200		Nov. 27, 1954	11.18	10,900
	Jan. 15, 1943	10.83	10,300		Feb. 8, 1955	14.47	18,900
	Mar. 28, 1943	12.15	13,000		June 11, 1955	12.82	14,600
	May 22, 1943	11.14	10,900		June 22, 1955	10.89	10,300
1944	Dec. 3, 1943	20.8	41,900	1956	Oct. 25, 1955	13.83	17,200
					Oct. 29, 1955	13.48	16,200
1945	Dec. 6, 1944	13.47	15,500		Nov. 4, 1955	17.40	27,900
	Jan. 7, 1945	17.56	28,200		Nov. 10, 1955	14.26	18,300
	Jan. 13, 1945	12.92	14,200		Dec. 11, 1955	17.34	27,700
	Feb. 7, 1945	16.72	25,000		Dec. 22, 1955	10.82	10,200
					May 20, 1956	12.86	14,600
1946	Oct. 25, 1945	14.26	18,400		June 1, 1956	11.58	11,700
	Dec. 28, 1945	13.14	15,200				
	June 15, 1946	12.17	13,000	1957	Oct. 15, 1956	12.00	12,600
					Oct. 20, 1956	10.76	10,100
1947	Oct. 25, 1946	14.37	18,700		Dec. 10, 1956	18.66	31,900
	Dec. 11, 1946	16.37	24,700		Dec. 13, 1956	11.81	12,200
	Dec. 14, 1946	13.80	17,100		Dec. 17, 1956	13.17	15,400
	Jan. 24, 1947	14.58	19,300				

1335. Troublesome Creek near Index, Wash.

Location.--Lat 47°54'00", long 121°23'40", in NE¼ sec.21, T.28 N., R.11 E., (unsurveyed), on right bank a quarter of a mile upstream from mouth and 9 miles northeast of Index. Records represent flow passing measuring section, 1¼ miles upstream.

Drainage area.--10.6 sq mi at measuring section. Area of lakes and ponds, 0.41 sq mi; mean altitude, 3,500 ft.

Gage.--Recording. Altitude of gage is 1,350 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 800 cfs and extended on basis of velocity-area studies.

Remarks.--Base for partial-duration series, 520 cfs.

Peak stages and discharges of Troublesome Creek near Index, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 5, 1930	3.95	632	1936	May 16, 1936	2.87	486
1931	Oct. 26, 1930	3.91	635	1937	Dec. 6, 1936	3.04	580
	Jan. 27, 1931	4.78	1,100		Dec. 18, 1936	3.45	740
1932	Jan. 11, 1932	4.40	825		Dec. 22, 1936	3.22	640
	Feb. 26, 1932	7.54	2,220		Feb. 22, 1937	2.90	523
1933	Nov. 13, 1932	5.80	1,620		Mar. 5, 1937	2.88	523
	Nov. 17, 1932	4.64	1,100		Apr. 14, 1937	3.04	580
	Dec. 2, 1932	4.36	968	1938	Oct. 28, 1937	3.20	640
	June 14, 1933	3.30	545		Nov. 8, 1937	3.57	780
1934	Oct. 23, 1933	-	-		Nov. 14, 1937	3.09	600
	Nov. 2, 1933	-	-		Nov. 25, 1937	3.35	700
	Dec. 11, 1933	3.80	740		Dec. 17, 1937	2.95	542
	Dec. 21, 1933	7.0	2,300		Dec. 28, 1937	3.20	640
	Jan. 23, 1934	3.41	720		Apr. 18, 1938	3.95	940
	Mar. 2, 1934	3.24	660	1939	Oct. 12, 1938	3.40	720
1935	Oct. 24, 1934	5.39	1,520		Jan. 1, 1939	3.30	680
	Nov. 5, 1934	4.00	960		May 28, 1939	3.36	650
	Dec. 21, 1934	3.40	720	1940	Dec. 15, 1939	2.98	438
	Jan. 24, 1935	5.33	1,480	1941	Oct. 10, 1940	3.36	575

1340. North Fork Skykomish River at Index, Wash.

Location.--Lat 47°49'10", long 121°33'10", in NW¼ sec.20, T.27 N., R.10 E., on highway bridge at Index, 1¼ miles upstream from mouth.

Drainage area.--149 sq mi. Area of lakes and ponds, 0.60 sq mi; mean altitude, 3,800 ft.

Gage.--Nonrecording. At several sites within 1,600 ft of described site at different datums prior to Oct. 1, 1922. Altitude of gage is 525 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 6,200 cfs and extended by logarithmic plotting.

Remarks.--Peaks are from graphs based on gage readings. Base for partial-duration series, 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Nov. 21, 1910	10.5	15,300	1919	Jan. 27, 1919	5.2	6,520
1912	Nov. 19, 1911	11.0	16,900		May 27, 1919	6.2	8,770
1913 a/	Sept. 4, 1913	7.0	6,500	1920	Nov. 15, 1919	9.6	16,800
1914	Oct. 11, 1913	8.70	10,200		Nov. 17, 1919	5.5	7,020
	Jan. 6, 1914	9.30	11,800		Dec. 24, 1919	7.7	12,100
1915	Nov. 2, 1914	8.7	10,200		Jan. 18, 1920	6.5	9,240
	Apr. 2, 1915	8.4	9,500		Jan. 28, 1920	7.0	10,400
1916	Oct. 31, 1915	7.50	7,500		Sept. 14, 1920	6.5	9,240
	Dec. 8, 1915	7.0	6,500	1921	Oct. 4, 1920	6.6	9,470
	Dec. 22, 1915	7.4	7,300		Dec. 30, 1920	6.2	8,560
	Mar. 12, 1916	6.8	6,120		Feb. 11, 1921	7.4	11,300
	June 16, 1916	7.1	6,700		June 7, 1921	5.6	7,240
1917	Nov. 9, 1916	8.1	8,750	1922 a/	Oct. 28, 1921	8.5	14,000
	June 17, 1917	7.6	7,700		Dec. 1, 1921	7.2	10,900
	June 24, 1917	7.4	7,300		Dec. 12, 1921	-	(b)
1918	Dec. 14, 1917	11.3	18,000		May 17, 1922	8.3	4,720
	Dec. 18, 1917	13.4	26,300	1930	Feb. 5, 1930	6.60	6,200
	Dec. 22, 1917	-	-	1931	Jan. 27, 1931	8.6	12,900
	Dec. 29, 1917	13.0	24,500	1932	Jan. 11, 1932	8.3	11,700
1919	Oct. 28, 1918	-	-		Feb. 26, 1932	10.50	28,000
	Dec. 4, 1918	6.5	9,460	1933	Nov. 13, 1932	9.70	23,900
	Dec. 14, 1918	8.2	13,800		Nov. 16, 1932	8.5	17,200
					Dec. 2, 1932	8.0	15,000

a Maximum for year not determined.
b Peak discharge may have exceeded that of Dec. 21, 1933.

Peak stages and dischsrges of North Fork Skykomish River at Index, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1933	June 15, 1933	5.8	7,050	1935	Jan. 24, 1935	9.1	20,000
	Sept. 28, 1933	7.2	11,900				
				1936	May 16, 1936	5.8	6,550
1934	Oct. 18, 1933	7.1	11,500				
	Oct. 23, 1933	9.3	21,000	1937	Dec. 18, 1936	6.6	8,180
	Nov. 2, 1933	9.0	19,500				
	Nov. 22, 1933	6.2	8,290	1938	Oct. 28, 1937	6.8	8,780
	Dec. 6, 1933	6.3	8,630		Nov. 8, 1937	8.2	13,800
	Dec. 10, 1933	7.4	12,600		Nov. 25, 1937	6.8	8,780
	Dec. 18, 1933	-	-		Nov. 27, 1937	7.0	9,380
	Dec. 21, 1933	10.70	28,400		Apr. 18, 1938	8.8	16,400
	Dec. 29, 1933	6.6	9,670				
	Jan. 3, 1934	5.6	6,490	1947	Oct. 25, 1946	8.10	13,800
	Jan. 23, 1934	7.2	11,900		Dec. 11, 1946	8.2	13,800
	Mar. 2, 1934	6.7	10,000		Jan. 24, 1947	7.00	8,810
	Mar. 29, 1934	6.3	8,630				
				1948	Oct. 3, 1947	7.24	9,120
1935	Oct. 24, 1934	9.3	21,000		Oct. 19, 1947	8.05	13,400
	Nov. 5, 1934	9.0	19,500		May 28, 1948	6.86	9,430
	Dec. 21, 1934	8.8	18,500		June 7, 1948	6.43	7,070

1345. Skykomish River near Gold Bar, Wash.

Location.--Lat 47°50'15", long 121°40'00", in SW¼ sec.9, T.27 N., R.9 E., on right bank 2 miles southeast of Gold Bar and 5 miles upstream from Wallace River and Startup.

Drainage area.--535 sq mi. Area of lakes and ponds, 3.91 sq mi; mean altitude, 3,700 ft.

Gage.--Recording. Datum of gage is 209.26 ft above mean sea level, datum of 1929 (supplementary adjustment of 1947).

Stage-discharge relation.--Defined by current-meter measurements below 33,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 19,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Oct. 9, 1928	10.55	18,800	1938	Nov. 8, 1937	14.36	36,400
					Nov. 25, 1937	13.50	31,900
1930	Feb. 5, 1930	10.44	15,800		Nov. 27, 1937	13.22	30,400
					Apr. 18, 1938	16.37	47,200
1931	Jan. 28, 1931	14.08	35,100				
				1939	Jan. 1, 1939	12.92	28,900
1932	Jan. 11, 1932	14.22	35,600		May 28, 1939	11.91	23,900
	Feb. 26, 1932	20.70	83,300				
	Mar. 18, 1932	11.50	22,800	1940	Dec. 15, 1939	-	26,000
1933	Nov. 13, 1932	19.5	72,500	1941	Nov. 28, 1940	11.38	21,600
	Nov. 17, 1932	16.28	48,100				
	Dec. 2, 1932	16.76	51,600	1942	Dec. 2, 1941	11.30	21,100
	Jan. 7, 1933	11.11	21,000				
	June 15, 1933	11.08	21,000	1943	Oct. 31, 1942	13.09	29,800
					Nov. 23, 1942	14.08	35,000
1934	Oct. 23, 1933	15.08	41,700				
	Nov. 2, 1933	17.35	55,800	1944	Dec. 3, 1943	19.40	71,600
	Dec. 6, 1933	12.43	28,200				
	Dec. 10, 1933	13.75	35,200	1945	Dec. 5, 1944	11.50	22,100
	Dec. 17, 1933	13.26	32,700		Dec. 6, 1944	12.75	28,300
	Dec. 21, 1933	21.28	88,700		Jan. 7, 1945	16.43	47,400
	Jan. 23, 1934	14.70	39,700		Jan. 12, 1945	11.50	22,100
	Mar. 2, 1934	11.92	25,700		Jan. 13, 1945	12.06	24,900
					Feb. 7, 1945	15.11	40,300
1935	Oct. 24, 1934	18.28	62,400				
	Nov. 5, 1934	15.08	40,300	1946	Oct. 25, 1945	13.95	34,500
	Dec. 21, 1934	12.29	25,800		Dec. 28, 1945	11.95	23,400
	Jan. 24, 1935	17.35	55,800		June 15, 1946	11.61	21,600
1936	May 16, 1936	10.91	19,400	1947	Oct. 25, 1946	13.88	33,900
					Dec. 11, 1946	14.86	40,200
1937	Dec. 18, 1936	12.19	25,300		Dec. 14, 1946	12.63	26,500
	Dec. 22, 1936	10.90	19,400		Jan. 24, 1947	13.50	31,500

Peak stages and discharges of Skykomish River near Gold Bar, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Jan. 25, 1947	11.44	20,600	1952	Oct. 3, 1951	9.58	13,300
1948	Oct. 3, 1947	11.15	19,800	1953	Jan. 9, 1953	12.66	26,600
	Oct. 19, 1947	15.67	45,300		Jan. 11, 1953	13.66	31,700
	Nov. 8, 1947	12.36	25,400		Jan. 23, 1953	15.13	40,500
	May 28, 1948	12.15	24,400		Jan. 31, 1953	15.15	40,600
	June 7, 1948	11.33	20,200				
	June 10, 1948	11.60	21,600	1954	Oct. 31, 1953	11.90	22,800
					Dec. 9, 1953	12.84	27,500
1949	Nov. 23, 1948	11.66	22,300		Dec. 12, 1953	12.56	26,100
	May 13, 1949	11.43	21,000				
				1955	Nov. 18, 1954	12.15	24,000
1950	Oct. 28, 1949	12.47	26,000		Feb. 8, 1955	13.45	30,600
	Nov. 27, 1949	17.5	56,500		June 11, 1955	11.77	22,300
	Dec. 2, 1949	11.38	21,000				
	Dec. 28, 1949	11.60	21,800	1956	Oct. 25, 1955	13.48	30,700
	Mar. 4, 1950	14.03	32,500		Oct. 29, 1955	12.12	23,900
					Nov. 4, 1955	16.07	46,500
1951	Oct. 10, 1950	12.88	26,500		Nov. 10, 1955	13.35	30,000
	Nov. 24, 1950	11.23	19,300		Dec. 11, 1955	16.13	46,900
	Nov. 25, 1950	12.22	23,600		May 20, 1956	11.75	22,200
	Dec. 23, 1950	12.29	23,600				
	Dec. 25, 1950	11.46	22,300	1957	Oct. 15, 1956	11.82	22,500
	Feb. 10, 1951	18.87	65,600		Dec. 10, 1956	17.87	59,100
	May 11, 1951	11.39	20,100		Dec. 17, 1956	12.21	24,400

1350. Wallace River at Gold Bar, Wash.

Location.--Lat 47°51'50", long 121°41'45", in NE¼ sec.6, T.27 N., R.9 E., on left bank 30 ft downstream from highway bridge, a quarter of a mile north of Gold Bar, and 1¼ miles upstream from Olney Creek.

Drainage area.--19.8 sq mi. Area of lakes and ponds, 0.16 sq mi; mean altitude, 2,660 ft.

Gage.--Nonrecording prior to Oct. 1, 1933, at different datum; recording thereafter. Altitude of gage is 200 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7.5 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 1,350 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 1, 1930	6.70	1,670	1951	Dec. 24, 1950	7.86	1,440
	Mar. 24, 1930	6.30	1,520		Feb. 9, 1951	8.75	1,780
1931	Jan. 27, 1931	6.60	1,630	1952	Oct. 3, 1951	8.01	1,450
1932	Jan. 11, 1932	6.65	1,630	1953	Dec. 12, 1952	7.89	1,440
	Feb. 26, 1932	8.50	2,740		Jan. 3, 1953	7.73	1,360
	Mar. 5, 1932	7.30	2,180		Jan. 23, 1953	8.50	1,750
	Mar. 18, 1932	7.40	2,230				
				1954	Oct. 31, 1953	8.04	1,890
1933	Nov. 12, 1932	8.40	2,690		Dec. 9, 1953	7.39	1,500
	Nov. 16, 1932	8.40	2,690				
	Dec. 2, 1932	8.00	2,380	1955	Nov. 16, 1954	7.70	1,720
	Jan. 7, 1933	8.00	2,380				
				1956	Oct. 25, 1955	7.89	1,830
1947	Oct. 25, 1946	8.20	1,580		Oct. 29, 1955	7.19	1,410
					Nov. 4, 1955	7.58	1,650
1948	Oct. 19, 1947	7.83	1,380		Nov. 9, 1955	8.04	1,930
					Dec. 11 or 12, 1955	(a)	(a)
1949	Nov. 23, 1948	8.09	1,480				
				1957	Oct. 15, 1956	7.99	1,890
1950	Oct. 28, 1949	8.03	1,440		Nov. 10, 1956	7.48	1,590
	Nov. 13, 1949	7.74	1,360		Dec. 9, 1956	7.63	1,680
	Mar. 4, 1950	7.98	1,500		Dec. 15, 1956	7.30	1,480
					Dec. 17, 1956	7.38	1,530
1951	Nov. 24, 1950	7.82	1,360				

a Not determined; may have been maximum for year.

1355. Olney Creek near Gold Bar, Wash.

Location.--Lat 47°56'40", long 121°42'30", in SW¼ sec.6, T.28 N., R.9 E., on left bank 5½ miles north of Gold Bar and 7¼ miles upstream from mouth.

Drainage area.--8.03 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,800 ft.

Gage.--Recording prior to December 1951; crest-stage gage since 1953. Altitude of gage is 970 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Only annual peaks since 1953. Base for partial-duration series, 700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Oct. 25, 1946	6.30	4,020	1950	Nov. 13, 1949	4.29	876
	Dec. 11, 1946	4.80	1,320		Dec. 27, 1949	4.19	818
	Jan. 23, 1947	4.70	1,220		Feb. 24, 1950	4.38	876
	Apr. 18, 1947	4.12	734		Mar. 3, 1950	4.48	949
	June 9, 1947	4.07	702				
				1951	Nov. 24, 1950	4.37	916
1948	Oct. 2, 1947	4.55	1,080		Feb. 9, 1951	6.10	3,530
	Oct. 19, 1947	4.31	868				
	Nov. 7, 1947	4.37	916	1953	Jan. 23, 1953	5.16	1,750
				1954	Oct. 31, 1953	4.10	720
1949	Nov. 23, 1948	4.50	1,030	1955	Nov. 16, 1954	4.69	1,210
1950	Oct. 9, 1949	4.54	1,070	1956	Dec. 11, 1955	4.57	1,090
	Oct. 28, 1949	4.32	818	1957	Oct. 15, 1956	4.55	1,080

1360. Olney Creek near Startup, Wash.

Location.--Lat 47°55'35", long 121°43'10", in SE¼ sec.12, T.28 N., R.8 E., on left bank 5 miles northeast of Startup and 6 miles upstream from mouth.

Drainage area.--9.95 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,800 ft.

Gage.--Recording. Altitude of gage is 830 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 570 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 1,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1923	Dec. 24, 1922	5.15	1,110	1931	Sept.13, 1931	4.59	945
	Jan. 10, 1923	5.7	1,450				
				1932	Jan. 11, 1932	5.76	1,500
1924	Feb. 12, 1924	6.07	1,520		Feb. 26, 1932	7.50	2,400
					Mar. 5, 1932	5.73	1,450
1925	Dec. 10, 1924	5.73	1,450		Mar. 17, 1932	5.24	1,210
					Mar. 18, 1932	5.54	1,350
1926	Oct. 27, 1925	5.97	1,600				
	Oct. 28, 1925	5.28	1,260	1933	Nov. 12, 1932	6.56	1,900
	Dec. 22, 1925	5.29	1,260		Nov. 16, 1932	6.98	2,100
	Jan. 5, 1926	5.08	1,170		Dec. 2, 1932	6.44	1,800
					Jan. 7, 1933	5.50	1,350
1930	Feb. 1, 1930	6.36	1,730				
	Mar. 24, 1930	5.39	1,300	1934 a/	Nov. 2, 1933	5.10	1,170

a Maximum for year not determined; partial year.

1365. May Creek near Gold Bar, Wash.

Location.--Lat 47°51'30", long 121°36'30", in NE¼ sec.2, T.27 N., R.9 E., on left bank half a mile downstream from Lake Isabel and 4 miles east of Gold Bar.

Drainage area.--4.07 sq mi. Area of lakes and ponds, 0.38 sq mi; mean altitude, 3,380 ft.

Gage.--Nonrecording at different datums prior to Jan. 1, 1935; recording thereafter. Altitude of gage is 1,800 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 115 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Oct. 9, 1928	2.83	138	1934	Oct. 24, 1933	2.6	147
					Nov. 2, 1933	3.15	250
1930	Feb. 1, 1930	2.60	116		Dec. 10, 1933	3.65	355
					Dec. 21, 1933	4.2	525
1931	Jan. 28, 1931	3.2	219		Jan. 23, 1934	2.75	172
	June 17, 1931	2.3	128				
				1935 a/	Oct. 26, 1934	2.55	139
1932	Feb. 26, 1932	4.0	330		Nov. 5, 1934	3.05	230
	Mar. 19, 1932	2.8	210				
				1946	Oct. 25, 1945	4.04	428
1933	Nov. 6, 1932	2.1	138		June 15, 1946	2.73	143
	Nov. 13, 1932	3.75	324				
	Nov. 17, 1932	4.0	348	1947	Oct. 25, 1946	4.9	726
	Dec. 2, 1932	4.92	475		Nov. 27, 1946	2.74	137
	Jan. 9, 1933	3.0	220		Dec. 11, 1946	3.57	297
	May 26, 1933	2.45	124		Jan. 23, 1947	3.78	355
	June 9, 1933	2.55	139		Apr. 19, 1947	3.21	218
	June 15, 1933	2.65	155		June 9, 1947	3.04	186

a Maximum for year not determined; partial year.

1375. Sultan River near Startup, Wash.

Location.--Lat 47°58'30", long 121°46'30", in NE¼ sec.28, T.29 N., R.8 E., on left bank 1½ miles upstream from intake of Everett water-supply system and 7½ miles north of Startup.

Drainage area.--74.5 sq mi. Area of lakes and ponds, 0.30 sq mi; mear altitude, 3,120 ft.

Gage.--Recording. Altitude of gage is 750 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 5,000 cfs and extended on basis of slope-area measurement at 34,600 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 6,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Oct. 24, 1934	16.05	27,000	1938	Dec. 28, 1937	11.90	9,500
	Nov. 5, 1934	14.20	17,800		Apr. 17, 1938	14.48	19,000
	Dec. 21, 1934	11.80	9,200				
	Jan. 24, 1935	15.20	22,500	1939	Oct. 12, 1938	12.56	11,600
					Nov. 16, 1938	11.05	7,100
1936	May 16, 1936	10.42	5,800		Dec. 7, 1938	11.00	7,100
					Dec. 31, 1938	12.15	10,400
1937	Dec. 6, 1936	13.40	14,600		Jan. 1, 1939	11.87	9,500
	Dec. 13, 1936	10.82	6,600		May 28, 1939	12.59	11,600
	Dec. 18, 1936	12.48	11,300				
	Dec. 22, 1936	11.44	8,100	1940	Oct. 4, 1939	11.56	8,600
	Apr. 14, 1937	11.14	7,350		Nov. 7, 1939	10.52	6,000
					Dec. 15, 1939	11.00	7,100
1938	Oct. 28, 1937	12.55	11,600		May 1, 1940	10.46	6,000
	Nov. 8, 1937	13.86	16,600				
	Nov. 25, 1937	12.26	10,700	1941	Oct. 10, 1940	12.65	11,600
	Nov. 27, 1937	12.55	11,600		Nov. 28, 1940	11.38	8,100

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Peak stages and discharges of Sultan River near Startup, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	Dec. 19, 1941	10.85	6,600	1951	Oct. 10, 1950	12.42	11,000
	June 15, 1942	11.03	7,100		Nov. 24, 1950	12.50	11,300
					Dec. 24, 1950	11.56	8,600
1943	Oct. 31, 1942	14.47	19,000		Jan. 26, 1951	10.60	6,200
	Nov. 23, 1942	12.70	12,000		Feb. 9, 1951	17.22	34,600
	Dec. 13, 1942	10.46	6,000		Sept.30, 1951	10.56	6,200
1944	Dec. 3, 1943	16.4	29,400	1952	Oct. 3, 1951	11.18	7,550
	Sept.16, 1944	10.8	6,600		Oct. 19, 1951	10.51	6,020
1945	Dec. 4, 1944	12.08	10,100	1953	Dec. 12, 1952	12.27	10,600
	Dec. 6, 1944	12.76	12,300		Jan. 3, 1953	11.38	8,050
	Jan. 7, 1945	14.66	20,000		Jan. 9, 1953	10.88	6,800
	Jan. 12, 1945	11.00	7,100		Jan. 11, 1953	12.51	11,300
	Jan. 13, 1945	10.89	6,850		Jan. 23, 1953	14.18	17,700
	Feb. 7, 1945	14.36	18,600		Jan. 31, 1953	12.42	11,100
1946a/	Oct. 25, 1945	-	-	1954	Oct. 30, 1953	13.28	14,100
	Dec. 28, 1945	10.90	6,850		Dec. 9, 1953	12.55	11,400
	June 14, 1946	11.16	7,600		Dec. 12, 1953	12.09	10,100
					Dec. 19, 1953	11.05	7,220
1947a/	Oct. 24, 1946	12.27	10,700		Jan. 5, 1954	10.98	7,050
	Jan. 23, 1947	-	-				
				1955	Nov. 16, 1954	11.50	8,350
1948	Oct. 2, 1947	12.04	9,800		Nov. 18, 1954	11.19	7,580
	Oct. 19, 1947	13.44	14,600		Nov. 26, 1954	11.48	8,300
	Nov. 8, 1947	10.77	6,600		Feb. 7, 1955	13.50	15,000
1949	Oct. 7, 1948	10.60	6,200	1956	Oct. 25, 1955	14.42	18,700
	Nov. 23, 1948	12.16	10,400		Oct. 29, 1955	11.80	9,200
					Nov. 3, 1955	13.66	15,600
1950	Oct. 9, 1949	11.27	7,850		Dec. 11, 1955	17.16	34,300
	Oct. 28, 1949	12.53	11,300				
	Nov. 13, 1949	11.00	7,100	1957	Oct. 15, 1956	12.27	10,600
	Nov. 27, 1949	12.26	10,700		Oct. 17, 1956	10.51	6,020
	Dec. 2, 1949	12.3	10,700		Oct. 20, 1956	10.80	6,600
	Dec. 28, 1949	12.46	11,300		Dec. 9, 1956	15.50	24,000
	Jan. 21, 1950	11.16	7,600		Dec. 15, 1956	11.49	8,320
	Mar. 4, 1950	14.32	18,200		Dec. 17, 1956	11.39	8,080

a Maximum for year not determined.

1380. Sultan River near Sultan, Wash.

Location.--Lat 47°55'40", long 121°47'50", in E½ sec.8, T.28 N., R.8 E., on left bank at head of Horseshoe Bend, a quarter of a mile downstream from Miners Creek, 4½ miles north of Sultan, and 6 miles upstream from mouth.

Drainage area.--88 sq mi, approximately.

Gage.--Recording. At Camp Habecker, 1½ miles upstream at different datum prior to Oct. 29, 1915. Altitude of gage is 420 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 15,100 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912	Nov. 18, 1911	19.6	14,000	1919	Oct. 28, 1918	10.70	9,500
					Dec. 4, 1918	12.62	13,200
1916	Oct. 31, 1915	-	-		Jan. 18, 1919	9.70	8,050
	Dec. 8, 1915	10.8	8,150		Jan. 22, 1919	11.42	11,100
	Dec. 21, 1915	10.8	8,150				
				1920	Nov. 15, 1919	12.70	13,100
1917	Nov. 9, 1916	11.2	8,700		Dec. 17, 1919	10.62	9,320
					Dec. 24, 1919	-	-
1918	Dec. 14, 1917	14.50	16,500		Jan. 28, 1920	13.22	14,000
	Dec. 18, 1917	16.60	20,600		Mar. 13, 1920	10.02	8,300
	Dec. 22, 1917	9.98	8,300		Sept.14, 1920	13.92	15,400
	Dec. 27, 1917	12.35	12,600				
	Dec. 29, 1917	14.30	16,100	1921	Dec. 30, 1920	10.57	9,320
	Dec. 31, 1917	11.35	10,800		Jan. 2, 1921	10.40	8,980

Peak stages and discharges of Sultan River near Sultan, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1921	Feb. 11, 1921	13.43	14,400	1925	Feb. 1, 1925	11.0	8,990
1922	Oct. 28, 1921	9.90	8,130	1926	Dec. 11, 1925	11.4	9,730
	Dec. 12, 1921	18.5	24,600		Dec. 23, 1925	11.3	10,600
					Jan. 5, 1926	9.87	8,130
1923	Oct. 25, 1922	10.67	9,500				
	Dec. 24, 1922	-	-	1927	Oct. 16, 1926	11.6	11,100
	Jan. 6, 1923	14.0	15,600				
	Jan. 9, 1923	9.96	8,300	1930	Feb. 1, 1930	9.9	7,190
1924	Jan. 31, 1924	11.60	11,100	1931	Jan. 27, 1931	11.80	10,300
	Feb. 12, 1924	16.90	21,200				
				1932	Feb. 27, 1932	17.4	22,500
1925	Dec. 10, 1924	13.0	13,700				

1410. Woods Creek near Monroe, Wash.

Location.--Lat 47°52'20", long 121°55'10", in W½ sec.33, T.28 N., R.7 E., on left bank 200 ft downstream from West Fork and 2½ miles northeast of Monroe.

Drainage area.--55.0 sq mi. Area of lakes and ponds, 1.19 sq mi; mean altitude, 625 ft.

Gage.--Recording. Altitude of gage is 100 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 970 cfs and extended by logarithmic plotting.

Bankfull stage.--5 ft.

Remarks.--Base for partial-duration series, 700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Dec. 5, 1946	5.65	868	1951	Feb. 10, 1951	6.26	1,260
	Dec. 12, 1946	5.54	822				
	Jan. 24, 1947	5.93	1,020	1952	Dec. 22, 1951	5.26	764
	Feb. 2, 1947	5.63	868				
	Apr. 20, 1947	5.34	732	1953	Jan. 23, 1953	5.18	740
1948	Oct. 19, 1947	5.70	890	1954	Dec. 1, 1953	5.81	1,020
	Nov. 8, 1947	5.72	990		Dec. 6, 1953	6.28	1,250
	Nov. 11, 1947	7.01	1,590		Dec. 10, 1953	5.12	713
	Dec. 19, 1947	5.20	700		Jan. 6, 1954	6.22	1,220
	Feb. 26, 1948	5.22	700		June 17, 1954	5.40	825
1949	Feb. 17, 1949	6.57	1,360	1955	Nov. 17, 1954	6.13	1,310
	Feb. 22, 1949	6.58	1,360		Dec. 31, 1954	5.16	797
					Feb. 8, 1955	4.98	716
1950	Nov. 14, 1949	5.70	920				
	Dec. 28, 1949	5.20	700	1956	Dec. 1, 1955	-	-
	Jan. 22, 1950	6.54	1,310		Dec. 21, 1955	6.48	1,450
	Feb. 16, 1950	5.27	720		Jan. 5, 1956	-	-
	Feb. 26, 1950	7.18	1,710		Jan. 16, 1956	-	-
	Mar. 6, 1950	6.12	1,110				
	Mar. 19, 1950	5.26	720	1957	Dec. 16, 1956	5.30	830
					Feb. 24, 1957	-	-
1951	Nov. 27, 1950	5.31	780		Mar. 9, 1957	5.14	758
	Jan. 3, 1951	5.56	885				

1415. Middle Fork Snoqualmie River near North Bend, Wash.

Location.--Lat 47°33'00", long 121°46'00", in SE¼ sec.34, T.24 N., R.8 E., on right bank at county road bridge, half a mile upstream from mouth and 1½ miles northeast of North Bend.

Drainage area.--173 sq mi. Area of lakes and ponds, 2.20 sq mi; mean altitude, 3,500 ft.

Gage.--Nonrecording prior to Sept. 1, 1912; recording Sept. 2, 1912, to June 2, 1926; nonrecording thereafter. At several sites within 300 ft at different datums prior to Aug. 6, 1915. At site 1¾ miles upstream at different datum Aug. 7, 1915, to June 2, 1926. Altitude of gage is 410 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 8,000 cfs at the various sites and extended on basis of velocity-area study.

Remarks.--Records furnished by Puget Sound Power & Light Co. for water years 1924-26, for which only annual peaks are shown. Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 7,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	June 1, 1909	8.1	8,100	1919	Jan. 23, 1919	-	-
1910	Nov. 18, 1909	12.4	19,300	1920	Nov. 15, 1919	8.50	10,200
	Nov. 23, 1909	14.6	26,700		Dec. 24, 1919	7.29	7,280
	Nov. 29, 1909	14.2	25,300		Jan. 18, 1920	7.52	7,740
	Mar. 1, 1910	7.8	7,500		Jan. 28, 1920	7.36	7,510
1911a/	Oct. 3, 1910	9.0	10,100	1921	Oct. 4, 1920	7.78	8,450
	Nov. 10, 1910	9.30	10,800		Dec. 30, 1920	9.2	12,300
					Jan. 2, 1921	8.37	9,950
1912	Nov. 18, 1911	13.5	22,800		Feb. 10, 1921	8.80	11,100
	Jan. 14, 1912	7.35	9,390				
				1922	Oct. 28, 1921	8.38	9,950
1913	Feb. 16, 1913	5.1	4,910		Nov. 30, 1921	9.45	12,900
					Dec. 12, 1921	11.9	22,000
1914	Oct. 10, 1913	7.4	11,100				
	Jan. 4, 1914	7.08	10,400	1923	Dec. 24, 1922	9.80	14,200
					Jan. 6, 1923	9.00	11,700
1915	Nov. 2, 1914	6.20	8,100		Jan. 7, 1923	9.40	12,900
	Apr. 3, 1915	6.20	8,170				
				1924	Feb. 12, 1924	11.87	22,000
1916	Nov. 19, 1915	7.50	7,740				
	Dec. 21, 1915	7.73	8,200	1925	Dec. 11, 1924	9.02	11,700
	Mar. 9, 1916	8.21	9,450				
				1926	Jan. 5, 1926	8.57	10,500
1917	June 24, 1917	7.04	6,620				
				1930	Dec. 14, 1929	7.60	7,110
1918	Dec. 14, 1917	10.79	17,600		Feb. 1, 1930	8.0	7,900
	Dec. 18, 1917	12.16	23,200				
	Dec. 22, 1917	8.24	9,450	1931	Jan. 28, 1931	8.60	9,150
	Dec. 29, 1917	11.56	20,800		Feb. 18, 1931	8.5	8,940
	Dec. 31, 1917	9.40	12,900				
				1932	Oct. 28, 1931	8.40	8,510
1919	Oct. 27, 1918	8.22	9,450		Nov. 13, 1931	7.60	7,070
	Dec. 3, 1918	8.65	10,500		Jan. 11, 1932	10.4	12,200
	Dec. 14, 1918	10.1	15,200		Feb. 26, 1932	14.3	25,600
	Jan. 18, 1919	-	-		Mar. 5, 1932	8.20	8,250

a Maximum for year not determined.

1420. North Fork Snoqualmie River near Snoqualmie Falls, Wash.

Location.--Lat 47°37'10", long 121°42'35", in SW¼ sec.30, T.25 N., R.9 E., on right bank 1 mile upstream from Calligan Creek, 7½ miles northeast of town of Snoqualmie Falls, 8½ miles northeast of Snoqualmie, and 9½ miles upstream from confluence with Middle Fork.

Drainage area.--65 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 3,200 ft.

Gage.--Recording prior to November 1949; crest-stage gage since 1953. Altitude of gage is 1,150 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,200 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Only annual peaks since 1951. Base for partial-duration series, 4,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 1, 1930	11.27	4,930	1942	Dec. 19, 1941	10.40	4,070
1931	Jan. 28, 1931	10.75	4,430	1943	Nov. 23, 1942	15.63	10,000
1932	Jan. 11, 1932	13.9	7,820	1944	Dec. 3, 1943	15.31	9,640
	Feb. 26, 1932	17.5	13,000		Sept.16, 1944	10.85	4,430
	Mar. 18, 1932	10.68	4,340		Sept.20, 1944	11.43	5,030
1933	Nov. 17, 1932	14.6	8,730	1945	Dec. 4, 1944	13.30	7,080
	Dec. 2, 1932	13.40	7,190		Jan. 7, 1945	16.3	11,100
	Jan. 7, 1933	12.09	5,760				
				1946	Oct. 25, 1945	12.73	6,420
1934	Oct. 18, 1933	10.87	4,530		Dec. 28, 1945	12.12	5,760
	Oct. 23, 1933	11.02	4,630		June 15, 1946	10.35	4,070
	Nov. 2, 1933	14.7	8,860				
	Dec. 6, 1933	11.69	5,330	1947	Oct. 25, 1946	11.87	5,540
	Dec. 9, 1933	14.58	8,730		Dec. 11, 1946	13.75	7,690
	Dec. 17, 1933	11.72	5,330		Dec. 14, 1946	11.56	5,230
	Dec. 20, 1933	14.00	7,950		Jan. 23, 1947	12.72	6,420
	Jan. 22, 1934	13.80	7,690				
	Mar. 1, 1934	11.35	5,030	1948	Oct. 19, 1947	12.9	6,640
					Nov. 8, 1947	12.32	5,980
1935	Oct. 25, 1934	16.3	11,100				
	Jan. 24, 1935	12.76	6,530	1949	Nov. 23, 1948	11.59	5,230
1936	May 16, 1936	9.76	3,540	1950	Oct. 9, 1949	a11.03	4,050
					Nov. 27, 1949 or		
1937	Dec. 6, 1936	10.74	4,340		Mar. 4, 1950	a15.1	9,380
1938	Oct. 28, 1937	10.39	4,070	1951	Feb. 9, 1951	a16.2	11,000
	Nov. 8, 1937	12.97	6,750	1952	Feb. 4, 1952	a10.5	4,160
	Apr. 17, 1938	14.60	8,730	1953	Jan. 23, 1953	12.2	5,870
				1954	Dec. 9, 1953	14.29	8,330
1939	Nov. 16, 1938	10.94	4,530				
	Dec. 7, 1938	11.59	5,230	1956	Dec. 11, 1955	15.72	10,200
				1957	Dec. 9, 1956	12.57	6,280
1940	Nov. 7, 1939	10.36	4,070				
1941	Nov. 28, 1940	12.94	6,640				

a From floodmark.

1430. North Fork Snoqualmie River near North Bend, Wash.

Location.--Lat 47°32'20", long 121°44'20", in NE¼ sec.26, T.24 N., R.8 E., on right bank 2 miles upstream from mouth and 3½ miles northeast of North Bend. Records represent flow passing measuring section 1¾ miles downstream.

Drainage area.--105 sq mi. Area of lakes and ponds, 1.60 sq mi; mean altitude, 3,100 ft.

Gage.--Nonrecording prior to Sept. 2, 1912; recording thereafter. At site 2 miles downstream at different datum prior to Sept. 27, 1916. Altitude of gage is 470 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 5,600 cfs and extended on basis of velocity-area studies.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Only annual peaks are shown for the water years 1909-12 and 1924-26. Records furnished by Puget Sound Power and Light Co. Base for partial-duration series, 4,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	June 2, 1909	9.0	6,450
1910	Nov. 23 or 24, 1909	15.5	15,800
1911	Nov. 21, 1910	10.3	7,210
1912	Nov. 18 or 19, 1911	14.5	13,200
1914	Oct. 11, 1913	9.34	5,980
1915	Apr. 2, 1915	7.65	4,270
1916	Nov. 19, 1915	7.54	4,400
	Dec. 21, 1915	7.67	4,640
	Mar. 9, 1916	8.70	5,840
1917	June 24, 1917	6.35	3,950
1918	Dec. 13, 1917	9.92	11,100
	Dec. 18, 1917	10.80	13,300
	Dec. 27, 1917	7.97	6,800
	Dec. 29, 1917	-	-
	Dec. 31, 1917	8.22	7,220
1919	Oct. 27, 1918	7.00	4,900
	Dec. 14, 1918	-	-
	Jan. 18, 1919	-	-
	Jan. 23, 1919	-	-
1920	Nov. 15, 1919	9.2	9,420
	Mar. 13, 1920	6.89	4,740
1921 a/	Oct. 4, 1920	-	-
	Dec. 30, 1920	-	-
	Feb. 10, 1921	6.98	4,900
1922	Nov. 30, 1921	7.90	6,600
	Dec. 12, 1921	9.9	11,100
1923	Dec. 24, 1922	9.05	8,980
	Jan. 7, 1923	7.77	6,400
1924	Feb. 12, 1924	11.1	14,100
1925	Dec. 10, 1924	8.71	8,320
1926	Dec. 23, 1925	8.5	7,880
1930	Feb. 1, 1930	6.47	4,610
1931	Oct. 26, 1930	6.42	4,310
	Jan. 28, 1931	6.60	4,610
1932	Jan. 11, 1932	8.57	6,940
	Feb. 26, 1932	11.55	15,400
1933	Nov. 13, 1932	9.78	10,800
	Nov. 17, 1932	9.9	11,100
	Dec. 2, 1932	9.16	9,420
	Jan. 7, 1933	8.60	8,100
1934	Oct. 18, 1933	7.06	5,080
	Oct. 22, 1933	7.09	5,080
	Oct. 23, 1933	7.30	5,440
	Nov. 2, 1933	-	-
	Dec. 6, 1933	•7.84	6,400
	Dec. 9, 1933	10.0	11,300
	Dec. 17, 1933	7.62	6,000
	Dec. 20, 1933	9.30	9,640
	Dec. 21, 1933	9.17	9,420
	Jan. 23, 1934	9.22	9,420
	Mar. 1, 1934	7.24	5,260
1935	Oct. 24, 25, 1934	10.6	12,800
	Nov. 5, 1934	7.92	6,360
	Jan. 24, 1935	8.20	6,780
1936	May 16, 1936	6.12	3,730
1937	Dec. 6, 1936	6.71	4,760
1938	Nov. 8, 1937	8.00	6,500
	Nov. 27, 1937	8.57	7,400
	Apr. 18, 1938	9.44	9,860

a Maximum for year not determined.

1433. South Fork Snoqualmie River tributary near North Bend, Wash.

Location. Lat 47°32'30", long 121°28'40", in NW¼ sec.13, T.22 N., R.10 E., at U.S. Highway 10, 15 miles southeast of North Bend.

Drainage area.--0.64 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,570 ft.

Gage.--Crest-stage gage. Datum of gage is 11.10 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 4- by 4-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 10, 1951	13.80	33.0	1955	Nov. 18, 1954	14.02	31.1
1952	Oct. 19, 1951	12.86	10.0				
1953	Jan. 31, 1953	13.96	35.0	1956	Dec. 11, 1955	13.83	20.6
1954	Dec. 9, 1953	14.08	30.0	1957	Dec. 9, 1956	14.17	32.5

1435. South Fork Snoqualmie River near Garcia, Wash.

Location.--Lat 47°25'00", long 121°35'20", in SW¼ sec.6, T.22 N., R.10 E., on left bank at Bide-a-wee Ranch, 150 ft downstream from Alice Creek, a quarter of a mile upstream from Fifteenmile Bridge, and 1¼ miles southeast of Garcia.

Drainage area.--45.3 sq mi.

Gage.--Nonrecording at datum 1.54 ft lower prior to Nov. 6, 1913; recording thereafter. Altitude of gage is 1,470 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 1,200 cfs and extended by logarithmic plotting.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Nov. 21, 1910	8.1	4,670	1914	Oct. 11, 1913	6.2	2,920
1912	Nov. 19, 1911	11.5	8,070	1915	Apr. 2, 1915	4.7	3,020
1913	Jan. 3, 1913	5.5	2,220				

1440. South Fork Snoqualmie River at North Bend, Wash.

Location.--Lat 47°29'40", long 121°47'20", in NE¼ sec.9, T.23 N., R.8 E., on right bank at county road crossing at North Bend, 2 miles upstream from mouth.

Drainage area.--83 sq mi, approximately. Area of lakes and ponds, 0.30 sq mi; mean altitude, 2,900 ft.

Gage.--Nonrecording prior to Sept. 1, 1912; recording thereafter. At site a quarter of a mile downstream at different datum prior to Oct. 2, 1916. At site a quarter of a mile upstream at different datum Oct. 2, 1916, to Sept. 30, 1938. Altitude of gage is 530 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Only annual peaks are shown for water years 1924-26. Records prior to Sept. 30, 1926, furnished by Puget Sound Power and Light Co. Base for partial-duration series, 2,200 cfs.

Peak stages and discharges of South Fork Snoqualmie River at North Bend, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	June 1, 1909	4.3	2,040
1910	Nov. 9, 1909	(a)	(b)
	Mar. 2, 1910	5.2	2,710
1911	Oct. 3, 1910	5.4	2,890
	Nov. 21, 1910	7.1	4,440
1912	Nov. 18, 1911	9.0	6,650
	Jan. 14, 1912	5.4	2,890
1914	Oct. 11, 1913	4.56	2,750
	Jan. 7, 1914	4.61	2,750
1915	Nov. 3, 1914	4.8	2,670
	Apr. 3, 1915	4.55	2,500
1916	Oct. 31, 1915	5.13	3,150
	Dec. 22, 1915	4.89	2,930
	Mar. 10, 1916	5.25	3,100
1917	June 16, 1917	6.54	2,200
1918	Dec. 14, 1917	10.55	6,460
	Dec. 18, 1917	10.76	6,780
	Dec. 22, 1917	8.68	3,900
	Dec. 29, 1917	10.51	6,300
	Dec. 31, 1917	9.67	5,060
1919	Oct. 27, 1918	8.42	3,630
	Dec. 3, 1918	9.27	4,540
	Dec. 14, 1918	10.2	5,820
	Jan. 18, 1919	8.03	3,300
	Jan. 23, 1919	-	-
1920	Nov. 15, 1919	8.54	3,570
	Dec. 24, 1919	6.89	2,460
	Jan. 19, 1920	8.23	3,360
	Jan. 28, 1920	7.01	2,520
	Mar. 13, 1920	7.32	2,730
1921	Oct. 4, 1920	7.35	2,800
	Dec. 30, 1920	9.47	4,410
	Jan. 2, 1921	8.49	3,660
	Feb. 11, 1921	9.06	4,090
	Mar. 18, 1921	6.38	2,250
1922	Oct. 28, 1921	8.14	3,380
	Dec. 1, 1921	9.68	4,570
	Dec. 12, 1921	10.78	6,780
	May 17, 1922	6.16	2,200
1923	Dec. 24, 1922	9.61	4,920
	Jan. 7, 1923	10.03	5,500
1924	Feb. 12, 1924	10.56	6,460
1925	Dec. 12, 1924	9.31	4,540
1926	Dec. 23, 1925	7.75	3,160
1930	Feb. 19, 1930	5.77	1,900
1931	Jan. 28, 1931	7.18	2,810
1932	Jan. 11, 1932	9.63	5,060
	Feb. 26, 1932	11.18	7,600
	Mar. 5, 1932	8.20	3,540
	Mar. 18, 1932	7.17	2,810
1933	Nov. 5, 1932	6.86	2,600
	Nov. 13, 1932	10.90	7,100
	Nov. 17, 1932	10.22	5,980
	Dec. 2, 1932	10.38	6,300
	Jan. 8, 1933	9.15	4,540
	June 8, 1933	6.85	2,440
1934	Oct. 23, 1933	8.70	4,000
	Nov. 2, 1933	10.98	7,260
	Dec. 6, 1933	8.10	3,460
	Dec. 10, 1933	10.69	6,780
	Dec. 18, 1933	9.29	4,660
	Dec. 22, 1933	11.1	7,430
	Jan. 3, 1934	6.61	2,560
	Jan. 23, 1934	9.86	5,500
	Mar. 29, 1934	5.95	2,200
1935	Oct. 25, 1934	11.2	7,620
	Nov. 5, 1934	7.28	3,440
	Dec. 21, 1934	6.38	2,810
	Jan. 25, 1935	8.91	4,720
1936	May 16, 1936	5.95	2,420
1937	Dec. 19, 1936	6.42	2,810
	June 19, 1937	5.64	2,250
1938	Nov. 8, 1937	8.62	4,480
	Nov. 25, 1937	8.60	4,480
	Nov. 28, 1937	9.26	5,090
	Dec. 30, 1937	5.73	2,320
	Apr. 18, 1938	9.65	5,410
1946	Oct. 25, 1945	8.85	5,200
	Nov. 2, 1945	6.20	2,250
	Dec. 29, 1945	7.95	4,140
1947	Oct. 25, 1946	7.30	3,430
	Dec. 11, 1946	9.70	6,490
	Dec. 14, 1946	8.95	5,470
	Jan. 24, 1947	7.75	4,000
1948	Oct. 3, 1947	5.79	2,300
	Oct. 19, 1947	8.13	4,320
	Nov. 8, 1947	7.31	3,520
	Nov. 10, 1947	5.72	2,230
	May 28, 1948	6.83	3,070
	June 10, 1948	5.76	2,300
	June 21, 1948	5.80	2,300
1949	Nov. 24, 1948	6.62	2,910
	Feb. 17, 1949	5.63	2,230
	May 13, 1949	5.88	2,370
1950	Oct. 28, 1949	7.27	3,430
	Nov. 27, 1949	8.85	5,190
	Dec. 28, 1949	6.36	2,750
	Mar. 4, 1950	8.45	4,670

a Water over gage.
b Discharge probably greater than that of Oct. 25, 1934.

1450. Tokul Creek near Snoqualmie, Wash.

Location.--Lat 47°33'10", long 121°50'30", in NW¼ sec.19, T.24 N., R.8 E., on right bank three-eighths of a mile downstream from highway bridge, 800 ft upstream from mouth, and 1½ miles north of Snoqualmie.

Drainage area.--34 sq mi, approximately. At site 1907-14, 33 sq mi, approximately.

Gage.--Nonrecording. Altitude of gage is 120 ft (from topographic map). July 21, 1907, to Oct. 31, 1914, at site 1 1/8 miles upstream at datum about 400 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 180 cfs and extended by logarithmic plotting.

Remarks.--Only annual observed peaks are shown. Records prior to 1930 furnished by Puget Sound Traction, Light and Power Co.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	Jan. 20, 1909	6.2	312	1930	Dec. 15, 1929	1.86	343
1912	Nov. 20, 1911	5.2	242	1931	Apr. 2, 1931	1.94	388
1914	Jan. 7, 1914	6.5	350				

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1455. Raging River near Fall City, Wash.

Location.--Lat 47°32'25", long 121°54'30", on west line sec.27, T.24 N., R.7 E., on left bank at highway crossing 2 miles southwest of Fall City and 2½ miles upstream from mouth.

Drainage area.--30.6 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,460 ft.

Gage.--Recording prior to 1951; crest-stage gage since 1953. Altitude of gage is 250 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,300 cfs and extended on basis of contracted-opening measurement at 3,430 cfs.

Remarks.--Only annual peaks since 1953. Base for partial-duration series, 1,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Dec. 28, 1945	4.67	1,380	1950	Nov. 27, 1949	4.46	1,170
					Dec. 27, 1949	5.16	1,850
1947	Dec. 11, 1946	4.97	1,650		Jan. 20, 1950	4.72	1,380
	Dec. 12, 1946	4.76	1,460		Jan. 22, 1950	4.70	1,380
	Jan. 24, 1947	4.55	1,280		Feb. 24, 1950	4.90	1,560
	Jan. 25, 1947	4.63	1,360		Mar. 4, 1950	5.35	2,050
	Feb. 2, 1947	4.63	1,360				
				1951	Feb. 9, 1951	a6.76	3,430
1948	Oct. 19, 1947	5.20	1,850				
	Nov. 8, 1947	4.50	1,230	1953	Jan. 31, 1953	4.95	1,600
	Jan. 2, 1948	4.22	1,060	1954	Dec. 9, 1953	5.54	2,200
	Feb. 26, 1948	4.69	1,460	1955	Feb. 8, 1955	5.74	2,400
	Mar. 21, 1948	4.56	1,280				
				1956	Dec. 11, 1955	5.85	2,500
1949	Nov. 28, 1948	4.28	1,040	1957	Dec. 9, 1956	4.72	1,380
	Dec. 9, 1948	4.35	1,100				
	Feb. 17, 1949	5.60	2,200				

a Maximum stage known.

1470. Griffin Creek near Carnation, Wash.
(Published as "near Tolt" prior to October 1951)

Location.--Lat 47°37'00", long 121°54'15", in SW¼SW¼ sec.27, T.25 N., R.7 E., on left bank a quarter of a mile upstream from bridge on State Highway 15B, three-quarters of a mile upstream from mouth, and 2 miles south of Carnation.

Drainage area.--17.1 sq mi. Area of lakes and ponds, 0.04 sq mi; mean altitude, 781 ft.

Gage.--Recording. At site 1,000 ft downstream at different datum prior to Sept. 21, 1951. Altitude of gage is 120 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--5 ft.

Remarks.--Base for partial-duration series, 220 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Feb. 6, 1946	2.68	209	1951	Feb. 10, 1951	5.03	738
1947	Dec. 15, 1946	3.58	306	1952	Dec. 22, 1951	3.26	248
	Jan. 24, 1947	3.09	295				
	Feb. 2, 1947	3.05	246	1953	Jan. 23, 1953	3.10	200
1948	Oct. 19, 1947	4.01	522	1954	Dec. 4, 1953	3.32	250
	Jan. 4, 1948	3.10	306		Dec. 9, 1953	3.41	275
	Feb. 17, 1948	2.86	250		Jan. 6, 1954	3.64	343
	Feb. 26, 1948	3.11	306				
				1955	Feb. 8, 1955	3.34	257
1949	Nov. 20, 1948	2.99	318	1956	Oct. 10, 1955	3.23	225
	Feb. 17, 1949	3.40	393		Nov. 10, 1955	3.30	245
	Feb. 23, 1949	3.08	295		Nov. 27, 1955	3.29	242
1950	Jan. 22, 1950	3.63	342		Dec. 2, 1955	3.27	237
	Feb. 25, 1950	3.41	265		Dec. 12, 1955	3.78	393
	Mar. 4, 1950	4.23	462		Dec. 22, 1955	3.78	393
	Mar. 19, 1950	3.22	260		Jan. 5, 1956	3.54	326
1951	Nov. 25, 1950	3.13	244	1957	Feb. 25, 1957	3.82	407
	Jan. 3, 1951	3.35	284				

1475. North Fork Tolt River near Carnation, Wash.

Location.--Lat 47°42'40", long 121°47'35", in SE¼NW¼ sec.28, T.26 N., R.8 E., on right bank 2¾ miles upstream from confluence with South Fork and 7 miles northeast of Carnation.

Drainage area.--39.2 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,590 ft.

Gage.--Recording. Altitude of gage is about 600 ft above mean sea level (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,800 cfs and extended on basis of logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 3,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Dec. 12, 1952	9.53	3,800	1955	Feb. 7, 1955	10.15	4,640
	Jan. 11, 1953	8.91	3,040				
	Jan. 18, 1953	8.94	3,080	1956	Oct. 25, 1955	10.1	4,400
	Jan. 23, 1953	10.94	5,850		Nov. 2, 1955	9.45	3,640
	Jan. 31, 1953	9.46	3,710		Dec. 11, 1955	12.2	7,360
1954	Dec. 9, 1953	10.60	5,310	1957	Oct. 15, 1956	9.25	3,420
					Dec. 9, 1956	9.43	3,610
1955	Nov. 16, 1954	9.18	3,370		Dec. 15, 1956	9.28	3,450

1480. South Fork Tolt River near Carnation, Wash.

Location.--Lat 47°41'20", long 121°42'35", in SW¼SW¼ sec.31, T.26 N., R.9 E., on left bank 7 miles upstream from confluence with North Fork and 10 miles northeast of Carnation.

Drainage area.--19.7 sq mi. Area of lakes and ponds, 0.03 sq mi; mean altitude, 2,940 ft.

Gage.--Recording. Altitude of gage is 1,300 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,700 cfs and extended on basis of logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Dec. 12, 1952	5.40	2,070	1955	Feb. 8, 1955	6.15	3,230
	Jan. 18, 1953	5.45	2,120				
	Jan. 23, 1953	6.26	3,160	1956	Oct. 25, 1955	5.45	2,220
	Jan. 31, 1953	5.52	2,200		Dec. 11, 1955	7.46	5,900
1954	Dec. 9, 1953	6.12	3,180	1957	Dec. 10, 1956	5.52	2,290

1485. Tolt River near Carnation, Wash.
(Published as "near Tolt" prior to October 1951)

Location.--Lat 47°41'45", long 121°49'30", in S½NE¼ sec.31, T.26 N., R.8 E., on right bank 500 ft downstream from the Forks, a quarter of a mile upstream from Stossel Creek, and 5 miles northeast of Carnation.

Drainage area.--79.7 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 2,300 ft.

Gage.--Nonrecording prior to Oct. 31, 1928; recording thereafter. At site 350 ft upstream at datum 7.1 ft higher (by river-profile survey) prior to Jan. 4, 1932. Datum of gage is 348 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 7,600 cfs and extended on basis of slope-area measurement at 16,800 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Peak for period of nonrecording gage is from graph based on gage readings. Base for partial-duration series, 3,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Oct. 9, 1928	8.10	4,090	1943	Oct. 31, 1942	11.95	12,300
					Nov. 23, 1942	10.18	6,770
1931	Oct. 26, 1930	6.85	3,250		Dec. 13, 1942	8.81	3,860
					Mar. 28, 1943	9.18	4,580
1938	Nov. 8, 1937	10.76	8,480		May 22, 1943	9.01	4,210
	Nov. 25, 1937	9.60	5,360				
	Nov. 27, 1937	9.80	5,830	1944	Dec. 2, 1943	11.24	9,210
	Dec. 17, 1937	8.85	3,860		May 24, 1944	9.30	4,960
	Dec. 28, 1937	9.10	4,310		Sept.16, 1944	9.37	5,150
	Jan. 14, 1938	9.14	4,410		Sept.20, 1944	9.32	4,960
	Apr. 18, 1938	11.51	10,600				
				1945	Dec. 4, 1944	10.68	7,960
1939	Nov. 16, 1938	9.33	4,800		Dec. 6, 1944	9.47	5,340
	Nov. 19, 1938	8.58	3,430		Jan. 7, 1945	12.14	12,700
	Dec. 7, 1938	9.22	4,500				
	Dec. 30, 1938	8.92	3,940	1946	Oct. 25, 1945	9.31	4,960
					Oct. 26, 1945	9.25	4,770
1940	Oct. 4, 1939	8.87	3,860		Nov. 14, 1945	8.76	3,980
	Nov. 7, 1939	9.30	4,680		Dec. 28, 1945	9.24	4,770
					June 15, 1946	8.84	4,140
1941	Oct. 10, 1940	9.37	4,680				
	Nov. 28, 1940	10.75	8,250	1947	Oct. 24, 1946	9.45	5,150
					Oct. 25, 1946	10.94	8,450
1942	Dec. 19, 1941	9.50	5,190		Dec. 11, 1946	10.59	7,720
	June 10, 1942	8.80	3,840		Dec. 14, 1946	9.01	4,410
	June 15, 1942	8.72	3,670		Apr. 19, 1947	8.44	3,480

Peak stages and discharges of Tolt River near Carnation, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Oct. 19, 1947	10.59	7,720	1953	Jan. 18, 1953	9.61	5,710
	Nov. 8, 1947	10.40	7,250		Jan. 23, 1953	11.19	10,000
	Feb. 26, 1948	8.38	3,400		Jan. 31, 1953	10.03	6,720
					Feb. 3, 1953	9.03	4,460
1949	Nov. 23, 1948	10.33	7,250				
	Feb. 17, 1949	9.23	4,770	1954	Nov. 1, 1953	9.42	5,280
					Dec. 5, 1953	8.82	4,050
1950	Oct. 9, 1949	9.36	5,150		Dec. 9, 1953	11.15	9,870
	Oct. 28, 1949	9.00	4,410		Dec. 11, 1953	8.78	3,970
	Nov. 13, 1949	9.16	4,770		Dec. 19, 1953	9.06	4,520
	Nov. 27, 1949	9.26	4,960		Jan. 5, 1954	8.73	3,880
	Dec. 28, 1949	10.35	7,250				
	Jan. 20, 1950	9.52	5,340	1955	Nov. 16, 1954	9.46	5,370
	Feb. 24, 1950	9.91	6,150		Nov. 18, 1954	8.99	4,380
	Mar. 4, 1950	11.54	10,600		Dec. 30, 1954	8.90	4,200
					Feb. 8, 1955	10.93	9,190
1951	Oct. 10, 1950	8.87	4,260		May 11, 1955	8.56	3,570
	Nov. 24, 1950	10.00	7,010				
	Dec. 23, 1950	9.28	5,520	1956	Oct. 25, 1955	10.30	7,420
	Jan. 26, 1951	8.54	3,680		Nov. 3, 1955	9.54	5,550
	Feb. 9, 1951	12.54	16,800		Nov. 9, 1955	9.17	4,750
					Dec. 11, 1955	12.52	15,000
1952	Oct. 3, 1951	8.79	4,140		Dec. 22, 1955	8.72	3,860
	Jan. 30, 1952	8.60	3,770				
	Feb. 4, 1952	9.15	4,890	1957	Oct. 15, 1956	9.72	5,970
					Dec. 10, 1956	10.05	6,780
1953	Dec. 12, 1952	9.83	6,230		Dec. 16, 1956	9.93	6,480
	Jan. 9, 1953	9.06	4,520		Dec. 17, 1956	9.03	4,460
	Jan. 11, 1953	9.61	5,710		Feb. 26, 1957	8.67	3,770

1490. Snoqualmie River near Carnation, Wash.
(Published as "near Tolt" prior to October 1951)

Location.--Lat 47°39'55", long 121°55'30", in W½ sec.9, T.25 N., R.7 E., on left bank 40 ft downstream from highway bridge, 1 mile northwest of Carnation, and 2 miles downstream from Tolt River.

Drainage area.--608 sq mi. Area of lakes and ponds, 4.20 sq mi; mean altitude, 2,400 ft.

Gage.--Nonrecording prior to Dec. 20, 1933; recording thereafter. At datum 42.96 ft higher prior to Oct. 1, 1939. Datum of gage is at mean sea level. Auxiliary recording gage 1¼ miles upstream in operation since Dec. 21, 1933.

Stage-discharge relation.--Defined by current-meter measurements below 51,000 cfs and extended above. Slope is a factor at high stages.

Bankfull stage.--60 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 16,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Dec. 14, 1929	7.62	14,800	1934	Dec. 10, 1933	15.83	47,800
	Feb. 5, 1930	7.62	14,800		Dec. 18, 1933	13.4	29,300
					Dec. 22, 1933	14.93	40,800
1931	Jan. 28, 1931	10.51	27,400		Jan. 23, 1934	14.10	32,600
	Feb. 19, 1931	8.40	18,000				
	Apr. 1, 1931	8.90	20,100	1935	Oct. 25, 1934	15.4	47,100
					Nov. 6, 1934	12.6	24,200
1932	Oct. 29, 1931	9.10	20,900		Dec. 22, 1934	10.4	16,900
	Jan. 12, 1932	12.1	35,000		Jan. 25, 1935	14.4	37,400
	Feb. 27, 1932	16.92	59,500				
	Mar. 6, 1932	12.2	34,000	1936	May 16, 1936	9.28	16,100
	Mar. 19, 1932	10.0	23,600				
				1937	Apr. 15, 1937	9.60	17,200
1933	Nov. 6, 1932	10.0	23,600				
	Nov. 13, 1932	16.97	59,000	1938	Nov. 9, 1937	11.9	23,700
	Dec. 3, 1932	15.50	45,500		Nov. 14, 1937	9.2	16,800
	Jan. 8, 1933	14.4	41,400		Nov. 26, 1937	11.1	21,600
					Nov. 28, 1937	13.3	29,100
1934	Oct. 24, 1933	12.0	29,500		Dec. 29, 1937	10.3	19,400
	Nov. 3, 1933	15.8	48,700		Apr. 18, 1938	14.6	38,800
	Dec. 6, 1933	12.0	23,100				

Peak stages and discharges of Snoqualmie River near Carnation, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	Dec. 8, 1938	11.2	22,900	1950	Dec. 28, 1949	53.66	19,500
	Jan. 2, 1939	10.4	20,600		Jan. 22, 1950	52.60	19,000
1940	Dec. 16, 1939	52.46	18,900		Feb. 24, 1950	51.94	16,600
1941	Nov. 29, 1940	53.18	20,000		Mar. 4, 1950	56.16	30,100
1942	Dec. 19, 1941	52.71	19,700	1951	Oct. 11, 1950	52.77	19,300
1943	Nov. 1, 1942	55.60	29,900		Nov. 24, 1950	52.86	19,600
	Nov. 24, 1942	55.69	30,300		Dec. 25, 1950	52.70	19,000
	Mar. 28, 1943	52.50	19,100		Feb. 10, 1951	59.18	52,200
1944	Dec. 3, 1943	58.13	48,400	1952	Feb. 4, 1952	51.58	14,300
1945	Dec. 6, 1944	53.60	20,500	1953	Jan. 9, 1953	53.11	19,500
	Jan. 8, 1945	57.02	32,000		Jan. 12, 1953	54.30	23,800
	Feb. 8, 1945	54.93	24,000		Jan. 19, 1953	52.77	18,300
1946	Oct. 26, 1945	54.42	23,500		Jan. 24, 1953	56.21	32,200
	Dec. 29, 1945	54.05	22,200		Feb. 1, 1953	56.27	32,400
	June 15, 1946	52.09	16,400	1954	Nov. 1, 1953	53.62	21,300
1947	Oct. 25, 1946	53.68	21,200		Dec. 10, 1953	56.82	35,700
	Dec. 11, 1946	56.57	32,600		Dec. 12, 1953	53.65	21,400
	Jan. 24, 1947	56.03	29,100	1955	Feb. 8, 1955	55.33	25,300
1948	Oct. 19, 1947	54.78	24,800	1956	Oct. 25, 1955	52.62	17,800
	Nov. 8, 1947	54.78	24,800		Nov. 5, 1955	54.49	24,600
	May 29, 1948	52.70	18,200		Nov. 10, 1955	53.41	20,500
1949	Nov. 24, 1948	53.06	20,200		Dec. 12, 1955	57.67	40,800
	Feb. 17, 1949	52.45	18,100		Dec. 23, 1955	53.27	19,300
1950	Oct. 28, 1949	51.68	16,000	1957	Oct. 16, 1956	52.22	16,400
	Nov. 27, 1949	54.82	23,100		Dec. 10, 1956	55.80	27,500
					Dec. 13, 1956	52.79	18,400
					Dec. 16, 1956	53.24	19,900
					Dec. 18, 1956	53.38	20,400

1525. Pilchuck River near Granite Falls, Wash.

Location.--Lat 48°03'15", long 121°57'25", in SE¼ sec.30, T.30 N., R.7 E., on right bank 200 ft upstream from county road bridge and 2 miles southeast of Granite Falls.

Drainage area.--53.5 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 1,500 ft.

Gage.--Nonrecording at several sites within 150 ft of present site prior to July 9, 1946; recording at present site thereafter. Altitude of gage is 340 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 5,400 cfs and extended on basis of slope-area measurement at 5,350 cfs.

Bankfull stage.--12 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	7.20	3,850	1947	Jan. 22, 1947	6.35	2,660
	May 24, 1944	7.40	4,170		Jan. 23, 1947	7.57	4,500
1945	Nov. 26, 1944	6.37	2,660		Jan. 24, 1947	7.50	4,330
	Jan. 7, 1945	9.40	8,070		Feb. 2, 1947	6.57	2,920
	Feb. 7, 1945	7.07	3,550	1948	Oct. 19, 1947	8.03	5,380
1946	Oct. 25, 1945	10.4	10,500		Feb. 26, 1948	6.49	2,850
	Nov. 14, 1945	6.46	2,780		Mar. 22, 1948	6.95	3,480
	June 14, 1946	6.69	3,120	1949	Nov. 23, 1948	7.15	3,690
1947	Oct. 25, 1946	8.92	6,970		Dec. 2, 1948	6.48	2,870
	Dec. 11, 1946	6.99	3,550		Feb. 17, 1949	7.54	4,560

Peak stages and discharges of Pilchuck River near Granite Falls, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	Nov. 13, 1949	6.90	3,450	1954	Dec. 12, 1953	6.39	2,710
	Dec. 28, 1949	7.90	5,220		Jan. 5, 1954	7.26	3,950
	Jan. 21, 1950	6.50	2,870				
	Feb. 24, 1950	8.01	5,420	1955	Nov. 16, 1954	8.18	5,530
	Feb. 26, 1950	6.79	3,300		Nov. 25, 1954	6.22	2,500
	Mar. 3, 1950	7.62	4,650		Dec. 30, 1954	7.11	3,720
					Feb. 8, 1955	8.17	5,510
1951	Jan. 26, 1951	6.49	2,870				
	Feb. 9, 1951	8.56	6,760	1956	Oct. 26, 1955	7.66	4,600
					Nov. 3, 1955	6.40	2,720
1952	Oct. 19, 1951	6.88	3,420		Nov. 30, 1955	6.95	3,480
	Jan. 30, 1952	6.29	2,630		Dec. 11, 1955	6.95	3,480
					Jan. 16, 1956	6.84	3,320
1953	Jan. 23, 1953	8.09	5,600				
	Feb. 7, 1953	6.48	2,840	1957	Oct. 15, 1956	7.00	3,550
					Dec. 9, 1956	7.46	4,270
1954	Dec. 6, 1953	6.47	2,810		Dec. 16, 1956	7.59	4,480
	Dec. 9, 1953	6.99	3,540		Feb. 24, 1957	6.42	2,780

1530. Little Pilchuck Creek near Lake Stevens, Wash.

Location.--Lat 48°02'00", long 122°03'00", in NW¼NW¼ sec.4, T.29 N., R.6 E., on right bank just downstream from highway crossing, 1½ miles northeast of Lake Stevens and 2 miles upstream from Stevens Creek.

Drainage area.--17.5 sq mi. Area of lakes and ponds, 0.02 sq mi; mean altitude, 376 ft.

Gage.--Recording gage and wooden control. Altitude of gage is 200 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 190 cfs and extended on basis of contracted-opening determination at 310 cfs.

Bankfull stage.--3 ft.

Remarks.--Base for partial-duration series, 150 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Dec. 12, 1946	3.79	199	1953	Feb. 1, 1953	3.27	137
	Jan. 26, 1947	3.55	164				
				1954	Dec. 1, 1953	3.86	184
1948	Nov. 7, 1947	3.86	206		Dec. 6, 1953	4.35	263
	Nov. 11, 1947	4.57	322		Dec. 10, 1953	4.36	272
	Feb. 27, 1948	3.82	199		Jan. 6, 1954	4.41	279
					Feb. 13, 1954	3.41	151
1949	Oct. 5, 1948	3.43	152		Mar. 10, 1954	3.63	176
	Dec. 3, 1948	3.67	178				
	Dec. 7, 1948	3.57	164	1955	Nov. 17, 1954	4.05	229
	Dec. 12, 1948	3.59	158		Nov. 28, 1954	3.44	154
	Feb. 17, 1949	4.46	284		Jan. 1, 1955	5.11	382
	Feb. 22, 1949	4.46	284				
				1956	Oct. 30, 1955	4.44	284
1950	Dec. 2, 1949	3.38	136		Nov. 5, 1955	3.63	176
	Dec. 28, 1949	3.92	199		Dec. 1, 1955	-	-
	Jan. 22, 1950	-	277		Dec. 11, 1955	-	-
	Feb. 15, 1950	3.59	176		Dec. 22, 1955	4.86	339
	Feb. 26, 1950	4.65	312		Jan. 6, 1956	-	-
	Mar. 6, 1950	4.28	264		Jan. 17, 1956	4.40	268
1951	Nov. 27, 1950	3.56	170	1957	Dec. 16, 1956	3.83	191
	Dec. 30, 1950	3.57	170		Dec. 21, 1956	3.64	168
	Jan. 2-3, 1951	4.00	225		Feb. 25, 1957	4.53	288
	Jan. 22, 1951	3.41	154		Mar. 10, 1957	3.54	156
	Mar. 16, 1951	3.70	187				

1555. Snohomish River at Snohomish, Wash.

Location.--Lat 47°54'40", long 122°05'50", in SE¼ sec.13, T.28 N., R.5 E., on downstream end of drawrest of bridge No. 205 on State Highway 1A in Snohomish.

Drainage area.--1,720 sq mi, approximately. Area of lakes and ponds, 11.0 sq mi; mean altitude, 2,300 ft.

Gage.--Recording. Auxiliary recording gage 2½ miles downstream from base gage. Datum of each gage is 10 ft below mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements, using fall as a factor.

Bankfull stage.--32 ft.

Remarks.--Base for partial-duration series, 40,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1906	-	35	-	1950	Nov. 27, 1949	27.50	67,000
					Dec. 28, 1949	26.66	53,100
1917	-	31.5	-		Jan. 22, 1950	25.50	46,700
					Mar. 4, 1950	27.45	58,500
1921	-	30.8	-				
				1951	Oct. 10, 1950	24.66	43,600
1932	February 1932	29.6	-		Nov. 26, 1950	25.93	45,500
					Dec. 25, 1950	26.54	49,000
1933	-	30.0	-		Feb. 10, 1951	a30.12	136,000
1942	Dec. 19, 1941	22.80	33,400	1952	Oct. 4, 1951	a21.43	28,800
1943	Nov. 1, 1942	24.92	48,700	1953	Jan. 10, 1953	26.13	48,200
	Nov. 24, 1942	25.86	56,600		Jan. 12, 1953	27.67	60,000
	Mar. 28, 1943	24.70	46,700		Jan. 23, 1953	a28.17	65,800
					Feb. 1, 1953	27.90	63,400
1944	Dec. 3, 1943	26.90	64,600				
				1954	Nov. 1, 1953	25.64	44,500
1945	Dec. 6, 1944	25.85	50,200		Dec. 10, 1953	a27.18	54,000
	Jan. 7, 1945	26.70	61,000		Dec. 12, 1953	26.91	51,000
	Jan. 13, 1945	25.00	47,300				
	Feb. 8, 1945	-	-	1955	Nov. 18, 1954	25.31	43,500
					Feb. 8, 1955	27.40	54,800
1946	Oct. 25, 1945	26.27	55,800		June 11, 1955	24.84	42,500
	Dec. 29, 1945	-	-				
	June 15, 1946	25.10	47,000	1956	Oct. 26, 1955	27.07	54,500
					Nov. 4, 1955	28.10	58,600
1947	Oct. 25, 1946	26.7	60,500		Nov. 10, 1955	25.57	46,500
	Dec. 15, 1946	27.5	70,000		Dec. 12, 1955	27.76	57,200
	Jan. 24, 1947	26.47	57,200		Dec. 22, 1955	24.41	42,400
	Feb. 15, 1947	24.27	40,200				
				1957	Oct. 16, 1956	25.24	43,100
1948	Oct. 19, 1947	27.10	58,700		Dec. 10, 1956	28.21	59,000
	Nov. 8, 1947	-	-		Dec. 16, 1956	27.06	52,800
	May 29, 1948	25.63	47,700		Feb. 26, 1957	24.96	41,500
1949	Nov. 24, 1948	24.79	44,000				

a Backwater from tide.

1564. Munson Creek near Marysville, Wash.

Location.--Lat 48°03'50", long 122°08'10", in NW¼ sec.26, T.30 N., R.5 E., at the south edge of Cedarcrest Golf Course, 2 miles northeast of Marysville.

Drainage area.--0.97 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 300 ft.

Gage.--Crest-stage gage. Datum of gage is 6.65 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 3-foot corrugated pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges of Munson Creek near Marysville, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 22, 1949	8.96	22.3	1954	Jan. 6, 1954	9.87	36.5
1950	Mar. 21, 1950	10.97	49.5	1955	Dec. 31, 1954	8.92	22.3
1951	Nov. 27, 1950	8.49	15.4	1956	Dec. 20, 1955	9.58	32.3
1952	Mar. 11, 1952	8.18	10.9	1957	Feb. 24, 1957	9.40	28.2
1953	Feb. 3, 1953	8.59	16.6				

1570. Quilceda Creek near Marysville, Wash.

Location.--Lat 48°06'20", long 122°09'40", in NE¼NE¼ sec.9, T.30 N., R.5 E., on right bank 300 ft downstream from Middle Fork and 3½ miles north of Marysville.

Drainage area.--13.9 sq mi. Area of lakes and ponds, 0.01 sq mi; mean altitude, 220 ft.

Gage.--Recording gage and wooden control. Datum of gage is 28.2 ft above mean sea level, by stadia traverse.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7 ft.

Remarks.--Base for partial-duration series, 110 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Dec. 11, 1946	4.76	121	1954	Dec. 9, 1953	5.98	172
					Dec. 20, 1953	4.82	114
1948	Nov. 11, 1947	5.19	125		Jan. 6, 1954	6.18	199
	Dec. 27, 1947	4.90	117		Jan. 31, 1954	4.78	113
	Feb. 22, 1948	4.76	121		Feb. 21, 1954	5.12	134
	Feb. 26, 1948	5.09	135		Mar. 9, 1954	5.48	162
	May 29, 1948	4.68	117				
				1955	Nov. 16, 1954	5.92	183
1949	Dec. 3, 1948	5.21	140		Nov. 19, 1954	4.88	110
	Feb. 10, 1949	4.98	125		Dec. 31, 1954	6.68	229
	Feb. 17, 1949	5.25	140				
	Feb. 22, 1949	5.53	155	1956	Oct. 30, 1955	5.50	151
					Dec. 1, 1955	5.98	184
1950	Jan. 22, 1950	5.38	128		Dec. 20, 1955	6.45	215
	Feb. 26, 1950	5.72	143		Dec. 26, 1955	5.08	133
					Jan. 6, 1956	6.03	190
1951	Jan. 2, 1951	5.21	125		Jan. 13, 1956	5.02	129
	Jan. 16, 1951	5.02	121		Jan. 16, 1956	5.95	185
	Jan. 21, 1951	5.27	134				
	Mar. 13, 1951	5.51	144	1957	Dec. 16, 1956	4.67	114
					Dec. 21, 1956	5.34	148
1952	Dec. 22, 1951	5.14	128		Feb. 5, 1957	5.70	170
					Feb. 11, 1957	4.88	124
1953	Feb. 3, 1953	4.52	104		Feb. 24, 1957	6.08	193
					Mar. 9, 1957	5.46	156
1954	Dec. 2, 1953	5.00	110		Mar. 20, 1957	5.11	136
	Dec. 6, 1953	5.74	154				

1595. South Fork Stillaguamish River near Silverton, Wash.

Location.--Lat 48°04'00", long 121°36'20", in SE¼ sec.23, T.30 N., R.9 E., on right bank a quarter of a mile downstream from Marten Creek and 2 miles southwest of Silverton.

Drainage area.--44.5 sq mi. At site "at Silverton" 1930-32, 38.4 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,210 ft.

Gage.--Nonrecording. May 1929 to September 1932, at site 1¼ miles upstream, at Silverton, at different datum. Altitude of gage is 1,360 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 3,300 cfs and extended above.

Remarks.--Gage-height record furnished by U.S. Forest Service. Discharges for period 1930-32, at Silverton, have been corrected to discharges near Silverton by ratio of the eight-tenths power of drainage areas. Peaks are from graphs based on gage readings. Base for partial-duration series, 3,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Nov. 20, 1910	8.0	7,190	1916	Mar. 12, 1916	5.3	3,570
1912	Nov. 18, 1911	8.5	7,990	1930	Dec. 14, 1929	-	3,660
					Feb. 1, 1930	-	4,840
1914	Jan. 6, 1914	8.4	7,830		Feb. 5, 1930	-	4,840
1915	Nov. 3, 1914	5.5	3,810	1931	Jan. 23, 1931	-	5,040
	Apr. 2, 1915	5.4	3,690		Jan. 27, 1931	-	6,680
					June 26, 1931	-	3,850
1916	Oct. 13, 1915	6.2	4,680				
	Dec. 9, 1915	6.5	5,080	1932	Jan. 11, 1932	-	12,600
	Feb. 16, 1916	5.8	4,180		Feb. 26, 1932	-	13,300

1610. South Fork Stillaguamish River near Granite Falls, Wash.

Location.--Lat 48°06'10", long 121°56'40", in SW¼NW¼ sec.8, T.30 N., R.7 E., on right bank a quarter of a mile upstream from county road bridge, 1½ miles upstream from Canyon Creek, and 2 miles northeast of Granite Falls.

Drainage area.--119 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 2,600 ft.

Gage.--Recording. Altitude of gage is 310 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 8,700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Oct. 9, 1928	12.44	13,800	1933	Dec. 2, 1932	13.10	15,700
					Jan. 8, 1933	11.03	10,300
1930	Feb. 1, 1930	10.8	9,790				
				1934	Oct. 28, 1933	11.33	11,000
1931	Jan. 23, 1931	11.80	12,200		Nov. 2, 1933	13.59	17,200
	Jan. 27, 1931	12.72	14,500		Dec. 5, 1933	11.74	12,000
	Feb. 18, 1931	12.05	12,800		Dec. 9, 1933	10.99	10,300
					Dec. 17, 1933	12.00	12,800
1932	Jan. 11, 1932	14.05	18,400		Dec. 21, 1933	15.10	21,700
	Feb. 26, 1932	19.7	38,800		Dec. 29, 1933	11.73	12,000
	Mar. 18, 1932	11.02	10,300		Jan. 22, 1934	13.25	16,000
					Mar. 1, 1934	12.12	13,000
1933	Nov. 5, 1932	10.94	10,000				
	Nov. 13, 1932	16.37	26,200	1935	Oct. 24, 1934	14.76	20,800
	Nov. 16, 1932	12.28	13,500		Nov. 5, 1934	15.05	21,400

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Peak stages and discharges of South Fork Stillaguamish River near Granite Falls, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Dec. 21, 1934	11.28	11,000	1949	Oct. 7, 1948	10.84	9,810
	Jan. 24, 1935	16.99	28,200		Nov. 23, 1948	10.66	9,570
1936	May 16, 1936	9.88	7,620	1950a/	Oct. 28, 1949	11.73	12,100
					Nov. 13, 1949	10.38	8,870
1937	Dec. 6, 1936	13.60	17,200		Nov. 27, 1949	-	-
	Dec. 22, 1936	11.54	11,500		Dec. 28, 1949	-	-
	Apr. 14, 1937	10.62	9,350		Jan. 21, 1950	11.14	10,600
					Mar. 3, 1950	14.18	20,200
1938	Oct. 28, 1937	12.17	13,200				
	Nov. 8, 1937	13.92	18,100	1951	Oct. 10, 1950	12.39	14,200
	Nov. 25, 1937	11.61	11,800		Nov. 24, 1950	11.61	11,800
	Nov. 27, 1937	12.28	13,500		Dec. 24, 1950	10.48	9,100
	Dec. 28, 1937	13.38	16,600		Jan. 26, 1951	11.46	11,600
	Apr. 18, 1938	14.13	18,700		Feb. 9, 1951	18.10	32,400
1939	Oct. 12, 1938	12.88	15,100	1952	Jan. 30, 1952	10.30	8,720
	Nov. 16, 1938	10.51	8,700				
	Dec. 31, 1938	10.71	9,560	1953	Dec. 12, 1952	10.96	10,200
	Jan. 1, 1939	12.06	13,000		Jan. 3, 1953	11.14	10,600
	May 28, 1939	11.82	12,200		Jan. 9, 1953	10.67	9,500
					Jan. 11, 1953	12.67	15,000
1940	Dec. 15, 1939	11.54	11,500		Jan. 23, 1953	13.13	15,900
					Jan. 31, 1953	13.29	16,300
1941	Oct. 10, 1940	10.76	9,790		Feb. 7, 1953	12.23	13,300
					Sept.28, 1953	10.60	9,330
1942	Dec. 19, 1941	10.30	8,340		Sept.30, 1953	10.65	9,440
1943	Oct. 31, 1942	12.26	13,500	1954	Oct. 31, 1953	11.82	12,300
	Nov. 23, 1942	12.6	14,200		Dec. 9, 1953	12.11	13,000
	Mar. 28, 1943	11.79	12,200		Dec. 11, 1953	11.57	11,700
					Dec. 19, 1953	11.37	11,200
1944	Dec. 3, 1943	15.84	24,000		Jan. 5, 1954	11.54	11,600
1945	Jan. 7, 1945	15.54	23,000	1955	Nov. 16, 1954	10.97	10,200
	Jan. 13, 1945	11.35	11,200		Nov. 26, 1954	10.35	8,800
	Feb. 7, 1945	14.94	21,100		Feb. 8, 1955	13.29	16,300
1946	Oct. 25, 1945	13.87	18,100	1956	Oct. 25, 1955	15.40	21,300
	Nov. 14, 1945	10.54	9,000		Oct. 29, 1955	10.83	9,840
	June 14, 1946	10.60	9,200		Nov. 3, 1955	14.27	18,200
					Dec. 11, 1955	15.48	21,500
1947	Oct. 25, 1946	16.30	25,800				
	Dec. 11, 1946	12.06	13,000	1957	Oct. 16, 1956	11.34	11,000
	Jan. 24, 1947	12.93	15,100		Oct. 20, 1956	10.69	9,530
					Dec. 9, 1956	17.22	26,900
1948	Oct. 19, 1947	15.06	21,700		Feb. 24, 1957	11.11	10,500

a Maximum for year not determined.

1625. South Fork Stillaguamish River above Jim Creek, near Arlington, Wash.

Location.--Lat 48°10'05", long 122°04'05", in SW¼ sec.17, T.31 N., R.6 E., on right bank 2 miles upstream from Jim Creek and 3 miles southeast of Arlington.

Drainage area.--199 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 2,300 ft.

Gage.--Recording. Datum of gage is 80.00 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 12,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Oct. 28, 1937	20.48	15,300	1950	Dec. 2, 1949	20.83	15,900
	Nov. 8, 1937	22.85	19,800		Dec. 28, 1949	23.40	20,900
	Nov. 25, 1937	19.38	13,100		Jan. 21, 1950	19.62	13,500
	Nov. 27, 1937	21.60	17,500		Feb. 24, 1950	19.60	13,500
	Dec. 28, 1937	22.37	19,100		Feb. 26, 1950	19.36	13,100
	Jan. 14, 1938	19.21	12,700				
	Apr. 17, 1938	23.27	20,700	1951	Oct. 10, 1950	21.36	17,100
					Nov. 24, 1950	20.35	15,100
1939	Oct. 12, 1938	21.6	17,500		Dec. 24, 1950	19.36	13,100
	Nov. 16, 1938	19.2	12,700		Jan. 26, 1951	20.92	16,100
	Jan. 1, 1939	19.98	14,300		Feb. 9, 1951	27.26	27,700
	May 28, 1939	19.8	13,900				
				1952	Jan. 30, 1952	19.21	12,700
1940	Dec. 15, 1939	19.35	13,100				
				1953	Dec. 12, 1952	20.30	14,900
1941	Oct. 10, 1940	19.56	13,500		Jan. 3, 1953	20.05	14,400
					Jan. 11, 1953	21.15	16,600
1942	Dec. 19, 1941	18.07	11,100		Jan. 23, 1953	22.16	18,600
					Jan. 31, 1953	23.04	20,300
1943	Oct. 31, 1942	21.57	17,500		Feb. 7, 1953	21.11	16,500
	Nov. 23, 1942	20.94	17,000				
	Mar. 28, 1943	19.47	13,800	1954	Oct. 31, 1953	20.37	15,000
					Dec. 9, 1953	22.32	18,900
1944	Dec. 3, 1943	23.88	21,800		Dec. 12, 1953	20.50	15,300
					Dec. 20, 1953	20.83	16,000
1945	Dec. 6, 1944	19.41	13,200		Jan. 5, 1954	20.94	16,200
	Jan. 7, 1945	24.79	23,200				
	Jan. 13, 1945	19.22	12,800	1955	Nov. 16, 1954	20.26	14,800
	Feb. 7, 1945	22.55	20,800		Nov. 25, 1954	19.37	13,000
					Feb. 8, 1955	22.86	20,000
1946	Oct. 25, 1945	24.35	22,600				
				1956	Oct. 25, 1955	24.36	22,600
1947	Oct. 25, 1946	26.07	25,500		Oct. 29, 1955	21.20	16,700
	Dec. 11, 1946	21.26	17,800		Nov. 3, 1955	24.07	22,100
	Jan. 24, 1947	21.55	18,500		Dec. 11, 1955	24.90	23,400
1948	Oct. 19, 1947	24.57	22,900	1957	Oct. 15, 1956	20.74	15,800
					Oct. 20, 1956	19.90	14,100
1949	Oct. 7, 1948	19.33	12,900		Dec. 9, 1956	26.8	26,800
	Nov. 23, 1948	19.68	13,700		Feb. 24, 1957	-	-
1950	Nov. 27, 1949	-	-				

1640. Jim Creek near Arlington, Wash.

Location.--Lat 48°10'25", long 122°04'05", in W½ sec.17, T.31 N., R.6 E., on right bank at abandoned bridge 1¼ miles upstream from mouth and 3 miles southeast of Arlington.

Drainage area.--48.9 sq mi. Area of lakes and ponds, 0.40 sq mi; mean altitude, 1,400 ft.

Gage.--Recording. Datum of gage is 103.4 ft above mean sea level (from stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements below 1,900 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 1,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Oct. 28, 1937	5.85	1,680	1950	Nov. 27, 1949	7.08	2,470
	Nov. 8, 1937	6.97	2,400		Dec. 1, 1949	6.24	1,900
	Nov. 28, 1937	7.06	2,470		Dec. 28, 1949	9.28	4,730
	Dec. 28, 1937	8.32	3,340		Jan. 21, 1950	5.78	1,630
	Jan. 14, 1938	6.86	2,340		Feb. 24, 1950	7.06	2,580
	Apr. 18, 1938	7.17	2,540		Feb. 26, 1950	7.01	2,580
					Mar. 3, 1950	5.99	1,840
1939	Oct. 12, 1938	5.78	1,680				
	Nov. 16, 1938	6.08	1,860	1951	Oct. 10, 1950	5.80	1,660
	Dec. 7, 1938	5.92	1,740		Jan. 26, 1951	6.23	1,910
	Jan. 1, 1939	6.40	2,040		Feb. 10, 1951	7.41	2,820
1940	Mar. 30, 1940	5.74	1,620	1953	Jan. 2, 1953	5.95	1,750
					Jan. 23, 1953	6.06	1,820
1941	Nov. 29, 1940	7.08	2,470		Jan. 31, 1953	6.24	1,940
					Feb. 7, 1953	5.55	1,510
1942	Nov. 13, 1941	5.51	1,520				
	June 15, 1942	5.80	1,680	1954	Nov. 1, 1953	5.89	1,710
					Dec. 9, 1953	8.17	3,520
1943	Oct. 31, 1942	5.36	1,470		Dec. 11, 1953	5.57	1,520
	Nov. 15, 1942	5.80	1,680		Dec. 20, 1953	6.59	2,180
	Nov. 23, 1942	5.28	1,420		Jan. 5, 1954	7.21	2,670
					Feb. 21, 1954	6.11	1,850
1944	Dec. 3, 1943	5.55	1,570		Mar. 9, 1954	5.51	1,490
					Aug. 23, 1954	5.70	1,600
1945	Dec. 6, 1944	5.60	1,570				
	Jan. 7, 1945	7.53	2,750	1955	Nov. 5, 1954	5.40	1,420
					Nov. 16, 1954	6.20	1,910
1946	Oct. 25, 1945	9.2	4,060		Nov. 25, 1954	5.57	1,520
	Feb. 24, 1946	6.08	1,840		Dec. 31, 1954	7.13	2,600
					Feb. 8, 1955	6.46	2,090
1947	Oct. 25, 1946	8.77	3,690				
	Dec. 11, 1946	6.54	2,080	1956	Oct. 25, 1955	6.16	1,880
	Jan. 24, 1947	6.85	2,260		Oct. 29, 1955	7.52	2,920
	Feb. 14, 1947	5.35	1,380		Nov. 3, 1955	7.07	2,560
					Dec. 11, 1955	6.55	2,160
1948	Oct. 15, 1947	5.54	1,510		Dec. 20, 1955	5.94	1,740
	Oct. 19, 1947	7.76	2,960		Dec. 22, 1955	5.94	1,740
	Dec. 17, 1947	5.36	1,400		Jan. 16, 1956	5.95	1,750
	Feb. 26, 1948	6.16	1,900				
				1957	Oct. 17, 1956	5.44	1,440
1949	Oct. 4, 1948	7.87	3,030		Oct. 20, 1956	6.44	2,080
	Oct. 7, 1948	5.51	1,480		Dec. 9, 1956	8.30	3,650
	Nov. 23, 1948	5.35	1,400		Dec. 15, 1956	6.63	2,210
	Dec. 1, 1948	5.40	1,430		Feb. 24, 1957	6.78	2,320
	Feb. 17, 1949	6.91	2,330				
	Feb. 22, 1949	5.93	1,720				

1645. South Fork Stillaguamish River near Arlington, Wash.

Location.--Lat 48°11'40", long 122°05'45", in NW¼ sec.7, T.31 N., R.6 E., near left bank on logging railroad bridge 1½ miles downstream from Jim Creek, 1½ miles southeast of Arlington, and 2½ miles upstream from confluence with North Fork.

Drainage area.--254 sq mi.

Gage.--Nonrecording. Altitude of gage is 70 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs and extended by logarithmic plotting.

Remarks.--Peaks are from graphs based on gage readings. Base for partial-duration series, 14,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 1, 1930	10.2	14,600	1934	Nov. 2, 1933	12.3	25,100
					Dec. 6, 1933	9.8	15,600
1931	Jan. 23, 1931	11.2	17,400		Dec. 9, 1933	10.0	16,300
	Jan. 27, 1931	12.0	19,700		Dec. 11, 1933	9.9	15,900
	Feb. 18, 1931	10.1	14,300		Dec. 18, 1933	9.6	14,800
					Dec. 21, 1933	12.6	26,400
1932	Jan. 11, 1932	12.8	27,400		Dec. 30, 1933	9.9	15,900
	Feb. 26, 1932	15.2	39,000		Jan. 23, 1934	10.7	19,700
	Mar. 18, 1932	10.4	16,900		Mar. 1, 1934	9.8	15,600
1933	Nov. 6, 1932	10.0	15,200	1935	Oct. 25, 1934	12.0	23,900
	Nov. 13, 1932	13.9	32,600		Nov. 5, 1934	13.05	28,300
	Nov. 17, 1932	11.5	21,500		Dec. 21, 1934	9.4	14,200
	Dec. 2, 1932	12.2	24,600		Jan. 24, 1935	14.0	33,100
	Jan. 7, 1933	10.2	17,100				
				1936	May 16, 1936	8.35	11,200
1934	Oct. 28, 1933	9.6	14,800				

1650. Squire Creek near Darrington, Wash.

Location.--Lat 48°16'15", long 121°40'00", in SE¼ sec.8, T.32 N., R.9 E., on left bank 150 ft upstream from road crossing, a third of a mile upstream from Ashton Creek, and 3½ miles northwest of Darrington.

Drainage area.--18.8 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,530 ft.

Gage.--Recording. Altitude of gage is 490 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 4,100 cfs and extended by logarithmic plotting.

Bankfull stage.--8 ft.

Remarks.--Base for partial-duration series, 2,200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Oct. 10, 1950	7.42	3,030	1954	Dec. 19, 1953	6.72	2,460
	Nov. 25, 1950	7.04	2,680				
	Dec. 24, 1950	6.53	2,280	1955	Feb. 7, 1955	6.02	1,610
	Feb. 10, 1951	10.52	6,440				
				1956	Oct. 25, 1955	8.95	3,720
1952	Oct. 3, 1951	5.37	1,480		Oct. 29, 1955	7.92	3,000
					Nov. 3, 1955	9.84	4,450
1953	Jan. 11, 1953	7.69	3,290		Dec. 11, 1955	8.11	3,080
	Jan. 31, 1953	7.48	3,100				
				1957	Oct. 15, 1956	8.00	3,000
1954	Oct. 30, 1953	6.48	2,260		Dec. 9, 1956	8.97	3,760

1655. North Fork Stillaguamish River near Darrington, Wash.

Location.--Lat 48°16'40", long 121°42'00", in NW¼ sec.7, T.32 N., R.9 E., in pier at left bank at highway bridge, 1 mile downstream from Squire Creek and 5 miles northwest of Darrington.

Drainage area.--82.2 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,340 ft.

Gage.--Recording. Altitude of gage is 410 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 4,200 cfs and extended by logarithmic plotting.

Bankfull stage.--12 ft.

Remarks.--Base for partial-duration series, 4,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Oct. 10, 1950	6.39	6,650	1954	Dec. 20, 1953	6.47	7,290
	Nov. 25, 1950	6.23	6,170		Jan. 5, 1954	5.93	5,880
	Dec. 10, 1950	5.50	4,670		Feb. 21, 1954	5.32	4,460
	Dec. 20, 1950	5.38	4,470				
	Dec. 24, 1950	5.73	5,180	1955	Nov. 18, 1954	6.16	6,460
	Feb. 10, 1951	10.63	15,500		Feb. 7, 1955	6.63	7,750
1952	Jan. 30, 1952	5.25	4,320	1956	Oct. 25, 1955	7.08	8,640
					Oct. 29, 1955	6.40	6,800
1953	Dec. 12, 1952	5.44	4,730		Nov. 3, 1955	9.55	17,500
	Jan. 3, 1953	6.55	7,520		Dec. 11, 1955	7.04	8,520
	Jan. 11, 1953	6.96	8,790				
	Jan. 23, 1953	5.80	5,560	1957	Oct. 15, 1956	6.25	6,420
	Jan. 31, 1953	7.80	11,800		Oct. 17, 1956	5.56	4,920
	Feb. 7, 1953	5.32	4,460		Oct. 20, 1956	5.97	5,740
					Dec. 9, 1956	9.17	16,000
1954	Oct. 31, 1953	5.41	4,660		Feb. 24, 1957	6.19	6,280
	Dec. 12, 1953	5.47	4,790				

1665. Deer Creek at Oso, Wash.

Location.--Lat 48°17'00", long 121°55'45", in SE¼ sec.5, T.32 N., R.7 E., on left bank 1 mile north of Oso and 1¼ miles upstream from mouth.

Drainage area.--71 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean altitude, 2,540 ft.

Gage.--Recording. At site half a mile upstream at different datums Aug. 11, 1917, to Sept. 30, 1930. Altitude of gage is 220 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs and extended above.

Remarks.--Base for partial-duration series, 5,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	Dec. 14, 1917	9.50	7,570	1921	Feb. 10, 1921	9.05	7,230
	Dec. 18, 1917	10.05	9,300				
	Dec. 29, 1917	9.25	7,150	1922	Oct. 29, 1921	8.89	6,390
					Nov. 27, 1921	8.79	6,250
1919	Oct. 27, 1918	8.2	5,790		Nov. 30, 1921	8.09	5,340
	Dec. 4, 1918	9.7	7,850		Dec. 12, 1921	11.7	10,400
	Dec. 13, 1918	8.77	6,590				
				1923	Oct. 25, 1922	9.5	7,230
1920	Nov. 15, 1919	9.90	8,490		Dec. 24, 1922	9.02	6,530
	Dec. 17, 1919	8.40	6,390		Jan. 6, 1923	8.29	5,600
	Dec. 24, 1919	7.80	5,600		Jan. 9, 1923	9.35	7,090
	Jan. 18, 1920	8.40	6,390				
	Jan. 28, 1920	8.97	7,230	1924	Dec. 6, 1923	8.80	6,250
	Mar. 13, 1920	8.00	5,860		Jan. 31, 1924	8.30	5,600
	Sept. 11, 1920	7.84	5,600		Feb. 5, 1924	9.49	7,230
	Sept. 14, 1920	9.44	7,790		Feb. 11, 1924	10.4	8,490

Peak stages and discharges of Deer Creek at Oso, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1925	Dec. 10, 1924	9.50	7,230	1929	Oct. 8, 1928	8.45	5,900
	Dec. 14, 1924	8.85	6,250		Nov. 9, 1928	8.53	6,030
	Feb. 2, 1925	8.10	5,340				
	Feb. 3, 1925	8.15	5,470	1930	Dec. 14, 1929	8.20	5,640
					Feb. 1, 1930	8.09	5,510
1926	Dec. 11, 1925	8.50	5,860		Feb. 4, 1930	8.04	5,380
	Dec. 23, 1925	8.60	6,170				
	Sept.21, 1926	8.40	5,900	1950 a/	June 22, 1950	4.85	6,100
					Aug. 15, 1950	4.78	5,890
1927	Oct. 16, 1926	8.25	5,640		Sept.26, 1950	4.71	5,490
	Dec. 2, 1926	8.24	5,640				
				1951 a/	Oct. 10, 1950	5.85	11,500
1928	Jan. 3, 1928	8.09	5,510				
	Jan. 12, 1928	9.4	7,290				

a Maximum for year not determined; partial year.

1670. North Fork Stillaguamish River near Arlington, Wash.

Location.--Lat 48°15'40", long 122°02'50", in SE¼NW¼ sec.16, T.32 N., R.6 E., on right bank 6 miles northeast of Arlington, 7 miles upstream from mouth, and 8 miles downstream from Deer Creek.

Drainage area.--269 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 2,300 ft.

Gage.--Recording. Datum of gage is 89.34 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--13 ft.

Remarks.--Base for partial-duration series, 11,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Oct. 9, 1928	9.70	14,300	1938	Oct. 28, 1937	10.26	16,200
					Nov. 8, 1937	10.32	16,200
1930	Feb. 5, 1930	9.38	12,800		Nov. 27, 1937	10.85	20,200
					Dec. 28, 1937	11.34	22,300
1931	Jan. 23, 1931	11.10	22,100		Jan. 14, 1938	9.90	15,400
	Feb. 18, 1931	9.64	13,800				
				1939	Oct. 12, 1938	9.58	14,200
1932	Nov. 13, 1931	9.41	12,000		Nov. 16, 1938	9.50	13,800
	Dec. 19, 1931	9.70	13,200		Jan. 1, 1939	9.89	15,400
	Jan. 11, 1932	11.06	19,200				
	Feb. 26, 1932	12.7	27,700	1940	Dec. 15, 1939	9.21	12,600
	Mar. 18, 1932	9.86	14,100		Feb. 9, 1940	9.0	11,800
					May 1, 1940	9.12	12,200
1933	Nov. 13, 1932	12.1	24,600				
	Dec. 2, 1932	11.63	21,100	1941	Oct. 10, 1940	8.38	9,760
	Jan. 8, 1933	10.05	14,500				
				1942	Nov. 14, 1941	9.13	12,300
1934	Oct. 23, 1933	10.46	16,700		Dec. 19, 1941	9.55	14,200
	Oct. 29, 1933	10.82	18,100				
	Nov. 2, 1933	10.06	14,900	1943	Nov. 23, 1942	10.34	17,200
	Dec. 9, 1933	9.26	11,600		Jan. 15, 1943	9.59	14,200
	Dec. 12, 1933	9.69	13,200		Apr. 1, 1943	9.05	11,900
	Dec. 17, 1933	9.28	11,600				
	Dec. 21, 1933	11.44	21,100	1944	Dec. 3, 1943	11.03	19,200
	Dec. 29, 1933	10.24	15,400				
	Jan. 3, 1934	9.32	11,600	1945	Dec. 6, 1944	9.10	11,800
	Jan. 23, 1934	11.21	20,100		Jan. 7, 1945	11.64	21,800
	Mar. 2, 1934	10.07	14,900		Jan. 13, 1945	9.48	13,200
					Feb. 7, 1945	10.08	15,500
1935	Oct. 25, 1934	10.10	14,900				
	Nov. 5, 1934	11.53	21,600	1946	Oct. 25, 1945	12.02	23,600
	Jan. 24, 1935	11.73	22,600		Nov. 14, 1945	9.44	12,900
					Feb. 24, 1946	9.90	14,700
1936	Jan. 4, 1936	9.08	10,800				
				1947	Oct. 25, 1946	12.90	25,000
1937	Dec. 7, 1936	9.28	11,600		Dec. 11, 1946	-	-
	Dec. 13, 1936	9.33	12,000		Jan. 24, 1947	13.10	27,500
	Dec. 22, 1936	9.26	11,900		Feb. 14, 1947	10.05	14,500

Peak stages and discharges of North Fork Stillaguamish River near Arlington, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Oct. 15, 1947	9.28	11,900	1953	Jan. 31, 1953	11.92	23,500
	Oct. 19, 1947	11.46	21,000		Feb. 3, 1953	9.56	13,800
	Dec. 17, 1947	9.59	13,000		Feb. 7, 1953	9.26	12,800
	Dec. 23, 1947	9.44	12,300				
				1954	Oct. 31, 1953	10.62	17,800
1949	Feb. 17, 1949	9.51	12,600		Dec. 9, 1953	10.18	16,100
					Dec. 12, 1953	10.18	16,100
1950	Oct. 28, 1949	9.22	11,600		Dec. 20, 1953	11.04	19,500
	Nov. 27, 1949	11.30	20,100		Jan. 5, 1954	10.27	16,400
	Dec. 2, 1949	9.82	13,700		Feb. 21, 1954	9.45	13,400
	Dec. 28, 1949	12.32	25,000				
	Jan. 21, 1950	9.20	11,600	1955	Nov. 18, 1954	9.02	12,100
	Feb. 26, 1950	10.04	14,500		Dec. 30, 1954	9.33	13,000
	Mar. 4, 1950	10.84	17,800		Feb. 8, 1955	11.44	21,100
					Apr. 9, 1955	9.01	12,100
1951	Oct. 10, 1950	10.17	16,100				
	Nov. 24, 1950	9.71	15,200	1956	Oct. 25, 1955	11.56	21,600
	Dec. 10, 1950	8.76	11,900		Oct. 29, 1955	10.26	16,400
	Dec. 20, 1950	9.45	14,500		Nov. 3, 1955	12.68	26,500
	Dec. 24, 1950	10.02	16,500		Dec. 11, 1955	12.27	24,700
	Jan. 26, 1951	10.30	16,100		Dec. 22, 1955	8.84	11,600
	Feb. 9, 1951	13.30	30,600				
				1957	Oct. 16, 1956	9.78	14,600
1952	Jan. 30, 1952	9.90	13,600		Oct. 18, 1956	9.67	14,200
					Oct. 20, 1956	10.19	16,100
1953	Dec. 12, 1952	10.10	14,900		Dec. 10, 1956	12.74	26,800
	Jan. 3, 1953	11.05	18,900		Dec. 16, 1956	9.61	14,200
	Jan. 11, 1953	9.64	13,600		Dec. 17, 1956	9.05	12,500
	Jan. 23, 1953	10.83	18,400		Feb. 24, 1957	10.07	15,700

1685. Pilchuck Creek near Bryant, Wash.

Location.--Lat 48°16'00", long 122°09'45", in NE¼ sec.16, T.32 N., R.5 E., on right bank 500 ft upstream from highway bridge and 2 miles north of Bryant.

Drainage area.--49.7 sq mi. Area of lakes and ponds, 1.29 sq mi; mean altitude, 1,290 ft.

Gage.--Nonrecording at site 100 ft downstream at different datum prior to Oct. 1, 1931; recording thereafter. Datum of gage is 119.8 ft (by stadia traverse).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--10 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Feb. 1, 1930	5.2	3,790	1954	Dec. 12, 1953	5.63	2,970
	Mar. 24, 1930	4.8	3,190		Dec. 20, 1953	6.23	3,870
					Jan. 5, 1954	5.37	2,620
1931	Jan. 23, 1931	4.65	2,900		Mar. 9, 1954	5.66	3,010
	Jan. 27, 1931	4.75	3,190				
	Feb. 18, 1931	4.60	2,900	1955	Dec. 14, 1954	5.40	2,660
	Mar. 20, 1931	4.40	2,620		Dec. 30, 1954	6.09	3,640
	Mar. 31, 1931	4.40	2,620		Feb. 8, 1955	6.54	4,370
	June 17, 1931	4.50	2,760				
				1956	Oct. 25, 1955	5.55	2,860
1950a/	Sept.26, 1950	5.75	3,260		Oct. 29, 1955	5.49	2,780
					Nov. 3, 1955	6.04	3,570
1951	Jan. 25, 1951	5.62	3,120		Dec. 11, 1955	5.39	2,650
	Feb. 9, 1951	6.69	3,990		Jan. 16, 1956	5.83	3,260
1953	Jan. 23, 1953	5.31	2,540	1957	Oct. 20, 1956	5.50	2,790
					Dec. 9, 1956	7.60	6,240
1954	Oct. 30, 1953	5.44	2,710		Dec. 15, 1956	5.48	2,760
	Dec. 9, 1953	6.20	3,820		Feb. 24, 1957	5.59	2,920

a Maximum for year not determined; partial year.

1695. Fish Creek near Arlington, Wash.

Location.--Lat 48°10'30", long 122°13'30", in NW¼ sec.18, T.31 N., R.5 E., on right bank three-quarters of a mile upstream from mouth and 4½ miles west of Arlington.

Drainage area.--7.6 sq mi. Area of lakes and ponds, 0.26 sq mi; mean altitude of basin, 270 ft.

Gage.--Recording prior to 1955; crest-stage gage at culvert 300 ft upstream thereafter. At site 250 ft upstream at different datum, and with wooden control, prior to Mar. 13, 1952. Altitude of gage is 50 ft (from topographic map).

Stage-discharge relation.--Prior to 1955, defined by current-meter measurements below 27 cfs and extended above. Since 1955, peaks are from computation of discharge through a 4-foot corrugated pipe culvert. Above elevation 11.5 ft, road overflow is added to discharge through culvert.

Remarks.--Only annual peaks since 1955; from culvert computations at site 300 ft upstream from described site. Base for partial-duration series, 40 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Dec. 30, 1950	2.07	58	1952	Mar. 11, 1952	1.88	46
	Jan. 2, 1951	2.17	66				
	Jan. 21, 1951	2.10	60	1953	Mar. 28, 1953	1.43	31
	Mar. 13, 1951	2.13	62				
				1955	Dec. 31, 1954	4.39	71.1
1952	Dec. 18, 1951	2.07	54				
	Dec. 22, 1951	1.91	43	1956	Dec. 20, 1955	6.12	a207
	Jan. 8, 1952	1.87	42				
	Feb. 12, 1952	1.83	42	1957	Feb. 24, 1957	5.89	134

a Beaver dam upstream washed out.

SKAGIT RIVER BASIN

1705. Skagit River near Hope, British Columbia (International gaging station)

Location.--Lat 49°02'50", long 121°05'45", on left bank just downstream from Galena Creek, 4 miles upstream from the international boundary and 27 miles southeast of Hope, British Columbia.

Drainage area.--357 sq mi. Area of lakes and ponds, 0.19 sq mi; mean altitude, 4,610 ft.

Gage.--Recording. Prior to October 1934, at site 550 ft downstream at different datum. Altitude of gage is 1,670 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 6,500 cfs and extended above.

Remarks.--Maximum dailies 1915-22 furnished by Canadian Department of Resources and Development. Only annual peaks are shown. This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Apr. 4, 1915	-	a1,280	1941	May 2, 1941	5.15	1,560
				1942	May 26, 1942	7.49	4,440
1916	June 17, 1916	-	a7,560	1943	May 27, 1943	8.12	5,420
1917	May 29, 1917	-	a5,920	1944	May 29, 1944	6.46	2,510
1918	June 10, 1918	-	a5,980	1945	May 30, 1945	8.60	5,560
1919	May 26, 1919	-	a5,140				
				1946	May 27, 1946	8.85	5,960
1921	June 7, 1921	-	a6,920	1947	May 8, 1947	8.47	5,630
1922	June 4, 1922	-	a6,850	1948	May 28, 1948	10.75	9,720
				1949	May 16, 1949	10.20	6,850
1935	Jan. 25, 1935	8.83	6,560	1950	June 21, 1950	12.20	10,200
1936	May 31, 1936	7.90	5,070	1951	May 24, 1951	10.49	5,560
1937	June 3, 1937	8.84	6,570	1952	May 19, 1952	10.21	4,970
1938	May 26, 1938	8.71	6,370	1953	June 13, 1953	10.58	5,720
1939	May 16, 1939	8.17	5,440	1954	May 19, 1954	11.93	6,820
1940	May 24, 1940	6.52	2,990	1955	June 12, 1955	11.93	9,760

a Maximum daily.

1715. Skagit River above Devils Creek, near Newhalem, Wash.

Location.--Lat 48°50'30", long 121°02'20", in W½ sec.30, T.39 N., R.14 E., on left bank 2 miles upstream from Devils Creek, 9½ miles upstream from Ross Dam, and 15 miles northeast of Newhalem.

Drainage area.--650 sq mi, approximately, of which 400 sq mi is in Canada.

Gage.--Recording. Altitude of gage is 1,410 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 6,600 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 3,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940a/	May 11, 1940	5.30	5,360	1943	May 27, 1943	6.71	8,040
	May 24, 1940	5.55	5,900		June 10, 1943	6.80	8,220
	June 1, 1940	4.59	4,160		July 2, 1943	6.51	7,680
1941	Oct. 21, 1940	4.58	4,210	1944	May 16, 1944	4.84	4,630
					May 29, 1944	4.80	4,630
1942	Dec. 3, 1941	6.20	6,570				
	May 26, 1942	6.13	6,420	1945	May 6, 1945	5.38	5,650
	June 7, 1942	5.31	5,220		May 31, 1945	7.27	9,140
1943	Apr. 16, 1943	6.06	6,960				

a Maximum for year not determined; partial year.

1720. Beaver Creek near Newhalem, Wash.

Location.--Lat 48°46'40", long 121°04'20", in S½ sec.14, T.38 N., R.13 E. (unsurveyed), on left bank three-quarters of a mile upstream from Ross Reservoir, 3 miles north of Ross Dam on Skagit River, and 10½ miles northeast of Newhalem.

Drainage area.--52 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean altitude, 4,400 ft.

Gage.--Recording. Altitude of gage is 1,600 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,100 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 1,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940a/	May 24, 1940	4.97	1,320	1945	Dec. 6, 1944	5.20	1,610
					May 31, 1945	5.32	1,680
1941	Oct. 19, 1940	7.34	3,540				
				1946	Oct. 26, 1945	7.57	3,760
1942	Oct. 16, 1941	5.30	1,520		May 10, 1946	5.08	1,550
	Dec. 2, 1941	7.76	3,980		May 27, 1946	5.35	1,730
	June 15, 1942	5.10	1,400				
				1947	Oct. 25, 1946	5.33	1,760
1943	May 26, 1943	5.05	1,520		May 8, 1947	4.94	1,480
	June 9, 1943	5.00	1,490		May 27, 1947	4.93	1,480
	June 17, 1943	5.00	1,490				
	July 4, 1943	5.11	1,550	1948	Oct. 4, 1947	5.57	1,930
					May 28, 1948	6.37	2,490
1944	Dec. 3, 1943	4.63	1,280		June 10, 1948	6.37	2,490

a Maximum for year not determined; partial year.

1725. Skagit River near Newhalem, Wash.
(Published as "above Ruby Creek, near Marblemount" 1930-31)

Location.--Lat 48°44'50", long 121°01'50", in S½ sec.30, T.38 N., R.14 E. (unsurveyed), on right bank 1¼ miles upstream from Ruby Creek and 11 miles northeast of Newhalem.

Drainage area.--765 sq mi, of which 400 sq mi is in Canada. Area of lakes and ponds, 1.53 sq mi; mean altitude, 4,800 ft.

Gage.--Recording. Altitude of gage is 1,250 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs and extended on basis of velocity-area studies.

Remarks.--Base for partial-duration series, 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1922	December 1921	17.8	33,000	1934	May 30, 1934	10.30	10,200
1929a/	June 8, 1929	9.50	8,130	1935	Nov. 5, 1934	13.05	17,000
					Jan. 26, 1935	12.63	15,900
1930	June 11, 1930	9.50	8,270		Feb. 3, 1935	9.78	9,020
					June 8, 1935	9.91	9,240
1931	May 2, 1931	10.20	9,860				
	May 14, 1931	10.11	9,630	1936	Apr. 18, 1936	10.10	9,700
					May 5, 1936	9.42	8,140
1932	Feb. 27, 1932	15.9	25,700		May 14, 1936	10.44	10,400
	May 10, 1932	9.62	8,620		May 31, 1936	11.11	12,000
	June 14, 1932	10.92	11,600				
				1937	May 27, 1937	9.53	8,430
1933	Nov. 13, 1932	10.50	10,600		June 3, 1937	11.39	12,700
	Nov. 18, 1932	9.43	8,140		June 21, 1937	10.28	10,100
	June 5, 1933	10.33	10,200		June 28, 1937	9.62	8,620
	June 16, 1933	13.10	17,300				
	July 16, 1933	10.20	9,930	1938	Oct. 28, 1937	11.32	12,600
					May 26, 1938	11.74	13,600
1934	Oct. 25, 1933	9.98	9,470		June 8, 1938	10.47	10,600
	Apr. 14, 1934	9.41	8,140		June 23, 1938	10.26	10,100
	Apr. 24, 1934	12.00	14,300				
	May 5, 1934	10.79	11,320	1939	May 16, 1939	10.42	10,400
	May 16, 1934	9.78	9,020		May 29, 1939	11.13	12,100

a Maximum for year not determined; partial year.

1735. Ruby Creek below Panther Creek, near Newhalem, Wash.

Location.--Lat 48°42'30", long 120°58'10", in NW¼ sec.10, T.37 N., R.14 E. (unsurveyed), on right bank 200 ft downstream from Panther Creek, 4 miles upstream from mouth, and 13 miles northeast of Newhalem.

Drainage area.--199 sq mi.

Gage.--Recording. Altitude of gage is 1,640 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 5,600 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 3,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	May 15, 1949	8.42	5,170	1954	May 18, 1954	7.84	4,540
	June 6, 1949	7.55	4,280		June 22, 1954	6.78	3,440
					June 27, 1954	6.94	3,600
1950	Nov. 27, 1949	10.95	8,640		July 1, 1954	7.82	4,630
	June 5, 1950	6.74	3,360		July 7, 1954	7.10	3,860
	June 20, 1950	9.30	6,270		July 14, 1954	6.65	3,410
	June 29, 1950	8.25	4,940				
				1955	June 11, 1955	9.50	6,540
1951	Feb. 10, 1951	7.03	3,760		June 23, 1955	8.14	5,000
	May 11, 1951	7.44	4,060		July 17, 1955	6.45	3,250
	May 23, 1951	7.50	4,170				
	June 15, 1951	6.87	3,560	1956	Oct. 25, 1955	9.25	6,240
					Nov. 4, 1955	7.12	3,920
1952	May 18, 1952	6.38	3,150		May 19, 1956	7.61	4,300
					May 31, 1956	8.98	5,810
1953	June 13, 1953	7.16	3,820		June 19, 1956	7.50	4,300

1740. Ruby Creek near Newhalem, Wash.
(Published as "near Marblemount" prior to October 1931)

Location.--Lat 48°43'20", long 121°00'30", in SE¼ sec.5, T.37 N., R.14 E., 2 miles upstream from mouth and 12 miles east of Newhalem.

Drainage area.--210 sq mi, approximately. Area of lakes and ponds, 0.10 sq mi; mean altitude, 5,700 ft.

Gage.--Recording. Prior to Mar. 8, 1940, at site 1½ miles downstream at different datum. Datum of gage is 1,554.26 ft above mean sea level (levels by city of Seattle).

Stage-discharge relation.--Defined by current-meter measurements below 5,600 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 2,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1919a/	June 20, 1919	12.9	3,560	1938	June 23, 1938	12.67	3,660
1929	Oct. 9, 1928	12.12	2,840	1939	May 15, 1939	12.75	3,950
	May 22, 1929	12.57	3,460		May 28, 1939	13.08	4,650
	June 7, 1929	12.31	3,080		June 29, 1939	12.09	2,790
1930	May 15, 1930	11.90	2,740	1940	May 10, 1940	6.62	2,600
	June 6, 1930	12.10	3,030		May 23, 1940	6.91	3,070
1931	May 2, 1931	12.16	3,060	1941	Oct. 20, 1940	5.88	1,630
	May 14, 1931	12.47	3,570	1942	May 25, 1942	7.69	4,650
1932	Feb. 27, 1932	14.15	6,730		June 6, 1942	6.65	2,670
	June 12, 1932	12.83	4,100	1943	May 27, 1943	7.26	3,780
1933	Nov. 13, 1932	12.35	3,340		June 9, 1943	7.45	4,160
	June 14, 1933	14.09	6,510		June 30, 1943	7.38	4,060
1934	Apr. 23, 1934	13.74	4,920	1944	May 15, 1944	6.41	2,370
	May 15, 1934	12.57	3,120	1945	May 30, 1945	7.56	4,360
	May 28, 1934	13.00	3,750		June 21, 1945	6.64	2,750
1935	Nov. 5, 1934	12.80	3,460	1946	May 26-27, 1946	7.43	4,160
	Jan. 25, 1935	12.98	3,300		June 14, 1946	7.03	3,410
	May 31, 1935	12.95	3,240	1947	May 8, 1947	7.50	4,260
	June 6, 1935	13.11	3,430		May 27, 1947	7.48	4,260
1936	May 14, 1936	12.87	3,440	1948	May 27, 1948	9.2	9,920
	June 2, 1936	13.92	4,850		June 7, 1948	8.07	6,380
1937	June 2, 1937	13.51	4,480		July 1, 1948	8.24	6,940
	June 16, 1937	13.10	3,930	1949b/	May 15, 1949	7.65	5,340
1938	Oct. 28, 1937	12.36	3,180				
	May 25, 1938	13.12	4,530				

a Maximum for year not determined; partial year.
b Partial year.

1745. Skagit River below Ruby Creek, near Newhalem, Wash.
(Published as "near Marblemount" 1919-30)

Location.--Lat 48°44'20", long 121°03'40", in SE¼ sec.35, T.38 N., R.13 E. (unsurveyed), on right bank three-quarters of a mile downstream from Ruby Creek and 9 miles northeast of Newhalem.

Drainage area.--978 sq mi, of which 400 sq mi is in Canada.

Gage.--Recording. Altitude of gage is 1,190 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended by reducing discharge at Reflector Bar by measured inflow.

Remarks.--Base for partial-duration series, 10,000 cfs.

Peak stages and discharges of Skagit River below Ruby Creek, near Newhalem, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1919a/	June 20, 1919	10.0	15,300	1924	June 2, 1924	9.00	11,000
	June 26, 1919	9.30	12,200				
				1925	Dec. 13, 1924	10.40	17,200
1920	July 1, 1920	9.31	12,600		May 19, 1925	11.6	23,200
					June 22, 1925	9.50	13,000
1921	Oct. 4, 1920	9.18	11,800				
	May 25, 1921	10.29	16,700	1926	Apr. 30, 1926	7.76	7,460
	June 7, 1921	11.95	25,200				
				1927	Oct. 16, 1926	8.95	11,300
1922	Oct. 29, 1921	9.60	13,500		May 17, 1927	9.40	12,800
	Dec. 12, 1921	16.1	45,700		June 7, 1927	11.35	22,200
	May 18, 1922	10.23	16,200				
	June 4, 1922	12.3	26,700	1928	May 22, 1928	11.4	22,200
1923	May 10, 1923	9.84	14,400	1929	Oct. 9, 1928	9.35	12,800
	June 8, 1923	10.75	19,200		May 23, 1929	9.65	13,600
					June 7, 1929	9.06	11,600
1924	Feb. 12, 1924	12.2	26,200				
	May 14, 1924	11.2	21,200	1930	June 11, 1930	8.9	10,700

a Maximum for year not determined; partial year.

1755. Thunder Creek near Newhalem, Wash.
(Published as "above Colonial Creek, near Marblemount" 1931)

Location.--Lat 48°40'20", long 121°04'20", in SE¼ sec.23, T.37 N., R.13 E. (unsurveyed), on right bank half a mile upstream from backwater from Diablo Reservoir, 8 miles east of Newhalem, and 20 miles northeast of Marblemount.

Drainage area.--98 sq mi, approximately. Area of lakes and ponds, 0.10 sq mi; mean altitude, 5,800 ft.

Gage.--Recording. Altitude of gage is 1,220 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,900 cfs and extended by logarithmic plotting.

Bankfull stage.--14 ft.

Remarks.--Base for partial-duration series, 2,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	June 26, 1931	8.2	3,630	1937	June 21, 1937	7.34	2,650
	Sept. 5, 1931	8.13	3,520		June 28, 1937	7.34	2,650
1932	Feb. 26, 1932	11.3	8,150	1938	Oct. 28, 1937	11.0	7,630
	June 15, 1932	7.33	2,730		June 23, 1938	8.12	3,510
	June 21, 1932	8.32	3,740				
				1939	May 28, 1939	9.14	4,740
1933	Nov. 13, 1932	9.27	5.010		June 29, 1939	7.08	2,490
	Nov. 17, 1932	7.55	3,010		July 27, 1939	7.25	2,580
	June 14, 1933	7.92	3,310				
	July 16, 1933	7.62	3,010	1940	May 23, 1940	6.63	2,060
	Sept.28, 1933	7.09	2,550				
				1941	Oct. 10, 1940	8.13	3,510
1934	Oct. 18, 1933	7.06	2,550		Oct. 20, 1940	9.56	5,430
	Oct. 25, 1933	8.11	3,520		July 17, 1941	7.27	2,550
	Nov. 2, 1933	8.05	3,410				
	Nov. 22, 1933	8.00	3,410	1942	Oct. 3, 1941	8.15	3,530
	Dec. 21, 1933	8.18	3,140		Dec. 2, 1941	7.50	2,750
	May 30, 1934	7.31	2,550		June 15, 1942	7.20	2,460
	July 16, 1934	8.82	4,440		July 4, 1942	7.44	2,650
	July 27, 1934	7.23	2,580				
				1943	July 10, 1943	7.10	2,370
1935	Nov. 5, 1934	10.0	6,120				
	Jan. 25, 1935	9.86	5,870	1944	Sept.16, 1944	7.05	2,400
	July 14, 1935	7.29	2,700		Sept.20, 1944	7.43	2,780
	Sept.15, 1935	6.98	2,430				
				1945	May 30, 1945	6.99	2,400
1936	Apr. 18, 1936	7.83	3,220		Sept. 4, 1945	7.67	3,080
	May 30, 1936	8.30	3,800				
	June 16, 1936	7.37	2,800	1946	Oct. 25, 1945	8.68	4,220
	Sept. 1, 1936	7.07	2,530				

Peak stages and discharges of Thunder Creek near Newhalem, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Oct. 25, 1946	9.74	5,550	1953	July 8, 1953	6.86	2,430
					Sept.28, 1953	7.14	2,690
1948	Oct. 2, 1947	8.35	3,780				
	Oct. 19, 1947	8.90	4,410	1954	Aug. 23, 1954	7.48	2,850
	May 29, 1948	8.55	4,020				
	June 7, 1948	8.19	3,550	1955	Nov. 5, 1954	7.68	3,050
					June 11, 1955	7.70	3,070
1949	May 13, 1949	7.06	2,560		July 16, 1955	7.79	3,160
	June 6, 1949	7.02	2,480				
	Sept.19, 1949	6.92	2,400	1956	Oct. 25, 1955	12.68	10,800
					Nov. 3, 1955	8.38	3,840
1950	Oct. 28, 1949	8.16	3,570		Nov. 10, 1955	7.61	3,020
	Nov. 27, 1949	12.14	9,630		June 1, 1956	7.38	2,790
	June 20, 1950	7.57	3,100		June 19, 1956	7.09	2,530
	June 30, 1950	7.32	2,830		July 12, 1956	7.42	2,830
	Aug. 15, 1950	8.27	3,770		July 20, 1956	7.23	2,660
					Sept.26, 1956	7.29	2,710
1951	Nov. 25, 1950	8.13	3,470				
	Dec. 24, 1950	7.43	2,830	1957	June 1, 1957	6.99	2,440
	Feb. 10, 1951	8.54	3,870		June 11, 1957	7.38	2,790
	May 11, 1951	7.09	2,560				
1952	June 4, 1952	7.02	2,580				

1760. Thunder Creek near Marblemount, Wash.

Location.--Lat 48°42'30", long 121°06'00", in NW¼ sec.10, T.37 N., R.13 E., on left bank a quarter of a mile upstream from mouth, 1½ miles southeast of Diablo Dam, and 20 miles northeast of Marblemount.

Drainage area.--111 sq mi.

Gage.--Recording. Altitude of gage is 1,085 ft (by water level transfer from Diablo Dam).

Stage-discharge relation.--Defined by current-meter measurements below 2,200 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1919a/	May 27, 1919	9.5	4,200	1925	Dec. 12, 1924	9.53	4,200
	July 15, 1919	8.66	3,290		May 19, 1925	8.20	2,880
					June 26, 1925	8.46	3,180
1920	July 2, 1920	8.00	2,580				
	July 17, 1920	8.06	2,680	1926	July 5, 1926	8.11	2,680
	Sept.11, 1920	10.10	4,960		July 12, 1926	7.97	2,490
1921	Oct. 4, 1920	8.58	3,180	1927	Oct. 16, 1926	13.26	10,400
	June 7, 1921	9.80	4,570		Oct. 24, 1926	8.38	2,980
	June 30, 1921	8.12	2,680		June 8, 1927	8.80	3,400
					Aug. 31, 1927	9.80	4,570
1922	Oct. 19, 1921	9.35	4,080		Sept. 3, 1927	9.30	3,960
	Oct. 29, 1921	10.62	5,610		Sept.27, 1927	8.00	2,580
	Dec. 12, 1921	15.5	15,400				
	June 3, 1922	8.80	3,400	1928	Oct. 19, 1927	8.50	3,080
	July 3, 1922	8.50	3,080		Jan. 12, 1928	8.60	3,180
					May 22, 1928	8.95	3,620
1923	June 9, 1923	8.60	3,180		May 25, 1928	8.60	3,180
	June 30, 1923	8.50	3,080		July 22, 1928	8.00	2,580
1924	Feb. 12, 1924	11.1	6,360	1929	Oct. 9, 1928	12.48	8,800
	May 13, 1924	8.13	2,680				
	July 2, 1924	8.20	2,780	1920	July 13, 1930	8.10	2,680
1925	Oct. 25, 1924	8.23	2,780				

a Maximum for year not determined; partial year.

1770. Skagit River at Reflector Bar, near Newhalem, Wash.
(Published as "near Marblemount" 1913-22)

Location.--Lat 48°42'50", long 121°08'30", in N½ sec.8, T.37 N., R.13 E. (unsurveyed), on right bank just downstream from Canyon Diablo, a quarter of a mile downstream from later site of Diablo Dam, three-quarters of a mile upstream from Stetattle Creek, 1½ miles downstream from Thunder Creek, 6 miles northeast of Newhalem, and 19 miles northeast of Marblemount.

Drainage area.--1,100 sq mi, approximately, of which 400 sq mi is in Canada.

Gage.--Nonrecording prior to Apr. 14, 1914; recording thereafter. Altitude of gage is 880 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 25,000 cfs and extended by logarithmic plotting.

Remarks.--Peak for period of nonrecording gage is from graph based on gage readings. Base for partial-duration series, 13,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	20.5	115,000	1918	Dec. 29, 1917	12.00	37,300
					May 4, 1918	6.99	13,700
1856	-	18.5	95,000		June 10, 1918	9.02	22,400
1898	Nov. 18, 1897	12.5	48,000	1919	May 27, 1919	9.0	24,200
					June 20, 1919	7.67	18,500
1910	Nov. 29, 1909	15.4	70,000				
				1920	July 1, 1920	7.03	15,600
1914	Jan. 6, 1914	7.80	16,800				
	May 15, 1914	7.28	14,800	1921	Oct. 5, 1920	6.51	13,500
	June 17, 1914	7.08	14,000		May 25, 1921	7.98	19,800
					June 7, 1921	10.66	30,800
1915	Apr. 3, 1915	6.52	11,800		June 21, 1921	7.63	17,200
1916	June 17, 1916	10.50	29,400	1922	Oct. 29, 1921	-	-
	June 27, 1916	8.60	20,900		Dec. 12, 1921	14.1	58,000
	July 9, 1916	7.48	16,200		May 18, 1922	8.07	18,000
					June 4, 1922	9.84	26,100
1917	May 29, 1917	8.03	18,800				
	June 16, 1917	8.18	19,700				

1775. Stetattle Creek near Newhalem, Wash.
(Published as "near Marblemount" 1913-15)

Location.--Lat 48°43'30", long 121°09'20", in NE¼ sec.6, T.37 N., R.13 E., on left bank three-quarters of a mile upstream from mouth, 5½ miles northeast of Newhalem, and 18½ miles northeast of Marblemount.

Drainage area.--21.4 sq mi. Area of lakes and ponds, 0.10 sq mi; mean altitude, 5,000 ft.

Gage.--Recording. Sept. 7, 1933, to Aug. 26, 1937, at site 150 ft upstream at datum 1.69 ft higher. Altitude of gage is 925 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 1,600 cfs and extended on basis of slope-area measurement at 8,800 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 1,100 cfs.

Peak stages and discharges of Stetattle Creek near Newhalem, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Oct. 23, 1933	7.17	2,020
	Oct. 24, 1933	6.55	1,660
	Nov. 2, 1933	6.16	1,390
	Nov. 22, 1933	5.74	1,150
	Dec. 11, 1933	5.94	1,270
	May 4, 1934	6.30	1,480
	July 16, 1934	5.78	1,180
1935	Nov. 1, 1934	6.06	1,330
	Nov. 5, 1934	10.4	5,640
	Jan. 25, 1935	7.76	3,100
1936	June 2, 1936	4.78	1,010
1937	June 2, 1937	5.08	1,160
	June 18, 1937	5.50	1,370
1938	Oct. 28, 1937	7.34	3,220
	Nov. 25, 1937	5.41	1,330
	Apr. 18, 1938	5.52	1,460
1939	Jan. 1, 1939	5.30	1,290
	May 28, 1939	6.64	2,560
1940	Nov. 30, 1939	5.10	1,130
1941	Oct. 19, 1940	6.03	1,940
1942	Oct. 10, 1941	5.23	1,240
	Dec. 2, 1941	6.77	2,680
1943	June 17, 1943	4.70	870
1944	Dec. 3, 1943	5.62	1,510
1945	Dec. 5, 1944	5.88	1,780
	Feb. 7, 1945	6.10	1,980
1946	Oct. 25, 1945	7.16	3,210
1947	Oct. 24, 1946	5.85	1,740
1948	Oct. 3, 1947	5.33	1,310
	Oct. 19, 1947	6.80	2,730
	June 9, 1948	5.53	1,470
1949	Oct. 6, 1948	5.87	1,740
	Sept.19, 1949	5.39	1,350
1950	Oct. 28, 1949	5.74	1,640
	Nov. 26, 1949	9.70	8,580
	Aug. 15, 1950	4.72	1,140
1951	Nov. 25, 1950	-	2,000
	Dec. 10, 1950	-	1,200
	Dec. 24, 1950	-	1,700
	Feb. 10, 1951	-	3,300
1952	June 4, 1952	4.76	1,480
1953	Jan. 12, 1953	4.95	1,600
	Jan. 31, 1953	4.65	1,410
	Sept.30, 1953	5.20	1,820
1954	Oct. 30, 1953	5.08	1,710
1955	Nov. 5, 1954	4.58	1,360
	Nov. 18, 1954	4.32	1,170
	Nov. 22, 1954	4.90	1,620
	Nov. 25, 1954	4.71	1,460
	May 19, 1955	4.33	1,130
	June 10, 1955	4.29	1,100
1956	Oct. 25, 1955	7.34	4,330
	Nov. 3, 1955	5.70	2,300
	Sept.25, 1956	4.35	1,150
1957	Oct. 17, 1956	5.07	1,700
	Oct. 20, 1956	5.08	1,710

1780. Skagit River at Newhalem, Wash.
(Published as "near Marblemount" 1909-14, 1921-31)

Location.--Lat 48°40'29", long 121°14'45", in SE¼ sec.21, T.37 N., R.12 E., on right bank a quarter of a mile upstream from Newhalem Creek, half a mile downstream from city of Seattle powerplant at Newhalem, 11 miles upstream from Bacon Creek, and 13 miles northeast of Marblemount.

Drainage area.--1,160 sq mi, approximately, of which 400 sq mi is in Canada. Area of lakes and ponds, 25.6 sq mi; mean altitude, 5,000 ft.

Gage.--Nonrecording prior to June 5, 1923; recording thereafter. At site half a mile upstream at datum 91 ft higher prior to May 24, 1914. At site 500 ft upstream at present datum Nov. 15, 1920, to June 4, 1923. Datum of gage is 401.5 ft above mean sea level (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 26,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Approximately 94 ft.

Remarks.--Flow partly regulated by Gorge Dam since August 1924, by Diablo Reservoir since October 1929, and by Ross Reservoir since March 1940. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Only annual peaks are shown.

Peak stages and discharges of Skagit River at Newhalem, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	20.5	115,000	1934	Apr. 23, 1934	89.64	25,000
				1935	Jan. 25, 1935	90.82	30,300
1856	-	18.5	95,000				
				1936	May 31, 1936	89.27	22,400
1898	Nov. 19, 1897	12.5	48,000	1937	June 3, 1937	89.32	22,500
				1938	Oct. 28, 1937	89.69	24,400
1909	June 2, 1909	12.3	26,900	1939	May 29, 1939	89.3	22,400
1910	Nov. 29, 1909	22.0	63,500	1940	May 23, 1940	87.56	15,100
1911	June 14, 1911	11.9	25,500	1941	Oct. 20, 1940	88.12	17,100
1912	May 15, 1912	10.2	19,800	1942	May 26, 1942	88.14	17,400
1913	June 3, 1913	12.6	27,900	1943	May 27, 1943	88.82	20,400
1914	Jan. 6, 1914	10.5	20,700	1944	June 12, 1944	86.45	11,200
				1945	May 31, 1945	88.89	20,700
1921	June 8, 1921	91.1	31,400				
1922	Dec. 12, 1921	94.8	60,000	1946	May 27, 1946	89.73	24,400
1923	June 9, 1923	89.1	21,400	1947	May 25, 1947	87.11	13,500
1924	Feb. 12, 1924	90.85	31,400	1948	June 15, 1948	87.53	15,100
1925	May 20, 1925	89.65	25,400	1949	May 15, 1949	86.59	11,800
				1950	June 29, 1950	88.20	17,700
1926	Apr. 30, 1926	85.68	9,220				
1927	June 8, 1927	89.56	26,000	1951	Dec. 24, 1950	88.33	18,300
1928	May 21, 1928	89.75	27,200	1952	Oct. 29, 1951	86.64	12,000
1929	Oct. 9, 1928	89.15	23,600	1953	July 14, 1953	88.66	19,700
1930	June 11, 1930	86.9	13,400	1954	July 3, 1954	88.40	18,600
				1955	July 13, 1955	88.75	20,100
1931	May 2, 1931	87.53	15,500				
1932	Feb. 27, 1932	92.84	45,000	1956	Oct. 25, 1955	88.14	17,500
1933	June 15, 1933	90.15	28,200	1957	June 7, 1957	86.30	10,900

1790. Skagit River above Alma Creek, near Marblemount, Wash.

Location.--Lat 48°36'25", long 121°21'35", in NE¼ sec.15, T.36 N., R.11 E., on right bank three-quarters of a mile upstream from Alma Creek and 7 miles north of Marblemount.

Drainage area.--1,260 sq mi, approximately, of which 400 sq mi is in Canada.

Gage.--Recording. Datum of gage is 358.8 ft above mean sea level (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 22,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Flow partly regulated by powerplants on upper Skagit River, and by Ross and Diablo Reservoirs. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 10, 1951	14.40	28,000	1955	July 16, 1955	13.44	24,600
1952	Oct. 29, 1951	10.26	12,900				
1953	July 14, 1953	12.44	20,200	1956	Oct. 25, 1955	14.64	29,400
1954	July 3, 1954	12.24	19,400	1957	Oct. 17, 1956	11.37	16,800

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1800. Bacon Creek near Marblemount, Wash.

Location.--Lat 48°35'20", long 121°23'40", on line between secs. 20 and 21, T.36 N., R.11 E., on highway bridge near right bank a quarter of a mile upstream from mouth and 4½ miles north of Marblemount.

Drainage area.--50.9 sq mi. Area of lakes and ponds, 0.31 sq mi; mean altitude, 4,500 ft.

Gage.--Nonrecording. Altitude of gage is 350 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 2,100 cfs and extended on basis of slope-area measurement at 18,100 cfs.

Remarks.--Peaks are from graphs based on gage readings except for the 1950 water year, which is from high-water mark. Base for partial-duration series, 2,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	4.25	3,050	1948	Oct. 19, 1947	5.67	5,670
					May 26, 1948	4.10	2,290
1945	Dec. 5, 1944	4.30	3,050		June 9, 1948	4.20	2,440
	Jan. 7, 1945	4.28	3,050				
	Feb. 7, 1945	5.62	5,510	1949	Oct. 7, 1948	4.65	3,300
					May 12, 1949	3.99	2,140
1946	Oct. 25, 1945	6.20	7,000				
	Nov. 4, 1945	4.05	2,060	1950	Oct. 28, 1949	5.22	4,400
	June 14, 1946	4.20	2,150		Nov. 26, 1949	7.13	18,100
					Dec. 1, 1949	5.50	5,480
1947	Oct. 24, 1946	5.88	6,480		Mar. 4, 1950	4.40	2,220
	Dec. 11, 1946	3.85	2,000		June 16, 1950	4.65	2,600
					Aug. 15, 1950	4.94	3,250
1948	Oct. 2, 1947	4.22	2,440				

1810. Skagit River at Marblemount, Wash.

Location.--Lat 48°32'00", long 121°25'40", in NW¼ sec.7, T.35 N., R.11 E., on right bank half a mile north of Marblemount and 0.6 mile upstream from Cascade River.

Drainage area.--1,360 sq mi, approximately, of which 400 sq mi is in Canada.

Gage.--Recording. Datum of gage is 305.1 ft above mean sea level (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 20,000 cfs and extended by logarithmic plotting.

Bankfull stage.--9 ft.

Remarks.--Flow partly regulated by powerplants on upper Skagit River, and by Diablo and Ross Reservoirs. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	5.66	16,800	1952	Oct. 29, 1951	5.40	14,000
				1953	July 14, 1953	6.64	20,500
1947	Oct. 25, 1946	6.98	24,600	1954	July 4, 1954	6.69	21,100
1948	Oct. 19, 1947	8.52	35,400	1955	July 16, 1955	7.37	25,600
1949	May 12, 1949	5.90	17,900				
1950	Nov. 27, 1949	11.37	59,300	1956	Oct. 25, 1955	9.25	38,900
				1957	Oct. 17, 1956	7.01	23,000
1951	Feb. 10, 1951	9.65	42,400				

1825. Cascade River at Marblemount, Wash.

Location.--Lat 48°31'25", long 121°23'00", in N½ sec.16, T.35 N., R.11 E., on right bank 1½ miles downstream from Boulder Creek, 2 miles east of Marblemount, and 2½ miles upstream from mouth.

Drainage area.--171 sq mi. 140 sq mi, approximately, at site "near Marblemount" prior to May 1, 1913. Area of lakes and ponds, 0.29 sq mi; mean altitude, 4,400 ft.

Gage.--Nonrecording "near Marblemount" at sites 5½ miles upstream at different datums prior to May 1, 1913; recording at present site thereafter. Datum of gage is 380.3 ft above mean sea level (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 5,000 cfs and extended above.

Bankfull stage.--12 ft.

Remarks.--Discharges for period 1909-12 from graphs based on gage readings at upper site, near Marblemount, and adjusted to discharges at lower site, at Marblemount, by ratio of the eight-tenths power of drainage areas. Base for partial-duration series, 3,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	22.0	46,000	1933	June 15, 1933	7.23	5,980
					July 16, 1933	6.68	4,950
1898	Nov. 19, 1897	20.0	40,000		Sept.28, 1933	6.90	5,350
1909a/	June 1, 1909	-	7,040	1934	Oct. 18, 1933	6.89	5,350
	July 11, 1909	-	3,850		Oct. 23, 1933	7.50	6,640
	Aug. 26, 1909	-	5,600		Oct. 25, 1933	6.85	5,150
					Oct. 27, 1933	6.80	5,150
1910	Nov. 3, 1909	-	6,300		Nov. 2, 1933	8.06	8,050
	Nov. 20, 1909	-	6,660		Nov. 22, 1933	7.26	6,200
	Nov. 23, 1909	-	9,270		Dec. 12, 1933	6.30	4,200
	Nov. 29, 1909	-	30,500		Dec. 21, 1933	7.70	7,100
	Dec. 12, 1909	-	5,100		Dec. 29, 1933	6.00	3,680
	Apr. 26, 1910	-	6,120		Apr. 23, 1934	6.10	3,850
	May 11, 1910	-	7,410		May 4, 1934	6.19	4,020
	June 11, 1910	-	7,600		July 16, 1934	6.05	3,760
1911	Oct. 1, 1910	-	5,270	1935	Oct. 25, 1934	6.90	5,350
	Oct. 3, 1910	-	7,790		Nov. 5, 1934	9.40	11,500
	Oct. 6, 1910	-	10,900		Jan. 25, 1935	8.67	9,610
	Oct. 24, 1910	-	17,400				
	Nov. 7, 1910	-	6,120	1936	Apr. 18, 1936	6.00	3,680
	Nov. 10, 1910	-	11,600		June 2, 1936	7.07	5,760
	Nov. 21, 1910	-	15,500		June 17, 1936	6.40	4,380
	May 31, 1911	-	6,850				
	June 13, 1911	-	9,500	1937	June 3, 1937	6.59	4,760
	June 26, 1911	-	6,850		June 21, 1937	6.18	4,020
	July 16, 1911	-	5,950		June 28, 1937	6.35	4,290
1912	Nov. 19, 1911	-	4,610	1938	Oct. 28, 1937	8.62	8,810
	May 15, 1912	-	6,120		Apr. 18, 1938	7.33	5,850
	June 7, 1912	-	6,850		June 21, 1938	6.50	4,250
	June 19, 1912	-	8,210				
	June 25, 1912	-	7,790	1939	Jan. 1, 1939	6.43	4,160
	July 16, 1912	-	4,770		May 15, 1939	6.15	3,650
					May 28, 1939	8.19	7,870
1918	Dec. 29, 1917	17.2	32,000		June 29, 1939	6.18	3,730
1929	Oct. 9, 1928	9.20	10,700	1940	Dec. 15, 1939	5.87	3,190
	June 15, 1929	6.18	3,870				
				1941	Oct. 19, 1940	6.58	4,430
1930	June 7, 1930	5.43	2,740				
				1942	Oct. 3, 1941	7.61	6,510
1931	Oct. 26, 1930	6.48	4,390		Dec. 2, 1941	7.66	6,730
	Jan. 23, 1931	6.22	3,870		June 15, 1942	6.61	4,430
	Jan. 27, 1931	6.55	4,480				
	June 26, 1931	6.20	3,870	1943	June 17, 1943	6.26	3,820
					June 30, 1943	6.22	3,730
1932	Feb. 26, 1932	9.88	12,900				
	June 13, 1932	6.40	4,370	1944	Dec. 3, 1943	6.98	5,210
	June 21, 1932	6.47	4,460		Sept.16, 1944	6.16	3,650
	July 3, 1932	6.02	3,680		Sept.20, 1944	6.30	3,900
1933	Nov. 13, 1932	9.02	10,400	1945	Jan. 7, 1945	6.62	4,430
	Nov. 17, 1932	8.02	7,810		Feb. 7, 1945	6.50	4,370
	Dec. 2, 1932	6.80	5,150		May 30, 1945	6.28	4,020

a Maximum for year not determined; partial year.

Peak stages and discharges of Cascade River at Marblemount, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Oct. 25, 1945	8.84	9,620	1953	Jan. 31, 1953	6.70	4,750
	May 27, 1946	6.30	3,920		June 13, 1953	5.99	3,600
	June 20, 1946	6.18	3,760		July 7, 1953	6.35	4,150
					Sept.28, 1953	6.34	4,130
1947	Oct. 25, 1946	9.54	11,600				
	Dec. 11, 1946	6.21	3,760	1954	Oct. 31, 1953	6.76	4,860
	May 26, 1947	6.33	4,000		May 19, 1954	6.38	4,200
					July 1, 1954	6.51	4,420
1948	Oct. 19, 1947	9.33	11,000		July 7, 1954	6.13	3,800
	May 28, 1948	7.90	7,240		July 10, 1954	6.04	3,670
	June 10, 1948	7.90	7,240		July 14, 1954	6.28	4,040
	June 21, 1948	6.51	4,260		Aug. 23, 1954	7.09	5,470
1949	Oct. 7, 1948	6.37	3,980	1955	Nov. 5, 1954	6.42	4,200
	May 13, 1949	7.14	5,420		Nov. 19, 1954	6.08	3,650
	June 6, 1949	6.71	4,620		Nov. 22, 1954	6.12	3,710
					June 11, 1955	7.50	6,290
1950	Oct. 28, 1949	7.59	6,510		June 22, 1955	6.72	4,740
	Nov. 27, 1949	11.47	17,800		July 15, 1955	6.87	5,020
	June 20, 1950	7.05	5,300				
	June 29, 1950	6.90	5,110	1956	Oct. 25, 1955	9.31	10,800
	Aug. 15, 1950	6.73	4,750		Nov. 3, 1955	8.00	7,400
					Nov. 10, 1955	7.81	6,960
1951	Oct. 10, 1950	6.22	3,910		May 19, 1956	6.66	4,630
	Nov. 25, 1950	7.74	6,720		May 31, 1956	6.64	4,590
	Dec. 10, 1950	6.00	3,610		June 19, 1956	6.32	4,030
	Dec. 24, 1950	7.27	5,880				
	Feb. 10, 1951	8.89	9,650	1957	Oct. 17, 1956	6.67	4,650
	May 11, 1951	6.90	5,110		Oct. 20, 1956	6.53	4,390
					Dec. 10, 1956	6.38	4,140
1952	June 4, 1952	6.43	4,280		May 7, 1957	6.22	3,870
					June 1, 1957	6.14	3,740
1953	Jan. 12, 1953	6.38	4,040		June 11, 1957	6.26	3,940

1855. South Fork Sauk River near Barlow Pass, Wash.

Location.--Lat 48°03'45", long 121°24'20", in NE¼ sec.29, T.30 N., R.11 E. (unsurveyed), 2¾ miles upstream from North Fork, 3½ miles northeast of Barlow Pass, and 16 miles southeast of Darrington.

Drainage area.--32.7 sq mi. Area of lakes and ponds, 0.16 sq mi; mean altitude, 4,100 ft.

Gage.--Recording. Altitude of gage is 1,550 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 1,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	Dec. 13, 1917	5.14	2,280	1921a/	Oct. 4, 1920	6.54	3,730
	Dec. 18, 1917	7.93	6,630		Dec. 30, 1920	4.87	1,660
	Dec. 22, 1917	4.53	1,670		Sept.20, 1921	4.94	1,760
	Dec. 29, 1917	9.1	9,410		Sept.27, 1921	5.33	2,180
1919	Oct. 11, 1918	5.44	2,280	1922	Dec. 12, 1921	9.5	b10,500
	Oct. 27, 1918	5.90	2,810				
	Dec. 4, 1918	5.00	1,810	1929	June 15, 1929	5.37	1,100
	Dec. 14, 1918	6.25	3,350				
	May 27, 1919	4.92	1,710	1930	Feb. 5, 1930	6.37	2,080
					Feb. 19, 1930	5.48	1,170
1920	Nov. 15, 1919	7.66	5,870		Apr. 7, 1930	5.49	1,180
	Jan. 18, 1920	4.83	1,660				
	Jan. 28, 1920	6.49	3,650	1931	Oct. 26, 1930	6.62	2,450
	Sept.11, 1920	5.74	2,630		Jan. 27, 1931	7.22	3,210
	Sept.14, 1920	5.96	2,870		June 26, 1931	5.72	1,460
	Sept.21, 1920	4.35	1,130				

a Maximum for year not determined; partial year.
b Annual peak only.

1860. Sauk River above Whitechuck River, near Darrington, Wash.

Location.--Lat 48°10'00", long 121°27'45", in NW¼ sec.24, T.31 N., R.10 E., on right bank half a mile upstream from Whitechuck River and 9½ miles southeast of Darrington.

Drainage area.--152 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 3,700 ft.

Gage.--Recording. Altitude of gage is 930 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 4,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	Dec. 18, 1917	10.92	16,700	1936	May 16, 1936	6.26	4,400
	Dec. 29, 1917	13.30	24,400	1937	Dec. 22, 1936	6.08	4,140
1919	Oct. 11, 1918	6.63	5,890		June 3, 1937	6.19	4,310
	Oct. 27, 1918	7.14	6,840		June 18, 1937	6.12	4,140
	Dec. 4, 1918	7.39	7,430	1938	Oct. 28, 1937	7.76	7,380
	Dec. 14, 1918	7.89	8,430		Nov. 8, 1937	6.94	5,590
	Jan. 23, 1919	6.16	5,130		Nov. 25, 1937	6.92	5,590
	May 27, 1919	6.58	5,890		Dec. 28, 1937	6.49	4,850
1920	Nov. 15, 1919	8.96	11,400		Apr. 18, 1938	8.23	8,240
	Dec. 17, 1919	5.76	4,460	1939	Oct. 12, 1938	6.28	4,510
	Dec. 24, 1919	6.00	4,910		Jan. 1, 1939	7.27	6,470
	Jan. 18, 1920	5.86	4,730		May 29, 1939	7.60	7,010
	Jan. 28, 1920	7.56	8,030	1940	Dec. 15, 1939	6.71	5,480
	Sept.11, 1920	6.61	6,020				
	Sept.14, 1920	7.03	6,780	1941	Oct. 10, 1940	5.91	4,100
1921	Oct. 4, 1920	8.13	8,960		Oct. 18, 1940	5.94	4,180
	Dec. 30, 1920	5.67	4,280	1942	Dec. 2, 1941	7.61	7,220
	Feb. 11, 1921	7.55	7,960		June 15, 1942	6.07	4,430
	June 7, 1921	6.58	6,020	1943	Nov. 23, 1942	7.06	6,230
	Sept.27, 1921	6.16	5,270		Mar. 28, 1943	5.95	4,260
1922	Oct. 28, 1921	8.75	10,900	1944	Dec. 3, 1943	9.00	10,300
	Dec. 1, 1921	6.55	6,020	1945	Dec. 6, 1944	6.70	5,480
	Dec. 12, 1921	14.65	29,100		Jan. 7, 1945	7.45	6,820
	May 17, 1922	5.99	4,910		Jan. 13, 1945	6.60	5,300
	June 4, 1922	6.36	5,640		Feb. 7, 1945	8.40	8,940
1929	Oct. 9, 1928	7.50	7,030	1946	Oct. 25, 1945	8.00	8,950
1930	Feb. 5, 1930	6.35	5,060		June 15, 1946	6.43	5,330
1931	Oct. 26, 1930	6.37	5,060	1947	Oct. 25, 1946	8.50	10,200
	Jan. 23, 1931	6.09	4,550		Dec. 11, 1946	6.69	5,840
	Jan. 27, 1931	7.72	7,410		Jan. 24, 1947	6.39	5,330
	June 26, 1931	6.30	4,890	1948	Oct. 3, 1947	5.94	4,570
1932	Jan. 11, 1932	5.94	4,300		Oct. 19, 1947	9.68	13,500
	Feb. 26, 1932	13.0	22,900		May 28, 1948	7.47	7,970
	June 13, 1932	6.52	4,470		June 8, 1948	6.78	6,380
1933	Nov. 13, 1932	10.3	13,000	1949	Oct. 7, 1948	6.32	5,260
	Dec. 2, 1932	7.95	7,700		May 13, 1949	6.52	5,660
	June 15, 1933	6.96	5,700		June 7, 1949	5.87	4,420
	July 16, 1933	6.33	4,460	1950	Oct. 28, 1949	7.31	7,360
	Sept.28, 1933	7.38	6,470		Nov. 27, 1949	14.90	30,200
1934	Oct. 18, 1933	6.33	4,460		Dec. 2, 1949	7.40	6,490
	Oct. 23, 1933	7.52	6,670		Mar. 3, 1950	7.49	6,700
	Nov. 2, 1933	8.92	9,670		June 21, 1950	6.86	5,460
	Dec. 11, 1933	7.20	6,080		June 30, 1950	6.75	5,260
	Dec. 21, 1933	12.05	18,600		Aug. 15, 1950	6.24	4,060
	Jan. 23, 1934	6.90	5,510	1951	Oct. 10, 1950	7.48	6,700
	Mar. 2, 1934	6.68	5,130		Nov. 25, 1950	7.67	7,360
	Mar. 29, 1934	6.51	4,750		Dec. 25, 1950	6.96	5,860
	May 5, 1934	6.54	4,750		Feb. 10, 1951	-	a20,800
1935	Oct. 25, 1934	9.19	10,400		May 11, 1951	6.79	5,730
	Nov. 5, 1934	10.34	13,000				
	Dec. 21, 1934	6.51	4,750				
	Jan. 25, 1935	10.41	13,200				

a Estimated from correlation with Sauk River near Sauk, Wash.

Peak stages and discharges of Sauk River above Whitechuck River, near Darrington, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Oct. 3, 1951	5.94	4,070	1955	Feb. 8, 1955	6.09	4,480
	Oct. 19, 1951	6.36	4,970		June 10, 1955	6.96	6,460
	June 5, 1952	6.41	5,080		June 22, 1955	6.12	4,540
					July 15, 1955	6.33	5,010
1953	Jan. 9, 1953	7.00	6,420				
	Jan. 12, 1953	8.11	9,100	1956	Oct. 25, 1955	9.67	13,900
	Jan. 23, 1953	6.91	6,210		Oct. 29, 1955	6.22	4,760
	Jan. 31, 1953	8.17	9,360		Nov. 4, 1955	9.86	14,400
	Feb. 7, 1953	5.90	4,220		Nov. 10, 1955	6.95	6,440
	July 8, 1953	5.84	4,100		Dec. 11, 1955	7.58	8,020
	Sept.30, 1953	5.93	4,280		May 20, 1956	6.60	5,620
					June 1, 1956	6.46	5,300
1954	Oct. 31, 1953	6.56	5,600		June 10, 1956	5.83	4,020
	Dec. 12, 1953	5.79	4,000				
	Dec. 20, 1953	5.96	4,340	1957	Oct. 16, 1956	6.76	5,990
	May 19, 1954	6.08	4,380		Oct. 20, 1956	6.64	5,710
	July 1, 1954	5.95	4,120		Dec. 10, 1956	8.19	9,650
	July 11, 1954	6.09	4,600		Dec. 17, 1956	6.33	5,020
					Feb. 26, 1957	6.22	4,780
1955	Nov. 18, 1954	6.76	5,990		Apr. 30, 1957	5.95	4,240
	Nov. 25, 1954	6.12	4,540		May 8-9, 1957	5.96	4,260

1875. Sauk River at Darrington, Wash.

Location.--Lat 48°15'00", long 121°35'00", in SW¼ sec.24, T.32 N., R.9 E., on right bank half a mile southeast of Darrington and 2¼ miles downstream from Clear Creek.

Drainage area.--293 sq mi. Area of lakes and ponds, 0.21 sq mi; mean altitude, 3,800 ft.

Gage.--Nonrecording. Prior to Apr. 14, 1922, at site 700 ft upstream at different datum. Altitude of gage is 525 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 7,800 cfs and extended on basis of velocity-area studies.

Bankfull stage.--15 ft.

Remarks.--Records prior to 1915 were taken from Stewart report (unpublished). Gage heights are from graphs based on gage readings. Base for partial-duration series, 7,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	18.0	48,000	1919	Jan. 18, 1919	6.8	7,890
					Jan. 23, 1919	7.9	10,600
1897	-	17.0	44,000				
				1920	Nov. 15, 1919	10.5	17,200
1910	November 1909	16.0	40,000		Dec. 17, 1919	7.1	8,550
					Dec. 24, 1919	7.5	9,550
1915	Nov. 4, 1914	7.3	11,600		Jan. 18, 1920	7.4	9,300
	Apr. 2, 1915	8.8	16,500		Jan. 28, 1920	8.6	12,300
					Sept.11, 1920	8.4	11,800
1916	Oct. 31, 1915	7.3	11,600		Sept.14, 1920	8.9	13,000
	Dec. 8, 1915	7.4	12,000				
	Feb. 16, 1916	6.5	9,160	1921	Oct. 4, 1920	10.1	16,200
	Mar. 12, 1916	6.7	9,770		Dec. 30, 1920	7.4	9,300
	June 18, 1916	6.6	9,460		Feb. 12, 1921	8.8	12,800
					June 7, 1921	7.5	9,550
1917	Nov. 9, 1916	6.2	8,260		Sept.27, 1921	6.8	7,800
	June 16, 1917	6.1	7,970				
				1922	Oct. 28, 1921	11.5	22,400
1918	Dec. 29, 1917	15.0	36,000		Nov. 30, 1921	8.3	11,700
					Dec. 12, 1921	15.0	36,000
1919	Oct. 11, 1918	8.3	11,600		June 3, 1922	6.6	8,260
	Oct. 27, 1918	9.00	13,300				
	Dec. 4, 1918	8.1	11,000	1923	Dec. 24, 1922	8.00	12,300
	Dec. 14, 1918	9.7	15,100		Jan. 7, 1923	7.70	11,400

Peak stages and discharges of Sauk River at Darrington, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	Jan. 31, 1924	9.2	16,200	1930	Feb. 5, 1930	7.10	9,630
	Feb. 12, 1924	12.1	27,200				
	May 13, 1924	6.8	8,800	1931	Jan. 23, 1931	7.6	11,100
					Jan. 27, 1931	8.40	13,600
1925	Oct. 25, 1924	-	-		Feb. 18, 1931	6.7	8,530
	Dec. 11, 1924	9.0	15,500		June 26, 1931	7.3	10,200
	Feb. 3, 1925	8.4	13,600				
	May 19, 1925	6.7	8,530	1932	Dec. 19, 1931	6.7	8,530
					Jan. 11, 1932	7.2	9,910
1926	Dec. 1, 1925	6.8	8,800		Feb. 26, 1932	16.0	46,500
	Jan. 5, 1926	7.50	10,800		June 13, 1932	6.6	8,260
1929	Oct. 9, 1928	8.50	13,900				

1890. Suiattle River near Mansford, Wash.

Location.--Lat 48°21'50", long 121°29'30", in N½ sec.10, T.33 N., R.10 E., on left bank 2½ miles downstream from Big Creek and 4 miles north of Mansford.

Drainage area.--335 sq mi. Area of lakes and ponds, 0.50 sq mi; mean altitude, 4,500 ft.

Gage.--Recording. Altitude of gage is 530 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs and extended above.

Remarks.--Base for partial-duration series, 5,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	Jan. 1, 1939	8.82	7,130	1945	Feb. 8, 1945	9.70	9,520
	May 16, 1939	8.67	6,900		May 31, 1945	8.67	7,200
	May 29, 1939	9.79	9,680		June 20, 1945	8.31	6,350
	June 29, 1939	8.55	6,680				
				1946	Oct. 25, 1945	10.90	12,600
1940	Dec. 15, 1939	7.97	5,580		May 27, 1946	8.79	7,200
	May 23, 1940	7.94	5,390		June 3, 1946	8.24	5,950
					June 14, 1946	8.64	6,770
1941	Oct. 18, 1940	7.83	4,980		June 20, 1946	8.78	7,200
1942	Oct. 3, 1941	9.78	9,100	1947	Oct. 25, 1946	12.86	19,200
	Dec. 2, 1941	8.92	7,420		Dec. 11, 1946	8.76	7,420
	May 25, 1942	8.32	6,170		May 8, 1947	8.10	5,770
	June 15, 1942	8.73	6,990		May 27, 1947	8.96	7,640
	July 1, 1942	8.21	5,970		June 9, 1947	7.80	5,200
1943	Nov. 23, 1942	8.34	6,170	1948	Oct. 2, 1947	8.10	5,770
	May 26, 1943	8.19	5,970		Oct. 19, 1947	12.37	18,000
	June 9, 1943	8.40	6,370		May 28, 1948	11.63	15,200
	June 17, 1943	8.70	6,990		June 10, 1948	12.08	17,000
	June 30, 1943	8.82	7,200				
				1949	Oct. 7, 1948	7.87	5,390
1944	Dec. 3, 1943	9.47	8,850		May 13, 1949	9.89	9,900
	Sept.16, 1944	8.27	5,170		June 7, 1949	9.40	8,600
	Sept.20, 1944	8.17	5,020		July 14, 1949	7.88	5,390
1945	Dec. 6, 1944	8.22	5,320	1950 a/	Oct. 28, 1949	9.76	9,600
	Jan. 7, 1945	8.52	6,770		Nov. 27, 1949	15.60	30,700
	Jan. 13, 1945	7.88	5,560				

a Maximum for year not determined; partial year.

1894. Sauk River tributary near Darrington, Wash.

Location.--Lat 48°20'30", long 121°33'00", in SE¼ sec.18, T.33 N., R.10 E., at Darrington-Concrete road, 6.5 miles northeast of Darrington.

Drainage area.--1.11 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,620 ft.

Gage.--Crest-stage gage. Datum of gage is 70.28 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 4-foot corrugated pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 10, 1951	79.40	160	1955	Feb. 8, 1955	74.36	78.2
1952	Feb. 5, 1952	73.52	50.6				
1953	Jan. 31, 1953	77.55	145	1956	Nov. 3, 1955	74.72	87.6
1954	Dec. 19, 1953	74.72	88.0	1957	Dec. 9, 1956	79.30	184

1895. Sauk River near Sauk, Wash.
(Published as "near Suiattle Crossing, near Sauk" 1910-12)

Location.--Lat 48°25'15", long 121°34'00", in NW¼ sec.19, T.34 N., R.10 E., on left bank 5 miles upstream from mouth, 5 miles southeast of Sauk, and 8 miles downstream from Suiattle River.

Drainage area.--714 sq mi. Area of lakes and ponds, 0.71 sq mi; mean altitude, 3,900 ft.

Gage.--Nonrecording at several sites from 1 mile downstream to 5 miles upstream at various datums prior to Aug. 4, 1912; recording thereafter. Datum of gage is 266 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 41,000 cfs and extended by logarithmic plotting.

Bankfull stage.--18 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 13,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912	Nov. 19, 1911	8.70	28,000	1934	Oct. 18, 1933	7.72	13,800
	May 15, 1912	5.70	14,600		Oct. 23, 1933	9.30	21,500
	May 20, 1912	5.80	15,000		Oct. 28, 1933	8.92	19,500
	June 9, 1912	6.20	16,600		Nov. 2, 1933	11.19	32,600
	June 24, 1912	6.30	16,100		Dec. 12, 1933	9.38	22,000
					Dec. 22, 1933	14.40	56,600
1929	Oct. 9, 1928	9.33	21,800		Jan. 23, 1934	9.52	22,500
	May 23, 1929	7.48	13,000		Mar. 2, 1934	8.41	17,100
	June 16, 1929	7.50	13,000		Mar. 29, 1934	8.41	17,100
					May 5, 1934	8.44	17,100
1930	Feb. 5, 1930	7.99	15,200				
				1935	Oct. 25, 1934	10.75	29,900
1931	Jan. 23, 1931	8.23	16,100		Nov. 5, 1934	13.54	49,400
	Jan. 28, 1931	9.32	21,800		Dec. 21, 1934	7.80	14,300
	June 26, 1931	8.12	15,700		Jan. 25, 1935	13.30	47,800
1932	Jan. 11, 1932	7.95	15,200	1936	May 16, 1936	8.12	15,700
	Feb. 26, 1932	15.83	68,500		June 3, 1936	8.33	16,600
	June 15, 1932	8.19	16,100		June 17, 1936	7.94	14,700
	July 3, 1932	7.72	13,800				
				1937	June 3, 1937	8.15	15,900
1933	Nov. 13, 1932	12.62	42,500		June 21, 1937	8.06	15,500
	Nov. 17, 1932	10.02	25,200		June 29, 1937	7.87	14,500
	Dec. 2, 1932	10.47	28,100				
	June 15, 1933	9.16	21,000	1938	Oct. 28, 1937	10.14	25,700
	Sept.28, 1933	8.31	16,600		Nov. 8, 1937	9.24	21,000

Peak stages and discharges of Sauk River near Sauk, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Nov. 27, 1937	8.62	18,000
	Dec. 28, 1937	9.43	22,000
	Apr. 18, 1938	10.78	29,900
1939	Oct. 12, 1938	7.56	13,400
	Jan. 1, 1939	9.96	25,200
	May 16, 1939	7.73	13,800
	May 29, 1939	9.72	23,600
1940	Dec. 15, 1939	9.00	20,000
1941	May 17, 1941	6.80	7,980
1942	Dec. 2, 1941	8.85	19,000
	June 15, 1942	8.02	15,200
1943	Nov. 23, 1942	9.02	19,500
	Mar. 28, 1943	8.44	17,100
	June 17, 1943	7.64	13,400
	June 29, 1943	7.56	13,400
1944	Dec. 3, 1943	10.80	29,900
1945	Jan. 7, 1945	8.63	16,800
	Jan. 13, 1945	7.74	13,400
	Feb. 8, 1945	10.28	26,800
1946	Oct. 25, 1945	9.96	25,000
	May 27, 1946	7.71	13,800
	June 14, 1946	8.36	16,800
	June 21, 1946	7.63	13,000
1947	Oct. 25, 1946	11.41	33,200
	Dec. 11, 1946	9.28	21,200
	Jan. 24, 1947	8.48	16,800
	Feb. 14, 1947	7.78	13,800
	May 28, 1947	7.47	13,400
1948	Oct. 19, 1947	11.74	35,900
	May 28, 1948	10.05	27,400
	June 10, 1948	9.65	25,000
1949	May 13, 1949	9.03	19,700
	June 7, 1949	8.35	15,900
1950	Oct. 28, 1949	9.62	22,800
	Nov. 27, 1949	16.93	82,400
	Dec. 2, 1949	9.19	20,700
	Dec. 28, 1949	8.06	15,500
	Jan. 21, 1950	7.63	13,400
	Mar. 4, 1950	9.82	23,300
1950	June 20, 1950	9.07	19,700
	June 30, 1950	8.86	18,700
	Aug. 15, 1950	7.79	13,800
1951	Oct. 10, 1950	8.96	18,700
	Nov. 25, 1950	9.95	23,900
	Dec. 25, 1950	9.49	21,700
	Feb. 10, 1951	14.97	62,700
	May 11, 1951	8.99	19,700
1952	June 5, 1952	7.65	13,600
1953	Jan. 12, 1953	9.93	24,600
	Jan. 23, 1953	8.18	15,600
	Jan. 31, 1953	10.56	28,400
	July 8, 1953	7.80	13,900
1954	Oct. 31, 1953	8.06	15,100
	Dec. 20, 1953	8.17	15,600
	Jan. 5, 1954	8.03	14,900
	Feb. 21, 1954	7.60	13,200
	May 19, 1954	8.06	15,300
	July 1, 1954	8.07	15,400
1955	Nov. 19, 1954	8.38	17,600
	Nov. 27, 1954	7.91	15,400
	Feb. 8, 1955	8.41	17,800
	June 11, 1955	9.56	23,900
	June 23, 1955	8.23	16,900
	July 15, 1955	8.72	19,300
1956	Oct. 25, 1955	12.23	40,600
	Oct. 29, 1955	8.30	16,400
	Nov. 4, 1955	12.19	40,300
	Nov. 10, 1955	9.37	22,200
	Dec. 12, 1955	9.11	20,700
	Dec. 22, 1955	7.65	13,600
	May 20, 1956	8.54	17,600
	June 1, 1956	8.48	17,400
	June 11, 1956	7.70	13,800
	June 19, 1956	7.59	13,300
	July 13, 1956	7.51	13,000
1957	Oct. 16, 1956	8.24	16,200
	Oct. 20, 1956	8.48	17,400
	Dec. 10, 1956	10.41	28,500
	Dec. 18, 1956	-	15,100
	Feb. 26, 1957	8.65	18,200
	May 1, 1957	7.57	13,200
	May 9, 1957	7.77	14,100

1915. Baker River below Anderson Creek, near Concrete, Wash.

Location.--Lat 48°39'50", long 121°40'25", in SE¼ sec.30, T.37 N., R.9 E., on right bank 100 ft downstream from Anderson Creek and 9½ miles northeast of Concrete.

Drainage area.--211 sq mi. Area of lakes and ponds, 1.50 sq mi; mean altitude, 3,900 ft.

Gage.--Nonrecording prior to Sept. 24, 1915; recording thereafter. At site 250 ft downstream at different datum prior to Nov. 12, 1931. Datum of gage is 521 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 8,100 cfs and extended on basis of velocity-area studies.

Bankfull stage.--Not subject to overflow.

Remarks.--Observed discharges are used during period of nonrecording gage. Base for partial-duration series, 7,200 cfs.

Peak stages and discharges of Baker River below Anderson Creek, near Concrete, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	16.0	50,000
1897	-	13.5	36,700
1910	November 1909	15.3	46,200
1911	Oct. 25, 1910	-	-
	Nov. 10, 1910	-	-
	Nov. 20, 1910	10.0	20,000
	June 13, 1911	7.3	7,800
1912	June 25, 1912	7.0	6,860
1913	Nov. 18, 1912	7.0	6,860
	June 3, 1913	7.5	8,460
	July 22, 1913	7.3	7,800
	Sept. 4, 1913	7.6	8,800
1914	Oct. 11, 1913	-	-
	Nov. 24, 1913	-	-
	Jan. 6, 1914	12.6	24,900
1915	Nov. 1, 1914	7.39	8,120
	Apr. 2, 1915	9.6	17,700
1916	Oct. 28, 1915	8.33	12,600
	Dec. 8, 1915	8.07	11,800
	Feb. 15, 1916	8.79	14,800
	June 16, 1916	7.36	8,760
1917	June 16, 1917	7.20	8,170
	July 16, 1917	7.21	8,210
1918	Nov. 20, 1917	7.68	10,200
	Dec. 18, 1917	8.65	13,900
	Dec. 29, 1917	13.7	36,800
	Jan. 17, 1918	7.21	8,310
	June 10, 1918	7.22	8,310
1919	Oct. 11, 1918	8.50	13,500
	Oct. 27, 1918	8.16	12,200
	Dec. 4, 1918	9.70	18,700
	Dec. 14, 1918	7.42	8,950
	May 25, 1919	7.19	8,170
1920	Nov. 15, 1919	9.93	19,600
	Sept. 11, 1920	8.08	11,800
1920	Sept. 21, 1920	6.93	7,280
1921	Oct. 4, 1920	9.74	18,700
	Feb. 11, 1921	8.89	15,200
	June 7, 1921	7.41	8,950
	June 21, 1921	7.08	7,810
	June 30, 1921	7.06	7,630
	Sept. 20, 1921	6.97	7,280
	Sept. 27, 1921	7.68	10,200
1922	Oct. 28, 1921	9.93	19,600
	Dec. 12, 1921	10.8	23,600
	June 3, 1922	7.18	8,350
1923	Oct. 25, 1922	7.91	11,000
	Dec. 24, 1922	8.1	11,800
1924	Jan. 31, 1924	11.90	28,500
	Feb. 12, 1924	-	-
	May 13, 1924	7.00	7,700
	Sept. 23, 1924	6.99	7,700
1925 a/	Oct. 25, 1924	8.70	14,300
	Dec. 12, 1924	-	-
	Feb. 3, 1925	7.45	9,220
1929	Oct. 8, 1928	10.15	20,900
1930	Feb. 18, 1930	6.88	7,390
1931	Jan. 23, 1931	9.90	19,600
	Jan. 28, 1931	8.22	12,200
	June 26, 1931	9.36	17,400
1955	June 10, 1955	10.03	b8,180
	Aug. 1, 1955	9.61	7,330
1956	Oct. 25, 1955	13.86	18,400
	Nov. 3, 1955	14.37	20,100
	Nov. 9, 1955	10.04	8,200
	June 8, 1956	11.41	11,300
1957	Oct. 17, 1956	11.52	11,600
	Oct. 20, 1956	11.78	12,200
	Feb. 26, 1957	-	-
	Apr. 30, 1957	10.9	9,200

a Maximum for year not determined.
b May have been higher between Oct. 1, 1954, and Jan. 17, 1955, when station was not operating.

1935. Baker River at Concrete, Wash.

Location.--Lat 48°32'35", long 121°44'35", on line between secs. 10 and 11, T.35 N., R.8 E., on left bank 800 ft downstream from Baker River powerplant, a quarter of a mile northeast of Concrete, and three-quarters of a mile upstream from mouth.

Drainage area.--297 sq mi.

Gage.--Nonrecording at site half a mile downstream at different datum prior to 1915; recording thereafter. Datum of gage is 172.6 ft above mean sea level (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 16,000 cfs and extended on basis of computation of flow over dam of flood peak of Nov. 27, 1949.

Bankfull stage.--Not subject to overflow.

Remarks.--Flow regulated since November 1925 by Baker River powerplant and Lake Shannon. Peaks for period of nonrecording gage are from graphs based on gage readings. Only annual peaks are shown.

Peak stages and discharges of Baker River at Concrete, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Nov. 21, 1910	10.8	24,600	1949	May 10, 1949	10.30	12,600
1912	Nov. 18, 1911	8.7	14,800	1950	Nov. 27, 1949	20.32	35,200
1913	Sept. 4, 1913	9.3	18,100				
1914	Jan. 6, 1914	12.2	31,000	1951	Feb. 10, 1951	16.20	29,700
				1952	Oct. 19, 1951	9.87	11,000
1944	Dec. 3, 1943	10.7	14,100	1953	Jan. 12, 1953	11.22	16,200
1945	Feb. 8, 1945	12.45	20,000	1954	Oct. 31, 1953	10.55	14,200
				1955	Nov. 18, 1954	11.99	18,500
1946	Oct. 25, 1945	14.90	27,000				
1947	Oct. 24, 1946	12.40	20,000	1956	Nov. 4, 1955	15.07	26,900
1948	Oct. 18, 1947	13.40	23,000	1957	Oct. 17, 1956	12.67	20,400

1940. Skagit River near Concrete, Wash.

Location.--Lat 48°31'30", long 121°46'10", in NE¼ sec.16, T.35 N., R.8 E., on right bank at The Dalles 1½ miles southwest of Concrete and 2½ miles downstream from Baker River.

Drainage area.--2,700 sq mi, approximately, of which 400 sq mi is in Canada. Area of lakes and ponds, 33.2 sq mi; mean altitude, 4,100 ft.

Gage.--Recording. Dec. 10, 1924, to Oct. 27, 1937, at datum 12.69 ft higher. Datum of gage is 130.0 ft above mean sea level, datum of 1929. All gage heights adjusted to present datum.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Flow partly regulated by powerplants on Baker and upper Skagit Rivers and by Lake Shannon Reservoir since 1926, Diablo Reservoir since 1930, and Ross Reservoir since 1940. Peak discharges are affected. Records prior to 1925 taken from Stewart report (unpublished). Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	69.3	500,000	1937	June 19, 1937	28.97	68,300
				1938	Oct. 28, 1937	32.16	89,600
1856	-	57.3	350,000	1939	May 29, 1939	30.7	79,600
				1940	Dec. 15, 1939	25.70	48,200
1898	Nov. 19, 1897	51.1	275,000				
				1941	Oct. 19, 1940	26.20	51,000
1910	Nov. 30, 1909	49.1	260,000	1942	Dec. 2, 1941	30.17	76,300
				1943	Nov. 23, 1942	26.69	54,000
1918	Dec. 30, 1917	45.7	220,000	1944	Dec. 3, 1943	28.49	65,200
				1945	Feb. 8, 1945	29.35	70,800
1922	Dec. 13, 1921	47.6	240,000				
				1946	Oct. 25, 1945	34.0	102,000
1925	Dec. 12, 1924	32.44	92,500	1947	Oct. 25, 1946	31.14	82,200
				1948	Oct. 19, 1947	32.99	95,200
1926	Dec. 23, 1925	26.3	51,600	1949	May 13, 1949	26.97	55,700
1927	Oct. 16, 1926	32.03	88,900	1950	Nov. 27, 1949	40.8	154,000
1928	Jan. 12, 1928	32.9	95,500				
1929	Oct. 9, 1928	29.94	74,300	1951	Feb. 10, 1951	38.99	139,000
1930	June 7, 1930	22.70	32,200	1952	June 5, 1952	24.80	43,500
				1953	Feb. 1, 1953	28.61	66,000
1931	June 26, 1931	27.78	60,600	1954	Oct. 31, 1953	27.39	58,000
1932	Feb. 27, 1932	39.99	147,000	1955	June 11, 1955	27.10	56,300
1933	Nov. 13, 1932	35.6	116,000				
1934	Dec. 22, 1933	33.6	101,000	1956	Nov. 3, 1955	34.48	106,000
1935	Jan. 25, 1935	37.9	131,000	1957	Oct. 20, 1956	27.84	61,000
1936	June 3, 1936	27.7	60,000				

1960. Alder Creek near Hamilton, Wash.

Location.--Lat 48°31'40", long 121°57'00", in NE¼ sec.18, T.35 N., R.7 E., on left bank at railroad trestle a quarter of a mile upstream from highway bridge, three-quarters of a mile upstream from mouth, and 2 miles east of Hamilton.

Drainage area.--10.7 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,280 ft.

Gage.--Recording. At datum 2.46 ft higher prior to Nov. 15, 1945, 2.56 ft higher Nov. 15, 1945, to Jan. 7, 1947, and 0.98 ft higher Jan. 8, 1947, to Aug. 24, 1951; all gage heights adjusted to present datum. Altitude of gage is 125 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 400 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 140 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	5.38	137	1951	Jan. 25, 1951	3.79	350
					Feb. 10, 1951	4.90	654
1945	Jan. 7, 1945	6.74	670				
	Jan. 13, 1945	5.61	202	1952	Feb. 4, 1952	3.56	212
	Jan. 18, 1945	5.35	145				
				1953	Jan. 23, 1953	3.63	210
1946	Oct. 25, 1945	5.93	265		Jan. 31, 1953	4.23	364
	Nov. 14, 1945	5.56	186				
				1954	Nov. 1, 1953	3.57	197
1947	Oct. 24, 1946	4.30	181		Dec. 9, 1953	3.74	225
	Dec. 11, 1946	5.17	450		Dec. 11, 1953	3.80	239
	Jan. 25, 1947	3.98	392		Dec. 21, 1953	3.56	203
	Feb. 14, 1947	3.22	150		Jan. 6, 1954	3.30	151
1948	Oct. 19, 1947	3.55	241	1955	Nov. 26, 1954	3.43	190
	Dec. 18, 1947	3.22	150		Dec. 31, 1954	3.49	198
	Jan. 1, 1948	3.25	158		Feb. 8, 1955	3.79	300
	Feb. 22, 1948	3.26	145		Apr. 9, 1955	3.28	162
1949	Nov. 24, 1948	3.61	220	1956	Oct. 30, 1955	-	-
	Dec. 1, 1948	3.75	256		Nov. 3, 1955	4.11	363
	Feb. 17, 1949	3.28	145		Nov. 9, 1955	3.40	172
	Mar. 21, 1949	3.51	195		Nov. 30, 1955	3.29	145
					Dec. 11, 1955	3.74	255
1950	Dec. 27, 1949	4.24	477		Jan. 16, 1956	3.43	165
	Feb. 26, 1950	3.67	317				
	Mar. 3, 1950	3.54	284	1957	Oct. 17, 1956	3.53	212
	Mar. 19, 1950	3.09	176		Oct. 20, 1956	3.59	228
					Dec. 9, 1956	5.28	714
1951	Dec. 24, 1950	3.40	249		Dec. 15, 1956	4.53	208
	Jan. 3, 1951	3.05	168				

1965. Day Creek near Lyman, Wash.

Location.--Lat 48°30'05", long 122°02'45", in NW¼ sec.28, T.35 N., R.6 E., on left bank at highway bridge 1 mile upstream from mouth and 1¾ miles southeast of Lyman.

Drainage area.--36.3 sq mi. Area of lakes and ponds, 0.22 sq mi; mean altitude, 2,310 ft.

Gage.--Recording. Altitude of gage is 90 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,000 cfs and extended by logarithmic plotting.

Bankfull stage.--8 ft.

Remarks.--Base for partial-duration series, 3,000 cfs.

Peak stages and discharges of Day Creek near Lyman, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	7.60	4,370	1951	Jan. 25, 1951	7.10	3,570
	Jan. 17, 1944	6.53	3,210		Feb. 9, 1951	7.72	4,510
1945	Nov. 23, 1944	6.96	3,500	1952	Oct. 2, 1951	6.55	3,350
	Dec. 5, 1944	6.76	3,300		Jan. 30, 1952	6.23	3,270
	Jan. 7, 1945	7.85	4,310				
	Jan. 11, 1945	6.51	3,000	1953	Dec. 12, 1952	6.27	3,310
					Jan. 2, 1953	6.81	3,890
1946	Oct. 25, 1945	7.70	4,200		Jan. 23, 1953	6.51	3,560
	Nov. 14, 1945	7.77	4,310		Jan. 31, 1953	6.56	3,620
	Feb. 24, 1946	6.46	3,000				
				1954	Oct. 30, 1953	7.07	4,180
1947	Oct. 24, 1946	8.12	4,530		Dec. 9, 1953	5.83	3,010
	Dec. 10, 1946	7.82	4,100		Dec. 19, 1953	6.85	4,160
	Jan. 24, 1947	6.94	3,400				
	Feb. 14, 1947	6.78	3,100	1955	Dec. 30, 1954	6.03	3,380
	Apr. 19, 1947	6.68	3,000		Feb. 7, 1955	6.47	3,750
1948	Oct. 15, 1947	7.00	3,400	1956	Oct. 25, 1955	6.33	3,570
	Oct. 18, 1947	7.94	4,420		Oct. 29, 1955	6.30	3,530
					Nov. 3, 1955	8.27	4,750
1949	Feb. 16, 1949	6.85	3,330				
				1957	Oct. 20, 1956	7.13	3,430
1950	Nov. 27, 1949	7.80	4,650		Dec. 9, 1956	8.80	5,360
	Dec. 1, 1949	7.20	3,830				
	Dec. 28, 1949	8.35	5,570				

1972. Skagit River tributary near Lyman, Wash.

Location.--Lat 48°29'25", long 122°05'50", in SE¼ sec.25, T.35 N., R.5 E., at county road on the south side of Skagit River, 3 miles southwest of Lyman.

Drainage area.--1.82 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,970 ft.

Gage.--Crest-stage gage. Datum of gage is 14.14 ft below upstream invert of right culvert.

Stage-discharge relation.--Defined by computations of discharge through two 3-foot concrete pipe culverts.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Feb. 10, 1951	19.45	164	1955	Feb. 7, 1955	18.82	132
1952	Jan. 30, 1952	19.32	158				
1953	Jan. 2, 1953	19.01	141	1956	Nov. 3, 1955	19.55	164
1954	Dec. 19, 1953	19.03	142	1957	Dec. 9, 1956	21.90	233

1990. Skagit River near Sedro Woolley, Wash.

Location.--Lat 48°29'05", long 122°14'30", in NW¼ sec.36, T.35 N., R.4 E., at Northern Pacific Railway bridge, three-quarters of a mile downstream from entrance to Beatty Slough and 1½ miles south of Sedro Woolley.

Drainage area.--3,000 sq mi, approximately, of which 400 sq mi is in Canada.

Gage.--Nonrecording. Datum of gage is extreme low sea level in Puget Sound (levels by Corps of Engineers), which is 8.93 ft below mean sea level, unadjusted.

Stage-discharge relation.--Defined by current-meter measurements below 92,000 cfs.

Historical data.--Maximum stage known, approximately 63.5 ft, about 1815, estimated from height of flood plain, from stage and discharge at The Dalles and by comparison with 1856 and November 1909 flood stages (discharge, about 400,000 cfs).

Remarks.--Flow in Beatty's slough is included in this record. Records prior to 1909 were taken from Stewart report (unpublished). Peaks since 1909 are from graphs based on gage readings. Only annual peaks are shown.

Peak stages and discharges of Skagit River near Sedro Woolley, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1815	-	63.5	400,000	1912	Nov. 19, 1911	48.4	66,600
				1913	June 3, 1913	46.4	70,800
1856	-	60.0	300,000	1914	Jan. 7, 1914	49.6	104,000
				1915	Apr. 3, 1915	45.4	67,300
1897	Nov. 16, 1896	54.8	185,000				
1898	Nov. 19, 1897	54.9	190,000	1916	June 18, 1916	46.5	75,800
				1917	June 16, 1917	44.4	60,400
1907	Nov. 16, 1906	54.7	180,000	1918	Dec. 30, 1917	54.1	195,000
				1919	Dec. 4, 1918	47.0	80,200
1909	Nov. 18, 1908	52.0	97,000				
1910	Nov. 30, 1909	56.5	220,000	1922	Dec. 13, 1921	54.3	210,000
				1923	Dec. 25, 1922	45.2	71,000
1911	Nov. 21, 1910	52.1	114,000				

2000. East Fork Nookachamps Creek near Clear Lake, Wash.

Location.--Lat 48°25'30", long 122°12'30", in NE¼ sec.19, T.34 N., R.5 E., on right bank at county road bridge, 3 miles southeast of Clear Lake and 3½ miles upstream from mouth.

Drainage area.--20.5 sq mi. Area of lakes and ponds, 0.18 sq mi; mean altitude, 1,450 ft.

Gage.--Nonrecording. Altitude of gage is 70 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,900 cfs and extended by logarithmic plotting.

Remarks.--Gage heights are from graphs based on gage readings. Base for partial-duration series, 1,200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Sept.20, 1944	6.80	1,390	1947	Dec. 10, 1946	8.10	1,440
					Jan. 23, 1947	8.60	1,580
1945	Nov. 23, 1944	6.90	1,420				
	Jan. 7, 1945	8.59	2,000	1948	Oct. 19, 1947	10.33	2,220
1946	Oct. 25, 1945	10.3	2,710	1949a/	Feb. 17, 1949	10.05	2,130
	Nov. 14, 1945	9.4	2,280				
				1950	Dec. 28, 1949	10.0	2,190
1947	Oct. 24, 1946	10.0	2,120				

a Partial year.

2005. Skagit River near Mount Vernon, Wash.

Location.--Lat 48°26'40", long 122°20'00", in SE¼ sec.7, T.34 N., R.4 E., on drawrest of, and 150 ft downstream from, bridge on U.S. Highway 99 and 1 mile north of Mount Vernon.

Drainage area.--3,060 sq mi, approximately.

Gage.--Recording, and since Sept. 28, 1951, crest-stage gage. Datum of gage is at mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--43 ft.

Remarks.--Flow partly regulated by powerplants on Baker and upper Skagit Rivers, and by Lake Shannon, Diablo and Ross Reservoirs. Minor diversions. All peak discharges are affected. Base for partial-duration series, 55,000 cfs.

Peak stages and discharges of Skagit River near Mount Vernon, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	November 1906	a37	180,000	1950	Dec. 2, 1949	27.24	61,400
					Mar. 4, 1950	26.08	57,100
1941 b/	Oct. 20, 1940	-	44,000		June 21, 1950	25.89	55,500
1942	Dec. 3, 1941	25.99	65,300	1951	Nov. 26, 1950	28.19	68,400
					Dec. 25, 1950	29.08	74,000
1943	June 18, 1943	22.92	47,000		Feb. 11, 1951	36.85	144,000
					May 12, 1951	25.48	55,600
1944	Dec. 3, 1943	24.40	55,700				
				1952	June 5, 1952	22.43	41,400
1945	Feb. 8, 1945	25.77	59,800				
				1953	Jan. 13, 1953	27.25	62,800
1946	Oct. 26, 1945	30.25	94,300		Feb. 1, 1953	27.76	65,700
	May 27, 1946	25.18	56,200				
	June 15, 1946	25.14	55,600	1954	Nov. 1, 1953	26.37	57,900
1947	Oct. 25, 1946	27.8	64,900	1955	Nov. 20, 1954	27.10	60,800
	Dec. 11, 1946	26.51	58,400		June 11, 1955	26.93	59,600
1948	Oct. 19, 1947	28.68	69,400	1956	Oct. 26, 1955	30.69	84,900
	May 29, 1948	27.50	63,400		Nov. 4, 1955	33.52	107,000
	June 10, 1948	26.62	58,900		Nov. 10, 1955	26.56	59,100
1949	May 13, 1949	26.05	56,200	1957	Oct. 18, 1956	26.47	58,500
					Oct. 20, 1956	27.47	64,000
1950	Nov. 28, 1949	34.21	114,000		Dec. 10, 1956	26.26	57,300

a Maximum stage known; from Great Northern Railway high-water profile.
b Maximum for year not determined; estimated maximum daily shown.

2007. Skagit River tributary near Mount Vernon, Wash.

Location.--Lat 48°17'10", long 122°17'25", in SE¼ sec.4, T.32 N., R.4 E., at U.S. Highway 99, three-quarters of a mile south of Skagit County line and 9.5 miles south of Mount Vernon.

Drainage area.--2.58 sq mi. Measurable area of lakes and ponds, 0 sq mi. Considerable effect at peak stages from pondage that cannot be measured; mean altitude, 490 ft.

Gage.--Crest-stage gage. Datum of gage is 3.42 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 5- by 6-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 22, 1949	5.88	61.1	1954	Dec. 9, 1953	4.97	30.5
1950	Jan. 22, 1950	5.92	62.0	1955	Feb. 7, 1955	5.26	40.0
1951	Mar. 13, 1951	4.86	27.0	1956	Dec. 11, 1955	4.93	29.7
1952	Mar. 28, 1952	5.22	38.8	1957	Dec. 9, 1956	5.34	42.2
1953	-	<4.38	<14				

2008. Lake Creek near Bellingham, Wash.

Location.--Lat 48°41'05", long 122°23'30", in NW¼ sec.23, T.37 N., R.3 E., 200 ft south of Samish Inn at U.S. Highway 99 and 6.5 miles southeast of Bellingham.

Drainage area.--2.35 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 1,220 ft.

Gage.--Crest-stage gage. Datum of gage is 6.47 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through an 8- by 6-foot concrete box culvert with irregular gravel fill on bottom.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 17, 1949	13.09	250	1954	Dec. 9, 1953	10.31	97.0
1950	Dec. 28, 1949	12.16	214	1955	Feb. 8, 1955	10.84	90.7
1951	Feb. 10, 1951	11.94	208	1956	Nov. 3, 1955	11.48	124
1952	Jan. 30, 1952	10.28	110	1957	Dec. 9, 1956	12.93	200
1953	Jan. 31, 1953	10.11	82.0				

2010. Friday Creek near Burlington, Wash.

Location.--Lat 48°34'20", long 122°20'15", in NE¼NE¼ sec.31, T.36 N., R.4 E., on left bank 1¾ miles upstream from mouth and 6 miles north of Burlington.

Drainage area.--37.1 sq mi. At site 1943-45, 38.0 sq mi. Area of lakes and ponds, 1.50 sq mi; mean altitude, 710 ft.

Gage.--Nonrecording gage three-quarters of a mile downstream at different datum prior to Oct. 24, 1945; recording thereafter. Altitude of gage is 130 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Natural regulation by Samish Lake. Peak for December 1943 is from graph based on gage readings. Base for partial-duration series, 400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	3.13	195	1947	Dec. 11, 1946	4.03	825
					Jan. 24, 1947	3.96	780
1945	Jan. 7, 1945	6.28	960		Apr. 19, 1947	3.05	407
1946	Oct. 25, 1945	-	1,090	1948	Jan. 4, 1948	3.40	537
	Nov. 14, 1945	-	-		Feb. 17, 1948	3.19	464
	Jan. 7, 1946	3.35	518		Feb. 22, 1948	3.15	447
	Feb. 6, 1946	3.60	614				
	Mar. 27, 1946	3.19	464				

2015. Samish River near Burlington, Wash.

Location.--Lat 48°32'45", long 122°20'15", in SE¼ sec.6, T.35 N., R.4 E., on left bank 500 ft downstream from U.S. Highway 99 bridge, half a mile downstream from Friday Creek, and 5 miles north of Burlington.

Drainage area.--87.8 sq mi. Area of lakes and ponds, 1.60 sq mi; mean altitude, 580 ft.

Gage.--Recording prior to Dec. 1, 1948, and since Jan. 8, 1949; nonrecording at site 200 ft upstream at datum 3.14 ft higher Dec. 1, 1948, to Jan. 7, 1949. At site 500 ft upstream at different datum prior to Dec. 1, 1948. Altitude of gage is 45 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7.5 ft.

Remarks.--Base for partial-duration series, 1,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1944	Dec. 3, 1943	4.44	998	1951	Jan. 26, 1951	6.96	1,720
					Feb. 10, 1951	10.23	4,030
1945	Jan. 7, 1945	7.77	2,820				
	Jan. 18, 1945	5.54	1,480	1952	Jan. 31, 1952	6.08	1,210
1946	Oct. 25, 1945	9.78	4,310	1953	Jan. 23, 1953	6.43	1,430
	Nov. 14, 1945	6.29	1,880		Jan. 28, 1953	6.03	1,200
	Jan. 7, 1946	5.06	1,290		Jan. 31, 1953	7.54	2,150
	Feb. 6, 1946	4.90	1,200				
	Mar. 26, 1946	4.91	1,200	1954	Nov. 1, 1953	6.50	1,590
					Dec. 6, 1953	5.87	1,220
1947	Dec. 11, 1946	7.67	2,750		Dec. 9, 1953	7.64	2,330
	Jan. 24, 1947	6.61	2,030		Dec. 12, 1953	7.30	2,090
	Apr. 19, 1947	5.25	1,410		Dec. 21, 1953	6.11	1,360
					Jan. 1, 1954	5.68	1,120
1948	Oct. 19, 1947	5.14	1,210		Jan. 7, 1954	6.60	1,650
	Jan. 1, 1948	4.98	1,160				
	Jan. 4, 1948	4.99	1,160	1955	Nov. 19, 1954	5.93	1,160
	Mar. 22, 1948	4.89	1,110		Nov. 27, 1954	6.14	1,270
					Jan. 1, 1955	6.21	1,300
1949	Nov. 23, 1948	5.16	1,260		Feb. 8, 1955	8.02	2,420
	Feb. 17, 1949	10.44	4,990				
	Feb. 23, 1949	6.42	1,500	1956	Nov. 3, 1955	7.40	2,000
					Nov. 30, 1955	5.94	1,170
1950	Nov. 27, 1949	6.56	1,500		Dec. 12, 1955	7.25	1,910
	Dec. 2, 1949	7.32	1,780				
	Dec. 28, 1949	11.89	5,830	1957	Oct. 17, 1956	6.94	1,720
	Feb. 24, 1950	6.42	1,250		Oct. 20, 1956	6.70	1,580
	Mar. 4, 1950	7.04	1,600		Oct. 23, 1956	6.28	1,340
					Dec. 9, 1956	9.68	3,670
1951	Nov. 28, 1950	6.28	1,220		Dec. 16, 1956	6.97	1,740
	Dec. 24, 1950	7.09	1,720		Dec. 18, 1956	6.84	1,660
	Dec. 28, 1950	6.23	1,250		Dec. 20, 1956	6.21	1,300
	Jan. 3, 1951	7.02	1,720				

WHATCOM CREEK BASIN

2030. Whatcom Creek near Bellingham, Wash.

Location.--Lat 48°45'10", long 122°25'40", in NW¼SE¼ sec.28, T.38 N., R.3 E., on left bank in Whatcom Falls Park, three-quarters of a mile downstream from Lake Whatcom and 2 miles east of Bellingham.

Drainage area.--55.4 sq mi.

Gage.--Recording. Datum of gage is 200.00 ft above mean sea level (levels by city of Bellingham).

Stage-discharge relation.--Defined by current-meter measurements below 480 cfs and extended above.

Remarks.--Minor diversions. Flow regulated by Lake Whatcom. Peak discharges are affected. Only annual peaks are shown.

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Peak stages and discharges of Whatcom Creek near Bellingham, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Mar. 16, 1940	87.88	412	1944	Jan. 25, 1944	88.83	154
				1945	Jan. 10, 1945	88.47	590
1941	Jan. 23, 1941	88.08	473				
1942	Dec. 6, 1941	88.30	538	1946	Mar. 30, 1946	88.21	505
1943	Apr. 9, 1943	88.12	473				

2035. Whatcom Creek below hatchery, near Bellingham, Wash.

Location.--Lat 48°45'10", long 122°25'40", in NW¼SE¼ sec.28, T.38 N., R.3 E., on right bank in Whatcom Falls Park, seven-eighths of a mile downstream from Lake Whatcom and 2 miles east of Bellingham.

Drainage area.--55.5 sq mi.

Gage.--Recording. Datum of gage is 252.55 ft above mean sea level (city of Bellingham datum).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flow completely regulated by Lake Whatcom. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Mar. 31, 1946	4.15	544	1952	Mar. 18, 1952	3.67	381
1947	Jan. 27, 1947	4.31	638	1953	Feb. 4, 1953	4.55	685
1948	Jan. 5, 1948	4.28	505	1954	Dec. 12, 1953	4.89	821
1949	Feb. 19, 1949	4.75	662	1955	Feb. 8, 1955	4.37	614
1950	Dec. 29, 1949	16.0	1,350				
				1956	Dec. 12, 1955	3.87	432
1951	Feb. 11, 1951	5.49	1,100				

NOOKSACK RIVER BASIN

2050. Nooksack River above Cascade Creek, near Glacier, Wash.

Location.--Lat 48°54'20", long 121°50'30", in NW¼ sec.1, T.39 N., R.7 E., on right bank a quarter of a mile upstream from Cascade Creek, half a mile downstream from Dead Horse Creek, 4½ miles east of Glacier, and 6 miles upstream from Glacier Creek.

Drainage area.--105 sq mi. Area of lakes and ponds, 0.20 sq mi; mean altitude, 4,300 ft.

Gage.--Recording. Altitude of gage is 1,245 ft (from river-profile map). Prior to Oct. 1, 1953, on left bank at same datum.

Stage-discharge relation.--Defined by current-meter measurements below 3,100 cfs and extended on basis of contracted-opening measurement at 6,050 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--It has been found that the right bank gage would record a much higher stage for flood peaks than the left bank gage. Base for partial-duration series, 3,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Oct. 28, 1937	10.28	9,670	1940	Dec. 8, 1939	7.18	4,650
					Dec. 10, 1939	7.39	4,950
1939	Dec. 7, 1938	6.56	3,790				
	May 28, 1939	7.53	5,100	1941	Oct. 19, 1940	8.32	6,300

Peak stages and discharges of Nooksack River above Cascade Creek, near Glacier, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	Oct. 24, 1940	6.63	3,800	1951	Oct. 10, 1950	6.33	3,820
					Nov. 26, 1950	6.97	4,180
1942	Oct. 10, 1941	6.77	4,270		Dec. 24, 1950	8.13	6,050
	Oct. 16, 1941	7.06	5,000		Feb. 10, 1951	7.13	4,550
	Dec. 2, 1941	9.02	7,450				
				1952	June 4, 1952	6.26	3,660
1943	July 3, 1943	5.86	3,250				
				1953	Sept.30, 1953	7.20	4,710
1944	Dec. 3, 1943	6.37	3,900				
				1954	Oct. 10, 1953	7.40	4,040
1945	Dec. 5, 1944	7.23	4,100		Oct. 31, 1953	7.39	4,030
1946	Oct. 25, 1945	8.66	8,490	1955	Nov. 19, 1954	8.55	5,150
					Nov. 22, 1954	9.09	6,460
1947	Oct. 24, 1946	7.60	6,100		Nov. 25, 1954	7.41	3,750
					June 10, 1955	7.83	4,680
1948	Oct. 19, 1947	7.95	6,690		July 14, 1955	7.54	3,790
	June 8, 1948	7.28	4,980		Aug. 1, 1955	8.05	4,620
1949	Oct. 4, 1948	6.64	3,540	1956	Oct. 25, 1955	9.25	6,840
					Nov. 3, 1955	9.27	6,960
1950	Nov. 22, 1949	6.83	3,840		Nov. 9, 1955	7.26	4,110
	Nov. 25, 1949	8.15	6,100		June 9, 1956	9.10	6,700
	Nov. 26, 1949	10.50	10,300				
	June 17, 1950	5.66	3,600	1957	Oct. 17, 1956	8.66	6,040
	Aug. 15, 1950	6.13	3,720		Oct. 20, 1956	7.73	4,720
1951	Oct. 8, 1950	6.53	4,060				

2085. Canyon Creek at Kulshan, Wash.

Location.--Lat 48°50'00", long 122°08'05", in SE¼SE¼ sec.27, T.39 N., R.5 E., on left bank at county road crossing at Kulshan, a quarter of a mile upstream from mouth.

Drainage area.--8.70 sq mi. Area of lakes and ponds, 0.06 sq mi; mean altitude, 2,990 ft.

Gage.--Recording. Altitude of gage is 350 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 330 cfs and extended above.

Remarks.--Base for partial-duration series, 850 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Nov. 23, 1948	2.82	378	1951	Feb. 11, 1951	8.44	2,800
1950	Nov. 27, 1949	4.78	1,660	1952	Jan. 30, 1952	5.60	320
	Dec. 1, 1949	4.44	1,350				
	Dec. 28, 1949	3.77	850	1953	Jan. 2, 1953	5.83	1,090
	Mar. 3, 1950	4.04	1,090		Jan. 23, 1953	5.50	896
					Jan. 31, 1953	5.82	1,090
1951	Nov. 25, 1950	4.61	2,350				
	Dec. 24, 1950	3.58	973	1954a/	Aug. 23, 1954	5.00	563
	Jan. 25, 1951	3.60	973				

a Maximum for year not determined; partial year.

2090. South Fork Nooksack River near Wickersham, Wash.

Location.--Lat 48°39'50", long 122°07'50", in lot 2, SW¼ sec.26, T.37 N., R.5E., on left bank three-quarters of a mile upstream from Skookum Creek and 4 miles east of Wickersham.

Drainage area.--103 sq mi. Area of lakes and ponds, 0.30 sq mi; mean altitude, 3,000 ft.

Gage.--Recording. Altitude of gage is 385 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended by logarithmic plotting.

Bankfull stage.--11.8 ft.

Remarks.--Base for partial-duration series, 4,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1935	Oct. 24, 1934	7.30	5,100	1946	Feb. 24, 1946	-	-
	Nov. 5, 1934	9.95	11,200				
	Jan. 25, 1935	9.74	10,400	1947	Oct. 24, 1946	11.81	15,600
1936	May 4, 1936	6.51	3,770		Dec. 11, 1946	9.75	10,900
					Jan. 24, 1947	9.16	9,530
1937	Dec. 6, 1936	8.88	8,470		Feb. 13, 1947	8.16	7,370
	Dec. 22, 1936	8.20	6,920	1948	Oct. 4, 1947	6.98	4,970
	June 21, 1937	7.74	5,880		Oct. 15, 1947	8.82	8,650
					Oct. 18, 1947	11.26	14,400
1938	Oct. 28, 1937	10.70	12,900		Dec. 17, 1947	6.95	4,970
	Nov. 8, 1937	8.57	7,970		Dec. 23, 1947	7.32	5,540
	Nov. 20, 1937	7.46	5,810				
	Nov. 25, 1937	8.57	7,970	1949	Feb. 16, 1949	7.14	4,850
	Nov. 27, 1937	8.23	7,160				
	Dec. 29, 1937	8.49	7,760	1950	Nov. 27, 1949	12.01	15,800
	Apr. 18, 1938	8.14	6,960		Dec. 1, 1949	10.69	12,700
					Dec. 28, 1949	8.26	7,430
1939	Oct. 12, 1938	7.51	5,810		Mar. 3, 1950	8.77	8,460
	Dec. 7, 1938	7.50	5,810				
	Jan. 1, 1939	8.49	7,760	1951	Nov. 25, 1950	7.06	5,160
					Dec. 20, 1950	7.37	5,700
1940	Dec. 2, 1939	7.07	5,090		Dec. 24, 1950	8.64	8,040
	Dec. 15, 1939	7.81	6,380		Jan. 25, 1951	8.53	7,830
	Feb. 6, 1940	7.26	5,350		Feb. 10, 1951	11.89	15,600
	Feb. 9, 1940	7.09	4,970				
				1952	Jan. 30, 1952	7.19	5,450
1941	Jan. 18, 1941	7.26	5,340				
				1953	Jan. 3, 1953	6.97	4,940
1942	Oct. 3, 1941	7.44	5,530		Jan. 12, 1953	7.72	6,300
	Oct. 10, 1941	7.50	5,720		Jan. 15, 1953	7.02	5,020
	Oct. 16, 1941	7.39	5,530		Jan. 23, 1953	7.24	5,410
	Nov. 13, 1941	8.26	7,370		Jan. 31, 1953	8.63	8,100
	Dec. 2, 1941	7.13	4,970		Sept.28, 1953	7.40	5,700
1943	Oct. 31, 1942	7.40	5,540	1954	Oct. 31, 1953	8.81	8,590
	Nov. 14, 1942	8.13	6,950		Dec. 20, 1953	8.03	6,890
	Nov. 23, 1942	7.40	5,540				
	Jan. 14, 1943	8.75	8,430	1955	Nov. 5, 1954	7.45	5,790
					Nov. 18, 1954	8.98	8,840
1944	Dec. 3, 1943	9.10	9,090				
	Dec. 24, 1943	7.42	5,540	1956	Oct. 25, 1955	7.32	5,610
					Nov. 3, 1955	13.40	19,300
1945	Nov. 23, 1944	7.66	6,140		Nov. 9, 1955	7.82	6,490
	Dec. 5, 1944	7.44	5,540		Dec. 11, 1955	7.65	6,160
	Jan. 7, 1945	10.10	11,300				
	Jan. 12, 1945	7.78	6,340	1957	Oct. 17, 1956	8.01	6,850
	Feb. 7, 1945	9.30	9,530		Oct. 20, 1956	9.26	9,440
					Dec. 9, 1956	9.35	9,640
1946	Oct. 25, 1945	11.38	14,400				

2095. Skookum Creek near Wickersham, Wash.

Location.--Lat 48°40'20", long 122°08'25", in NE¼ sec.27, T.37 N., R.5 E., on left bank 100 ft upstream from private road crossing, 500 ft upstream from mouth, and 3½ miles northeast of Wickersham.

Drainage area.--23.1 sq mi. Area of lakes and ponds, 0.02 sq mi; mean altitude, 3,010 ft.

Gage.--Recording. Altitude of gage is 400 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 400 cfs and extended by logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Base for partial-duration series, 850 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Sept.15, 1949	5.77	893	1953	Jan. 15, 1953	5.15	890
					Jan. 31, 1953	6.05	1,320
1950	Nov. 22, 1949	5.25	932		Sept.27, 1953	5.55	1,120
	Nov. 25, 1949	5.05	850		Sept.30, 1953	5.14	946
	Nov. 27, 1949	a9.0	3,050				
	Dec. 1, 1949	-	-	1954	Oct. 31, 1953	5.44	1,070
	Dec. 28, 1949	5.86	1,230		Dec. 19, 1953	5.43	1,060
	Feb. 15, 1950	5.37	978		Jan. 5, 1954	4.97	910
	Feb. 26, 1950	5.08	870		Feb. 21, 1954	5.00	890
	Mar. 4, 1950	-	-				
				1955	Nov. 5, 1954	5.12	938
1951	Oct. 10, 1950	5.6	1,090		Nov. 19, 1954	6.60	1,640
	Nov. 26, 1950	5.24	955				
	Dec. 10, 1950	5.10	890	1956	Oct. 25, 1955	5.08	922
	Dec. 24, 1950	5.56	1,110		Nov. 3, 1955	5.90	1,290
	Jan. 25, 1951	5.27	978				
	Feb. 10, 1951	7.42	2,100	1957	Oct. 17, 1956	5.65	1,160
					Oct. 20, 1956	7.00	1,880
1952	Oct. 19, 1951	5.31	960		Dec. 9, 1956	5.45	1,070
	Nov. 30, 1951	5.15	870		Feb. 26, 1957	-	-
1953	Dec. 2, 1952	5.76	1,160				

a From floodmark; possibly occurred on Dec. 1.

2105. Nooksack River at Deming, Wash.

Location.--Lat 48°48'40", long 122°12'15", in lot 12, sec.6, T.38 N., R.5 E., on left bank 800 ft downstream from South Fork and 1 mile southeast of Deming.

Drainage area.--580 sq mi. Area of lakes and ponds, 1.39 sq mi; mean altitude, 3,000 ft.

Gage.--Recording. Datum of gage is 203.6 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 25,000 cfs and extended by logarithmic plotting.

Bankfull stage.--23.56 ft.

Historical data.--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 cfs). Peak of November 1909 reached a stage about equal to that of the the 1932 peak. Channel near Deming was reportedly widened considerably by the 1909 flood.

Remarks.--Only annual peaks are shown prior to 1936. Base for partial-duration series, 13,000 cfs.

Peak stages and discharges of Nooksack River at Deming, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)
1908	Mar. 15, 1908	a20	-
1910	Nov. 30, 1909	a17	-
1932	Feb. 27, 1932	16.8	49,300
1935	Jan. 25, 1935	15.0	39,600
1936	May 4, 1936	8.75	12,100
1937	Dec. 7, 1936	10.29	18,000
	Dec. 22, 1936	10.81	20,100
	June 21, 1937	11.02	20,900
1938	Oct. 28, 1937	13.21	33,200
	Nov. 8, 1937	10.15	17,600
	Nov. 20, 1937	9.79	16,000
	Nov. 25, 1937	10.68	19,700
	Nov. 27, 1937	11.37	22,800
	Dec. 30, 1937	10.94	20,600
	Apr. 18, 1938	10.87	20,600
1939	Dec. 8, 1938	9.85	16,200
	Jan. 1, 1939	11.41	23,000
	May 28, 1939	9.34	14,400
1940	Dec. 8, 1939	8.90	13,200
	Dec. 15, 1939	9.15	14,200
	Dec. 20, 1939	8.99	13,500
1941	Jan. 18, 1941	9.50	15,000
1942	Oct. 10, 1941	9.20	13,800
	Oct. 16, 1941	8.98	13,000
	Nov. 12, 1941	9.40	14,500
	Dec. 2, 1941	9.73	15,800
	June 15, 1942	9.73	15,800
1943	Nov. 14, 1942	9.12	13,400
	Jan. 15, 1943	10.00	17,200
1944	Dec. 3, 1943	11.85	23,300
1945	Nov. 23, 1944	9.75	14,500
	Dec. 6, 1944	10.08	15,700
	Jan. 7, 1945	12.88	28,800
	Jan. 12, 1945	9.92	13,300
	Feb. 8, 1945	10.70	17,700
1946	Oct. 25, 1945	14.74	38,000
	Feb. 24, 1946	9.66	15,100
1947	Oct. 25, 1946	13.13	29,900
1947	Dec. 11, 1946	12.72	26,600
	Jan. 24, 1947	10.90	19,000
	Feb. 14, 1947	10.22	17,000
1948	Oct. 15, 1947	10.55	18,600
	Oct. 19, 1947	13.41	31,400
	Dec. 23, 1947	9.82	15,900
	Dec. 27, 1947	9.13	13,300
1950	Nov. 27, 1949	15.11	36,500
	Dec. 2, 1949	12.67	23,800
	Dec. 28, 1949	11.57	20,300
	Mar. 4, 1950	-	-
1951	Oct. 10, 1950	11.30	15,500
	Nov. 26, 1950	11.52	16,300
	Dec. 24, 1950	12.95	23,300
	Jan. 25, 1951	11.00	15,900
	Feb. 10, 1951	15.60	43,200
1952	Jan. 30, 1952	9.58	14,200
1953	Jan. 3, 1953	9.87	15,400
	Jan. 12, 1953	10.14	16,500
	Jan. 16, 1953	9.30	13,100
	Jan. 23, 1953	10.05	16,100
	Jan. 31, 1953	11.57	22,700
	Sept.30, 1953	9.89	15,500
1954	Oct. 31, 1953	12.05	24,900
	Dec. 9, 1953	9.83	15,200
	Dec. 20, 1953	10.36	17,300
1955	Nov. 5, 1954	9.81	15,000
	Nov. 19, 1954	11.70	23,300
	Nov. 22, 1954	11.12	20,500
	Nov. 25, 1954	10.11	15,800
	June 10, 1955	10.08	15,200
1956	Oct. 25, 1955	11.85	21,800
	Nov. 3, 1955	15.25	38,500
	Nov. 9, 1955	11.15	18,100
	Dec. 11, 1955	11.37	20,400
	June 9, 1956	10.93	19,400
1957	Oct. 17, 1956	12.89	26,700
	Oct. 20, 1956	13.04	27,500
	Dec. 10, 1956	-	-
	Dec. 16, 1956	10.24	15,100
	Dec. 18, 1956	10.20	15,300
	Feb. 26, 1957	-	-

a About.

2115. Nooksack River near Lynden, Wash.

Location.--Lat 48°55'10", long 122°29'10", in NE¼NE¼ sec.36, T.40 N., R.2 E., on right bank 150 ft downstream from bridge on State Highway 1B, 1½ miles upstream from Fishtrap Creek, 2 miles southwest of Lynden, ard 12 miles upstream from mouth.

Drainage area.--636 sq mi.

Gage.--Recording. Datum of gage is 24.4 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--21 ft.

Remarks.--Only annual peaks are shown prior to 1945. Base for partial-duration series, 15,000 cfs.

Peak stages and discharges of Nooksack River near Lynden, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	Dec. 29, 1917	ab22	-	1951	Oct. 10, 1950	16.19	17,900
					Nov. 26, 1950	17.36	21,200
1922	Dec. 11, 1921	ab22	-		Dec. 10, 1950	15.30	15,800
					Dec. 25, 1950	19.63	30,400
1924	Feb. 1, 1924	c22.7	-		Jan. 26, 1951	17.63	21,800
					Feb. 10, 1951	21.76	46,200
1932	Feb. 27, 1932	b22.5	-				
				1952	Jan. 31, 1952	14.24	13,400
1935	Jan. 25, 1935	ab22	-				
				1953	Jan. 3, 1953	15.01	15,100
1945	Dec. 6, 1944	15.99	17,400		Jan. 12, 1953	15.60	16,500
	Jan. 7, 1945	20.45	35,300		Jan. 23, 1953	15.57	16,400
	Jan. 12, 1945	15.80	16,900		Feb. 1, 1953	18.23	24,100
	Feb. 8, 1945	17.34	20,900				
				1954	Oct. 1, 1953	15.14	15,400
1946	Oct. 26, 1945	21.58	44,500		Oct. 31, 1953	18.74	26,200
	Nov. 14, 1945	14.90	15,100		Dec. 9, 1953	15.71	16,700
	Feb. 25, 1946	15.19	15,800		Dec. 20, 1953	16.60	18,600
1947	Oct. 25, 1946	19.47	29,900	1955	Nov. 19, 1954	18.53	25,300
	Dec. 11, 1946	19.68	31,000		Nov. 22, 1954	17.89	23,000
	Jan. 24, 1947	17.84	22,400		Nov. 25, 1954	15.34	16,400
	Feb. 14, 1947	16.50	18,700				
				1956	Oct. 25, 1955	17.19	21,000
1948	Oct. 16, 1947	16.81	19,500		Nov. 3, 1955	21.37	42,600
	Oct. 19, 1947	19.78	31,600		Nov. 10, 1955	16.19	18,500
	Dec. 24, 1947	15.13	15,300		Dec. 12, 1955	16.79	20,000
					June 10, 1956	15.70	17,300
1949	Feb. 17, 1949	16.06	17,500				
				1957	Oct. 18, 1956	18.38	24,700
1950	Nov. 27, 1949	21.18	41,200		Oct. 20, 1956	18.85	26,600
	Dec. 2, 1949	19.65	30,400		Dec. 10, 1956	18.96	27,200
	Dec. 28, 1949	18.84	26,400		Dec. 16, 1956	14.86	15,200
	Mar. 4, 1950	17.69	22,100		Dec. 18, 1956	14.80	15,100

a About.
b From information by local residents.
c Maximum since at least 1909, from floodmarks.

2120. Fishtrap Creek at Lynden, Wash.

Location.--Lat 48°57'50", long 122°26'00", on north line sec.16, T.40 N., R.3 E., on right bank on downstream side of bridge on State Highway 1A, 1 mile north of Lynden.

Drainage area.--24.1 sq mi, of which 18.5 sq mi is in Canada. Area of lakes and ponds, 0.30 sq mi; mean altitude, 154 ft.

Gage.--Recording. Altitude of gage is 110 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--7 ft.

Remarks.--Base for partial-duration series, 220 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 17, 1949	5.04	289	1953	Jan. 23, 1953	5.03	286
					Jan. 31, 1953	4.84	258
1950	Dec. 28, 1949	5.40	342				
	Feb. 16, 1950	5.11	296	1954	Dec. 12, 1953	4.70	247
	Feb. 26, 1950	4.62	229		Dec. 20, 1953	4.85	266
	Mar. 4, 1950	4.70	241		Jan. 7, 1954	4.81	260
	Mar. 19, 1950	4.58	229				
				1955	Nov. 22, 1954	5.49	354
1951	Dec. 24, 1950	5.20	323		Feb. 8, 1955	4.85	266
	Jan. 3, 1951	4.40	222				
	Jan. 25, 1951	6.05	449	1956	Nov. 3, 1955	5.11	299
	Feb. 11, 1951	6.59	550		Dec. 11, 1955	4.93	282
	Mar. 15, 1951	4.77	245				
				1957	Dec. 9, 1956	5.83	406
1952	Jan. 31, 1952	4.94	278		Dec. 15, 1956	4.50	223

2127. Tenmile Creek tributary near Bellingham, Wash.

Location.--Lat 48°50'30", long 122°24'30", 0.1 mile north from center of sec.27, T.39 N., R.3 E., at Starry Road, 2.7 miles northwest of Noon, and 7 miles northeast of Bellingham.

Drainage area.--0.74 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 290 ft.

Gage.--Crest-stage gage. Datum of gage is 6.66 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 3-foot concrete pipe culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Feb. 17, 1949	10.54	52.0	1954	Dec. 12, 1953	9.26	28.7
1950	Dec. 26, 1949	9.41	32.0	1955	Nov. 19, 1954	10.38	49.2
1951	Feb. 10, 1951	10.86	56.5	1956	Dec. 11, 1955	8.96	23.6
1952	Jan. 30, 1952	8.16	10.8	1957	Dec. 9, 1956	9.45	32.2
1953	Jan. 23, 1953	8.09	19.3				

DAKOTA CREEK BASIN

2140. Dakota Creek near Blaine, Wash.

Location.--Lat 48°57'25", long 122°39'30", in NW¼SW¼ sec.14, T.40 N., R.1 E., on right bank 50 ft upstream from county road crossing, 3½ miles upstream from mouth, and 4½ miles southeast of Blaine.

Drainage area.--15.2 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 118 ft.

Gage.--Recording. Altitude of gage is 20 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 310 cfs and extended by logarithmic plotting.

Remarks.--Base for partial-duration series, 490 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Nov. 23, 1948	9.34	612	1951	Feb. 10, 1951	9.92	753
					Mar. 15, 1951	8.95	645
1950	Dec. 27, 1949	9.16	669				
	Feb. 13, 1950	7.93	491	1952	Jan. 30, 1952	5.78	309
1951	Jan. 25, 1951	8.93	634	1953	Jan. 23, 1953	6.71	401

3000. Kootenay River at Newgate, British Columbia (International gaging station)

Location.--Lat 49°01', long 115°10', on left bank at old highway bridge site, 0.7 mile northwest of Newgate and 0.9 mile north of international boundary.

Drainage area.--7,660 sq mi, approximately. Area of lakes and ponds, 14.5 sq mi; mean elevation, 5,650 ft.

Gage.--Nonrecording prior to Apr. 30, 1947; recording thereafter. At datum 1.00 ft higher prior to Oct. 1, 1940. Datum of gage is 2,310.23 ft above mean sea level (datum of Geodetic Survey of Canada, adjustment of 1945).

Stage-discharge relation.--Defined by current-meter measurements below 83,000 cfs and extended above.

Bankfull stage.--13 ft.

Remarks.--This is an international gaging station maintained by Canada under agreement with the United States.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	May 16, 1931	8.36	32,800	1945	June 1, 1945	10.24	46,900
1932	June 15, 1932	10.60	60,500				
1933	June 18, 1933	12.30	83,500	1946	May 29, 1946	11.78	65,000
1934	May 30, 1934	10.98	63,400	1947	May 11, 1947	12.13	62,200
1935	May 24, 1935	9.37	45,200	1948	May 28, 1948	15.02	98,200
				1949	May 15, 1949	10.82	48,700
1936	June 1, 1936	9.67	49,100	1950	June 23, 1950	12.69	71,400
1937	June 3, 1937	8.50	37,800				
1938	May 27, 1938	11.58	68,800	1951	June 17, 1951	12.24	66,500
1939	May 17, 1939	8.65	37,200	1952	May 21, 1952	9.82	40,300
1940	May 26, 1940	9.34	43,600	1953	June 14, 1953	12.63	70,900
				1954	May 21, 1954	-	74,200
1941	June 3, 1941	7.58	23,300	1955	June 14, 1955	12.42	70,800
1942	May 27, 1942	11.40	57,100				
1943	June 19, 1943	10.20	45,100	1956	May 22, 1956	14.08	92,000
1944	June 14, 1944	8.07	27,000	1957	May 21, 1957	10.22	45,800

3005. Fortine Creek near Trego, Mont.

Location.--Lat 48°38'40", long 114°54'40", in NE¼NE¼ sec.11, T.33 N., R.26 W., on downstream side of private bridge a quarter of a mile upstream from Edna Creek, 1 mile downstream from Stewart Creek, and 5 miles southwest of Trego.

Drainage area.--112 sq mi. Area of lakes and ponds, 0.06 sq mi; mean elevation, 4,570 ft.

Gage.--Nonrecording. Altitude of gage is 3,340 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs and extended above.

Remarks.--Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	Mar. 24, 1947	4.25	247	1950	May 28, 1950	8.71	684
	Apr. 3, 1947	4.20	242		June 14, 1950	7.10	508
	Apr. 29, 1947	10.24	948		June 25, 1950	4.68	257
	June 10, 1947	5.10	322				
				1951	Feb. 11, 1951	-	-
1948	Apr. 22, 1948	10.00	896		Apr. 14, 1951	7.04	468
	Apr. 30, 1948	9.30	784		May 1, 1951	9.55	782
	May 9, 1948	9.92	882		May 7, 1951	9.95	875
	May 22, 1948	10.46	1,000				
				1952	Apr. 19, 1952	9.30	720
1949	Apr. 20, 1949	7.15	496		Apr. 28, 1952	9.65	798
	Apr. 29, 1949	8.54	655		June 12, 1952	4.30	214
	May 11, 1949	9.34	754				
				1953	Apr. 29, 1953	9.13	668
1950	Apr. 22, 1950	6.64	440		May 7, 1953	9.90	860
	May 16, 1950	11.80	1,810		May 31, 1953	4.17	208
	May 23, 1950	8.76	687		June 9, 1953	4.57	236

3020. Fisher River near Jennings, Mont.

Location.--Lat 48°14'40", long 115°17'10", in NW¼SE¼ sec.27, T.23 N., R.29 W., on right bank 80 ft below bridge, 1 mile downstream from Wolf Creek, 9 miles upstream from mouth, and 9 miles southeast of Jennings.

Drainage area.--780 sq mi. Area of lakes and ponds, 1.66 sq mi; mean elevation, 4,190 ft.

Gage.--Recording. Datum of gage is 2,443.23 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 5,200 cfs and extended above.

Remarks.--Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 22, 1948	-	a6,560	1954	Apr. 18, 1954	5.97	3,640
					May 12, 1954	6.87	4,930
1951	Feb. 10, 1951	5.77	3,350		May 20, 1954	7.39	5,710
	May 7, 1951	5.90	3,520				
				1955	May 22, 1955	5.83	3,440
1952	Apr. 19, 1952	5.92	3,540				
	Apr. 27, 1952	6.03	3,680	1956	Apr. 17, 1956	7.32	6,320
1953	Feb. 1, 1953	5.35	2,860	1957	May 6, 1957	5.80	3,900
	Apr. 29, 1953	5.51	3,030				
	May 8, 1953	5.30	2,800				

a Slope-area measurement at site 7½ miles downstream.

3025. Granite Creek near Libby, Mont.

Location.--Lat 48°18'10", long 115°35'25", in NW¼SE¼ sec.5, T.29 N., R.31 W., on left bank 2½ miles upstream from Cherry Creek and 7 miles southwest of Libby.

Drainage area.--23.6 sq mi. Area of lakes and ponds, 0.25 sq mi; mean elevation, 5,260 ft.

Gage.--Nonrecording gage and, since Sept. 10, 1938, concrete control. Altitude of gage is 2,780 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 700 cfs and by slope-area measurement at 1,520 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1933	June 10, 1933	4.06	1,360	1942	Dec. 3, 1941	4.80	965
				1943	June 18, 1943	4.10	575
1937	May 26, 1937	2.86	415	1944	Oct. 12, 1943	2.43	35
1938	Apr. 18, 1938	4.40	1,960				
1939	May 3, 1939	3.96	534	1948	May 1948	5.65	1,520
1940	May 11, 25, 1940	3.75	408				
				1954	May 20, 1954	5.05	1,100
1941	May 17, 1941	3.86	430				

3030. Kootenai River at Libby, Mont.

Location.--Lat 48°24'00", long 115°33'10", in SE¼SW¼ sec.34, T.31 N., R.31 W., on right bank 1,800 ft downstream from highway bridge at Libby and 1 mile downstream from Libby Creek.

Drainage area.--10,240 sq mi. Area of lakes and ponds, 30 sq mi; mean elevation, 5,350 ft.

Gage.--Nonrecording prior to Apr. 27, 1931, at site 1,800 ft upstream; recording thereafter.

Stage-discharge relation.--Defined by current-meter measurements below 87,000 cfs and extended above.

Remarks.--Base for partial-duration series, 37,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 4, 1911	12.4	59,500
	June 16, 1911	13.8	72,500
1912	May 18, 1912	9.6	36,800
1913	June 4, 1913	14.3	77,300
	June 11, 1913	14.0	74,400
1914	May 18, 1914	10.5	43,500
	June 5, 1914	12.1	56,900
	June 20, 1914	12.0	56,000
	July 6, 1914	9.9	39,000
1915	June 28, 1915	9.5	36,100
1916	May 8, 1916	10.1	40,000
	June 21, 1916	19.24	121,000
1917	May 16, 1917	9.77	38,200
	May 29, 1917	10.83	45,900
	June 11, 1917	12.28	58,600
	June 18, 1917	12.99	65,000
1918	May 6, 1918	9.69	37,500
	June 13, 1918	14.29	77,300
1919	May 29, 1919	14.59	80,200
	June 23, 1919	11.47	51,700
1920	June 19, 1920	11.64	52,500
	July 4, 1920	12.51	60,400
1921	May 27, 1921	13.48	69,600
	June 9, 1921	13.84	72,500
	June 24, 1921	10.82	45,900
1922	May 20, 1922	10.39	42,700
	June 6, 1922	13.45	68,700
1923	May 24, 1923	10.20	41,200
	June 14, 1923	13.67	71,500
1924	May 18, 1924	10.74	45,100
1925	May 23, 1925	14.38	78,200
	June 23, 1925	10.68	45,100
1926	May 1, 1926	8.04	26,400
1927	May 18, 1927	9.99	39,700
	June 12, 1927	14.90	83,100
1928	May 27, 1928	13.85	70,200
	July 2, 1928	10.17	42,300
1929	May 25, 1929	11.67	53,500
	June 4, 1929	12.17	57,400
1930	June 1, 1930	11.46	52,100
	June 10, 1930	11.17	50,000
1931	May 17, 1931	10.66	41,200
1932	May 15, 1932	11.75	47,100
1932	May 23, 1932	13.27	56,800
	June 5, 1932	13.87	60,800
	June 16, 1932	14.06	62,000
1933	June 6, 1933	13.80	59,700
	June 18, 1933	16.90	85,600
1934	Apr. 29, 1934	14.04	61,000
	May 18, 1934	13.64	58,400
	May 31, 1934	14.39	63,700
1935	May 24, 1935	12.66	52,500
	June 2, 1935	11.79	46,900
1936	May 16, 1936	11.59	45,700
	June 1, 1936	12.18	49,400
1937	May 28, 1937	10.76	41,000
	June 4, 1937	10.65	39,900
	June 19, 1937	10.21	37,600
1938	May 28, 1938	15.60	78,800
	June 24, 1938	12.17	50,500
1939	May 18, 1939	10.80	41,000
	May 31, 1939	10.00	40,000
1940	May 13, 1940	10.35	38,200
	May 26, 1940	11.88	48,500
1941	May 19, 1941	8.18	26,800
1942	May 13, 1942	11.74	46,500
	May 27, 1942	14.45	67,900
	June 9, 1942	12.79	54,600
	July 4, 1942	11.69	46,500
1943	Apr. 21, 1943	11.26	43,800
	May 29, 1943	11.86	47,900
	June 19, 1943	12.19	50,100
	July 4, 1943	11.32	43,800
1944	June 1, 1944	8.44	27,800
1945	June 2, 1945	12.44	51,600
	June 23, 1945	10.92	41,800
1946	May 7, 1946	11.25	43,800
	May 30, 1946	15.12	74,300
1947	May 11, 1947	15.06	74,300
	June 4, 1947	11.87	48,500
1948	May 28, 1948	19.93	109,000
1949	May 15, 1949	13.97	61,900
1950	May 16, 1950	11.49	44,600
	May 29, 1950	11.32	43,500
	June 7, 1950	12.08	48,400
	June 23, 1950	16.23	79,100
1951	May 13, 1951	14.87	68,600
	May 25, 1951	14.74	67,600

Peak stages and discharges of Kootenai River at Libby, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	June 17, 1951	14.97	69,400	1954	June 16, 1954	14.50	65,200
	July 8, 1951	11.91	47,300		July 3, 1954	14.80	67,300
1952	Apr. 28, 1952	11.97	48,800	1955	May 22, 1955	11.34	45,500
	May 21, 1952	11.76	47,400		June 15, 1955	15.17	70,700
	June 7, 1952	11.23	44,000		June 26, 1955	14.79	68,000
1953	May 21, 1953	10.58	39,900	1956	May 23, 1956	18.63	96,600
	June 15, 1953	15.13	69,600	1957	May 8, 1957	13.17	57,100
1954	May 21, 1954	17.33	86,600				

3035. Lake Creek at Troy, Mont.

Location.--Lat 48°26'40", long 115°52'30", in SW¼ sec.18, T.31 N., R.33 W., on right bank a quarter of a mile downstream from powerplant, half a mile upstream from mouth, and 1¼ miles southeast of Troy.

Drainage area.--210 sq mi. Area of lakes and ponds, 2.81 sq mi; mean elevation, 4,080 ft.

Gage.--Nonrecording at site a quarter of a mile upstream at different datum prior to Oct. 31, 1946; recording thereafter. Altitude of gage is 1,900 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 2,900 cfs and extended above.

Remarks.--Natural regulation by Bull and Spar Lakes. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	May 29, 1945	8.46	2,350	1951	Feb. 11, 1951	7.49	2,770
				1952	May 19, 1952	5.63	1,610
1946	May 28, 1946	9.20	2,000	1953	May 20, 1953	5.94	2,030
				1954	May 20, 1954	7.17	3,080
1947	May 9, 1947	6.48	2,400	1955	June 13, 1955	6.88	2,730
1948	May 30, 1948	8.28	3,250				
1949	May 14, 1949	8.15	2,950	1956	May 21, 1956	7.05	3,150
1950	June 21, 1950	7.42	2,470	1957	May 6, 1957	6.64	2,400

3050. Kootenai River at Leonia, Idaho

Location.--Lat 48°37', long 116°03', in NW¼NW¼ sec.20, T.33 N., R.34 W., on right bank at Leonia, 450 ft east of Montana-Idaho State line and half a mile upstream from Boulder Creek.

Drainage area.--11,740 sq mi, approximately.

Gage.--Nonrecording at site 250 ft upstream prior to Nov. 13, 1928; recording thereafter. Datum of gage is 1,700.25 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements throughout range.

Bankfull stage.--122 ft (road bed Great Northern RR.).

Remarks.--Base for partial-duration series, 30,000 cfs.

Peak stages and discharges of Kootenai River at Leonia, Idaho

Water year	Date	Gage height (feet)	Discharge (cfs)
1894	-	124.6	-
1916	-	121.6	-
1928	Apr. 29, 1928	108.90	32,800
	May 25, 1928	116.05	77,500
	July 2, 1928	111.02	44,000
1929	May 25, 1929	113.20	60,300
	June 4, 1929	113.36	61,000
1930	May 21, 1930	108.24	31,400
	June 1, 1930	112.72	57,300
	June 10, 1930	112.24	54,400
1931	May 17, 1931	110.97	46,600
	June 4, 1931	108.12	31,600
1932	May 15, 1932	113.55	60,100
	May 23, 1932	114.96	69,400
	June 5, 1932	115.04	69,400
	June 16, 1932	114.99	70,900
1933	Apr. 29, 1933	111.09	44,800
	June 7, 1933	115.50	73,200
	June 18, 1933	118.11	95,500
1934	Dec. 23, 1933	111.66	46,000
	Apr. 29, 1934	116.40	75,200
	May 18, 1934	115.09	65,900
	May 30, 1934	115.55	69,100
1935	May 7, 1935	109.60	31,600
	May 24, 1935	115.04	63,600
	June 2, 1935	113.85	56,100
1936	Apr. 23, 1936	110.13	35,500
	May 17, 1936	113.23	53,900
	June 1, 1936	113.29	54,200
1937	May 28, 1937	112.40	47,900
	June 5, 1937	111.79	44,600
	June 19, 1937	111.23	41,800
1938	Apr. 19, 1938	113.33	53,500
	May 2, 1938	111.79	44,900
	May 28, 1938	117.64	83,000
	June 24, 1938	113.20	53,000
1939	May 4, 1939	110.90	40,100
	May 18, 1939	112.11	47,500
	May 31, 1939	111.12	41,900
	July 2, 1939	109.12	33,000
1940	May 13, 1940	111.55	44,000
	May 26, 1940	112.92	52,000
	June 15, 1940	109.00	32,300
1941	May 17, 1941	109.05	31,900
1942	May 13, 1942	113.81	52,700
	May 27, 1942	116.60	74,300
	June 9, 1942	114.40	59,600
	July 2, 1942	113.05	51,100
1943	Apr. 21, 1943	114.28	57,500
	May 29, 1943	114.37	58,000
	June 19, 1943	114.03	56,000
1944	June 1, 1944	108.80	30,000
1945	May 7, 1945	109.15	31,500
	June 2, 1945	114.32	57,700
	June 23, 1945	111.78	43,200
1946	May 7, 1946	113.84	55,100
	May 30, 1946	116.92	77,000
1947	May 11, 1947	117.56	82,500
	June 4, 1947	113.26	53,500
1948	Oct. 20, 1947	110.84	39,000
	Apr. 23, 1948	110.03	35,100
	May 28, 1948	123.40	123,000
1949	May 15, 1949	116.93	75,200
1950	May 15, 1950	115.12	61,000
	May 29, 1950	113.85	55,400
	June 7, 1950	114.41	59,400
	June 23, 1950	118.21	87,100
1951	May 13, 1951	117.04	76,300
	June 17, 1951	116.33	71,100
	July 6, 1951	113.00	49,700
1952	Apr. 28, 1952	114.87	63,000
	May 21, 1952	113.74	56,600
	June 7, 1952	112.34	47,600
	July 2, 1952	110.36	36,400
1953	May 8, 1953	111.20	40,600
	May 20, 1953	112.56	48,500
	June 15, 1953	116.51	74,700
1954	May 21, 1954	120.81	104,000
	June 16, 1954	116.64	75,400
	July 3, 1954	116.34	73,800
1955	May 22, 1955	114.09	57,600
	June 15, 1955	117.30	79,300
	June 25, 1955	116.61	74,600
1956	Apr. 22, 1956	112.95	50,700
	May 23, 1956	121.65	115,000
1957	May 7, 1957	115.93	71,000

3055. Boulder Creek near Leonia, Idaho

Location.--Lat 48°36', long 116°06', in NE¼ sec.32, T.61 N., R.3 E., on right bank three-quarters of a mile downstream from McGinty Creek, three-quarters of a mile upstream from buildings of the Idamont Lead-Zinc Mines Co., 2½ miles southwest of Leonia, and 2¾ miles upstream from mouth.

Drainage area.--53 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 4,980 ft.

Gage.--Recording prior to Nov. 29, 1933; nonrecording Dec. 30, 1933, to Oct. 12, 1934; recording thereafter. At site a quarter of a mile upstream at different datum prior to Sept. 28, 1946. Altitude of gage is 2,600 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,400 cfs and extended on basis of contracted-opening measurement at 2,700 cfs. At location prior to 1947 defined by current-meter measurements throughout range.

Bankfull stage.--8.5 ft.

Remarks.--Peaks for 1934 water year based on graph plotted from daily gage readings. Base for partial-duration series, 800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 12, 1929	4.10	880
1930	Apr. 14, 1930	3.70	683
1931	May 2, 1931	4.00	835
1932	Feb. 27, 1932	4.94	1,330
	May 7, 1932	4.80	1,330
	May 21, 1932	4.16	848
1933	Apr. 28, 1933	4.67	1,220
	May 14, 1933	4.17	848
	May 26, 1933	4.79	1,330
	June 4, 1933	4.33	1,040
	June 8, 1933	4.76	1,300
1934	(a)	-	-
	Apr. 13, 1934	3.63	1,070
	Apr. 24, 1934	4.07	1,320
	May 5, 1934	3.48	968
1935	Nov. 7, 1934	4.40	1,540
	May 5, 1935	3.54	980
	May 22, 1935	3.93	1,280
1936	(b)	3.75	1,100
	Apr. 25, 1936	3.47	938
	May 4, 1936	3.55	1,010
	May 11, 1936	3.45	950
1937	May 4, 1937	3.40	920
	May 25, 1937	3.35	890
1938	Apr. 18, 1938	5.50	2,050
	Apr. 30, 1938	3.52	991
	May 25, 1938	3.72	1,110
1939	Apr. 29, 1939	3.30	815
	May 3, 1939	3.36	854
1940	May 11, 1940	3.20	760
1941	May 17, 1941	4.05	1,200
1942	Dec. 2, 1941	5.61	2,170
	Dec. 20, 1941	3.67	1,120
	Apr. 22, 1942	3.22	871
1943	Apr. 19, 1943	3.70	980
	May 25, 1943	4.05	1,170
1944	May 9, 1944	2.62	488
1945	May 5, 1945	3.90	1,080
1945	May 15, 1945	3.40	830
1946	May 4, 1946	4.15	1,220
	May 17, 1946	3.76	970
	May 28, 1946	3.65	930
	June 6, 1946	3.45	825
1947	Apr. 19, 1947	4.43	854
	Apr. 29, 1947	4.68	956
	May 2, 1947	5.09	1,140
1948	Oct. 19, 1947	7.85	2,700
	May 27, 1948	6.42	1,710
1949	May 13, 1949	5.85	1,340
1950	Nov. 27, 1949	6.48	1,770
	May 13, 1950	5.68	1,230
	May 22, 1950	5.37	1,010
	June 12, 1950	5.22	916
1951	Oct. 30, 1950	5.16	910
	(c)	d6.46	-
	Feb. 11, 1951	5.38	1,050
	May 11, 1951	5.20	964
	May 17, 1951	4.96	820
1952	Apr. 26, 1952	5.46	1,050
	May 18, 1952	5.10	844
1953	May 6, 1953	5.24	964
	May 19, 1953	5.66	1,220
	May 29, 1953	5.01	826
1954	May 11, 1954	5.76	1,530
	May 19, 1954	6.31	2,040
	June 4, 1954	5.04	916
	June 15, 1954	5.02	904
1955	May 20, 1955	5.66	1,360
	May 30, 1955	5.05	915
	June 6, 1955	5.44	1,190
1956	Oct. 10, 1955	4.90	845
	Nov. 4, 1955	4.91	824
	Apr. 21, 1956	4.94	845
	May 10, 1956	5.12	971
	May 20, 1956	6.19	1,660
1957	Feb. 24, 1957	d6.45	-
	May 6, 1957	5.79	1,320
	May 20, 1957	5.40	1,060

a Between Dec. 21 and 24, 1933. b Between Apr. 19 and 22, 1936. c Sometime during period Jan. 31 to Feb. 11, 1951; ice jam. d Affected by ice.

3060. Kootenai River at Katka, Idaho

Location.--Lat 48°42'10", long 116°08'00", in NE¼ sec.25, T.62 N., R.2 E., on left bank at Katka, 3,000 ft downstream from Great Northern Railway station and 3¼ miles upstream from Moyie River.

Drainage area.--11,860 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 1,700.10 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined throughout range by current-meter measurements made at Leonia, 7 miles upstream and transferred to Katka by the "Slack" method, using gage heights interpolated from observer's readings.

Remarks.--Gage heights are from graphs based on gage readings. Base for partial-duration series, 30,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	Apr. 29, 1928	84.34	33,600	1931	June 4, 1931	83.56	31,200
	May 25, 1928	93.53	77,800				
	July 2, 1928	86.86	45,200	1932	May 15, 1932	89.40	58,700
					May 23, 1932	91.52	69,800
1929	May 25, 1929	89.82	59,300		June 5, 1932	91.55	70,000
	June 4, 1929	90.00	60,300		June 16, 1932	91.66	70,500
1930	May 22, 1930	83.62	31,600	1933	Apr. 29, 1933	87.05	45,700
	June 1, 1930	88.93	56,400		June 7, 1933	92.63	72,500
	June 10, 1930	88.41	54,300		June 18, 1933	96.80	96,500
1931	May 17, 1931	86.90	46,200				

3065. Moyie River at Eastport, Idaho
(International gaging station)

Location.--Lat 49°00', long 116°11', in SE¼ sec.10, T.65 N., R.2 E., on left bank at Eastport, 1,000 ft downstream from international boundary.

Drainage area.--570 sq mi. Area of lakes and ponds, 6.0 sq mi; mean altitude, 4,870 ft.

Gage.--Recording. Datum of gage is 2,620.06 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements throughout range.

Bankfull stage.--12 ft.

Remarks.--This station is maintained by the United States under agreement with Canada. Base for partial-duration series, 2,900 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Apr. 27, 1930	6.89	3,030	1936	Apr. 26, 1936	7.53	3,740
	May 31, 1930	7.09	3,330		May 12, 1936	7.30	3,370
1931	May 15, 1931	6.82	2,870	1937	May 5, 1937	7.16	3,150
1932	May 14, 1932	7.99	5,090		May 28, 1937	7.25	3,300
	May 22, 1932	8.16	5,440	1938	Apr. 18, 1938	8.99	6,080
	June 2, 1932	7.37	3,750		May 1, 1938	8.06	4,600
					May 27, 1938	8.97	6,080
1933	Apr. 28, 1933	7.79	4,460				
	May 31, 1933	8.14	5,120	1939	May 4, 1939	7.50	3,740
	June 16, 1933	8.10	5,020		May 16, 1939	6.98	3,010
1934	Apr. 14, 1934	8.21	3,720	1940	May 12, 1940	7.13	3,150
	Apr. 28, 1934	9.46	6,240				
				1941	May 17, 1941	6.72	2,560
1935	May 6, 1935	7.11	3,000				
	May 23, 1935	8.14	4,420	1942	Dec. 3, 1941	7.51	3,680
					May 15, 1942	7.36	3,460
1936	Apr. 18, 1936	7.55	3,740		May 27, 1942	8.74	5,680

Peak stages and discharges of Moyie River at Eastport, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	June 5, 1942	8.14	4,690	1950	May 28, 1950	8.45	5,280
	June 28, 1942	7.83	4,210		June 23, 1950	8.06	4,660
1943	Apr. 19, 1943	8.80	5,920	1951	Feb. 11, 1951	7.28	3,470
	May 27, 1943	8.06	4,660		Apr. 14, 1951	6.87	2,900
	June 19, 1943	6.97	3,000		May 12, 1951	9.11	6,450
1944	May 9, 1944	5.77	1,500	1952	Apr. 28, 1952	8.73	5,760
					May 19, 1952	7.50	3,800
1945	May 6, 1945	7.76	4,370	1953	Apr. 28, 1953	7.05	3,250
	May 14, 1945	7.57	4,060		May 7, 1953	7.98	4,690
	June 1, 1945	7.43	3,840		May 19, 1953	8.08	4,850
1946	Apr. 20, 1946	7.27	3,580		June 10, 1953	7.70	4,100
	Apr. 26, 1946	8.00	4,760	1954	May 12, 1954	9.03	6,750
	May 6, 1946	8.76	6,060		May 20, 1954	10.55	9,400
1947	Apr. 20, 1947	7.56	4,050		June 16, 1954	7.68	3,860
	Apr. 29, 1947	8.26	5,200		July 1, 1954	7.01	2,900
	May 10, 1947	9.17	6,800	1955	May 21, 1955	8.60	5,540
1948	Oct. 19, 1947	7.14	3,130		May 30, 1955	7.82	4,270
	Apr. 22, 1948	7.55	3,700		June 13, 1955	8.10	4,720
	Apr. 30, 1948	7.31	3,360		June 24, 1955	7.61	3,940
	May 24, 1948	10.25	8,030	1956	Apr. 22, 1956	8.33	5,170
1949	Apr. 20, 1949	7.12	3,140		May 20, 1956	10.52	9,310
	Apr. 29, 1949	7.52	3,700	1957	May 6, 1957	8.91	6,200
	May 14, 1949	9.15	6,190				
1950	May 15, 1950	9.22	6,650				

3070. Moyie River at Snyder, Idaho

Location.--Lat 48°52', long 116°10', in sec.23, T.64 N., R.2 E., on left bank at Snyder ranger station, a quarter of a mile west of Snyder station on Spokane International Railroad, 3½ miles downstream from Found Prairie Creek, and 12 miles upstream from mouth.

Drainage area.--656 sq mi.

Gage.--Nonrecording. Prior to Feb. 21, 1912, at site 1 mile downstream at different datum. Altitude of gage is 2,473 ft (river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 3,800 cfs and extended on basis of logarithmic plotting.

Bankfull stage.--Not subject to overflow.

Remarks.--Only observed annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 7, 1911	7.8	6,680	1919	May 23, 1919	9.0	7,230
1912	May 17, 1912	7.2	4,420	1920	May 18, 1920	7.25	4,200
1913	June 1, 1913	9.3	8,020				
1914	May 16, 1914	8.4	6,120	1921	May 26, 1921	9.0	7,230
1915	Apr. 19, 1915	6.2	2,700	1922	June 4, 1922	7.8	5,010
				1923	June 1, 1923	8.29	5,860
1916	June 19, 1916	11.0	10,800				

3075. Moyie River at Eileen, Idaho

Location.--Lat 48°46', long 116°10', in NE¼ sec.35, T.63 N., R.2 E., on right bank an eighth of a mile downstream from Skin Creek, a quarter of a mile southeast of Eileen, and 4 miles upstream from mouth.

Drainage area.--755 sq mi. Area of lakes and ponds, 6.2 sq mi; mean elevation, 4,710 ft.

Gage.--Nonrecording prior to June 1, 1928; recording thereafter. At datum 1.0 ft higher prior to Sept. 30, 1944. Datum of gage is 2,124.5 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 8,200 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Gage heights for period when nonrecording gage was used are from graphs based on gage readings. Base for partial-duration series, 3,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1926	Apr. 30, 1926	3.90	3,200	1943	May 27, 1943	4.07	5,500
					June 19, 1943	3.40	3,540
1927	Apr. 28, 1927	4.46	4,890				
	May 17, 1927	4.80	5,910	1944	May 9, 1944	2.50	1,840
	June 10, 1927	4.80	5,910				
				1945	May 6, 1945	4.97	4,780
1928	May 18, 1928	4.86	6,270		May 14, 1945	4.89	4,530
					June 1, 1945	4.77	4,180
1929	May 24, 1929	4.33	4,820				
				1946	Apr. 20, 1946	4.73	4,350
1930	Apr. 27, 1930	3.97	3,540		Apr. 26, 1946	5.07	5,480
	May 31, 1930	4.00	3,680		May 6, 1946	5.41	6,900
1931	May 15, 1931	3.95	3,540	1947	Apr. 20, 1947	4.73	4,350
					Apr. 29, 1947	5.21	6,030
1932	May 14, 1932	4.15	6,340		May 10, 1947	5.72	7,210
	May 22, 1932	4.24	6,840				
	June 2, 1932	3.90	5,120	1948	Apr. 23, 1948	4.96	4,500
					Apr. 30, 1948	4.78	3,990
1933	Apr. 29, 1933	4.02	5,670		May 26, 1948	6.51	9,650
	May 15, 1933	3.70	4,310				
	May 31, 1933	4.16	6,390	1949	Apr. 19, 1949	5.10	3,870
	June 16, 1933	4.05	5,820		Apr. 29, 1949	5.26	4,560
					May 13, 1949	6.17	7,430
1934	Apr. 14, 1934	3.78	4,620				
	Apr. 29, 1934	4.55	8,780	1950	May 16, 1950	6.28	8,090
					May 28, 1950	5.90	6,180
1935	May 6, 1935	3.62	3,850		June 23, 1950	5.67	5,340
	May 23, 1935	4.16	6,230				
				1951	Feb. 11, 1951	5.26	4,030
1936	Apr. 20, 1936	3.90	4,900		May 12, 1951	6.20	7,150
	Apr. 26, 1936	3.91	4,950				
	May 12, 1936	3.72	4,150				
				1952	Apr. 28, 1952	6.23	7,030
1937	May 5, 1937	3.62	3,850		May 19, 1952	5.54	4,640
	May 27, 1937	3.61	3,820				
				1953	Apr. 28, 1953	5.27	4,050
1938	Apr. 18, 1938	4.39	7,680		May 7, 1953	5.77	5,540
	May 1, 1938	4.07	5,730		May 19, 1953	5.75	5,480
	May 26, 1938	4.25	7,020		June 10, 1953	5.48	4,640
1939	May 4, 1939	3.54	4,500	1954	May 12, 1954	6.30	7,550
	May 16, 1939	3.23	3,550		May 20, 1954	6.99	11,000
1940	May 12, 1940	3.39	3,630	1955	May 21, 1955	5.90	6,550
					May 30, 1955	5.50	4,440
1941	May 17, 1941	3.24	3,290		June 12, 1955	5.68	5,510
					June 24, 1955	5.30	4,350
1942	Dec. 3, 1941	3.62	4,210				
	May 13, 1942	3.58	4,070	1956	Apr. 22, 1956	5.89	6,320
	May 27, 1942	4.23	6,320		May 11, 1956	5.54	5,590
	June 5, 1942	3.89	4,990		May 21, 1956	6.72	10,300
	June 28, 1942	3.82	4,700				
				1957	May 6, 1957	6.10	7,710
1943	Apr. 19, 1943	4.35	6,680				

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3085. Kootenai River at Boom Camp, near Bonners Ferry, Idaho

Location.--Lat 48°42'05", long 116°14'30", in NW¼ sec.29, T.62 N., R.2 E., on left bank 600 ft east of Boom Camp, 3½ miles upstream from Bonners Ferry, and 4 miles downstream from Moyie River.

Drainage area.--12,950 sq mi, approximately.

Gage.--Nonrecording prior to Aug. 23, 1934; recording thereafter. Prior to Oct. 8, 1934, at datum 54.08 ft higher. Datum of gage is 1,700.00 ft above mean sea level, levels by Topographic Branch in 1928. Datum of 1929, supplementary adjustment of 1947, is 0.04 ft higher.

Bankfull stage.--81 ft (road bed Great Northern RR.).

Remarks.--Stage station only. Gage heights affected by backwater from Kootenay Lake during high lake stages and occasionally by dike failure below station during floods. Records April 1925 to September 1927 in reports of Water Resources Division, Department of Northern Affairs and National Resources, Canada. Base stage, 65 ft.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1925	Apr. 13, 1925	68.08	-	1942	May 28, 1942	74.37	-
	May 23, 1925	73.98	-		June 9, 1942	71.11	-
	June 23, 1925	68.38	-		July 1, 1942	68.58	-
1926	May 2, 1926	64.38	-	1943	Apr. 21, 1943	70.66	-
					May 29, 1943	70.73	-
1927	Apr. 29, 1927	66.58	-		June 20, 1943	70.05	-
	May 18, 1927	68.48	-		July 4, 1943	68.13	-
	June 13, 1927	75.08	-				
				1944	June 1, 1944	64.06	-
1928	May 27, 1928	74.85	-				
	July 3, 1928	66.95	-	1945	June 3, 1945	70.08	-
					June 24, 1945	66.42	-
1929	May 25, 1929	69.19	-				
	June 4, 1929	69.74	-	1946	May 8, 1946	70.01	-
					May 31, 1946	75.29	-
1930	June 2, 1930	68.78	-				
	June 10, 1930	68.38	-	1947	May 11, 1947	76.22	-
					June 4, 1947	69.31	-
1931	May 17, 1931	67.00	-				
				1948	Oct. 21, 1947	66.06	-
1932	Feb. 29, 1932	72.09	-		Apr. 23, 1948	65.39	-
	May 14, 1932	70.06	-		May 28, 1948	79.87	-
	May 24, 1932	72.31	-				
	June 5, 1932	72.05	-	1949	May 15, 1949	75.71	-
	June 16, 1932	72.48	-				
				1950	May 16, 1950	72.00	-
1933	Apr. 28, 1933	65.95	-		May 29, 1950	70.78	-
	June 7, 1933	74.06	-		June 7, 1950	71.64	-
	June 19, 1933	76.85	-		June 23, 1950	78.21	-
1934	Dec. 23, 1933	66.53	-	1951	Feb. 12, 1951	a69.72	-
	Apr. 28, 1934	74.68	-		May 14, 1951	76.56	-
	May 18, 1934	73.03	-		May 26, 1951	75.66	-
	May 31, 1934	73.32	-		June 18, 1951	74.21	-
					July 7, 1951	68.91	-
1935	May 25, 1935	71.38	-				
	June 2, 1935	70.66	-	1952	Apr. 29, 1952	72.01	-
					May 21, 1952	70.63	-
1936	Apr. 26, 1936	65.83	-		June 7, 1952	68.13	-
	May 17, 1936	69.49	-		July 2, 1952	65.75	-
	June 2, 1936	69.42	-				
				1953	May 8, 1953	66.76	-
1937	May 29, 1937	68.16	-		May 20, 1953	68.75	-
	June 5, 1937	67.63	-		June 15, 1953	74.99	-
	June 19, 1937	67.28	-				
				1954	May 21, 1954	80.06	-
1938	Apr. 19, 1938	68.38	-		June 16, 1954	75.16	-
	May 2, 1938	67.59	-		July 4, 1954	74.43	-
	May 30, 1938	76.28	-				
	June 24, 1938	70.05	-	1955	May 22, 1955	69.72	-
					June 15, 1955	76.60	-
1939	May 5, 1939	66.45	-		June 26, 1955	75.68	-
	May 18, 1939	67.54	-				
	May 31, 1939	66.47	-	1956	Dec. 24, 1955	a67.62	-
					Apr. 23, 1956	68.50	-
1940	May 14, 1940	66.88	-		May 24, 1956	81.38	-
	May 27, 1940	68.57	-				
				1957	May 9, 1957	73.86	-
1941	May 17, 1941	64.87	-				
1942	May 14, 1942	68.26	-				

a Affected by ice jam.

3095. Kootenai River at Bonners Ferry, Idaho

Location.--Lat 48°42'00", long 116°18'45", in NE¼ sec.27, T.62 N., R.1 E., near right bank on downstream side of highway bridge at Bonners Ferry.

Drainage area.--13,000 sq mi, approximately.

Gage.--Nonrecording. After May 8, 1942, recording gage on left bank used as supplemental gage during high stages. Prior to June 13, 1933, various gages at different datums in general vicinity of present gage. Datum of gage is 1,743.00 ft above mean sea level (U.S. Coast and Geodetic Survey datum); gage readings have been reduced to elevations 1,700 ft above mean sea level.

Stage-discharge relation.--Stage-fall-discharge relation defined by current-meter measurements. Prior to 1934, discharges computed by various other special methods.

Bankfull stage.--River completely confined by dikes at high stages. Over the years additional bottomland has been reclaimed and dikes have been heightened. Dikes protect town of Bonners Ferry to stage of about 1,781 ft. Some drainage districts in Kootenai Valley would be inundated or dikes would fail at stages above 1,778 ft.

Historical data.--Flood of June 1894 reached an elevation of 1,777.2 ft (discharge not determined).

Remarks.--Only maximum daily discharges are listed on accompanying tabulation. Elevations listed are the maximum for period of rise. Elevations and discharge affected by failure of dikes above and below station at high stages some years. Gage-height records May 1904 to September 1927 are contained in reports of U.S. Weather Bureau, and those for April 1925 to September 1927 are in reports of Water Resources Division, Department of Northern Affairs and National Resources, Canada. Records for 1904-27 (gage heights only) not included in tabulation owing to control changes from dike construction and land reclamation. Backwater effect from Kootenay Lake present at Bonners Ferry. Base for partial-duration series, 31,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	77.2	-	1938	Apr. 19, 1938	63.47	56,000
					May 2, 1938	63.67	50,500
1928	Apr. 29, 1928	57.34	36,600		May 27, 1938	74.44	89,800
	May 25,27,1928	72.78	82,800		June 23, 1938	67.99	54,500
	July 3, 1928	63.29	45,900				
				1939	May 4,5, 1939	61.44	44,200
1929	May 25, 1929	65.46	62,700		May 18, 1939	63.56	50,200
	June 4, 1929	66.36	62,200		May 31, 1939	62.20	42,900
					June 23, 1939	58.86	33,500
1930	Apr. 27, 1930	56.87	32,500				
	May 22, 1930	58.39	33,700	1940	May 13, 1940	61.76	46,900
	June 2, 1930	64.96	59,200		May 26, 1940	65.06	55,100
	June 10, 1930	64.72	55,600		June 15, 1940	58.70	32,800
1931	May 17, 1931	62.36	49,400	1941	May 18, 1941	58.70	35,200
	June 4, 1931	58.09	31,900				
				1942	May 14, 1942	63.76	53,000
1932	May 14, 1932	67.53	64,500		May 27, 1942	72.00	81,000
	May 23, 1932	70.06	74,700		June 8, 1942	68.46	63,200
	June 5, 1932	69.84	73,700		July 1, 1942	65.12	53,800
	June 16, 1932	70.52	73,000				
				1943	Apr. 21, 1943	67.59	65,000
1933	Apr. 29, 1933	61.83	50,000		May 28,29, 1943	67.99	63,700
	June 6, 1933	72.30	80,900		June 19, 1943	67.31	59,400
	June 18, 1933	74.98	99,800		July 4, 1943	64.91	51,300
1934	Dec. 23, 1933	60.47	47,000	1944	June 1, 1944	57.02	31,100
	Apr. 29, 1934	73.04	87,800				
	May 18, 1934	70.38	69,100	1945	May 7, 1945	57.27	35,100
	May 31, 1934	71.45	73,900		June 2, 1945	67.04	61,300
					June 23,24, 1945	61.99	42,100
1935	May 7, 1935	58.02	35,500				
	May 24, 1935	68.67	69,000	1946	Apr. 21, 1946	55.82	31,800
					May 30, 1946	73.41	80,500
1936	Apr.23-25,1936	60.61	41,200				
	May 17, 1936	66.80	55,700	1947	May 11, 1947	74.31	88,200
	June 1, 1936	66.81	55,700		June 4, 1947	66.47	55,700
1937	May 6, 1937	56.32	32,000	1948	Oct. 20,21,1947	60.67	39,600
	May 28, 1937	64.69	52,300		Apr. 23, 1948	58.59	39,400
	June 4, 1937	64.30	47,900		May 28,29,1948	78.32	130,000
	June 19, 1937	63.90	46,100				

Peak stages and discharges of Kootenai River at Bonners Ferry, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Apr. 30, 1949	57.65	34,500	1953	May 8, 1953	61.49	45,800
	May 14,15,1949	73.84	81,700		May 20, 1953	66.39	53,500
					June 15, 1953	73.21	76,700
1950	May 15, 1950	69.52	68,800				
	May 29, 1950	67.96	63,100	1954	May 21, 1954	78.55	114,000
	June 7, 1950	69.30	65,700		June 16, 1954	73.25	79,600
	June 22,23,1950	76.98	90,100		July 3, 1954	72.48	76,200
1951	Feb. 11, 1951	63.41	32,000	1955	May 22, 1955	65.94	62,200
	May 13, 1951	74.86	83,800		June 15, 1955	74.80	85,600
	June 17, 1951	72.11	75,100		June 25, 1955	74.08	77,500
	July 7, 1951	66.14	50,400				
				1956	Apr. 22, 1956	64.69	54,100
1952	Apr. 29, 1952	69.30	69,700		May 22-24,1956	80.09	125,000
	May 21, 1952	68.00	61,100				
				1957	May 8, 1957	71.81	77,200
1953	Apr. 29, 1953	56.27	32,400				

Note.--Maximum gage height and maximum discharge frequently occur on different days.

3100. Kootenai River near Bonners Ferry, Idaho

Location.--Lat 48°41'55", long 116°20'40", in NW¼ sec.28, T.62 N., R.1 E., on left bank 1.6 miles downstream from highway bridge at Bonners Ferry.

Drainage area.--13,000 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,700 ft above mean sea level, levels by Topographic Branch in 1928. Datum of 1929, supplementary adjustment of 1947, is 0.02 ft higher at Bonners Ferry.

Bankfull stage.--78.5 ft (top of dike).

Remarks.--Stage station only. Gage heights affected by backwater from Kootenay Lake and occasionally by dike failure below station during floods. Base stage, 56 ft.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	May 28, 1928	72.22	-	1937	June 5, 1937	63.76	-
	July 4, 1928	62.79	-		June 19, 1937	63.56	-
1929	May 26, 1929	64.97	-	1938	Apr. 19, 1938	63.01	-
	June 4, 1929	65.78	-		May 3, 1938	63.09	-
					May 30, 1938	73.74	-
1930	Apr. 28, 1930	56.28	-		June 24, 1938	67.40	-
	May 22, 1930	57.78	-				
	June 2, 1930	64.15	-	1939	May 5, 1939	60.89	-
	June 10, 1930	64.14	-		May 18, 1939	62.98	-
					June 1, 1939	61.73	-
1931	May 17, 1931	61.92	-		June 25, 1939	58.38	-
	June 4, 1931	57.71	-				
	June 21, 1931	57.01	-	1940	May 14, 1940	61.14	-
					May 27, 1940	64.49	-
1932	Feb. 29, 1932	56.40	-		June 15, 1940	58.19	-
	May 15, 1932	66.87	-				
	May 24, 1932	69.43	-	1941	May 18, 1941	58.22	-
	June 5, 1932	69.26	-		June 4, 1941	56.07	-
	June 17, 1932	69.93	-				
				1942	Dec. 4, 1941	56.15	-
1933	Apr. 29, 1933	60.88	-		May 14, 1942	62.98	-
	June 10, 1933	71.69	-		May 28, 1942	71.28	-
	June 20, 1933	74.17	-		June 10, 1942	67.88	-
					July 3, 1942	64.51	-
1934	Dec. 23, 1933	59.44	-				
	Apr. 29, 1934	72.29	-	1943	Apr. 21, 1943	66.95	-
	May 19, 1934	69.74	-		May 29, 1943	67.30	-
	May 31, 1934	70.88	-		June 20, 1943	66.71	-
					July 5, 1943	64.35	-
1935	May 7, 1935	57.34	-				
	May 25, 1935	68.02	-	1944	June 3, 1944	56.50	-
1936	Apr. 26, 1936	60.01	-	1945	May 15, 1945	57.94	-
	May 17, 1936	66.23	-		June 3, 1945	66.37	-
	June 2, 1936	66.27	-		June 24, 1945	61.30	-
1937	May 29, 1937	64.07	-	1946	May 31, 1946	72.75	-

Peak stages and discharges of Kootenai River near Bonners Ferry, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	May 12, 1947	73.52	-	1952	Apr. 29, 1952	68.68	-
	June 4, 1947	65.85	-		May 22, 1952	67.46	-
1948	Oct. 21, 1947	60.07	-	1953	May 8, 1953	60.85	-
	Apr. 24, 1948	57.87	-		May 21, 1953	64.80	-
	May 28, 1948	76.84	-		June 16, 1953	72.64	-
1949	Apr. 30, 1949	57.18	-	1954	May 21, 1954	77.63	-
	May 16, 1949	73.23	-		June 17, 1954	72.70	-
					July 4, 1954	71.89	-
1950	May 16, 1950	68.83	-				
	May 29, 1950	67.43	-	1955	May 23, 1955	65.23	-
	June 7, 1950	68.69	-		June 15, 1955	74.25	-
	June 24, 1950	76.30	-		June 27, 1955	73.59	-
1951	Feb. 12, 1951	60.27	-	1956	Apr. 23, 1956	64.07	-
	May 14, 1951	74.22	-		May 24, 1956	78.94	-
	June 18, 1951	71.54	-				
	July 8, 1951	65.69	-	1957	May 9, 1957	71.19	-

3110. Deep Creek at Moravia, Idaho

Location.--Lat 48°38', long 116°24', in sec.18, T.61 N., R.1 E., on downstream side of right abutment of highway bridge, 1 mile downstream from Ruby Creek and 1 mile southwest of Moravia.

Drainage area.--133 sq mi. Area of lakes and ponds, 0.06 sq mi; mean elevation, 3,400 ft.

Gage.--Nonrecording. Prior to Aug. 2, 1949, at datum 2.00 ft higher. Altitude of gage is 1,800 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,300 cfs.

Bankfull stage.--Bridge at gage may constrict flow, depending on amount of bed deposition and debris collection, at gage heights above 6.4 ft, resulting in flow over road bypassing gage and control.

Remarks.--Only annual observed peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	May 8, 1928	2.60	612	1943	Apr. 16, 1943	4.10	1,100
1929	May 23, 1929	2.05	390	1944	Apr. 12, 1944	1.82	227
1930	Apr. 14, 1930	2.12	403	1945	May 6, 1945	4.46	1,280
1931	Apr. 8, 1931	2.20	360	1946	May 5, 1946	3.98	1,040
1932	Feb. 27, 1932	3.40	819	1947	May 8, 1947	3.36	778
1933	Apr. 28, 1933	3.66	975	1948	May 24, 1948	4.12	1,110
1934	Dec. 22, 1933	4.20	1,300	1949	May 12, 1949	4.30	905
1935	May 7, 1935	3.30	825	1950	May 15, 1950	6.42	1,500
1936	Apr. 25, 1936	3.65	920	1951	Feb. 11, 1951	6.80	1,200
1937	Apr. 15, 1937	3.40	830	1952	Apr. 27, 1952	6.98	1,400
1938	Apr. 18, 1938	4.20	1,260	1953	Apr. 28, 1953	6.58	1,090
1939	Apr. 29, 1939	2.40	450	1954	May 18, 1954	7.00	1,350
1940	Mar. 27, 1940	2.70	550	1955	May 20, 1955	6.20	804
1941	May 17, 1941	2.72	558	1956	Apr. 22, 1956	6.88	1,180
1942	Dec. 20, 1941	3.58	921	1957	May 6, 1957	6.89	1,100

3140. Kootenai River at Klockmann Ranch, near Bonners Ferry, Idaho

Location.--Lat 48°47'40", long 116°22'50", in SE¼ sec.19, T.63 N., R.1 E., on right bank 0.3 mile downstream from dike of drainage district No. 5 and 8 miles north of Bonners Ferry.

Drainage area.--13,300 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,700.00 ft above mean sea level, levels by Topographic Branch in 1928. Datum of 1929, supplementary adjustment of 1947, is 0.03 ft higher.

Bankfull stage.--River completely confined by dikes at high stages to about 77 ft. Some drainage districts in Kootenai Valley would be inundated or dikes would fail at stages somewhat lower.

Remarks.--Stage station only. Gage heights affected by backwater from Kootenay Lake and by failure of dikes above and below station at high stages some years. Base stage, 54 ft.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 26, 1929	62.56	-	1942	May 28, 1942	68.46	-
	June 10, 1929	63.57	-		June 10, 1942	65.64	-
					July 3, 1942	62.43	-
1930	Apr. 28, 1930	54.66	-				
	May 22, 1930	56.33	-	1943	Apr. 21, 1943	64.20	-
	June 2, 1930	61.96	-		May 29, 1943	64.75	-
	June 10, 1930	62.21	-		June 20, 1943	64.51	-
1931	May 18, 1931	60.03	-	1944	June 3, 1944	54.70	-
	June 4, 1931	56.26	-				
	June 21, 1931	55.66	-	1945	May 15, 1945	55.99	-
					June 3, 1945	64.01	-
1932	May 15, 1932	64.60	-		June 24, 1945	59.58	-
	May 24, 1932	66.81	-				
	June 6, 1932	66.78	-	1946	May 31, 1946	70.03	-
	June 17, 1932	67.66	-				
				1947	May 12, 1947	70.58	-
1933	Apr. 29, 1933	58.76	-		June 4, 1947	63.92	-
	June 10, 1933	69.11	-				
	June 20, 1933	71.24	-	1948	Oct. 21, 1947	57.30	-
					Apr. 23, 1948	55.74	-
1934	Dec. 23, 1933	57.25	-		May 28, 1948	73.82	-
	Apr. 29, 1934	69.4	-				
	May 19, 1934	67.32	-	1949	Apr. 30, 1949	55.17	-
	May 31, 1934	68.47	-		May 16, 1949	70.35	-
1935	May 7, 1935	55.55	-	1950	May 16, 1950	66.10	-
	May 25, 1935	65.54	-		June 7, 1950	66.34	-
	June 16, 1935	65.70	-		June 24, 1950	73.40	-
1936	Apr. 26, 1936	58.02	-	1951	Feb. 12, 1951	57.86	-
	May 17, 1936	64.21	-		May 14, 1951	71.35	-
	June 2, 1936	64.46	-		June 18, 1951	69.12	-
					July 8, 1951	63.84	-
1937	May 29, 1937	62.13	-				
	June 5, 1937	61.98	-	1952	Apr. 29, 1952	66.21	-
	June 19, 1937	61.87	-		May 22, 1952	65.81	-
1938	Apr. 19, 1938	60.60	-	1953	May 9, 1953	58.76	-
	May 3, 1938	61.13	-		May 21, 1953	62.75	-
	May 30, 1938	70.95	-		June 16, 1953	70.19	-
1939	May 5, 1939	58.92	-	1954	May 23, 1954	74.54	-
	May 19, 1939	61.03	-		June 17, 1954	70.32	-
	June 1, 1939	59.96	-		July 4, 1954	69.60	-
	June 25, 1939	56.66	-				
				1955	May 23, 1955	62.95	-
1940	May 14, 1940	58.98	-		June 15, 1955	71.69	-
	May 27, 1940	62.33	-		June 27, 1955	71.33	-
1941	May 18, 1941	56.43	-	1956	Apr. 23, 1956	61.78	-
	June 4, 1941	54.45	-		May 24, 1956	75.89	-
1942	Dec. 4, 1941	54.57	-	1957	May 9, 1957	68.66	-
	May 14, 1942	60.53	-				

3185. Kootenai River near Copeland, Idaho
(Published as "at Copeland" 1927-29)
(International gaging station)

Location.--Lat 48°54'45", long 116°25'00", in NW¼NW¼SW¼ sec.12, T.64 N., R.1 W., on right bank at Andrews Ranch, three-quarters of a mile downstream from Mission Creek and 1½ miles northwest of Copeland.

Drainage area.--13,400 sq mi, approximately.

Gage.--Prior to Nov. 20, 1929, nonrecording or recording at site three-quarters of a mile upstream; recording thereafter at present site. Datum of gage is 1,700.00 ft above mean sea level, referred to bench mark T-10-1914, elevation, 1,791.49 ft (datum of 1929, supplementary adjustment of 1947, is 0.04 ft higher).

Stage-discharge relation.--Stage-fall-discharge relation defined by current-meter measurements. Discharge sometimes computed by other special methods.

Bankfull stage.--River completely confined by dikes at high stages to about 72.5 ft. Some drainage districts in Kootenai Valley would be inundated or dikes would fail at stages somewhat lower.

Remarks.--Only maximum daily discharges are listed. Gage heights and discharge affected by failure of dikes above and below station at high stages some years; also affected by backwater from Kootenay Lake. Records April 1925 to September 1927 in reports of Water Resources Division, Department of Northern Affairs and National Resources, Canada. Base for partial-duration series, 32,000 cfs. This station is maintained by the United States under agreement with Canada.

Peak stages and discharges

Water year	Date	Gage height (feet)	Daily discharge (cfs)
1925	Apr. 14, 1925	56.27	-
	May 24, 1925	65.17	-
	June 24, 1925	60.72	-
1926	May 3, 1926	52.60	-
1927	Apr. 29, 1927	53.97	-
	May 19, 1927	57.82	-
	June 14, 1927	66.17	-
	Sept.16, 1927	52.74	-
1928	Apr. 30, 1928	52.07	-
	May 29, 1928	66.70	-
	July 4, 1928	58.89	-
1929	May 26, 1929	59.20	58,100
	June 5, 1929	60.30	58,400
	June 16, 1929	61.08	-
1930	Apr. 27, 1930	52.37	33,300
	May 22, 1930	54.12	34,100
	June 3, 1930	58.65	60,200
	June 10, 1930	59.32	55,200
1931	May 17, 1931	57.15	50,000
	June 4, 1931	54.35	32,400
1932	May 14,15, 1932	61.38	64,400
	May 23, 1932	63.44	74,500
	June 5, 1932	63.37	73,500
	June 16, 1932	64.53	73,100
1933	Apr. 29, 1933	55.29	50,700
	June 7, 1933	65.77	80,400
	June 19, 1933	67.98	90,500
1934	Dec. 23, 1933	54.00	43,300
	Apr. 29, 1934	65.32	86,000
	May 18, 1934	64.01	70,400
	May 31, 1934	65.31	73,200
1935	May 7,8, 1935	52.93	36,400
	May 25, 1935	62.02	67,100
	June 16, 1935	63.10	-
1936	Apr. 26, 1936	55.21	43,400
	May 17, 1936	61.28	57,700
1936	June 1, 1936	61.87	55,900
1937	May 6, 1937	51.13	33,100
	May 29, 1937	59.20	52,300
	June 5, 1937	59.38	48,600
	June 19, 1937	59.40	47,400
1938	Apr. 19, 1938	56.99	53,700
	May 3, 1938	58.25	50,500
	May 29, 1938	67.88	87,400
1939	May 5, 1939	56.13	44,800
	May 18, 1939	58.30	49,200
	June 1, 1939	57.54	42,600
	July 3, 1939	54.32	34,300
1940	May 14, 1940	55.89	46,800
	May 27, 1940	59.37	53,400
1941	May 18, 1941	54.00	36,500
1942	May 14, 1942	57.15	53,000
	May 28, 1942	64.72	80,000
	June 10, 1942	62.65	64,200
	July 1,2, 1942	59.59	54,000
1943	Apr. 21, 1943	60.58	66,500
	May 29, 1943	61.34	65,300
	June 20, 1943	61.40	60,900
1944	June 2, 1944	52.40	32,300
	June 15, 1944	52.60	-
1945	May 15, 1945	53.34	37,000
	June 3, 1945	60.79	59,700
	June 24, 1945	56.92	43,800
1946	May 31, 1946	66.49	80,900
1947	May 11,12, 1947	66.47	88,300
	June 4, 1947	61.07	55,500
1948	Oct. 21, 1947	55.05	40,200
	Apr. 24, 1948	52.53	39,900
	May 30, 1948	70.10	124,000
1949	Apr. 30, 1949	52.37	34,900

Peak stages and discharges of Kootenai River near Copeland, Idaho--Continued

Water year	Date	Gage height (feet)	Daily discharge (cfs)	Water year	Date	Gage height (feet)	Daily discharge (cfs)
1949	May 15, 1949	66.38	83,800	1953	May 21, 1953	59.47	54,700
					June 15,16, 1953	66.56	77,500
1950	May 16, 1950	61.93	72,900				
	June 7, 1950	62.77	66,200	1954	May 23, 1954	70.47	99,900
	June 24, 1950	69.95	90,800		June 17, 1954	66.83	78,500
					July 4, 1954	66.23	75,300
1951	Feb. 11, 1951	54.36	33,500				
	Feb. 14, 1951	66.99	86,900	1955	May 22,23, 1955	59.10	60,300
	Feb. 26, 1951	67.17	-		June 15, 1955	67.84	86,500
	June 18, 1951	65.29	74,900		June 26, 1955	67.93	80,000
	July 7,8,1951	60.84	53,500				
				1956	Apr. 23, 1956	58.02	58,000
1952	Apr. 29, 1952	61.97	70,700		May 26, 1956	71.78	112,000
	May 21, 1952	62.11	64,600				
				1957	May 8,9, 1957	64.57	79,500
1953	Apr. 29, 1953	50.42	33,700		May 21, 1957	64.77	-
	May 8, 1953	55.44	46,800				

Note.--Maximum gage height and maximum discharge frequently occurr on different days.

3205. Long Canyon Creek near Porthill, Idaho

Location.--Lat 48°57', long 116°32', in NW¼ sec.36, T.65 N., R.2 W., on right bank 200 ft below U.S. Forest Service bridge at mouth of canyon and 4 miles southwest of Porthill.

Drainage area.--29 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 5,260 ft.

Gage.--Nonrecording prior to Mar. 20, 1930; recording thereafter except May 1 to Oct. 11, 1956. At several nearby sites at different datums prior to Nov. 16, 1948. At site 200 ft upstream at datum 14.77 ft higher July 25, 1951, to June 12, 1955. At sites within 200 ft at different datums June 13, 1955, to Apr. 30, 1956. Altitude of present gage is 1,830 ft (by barometer).

Stage-discharge relation.--Channel consists of loose gravel and boulders, which shift and move readily during high flows. Numerous and dissimilar stage-discharge relation curves throughout period of record. The majority are fairly well defined by current-meter measurements below 400 cfs. Peak of 1948 defined by slope-area measurement. Highest current-meter measurement at 526 cfs.

Bankfull stage.--Steep mountain stream, not subject to overflow.

Remarks.--Base for partial-duration series, 380 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	May 18, 1928	2.87	448	1938	Apr. 18, 1938	3.91	567
					May 25, 1938	4.38	938
1929	May 23, 1929	3.00	580		June 5, 1938	3.83	572
1930	Apr. 24, 1930	2.81	347	1939	May 3, 1939	3.35	402
					May 15, 1939	3.47	455
1931	May 14, 1931	3.08	598				
				1940	May 11, 1940	3.34	375
1932	May 12, 1932	4.16	466				
	May 20, 1932	4.01	538	1941	May 17, 1941	3.90	580
1933	June 4, 1933	3.98	646	1942	Dec. 2, 1941	4.42	478
	June 15, 1933	6.55	950		May 25, 1942	4.71	568
1934	Apr. 28, 1934	4.26	818	1943	May 26, 1943	4.63	544
	May 15, 1934	3.97	569		June 9, 1943	4.19	410
	May 27, 1934	4.09	643		June 17, 1943	4.93	640
1935	May 22, 1935	4.01	637	1944	May 15, 1944	2.87	216
	May 30, 1935	3.97	609				
				1945	May 30, 1945	3.72	456
1936	May 14, 1936	3.98	616				
				1946	May 25, 1946	3.64	435
1937	May 27, 1937	3.79	497				
	June 2, 1937	4.00	644	1947	May 8, 1947	4.02	569
	June 19, 1937	3.87	553		May 26, 1947	3.24	435

Peak stages and discharges of Long Canyon Creek near Porthill, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Oct. 19, 1947	4.54	694	1953	May 19, 1953	4.58	399
	May 27, 1948	6.75	1,300		June 2, 1953	4.57	423
1949	May 13, 1949	5.35	570		June 13, 1953	4.72	530
1950	Nov. 27, 1949	4.85	660	1954	May 19, 1954	5.52	827
	June 5, 1950	3.49	582		June 15, 1954	5.12	494
	June 20, 1950	3.16	726		June 23, 1954	5.09	473
	June 30, 1950	2.14	455		July 1, 1954	5.10	480
1951	May 12, 1951	2.21	382	1955	June 12, 1955	5.94	1,240
	May 23, 1951	2.29	442		June 22, 1955	3.40	1,180
	June 14, 1951	2.21	466	1956	May 24, 1956	-	900
	June 24, 1951	2.35	586	1957	May 6, 1957	-	520
1952	May 18, 1952	4.61	399				

3210. Smith Creek near Porthill, Idaho

Location.--Lat 48°57'40", long 116°33'20", in NE¼ sec.26, T.65 N., R.2 W., on right bank at U.S. Forest Service bridge, 1 mile south of Smith Creek ranger station and 4 miles southwest of Porthill.

Drainage area.--70 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 5,100 ft.

Gage.--Nonrecording at site 40 ft downstream at datum 0.98 ft lower prior to Apr. 20, 1929; recording at present site thereafter. At datum 1.69 ft higher Apr. 20, 1929, to Sept. 30, 1956. Altitude of gage is 1,770 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,700 cfs and extended on basis of logarithmic plotting.

Bankfull stage.--Steep mountain stream, not subject to overflow.

Remarks.--Base for partial-duration series, 1,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1928	May 18, 1928	8.46	1,340	1942	May 23, 1942	5.48	1,430
1929	May 22, 1929	5.35	1,480	1943	May 26, 1943	5.60	1,550
1930	Apr. 24, 1930	4.95	1,210		June 17, 1943	6.00	1,870
1931	May 14, 1931	5.45	1,560	1944	May 9, 1944	4.42	830
1932	May 20, 1932	5.58	1,490	1945	May 31, 1945	-	1,500
1933	May 26, 1933	5.50	1,420	1946	May 25, 1946	5.88	1,870
	June 4, 1933	5.68	1,570		June 6, 1946	5.86	1,890
	June 14, 1933	7.15	3,060	1947	May 8, 1947	5.64	1,610
1934	Apr. 28, 1934	6.20	1,960	1948	Oct. 19, 1947	6.32	2,040
	May 15, 1934	5.56	1,440		May 27, 1948	7.37	2,480
	May 25, 1934	5.51	1,400	1949	May 13, 1949	6.42	2,210
1935	May 22, 1935	5.61	1,520		May 17, 1949	6.63	2,400
	May 30, 1935	5.48	1,440	1950	Nov. 27, 1949	7.03	2,600
1936	May 14, 1936	5.58	1,470		June 5, 1950	5.49	1,430
1937	June 19, 1937	5.68	1,550		June 22, 1950	6.26	1,910
1938	Apr. 18, 1938	6.30	2,050	1951	May 11, 1951	5.63	1,520
	May 25, 1938	6.35	2,100		May 17, 1951	5.48	1,430
1939	May 15, 1939	5.50	1,400		May 23, 1951	5.67	1,540
1940	May 11, 1940	5.44	1,330		June 24, 1951	5.98	1,730
1941	May 17, 1941	7.36	3,150	1952	May 20, 1952	5.73	1,490
1942	Dec. 2, 1941	7.00	2,750	1953	May 19, 1953	6.18	1,840
					June 2, 1953	5.53	1,490
					June 13, 1953	6.90	2,430

Peak stages and discharges of Smith Creek near Porthill, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1954	May 11, 1954	5.26	1,510	1955	June 23, 1955	7.65	3,810
	May 19, 1954	6.40	2,570				
	June 13, 1954	5.76	1,920	1956	Oct. 26, 1955	5.12	1,460
	June 15, 1954	6.08	2,280		May 20, 1956	6.37	2,560
	June 22, 1954	5.22	1,590		May 31, 1956	6.03	2,210
	July 1, 1954	5.34	1,680		June 10, 1956	5.99	2,150
	July 10, 1954	4.98	1,420	1957	May 5, 1957	7.17	1,790
1955	May 30, 1955	5.26	1,530		May 19, 1957	7.02	1,670
	June 12, 1955	6.38	2,500				

3215. Boundary Creek near Porthill, Idaho
(International gaging station)

Location.--Lat 48°59'50", long 116°34'05", in SW¼ sec.11, T.65 N., R.2 W., on left bank near mouth of canyon, 0.2 mile south of international boundary and 3 miles west of Porthill.

Drainage area.--97 sq mi, approximately. Area of lakes and ponds, 0.25 sq mi; mean elevation, 4,650 ft.

Gage.--Recording. Altitude of gage is 1,770 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,900 cfs and extended on basis of logarithmic plotting.

Bankfull stage.--Steep mountain stream, not subject to overflow.

Remarks.--Base for partial-duration series, 1,300 cfs. This station is maintained by the United States under agreement with Canada.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 23, 1929	4.02	1,300	1946	May 26, 1946	4.83	1,970
					June 6, 1946	4.40	1,650
1930	May 20, 1930	3.61	1,020	1947	May 7, 1947	4.54	1,700
1931	May 13, 1931	4.03	1,320		May 26, 1947	4.07	1,330
1932	May 12, 1932	4.26	1,510	1948	Oct. 19, 1947	4.64	1,790
	May 20, 1932	4.44	1,680		May 28, 1948	5.34	2,530
	June 2, 1932	3.98	1,310				
	June 13, 1932	4.02	1,310	1949	May 13, 1949	4.89	2,120
					May 17, 1949	4.86	2,090
1933	May 26, 1933	4.43	1,680				
	June 4, 1933	4.62	1,860	1950	June 5, 1950	4.17	1,410
	June 15, 1933	5.22	2,400		June 22, 1950	4.92	2,250
1934	Apr. 28, 1934	4.66	1,760	1951	May 12, 1951	4.44	1,620
	May 15, 1934	4.20	1,370		May 17, 1951	4.27	1,490
					May 23, 1951	4.35	1,550
1935	May 22, 1935	4.45	1,600		June 24, 1951	4.06	1,320
	May 30, 1935	4.25	1,440				
				1952	May 20, 1952	4.37	1,540
1936	May 14, 1936	4.37	1,490				
				1953	May 19, 1953	4.34	1,590
1937	June 2, 1937	4.07	1,320		May 30, 1953	4.20	1,480
					June 13, 1953	4.94	2,270
1938	May 25, 1938	5.12	2,270				
				1954	May 11, 1954	4.25	1,520
1939	May 15, 1939	4.13	1,400		May 19, 1954	5.16	2,350
					May 25, 1954	4.50	1,720
1940	May 11, 1940	4.01	1,200		June 4, 1954	4.25	1,500
					June 15, 1954	4.82	1,930
1941	May 17, 1941	5.1	2,300		June 22, 1954	4.15	1,380
1942	May 23, 1942	4.50	1,610	1955	May 30, 1955	4.06	1,360
					June 13, 1955	5.11	2,460
1943	May 26, 1943	4.45	1,630		June 23, 1955	5.80	3,280
	June 17, 1943	5.05	2,400				
				1956	May 20, 1956	5.24	2,610
1944	May 15, 1944	3.23	746		June 10, 1956	4.36	1,660
1945	May 31, 1945	4.54	1,840	1957	May 5, 1957	4.48	1,810
1946	May 6, 1946	4.07	1,340				

3220. Kootenai River at Porthill, Idaho
(International gaging station)

Location.--Lat 49°00'00", long 116°30'10", in SW¼ sec.8, T.65 N., R.1 W., on right bank 300 ft south of international boundary at Porthill.

Drainage area.--13,700 sq mi, approximately. Area of lakes and ponds, 42 sq mi; mean elevation, 4,710 ft.

Gage.--Nonrecording at approximately same site prior to May 17, 1928; recording thereafter. Datum of gage is 1,700 ft above mean sea level referred to bench mark "10-M 1928", at elevation 1,767.68 ft. Datum of 1929, supplementary adjustment of 1947, and datum of Geodetic Survey of Canada, Pub. 24, 1951 edition, are 0.03 ft higher.

Bankfull stage.--River confined by dikes to elevation of about 1,768 ft at station.

Remarks.--Only maximum daily discharges given. Elevations and discharges affected by failure of dikes above and below station at high stages some years. Elevations affected by backwater from Kootenay Lake. Daily discharge represents entire flow passing international boundary, and is computed by adding tributary inflow, including that of Boundary Creek, to flow at station near Copeland and correcting for storage change in channel and flooded areas between stations near Copeland and at Porthill. Records October 1924 to September 1927 in reports of Water Resources Division, Department of Northern Affairs and National Resources, Canada. This station is maintained by the United States under agreement with Canada. Base for partial-duration series, 33,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Daily discharge (cfs)	Water year	Date	Gage height (feet)	Daily discharge (cfs)
1894	-	72.7	-	1936	June 1, 1936	59.41	56,900
1925	Apr. 14, 1925	53.94	-	1937	May 6, 1937	48.92	34,100
	May 26, 1925	62.43	-		May 29, 1937	56.39	54,300
	June 25, 1925	58.67	-		June 19, 1937	57.05	49,600
1926	May 5, 1926	50.66	-	1938	Apr. 19, 1938	53.39	55,800
					May 3, 1938	55.41	52,400
1927	May 1, 1927	50.70	-		May 29, 1938	64.08	91,100
	May 19, 1927	54.78	-				
	June 17, 1927	62.49	-	1939	May 5, 1939	53.45	46,800
	Sept.16, 1927	50.64	-		May 18, 1939	55.68	51,100
					June 25, 1939	52.51	34,600
1928	Apr. 30, 1928	49.59	34,500				
	May 27,28, 1928	63.32	83,000	1940	May 14, 1940	52.96	48,500
	July 4, 1928	56.74	45,000		May 26,27, 1940	56.49	54,600
1929	May 26, 1929	55.76	59,000	1941	May 18, 1941	51.79	38,800
	June 5, 1929	57.18	59,500				
	June 16, 1929	58.62	-	1942	May 14, 1942	53.99	54,300
					May 28, 1942	60.58	81,900
1930	Apr. 27, 1930	50.47	35,000		June 10, 1942	59.45	65,600
	May 22, 1930	52.21	35,000		July 1, 1942	56.95	54,900
	June 3, 1930	55.63	61,200				
	June 10, 1930	56.73	55,400	1943	Apr. 21, 1943	56.64	68,200
	June 13, 1930	56.77	-		May 29, 1943	57.89	68,000
					June 20, 1943	58.39	63,200
1931	May 17, 1931	54.48	52,000				
	June 4, 1931	52.69	33,200	1944	June 2, 1944	50.43	33,300
					June 15, 1944	50.78	-
1932	May 14, 1932	58.06	67,300				
	May 23, 1932	59.79	77,200	1945	May 15, 1945	50.99	39,100
	June 5, 1932	59.88	75,400		June 2, 1945	57.91	62,300
	June 18, 1932	61.37	-		June 24, 1945	54.59	44,700
1933	Apr. 29, 1933	52.04	52,300	1946	May 31, 1946	62.62	83,300
	June 7, 1933	61.97	83,200				
	June 19, 1933	63.92	93,200	1947	May 11, 1947	62.09	91,100
1934	Dec. 23, 1933	50.84	44,400	1948	Oct. 21, 1947	52.40	41,300
	Apr. 29, 1934	61.04	89,300		Apr. 24, 1948	49.69	40,400
	May 18, 1934	60.64	72,400		June 1, 1948	66.16	125,000
	May 30, 1934	61.97	74,900				
				1949	Apr. 30, 1949	50.01	35,900
1935	May 7, 1935	50.68	37,800		May 16, 1949	61.98	86,800
	May 24, 1935	58.38	69,400				
	June 17, 1935	60.56	-	1950	May 16,17, 1950	57.62	74,100
					June 7, 1950	59.41	67,900
1936	Apr. 25, 1936	52.60	45,400		June 23, 1950	65.44	91,600
	May 17, 1936	58.49	59,800				

Peak stages and discharges of Kootenai River at Porthill, Idaho--Continued

Water year	Date	Gage height (feet)	Daily discharge (cfs)	Water year	Date	Gage height (feet)	Daily discharge (cfs)
1951	Feb. 11, 1951	51.57	33,300	1954	May 22,23, 1954	65.17	102,000
	May 14, 1951	62.20	88,600		July 4, 1954	62.58	76,900
	May 26, 1951	63.11	-				
	June 18, 1951	61.40	75,900	1955	May 23, 1955	55.40	61,300
	July 8, 1951	58.19	54,000		June 15, 1955	63.46	88,700
					June 26,27, 1955	64.13	81,700
1952	Apr. 29, 1952	57.86	71,200				
	May 21, 1952	58.86	66,500	1956	Apr. 23, 1956	54.55	58,800
					May 28, 1956	-	114,000
1953	Apr. 30, 1953	47.64	34,300		June 5, 1956	67.53	-
	May 9, 1953	52.29	47,700				
	May 21, 1953	56.34	56,600	1957	May 9, 1957	60.15	82,300
	June 16, 1953	62.59	79,200		May 21, 1957	61.19	-

Note.--Maximum gage height and maximum discharge frequently occur on different days.

COLUMBIA RIVER MAIN STEM

3230. Columbia River at Birchbank, British Columbia
(Published as "at Trail, British Columbia" prior to May 1937)
(International gaging station)

Location.--Lat 49°10', long 117°43', on right bank at Birchbank, British Columbia, 7 miles upstream from Trail, 11 miles downstream from Kootenay River, and 17 miles upstream from international boundary.

Drainage area.--34,000 sq mi, approximately. Area of lakes and ponds, 418 sq mi; mean elevation, 4,920 ft.

Gage.--Nonrecording at site 7 miles downstream at datum 16.27 ft lower prior to Oct. 1, 1937; recording thereafter. Datum of gage is 1,329.90 ft above mean sea level, 1947 international joint adjustment; published as 1,338.00 ft prior to 1949.

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--For water years 1913-37, maximum daily discharges are used. Station maintained by Canada under agreement with the United States. Prior to 1930, all records were furnished by Dominion Water and Power Bureau of Canada. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	June 14, 1913	41.60	312,000	1936	June 4, 1936	37.72	271,000
1914	July 16, 1914	33.80	222,000	1937	June 25, 1937	29.92	183,000
1915	July 11, 1915	26.90	149,000				
				1938	June 27, 1938	40.00	260,000
1916	June 30, 1916	40.60	306,000	1939	June 1, 1939	33.63	196,000
1917	July 8, 1917	33.95	224,000	1940	May 29, 1940	34.06	197,000
1918	June 26, 1918	38.40	274,000				
1919	June 29, 1919	34.45	229,000	1941	June 19, 1941	29.10	153,000
1920	July 19, 1920	37.40	263,000	1942	June 11, 1942	35.50	208,000
				1943	July 12, 1943	35.29	206,000
1921	June 13, 1921	37.95	270,000	1944	June 14, 1944	29.80	159,000
1922	June 17, 1922	35.45	244,000	1945	June 10, 1945	34.44	198,000
1923	June 16, 1923	36.38	253,000				
1924	May 26, 1924	31.12	199,000	1946	June 6, 1946	41.02	267,000
1925	May 27, 1925	35.60	245,000	1947	June 14, 1947	37.92	236,000
				1948	June 11, 1948	50.62	370,000
1926	July 12, 1926	24.92	138,000	1949	May 24, 1949	35.27	210,000
1927	June 19, 1927	36.92	258,000	1950	June 24, 1950	46.53	325,000
1928	May 30, 1928	40.75	306,000				
1929	June 16, 1929	33.5	224,000	1951	May 27, 1951	37.22	229,000
1930	June 14, 1930	30.23	189,000	1952	June 10, 1952	36.37	221,000
				1953	June 17, 1953	40.14	250,000
1931	June 13, 1931	30.18	189,000	1954	July 12, 1954	45.70	326,000
1932	June 25, 1932	37.0	270,000	1955	June 29, 1955	45.55	324,000
1933	June 23, 1933	39.2	288,000				
1934	June 2, 1934	37.98	274,000	1956	June 7, 1956	47.37	334,000
1935	June 20, 1935	35.02	238,000	1957	May 24,25, 1957	40.36	260,000

3255. Flint Creek near Southern Cross, Mont.

Location.--Lat 46°14'00", long 133°17'40", in SE¼NW¼ sec.36, T.6 N., R.14 W., on left wing of weir half a mile downstream from powerplant, 2 miles downstream from Georgetown Lake, 3 miles northwest of Southern Cross, and 6 miles south of Philipsburg.

Drainage area.--52.6 sq mi.

Gage.--Nonrecording gage and Cippoletti weir. Altitude of gage is 5,630 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 160 cfs.

Remarks.--Flow completely regulated by Georgetown Lake. Flow may be augmented by transbasin diversion from Silver Lake to Georgetown Lake or reduced by pumping from Georgetown Lake to Silver Lake.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	Oct. 1-15, 1940	0.85	32	1949	May 6-11, 1949	1.68	124
1942	June 13, 1942	1.86	174	1950	(a)	.82	30
1943	Mar. 15, 1943	1.78	146				
1944	June 9, 1944	1.73	137	1951	July 11, 1951	1.65	168
1945	Dec. 1-7, 9-17, 1944	-	40	1952	July 14, 1952	1.65	116
				1953	June 17-19, 1953	1.78	130
				1954	June 12, 1954	.88	34
1946	Feb. 25, 1946	.83	32	1955	July 25-30, 1955	.98	43
1947	June 19-23, 1947	1.22	53				
1948	June 4 to July 6, 1948	1.78	146	1956	June 2-17, 1956	-	32
				1957	May 28-30, 1957	.94	38

a Occurred June 1-18, July 8 to Sept. 30, 1950.

3265. Trout Creek near Southern Cross, Mont.

Location.--Lat 46°16'40", long 113°20'50", in W½NW¼ sec.15, T.6 N., P.14 W., on right bank a quarter of a mile upstream from mouth, 4½ miles southwest of Philipsburg, and 6½ miles northwest of Southern Cross.

Drainage area.--34.8 sq mi.

Gage.--Recording. Altitude of gage is 5,270 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 95 cfs and extended above.

Remarks.--Diversions above station for irrigation of about 4,000 acres, of which 1,500 acres lie below station. During irrigation season flow is supplemented by water from East Fork Rock Creek which is diverted in sec.5, T.4 N., R.14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Mar. 26, 1946	4.06	107	1950	Apr. 1, 1950	4.36	159
1947	Mar. 15, 1947	4.24	130				
1948	Apr. 16, 1948	5.67	331	1951	Feb. 10, 1951	4.58	196
1949	Apr. 11, 1949	4.55	189				

3295. Flint Creek at Maxville, Mont.

Location.--Lat 46°28'00", long 113°14'30", in NW¼ sec.9, T.8 N., R.13 W., on right bank 0.4 mile west of Maxville and 1 mile upstream from Boulder Creek.

Drainage area.--208 sq mi.

Gage.--Recording. Datum of gage is 4,828.44 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 600 cfs and extended above.

Remarks.--Diversions for irrigation of about 8,200 acres above station. During irrigation season flow is supplemented by water from East Fork Rock Creek which is diverted in sec.5, T.4 N., R.12 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Some regulation by Georgetown Lake. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1942	May 27, 1942	5.10	820	1951	Feb. 10, 1951	4.19	480
1943	Mar. 28, 1943	6.79	1,680	1952	May 16, 1952	4.23	438
1944	Mar. 9, 1944	3.93	364	1953	June 3, 1953	5.25	648
1945	June 22, 1945	3.00	186	1954	June 5, 1954	3.27	226
				1955	June 30, 1955	4.93	569
1946	June 24, 1946	3.41	245				
1947	June 10, 1947	3.75	318	1956	Mar. 24, 1956	5.16	638
1948	Apr. 17, 1948	5.87	1,280	1957	May 20, 1957	4.35	426
1949	Apr. 8, 1949	4.74	710				
1950	June 18, 1950	4.00	415				

3300. Boulder Creek at Maxville, Mont.

Location.--Lat 46°28'30", long 113°14'00", in SE¼ sec.4, T.8 N., R.13 W., on right bank an eighth of a mile upstream from mouth and three-quarters of a mile north of Maxville.

Drainage area.--71.3 sq mi. Area of lakes and ponds, 0.2 sq mi; mean elevation, 6,980 ft.

Gage.--Nonrecording at site 75 ft upstream at different datum; recording thereafter. Altitude of gage is 4,750 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 550 cfs.

Remarks.--Bypass diversion for irrigation of about 350 acres below station. Base for partial-duration series, 150 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	May 11, 1940	2.30	204	1946	May 28, 1946	2.89	253
	May 25, 1940	2.10	176				
				1947	May 9, 1947	3.42	440
1941	June 4, 1941	2.00	206		May 27, 1947	2.58	176
					June 3, 1947	2.68	197
1942	May 26, 1942	4.04	646		June 9, 1947	3.08	316
	June 7, 1942	3.67	500		June 14, 1947	2.94	271
	June 15, 1942	3.01	276		June 18, 1947	3.20	356
	June 26, 1942	2.73	200				
				1948	May 21, 1948	3.82	588
1943	May 31, 1943	3.31	369		May 28, 1948	3.74	556
	June 14, 1943	3.37	390		June 3, 1948	4.24	763
	June 20, 1943	3.80	558		June 11, 1948	3.29	387
	July 4, 1943	3.17	340		June 16, 1948	2.87	254
					June 22, 1948	3.06	311
1944	May 18, 1944	2.92	251		July 1, 1948	2.76	224
	June 2, 1944	2.97	265				
	June 9, 1944	3.23	356	1949	May 16, 1949	3.08	334
	June 18, 1944	2.92	273		May 21, 1949	2.96	293
	June 28, 1944	2.90	267		June 1, 1949	2.98	299
					June 6, 1949	3.01	308
1945	May 31, 1945	2.97	267		June 19, 1949	2.38	151
	June 11, 1945	2.74	203				
	June 23, 1945	2.91	245	1950	June 1, 1950	2.37	150

Peak stages and discharges of Boulder Creek at Maxville, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1950	June 6, 1950	2.90	275	1953	June 18, 1953	3.62	534
	June 18, 1950	3.52	495		July 1, 1953	2.73	225
	June 21, 1950	3.25	396	1954	May 20, 1954	2.85	275
1951	May 12, 1951	2.78	242		June 28, 1954	2.52	167
	May 24, 1951	3.28	406	1955	May 22, 1955	2.40	154
	May 28, 1951	3.20	378		June 12, 1955	3.00	325
	June 16, 1951	3.27	410		June 16, 1955	3.01	325
1952	May 3, 1952	2.58	187		June 29, 1955	3.02	322
	May 14, 1952	2.57	185		July 11, 1955	2.71	225
	May 20, 1952	2.62	197	1956	May 22, 1956	3.30	388
	May 29, 1952	2.72	223		June 16, 1956	2.48	178
	June 6, 1952	2.75	231	1957	May 20, 1957	3.10	338
	June 10, 1952	2.61	194		May 31, 1957	3.35	429
1953	June 3, 1953	3.51	526		June 9, 1957	3.14	352
	June 8, 1953	3.31	437		June 17, 1957	2.63	204
	June 13, 1953	4.18	764				

3320. Middle Fork Rock Creek near Philipsburg, Mont.

Location.--Lat 46°11', long 113°30', in NE¼ sec.17, T.5 N., R.15 W., on left downstream abutment of timber bridge, half a mile upstream from East Fork, 2¼ miles upstream from West Fork, and 15 miles southwest of Philipsburg.

Drainage area.--123 sq mi. Area of lakes and ponds, 0.56 sq mi; mean elevation, 7,070 ft.

Gage.--Nonrecording prior to May 11, 1954; recording thereafter. At site 600 ft upstream at different datum prior to May 11, 1942. At site 400 ft downstream at different datum May 11, 1942, to May 11, 1954. At site 300 ft upstream at datum 5.74 ft higher May 12, 1954, to Sept. 30, 1955. Altitude of gage is 5,450 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,260 cfs and by slope-area measurement at 1,360 cfs.

Remarks.--Base for partial-duration series, 450 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	May 29, 1938	4.02	992	1949	May 17, 1949	2.90	875
	June 18, 1938	3.07	500		June 1, 1949	3.10	1,000
	July 3, 1938	3.12	523	1950	June 7, 1950	2.84	863
1939	Apr. 30, 1939	3.18	557		June 18, 1950	3.57	1,340
	May 4, 1939	3.30	611		July 2, 1950	2.90	917
	May 17, 1939	3.14	539	1951	May 12, 1951	2.90	660
1940	May 26, 1940	2.60	395		May 24, 1951	3.47	1,080
					May 28, 1951	3.60	1,180
1941	June 5, 1941	2.80	482		June 17, 1951	3.40	1,020
1942	May 26, 1942	3.42	1,250	1952	May 4, 1952	2.50	525
	June 9, 1942	2.82	842		May 16, 1952	2.70	625
					June 6, 1952	3.12	884
1943	May 31, 1943	3.20	1,070				
	June 19, 1943	3.40	1,220	1953	June 8, 1953	2.96	746
	June 30, 1943	2.83	820		June 13, 1953	3.92	1,430
1944	June 13, 1944	2.40	565	1954	May 21, 1954	3.78	998
	June 27, 1944	2.27	500		June 5, 1954	2.80	460
					June 16, 1954	2.88	500
1945	June 5, 1945	2.22	457		June 27, 1954	3.50	830
	June 23, 1945	2.42	550				
				1955	June 12, 1955	3.48	824
1946	June 8, 1946	2.23	466		June 29, 1955	3.24	690
1947	May 9, 1947	3.68	1,310	1956	May 25, 1956	4.73	1,220
	May 27, 1947	2.85	788		June 2, 1956	4.70	1,200
	June 9, 1947	2.98	854		June 11, 1956	3.80	620
1948	May 29, 1948	3.80	1,360	1957	May 20, 1957	4.07	708
	June 24, 1948	2.42	560		June 3, 1957	4.56	999

3335. Rock Creek near Quigley, Mont.

Location.--Lat 46°34'50", long 113°40'50", in SW¼ sec.36, T.10 N., R.17 W., on downstream side of Forest Service bridge, a quarter of a mile upstream from Ranch Creek, and 2½ miles south of Quigley.

Drainage area.--749 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,920 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,200 cfs and extended above.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1922	June 5, 1922	6.6	6,840	1926	Apr. 30, May 1, 1926	3.63	1,520
1923	May 26, 1923	4.49	2,760				
1924	May 17, 1924	4.45	2,700	1927	June 10, 1927	-	8,000
1925	May 21-22, 1925	4.94	3,540				

3340. Ranch Creek near Quigley, Mont.

Location.--Lat 46°35'00", long 113°40'10", in SE¼NE¼ sec.36, T.10 N., R.17 W., on downstream right abutment of county bridge, a quarter of a mile upstream from mouth, 2¼ miles south of townsite of Quigley, and 15 miles south of Clinton.

Drainage area.--42.7 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,930 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurement below 210 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1922	May 19-20, 1922	1.50	238	1926	Apr. 30, 1926	1.00	67
1923	May 24-28, 1923	1.20	145	1927	June 9, 1927	1.50	217
1924	May 17, 1924	1.30	164				
1925	May 21-22, 1925	1.22	145				

3350. Blackfoot River near Helmville, Mont.

Location.--Lat 46°56'10", long 112°56'30", in NW¼SW¼ sec.25, T.14 N., R.11 W., on right bank 50 ft downstream from county highway bridge, 2 miles downstream from Arrastre Creek, and 5 miles northeast of Helmville.

Drainage area.--481 sq mi. Area of lakes and ponds, 0.2 sq mi; mean elevation, 5,890 ft.

Gage.--Recording. Datum of gage is 4,301.29 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 5,800 cfs.

Remarks.--Base for partial-duration series, 650 cfs.

Peak stages and discharges of Blackfoot River near Helmville, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	June 7, 1941	2.62	427	1948	June 6, 1948	7.55	3,180
					June 25, 1948	5.27	1,710
1942	May 27, 1942	4.70	1,340				
	June 9-10, 1942	4.50	1,240	1949	May 17, 1949	5.32	1,750
					May 30, 1949	4.92	1,510
1943	Apr. 21, 1943	4.90	1,460				
	May 31, 1943	5.97	2,130	1950	May 24, 1950	5.48	1,840
	June 15, 1943	7.33	3,110		June 17, 1950	6.45	2,440
1944	May 20, 1944	3.77	882	1951	May 12, 1951	-	-
	June 18, 1944	4.19	1,090		May 25, 1951	6.75	2,540
					June 17, 1951	6.33	2,290
1945	June 10, 1945	4.64	1,400				
				1952	May 4, 1952	5.29	1,680
1946	May 29, 1946	5.20	1,670		May 17, 1952	6.70	2,480
1947	May 10, 1947	6.95	2,760	1953	May 9, 1953	3.35	724
	June 10, 1947	5.65	1,940		June 5, 1953	9.10	6,040
1948	May 23, 1948	7.19	2,920				

3355. Nevada Creek above reservoir, near Finn, Mont.

Location.--Lat 46°46'30", long 112°45'20", near south line sec.20, T.12 N., R.9 W., on right bank a quarter of a mile downstream from Gallagher Creek, 2 miles upstream from Buffalo Creek, and 3 miles west of Finn.

Drainage area.--116 sq mi. At site prior to July 1953, 128 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 5,880 ft.

Gage.--Nonrecording prior to Apr. 30, 1942; recording thereafter. At site seven-eighths of a mile downstream at different datum prior to Apr. 30, 1942. At site 1 mile downstream at different datum Apr. 30, 1942, to July 26, 1953. Altitude of present gage is 4,660 ft (from-river profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 210 cfs at present site and below 520 cfs at preceding site.

Remarks.--Base for partial-duration series, 160 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Mar. 21, 1940	3.70	325	1948	June 17, 1948	2.99	204
	May 12, 1940	3.05	180		June 26, 1948	2.94	193
1941	Mar. 2, 1941	3.40	150	1949	Apr. 7, 1949	4.81	800
					Apr. 11, 1949	4.31	589
1942	May 27, 1942	3.11	223		Apr. 17, 1949	3.12	272
	June 7, 1942	3.64	319		Apr. 29, 1949	2.60	162
					May 14, 1949	2.72	184
1943	Apr. 2, 1943	5.86	1,200				
	Apr. 6, 1943	3.99	447	1950	Mar. 19, 1950	3.53	380
	Apr. 21, 1943	3.18	237		Apr. 1, 1950	5.82	1,360
	June 3, 1943	3.63	345		Apr. 6, 1950	3.57	392
	June 13, 1943	3.42	293		Apr. 13, 1950	2.82	203
					June 9, 1950	2.66	173
1944	Apr. 1, 1944	3.40	290		June 17, 1950	3.44	356
	May 19, 1944	3.07	221		June 25, 1950	2.84	209
1945	June 4, 1945	2.91	212	1951	May 4, 1951	3.25	286
	June 10, 1945	3.14	262		May 13, 1951	3.62	378
					May 19, 1951	3.37	313
1946	Mar. 28, 1946	5.23	914		May 25, 1951	3.34	306
					June 5, 1951	2.79	198
1947	May 5, 1947	3.60	355		June 13, 1951	2.71	186
	June 9, 1947	3.66	373				
	June 17, 1947	3.03	213	1952	Apr. 14, 1952	4.30	610
					Apr. 29, 1952	3.35	254
1948	Apr. 16, 1948	6.04	1,440		May 4, 1952	3.48	290
	May 8, 1948	3.49	322		May 15, 1952	4.10	520
	May 11, 1948	3.35	288				
	May 22, 1948	4.22	557	1953	May 25, 1953	3.60	439
	June 4, 1948	3.38	295		May 30, 1953	5.80	1,090
	June 11, 1948	2.89	183		June 2, 1953	6.00	1,800

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Peak stages and discharges of Nevada Creek above reservoir near Finn, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	June 13, 1953	3.40	410	1955	July 17, 1955	3.33	222
1954	Apr. 13, 1954	3.17	189	1956	Apr. 9, 1956	3.64	273
	May 20, 1954	3.70	280		May 22, 1956	3.82	297
	June 1, 1954	3.45	229				
	June 5, 1954	3.60	257	1957	Feb. 26, 1957	4.77	-
	June 10, 1954	3.16	188		Apr. 9, 1957	3.29	218
					May 21, 1957	3.99	346
1955	June 24, 1955	3.34	223		May 27, 1957	3.43	224
	July 12, 1955	4.09	416				

3385. Blackfoot River near Ovando, Mont.

Location.--Lat 47°01'10", long 113°13'40", in SE¼NW¼ sec.34, T.15 N., R.13 W., on left bank a quarter of a mile upstream from Monture Creek and 5 miles west of Ovando.

Drainage area.--1,274 sq mi. Area of lakes and ponds, 4.1 sq mi; mean elevation, 5,760 ft.

Gage.--Recording. Datum of gage is 3,917.27 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 12,100 cfs and extended above.

Remarks.--Diversions for irrigation of about 25,000 acres above station. Floodmarks indicate a stage of 10 ft reached in recent years. Base for partial-duration series, 1,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	June 2, 1941	3.27	1,140	1950	May 28, 1950	4.80	3,780
					June 6, 1950	5.21	4,670
1942	May 26, 1942	5.16	4,150		June 18, 1950	5.72	5,870
	June 8, 1942	4.64	3,130				
				1951	May 24, 1951	5.81	6,080
1943	Apr. 21, 1943	4.78	3,560		June 16, 1951	5.60	5,580
	May 30, 1943	5.62	5,350				
	June 20, 1943	6.26	6,850	1952	May 4, 1952	4.90	3,990
					May 18, 1952	5.26	4,790
1944	May 20, 1944	4.24	2,550				
	June 19, 1944	3.79	1,840	1953	May 8, 1953	3.66	1,730
					June 4, 1953	8.45	14,600
1945	June 5, 1945	4.62	3,100		June 14, 1953	6.63	9,010
1946	May 29, 1946	5.08	4,130	1954	May 21, 1954	6.07	7,040
					June 14, 1954	4.98	4,150
1947	May 9, 1947	6.19	6,925		June 24, 1954	5.23	4,760
	June 10, 1947	5.54	5,330				
				1955	May 22, 1955	4.63	3,300
1948	May 22, 1948	6.84	8,200		June 14, 1955	5.12	4,450
	June 4-5, 1948	6.43	7,140				
				1956	May 24, 1956	5.93	6,340
1949	May 17, 1949	5.26	4,680		June 17, 1956	4.90	3,870
	May 30, 1949	4.96	4,010				
				1957	May 21, 1957	5.57	5,530
1950	May 18, 1950	4.46	3,090				

3400. Blackfoot River near Bonner, Mont.

Location.--Lat 46°53'50", long 113°45'20", near center sec.9, T.13 N., R.17 W., on right bank 5 miles northeast of Bonner, 5 miles downstream from Union Creek, and 7 miles upstream from mouth.

Drainage area.--2,290 sq mi. Area of lakes and ponds, 14.1 sq mi; mean elevation, 5,710 ft.

Gage.--Nonrecording at site 1.3 miles downstream at datum 21.82 ft lower prior to Oct. 1, 1955; recording thereafter. Datum of gage is 3,344.76 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 18,200 cfs.

Remarks.--Diversions for irrigation of about 35,000 acres above station. Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	May 12, 1940	4.94	3,800	1950	June 21, 1950	8.33	9,400
1941	June 2, 1941	3.27	1,940	1951	Apr. 17, 1951	4.77	3,680
					May 13, 1951	9.10	11,000
1942	Apr. 22, 1942	4.02	2,750		June 17, 1951	7.78	8,360
	May 16, 1942	4.00	2,730		July 5, 1951	5.18	4,230
	May 26, 1942	6.99	6,900				
	June 8, 1942	5.84	5,130	1952	Apr. 29, 1952	8.02	8,820
					May 16, 1952	7.62	8,080
1943	Apr. 21, 1943	8.24	9,240				
	May 7, 1943	6.05	5,400	1953	May 9, 1953	4.98	3,950
	May 29, 1943	8.30	9,350		June 4, 1953	11.65	18,300
	June 18, 1943	8.52	9,750		June 14, 1953	9.50	12,100
1944	May 19, 1944	5.38	4,280	1954	May 21, 1954	9.63	13,300
					June 24, 1954	7.00	6,990
1945	June 4, 1945	6.15	5,540				
				1955	May 21, 1955	6.69	6,610
1946	May 29, 1946	6.75	6,540		June 14, 1955	6.94	7,060
1947	May 9, 1947	9.89	12,800	1956	Mar. 26, 1956	4.20	2,510
	June 11, 1947	7.72	8,120		Apr. 23, 1956	5.69	5,270
					May 22, 1956	8.69	12,100
1948	May 22, 1948	11.30	16,300		June 17, 1956	6.52	6,520
	June 4, 1948	9.83	12,600				
				1957	May 21, 1957	7.99	10,100
1949	May 16, 1949	8.09	8,840		May 30, 1957	7.16	7,960
1950	June 7, 1950	7.61	7,970				

3405. Clark Fork above Missoula, Mont.

Location.--Lat 46°52'40", long 113°55'40", in NW¼NW¼ sec.19, T.13 N., R.18 W., on right bank 3 miles downstream from Blackfoot River and 3 miles east of Missoula.

Drainage area.--5,999 sq mi. Area of lakes and ponds, 22.5 sq mi; mean elevation, 5,690 ft.

Gage.--Nonrecording prior to May 27, 1929; recording thereafter. Altitude of gage is 3,230 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 29,100 cfs and extended above.

Remarks.--Flow regulated by powerplant at Bonner. Only annual peaks are shown.

Peak stages and discharges of Clark Fork above Missoula, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Apr. 28, 1930	6.54	9,200	1944	May 20, 1944	5.99	8,230
				1945	June 7, 1945	6.75	9,860
1931	June 21, 1931	4.36	4,150				
1932	May 14, 1932	7.65	12,800	1946	May 29, 1946	6.84	10,100
1933	June 2, 1933	9.90	21,600	1947	May 9, 1947	11.10	24,200
1934	Apr. 13, 1934	8.42	15,300	1948	May 23, 1948	13.07	31,500
1935	May 25, 1935	6.74	10,300	1949	May 17, 1949	8.53	15,200
				1950	June 19, 1950	9.87	19,800
1936	May 16, 1936	7.51	12,600				
1937	May 5, 1937	5.80	7,790	1951	May 15, 1951	10.04	20,400
1938	May 30, 1938	10.01	19,700	1952	May 16, 1952	8.62	15,500
1939	May 5, 1939	7.10	11,000	1953	June 4, 1953	12.34	28,800
1940	May 13, 1940	5.17	6,140	1954	May 21, 1954	9.42	17,900
				1955	May 23, 1955	8.22	13,900
1941	June 6, 1941	4.89	5,400				
1942	May 27, 1942	9.11	17,400	1956	May 23, 1956	10.27	21,200
1943	Apr. 20, 1943	9.50	18,700	1957	May 21, 1957	9.61	18,900

3415. Clark Fork at Missoula, Mont.

Location.--Lat 46°52'40", long 114°00'10", in NW¼NE¼ sec.21, T.13 N., R.19 W., on right bank about 400 ft upstream from Northern Pacific Railway bridge at Missoula.

Drainage area.--6,084 sq mi.

Gage.--Nonrecording. Datum of gage is 3,162.18 ft above mean sea level (from old survey).

Stage-discharge relation.--Defined by current-meter measurements below 34,600 cfs.

Remarks.--Flow regulated by powerplant at Bonner. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1899	June 20, 1899	-	36,400	1904	May 23, 1904	-	17,800
1900	May 12, 1900	-	25,600	1905	June 8, 1905	-	8,500
1901	May 18, 1901	-	20,200	1906	June 7, 1906	-	7,740
1902	May 30, 1902	-	31,400	1907	May 21, 1907	-	18,500
1903	June 4, 1903	-	25,000				

3425. West Fork Bitterroot River near Conner, Mont.

Location.--Lat 45°44', long 114°17', in NE¼NW¼ sec.26, T.1 S., R.22 W., on right bank half a mile downstream from West Fork Dam, 6 miles upstream from Nez Perce Creek, and 16 miles southwest of Conner.

Drainage area.--317 sq mi.

Gage.--Recording. Altitude of gage is 4,560 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 4,000 cfs.

Remarks.--Diversion for irrigation of about 200 acres above station. Flow regulated by West Fork Bitterroot River Reservoir. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	May 28, 1941	3.35	820	1950	June 7, 1950	4.38	1,860
1942	May 26, 1942	5.10	2,490				
1943	May 31, 1943	4.92	2,290	1951	May 25, 1951	4.45	2,020
1944	May 19, 1944	3.31	832	1952	May 27, 1952	4.18	1,670
1945	June 6, 1945	3.97	1,300	1953	June 14, 1953	4.88	2,390
				1954	May 21, 1954	4.37	1,850
1946	May 28, 1946	3.86	1,110	1955	June 15, 1955	4.54	2,090
1947	May 9, 1947	6.18	4,060				
1948	May 29, 1948	6.08	3,880	1956	May 23, 1956	5.52	3,260
1949	May 16, 1949	4.78	2,280	1957	May 10, 1957	5.24	2,860

3435. East Fork Bitterroot River at Conner, Mont.

Location.--Lat 45°56'00", long 114°07'30", in SE¼SE¼ sec.7, T.2 N., R.20 W., on right bank 200 ft downstream from highway bridge at Conner and half a mile upstream from confluence with West Fork.

Drainage area.--405 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 7,150 ft.

Gage.--Nonrecording. At several sites 2½ miles downstream at datum 1.0 ft higher prior to Oct. 1, 1953. Datum of gage is 4,014.29 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 3,100 cfs and extended above.

Remarks.--Diversions for irrigation of about 3,000 acres above station. Base for partial-duration series, 700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	May 26, 1937	3.74	700	1947	June 9, 1947	4.00	1,510
1938	May 1,18, 1938	3.60	702	1948	May 29, 1948	5.70	3,760
	May 29, 1938	5.78	1,810	1949	Apr. 29, 1949	2.57	760
	June 18, 1938	3.90	843		May 17, 1949	5.07	2,910
1939	May 5, 1939	4.90	1,320		June 1, 1949	4.46	1,620
	May 17, 1939	4.65	1,180	1950	May 18, 1950	3.32	1,070
	May 30, 1939	3.94	820		May 28, 1950	3.93	1,480
1940	May 13, 1940	3.74	738		June 7, 1950	4.48	2,020
1941	June 5, 1941	3.83	715		June 16, 1950	4.70	2,380
1942	Apr. 22, 1942	3.35	714	1951	May 12, 1951	4.43	2,170
	May 12, 1942	3.35	718		May 24, 1951	4.63	2,530
	May 26, 1942	5.28	1,990		May 28, 1951	4.61	2,490
	June 8, 1942	4.82	1,650		June 16, 1951	3.72	1,660
1943	Apr. 21, 1943	4.02	1,160	1952	May 14, 1952	3.55	1,520
	May 5, 1943	3.70	945		May 29, 1952	3.64	1,590
	May 31, 1943	5.30	2,110	1953	June 3, 1953	4.13	1,770
	June 20, 1943	5.10	1,950		June 13, 1953	4.73	2,240
1944	May 18, 1944	3.40	750	1954	May 21, 1954	5.03	1,990
	June 2, 1944	3.88	1,010		June 16, 1954	3.84	1,040
	June 13, 1944	3.82	1,010		June 27, 1954	4.30	1,380
	June 28, 1944	3.42	744	1955	May 22, 1955	3.87	1,060
1945	May 27, 1945	3.55	808		June 15, 1955	4.73	1,540
	June 5, 1945	4.02	1,030		June 29, 1955	4.10	1,180
	June 22, 1945	3.78	898	1956	Apr. 24, 1956	4.53	850
1946	May 9, 1946	4.05	1,060		May 10, 1956	4.64	946
	May 28, 1946	4.35	1,310		May 25, 1956	6.44	3,000
	June 8, 1946	4.00	1,020	1957	May 20, 1957	5.63	1,940
1947	May 9, 1947	5.78	3,660		June 3, 1957	5.77	2,040

3440. Bitterroot River near Darby, Mont.

Location.--Lat 45°58'20", long 114°08'20", in E½ sec.36, T.3 N., R.21 W., on left bank 25 ft downstream from bridge on U.S. Highway 93, a quarter of a mile downstream from Chaffin Creek, and 4 miles southeast of Darby.

Drainage area.--1,049 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 7,060 ft.

Gage.--Nonrecording prior to Aug. 2, 1939, at site 25 ft upstream; recording thereafter. Datum of gage is 3,943.14 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs.

Remarks.--Some regulation by West Fork Bitterroot River Reservoir. Diversions above station for irrigation of 5,500 acres, of which 500 acres are below station. Base for partial-duration series, 2,500 cfs. Only annual peaks are shown for 1947-48 and 1956-57.

Peak stages and discharges of Bitterroot River near Darby, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Apr. 19, 1938	4.70	3,010	1948	May 29, 1948	8.12	11,300
	May 1, 1938	5.12	3,560				
	May 18, 1938	4.42	2,650	1949	Apr. 29, 1949	4.35	3,180
	May 29, 1938	6.51	5,480		May 16, 1949	6.55	7,440
	June 13, 1938	5.02	3,430		May 29, 1949	5.78	5,740
	June 18, 1938	4.88	3,240				
	June 22, 1938	4.30	2,500	1950	May 18, 1950	4.34	3,120
					May 28, 1950	5.86	4,900
1939	Apr. 24, 1939	4.40	2,620		June 7, 1950	5.83	5,840
	Apr. 30, 1939	6.10	4,920		June 17, 1950	6.33	6,930
	May 19, 1939	5.75	4,430				
				1951	May 12, 1951	6.20	6,460
1940	May 12, 1940	4.83	3,360		May 24, 1951	6.47	7,080
					May 28, 1951	6.44	7,010
1941	May 13, 1941	4.18	2,420		June 16, 1951	5.71	5,370
1942	May 26, 1942	6.23	5,930	1952	Apr. 28, 1952	5.08	4,130
	June 9, 1942	5.81	5,120		June 7, 1952	5.78	5,520
1943	Apr. 20, 1943	5.50	4,520	1953	May 20, 1953	4.68	3,190
	May 31, 1943	6.64	6,820		June 3, 1953	6.28	6,340
	June 18, 1943	6.08	5,680		June 13, 1953	7.04	8,200
1944	May 17, 1944	4.56	2,750	1954	Apr. 29, 1954	4.28	2,650
	May 31, 1944	4.75	3,060		May 10, 1954	4.77	3,390
	June 10, 1944	4.58	2,780		May 21, 1954	6.70	7,420
					June 5, 1954	4.22	2,540
1945	May 6, 1945	4.54	2,960		June 16, 1954	4.58	3,110
	June 1, 1945	5.10	3,960		June 24, 1954	5.05	3,900
	June 22, 1945	4.87	3,540		June 27, 1954	5.31	4,380
1946	Apr. 27, 1946	4.32	2,600	1955	May 22, 1955	4.96	3,900
	May 9, 1946	4.83	3,460		June 15, 1955	6.46	6,770
	May 28, 1946	5.17	4,060		June 29, 1955	4.72	3,250
	June 5, 1946	4.83	3,460				
				1956	May 24, 1956	7.85	10,500
1947	May 9, 1947	8.18	11,500	1957	May 11, 1957	5.87	6,030

3460. Bitterroot River near Grantsdale, Mont.

Location.--Lat 46°11'30", long 114°10'10", in W½ sec.13, T.5 N., R.21 W., on downstream side of highway bridge 2 miles southwest of Grantsdale.

Drainage area.--1,414 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,570 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 9,500 cfs and extended above.

Remarks.--Many diversions for irrigation above station. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1902	May 29, 1902	6.80	11,100	1906	May 27, June 12, 1906	4.4	4,110
1903	June 3, 1903	7.30	12,900				
1904	May 24, 1904	7.30	11,800	1907	June 4, 1907	7.25	11,800
1905	June 9, 1905	4.90	5,240				

3475. Blodgett Creek near Corvallis, Mont.

Location.--Lat 46°16'10", long 114°14'10", in NW¼NW¼ sec.21, T.6 N., R.21 W., on right bank 4½ miles upstream from mouth and 7 miles southwest of Corvallis.

Drainage area.--26.4 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 6,730 ft.

Gage.--Recording. Altitude of gage is 4,050 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 600 cfs and extended above.

Remarks.--Base for partial-duration series, 450 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	May 9, 1947	6.10	750	1953	June 13, 1953	5.12	520
					June 18, 1953	4.90	465
1948	May 20, 1948	5.93	706				
	May 28, 1948	6.33	812	1954	May 10, 1954	5.18	548
	June 3, 1948	6.20	777		May 20, 1954	5.89	724
	June 8, 1948	5.61	623		June 24, 1954	5.05	505
	June 16, 1948	4.56	362		June 27, 1954	4.86	458
1949	May 16, 1949	6.42	836	1955	May 22, 1955	5.24	560
	May 28, 1949	4.99	485		June 8, 1955	5.20	578
					June 12, 1955	5.44	652
1950	May 23, 1950	5.16	530		June 23, 1955	5.16	565
	June 6, 1950	4.97	470				
	June 13, 1950	4.95	472	1956	May 21, 1956	5.78	809
	June 17, 1950	6.12	771		May 24, 1956	5.79	813
	June 21, 1950	5.35	578		June 1, 1956	5.29	644
	July 1, 1950	4.91	468				
				1957	May 4, 1957	4.86	507
1951	May 24, 1951	5.01	492		May 9, 1957	4.87	510
	June 16, 1951	5.11	518		May 20, 1957	4.70	457
					June 4, 1957	4.98	544
1952	Apr. 28, 1952	4.82	445				

3480. Blodgett Creek near Hamilton, Mont.

Location.--Lat 46°17'20", long 114°09'50", in NW¼SE¼ sec.12, T.6 N., R.21 W., on upstream side of highway bridge, 1½ miles upstream from mouth and 2½ miles north of Hamilton.

Drainage area.--29.2 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,480 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 340 cfs and extended above.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	May 28-29, 1938	3.45	606	1941	May 13, 1941	2.66	275
1939	Apr. 30, 1939	3.18	492	1942	May 26, 1942	3.56	678
1940	May 11, 1940	2.84	350	1943	May 23, 1943	3.04	515

3490. Willow Creek at Anfinson Ranch, near Corvallis, Mont.

Location.--Lat 46°17'40", long 114°01'30", in SW¼NW¼ sec.7, T.6 N., R.19 W., on left bank at Anfinson Ranch, 5 miles southeast of Corvallis.

Drainage area.--23.2 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,750 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 80 cfs and extended above.

Remarks.--Many diversions for irrigation above station. During irrigation season natural flow is supplemented by releases from Gleason Lake. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	June 19, 1938	2.28	73	1941	June 1-4, 1941	1.58	16
1939	May 31, 1939	1.64	16	1942	June 9, 1942	2.50	125
1940	June 1, 1940	1.58	16	1943	June 21, 1943	2.38	123

3495. Fred Burr Creek near Victor, Mont.

Location.--Lat 46°21'20", long 114°15'10", in NE¼NW¼ sec.20, T.7 N., R.21 W., on right bank 5 miles upstream from mouth and 7 miles southwest of Victor.

Drainage area.--18.4 sq mi.

Gage.--Recording. Altitude of gage is 4,150 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 370 cfs and by slope-area measurement at 23,100 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	May 8, 1947	3.28	397	1950	June 17, 1950	5.67	822
1948	May 28, 1948	-	23,000				
1949	May 16, 1949	3.16	632	1951	June 16, 1951	4.58	424

3500. Bear Creek near Victor, Mont.

Location.--Lat 46°23', long 114°13', in NE¼ sec.9, T.7 N., R.21 W., on left bank 4 miles upstream from mouth and 5 miles southwest of Victor.

Drainage area.--26.8 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 6,430 ft.

Gage.--Nonrecording prior to Aug. 27, 1941; recording and timber control thereafter. Altitude of gage is 3,770 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 500 cfs and extended above.

Remarks.--Natural flow is supplemented by stored water from Bear Lake (capacity, 375 acre-ft) during irrigation season. Base for partial-duration series, 470 cfs.

Peak stages and discharges of Bear Creek near Victor, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Apr. 18, 1938	3.40	865	1948	May 21, 1948	3.70	815
	May 29, 1938	3.23	772		May 27, 1948	3.70	1,100
	June 21, 1938	2.80	595		June 3, 1948	3.27	822
					June 7, 1948	3.11	726
1939	Apr. 30, 1939	2.58	507				
				1949	May 16, 1949	3.61	866
1940	May 11, 1940	2.38	578		May 27, 1949	3.05	546
	May 24, 1940	2.30	513		June 6, 1949	2.82	475
1941	May 13, 1941	2.40	578	1950	May 22, 1950	2.87	541
					June 6, 1950	2.92	565
1942	May 24, 1942	3.70	652		June 16, 1950	4.05	1,340
					June 30, 1950	2.88	600
1943	May 23, 1943	3.47	560				
	May 29, 1943	3.40	533	1951	May 24, 1951	2.83	566
	June 18, 1943	3.62	611		June 15, 1951	2.99	654
	June 22, 1943	3.28	487				
	July 1, 1943	3.58	603	1952	Apr. 27, 1952	2.74	525
					May 26, 1952	2.63	474
1944	May 15, 1944	3.33	514		June 4, 1952	2.62	470
	June 9, 1944	3.26	480				
				1953	June 2, 1953	3.72	516
1945	May 5, 1945	3.22	481		June 13, 1953	3.91	609
	May 30, 1945	3.20	473		June 17, 1953	3.85	579
	June 21, 1945	3.36	536				
				1954	May 10, 1954	3.91	603
1946	June 3, 1946	3.01	406		May 19, 1954	4.44	893
					June 23, 1954	4.02	658
1947	May 8, 1947	3.83	901		June 26, 1954	3.82	560

3505. Kootenai Creek near Stevensville, Mont.

Location.--Lat 46°32'30", long 114°10'00", in SW¼NW¼ sec.18, T.9 N., R.20 W., on left bank 3 miles upstream from mouth and 4 miles northwest of Stevensville.

Drainage area.--28.9 sq mi. Area of lakes and ponds, 0.10 sq mi; mean elevation, 6,670 ft.

Gage.--Recording. Altitude of gage is 3,780 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 500 cfs and by slope-area measurement at 1,250 cfs.

Remarks.--Base for partial-duration series, 500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May or June 1948	-	1,250	1950	June 21, 1950	4.66	774
					June 30, 1950	4.38	662
1949	May 16, 1949	5.11	980	1951	June 15, 1951	4.36	654
	May 27, 1949	4.22	697				
				1952	June 6, 1952	3.76	381
1950	May 23, 1950	4.16	558				
	June 17, 1950	5.85	1,300	1953	June 13, 1953	3.99	490

3510. Burnt Fork Creek near Stevensville, Mont.

Location.--Lat 46°27'50", long 113°56'40", in NW¼SW¼ sec.11, T.8 N., R.19 W., 150 ft upstream from county road bridge and 8 miles southeast of Stevensville.

Drainage area.--74.0 sq mi. Area of lakes and ponds, 0.08 sq mi; mean elevation, 6,460 ft.

Gage.--Nonrecording. At site 150 ft downstream at datum 2.00 ft lower prior to Mar. 16, 1955. Altitude of gage is 4,270 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 420 cfs and extended above.

Remarks.--Only annual peaks are shown.

Peak stages and discharges of Burnt Fork Creek near Stevensville, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1938	May 28, 1938	2.92	641	1949	May 17, 1949	2.05	310
1939	May 4, 1939	1.74	192	1950	June 21, 1950	2.22	379
1940	May 25, 1940	1.40	121	1951	May 24, 1951	2.16	361
1941	June 4, 1941	1.36	119	1952	May 26, 1952	1.86	233
1942	May 26, 1942	2.12	371	1953	June 13, 1953	2.19	351
1943	June 19, 1943	2.04	382	1954	June 28, 1954	2.09	300
1944	June 19, 1944	1.50	183	1955	June 15, 1955	3.28	284
1945	June 4,6, 1945	1.40	139	1956	May 24, 1956	3.72	414
1946	May 28, 1946	1.43	142	1957	June 3,4, 1957	3.46	320
1947	May 8,9, 1947	2.20	414				
1948	May 28,29, 1948	2.54	565				

3520. Lolo Creek above Sleeman Creek near Lolo, Mont.
(Published as Lolo Creek near Lolo prior to 1955)

Location.--Lat 46°45', long 114°09', in NW¼ sec.5, T.11 N., R.20 W., on left bank 4 miles upstream from mouth and 3 miles southwest of Lolo.

Drainage area.--250 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,910 ft.

Gage.--Recording. Altitude of gage is 3,290 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,900 cfs and extended above.

Remarks.--Base for partial-duration series, 1,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	May 12, 1951	4.98	1,500	1955	May 21, 1955	3.90	645
	May 24, 1951	4.73	1,320	1956	Apr. 24, 1956	5.24	1,630
	June 16, 1951	4.32	1,100		May 11, 1956	4.43	1,120
1952	Apr. 28, 1952	4.72	1,320		May 24, 1956	6.24	2,430
	May 16, 1952	4.49	1,170		June 2, 1956	5.40	1,840
1953	June 13, 1953	4.30	1,060	1957	May 9, 1957	4.49	1,160
1954	May 10, 1954	5.02	1,490		May 20, 1957	4.76	1,330
	May 20, 1954	5.72	1,980		June 3, 1957	4.50	1,170
	June 27, 1954	4.28	1,010				

3525. Bitterroot River near Missoula, Mont.

Location.--Lat 46°49'20", long 114°04'30", in center of S½ sec.2, T.12 N., R.20 W., on downstream rail of bridge, 4 miles southwest of Missoula and 5 miles upstream from mouth.

Drainage area.--2,812 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,120 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 37,000 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1899	June 20, 1899	-	38,300	1903	June 5, 1903	-	19,700
1900	May 13, 1900	-	18,200	1904	May 25, 1904	-	18,300
1901	May 30, 1901	-	18,400				

3530. Clark Fork below Missoula, Mont.

Location.--Lat 46°52'10", long 114°07'30", in NE¼SE¼ sec.21, T.13 N., R.20 W., on right bank 2 miles downstream from Bitterroot River and 5 miles west of Missoula.

Drainage area.--9,003 sq mi.

Gage.--Recording. Altitude of gage is 3,090 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 47,000 cfs.

Remarks.--Some regulation by powerplant at Bonner. Base for partial-duration series, 12,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	Apr. 26, 1930	6.32	17,500	1943	June 20, 1943	9.47	33,200
	May 22, 1930	5.50	13,900				
	May 31, 1930	6.20	17,100	1944	May 20, 1944	5.36	13,500
					June 2, 1944	5.19	12,700
1931	May 18, 1931	5.08	12,200		June 18, 1944	5.58	14,400
1932	May 15, 1932	7.97	24,400	1945	May 7, 1945	5.33	13,100
	May 23, 1932	8.12	25,800		June 2, 1945	6.66	19,100
	June 17, 1932	7.27	21,000		June 23, 1945	5.91	15,600
1933	Apr. 29, 1933	5.15	12,400	1946	May 6, 1946	5.37	13,800
	June 11, 1933	10.14	36,800		May 29, 1946	6.72	19,700
1934	Apr. 15, 1934	7.21	21,300	1947	May 10, 1947	11.18	45,900
	Apr. 26, 1934	8.00	25,700		June 10, 1947	8.23	26,000
	May 9, 1934	7.44	22,400				
	June 8, 1934	5.96	15,200	1948	Apr. 23, 1948	5.87	14,800
					May 23, 1948	12.08	52,800
1935	May 25, 1935	6.80	20,200				
				1949	May 3, 1949	6.10	15,800
1936	Apr. 26, 1936	6.57	18,200		May 17, 1949	9.55	34,300
	May 6, 1936	7.02	20,200				
	May 16, 1936	8.34	26,900	1950	May 17, 1950	6.64	18,800
	June 2, 1936	7.09	20,700		June 7, 1950	8.45	28,700
	June 9, 1936	6.22	16,300		June 18, 1950	10.18	39,100
1937	May 27, 1937	5.09	11,700	1951	May 13, 1951	8.96	31,800
					May 25, 1951	9.09	32,500
1938	Apr. 20, 1938	5.42	12,800		June 17, 1951	8.28	27,700
	May 2, 1938	6.12	15,900				
	May 30, 1938	10.00	35,700	1952	May 16, 1952	8.17	27,100
	June 19, 1938	6.68	18,700				
	June 25, 1938	6.99	20,200	1953	June 4, 1953	10.10	40,100
1939	May 5, 1939	7.29	22,000	1954	May 21, 1954	9.37	34,200
	May 18, 1939	6.72	19,100		June 17, 1954	6.68	19,500
	May 31, 1939	5.90	15,600		June 28, 1954	7.57	24,000
1940	May 13, 1940	5.56	14,200	1955	May 14, 1955	5.38	13,900
					May 22, 1955	7.40	23,400
1941	June 2, 1941	4.61	10,400		June 16, 1955	8.19	27,500
					July 13, 1955	6.27	17,900
1942	May 27, 1942	8.96	30,500				
	June 10, 1942	7.87	25,000	1956	Apr. 25, 1956	7.01	21,000
					May 25, 1956	10.75	44,600
1943	Mar. 30, 1943	5.79	15,200				
	Apr. 20, 1943	8.42	27,500	1957	May 21, 1957	8.88	31,500
	June 1, 1943	9.00	30,500				

3535. Clark Fork at Tarkio, Mont.

Location.--Lat 47°01'10", long 114°44'10", in NW¼NE¼ sec.34, T.15 N., R.25 W., on right bank a quarter of a mile northwest of Tarkio, 1 mile upstream from Quartz Creek, 3¼ miles downstream from Fish Creek, and 15 miles west of Alberton.

Drainage area.--9,882 sq mi.

Gage.--Nonrecording. Altitude of gage is 2,750 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 58,000 cfs.

Remarks.--Some regulation by powerplant at Bonner. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	June 2, 1945	14.70	21,600	1947	May 10, 1947	27.60	55,000
				1948	May 30, 1948	30.35	63,200
1946	May 29, 1946	14.25	20,600	1949	May 17, 1949	-	a45,000

a Maximum daily discharge.

3540. St. Regis River near St. Regis, Mont.

Location.--Lat 47°17'40", long 115°10'00", in NW¼NE¼ sec.28, T.18 N., R.28 W., on left bank just downstream from Twomile Creek, 2 miles upstream from Little Joe Creek, 3 miles west of St. Regis, and 3½ miles upstream from mouth.

Drainage area.--300 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,520 ft.

Gage.--Nonrecording. Altitude of gage is 2,720 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 3,500 cfs and extended above.

Remarks.--Some diversions for irrigation above station. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Apr. 25, May 6, 1911	6.16	3,880	1916	May 7, 1916	7.5	5,900
				1917	May 28, 1917	8.65	7,740
1912	May 21, 1912	5.6	3,100				
1913	May 28, 1913	7.7	6,220	1948	May 1948	-	4,650
1914	Apr. 23,24, 1914	5.5	2,970				
1915	Apr. 15,16, 1915	4.6	1,900	1954	May 1954	-	7,600

3545. Clark Fork at St. Regis, Mont.

Location.--Lat 47°18'05", long 115°05'15", in center of SW¼ sec.19, T.18 N., R.27 W., on left bank at St. Regis, half a mile downstream from St. Regis River.

Drainage area.--10,709 sq mi. Area of lakes and ponds, 33.5 sq mi; mean elevation, 5,460 ft.

Gage.--Nonrecording prior to Nov. 29, 1933; recording thereafter. Altitude of gage is 2,600 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 68,000 cfs.

Remarks.--Diversion for irrigation of about 244,000 acres above station. Base for partial-duration series, 17,000 cfs. Only annual peaks are shown subsequent to 1955.

Peak stages and discharges of Clark Fork at St. Regis, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 8, 1911	11.5	23,400
	June 14, 1911	13.9	33,800
1912	May 23, 1912	15.1	39,500
	June 12, 1912	15.5	41,400
1913	May 4, 1913	14.0	34,300
	May 13, 1913	14.1	34,800
	May 30, 1913	19.2	63,500
1914	May 10, 1914	13.4	31,200
	May 15, 1914	14.2	35,000
	June 15, 1914	12.4	26,700
	June 23, 1914	10.0	17,300
1915	June 21, 1915	10.0	17,300
1916	Apr. 27, 1916	13.1	29,800
	May 8, 1916	14.4	36,000
	May 19, 1916	15.1	39,600
	June 20, 1916	17.5	53,000
	July 1, 1916	16.8	48,900
	July 18, 1916	14.0	34,000
1917	May 29, 1917	18.5	59,100
	June 11, 1917	16.4	46,700
	June 19, 1917	17.4	52,400
1918	Apr. 14, 1918	11.25	21,800
	Apr. 25, 1918	14.2	35,000
	May 2, 1918	16.0	44,500
	May 7, 1918	14.9	38,500
	June 2, 1918	13.0	29,300
	June 14, 1918	16.7	48,400
	June 27, 1918	13.4	31,200
1919	Apr. 29, 1919	10.4	18,800
	May 31, 1919	13.0	29,300
1920	May 18, 1920	13.6	32,100
	June 17, 1920	13.6	32,100
1921	May 28, 1921	15.5	41,800
1922	May 27, 1922	15.8	43,400
	June 8, 1922	16.5	47,200
1923	May 26, 1923	13.3	30,700
	June 12, 1923	13.8	33,100
1929	May 26, 1929	13.7	32,600
	June 11, 1929	11.8	24,200
1930	Apr. 26, 1930	11.30	22,200
	June 1, 1930	10.5	19,200
1931	May 17, 1931	9.55	15,900
1932	May 15, 1932	13.60	32,300
	May 23, 1932	13.70	32,700
	June 17, 1932	12.1	25,400
1933	Apr. 29, 1933	10.20	18,000
	June 11, 1933	16.85	49,000
	Dec. 23, 1933	14.10	34,700
1934	Mar. 31, 1934	11.43	22,400
	Apr. 26, 1934	14.27	35,700
1934	May 9, 1934	12.92	29,000
	June 9, 1934	10.39	18,200
1935	May 25, 1935	12.36	27,400
1936	Apr. 26, 1936	12.19	24,800
	May 7, 1936	12.37	25,700
	May 17, 1936	14.16	34,000
	June 3, 1936	12.08	24,400
1937	May 28, 1937	10.06	17,100
1938	Apr. 18, 1938	11.01	20,400
	May 3, 1938	11.35	22,100
	May 31, 1938	16.00	46,400
1939	May 5, 1939	12.81	26,100
	May 19, 1939	11.92	22,600
1940	May 13, 1940	10.38	17,200
1941	June 3, 1941	8.82	12,000
1942	May 28, 1942	14.22	35,800
	June 11, 1942	12.84	28,500
1943	Apr. 21, 1943	14.47	35,300
	June 1, 1943	15.23	38,800
	June 21, 1943	15.69	41,300
1944	June 18, 1944	9.94	16,000
1945	May 8, 1945	10.83	18,900
	June 2, 1945	12.05	23,900
	June 23, 1945	10.60	18,100
1946	May 7, 1946	11.02	19,700
	May 30, 1946	12.03	23,900
1947	May 10, 1947	17.91	54,600
	June 11, 1947	13.58	31,000
1948	Apr. 24, 1948	11.63	22,200
	May 24, 1948	19.96	68,900
1949	May 4, 1949	11.26	20,800
	May 17, 1949	16.84	47,900
1950	June 8, 1950	14.68	36,200
	June 19, 1950	17.39	51,200
1951	May 26, 1951	15.76	41,700
	June 17, 1951	14.08	33,300
1952	May 17, 1952	14.32	34,400
1953	June 5, 1953	16.48	45,800
1954	May 22, 1954	16.85	49,000
	June 16, 1954	12.64	26,400
	June 29, 1954	13.30	29,400
1955	May 23, 1955	13.63	30,900
	June 14, 1955	14.73	36,400
1956	May 24, 1956	18.98	62,000
1957	May 21, 1957	15.30	39,300

3550. Flathead River at Flathead, British Columbia
(Published as "near Trail Creek" prior to 1935)
(International gaging station)

Location.--Lat 49°00', long 114°29', on left bank at highway bridge, 0.2 mile north of international boundary, 0.2 mile northwest of Flathead, British Columbia, and 7 miles northwest of Trail Creek, Mont.

Drainage area.--450 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 6,010 ft.

Gage.--Nonrecording prior to Sept. 1, 1949; recording thereafter. Altitude of gage is 3,980 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 8,800 cfs, with extension based on logarithmic plotting.

Bankfull stage.--7 ft.

Remarks.--Station maintained by Canada under agreement with the United States. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 24, 1929	6.10	7,750	1944	May 17, 1944	3.82	2,780
1930	May 31, 1930	4.78	4,760	1945	May 31, 1945	5.20	5,470
1931	May 15, 1931	5.10	5,400	1946	May 6, 1946	6.35	7,960
1932	May 22, 1932	6.12	a8,030	1947	May 9, 1947	6.60	8,510
1933	June 17, 1933	7.10	10,600	1948	May 23, 1948	9.1	14,600
1934	May 16, 1934	5.79	6,990	1949	May 13, 1949	5.80	6,750
1935	May 23, 1935	6.18	8,080	1950	June 21, 1950	5.25	6,320
1936	May 15, 1936	5.52	a6,270	1951	May 12, 1951	6.12	8,100
1937	May 27, 1937	5.10	5,260	1952	May 21, 1952	4.29	4,400
1938	May 26, 1938	6.82	a8,950	1953	June 13, 1953	6.20	8,900
1939	May 4, 1939	4.99	a5,030	1954	May 20, 1954	7.40	11,700
1940	May 12, 1940	5.55	a6,220	1955	June 12, 1955	5.58	8,260
1941	May 2, 1941	3.92	2,930	1956	May 21, 1956	7.05	13,300
1942	June 6, 1942	5.52	6,160	1957	May 5, 1957	5.60	8,320
1943	May 29, 1943	5.24	5,550				

a Maximum daily.

3555. Flathead River near Columbia Falls, Mont.

Location.--Lat 48°28'20", long 114°05'20", in NE¼NE¼ sec.12, T.31 N., R.20 W., on right bank 1 mile upstream from Middle Fork and 8 miles northeast of Columbia Falls.

Drainage area.--1,553 sq mi. Area of lakes and ponds, 16.0 sq mi; mean elevation, 5,120 ft.

Gage.--Nonrecording prior to Oct. 1, 1917; recording at site 1,000 ft upstream thereafter. Datum of gage is 3,109.70 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Stage-discharge relation.--Defined by current-meter measurements below 30,000 cfs.

Remarks.--Base for partial-duration series, 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 14, 1911	7.20	15,100	1916	May 7, 1916	6.8	13,300
					June 20, 1916	9.9	30,100
1912	May 17, 1912	6.45	11,700	1917	May 16, 1917	7.9	18,800
1913	June 2, 1913	8.7	23,800		May 26, 1917	7.7	17,600
					June 10, 1917	9.0	24,900
1914	May 25, 1914	6.6	12,400		June 17, 1917	9.0	25,400
	June 4, 1914	6.8	13,300	1929	May 24, 1929	10.2	20,300
1915	June 27, 1915	5.6	8,540		June 3, 1929	9.0	15,400

Peak stages and discharges of Flathead River near Columbia Falls, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	May 31, 1930	7.96	11,800	1946	May 29, 1946	10.79	22,000
1931	May 17, 1931	8.93	15,000	1947	Apr. 30, 1947	8.62	13,300
1932	May 14, 1932	9.93	19,000		May 10, 1947	11.08	23,500
	May 23, 1932	10.35	21,200		May 27, 1947	8.81	14,000
	June 2, 1932	9.59	17,800	1948	May 24, 1948	11.84	26,400
	June 15, 1932	9.24	16,200	1949	May 14, 1949	10.11	19,900
1933	June 17, 1933	11.14	24,400		May 28, 1949	8.95	15,000
1934	Apr. 26, 1934	9.95	19,400		June 7, 1949	8.06	11,800
1935	May 24, 1935	10.34	20,800	1950	May 15, 1950	9.48	17,400
					May 28, 1950	9.13	16,000
					June 6, 1950	9.45	17,300
1936	May 16, 1936	9.86	19,000		June 23, 1950	10.34	21,000
1937	May 5, 1937	7.86	11,200	1951	May 1, 1951	7.85	11,400
	May 28, 1937	8.74	13,900		May 12, 1951	10.30	20,800
					May 25, 1951	9.96	19,300
1938	Apr. 19, 1938	8.60	13,600		June 16, 1951	9.56	17,700
	May 2, 1938	8.50	13,200		June 25, 1951	8.62	14,100
	May 28, 1938	10.87	24,000				
	June 17, 1938	8.75	14,700	1952	Apr. 28, 1952	9.66	18,100
					May 21, 1952	8.61	14,100
1939	Apr. 30, 1939	8.91	13,900				
	May 17, 1939	8.68	13,200	1953	May 8, 1953	8.30	13,000
					May 20, 1953	8.47	13,800
1940	May 12, 1940	8.57	13,900		June 14, 1953	10.78	23,800
	May 25, 1940	8.12	12,500				
				1954	May 21, 1954	12.25	31,500
1941	May 3, 1941	6.71	8,010		June 14, 1954	9.44	17,200
					June 23, 1954	9.32	16,700
1942	May 11, 1942	7.70	11,100		July 2, 1954	9.68	18,200
	May 27, 1942	9.57	18,000				
	June 7, 1942	8.92	15,300	1955	May 21, 1955	8.63	13,900
					June 14, 1955	9.86	18,700
1943	Apr. 20, 1943	8.74	14,500		June 24, 1955	9.25	16,300
	May 28, 1943	8.87	15,300				
	June 19, 1943	8.90	14,300	1956	May 22, 1956	11.97	29,700
					June 11, 1956	9.09	15,700
1944	May 17, 1944	6.82	7,850		June 17, 1956	8.85	14,700
1945	June 2, 1945	9.19	15,400	1957	May 7, 1957	10.75	23,000
					May 15, 1957	9.74	18,300
1946	May 7, 1946	9.00	14,700				

3557. Middle Fork Flathead River at Essex, Mont.

Location.--Lat 48°16'30", long 113°36'10", in NE¼SW¼ sec.14, T.29 N., R.16 W., on right bank 0.6 mile upstream from Ole Creek, 0.7 mile southeast of Essex, and 4 miles downstream from Bear Creek.

Drainage area.--510 sq mi.

Gage.--Recording. Altitude of gage is 3,730 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended above.

Remarks.--Base for partial-duration series, 4,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	May 11, 1940	7.09	5,420	1944	May 19, 1944	7.40	5,700
1941	May 14, 1941	5.90	3,410	1945	May 6, 1945	7.90	6,590
					May 11, 1945	7.60	6,000
1942	Apr. 22, 1942	6.79	4,890		June 1, 1945	8.06	7,070
	May 11, 1942	6.54	4,470				
	May 24, 1942	8.35	7,740	1946	Apr. 20, 1946	6.62	4,510
	June 7, 1942	6.80	4,910		Apr. 26, 1946	7.09	5,350
					May 6, 1946	7.14	5,450
1943	Apr. 20, 1943	8.24	7,350		May 13, 1946	7.60	6,340
	May 28, 1943	8.80	8,520		May 18, 1946	7.80	6,740
	June 18, 1943	9.45	9,800		May 28, 1946	8.23	7,570

Peak stages and discharges of Middle Fork Flathead River at Essex, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	June 4, 1946	7.19	5,540	1951	May 12, 1951	8.99	9,180
					May 24, 1951	8.75	8,620
1947	Apr. 29, 1947	7.96	6,880		June 16, 1951	8.45	7,930
	May 9, 1947	9.84	11,200				
	May 27, 1947	7.76	6,460	1952	Apr. 28, 1952	8.72	8,550
	June 2, 1947	7.00	5,000		May 16, 1952	8.04	7,040
	June 10, 1947	6.98	4,960				
				1953	May 8, 1953	7.50	5,940
1948	May 22, 1948	10.95	14,500		May 20, 1953	7.84	6,620
	June 4, 1948	9.07	9,370		June 4, 1953	10.31	12,600
	June 17, 1948	6.87	4,770		June 13, 1953	9.79	11,200
1949	May 15, 1949	8.69	8,480	1954	May 1954	12.7	18,000
	May 28, 1949	7.85	6,640				
	June 7, 1949	6.82	4,680	1956	May 21, 1956	11.7	15,400
					June 2, 1956	10.9	13,500
1950	May 15, 1950	8.98	9,660				
	May 23, 1950	9.20	10,700	1957	May 5, 1957	9.95	11,200
	May 28, 1950	8.70	9,060		May 21, 1957	9.08	9,260
	June 6, 1950	10.01	11,800		May 31, 1957	7.84	6,580
	June 13, 1950	9.60	10,700		June 9, 1957	6.99	4,930
	July 1, 1950	8.26	7,510				

3560. Skyland Creek near Essex, Mont.

Location.--Lat 48°17'30", long 113°23'10", in SE¼NW¼ sec.9, T.29 N., R.14 W., on left bank 150 ft upstream from mouth and 10 miles northeast of Essex.

Drainage area.--8.09 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 5,920 ft.

Gage.--Recording gage and concrete control. Datum of gage is 4,835.83 ft above mean sea level (Corps of Engineers bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 200 cfs.

Remarks.--Records collected in conjunction with Upper Columbia River Snow Laboratory. Base for partial-duration series, 65 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	May 18, 1946	1.49	83.4	1950	June 5, 1950	2.11	201
	May 28, 1946	1.72	117		June 12, 1950	2.46	268
					June 18, 1950	2.34	246
1947	May 9, 1947	1.84	189		June 30, 1950	1.88	158
	May 26, 1947	1.53	114				
	June 10, 1947	1.37	84	1951	May 12, 1951	1.78	127
					May 24, 1951	1.97	163
1948	May 22, 1948	2.15	284		June 15, 1951	2.05	179
	June 4, 1948	2.16	201		June 24, 1951	1.74	120
	June 17, 1948	1.87	144		July 6, 1951	1.53	84
					July 10, 1951	1.45	71
1949	May 16, 1949	1.68	126				
	May 30, 1949	1.66	123	1952	Apr. 27, 1952	1.58	96
					May 4, 1952	1.48	79
1950	May 22, 1950	1.59	108		May 15, 1952	1.87	148
	May 28, 1950	1.69	124				

3565. Bear Creek near Essex, Mont.

Location.--Lat 48°16'50", long 113°25'30", in SE¼NW¼ sec.18, T.29 N., R.14 W., on right bank 1 mile downstream from Autumn Creek and 8½ miles northeast of Essex.

Drainage area.--20.7 sq mi. Area of lakes and ponds, 0.04 sq mi; mean elevation, 5,700 ft.

Gage.--Nonrecording prior to Mar. 19, 1947; recording thereafter. Datum of gage is 4,484.14 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 450 cfs and extended above.

Remarks.--Records collected in conjunction with Upper Columbia River Snow Laboratory. Base for partial-duration series, 150 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	May 28, 1946	1.94	253	1950	May 27, 1950	2.31	388
					June 5, 1950	2.42	463
1947	Apr. 28, 1947	2.30	352		June 12, 1950	2.83	620
	May 2, 1947	2.87	623		June 18, 1950	2.27	374
	May 9, 1947	2.78	587				
	May 27, 1947	2.00	248	1951	Apr. 29, 1951	1.56	178
					May 11, 1951	2.19	352
1948	May 22, 1948	3.01	696		May 17, 1951	1.94	277
	June 4, 1948	2.37	397		May 23, 1951	2.09	321
	June 17, 1948	2.12	308		June 15, 1951	1.85	252
					June 24, 1951	1.63	194
1949	Apr. 28, 1949	1.60	160		July 6, 1951	1.46	156
	May 12, 1949	2.06	280				
	May 30, 1949	1.89	232	1952	Apr. 27, 1952	2.15	340
					May 4, 1952	1.76	229
1950	May 13, 1950	2.45	426		May 15, 1952	1.90	266
	May 22, 1950	2.58	482				

3575. Middle Fork Flathead River at Belton, Mont.

Location.--Lat 48°30'00", long 113°58'30", in NW¼NW¼ sec.36, T.32 N., R.19 W., on left bank at Belton, half a mile upstream from highway bridge and 2 miles upstream from outlet of Lake McDonald.

Drainage area.--943 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,170 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 23,000 cfs and extended above.

Remarks.--Base for partial-duration series, 10,900 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 6, 1911	9.9	13,000	1917	June 17, 1917	11.5	18,700
	June 3, 1911	9.9	13,000				
	June 14, 1911	9.1	11,200	1918	May 4, 1918	11.0	16,500
					June 11, 1918	12.9	22,500
1912	May 16, 1912	9.5	12,200				
				1919	May 28, 1919	10.0	13,600
1913	May 27, 1913	14.2	26,900				
				1920	May 18, 1920	9.3	11,800
1914	May 17, 1914	9.2	11,500				
				1921	May 11, 1921	10.1	13,900
1915	May 2, 1915	7.4	7,250		May 27, 1921	12.6	21,500
					June 8, 1921	10.2	14,200
1916	May 7, 1916	10.9	16,200				
	June 5, 1916	9.9	13,400	1922	May 20, 1922	12.0	19,600
	June 10, 1916	9.9	13,400		June 5, 1922	12.9	22,500
	June 21, 1916	17.5	45,000				
				1923	May 9, 1923	9.4	12,000
1917	May 15, 1917	12.7	23,400		May 26, 1923	11.1	16,800
	May 26, 1917	10.45	15,200		June 11, 1923	10.6	15,400
	June 9, 1917	11.3	18,000				

Peak stages and discharges of Middle Fork Flathead River at Belton, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 14, 1929	9.1	11,900	1933	June 16, 1933	12.7	23,400
	May 24, 1929	10.7	18,000				
	June 1, 1929	10.0	14,900	1944	May 20, 1944	8.3	9,190
1930	Apr. 14, 1930	8.8	10,900	1945	May 6, 1945	9.3	12,000
					June 1, 1945	9.9	13,700
1931	May 7, 1931	9.1	11,900				
	May 16, 1931	10.7	18,000	1946	May 13, 1946	9.2	11,800
					May 18, 1946	9.3	12,100
1932	May 14, 1932	11.5	20,200		May 28, 1946	10.3	14,800
	May 22, 1932	12.5	24,100				
	June 2, 1932	8.9	11,200	1947	Apr. 29, 1947	9.7	13,100
	June 15, 1932	9.05	11,600		May 9, 1947	13.00	24,500
1933	Apr. 28, 1933	9.6	12,500	1948	May 23, 1948	14.3	30,000
	May 31, 1933	12.0	20,600				

3585. Middle Fork Flathead River near West Glacier, Mont.
(Published as "near Belton" 1939-47)

Location.--Lat 48°29'50", long 114°00'30", in SW¼NE¼ sec.34, T.32 N., R.19 W., on left bank three-quarters of a mile downstream from McDonald Creek, 1¼ miles west of West Glacier, and 3½ miles upstream from mouth.

Drainage area.--1,128 sq mi. Area of lakes and ponds, 0.12 sq mi; mean elevation, 5,800 ft.

Gage.--Nonrecording prior to Nov. 22, 1950; recording thereafter. Altitude of gage is 3,130 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 33,000 cfs.

Remarks.--Base for partial-duration series, 8,700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	May 12, 1940	6.66	12,800	1950	May 23, 1950	-	-
	May 25, 1940	6.15	10,700		May 28, 1950	8.17	18,100
					June 6, 1950	9.69	23,600
1941	May 14, 1941	5.22	7,620		June 22, 1950	9.61	23,300
					June 30, 1950	7.72	16,500
1942	Apr. 22, 1942	5.92	10,000				
	May 11, 1942	5.72	9,370	1951	Apr. 30, 1951	5.67	9,440
	May 24, 1942	7.50	15,700		May 12, 1951	8.71	20,100
	June 8, 1942	6.40	11,700		May 24, 1951	8.25	18,400
					June 16, 1951	7.85	17,000
1943	Apr. 20, 1943	7.82	16,600		July 6, 1951	5.96	10,400
	May 28, 1943	8.12	17,600				
	June 18, 1943	9.00	20,600	1952	Apr. 28, 1952	8.29	18,100
					May 20, 1952	7.13	13,800
1944	May 20, 1944	6.30	11,300		June 6, 1952	6.07	10,400
	June 1, 1944	5.60	8,940				
				1953	Apr. 29, 1953	5.62	8,970
1945	May 6, 1945	7.20	14,400		May 8, 1953	7.08	13,700
	May 11, 1945	6.70	12,700		May 20, 1953	7.10	13,800
	June 1, 1945	7.80	16,400		June 4, 1953	9.68	23,100
	June 22, 1945	6.32	11,400		June 13, 1953	10.14	24,800
					July 1, 1953	5.76	9,420
1946	Apr. 20, 1946	6.00	10,500				
	Apr. 26, 1946	6.45	12,200	1954	May 12, 1954	8.30	17,900
	May 13, 1946	7.05	14,200		May 20, 1954	13.01	34,500
	May 18, 1946	7.20	14,700		June 5, 1954	7.57	15,400
	May 29, 1946	8.34	18,500		June 14, 1954	7.66	15,700
	June 6, 1946	7.18	14,700		June 23, 1954	8.22	17,600
	June 11, 1946	7.10	14,400				
				1955	May 21, 1955	7.72	15,900
1947	Apr. 29, 1947	7.20	14,700		June 14, 1955	8.19	17,500
	May 9, 1947	9.80	23,600		June 25, 1955	7.45	15,000
1948	May 23, 1948	12.40	32,600	1956	Apr. 22, 1956	5.58	9,020
	June 4, 1948	9.51	22,000		May 22, 1956	11.28	28,300
					June 2, 1956	10.48	25,500
1949	Apr. 29, 1949	5.82	9,920		June 11, 1956	7.68	15,800
	May 14, 1949	8.56	19,500				
	May 28, 1949	7.61	16,100	1957	May 5, 1957	10.10	24,200
					May 21, 1957	8.25	17,800
1950	May 15, 1950	8.11	17,900		June 4, 1957	7.13	14,000

3590. South Fork Flathead River at Spotted Bear ranger station, near Hungry Horse, Mont.

Location.--Lat 47°55'20", long 113°31'25", in SE¼SW¼ sec.17, T.25 N., R.15 W., on left bank 1,000 ft upstream from Spotted Bear River and 40 miles southeast of Hungry Horse.

Drainage area.--958 sq mi. Area of lakes and ponds, 2.2 sq mi; mean elevation, 6,130 ft.

Gage.--Recording. Altitude of gage is 3,670 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 15,000 cfs and by slope-area measurement at 22,000 cfs.

Remarks.--Base for partial-duration series, 7,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 22, 1948	14.00	a22,000	1953	May 20, 1953	7.49	8,400
					June 3, 1953	10.57	15,500
1949	May 15, 1949	9.69	13,700		June 13, 1953	11.45	17,700
	May 28, 1949	8.47	11,100				
	June 8, 1949	7.21	8,490	1954	May 12, 1954	9.34	12,500
					May 20, 1954	12.75	21,000
1950	May 15, 1950	8.42	11,000		June 5, 1954	7.87	9,720
	May 23, 1950	8.23	10,600		June 14, 1954	8.02	10,200
	May 28, 1950	8.33	10,800		June 24, 1954	10.02	15,000
	June 6, 1950	10.06	14,500				
	June 21, 1950	10.54	15,600	1955	May 21, 1955	9.36	12,600
	July 1, 1950	9.65	13,600		June 14, 1955	9.86	13,800
					June 24, 1955	9.12	12,100
1951	May 12, 1951	9.93	14,200				
	May 24, 1951	9.28	12,300	1956	May 22, 1956	11.93	19,500
	June 16, 1951	9.89	13,700		June 2, 1956	12.52	21,200
					June 11, 1956	8.68	12,000
1952	Apr. 28, 1952	9.16	12,000		June 16, 1956	8.28	11,100
	May 20, 1952	8.20	9,750				
	June 6, 1952	7.72	8,680	1957	May 5, 1957	9.41	13,200
					May 20, 1957	8.85	11,900
1953	May 8, 1953	7.22	7,840		June 3, 1957	8.44	10,900

a Annual peak only.

3595. Spotted Bear River near Hungry Horse, Mont.

Location.--Lat 47°55'40", long 113°31'10", near center of sec.17, T.25 N., R.15 W., on left bank a third of a mile upstream from mouth and 40 miles southeast of Hungry Horse.

Drainage area.--184 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 5,960 ft.

Gage.--Recording. Altitude of gage is 3,690 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurement below 3,600 cfs and by slope-area measurement at 4,010 cfs.

Remarks.--Base for partial-duration series, 1,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 22, 1948	7.24	a4,010	1951	June 16, 1951	5.25	2,740
1949	Apr. 29, 1949	4.15	1,550	1952	Apr. 28, 1952	5.37	2,770
	May 13, 1949	6.03	3,050		May 4, 1952	4.59	2,020
	May 28, 1949	5.29	2,460		May 16, 1952	4.63	2,050
1950	May 15, 1950	5.88	2,930	1953	May 8, 1953	4.58	2,010
	May 23, 1950	5.40	2,550		May 20, 1953	4.35	1,800
	May 28, 1950	5.32	2,490		June 2, 1953	5.57	3,070
	June 6, 1950	6.42	3,860		June 13, 1953	6.17	3,720
	June 12, 1950	5.86	3,300				
	July 1, 1950	4.82	2,090	1954	May 12, 1954	5.50	3,150
					May 20, 1954	7.40	5,480
1951	May 12, 1951	5.77	3,280		May 26, 1954	5.80	3,620
	May 24, 1951	5.33	2,820		June 1, 1954	4.25	2,000

a Annual peak only.

Peak stages and discharges of Spotted Bear River near Hungry Horse, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1954	June 5, 1954	4.73	2,420	1955	June 25, 1955	4.35	1,880
	June 13, 1954	4.52	2,160				
	June 23, 1954	5.09	2,700	1956	May 21, 1956	7.00	4,690
					June 2, 1956	6.35	3,910
1955	May 21, 1955	5.72	3,400		June 11, 1956	4.59	1,990
	June 12, 1955	5.35	2,840		June 16, 1956	4.41	1,820

3600. Twin Creek near Hungry Horse, Mont.

Location.--Lat 47°59'10", long 113°33'30", in E½ sec.25, T.26 N., R.16 W., on left bank 300 ft upstream from road bridge, 0.1 mile upstream from mouth, and 36 miles southeast of Hungry Horse.

Drainage area.--47.0 sq mi. Area of lakes and ponds, 0.05 sq mi; mean elevation, 5,300 ft.

Gage.--Recording. Altitude of gage is 3,610 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 1,000 cfs and by slope-area measurement at 2,400 cfs.

Remarks.--Base for partial-duration series, 480 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 22, 1948	8.1	a2,410	1953	Apr. 28, 1953	5.97	680
					May 7, 1953	6.47	868
1949	Apr. 24, 1949	5.35	488		May 19, 1953	6.28	792
	Apr. 29, 1949	5.88	649		May 29, 1953	6.59	920
	May 14, 1949	6.71	980		June 13, 1953	6.48	872
	May 27, 1949	5.92	663				
				1954	May 11, 1954	7.79	1,640
1950	May 14, 1950	7.52	1,550		May 19, 1954	8.33	2,790
	May 22, 1950	6.92	1,070		May 25, 1954	6.62	971
	May 27, 1950	6.72	945		May 31, 1954	5.81	654
	June 5, 1950	7.30	1,350		June 5, 1954	5.82	657
	June 12, 1950	6.59	935		June 13, 1954	5.67	611
	June 16, 1950	6.38	852		June 22, 1954	5.80	651
	June 29, 1950	5.37	522				
				1955	May 7, 1955	5.31	514
1951	Apr. 30, 1951	5.54	542		May 13, 1955	5.92	696
	May 12, 1951	7.19	1,270		May 21, 1955	7.10	1,260
	May 22, 1951	6.39	836		June 7, 1955	6.12	757
	June 15, 1951	5.80	622		June 11, 1955	6.30	757
1952	Apr. 18, 1952	5.93	646	1956	Apr. 21, 1956	5.91	673
	Apr. 27, 1952	7.17	1,250		May 11, 1956	5.59	566
	May 4, 1952	5.94	649		May 21, 1956	7.54	1,560
	May 15, 1952	5.92	642		June 2, 1956	6.92	1,080
1953	Apr. 23, 1953	6.20	762				

a Annual peak only.

3605. Lower Twin Creek near Hungry Horse, Mont.

Location.--Lat 47°59'40", long 113°33'20", in SE¼ sec.24, T.26 N., R.16 W., on left bank half a mile upstream from mouth and 35 miles southeast of Hungry Horse.

Drainage area.--22.4 sq mi. Area of lakes and ponds, 0.02 sq mi; mean elevation, 5,540 ft.

Gage.--Recording. Altitude of gage is 3,630 ft (from river profile).

Stage-discharge relation.--Defined by current-meter measurements below 500 cfs and by slope-area measurement at 1,200 cfs.

Remarks.--Base for partial-duration series, 300 cfs.

Peak stages and discharges of Lower Twin Creek near Hungry Horse, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 22, 1948	5.25	a1,200	1953	Apr. 28, 1953	3.06	353
					May 7, 1953	3.31	437
1949	Apr. 29, 1949	2.58	325		May 19, 1953	3.11	398
	May 12, 1949	3.46	548		June 3, 1953	3.38	503
	May 27, 1949	3.14	419		June 8, 1953	3.34	434
	June 5, 1949	2.83	308		June 13, 1953	3.44	446
1950	May 15, 1950	3.65	490	1954	May 12, 1954	3.62	590
	May 23, 1950	3.52	445		May 20, 1954	4.01	868
	May 27, 1950	3.59	469		June 5, 1954	2.68	300
	June 5, 1950	3.86	565		June 11, 1954	2.97	383
	June 12, 1950	3.76	543		June 22, 1954	2.91	366
	June 22, 1950	3.56	490				
	June 30, 1950	3.11	327	1955	May 21, 1955	3.90	645
					June 7, 1955	3.52	478
1951	May 12, 1951	3.50	457		June 12, 1955	3.58	502
	May 24, 1951	3.09	345		June 24, 1955	3.30	405
1952	Apr. 28, 1952	3.44	482	1956	Apr. 22, 1956	3.07	332
	May 4, 1952	3.09	377		May 21, 1956	4.38	909
	May 15, 1952	3.19	407		June 2, 1956	4.49	804
					June 10, 1956	3.17	388
1953	Apr. 24, 1953	3.11	368		June 16, 1956	2.86	323

a Annual peak only.

3610. Sullivan Creek near Hungry Horse, Mont.

Location.--Lat 48°01'45", long 113°42'10", in W½ sec.12, T.26 N., R.17 W., on left bank a quarter of a mile downstream from Quintonkon Creek, 1 mile upstream from Hungry Horse Reservoir flow line, and 30 miles southeast of Hungry Horse.

Drainage area.--71.3 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 5,510 ft.

Gage.--Recording. Altitude of gage is 3,740 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 2,000 cfs and by slope-area measurement at 2,300 cfs.

Remarks.--Base for partial-duration series, 700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 1948	-	a2,280	1953	Apr. 28, 1953	3.39	754
					May 7, 1953	3.86	1,060
1949	Apr. 24, 1949	3.46	744		May 19, 1953	3.93	1,110
	Apr. 29, 1949	3.64	842		June 3, 1953	4.31	1,380
	May 2, 1949	3.53	774		June 8, 1953	4.23	1,320
	May 12, 1949	4.73	1,700		June 13, 1953	4.16	1,270
	May 27, 1949	4.23	1,320				
	June 5, 1949	3.68	927	1954	May 11, 1954	4.47	1,620
					May 19, 1954	5.29	2,750
1950	May 14, 1950	4.62	1,620		May 31, 1954	3.65	922
	May 22, 1950	4.28	1,360		June 11, 1954	3.77	1,000
	May 27, 1950	4.25	1,340		June 22, 1954	3.81	1,060
	June 5, 1950	4.57	1,580		July 1, 1954	3.72	1,000
	June 21, 1950	4.59	1,590				
	June 30, 1950	4.13	1,250	1955	May 12, 1955	3.59	894
					May 21, 1955	4.40	1,540
1951	Dec. 24, 1950	3.82	1,020		May 31, 1955	3.29	710
	May 12, 1951	4.34	1,400		June 11, 1955	4.22	1,360
	May 24, 1951	4.01	1,160		June 24, 1955	3.67	946
	June 15, 1951	3.95	1,040				
				1956	Apr. 21, 1956	3.46	861
1952	Apr. 19, 1952	3.39	724		May 11, 1956	3.57	926
	Apr. 28, 1952	4.37	1,410		May 21, 1956	4.94	2,220
	May 19, 1952	4.07	1,170		June 2, 1956	4.96	2,250
	June 5, 1952	3.52	802		June 10, 1956	3.61	906
					June 17, 1956	3.95	1,120
1953	Apr. 23, 1953	3.67	936				

a Annual peak only.

3615. Graves Creek near Hungry Horse, Mont.

Location.--Lat 48°07'30", long 113°49'10", in SE¼ sec.1, T.27 N., R.17 W., on left bank 500 ft upstream from Hungry Horse Reservoir flow line, and 22 miles southeast of Hungry Horse.

Drainage area.--27.0 sq mi. At site prior to October 1951, 33.0 sq mi. Area of lakes and ponds, 0.66 sq mi; mean elevation, 5,430 ft.

Gage.--Recording. Prior to Oct. 1, 1951, at site 2½ miles downstream at different datum. Altitude of gage is 3,600 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurement below 1,100 cfs and by slope-area measurement at 1,440 cfs.

Remarks.--Base for partial-duration series, 500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 22, 1948	5.33	a1,440	1953	May 8, 1953	3.75	502
					May 19, 1953	3.96	626
1949	May 16, 1949	4.60	1,030		June 3, 1953	4.57	1,030
	May 23, 1949	4.08	763		June 8, 1953	4.53	1,000
	May 28, 1949	4.42	933		June 13, 1953	4.38	897
	June 7, 1949	4.02	734				
				1954	May 12, 1954	4.28	728
1950	May 15, 1950	3.98	699		May 19, 1954	4.82	1,300
	May 23, 1950	3.86	648		June 1, 1954	3.68	502
	May 28, 1950	4.00	708		June 5, 1954	3.71	519
	June 6, 1950	4.57	963		June 13, 1954	4.22	826
	June 12-13, 1950	4.60	977		June 23, 1954	4.32	858
	June 22, 1950	5.69	1,520		July 1, 1954	4.50	987
	July 1, 1950	4.63	991				
				1955	May 31, 1955	3.90	602
1951	Dec. 24, 1950	3.65	562		June 14, 1955	4.44	917
	May 12, 1951	4.17	782		June 23, 1955	4.49	952
	May 24, 1951	4.08	738				
	June 16, 1951	4.33	907	1956	May 21, 1956	4.97	1,100
	June 24, 1951	3.44	534		May 25, 1956	4.85	1,020
					June 2, 1956	5.00	1,160
1952	Apr. 28, 1952	4.01	656		June 11, 1956	4.37	717
	May 20, 1952	4.33	864		June 17, 1956	4.86	1,050
	June 5, 1952	4.06	689				
	June 21, 1952	3.97	632				

a Annual peak only.

3625. South Fork Flathead River near Columbia Falls, Mont.

Location.--Lat 48°21'30", long 114°02'15", in SW¼SE¼SW¼ sec.16, T.30 N., R.19 W., 1½ miles downstream from Hungry Horse Dam, 3½ miles upstream from mouth, and 7 miles east of Columbia Falls.

Drainage area.--1,663 sq mi. Area of lakes and ponds, 4.66 sq mi; mean elevation, 5,780 ft.

Gage.--Nonrecording prior to October 1916; recording thereafter. At site 3 miles downstream at different datum prior to October 1916, and Apr. 23, 1923, to Sept. 30, 1928. At site 1½ miles downstream at several different datums Oct. 1, 1928, to Sept. 30, 1952. Datum of gage is 3,040.0 ft above mean sea level (levels by Bureau of Reclamation).

Stage-discharge relation.--Defined by current-meter measurements below 31,000 cfs and extended above.

Remarks.--Flow regulated since Sept. 21, 1951, by Hungry Horse Reservoir. Base for partial-duration series, 14,900 cfs.

Peak stages and discharges of South Fork Flathead River near Columbia Falls, Mont.

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 13, 1911	10.5	21,800
1912	June 14, 1912	9.01	16,000
1913	June 3, 1913	14.8	39,000
1914	May 17, 1914	10.6	22,200
1915	June 25, 1915	6.5	7,300
1916	June 19, 1916	16.6	46,200
1917	May 28, 1917	10.9	23,400
1918	June 10, 1918	13.5	33,800
1919	May 25, 1919	8.8	15,200
1920	June 16, 1920	10.2	20,600
1921	May 26, 1921	12.8	29,700
1922	June 6, 1922	12.2	27,500
1923	May 11, 1923	9.90	17,200
	May 26, 1923	11.40	21,900
1924	May 4, 1924	9.92	17,500
	May 17, 1924	12.13	25,400
1925	May 25, 1925	11.00	23,200
1926	-	9.29	17,300
1927	May 17, 1927	12.25	27,500
	May 26, 1927	8.95	16,300
	June 9, 1927	14.85	38,000
1928	May 25, 1928	14.2	34,100
1929	May 24, 1929	14.58	24,400
	June 2, 1929	11.70	16,700
	June 9, 1929	11.30	15,800
1930	Apr. 25, 1930	10.92	14,800
1931	May 7, 1931	11.47	16,200
	May 16, 1931	13.98	22,700
1932	May 14, 1932	15.54	27,000
	May 22, 1932	16.53	30,000
	June 2, 1932	11.46	16,200
	June 15, 1932	12.11	17,700
1933	Apr. 28, 1933	11.47	17,000
	June 5, 1933	16.97	33,100
	June 16, 1933	18.22	36,800
1934	Apr. 25, 1934	13.27	22,000
1935	May 23, 1935	14.84	26,400
	June 1, 1935	12.99	21,100
1936	Apr. 20, 1936	11.44	16,700
	May 5, 1936	12.98	21,100
	May 15, 1936	16.33	30,900
	May 31, 1936	13.15	21,700
1937	May 28, 1937	11.19	17,000
1938	Apr. 19, 1938	12.84	20,400
	Apr. 27, 1938	13.73	23,100
1939	Apr. 30, 1939	15.2	27,000
	May 17, 1939	14.65	25,100
	May 30, 1939	11.63	16,700
1940	May 12,25,1940	10.84	14,700
1941	May 14, 1941	9.12	11,200
1942	May 27, 1942	13.38	23,300
	June 8, 1942	10.98	16,100
1943	Apr. 20, 1943	13.31	23,000
	May 28, 1943	13.74	22,700
	June 19, 1943	14.68	25,400
	July 1, 1943	12.43	19,300
1944	May 16, 1944	10.73	15,100
1945	May 6, 1945	11.84	17,800
	June 1, 1945	12.53	19,500
1946	Apr. 27, 1946	10.79	15,300
	May 6, 1946	11.96	18,300
	May 18, 1946	10.89	15,600
	May 29, 1946	14.58	25,100
	June 6, 1946	11.89	18,300
1947	Apr. 29, 1947	11.66	17,500
	May 9, 1947	17.70	35,800
	May 27, 1947	12.12	18,500
	June 10, 1947	11.77	17,800
1948	May 22, 1948	19.60	43,400
	May 28, 1948	17.22	34,100
	June 4, 1948	16.65	32,100
1949	May 15, 1949	16.23	27,100
	May 28, 1949	13.92	20,200
1950	May 15, 1950	15.10	23,600
	May 23, 1950	14.0	20,400
	May 28, 1950	14.16	20,800
	June 6, 1950	16.14	26,800
	June 22, 1950	16.89	29,400
	July 1, 1950	14.94	22,900
1951	May 12, 1951	15.73	25,500
	May 24, 1951	14.54	21,900
	June 16, 1951	14.65	22,200
1952	May 18, 1952	9.86	10,000
1953	Dec. 3, 1952	7.66	4,870
1954	July 13, 1954	18.56	32,500
1955	July 15, 1955	11.50	13,200
1956	June 21, 1956	10.91	11,700
1957	Feb. 19, 1957	10.65	11,100

3630. Flathead River at Columbia Falls, Mont.

Location.--Lat 48°21'50", long 114°11'10", in NW¼SE¼ sec.17, T.30 N., R.20 W., on right bank 200 ft downstream from county highway bridge at Columbia Falls and 5 miles downstream from South Fork.

Drainage area.--4,464 sq mi. Area of lakes and ponds, 42 sq mi; mean elevation, 5,730 ft.

Gage.--Nonrecording at site 200 ft upstream at datum 0.19 ft higher prior to Nov. 12, 1928; recording thereafter. Datum of gage is 2,978.00 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 85,000 cfs and extended above.

Remarks.--South Fork Flathead River, which contributes about one-third of flow, completely regulated by Hungry Horse Reservoir since Sept. 21, 1951. Base for partial-duration series, 38,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	22.7	a135,000	1941	May 14, 1941	9.06	26,400
1928	May 26, 1928	-	a101,000	1942	May 27, 1942	13.94	56,300
					June 7, 1942	11.83	41,900
1929	May 24, 1929	14.44	69,700	1943	Apr. 20, 1943	13.71	54,900
	June 2, 1929	12.00	48,200		May 28, 1943	13.90	56,300
	June 9, 1929	11.37	43,400		June 18, 1943	14.80	62,800
1930	May 31, 1930	10.80	38,800	1944	May 20, 1944	10.91	34,700
1931	May 7, 1931	10.80	38,800	1945	May 6, 1945	12.10	42,200
	May 16, 1931	13.60	62,300		June 1, 1945	13.64	52,700
1932	May 14, 1932	15.36	79,300	1946	Apr. 27, 1946	11.57	39,000
	May 22, 1932	16.46	89,800		May 6, 1946	12.54	45,000
	June 2, 1932	12.50	52,400		May 29, 1946	15.63	68,400
	June 15, 1932	12.66	54,100		June 6, 1946	13.11	49,200
1933	Apr. 29, 1933	11.65	42,600	1947	Apr. 29, 1947	12.68	47,900
	June 10, 1933	16.70	83,500		May 9, 1947	17.27	83,700
	June 16, 1933	17.63	91,200		May 27, 1947	12.74	47,900
1934	Apr. 25, 1934	13.92	60,200		Apr. 10, 1947	12.13	43,800
	May 8, 1934	13.71	58,600	1948	May 23, 1948	19.08	a102,000
	May 17, 1934	13.10	53,900	1949	May 15, 1949	14.84	65,200
	May 28, 1934	12.32	47,700		May 28, 1949	13.09	51,500
1935	May 24, 1935	15.28	71,000	1950	May 15, 1950	14.18	60,800
1936	Apr. 20, 1936	11.00	39,100		May 23, 1950	12.92	51,300
	May 5, 1936	12.76	51,800		May 28, 1950	13.65	56,800
	May 15, 1936	15.40	71,800		June 6, 1950	15.38	70,400
	June 1, 1936	12.78	51,800		June 22, 1950	16.16	74,600
1937	May 28, 1937	11.99	46,000		July 1, 1950	13.85	56,100
	June 3, 1937	11.04	39,100	1951	May 12, 1951	15.50	69,000
1938	Apr. 19, 1938	13.94	59,900		May 24, 1951	14.63	62,000
	May 2, 1938	11.63	42,500		June 16, 1951	11.18	58,600
	May 27, 1938	15.25	70,400	1952	Apr. 28, 1952	12.65	a47,200
1939	Apr. 30, 1939	14.63	65,600	1953	June 13, 1953	12.88	a48,900
	May 17, 1939	14.09	57,700	1954	May 20, 1954	15.57	a69,600
	May 30, 1939	11.77	41,900	1955	June 14, 1955	11.91	a42,100
1940	May 12, 1940	11.67	41,300	1956	May 21, 1956	15.34	a66,200
	May 25, 1940	11.26	38,900	1957	May 6, 1957	13.20	a50,500

a Annual peak only.

3640. Logan Creek at Tally Lake, near Whitefish, Mont.

Location.--Lat 48°27'10", long 114°34'10", in SW¼NW¼ sec.17, T.31 N., R.23 W., on left bank 2½ miles downstream from Tally Lake and 10 miles west of Whitefish.

Drainage area.--183 sq mi. At site prior to September 1934, 179 sq mi. Area of lakes and ponds, 42 sq mi; mean elevation, 5,720 ft.

Gage.--Recording at outlet of Tally Lake 2½ miles upstream at different datum prior to Sept. 16, 1934; nonrecording thereafter. Altitude of gage is 3,340 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 1,300 cfs.

Remarks.--Natural storage in Tally Lake. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1933	May 28, 1933	7.22	-	1941	May 6, 1941	1.91	90
				1942	May 29, 1942	3.22	496
1936	Apr. 28, 1936	3.66	900				
1937	May 9, 1937	3.18	515	1945	May 17, 1945	2.93	381
1938	May 5, 1938	3.28	590				
1939	May 6, 1939	3.12	477	1946	Apr. 29, 1946	3.60	650
1940	May 6,7, 1940	2.33	165	1947	May 11, 1947	4.85	1,380

3650. Stillwater River near Whitefish, Mont.

Location.--Lat 48°19'10", long 114°23'00", in NE¼SW¼ sec.34, T.30 N., R.22 W., on right bank 600 ft downstream from highway bridge, 7 miles southwest of Whitefish, and 10 miles upstream from Whitefish Creek.

Drainage area.--325 sq mi. Area of lakes and ponds, 1.19 sq mi; mean elevation, 4,320 ft.

Gage.--Recording. Altitude of gage is 2,950 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurement below 3,700 cfs.

Remarks.--Base for partial-duration series, 540 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	May 9, 1931	6.17	825	1942	Apr. 26, 1942	6.52	857
					May 31, 1942	9.63	1,470
1932	May 17, 1932	11.54	1,910		July 1, 1942	7.34	1,010
	June 8, 1932	10.55	1,720				
				1943	Apr. 22, 1943	14.79	2,630
1933	May 2, 1933	10.38	1,680		May 31, 1943	11.63	1,840
	June 3, 1933	11.63	1,930				
				1944	May 23, 1944	3.56	345
1934	Apr. 28, 1934	14.47	2,680				
				1945	May 18, 1945	7.27	948
1935	May 26, 1935	12.49	2,170				
				1946	May 10, 1946	11.09	1,710
1936	Apr. 28, 1936	10.70	1,750				
				1947	May 12, 1947	17.22	3,200
1937	May 10, 1937	7.79	1,240		June 14, 1947	10.68	1,550
1938	May 30, 1938	8.67	1,280	1948	May 26, 1948	20.90	4,330
1939	May 7, 1939	8.75	1,300	1949	May 17, 1949	-	a2,650
1940	May 16, 1940	5.62	688	1950	Apr. 24, 1950	8.21	1,020
					May 19, 1950	15.57	2,700
1941	May 8, 1941	3.81	408				

a Maximum daily.

3660. Whitefish Creek near Kalispell, Mont.

Location.--Lat 48°19'10", long 114°16'30", in SE¼NW¼ sec.34, T.30 N., R.21 W., on left bank 8 miles upstream from mouth and 8 miles north of Kalispell.

Drainage area.--170 sq mi. Area of lakes and ponds, 5.0 sq mi; mean elevation, 4,170 ft.

Gage.--Nonrecording gage at site 200 ft downstream at datum 10.0 ft lower prior to Oct. 16, 1930; recording thereafter. Datum of gage is 2,969.7 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 900 cfs and extended above.

Remarks.--Base for partial-duration series, 530 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	June 4, 1929	12.52	684	1941	May 6, 1941	2.60	488
1930	June 8, 1930	12.85	827	1942	June 6, 1942	2.98	682
1931	May 19, 1931	2.81	648	1943	Apr. 22, 1943	2.76	568
1932	May 24, 1932	3.84	1,070		June 23, 1943	3.18	709
	June 3, 1932	4.26	1,270	1944	May 20, 1944	2.43	406
1933	June 18, 1933	4.01	1,140	1945	June 6, 1945	3.25	710
1934	May 1, 1934	3.55	982	1946	June 1, 1946	3.94	1,110
1935	June 16, 1935	3.3[illegible]	905	1947	May 12, 1947	4.17	1,170
1936	May 17, 1936	3.25	856		June 11, 1947	4.14	1,160
1937	June 8, 1937	2.84	661	1948	May 30, 1948	4.41	1,290
1938	May 31, 1938	3.18	782	1949	May 18, 1949	3.76	982
1939	May 20, 1939	3.22	757	1950	June 26, 1950	4.45	1,260
1940	May 26, 1940	2.73	552				

3675. Ashley Creek near Kalispell, Mont.

Location.--Lat 48°10'00", long 114°26'00", in NE¼NW¼ sec.29, T.28 N., R.22 W., on left bank 2½ miles downstream from Smith Lake, 1½ miles upstream from headgate of Ashley Irrigation District canal, and 5 miles west of Kalispell.

Drainage area.--201 sq mi.

Gage.--Nonrecording and Cippoletti weir. Altitude of gage is 3,130 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurement below 680 cfs.

Remarks.--Floodwater stored in Ashley Lake (usable capacity, 20,000 acre-ft for release during irrigation seasons. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1931	May 17, 1931	7.20	57	1942	June 10, 1942	4.70	100
1932	May 14,15,1932	8.20	124	1943	Apr. 23, 1943	5.53	264
				1944	June 2,3,4,1944	4.23	45
1935	May 24,25,1935	8.36	166	1945	May 19, 1945	4.36	57
1936	May 5, 1936	8.16	154	1946	Mar. 22, 1946	4.46	68
1937	Apr. 5, 1937	7.31	60	1947	May 12, 1947	6.26	374
1938	June 1, 1938	7.38	64	1948	May 27, 1948	7.58	749
1939	Mar.26,28,29,1939	4.21	46	1949	May 14-16, 1949	5.47	192
1940	May 3,4, 1940	3.99	28	1950	May 25, 1950	5.64	221
1941	Mar.18,19,1941	3.78	19				

3700. Swan River near Bigfork, Mont.

Location.--Lat 48°01'30", long 113°58'40", in SE¼SW¼ sec.11, T.26 N., R.19 W., on left bank at outlet of Swan Lake, about 1,000 ft downstream from Johnson Creek and 5 miles southeast of Bigfork.

Drainage area.--671 sq mi. Area of lakes and ponds, 8.75 sq mi; mean elevation, 5,020 ft.

Gage.--Nonrecording at site 800 ft upstream at datum 1.9 ft higher prior to Oct. 14, 1930; recording thereafter. Datum of gage is 3,062.6 ft (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 6,700 cfs and extended above.

Remarks.--Natural storage in Swan Lake. Diversions for irrigation of about 360 acres above station. Base for partial-duration series, 3,300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1922	May 22, 1922	4.25	4,530
	June 8, 1922	4.82	5,500
1923	May 28, 1923	3.93	4,020
	June 14, 1923	4.35	4,870
1924	May 19, 1924	4.68	5,380
1925	Apr. 14, 1925	4.24	4,530
	May 23, 1925	5.45	6,760
	June 23, 1925	3.88	4,020
1926	Apr. 21, 1926	3.80	3,860
	May 2, 1926	3.74	3,700
1927	Apr. 30, 1927	4.10	4,360
	May 19, 1927	4.34	4,700
	June 13, 1927	5.56	7,060
1928	Apr. 30, 1928	3.70	4,140
	May 28, 1928	5.90	7,820
	June 30, 1928	4.00	7,640
1929	May 26, 1929	4.40	5,300
	June 12, 1929	3.80	4,310
1930	June 1, 1930	2.88	2,920
1931	May 18, 1931	5.57	5,140
	June 3, 1931	4.63	3,400
1932	May 16, 1932	5.49	4,950
	May 24, 1932	5.92	5,710
	June 18, 1932	5.32	4,570
1933	June 18, 1933	7.00	8,280
1934	Dec. 25, 1934	5.42	4,750
	Apr. 30, 1934	4.99	3,950
	June 1, 1934	4.80	3,560
1935	May 25, 1935	5.33	4,650
1936	Apr. 25, 1936	5.41	4,850
	May 17, 1936	5.97	6,180
	June 2, 1936	5.66	5,550
1937	May 29, 1937	4.71	3,380
1938	May 30, 1938	5.26	4,350
1939	May 6, 1939	5.24	4,350
1940	May 27, 1940	4.82	3,650
1941	June 3, 1941	3.83	2,120
1942	May 28, 1942	5.03	3,980
	June 10, 1942	4.91	3,690
1943	Apr. 21, 1943	5.17	4,220
	May 30, 1943	5.16	4,220
	June 21, 1943	5.82	5,570
1944	May 20, 1944	4.53	3,120
1945	June 4, 1945	5.01	3,940
	June 24, 1945	4.83	3,660
1946	May 30, 1946	5.34	4,610
1947	May 11, 1947	6.11	5,960
	June 12, 1947	5.32	4,380
1948	Apr. 25, 1948	4.82	3,630
	May 10, 1948	5.00	3,860
	May 24, 1948	7.12	8,400
1949	May 17, 1949	5.64	5,130
1950	May 18, 1950	4.96	3,780
	June 8, 1950	5.08	4,010
	June 23, 1950	6.01	5,900
	July 4, 1950	5.65	5,150
1951	May 14, 1951	5.45	4,750
1952	Apr. 30, 1952	5.37	4,590
1953	June 5, 1953	5.67	5,610
1954	May 22, 1954	5.68	5,630
1955	June 16, 1955	5.60	5,060
1956	June 4, 1956	6.42	6,790
1957	May 8, 1957	5.55	4,960

3705. Big Creek near Polson, Mont. a/

Location.--Lat 47°42'10", long 114°02'50", in NW¼NW¼ sec.4, T.22 N., R.19 W., on left bank just downstream from powerplant, three-quarters of a mile upstream from mouth and 7 miles east of Polson.

Drainage area.--6.41 sq mi. Area of lakes and ponds, 0.06 sq mi; mean elevation, 5,000 ft.

Gage.--Recording and concrete control. Altitude of gage is 3,150 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 40 cfs.

Remarks.--Records include water diverted by the Flathead irrigation project canal for irrigation of lands downstream, and the Polson municipal water-supply pipeline. Flow regulated by powerplant and two reservoirs with a combined capacity of about 200 acre-ft. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1918	June 11,14,1918	-	38	1925	May 22, 1925	-	61
1919	May 27, 1919	-	69				
1920	May 14, 1920	-	29	1926	May 1, 1926	-	34
				1927	June 11, 1927	-	61
1921	June 7, 1921	-	23	1928	May 23, 1928	-	40
1922	May 20, 1922	-	49	1929	May 25, 1929	-	33
1923	June 22, 1923	-	30	1930	May 25, 1930	-	14
1924	May 17, 1924	-	27				

a Now Hell Roaring Creek, by decision of the U.S. Geographic Board Oct. 5, 1932.

3720. Flathead River near Polson, Mont.

Location.--Lat 47°40'50", long 114°15'10", in NW¼SE¼ sec.11, T.22 N., R.21 W., on left bank half a mile downstream from Kerr Dam, 4 miles west of Polson, and 5 miles downstream from Flathead Lake.

Drainage area.--7,096 sq mi. At sites prior to Oct. 1, 1941, 7,117 sq mi. Area of lakes and ponds, 251 sq mi; mean elevation, 5,160 ft.

Gage.--Nonrecording prior to Nov. 23, 1928; recording thereafter. At site 6 miles downstream at datum 2,629.20 ft above mean sea level (river-profile survey) prior to Oct. 1, 1941. Datum of gage is 2,693.70 ft above mean sea level (levels by Montana Power Co.).

Stage-discharge relation.--Defined by current-meter measurements below 71,000 cfs.

Remarks.--Diversion for irrigation of about 10,000 acres above station. Flathead Project pumps can divert up to 12,000 acre-ft per month when required for irrigation of lands downstream from station. Flow regulated since April 1938 by Kerr Dam and since September 1951 by Hungry Horse Reservoir. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908	June 13, 1908	14.6	62,100	1921	June 11, 1921	14.3	62,000
1909	June 22, 1909	13.75	58,800	1922	June 10, 1922	13.5	56,400
1910	May 15, 1910	11.55	42,800	1923	June 15, 1923	13.43	55,700
				1924	May 26, 1924	12.09	47,000
1911	June 20, 1911	11.9	44,200	1925	May 25, 1925	15.02	67,000
1912	June 15, 1912	-	36,500				
1913	June 10, 1913	16.4	75,400	1926	May 8, 1926	9.22	29,200
1914	May 26, 1914	11.4	41,000	1927	June 19, 1927	16.1	75,000
1915	May 18, 1915	8.0	21,000	1928	May 29, 1928	17.2	82,800
				1929	June 13, 1929	11.70	45,500
1916	July 4, 1916	16.3	74,700	1930	June 11, 1930	9.98	31,700
1917	June 23, 1917	14.1	59,100				
1918	June 20, 1918	14.0	58,400	1931	May 20, 1931	10.52	35,400
1919	June 1, 1919	12.5	48,200	1932	May 24, 1932	13.60	51,800
1920	June 24, 1920	11.9	44,200	1933	June 19, 1933	17.30	78,100

Peak stages and discharges of Flathead River near Polson, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	May 12, 1934	13.30	52,200	1946	June 7, 1946	15.67	50,500
1935	June 5, 1935	13.03	50,200	1947	May 15, 1947	16.80	56,600
				1948	June 6, 1948	19.15	73,200
1936	May 19, 1936	13.12	50,900	1949	May 19, 1949	15.89	51,500
1937	June 4, 1937	10.83	35,800	1950	June 25, 1950	18.02	67,000
1938	June 7, 1938	13.07	49,200				
1939	May 20, 1939	12.42	45,900	1951	June 16, 1951	17.99	66,800
1940	May 27, 1940	11.20	38,400	1952	May 23, 1952	13.93	41,800
				1953	June 4, 1953	16.64	58,100
1941	June 4, 1941	8.56	22,200	1954	July 3, 1954	16.69	59,300
1942	June 10, 1942	16.20	53,500	1955	June 16, 1955	15.48	49,300
1943	June 24, 1943	15.52	49,300				
1944	June 6, 1944	10.57	24,500	1956	June 7, 1956	16.89	58,200
1945	June 3, 1945	17.04	58,400	1957	May 22, 1957	15.40	48,800

3760. Crow Creek near Ronan, Mont.

Location.--Lat 47°29'10", long 114°05'40", in SW¼SW¼ sec.13, T.20 N., R.20 W., 500 ft upstream from bridge on former St. Ignatius-Ronan highway, a quarter of a mile upstream from bridge on present route, and 3 miles south of Ronan.

Drainage area.--46.1 sq mi.

Gage.--Nonrecording. Altitude of gage is 3,010 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 540 cfs and extended above.

Remarks.--Diversions above station for irrigation of lands below (no water bypassed station during 1907-12; 6,550 acre-ft bypassed in 1913; 12,000 acre-ft in 1914; 7,820 acre-ft in 1915; 12,000 acres irrigated in 1916; 12,400 acres in 1917). Annual peaks for the years 1913-17 probably not seriously affected.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	June 8, 1907	5.68	427	1913	June 1-3, 1913	6.2	474
1908	June 6, 1908	10.85	1,400	1914	June 2, 1914	5.9	367
1909	June 21, 1909	6.65	426	1915	July 18, 1915	6.3	408
1910	May 10-12, 1910	5	300				
				1916	June 21, 1916	7.1	682
1911	(a)	-	475	1917	June 23, 1917	7.2	700

a Occurred about June 3, 1911.

3780. Mission Creek near St. Ignatius, Mont.

Location.--Lat 47°19'40", long 114°07'20", in SE¼SE¼ sec.10, T.18 N., R.20 W., on left bank 1 mile northwest of St. Ignatius.

Drainage area.--74.8 sq mi.

Gage.--Nonrecording. At several sites within 300 ft at different datums prior to Jan. 29, 1912. Altitude of gage is 2,790 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurement below 320 cfs and extended above.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	July 5, 1907	-	550	1913	June 30, 1913	-	370
1908	June 10, 1908	6.9	1,700	1914	June 19,20, 1914	3.5	358
1909	June 21, 1909	4.55	602	1915	June 26, 1915	3.6	385
1910	June 14, 1910	3.5	210				
				1916	June 19, 1916	4.7	590
1911	June 28, 1911	4.60	380	1917	June 17, 1917	4.10	426
1912	June 22, 1912	4.0	343				

3885. Revais Creek near Dixon, Mont.

Location.--Lat 47°19'00", long 114°23'10", in E½SW¼ sec.15, T.18 N., R.22 W., on right bank 100 ft downstream from highway bridge, 0.7 mile upstream from mouth, and 3 miles west of Dixon.

Drainage area.--35.0 sq mi. Area of lakes and ponds, 1.0 sq mi; mean elevation, 4,860 ft.

Gage.--Nonrecording. Altitude of gage is 2,640 ft (from river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 155 cfs and extended above.

Remarks.--Only observed annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 2, 1911	2.80	154	1916	June 19, 1916	3.7	512
1912	May 22, 1912	3.1	226				
1913	May 27, 1913	3.5	413	1918	June 10,11,1918	3.4	204
1914	May 24, 1914	3.0	202	1919	May 23, 1919	2.95	144
1915	May 22, 1915	2.73	139				

3890. Clark Fork near Plains, Mont.

Location.--Lat 47°25'50", long 114°51'20", on lot 7, SW¼ sec.1, T.19 N., R.26 W., on right bank 2 miles upstream from Plains and 6 miles downstream from Flathead River.

Drainage area.--19,958 sq mi. Area of lakes and ponds, 290 sq mi; mean elevation, 5,240 ft.

Gage.--Recording. Datum of gage is 2,449.34 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements below 128,000 cfs.

Remarks.--Flow partly regulated by Flathead Lake. Diversions for irrigation of about 335,000 acres above station. Base for partial-duration series, 47,000 cfs. Only annual peaks are shown for many years.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912	June 11, 1912	14.0	74,500	1931	May 19, 1931	10.85	47,300
1913	June 5, 1913	17.94	115,000	1932	May 24, 1932	14.53	83,600
1914	May 25, 1914	13.1	67,000	1933	June 17, 1933	18.0	120,000
1915	June 7, 1915	9.76	37,900	1934	May 10, 1934	14.01	76,800
				1935	June 3, 1935	13.27	71,200
1916	May 9, 1916	-	67,400				
	July 2, 1916	17.9	115,000	1936	May 17, 1936	14.38	81,800
				1937	May 30, 1937	11.05	50,000
1917	May 30, 1917	16.6	102,000	1938	May 31, 1938	14.98	88,000
	June 20, 1917	17.0	106,000	1939	May 20, 1939	13.07	68,000
				1940	May 27, 1940	10.88	48,100
1918	May 7, 1918	13.3	69,100				
	June 16, 1918	16.45	100,000	1941	June 6, 1941	8.91	32,200
1919	May 31, 1919	13.8	73,800	1942	May 29, 1942	13.14	69,000
1920	June 18, 1920	13.8	73,800		June 11, 1942	13.65	74,000
					June 16, 1942	11.62	54,900
1921	May 28, 1921	16.0	100,000		July 1, 1942	10.75	47,300
1922	June 9, 1922	17.25	114,000				
1923	June 14, 1923	15.5	96,500	1943	Apr. 22, 1943	12.57	64,000
1924	May 20, 1924	14.0	80,300		June 22, 1943	15.30	92,500
1925	May 22, 1925	16.55	106,000				
				1944	June 13, 1944	9.27	36,200
1926	May 6, 1926	11.0	47,800				
1927	June 14, 1927	17.6	117,000	1945	June 4, 1945	13.66	74,900
1928	May 28, 1928	18.41	126,000		June 24, 1945	12.08	59,200
1929	June 11, 1929	12.95	67,300				
1930	June 1, 1930	10.76	47,300	1946	May 30, 1946	13.33	70,900

Peak stages and discharges of Clark Fork near Plains, Mont.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1947	May 11, 1947	16.41	104,000	1953	June 15, 1953	15.11	93,700
1948	June 5, 1948	19.17	134,000	1954	May 23, 1954	14.83	90,600
1949	May 18, 1949	15.60	96,100	1955	June 17, 1955	13.57	74,800
1950	June 23, 1950	16.81	110,000	1956	May 26, 1956	16.05	106,000
1951	May 26, 1951	15.60	96,100	1957	May 22, 1957	14.20	86,900
1952	May 17, 1952	13.23	72,300				

3920. Clark Fork at Whitehorse Rapids, near Cabinet, Idaho
(Published as Clark Fork near Heron, Mont., prior to October 1952)

Location.--Lat 48°05'25", long 116°03'50", in NE¼SW¼ sec.27, T.55 N., R.3 E., on left bank at Cabinet, 0.4 mile downstream from Cabinet Gorge Dam, 1.7 miles downstream from Blue Creek, and 6.5 miles southeast of Clark Fork. Discharge computed at Whitehorse Rapids 2.7 miles downstream.

Drainage area.--22,067 sq mi, based on revised area of 22,006 sq mi for site near Heron.

Gage.--Recording prior to Apr. 9, 1952; nonrecording Apr. 9 to Sept. 30, 1952; recording thereafter. At site 4 miles upstream near Heron at datum 88.00 ft higher prior to Jan. 2, 1931, and 78.00 ft higher Jan. 2, 1931, to Apr. 8, 1952. Datum of gage is 2,000.00 ft above mean sea level, datum of 1929, supplementary adjustment of 1947 (levels by Washington Power Co.).

Stage-discharge relation.--Defined by current-meter measurements throughout range.

Bankfull stage.--Not subject to overflow.

Remarks.--Flood flow regulated by Flathead Lake since April 1938 and by Hungry Horse Reservoir since September 1951. Some diurnal fluctuation even at flood stages caused by powerplant at Cabinet Gorge Dam since August 1952. Diversions above station for irrigation of about 354,000 acres. Discharges at present site are considered to be comparable to records at former site near Heron, except for surface flow from slight additional drainage area. Base for partial-duration series, 52,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	-	195,000	1945	June 25, 1945	28.62	59,300
1929	May 27, 1929	21.46	72,600	1946	May 31, 1946	32.86	76,900
1930	June 2, 1930	16.26	51,400	1947	May 11, 1947	41.95	114,000
1931	May 19, 1931	26.31	51,400	1948	May 31, 1948	50.97	153,000
1932	May 24, 1932	36.68	95,400	1949	May 18, 1949	40.19	106,000
1933	June 17, 1933	46.64	137,000	1950	June 22, 1950	43.70	120,000
1934	Dec. 24, 1933	32.17	73,400	1951	May 26, 1951	40.53	106,000
	Apr. 29, 1934	35.52	87,400		June 18, 1951	38.37	97,200
					July 7, 1951	30.16	63,800
1935	June 3, 1935	33.25	77,600	1952	May 21, 1952	-	a78,000
1936	May 18, 1936	36.12	90,000	1953	June 16, 1953	85.10	97,400
1937	May 29, 1937	27.63	54,900	1954	May 22, 1954	85.95	105,000
1938	June 1, 1938	37.47	96,200		June 9, 1954	80.25	65,500
					June 15, 1954	83.04	83,900
1939	May 20, 1939	32.30	73,800		June 26, 1954	82.39	79,300
					July 4, 1954	82.46	79,800
1940	May 27, 1940	26.92	52,600		July 17, 1954	79.90	63,300
1941	June 7, 1941	22.15	35,200	1955	May 23, 1955	78.80	56,800
					June 18, 1955	83.30	85,700
1942	May 29, 1942	32.27	74,500		July 16, 1955	80.19	65,100
	June 12, 1942	32.89	77,100				
				1956	Apr. 23, 1956	82.04	77,000
1943	Apr. 22, 1943	32.11	73,700		May 26, 1956	88.02	121,000
	June 22, 1943	38.44	101,000				
				1957	May 22, 1957	84.88	97,000
1944	June 15, 1944	22.80	37,300		June 8, 1957	82.60	80,800
1945	June 5, 1945	33.34	79,000				

a Maximum daily.

3935. Priest River at outlet of Priest Lake, near Coolin, Idaho

Location.--Lat 48°29', long 116°54', in SW¼ sec.5, T.29 N., R.4 W., on right bank 600 ft downstream from outlet of Priest Lake and 2 miles northwest of Coolin.

Drainage area.--572 sq mi. Area of lakes and ponds, 37.2 sq mi; mean elevation, 4,230 ft.

Gage.--Nonrecording gages on Priest Lake at Coolin at different datums prior to Nov. 25, 1914; recording thereafter. Datum of gage is 2,435.06 ft (Coast and Geodetic Survey datum) or 2,437.99 ft (Geological Survey datum) above mean sea level.

Stage-discharge relation.--Defined by current-meter measurements throughout range.

Remarks.--Slight regulation of flood peaks some years due to logging operations in outlet of Priest Lake. Base for partial-duration series, 2,400 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	June 5, 1913	7.42	5,970	1932	May 23, 1932	5.29	6,890
1914	May 23, 1914	6.7	5,030	1933	June 17, 1933	4.89	5,940
1915	May 2, 1915	3.50	2,450	1934	Apr. 30, 1934	4.84	5,870
1916	June 20, 1916	5.88	5,770	1935	June 1, 1935	4.35	5,130
1917	May 30, 1917	6.83	7,290	1936	May 16, 1936	4.13	4,540
1919	May 29, 1919	5.86	5,800	1937	May 29, 1937	3.21	3,220
1920	May 21, 1920	4.02	3,170	1938	May 30, 1938	4.78	5,780
1921	Apr. 25, 1921	4.23	3,480	1939	May 5, 1939	3.62	4,010
	May 27, 1921	6.28	6,440	1940	May 15, 1940	3.46	3,760
1922	June 7, 1922	5.32	5,120	1941	May 20, 1941	3.53	3,920
1923	May 27, 1923	4.48	4,080	1942	May 29, 1942	3.63	4,100
1924	May 20, 1924	4.64	4,220	1943	Apr. 23, 1943	3.77	4,100
1925	May 23, 1925	5.55	5,730		June 1, 1943	3.48	4,180
1926	May 4, 1926	4.07	3,080	1944	May 18, 1944	2.35	2,430
1927	June 14, 1927	5.38	5,410	1945	May 17, 1945	4.27	5,620
1928	May 28, 1928	5.18	5,250	1946	May 29, 1946	4.64	6,390
1929	May 26, 1929	3.95	3,660	1947	May 11, 1947	4.20	6,160
1930	Apr. 28, 1930	3.85	3,710	1948	May 29, 1948	5.53	8,560
1931	May 17, 1931	3.98	4,220				

3940. Priest River near Coolin, Idaho

Location.--Lat 48°26'50", long 116°53'50", in SE¼ sec.19, T.59 N., R.4 W., on left bank 190 ft downstream from Dickensheet Bridge, 2½ miles downstream from Binarch Creek, 3 miles southwest of Coolin, and 5 miles downstream from outlet of Priest Lake.

Drainage area.--611 sq mi.

Gage.--Recording. Datum of gage is 2,338.24 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements throughout range.

Bankfull stage.--11 ft.

Remarks.--Flood peaks may be slightly regulated by low dam at outlet of Priest Lake since completion Aug. 9, 1950. Base for partial-duration series, 3,500 cfs.

Peak stages and discharges of Priest River near Coolin, Idaho

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	May 16, 1949	7.48	6,840	1954	May 26, 1954	7.63	7,290
1950	June 22, 1950	6.87	5,680	1955	June 14, 1955	7.32	6,580
1951	May 19, 1951	6.80	5,550		July 12, 1955	5.65	3,780
1952	May 21, 1952	6.97	5,740	1956	May 27, 1956	8.15	8,130
1953	June 14, 1953	6.75	5,270	1957	May 20, 1957	7.12	6,230

3950. Priest River near Priest River, Idaho
(Published as "at Priest River" prior to 1931)

Location.--Lat 48°13', long 116°55', in NE¼SE¼ sec.11, T.56 N., R.5 W., on right bank 500 ft downstream from Saddler Creek, a quarter of a mile downstream from Lower West Branch, 2½ miles north of Priest River, and 3½ miles upstream from mouth.

Drainage area.--902 sq mi. Area of lakes and ponds, 4.05 sq mi; mean elevation, 3,820 ft.

Gage.--Nonrecording prior to Sept. 12, 1930; recording thereafter. Altitude of gage is 2,090 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements throughout range.

Bankfull stage.--Not subject to overflow.

Remarks.--Some regulation on tributary and slight regulation of flood peaks some years by logs dumped into outlet of Priest Lake, and since Aug. 9, 1950, by dam three-quarters of a mile below Priest Lake outlet. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	Apr. 30, 1904	6.07	6,300	1945	May 17, 1945	7.26	7,640
1931	May 17,18, 1931	6.25	4,850	1946	May 7, 1946	7.70	8,300
1932	May 23, 1932	8.03	8,890	1947	May 10, 1947	6.95	7,120
1933	June 9, 1933	7.06	7,080	1948	May 29,30, 1948	8.97	10,500
1934	Apr. 29, 1934	7.02	6,900	1949	May 16, 1949	7.96	8,630
1935	May 24,25, 1935	6.50	6,150	1950	June 22, 1950	6.71	6,740
1936	May 16, 1936	6.51	5,710	1951	May 14, 1951	6.80	6,880
1937	May 29, 1937	4.99	4,000	1952	May 1, 1952	6.96	7,140
1938	May 28-30, 1938	6.93	6,960	1953	May 21, 1953	-	6,400
1939	May 5, 1939	6.04	5,000		June 4, 1953	b6.72	-
1940	May 13-15, 1940	5.28	4,540	1954	May 21, 1954	7.94	8,300
				1955	June 14, 1955	7.48	7,570
1941	May 18, 1941	5.69	5,100				
1942	May 28,29, 1942	5.92	5,550	1956	May 26, 1956	8.64	9,690
1943	Apr. 21, 1943	6.27	6,000	1957	May 20, 1957	7.99	8,540
1944	May 24, 1944	a4.57	3,310				

a Backwater from logs.
b Maximum gage height for the year.

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3955. Pend Preille River at Newport, Wash.

(Published as Clark Fork at Newport, Wash., 1904-21, as Clark Fork at Priest River, Idaho, 1922-37, and as Pend Oreille River at Priest River, Idaho, 1938-41)

Location.--Lat 48°11', long 117°02', in SE¼SW¼ sec.24, T.56 N., R.6 W., on left bank at Newport, 0.2 mile upstream from bridge on U.S. Highway 2, a quarter of a mile east of Idaho-Washington State line, and 1.6 miles downstream from Albeni Falls Dam.

Drainage area.--24,200 sq mi, approximately.

Gage.--Nonrecording at different sites and datums prior to Sept. 22, 1928; recording thereafter. Sept. 22, 1928, to Sept. 30, 1935, at datum 2,040.14 ft above mean sea level, and Oct. 1, 1935, to Sept. 30, 1941, at datum 2,000 ft above mean sea level, datum of 1929. Datum of present gage is 2,000 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Auxiliary recording gage 2.74 miles downstream since December 1952.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--52 ft.

Remarks.--Diversions above station. Flow regulated at Albeni Falls Dam. Storage reservoirs in the Pend Oreille River basin have a combined capacity of about 289,750 acre-ft. Peaks for 1904-28 were estimated by various means. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	a64.0	a200,000	1926	May 1926	-	49,400
				1927	June 1927	-	131,000
1904	June 8, 1904	56.40	88,200	1928	June 1928	-	135,000
1905	June 17, 1905	8.8	50,800	1929	June 18, 1929	15.36	73,200
				1930	June 5, 1930	12.29	50,100
1906	June 10, 1906	7.5	43,800				
1907	June 15, 1907	16.7	95,200	1931	June 3, 1931	12.41	50,800
1908	June 16, 1908	21.7	124,000	1932	May 27, 1932	18.77	98,000
1909	June 25, 1909	34.85	104,000	1933	June 21, 1933	24.18	136,000
1910	May 15, 1910	29.15	75,500	1934	May 12, 1934	18.23	91,200
				1935	June 10, 1935	17.13	83,500
1911	June 21, 1911	29.55	77,400				
1912	June 15, 1912	16.0	89,000	1936	May 21, 1936	57.56	86,400
1913	June 15, 1913	-	136,000	1937	June 7, 1937	53.69	59,100
1914	May 1914	-	67,400	1938	June 9, 1938	58.59	93,400
1915	May, June, 1915	-	42,500	1939	May 23, 1939	56.08	75,800
				1940	May 30, 1940	53.12	55,100
1916	July 1916	-	131,000				
1917	June 1917	-	119,000	1941	June 11, 1941	49.45	30,200
1918	June 1918	-	98,200				
1919	June 1919	-	76,900	1953	June 17, 1953	46.76	96,500
1920	June 1920	-	81,800	1954	May 29, 1954	47.66	103,000
				1955	June 20, 1955	44.54	84,700
1921	June 14, 1921	-	109,000				
1922	June 1922	-	106,000	1956	June 4-7, 1956	51.73	127,000
1923	June 1923	-	90,700	1957	May 26, 1957	46.64	97,900
1924	May 1924	-	80,300				
1925	May 1925	-	112,000				

a Maximum stage and discharge known.

3960. Calispell Creek near Dalkena, Wash.

Location.--Lat 48°14'40", long 117°20'30", in SW¼ sec.26, T.32 N., R.43 E., on left bank 2 miles upstream from Calispell Lake, 4.8 miles west of Dalkena, and 9 miles upstream from mouth.

Drainage area.--67.8 sq mi. Area of lakes and ponds, 0.28 sq mi; mean elevation, 3,650 ft.

Gage.--Recording. Altitude of gage is 2,070 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 720 cfs and extended by logarithmic plotting.

Bankfull stage.--7 ft.

Remarks.--Regulation by Power Lake. Base for partial-duration series, 420 cfs.

Peak stages and discharges of Calispell Creek near Dalkena, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Apr. 14-15, 1951	5.90	515	1954	May 11, 1954	5.22	456
	Apr. 29, 1951	5.65	445				
	May 8, 1951	5.68	460	1955	Apr. 22, 1955	5.18	426
1952	Dec. 1, 1951	5.72	432	1956	Apr. 22, 1956	6.78	904
	Apr. 19, 1952	6.46	734		May 20, 1956	5.54	544
	Apr. 26, 1952	6.65	877				
				1957	May 20, 1957	5.34	485
1953	Apr. 28, 1953	6.15	755				

3975. Sullivan Creek at Metaline Falls, Wash.
(Published as "near Metaline Falls" prior to October 1953)

Location.--Lat 48°51'40", long 117°21'50", in SW¼SW¼ sec.22, T.39 N., R.43 E., on right bank 100 ft downstream from State highway bridge, half a mile upstream from mouth, and half a mile east of Metaline Falls.

Drainage area.--142 sq mi; 122 sq mi at former site. Area of lakes and ponds, 2.06 sq mi; mean elevation, 4,840 ft.

Gage.--Nonrecording prior to Aug. 24, 1956; recording thereafter. At site "near Metaline Falls" 4 miles upstream at altitude 2,550 ft prior to October 1953. At site 120 ft upstream at datum 3.70 ft higher October 1953 to Aug. 23, 1956. Altitude of gage is 2,050 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,600 cfs and extended above.

Remarks.--Records combined for stations "near" and "at" Metaline Falls. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	June 2, 1913	4.2	1,650	1922	June 4, 1922	2.82	850
1914	May 16, 1914	3.8	1,340	1923	May 12, 1923	2.65	682
1915	Apr. 24, 1915	2.7	635	1924	May 15, 1924	2.3	495
1916	June 17, 1916	4.6	1,540	1954	May 19, 1954	4.48	1,860
1917	June 19, 1917	4.2	1,400	1955	June 12, 1955	3.90	3,550
1918	June 9, 1918	2.7	646				
1919	May 23, 1919	4.4	1,580	1957	May 13, 1957	a4.71	-
1920	June 10, 19, 1920	2.30	495		May 20, 1957	-	1,580
1921	June 8, 1921	3.75	1,540				

a Maximum gage height.

3985. Pend Oreille River below Z Canyon, near Metaline Falls, Wash.
(Published as Clark Fork at Metaline Falls prior to October 1928, and as Clark Fork below Z Canyon, near Metaline Falls, October 1928 to September 1937)
(International gaging station)

Location.--Lat 48°58'50", long 117°20'40", in lot 2, sec.11, T.40 N., R.43 E., on right bank three-quarters of a mile downstream from Z Canyon, 1½ miles south of international boundary, 5 miles downstream from Slate Creek, and 10 miles downstream from town of Metaline Falls.

Drainage area.--25,200 sq mi, approximately. At site prior to October 1928, 25,100 sq mi, approximately. Area of lakes and ponds, 465 sq mi; mean elevation 4,950 ft.

Gage.--Nonrecording at site 10 miles upstream at datum approximately 262.2 ft higher prior to Dec. 19, 1928; recording thereafter. Datum of gage is 1,721.18 ft above mean sea level, datum of 1929, supplementary adjustment of 1947 (levels by Corps of Engineers).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Flow partly regulated by Hungry Horse Reservoir since 1952; peak discharges slightly affected. Only annual peaks are shown.

Peak stages and discharges of Pend Oreille River below Z Canyon, near Metaline Falls, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	69.0	a195,000	1935	June 12, 1935	36.77	85,900
1913	June 16, 1913	41.2	139,000	1936	May 22, 1936	37.28	87,500
1914	June 1, 1914	28.7	70,100	1937	June 8, 1937	28.30	60,200
1915	May 31, 1915	19.8	44,000	1938	June 10, 1938	40.10	96,600
				1939	May 26, 1939	33.75	76,400
1916	July 9, 1916	40.02	133,000	1940	May 31, 1940	27.24	56,900
1917	June 25, 1917	36.2	122,000				
1918	June 24, 1918	31.55	99,100	1941	June 13, 1941	19.10	32,200
1919	June 5, 1919	27.4	79,100	1942	June 15, 1942	31.80	70,600
1920	June 25, 1920	28.0	82,600	1943	June 28, 1943	42.22	103,000
				1944	June 20, 1944	20.76	38,300
1921	June 14, 1921	34.0	111,000	1945	June 11, 1945	34.90	79,900
1922	June 15, 1922	33.0	107,000				
1923	June 17, 1923	30.0	91,900	1946	June 8, 1946	37.56	88,300
1924	May 29, 1924	27.3	81,000	1947	May 18, 1947	43.62	107,000
1925	May 30, 1925	34.0	114,000	1948	June 13, 1948	60.25	171,300
				1949	May 26, 1949	42.63	104,400
1926	May 11, 1926	19.9	50,400	1950	June 28, 1950	50.36	128,000
1927	June 23, 1927	37.7	134,000				
1928	June 4, 1928	37.88	137,000	1951	May 31, 1951	44.27	109,400
1929	June 19, 1929	32.32	74,500	1952	May 25, 1952	38.44	91,600
1930	June 7, 1930	25.28	51,200	1953	June 18, 1953	41.41	100,700
				1954	May 29, 1954	43.38	106,700
1931	June 1, 1931	25.46	51,800	1955	June 20, 1955	37.53	88,900
1932	May 28, 1932	40.97	98,300				
1933	June 22, 1933	53.56	137,000	1956	June 5, 1956	50.90	129,800
1934	May 14, 1934	39.54	94,700	1957	May 26, 1957	41.54	101,100

a Maximum discharge known; estimated.

3990. Salmo River near Waneta, British Columbia
(Published as "Salmon River," 1936-42)

Location.--Lat 49°01'30", long 117°22'30", on left bank three-quarters of a mile upstream from mouth and 15 miles east of Waneta.

Drainage area.--500 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 4,840 ft.

Gage.--Nonrecording. Altitude of gage is 1,750 ft above mean sea level (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 6,200 cfs and extended by logarithmic plotting.

Remarks.--Only annual observed peaks are shown. Records furnished by Dominion Water and Power Bureau, Department of Mines and Resources, Canada.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1936	Apr. 25, 1936	12.65	7,630	1942	May 27, 1942	14.70	9,340
1937	May 27, 1937	10.25	4,840	1943	May 27, 1943	12.02	6,600
1938	May 26, 1938	14.55	9,060	1944	May 16, 1944	9.15	3,840
1939	Apr. 30, 1939	12.15	6,720	1945	May 30, 1945	14.95	9,600
1940	May 11, 1940	11.60	6,190				
				1946	May 6, 1946	14.15	8,760
1941	May 18, 1941	12.38	6,820				

3995. Columbia River at international boundary (International gaging station)

Location.--Lat 49°00'03", long 117°37'40", in SE¼ sec.4, T.40 N., R.41 E., on left bank at international boundary, half a mile downstream from Pend Oreille River.

Drainage area.--59,700 sq mi, approximately.

Gage.--Nonrecording prior to Apr. 27, 1939; recording thereafter. Auxiliary recording gage 2.2 miles downstream since May 31, 1942. Datum of gage is 1,300.00 ft above mean sea level (Bureau of Reclamation 1937 datum).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Many small diversions. Peak discharges are slightly affected by internationally controlled storage in Kootenay Lake and other lakes and reservoirs in Kootenay and Pend Oreille River basins. Peaks obtained by stage-fall-discharge relation since 1944. Only annual peaks are shown. This station is maintained by the United States under agreement with Carada.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	46.00	680,000	1947	June 14, 1947	24.05	324,200
				1948	June 12, 1948	38.13	550,100
1938	June 27, 1938	24.00	334,400	1949	May 24, 1949	23.02	314,500
1939	May 31, 1939	18.95	259,600	1950	June 24, 1950	32.53	461,000
1940	May 30, 1940	17.98	248,000				
				1951	May 27, 1951	24.28	332,800
1941	June 19, 1941	12.33	185,400	1952	May 29, 1952	31.66	300,200
1942	June 16, 1942	20.06	275,000	1953	June 18, 1953	26.00	367,300
1943	July 7, 1943	21.47	291,000	1954	July 12, 1954	29.00	413,000
1944	June 15, 1944	13.81	196,700	1955	June 29, 1955	28.37	403,600
1945	June 11, 1945	20.73	280,800				
				1956	June 6, 1956	33.16	463,900
1946	June 6, 1946	26.08	360,200	1957	May 26, 1957	25.79	357,100

SHEEP CREEK BASIN

4005. Sheep Creek near Northport, Wash.

Location.--Lat 48°56'40", long 117°46'50", in NE¼NE¼ sec.25, T.40 N., R.39 E., on right bank at county highway bridge, 1 mile upstream from mouth and 1½ miles north of Northport.

Drainage area.--225 sq mi, approximately. Area of lakes and ponds, 0.08 sq mi; mean elevation, 4,120 ft.

Gage.--Recording. Datum of gage is 1,294.78 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 1,600 cfs and extended by logarithmic plotting.

Bankfull stage.--34 ft.

Remarks.--Flow partly regulated by flash dam 6½ miles upstream having a minor effect on peak discharges. Base for partial-duration series, 1,100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1930	June 1, 1930	26.03	1,160	1938	Apr. 19, 1938	26.64	1,740
					May 2, 1938	27.26	2,080
1931	May 3, 1931	25.86	1,260		May 25, 1938	26.76	1,800
1932	Apr. 15, 1932	27.1	2,130	1939	Apr. 30, 1939	26.22	1,420
	May 21, 1932	26.54	1,740				
				1940	May 12, 1940	26.33	1,620
1933	Apr. 29, 1933	27.46	2,450				
	May 27, 1933	27.01	2,060	1941	Apr. 1, 1941	26.01	1,350
					May 2, 1941	25.92	1,280
1934	Apr. 25, 1934	26.85	1,920		May 18, 1941	26.27	1,540
1935	May 7, 1935	26.42	1,640	1942	Apr. 22, 1942	25.73	1,170
	May 23, 1935	26.08	1,430		May 11, 1942	25.81	1,210
					May 27, 1942	26.71	1,920
1936	Apr. 26, 1936	27.17	2,210				
				1948	May 29, 1948	-	3,070
1937	June 25, 1937	25.44	975				

4015. Kettle River near Ferry, Wash.
(International gaging station)

Location.--Lat 48°58'40", long 118°46'10", in lot 7, sec.10, T.40 N., R.32 E., on right bank 1¼ miles south of international boundary and Ferry and 3 miles upstream from Toroda Creek.

Drainage area.--2,220 sq mi, approximately. Area of lakes and ponds, 1.0 sq mi; mean elevation, 4,560 ft.

Gage.--Recording. Datum of gage is 1,836.8 ft above mean sea level, international joint adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--19 ft.

Remarks.--This station is maintained by the United States under agreement with Canada. Base for partial-duration series, 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 24, 1929	15.15	7,420	1945	May 31, 1945	18.16	12,900
1930	June 1, 1930	14.46	6,000	1946	May 9, 1946	18.01	12,000
1931	May 15, 1931	15.90	9,020		May 29, 1946	18.66	13,600
1932	May 10, 1932	16.87	10,100	1947	May 8, 1947	16.39	9,070
	May 22, 1932	17.03	10,300	1948	May 29, 1948	21.15	21,200
	June 3, 1932	16.32	8,970		June 11, 1948	18.76	14,800
1933	May 27, 1933	17.19	11,100	1949	Apr. 29, 1949	16.16	8,810
	June 17, 1933	18.40	14,000		May 14, 1949	18.62	14,400
1934	Apr. 28, 1934	17.43	11,500	1950	May 15, 1950	16.01	8,360
					May 28, 1950	15.92	8,140
1935	May 23, 1935	17.23	11,100		June 5, 1950	16.70	9,960
	July 2, 1935	16.14	8,700		June 15, 1950	17.59	12,000
1936	Apr. 26, 1936	17.22	11,100	1951	May 13, 1951	18.79	15,000
	May 5, 1936	16.74	9,940		May 24, 1951	17.93	12,800
	May 16, 1936	16.56	9,730				
				1952	Apr. 27, 1952	17.99	13,000
1937	May 27, 1937	16.06	8,700		May 21, 1952	18.84	14,800
	June 3, 1937	16.66	9,940				
				1953	May 20, 1953	16.74	9,470
1938	May 1, 1938	16.23	8,900		June 14, 1953	17.72	11,800
	May 26, 1938	17.66	12,200				
				1954	May 13, 1954	-	-
1939	May 4, 1939	16.03	8,500		May 20, 1954	19.12	15,600
	May 17, 1939	16.9	10,400		July 2, 1954	17.48	11,200
1940	May 11, 1940	16.42	8,990	1955	May 21, 1955	16.07	8,250
	May 26, 1940	16.83	9,930		June 13, 1955	18.65	14,400
1941	May 2, 1941	16.38	9,310	1956	Apr. 24, 1956	17.00	10,300
					May 11, 1956	16.44	9,020
1942	May 27, 1942	20.54	18,200		May 21, 1956	19.60	17,100
					June 5, 1956	17.54	11,500
1943	May 27, 1943	15.92	7,950		June 11, 1956	16.53	9,220
1944	June 2, 1944	15.96	8,280	1957	May 20, 1957	19.30	16,300
1945	May 6, 1945	17.21	10,800				

4030. Curlew Creek near Curlew, Wash.

Location.--Lat 48°46'25", long 118°38'45", in sec.21, T.38 N., R.33 E., on right bank half a mile downstream from Curlew Lake, 9 miles upstream from mouth, and 9 miles southwest of Curlew.

Drainage area.--89.8 sq mi. Area of lakes and ponds, 1.59 sq mi; mean elevation, 3,560 ft.

Gage.--Nonrecording. Altitude of gage is 2,330 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peak flows affected by interbasin diversions (sometimes 30 cfs) from the Sanpoil River. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1917	May 30, 1917	3.08	65	1921	May 25, 1921	3.23	61
1918	Apr.20,May 23, 1918	.98	11.2	1948	May or June, 1948	-	139
1919	May 23, 1919	2.40	50				
1920	May 14, 1920	.91	12				

4040. Kettle River at Cascade, British Columbia (International gaging station)

Location.--Lat 49°01'35", long 118°12'20", on left bank at highway bridge on road to Christina Lake, half a mile downstream from Cascade Falls, at Cascade.

Drainage area.--3,550 sq mi, approximately.

Gage.--Nonrecording. Datum of gage is 1,449.79 ft above mean sea level (Geodetic Survey of Canada, datum of 1928).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Only annual observed peaks are shown. This station is mairtained by Canada under agreement with the United States.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1916	June 18, 1916	8.50	15,200	1926	May 1, 1926	-	16,100
1917	May 27, 1917	-	20,950	1927	June 10, 1927	-	24,100
1918	June 14, 1918	-	16,000	1928	May 24, 1928	-	25,300
1919	May 27, 1919	-	24,500	1929	May 25, 1929	-	11,100
1920	June 17, 1920	-	12,900	1930	June 1, 1930	-	7,400
1921	June 8, 1921	-	29,300	1931	May 16, 1931	7.85	12,800
1922	June 3, 1922	-	25,900	1932	May 11, 1932	9.50	17,400
1923	June 13, 1923	-	16,400	1933	June 17, 1933	13.65	22,500
1924	May 17, 1924	-	18,900	1934	Sept. 4, 1934	13.10	20,700
1925	May 20, 1925	-	20,600				

4045. Kettle River near Laurier, Wash.
(International gaging station)

Location.--Lat 48°59'10", long 118°13'00", in NW¼ sec.11, T.40 N., R.36 E., on right bank 500 ft downstream from Deep Creek, 1½ miles southeast of Laurier, and 12 miles upstream from Boulder Creek.

Drainage area.--3,800 sq mi, approximately. Area of lakes and ponds, 12.55 sq mi; mean elevation, 4,560 ft.

Gage.--Recording. Datum of gage is 1,425.5 ft above mean sea level, international joint adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 28,000 cfs and extended by slope-area measurement at 36,200 cfs.

Bankfull stage.--19 ft.

Remarks.--This station is maintained by the United States under agreement with Canada. Base for partial-duration series, 13,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	May or June, 1894	a22	-	1945	May 6,7, 1945	13.24	19,900
					June 1, 1945	13.82	21,700
1930	June 1, 1930	8.64	7,820	1946	Apr. 27, 1946	12.01	16,300
					May 10, 1946	13.89	22,000
1931	May 16, 1931	11.58	14,800		May 29, 1946	13.66	21,400
1932	May 11, 1932	13.2	19,200	1947	May 9, 1947	11.93	16,000
	May 22, 1932	13.0	18,600				
	June 4, 1932	11.28	14,000	1948	May 22, 1948	15.77	29,100
	June 16, 1932	11.28	14,000		May 29, 1948	17.25	35,000
1933	Apr. 29, 1933	12.1	16,600	1949	Apr. 29, 1949	11.7	15,900
	May 15, 1933	11.77	15,700		May 14, 1949	14.46	25,200
	May 27, 1933	13.15	19,900				
	May 31, 1933	13.04	19,300	1950	May 15, 1950	11.69	15,900
	June 17, 1933	14.48	23,800		June 6, 1950	12.04	16,800
					June 15, 1950	13.11	20,400
1934	Apr. 26, 1934	13.60	21,100				
				1951	May 13, 1951	14.90	26,700
1935	May 24, 1935	13.03	19,300		May 24, 1951	13.58	22,100
1936	Apr. 26, 1936	12.93	19,000	1952	Apr. 20, 1952	12.65	18,900
	May 6, 1936	11.93	16,000		Apr. 27, 1952	14.20	24,200
	May 16, 1936	11.53	14,800		May 20, 1952	14.35	24,700
1937	May 28, 1937	11.15	14,000	1953	May 8, 1953	11.50	15,500
	June 4, 1937	11.66	15,400		May 20, 1953	12.26	17,800
					June 14, 1953	13.44	21,700
1938	May 2, 1938	12.26	17,200				
	May 27, 1938	13.82	21,700	1954	May 20, 1954	14.93	27,000
					July 3, 1954	12.04	17,100
1939	May 1, 1939	11.62	15,200				
	May 17-18, 1939	12.0	16,300	1955	May 21, 1955	11.25	14,700
					June 13, 1955	14.22	24,400
1940	May 12, 1940	12.05	16,300		June 24, 1955	11.90	16,700
	May 26, 1940	12.33	17,200				
				1956	Apr. 23, 1956	13.40	21,600
1941	May 3, 1941	11.80	15,700		May 11, 1956	12.01	17,000
					May 22, 1956	16.15	31,700
1942	May 28, 1942	15.73	27,400		June 5, 1956	13.14	20,700
	June 8, 1942	12.29	17,200				
				1957	May 14, 1957	14.03	23,700
1943	May 28, 1943	11.09	13,800		May 20, 1957	14.44	25,400
1944	June 3, 1944	10.72	12,800				

a Maximum stage known, from information by local residents.

4054. Nancy Creek near Kettle Falls, Wash.

Location.--Lat 48°39'20", long 118°06'40", in SE¼ sec.33, T.37 N., R.37 E., at U.S. Highway 395, 4.2 miles northwest of Kettle Falls.

Drainage area.--11.9 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude, 3,180 ft.

Gage.--Crest-stage gage. Datum of gage is 4.90 ft below upstream invert of culvert.

Stage-discharge relation.--Defined by computations of discharge through a 4- by 4-foot concrete box culvert.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Apr. 19, 1952	20.98	160	1956	Apr. 22, 1956	20.20	145
1954	May 10, 1954	18.07	66.0	1957	May 20, 1957	18.04	66.6
1955	May 21, 1955	18.08	67.8				

COLUMBIA RIVER MAIN STEM

4055. Columbia River at Kettle Falls, Wash.

Location.--Lat 48°37'20", long 118°07'00", in northwest corner lot 1, sec.14, T.36 N., R.37 E., on right bank at Kettle Falls, 3¼ miles upstream from Colville River.

Drainage area.--64,500 sq mi, approximately. Area of lakes and ponds, 896 sq mi; mean elevation, 4,870 ft.

Gage.--Nonrecording prior to May 3, 1931; recording thereafter. At site 1¼ miles upstream at datum 1,200 ft above mean sea level Apr. 1, 1916, to June 4, 1921. At site 1¾ miles downstream at present datum June 5, 1921, to May 2, 1931. Datum of gage is 1,100 ft above mean sea level, unadjusted.

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flood peaks are slightly affected by internationally controlled storage in Kootenay Lake as well as by natural and controlled regulation in other lakes and reservoirs in Kootenai and Pend Oreille River basins. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	44.7	700,000	1927	June 18, 1927	92.4	413,000
				1928	May 30, 1928	94.6	466,000
1913	June 14,15,1913	a34.2	468,000	1929	June 16, 1929	88.1	313,000
				1930	June 15, 1930	84.8	246,000
1916	June 30, 1916	33.8	458,000				
1917	June 24, 1917	30.0	367,000	1931	June 13, 1931	88.1	241,000
1918	June 26, 1918	31.2	396,000	1932	June 18, 1932	94.5	354,000
1919	June 1, 1919	27.5	309,000	1933	June 22, 1933	98.2	438,000
1920	July 17, 1920	28.5	332,000	1934	June 2, 1934	95.0	371,000
				1935	June 19, 1935	93.4	337,000
1921	June 11, 1921	92.7	420,000				
1922	June 17, 1922	90.7	373,000	1936	June 4, 1936	95.0	374,000
1923	June 18, 1923	90.6	371,000	1937	June 24, 1937	89.3	258,000
1924	May 25, 1924	86.9	287,000	1938	June 8, 1938	93.7	345,000
1925	May 28, 1925	90.7	373,000	1939	June 1, 1939	90.4	280,000
				1940	June 2, 1940	90.4	278,200
1926	May 7, 1926	80.0	168,000				

a From floodmarks, referred to U.S. Weather Bureau gage at Marcus, the datum of which is 1,205.55 ft above mean sea level, unadjusted.

4070. Sheep Creek at Loon Lake, Wash.

Location.--Lat 48°03'35", long 117°39'10", in NE¼ sec.32, T.30 N., R.41 E., on right bank 0.7 mile downstream from outlet of Loon Lake and 1 mile west of town of Loon Lake.

Drainage area.--36.2 sq mi. Area of lakes and ponds, 3.59 sq mi; mean elevation, 2,770 ft.

Gage.--Recording and wooden control. Altitude of gage is 2,370 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Flow regulated at outlet of Loon Lake. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1952	Apr. 9, 1952	2.83	42	1956	Jan. 6, 1956	a3.27	-
1953	May 25, 1953	2.81	41		Apr. 23, 1956	2.84	43
1954	Feb. 4, 1954	a3.43	-	1957	Jan.15-17,1957	a3.33	-
	Apr. 6, 1954	2.72	34		Feb. 26, 1957	2.32	14.0
1955	Nov. 8, 1954	2.13	6.3				

a Backwater from ice.

4085. Mill Creek near Colville, Wash.

Location.--Lat 48°34'45", long 117°51'50", in SW¼NW¼ sec.35, T.36 N., R.39 E., on right bank 3 miles northeast of Colville and 5 miles downstream from North Fork.

Drainage area.--82 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 3,510 ft.

Gage.--Recording at site half a mile upstream at different datum prior to Nov. 2, 1952; nonrecording thereafter, and also crest-stage gage since August 1954. Altitude of gage is 1,950 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--6 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings or crest-stage gage. Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1940	Mar. 27, 1940	4.55	353	1949	Apr. 28, 1949	4.08	321
1941	Mar. 2, 1941	3.68	222	1950	Apr. 21, 1950	3.83	271
1942	Dec. 20, 1941	3.68	228		May 13, 1950	4.19	338
	Apr. 14, 1942	3.72	236	1951	Apr. 8, 1951	4.33	377
	May 27, 1942	4.79	395		Apr. 14, 1951	4.56	413
1943	Apr. 15, 1943	3.60	211		Apr. 29, 1951	3.87	292
1944	May 24, 1944	2.86	97	1952	Apr. 19, 1952	5.19	538
					Apr. 26, 1952	4.82	464
1945	May 5, 1945	4.66	361	1953	Apr. 29, 1953	6.65	570
1946	Apr. 19, 1946	5.19	466	1954	May 12, 1954	5.72	301
	Apr. 26, 1946	4.83	404	1955	May 13, 1955	5.65	272
1947	Apr. 20, 1947	3.77	230	1956	Apr. 22, 1956	7.16	609
1948	May 4, 1948	5.25	538	1957	May 20, 1957	6.52	526
1949	Apr. 20, 1949	4.69	430				

4090. Colville River at Kettle Falls, Wash.
(Published as "at Meyers Falls" prior to 1939)

Location.--Lat 48°35'40", long 118°03'30", in sec.29, T.36 N., R.38 E., on right bank 600 ft downstream from Stevens County Light & Power Co.'s plant at foot of Meyers Falls, half a mile south of town of Kettle Falls, and 2 miles upstream from Franklin D. Roosevelt Lake.

Drainage area.--1,050 sq mi, approximately. Area of lakes and ponds, 6.39 sq mi; mean elevation, 3,000 ft.

Gage.--Nonrecording prior to Mar. 21, 1949; recording thereafter. At site 500 ft upstream at different datum prior to Oct. 21, 1932. At site 200 ft upstream at different datum Oct. 21, 1932, to Sept. 19, 1938. Altitude of gage is 1,500 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--9 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Gage-height record furnished by Washington Water Power Co. Base for partial-duration series, 450 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1923	Apr. 20, 1923	3.9	916
1924	Feb. 8, 1924	2.73	422
1925	Feb. 10, 1925	-	772
	Mar. 4, 1925	3.42	683
	Apr. 19, 1925	4.65	1,290
1926	Apr. 19, 1926	2.39	285
1927	May 1, 1927	4.95	1,280
	June 12, 1927	3.74	730
1928	Dec. 5, 1927	3.45	625
	Jan. 13, 1928	2.90	450
	Feb. 7, 1928	2.98	485
	Apr. 3, 1928	4.55	1,260
	May 1, 1928	4.56	1,260
1929	Mar. 14, 1929	2.55	356
1930	Feb. 25, 1930	-	220
1931	Apr. 9, 1931	2.16	237
1932	Mar. 5, 1932	2.84	461
	Apr. 27, 1932	5.55	1,760
1933	Apr. 30, 1933	4.4	1,540
1934	Dec. 25, 1933	-	600
	Jan. 28, 1934	3.15	820
	Apr. 3, 1934	3.6	1,040
1935	Apr. 28, 1935	4.08	1,380
1936	Apr. 27, 1936	2.97	753
1937	Apr. 22, 1937	2.88	703
1938	Jan. 1, 1938	2.44	458
	Jan. 23, 1938	2.75	605
	Mar. 22, 1938	5.57	2,300
	Apr. 19, 1938	6.20	2,690
1939	Mar. 28, 1939	6.82	620
1940	Mar. 8, 1940	6.78	620
	Apr. 4, 1940	8.26	1,450
1941	Mar. 13, 1941	7.43	932
	May 19, 1941	6.60	547
1942	Dec. 26, 1941	7.02	730
	Feb. 11, 1942	6.68	608
	Apr. 16, 1942	7.40	973
	May 29, 1942	7.88	1,270
1943	Apr. 16, 1943	7.40	973
1944	Mar. 10, 1944	6.39	470
1945	Feb. 9, 1945	6.46	492
	Mar. 28, 1945	6.95	758
	May 6, 1945	7.65	1,060
1946	Apr. 22, 1946	8.72	1,710
1947	Apr. 21, 1947	6.80	668
1948	May 14, 1948	9.47	2,240
1949	Mar. 2, 1949	7.40	980
	Mar. 26, 1949	7.60	1,100
	Apr. 21, 1949	8.45	1,720
1950	Mar. 9, 1950	7.05	760
	Apr. 22, 1950	8.03	1,370
1951	Dec. 26, 1950	6.92	755
	Feb. 16, 1951	7.69	1,190
	Apr. 14, 1951	9.30	2,240
1952	Dec. 5, 1951	6.54	567
	Apr. 21, 1952	9.69	2,550
1953	Jan. 11, 1953	6.50	475
	Apr. 30, 1953	8.48	1,660
1954	Feb. 24, 1954	6.96	746
	Mar. 12, 1954	6.71	615
	Apr. 19, 1954	7.16	866
	May 13, 1954	7.43	1,050
1955	Apr. 25, 1955	7.28	948
	May 22, 1955	7.35	990
1956	Jan. 7, 1956	6.48	551
	Mar. 5, 1956	6.62	614
	Apr. 23, 1956	10.17	3,230
1957	Feb. 28, 1957	6.39	784
	May 21, 1957	7.73	1,590

4095. Hall Creek at Inchelium, Wash.
(Published as "near Inchelium" prior to 1921)

Location.--Lat 48°18'20", long 118°11'10", in NE¼ sec.6, T.32 N., R.37 E., on right bank three-quarters of a mile upstream from highway bridge, about 1 mile upstream from mouth, and 1 mile northwest of Inchelium.

Drainage area.--About 170 sq mi. Area of lakes and ponds, 0.03 sq mi; mean elevation, 3,880 ft.

Gage.--Nonrecording prior to Jan. 28, 1916; recording thereafter. At site half a mile downstream at different datum prior to May 16, 1913, and Aug. 1, 1915, to Jan. 27, 1916. At Wires Bridge 2 miles upstream at different datum May 16, 1913, to July 31, 1915. Altitude of gage is 1,250 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 430 cfs and extended by logarithmic plotting.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 240 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	Apr. 22, 1913	2.00	485	1921	May 11, 1921	3.67	577
	May 13, 1913	1.80	366	1922	May 18, 1922	3.62	531
1914	Apr. 16, 1914	3.22	1,010	1923	Apr. 19, 1923	3.13	306
1915	Apr. 14, 1915	1.56	381	1924	Apr. 14, 1924	2.58	158
	May 25, 1915	1.78	519	1925	Apr. 12, 1925	3.84	700
1916	Apr. 12, 1916	3.37	458	1926	Apr. 18, 1926	2.59	155
	May 5, 1916	3.72	649	1927	Apr. 30, 1927	4.0	800
1917	May 14, 1917	3.69	634		May 18, 1927	3.46	489
1918	Apr. 10, 1918	2.57	168	1928	Apr. 28, 1928	3.32	425
1919	Apr. 5, 1919	3.60	580	1929	May 6, 1929	2.66	171
	Apr. 29, 1919	3.85	730	1948	May 6, 1948	-	1,770
1920	May 11, 1920	2.21	92				
1921	Apr. 20, 1921	3.48	471				

STRANGER CREEK BASIN

4100. Stranger Creek at Meteor, Wash.

Location.--Lat 48°15'40", long 118°17'00", in NW¼ sec.21, T.32 N., R.36 E., on right bank at townsite of Meteor, just downstream from road bridge about 6 miles downstream from Twin Lakes, and about 6 miles southwest of Inchelium.

Drainage area.--About 56 sq mi. Area of lakes and ponds, 1.48 sq mi; mean elevation, 2,710 ft.

Gage.--Nonrecording and concrete control. Altitude of gage is 1,850 ft (from Indian Service irrigation project map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks are from graphs based on gage readings. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1917	May 17, 1917	2.00	164	1924	Apr. 27, 1924	0.64	14.1
1918	Apr. 30, 1918	.78	25	1925	Apr. 20, 1925	1.84	180
1919	Apr. 27, 1919	2.00	164	1926	May 7,8, 1926	.56	11.8
1920	Apr. 13, 1920	.64	16.3	1927	Apr. 30, 1927	1.71	151
1921	Apr. 19, 1921	1.84	140	1928	May 1, 1928	1.20	61.0
1922	May 19, 1922	1.77	128	1929	Apr. 14, 1929	.47	7.5
1923	Apr. 26, 1923	1.17	56				

4110. Coeur d'Alene River above Shoshone Creek, near Prichard, Idaho

Location.--Lat 47°42', long 115°59', in NE¼SW¼ sec.5, T.50 N., R.4 E., on left bank at Shoshone Creek ranger station, 0.2 mile downstream from Urarus Creek, 0.4 mile upstream from Shoshone Creek, and 3½ miles north of Prichard.

Drainage area.--335 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,120 ft.

Gage.--Recording. Altitude of gage is 2,485 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 5,500 cfs and extended by logarithmic plotting.

Bankfull stage.--8 ft.

Remarks.--Base for partial-duration series, 3,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Dec. 24, 1950	6.97	9,010	1954	May 19, 1954	5.85	5,900
	Feb. 11, 1951	7.17	9,610				
	Apr. 14, 1951	4.68	3,690	1955	May 8, 1955	5.16	4,470
	May 7, 1951	4.69	3,710		May 21, 1955	5.86	5,800
1952	Apr. 19, 1952	5.82	5,970	1956	Dec. 12, 1955	5.16	4,540
	Apr. 26, 1952	6.41	7,470		Dec. 23, 1955	6.03	6,280
					Apr. 22, 1956	6.52	7,110
1953	Jan. 9, 1953	a6.25	-		May 9, 1956	5.57	5,120
	Feb. 1, 1953	6.18	6,900		May 19, 1956	5.53	5,040
	Apr. 24, 1953	5.89	6,190				
	Apr. 28, 1953	6.13	6,780	1957	Dec. 16, 1956	a4.84	-
	May 7, 1953	5.30	4,880		Feb. 26, 1957	a9.09	-
					Feb. 27, 1957	4.69	3,850
1954	Apr. 14, 1954	5.50	5,210		May 1, 1957	6.05	6,300
	Apr. 18, 1954	6.17	6,560		May 21, 1957	6.02	6,180
	May 10, 1954	5.93	6,060				

a Affected by ice.

4120. Coeur d'Alene River near Prichard, Idaho

Location.--Lat 47°38', long 115°59', in lot 7, sec. 32, T.50 N., R.4 E., on right bank 0.2 mile downstream from Beaver Creek and 1¾ miles southwest of Prichard.

Drainage area.--583 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,300 ft.

Gage.--Nonrecording. Altitude of gage is 2,365 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended to peak stage.

Remarks.--Peaks are from graphs based on gage readings. Base for partial-duration series, 5,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	May 4, 1945	8.80	10,200	1950	Jan. 22, 1950	b11.7	-
					Mar. 5, 1950	7.19	6,300
1946	Mar. 28, 1946	7.65	7,500		Apr. 2, 1950	7.54	7,080
	Apr. 19, 1946	9.13	11,000		Apr. 22, 1950	7.38	6,720
	Apr. 26, 1946	9.54	12,100		May 14, 1950	10.27	14,300
	May 5, 1946	8.85	10,300		May 23, 1950	8.09	8,380
1947	Dec. 15, 1946	-	a16,000	1951	Dec. 24, 1950	9.71	12,600
	Apr. 20, 1947	6.90	6,030		Feb. 11, 1951	10.95	16,400
	Apr. 29, 1947	6.90	5,890		Apr. 14, 1951	6.89	5,570
					May 7, 1951	7.05	5,890
1948	Apr. 18, 1948	9.13	11,000				
	Apr. 22, 1948	9.35	11,600	1952	Apr. 7, 1952	6.97	5,750
	May 7, 1948	8.14	8,380		Apr. 19, 1952	8.51	9,320
	May 14, 1948	7.85	7,670		Apr. 26, 1952	9.45	11,800
	May 21, 1948	9.30	11,400				
				1953	Feb. 1, 1953	9.18	11,200
1949	Apr. 12, 1949	7.48	6,810		Apr. 24, 1953	8.36	9,030
	Apr. 19, 1949	8.60	9,550		Apr. 28, 1953	8.82	10,200
	Apr. 29, 1949	8.50	9,290		May 7, 1953	7.92	7,930
	May 3, 1949	7.87	7,720				
	May 11, 1949	9.22	11,200				

a Maximum daily. b Affected by ice.

4130. Coeur d'Alene River at Enaville, Idaho
(Published as North Fork Coeur d'Alene River at Enaville, 1911-13)

Location.--Lat 47°34', long 116°15', in NW¼ sec.30, T.49 N., R.2 E., on right bank 800 ft upstream from highway bridge, a quarter of a mile northwest of Enaville Post Office, 1.1 miles upstream from South Fork, and 3.5 miles downstream from North Fork.

Drainage area.--895 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 3,610 ft.

Gage.--Nonrecording prior to Dec. 22, 1939; recording thereafter. At site a quarter of a mile downstream at different datum Mar. 3, 1911, to Apr. 12, 1913. Datum of gage is 2,100.00 ft above mean sea level (referenced to bench mark near mouth of North Fork, elevation 2,204.880 ft, U.S. Geol. Survey Bull. 567, p. 82).

Stage-discharge relation.--Defined by current-meter measurements below 18,000 cfs and extended above by logarithmic plotting.

Bankfull stage.--74 ft.

Remarks.--Base for partial-duration series, 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912	Apr. 12, 1912	11.4	10,500	1949	May 11, 1949	70.44	16,400
1934	December 1933	79.47	-	1950	Jan. 22, 1950	-	-
					Mar. 5, 1950	68.89	12,200
1938	April 1938	78.16	-		Mar. 18, 1950	68.35	11,000
					Apr. 2, 1950	68.47	11,200
1940	Mar. 28, 1940	68.13	10,000		Apr. 18, 1950	68.51	11,200
					May 14, 1950	72.96	23,100
1941	May 18, 1941	65.96	5,800		May 23, 1950	68.91	11,300
1942	Dec. 4, 1941	67.29	8,320	1951	Dec. 24, 1950	71.90	18,400
	Dec. 20, 1941	69.07	12,200		Feb. 11, 1951	74.93	27,400
	Apr. 12, 1942	67.36	8,740		Apr. 8, 1951	67.77	8,380
					Apr. 14, 1951	67.82	8,480
1943	Nov. 24, 1942	68.71	11,500				
	Apr. 2, 1943	68.78	11,200	1952	Dec. 2, 1951	68.16	9,620
	Apr. 15, 1943	71.80	17,700		Apr. 7, 1952	68.36	10,100
					Apr. 19, 1952	70.45	15,200
1944	Apr. 13, 1944	65.68	5,700		Apr. 26, 1952	71.63	18,400
1945	Jan. 14, 1945	67.08	8,020	1953	Feb. 1, 1953	72.63	20,100
	Feb. 9, 1945	67.38	8,580		Apr. 24, 1953	69.58	12,800
	May 5, 1945	69.91	14,100		Apr. 29, 1953	70.44	14,800
					May 7, 1953	68.67	10,800
1946	Dec. 29, 1945	67.96	9,770				
	Mar. 28, 1946	69.32	12,800	1954	Apr. 6, 1954	67.45	8,220
	Apr. 20, 1946	70.95	16,400		Apr. 14, 1954	69.59	12,800
	Apr. 26, 1946	71.10	16,700		Apr. 18, 1954	70.16	14,000
	May 5, 1946	69.68	13,600		May 10, 1954	70.37	14,300
					May 19, 1954	70.12	13,700
1947	Nov. 19, 1946	-	a8,000				
	Dec. 15, 1946	74.79	28,100	1955	May 13, 1955	68.76	10,800
					May 21, 1955	70.50	14,600
1948	Apr. 18, 1948	70.72	16,800				
	Apr. 22, 1948	70.78	16,900	1956	Dec. 12, 1955	68.79	10,300
	May 8, 1948	68.59	11,400		Dec. 23, 1955	71.72	16,700
	May 14, 1948	68.56	11,300		Apr. 22, 1956	72.62	19,100
	May 21, 1948	69.89	14,600		May 9, 1956	69.72	12,500
					May 19, 1956	69.48	12,000
1949	Apr. 12, 1949	68.37	11,000				
	Apr. 20, 1949	70.07	15,400	1957	Feb. 27, 1957	67.79	9,180
	Apr. 24, 1949	68.59	11,700		Apr. 6, 1957	67.69	8,700
	Apr. 29, 1949	69.75	14,600		May 1, 1957	71.20	16,300
	May 3, 1949	68.90	12,400		May 21, 1957	71.75	17,300

a Maximum daily.

4135. Coeur d'Alene River near Cataldo, Idaho

Location.--Lat 47°34', long 116°18', in sec.26, T.29 N., R.1 E., on left bank 1½ miles upstream from Cataldo and 3 miles downstream from South Fork.

Drainage area.--1,220 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 3,900 ft.

Gage.--Nonrecording prior to Oct. 10, 1925; recording thereafter. At site 300 ft downstream at different datum Apr. 25, 1911, to Dec. 21, 1912. Datum of gage is 2,100 ft above mean sea level (referenced to bench mark "2143 S", U.S. Geol. Survey Bull. 567, p. 82). Datum of 1929, supplementary adjustment of 1947, is 2.84 ft higher.

Stage-discharge relation.--Defined by current-meter measurements below 23,000 cfs and extended to peak stage by logarithmic plotting.

Bankfull stage.--52 ft.

Remarks.--Base for partial-duration series, 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Apr. 26, 1911	10.3	13,500
	May 20, 1911	9.8	12,200
1912	Apr. 5, 1912	9.45	11,300
	Apr. 11, 1912	10.8	14,900
	May 10, 1912	10.1	13,000
1921	Dec. 30, 1920	47.00	16,100
	Feb. 13, 1921	48.00	19,000
	Mar. 18, 1921	49.65	24,000
	Apr. 14, 1921	45.50	11,800
	Apr. 23, 1921	47.20	16,700
	May 8, 1921	47.26	15,800
	May 15, 1921	46.00	11,800
1922	Dec. 12, 1921	48.40	20,200
	May 5, 1922	46.69	15,100
	May 18, 1922	48.30	18,500
1923	Jan. 8, 1923	45.50	11,800
	Apr. 2, 1923	45.42	11,600
	Apr. 18, 1923	47.52	17,600
	Apr. 28, 1923	45.56	12,000
	May 8, 1923	46.60	14,900
1924	Feb. 13, 1924	46.00	13,200
	May 4, 1924	47.47	16,600
1925	Feb. 5, 1925	51.3	27,600
	Mar. 26, 1925	45.70	11,900
	Apr. 4, 1925	45.83	12,200
	Apr. 12, 1925	49.30	21,700
1926	Apr. 19, 1926	45.30	11,000
1927	Nov. 30, 1926	45.72	11,900
	Dec. 3, 1926	46.28	13,400
	Apr. 27, 1927	50.74	25,800
	May 16, 1927	47.88	16,400
1928	Nov. 26, 1927	48.37	18,500
	Dec. 3, 1927	45.75	11,900
	Mar. 23, 1928	45.64	11,400
	Apr. 28, 1928	46.33	13,100
	May 8, 1928	46.95	14,800
1929	Apr. 29, 1929	45.58	11,400
1930	Apr. 8, 1930	43.95	7,880
1931	Mar. 22, 1931	45.74	11,300
	Apr. 8, 1931	46.45	13,100
1932	Feb. 28, 1932	47.70	16,800
	Apr. 3, 1932	46.67	14,200
	Apr. 14, 1932	49.58	22,400
	May 8, 1932	47.52	15,800
	May 23, 1932	46.26	12,400
1933	Apr. 28, 1933	49.44	21,500
1933	May 15, 1933	45.74	11,300
	May 27, 1933	45.61	11,000
	June 10, 1933	47.83	16,600
1934	Nov. 3, 1933	45.68	11,300
	Dec. 11, 1933	50.17	24,700
	Dec. 23, 1933	56.9	55,300
	Jan. 4, 1934	48.53	22,800
	Jan. 24, 1934	47.86	16,800
	Mar. 29, 1934	49.88	22,200
1935	Apr. 21, 1935	46.70	14,200
	Apr. 27, 1935	46.00	12,400
	May 6, 1935	46.79	14,400
	May 23, 1935	45.53	11,600
1936	Apr. 19, 1936	49.40	23,100
1937	Apr. 15, 1937	46.78	15,500
	Apr. 21, 1937	46.10	13,500
	Apr. 27, 1937	45.70	12,400
	May 4, 1937	47.40	17,300
1938	Apr. 19, 1938	55.15	46,300
1939	Apr. 22, 1939	45.62	11,800
	Apr. 29, 1939	46.17	13,000
1940	Mar. 28, 1940	45.11	10,700
1941	May 19, 1941	43.35	6,440
1942	Dec. 20, 1941	45.97	13,000
1943	Nov. 24, 1942	45.41	11,000
	Apr. 2, 1943	46.10	14,000
	Apr. 8, 1943	45.68	12,800
	Apr. 15, 1943	48.40	22,000
1944	Apr. 13, 1944	43.73	6,210
1945	Feb. 9, 1945	45.35	11,300
	May 5, 1945	47.35	18,200
1946	Dec. 29, 1945	45.55	12,600
	Mar. 28, 1946	46.33	15,400
	Apr. 20, 1946	47.82	19,800
	Apr. 27, 1946	47.76	19,700
	May 5, 1946	46.85	17,000
1947	Nov. 19, 1946	44.92	11,200
	Dec. 15, 1946	51.35	36,000
1948	Apr. 18, 1948	47.99	20,500
	Apr. 22, 1948	48.03	20,600
	May 8, 1948	46.10	14,000
	May 14, 1948	46.10	14,000
	May 21, 1948	47.47	18,600
1949	Apr. 12, 1949	46.04	13,600

Peak stages and discharges of Coeur d'Alene River near Cataldo, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Apr. 20, 1949	47.37	17,900	1953	Feb. 1, 1953	48.24	20,900
	Apr. 29, 1949	47.02	16,700		Apr. 24, 1953	46.36	14,900
	May 3, 1949	46.15	13,800		Apr. 29, 1953	47.04	17,400
	May 12, 1949	47.82	19,400		May 7, 1953	45.77	13,300
1950	Jan. 22, 1950	45.08	11,100	1954	Apr. 14, 1954	46.35	14,700
	Jan. 26, 1950	a46.45	-		Apr. 18, 1954	46.94	16,700
	Mar. 5, 1950	46.52	15,600		May 10, 1954	47.38	18,300
	Mar. 18, 1950	45.85	13,400		May 19, 1954	47.34	18,200
	Apr. 2, 1950	46.10	14,200				
	Apr. 18, 1950	45.90	13,500	1955	May 13, 1955	45.77	13,100
	May 14, 1950	49.44	26,200		May 21, 1955	47.33	18,100
	May 23, 1950	46.35	14,400				
				1956	Dec. 12, 1955	45.54	12,100
1951	Dec. 24, 1950	47.76	19,400		Dec. 23, 1955	49.06	24,200
	Feb. 11, 1951	51.45	34,800		Apr. 22, 1956	48.96	23,900
					May 9, 1956	46.77	15,900
1952	Dec. 2, 1951	45.11	11,200		May 20, 1956	46.80	16,000
	Apr. 7, 1952	45.44	12,200				
	Apr. 19, 1952	47.10	17,400	1957	May 1, 1957	47.80	20,300
	Apr. 27, 1952	48.17	21,100		May 21, 1957	48.58	23,200

a Affected by ice.

4140. St. Joe River at Avery, Idaho

Location.--Lat 47°15', long 115°49', in sec.15, T.45 N., R.5 E., on left bank at Avery, 500 ft downstream from Chicago, Milwaukee, St. Paul, and Pacific Railway depot and 0.5 mile downstream from North Fork.

Drainage area.--594 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,170 ft.

Gage.--Nonrecording. At sites within 700 ft downstream at different datums prior to Sept. 18, 1912. Datum of gage is 2,474.13 ft above mean sea level, datum of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 5,000 cfs and extended by logarithmic plotting.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 5, 1911	-	8,600	1915	Apr. 19, 1915	2.33	4,110
1912	May 10, 1912	5.40	8,120				
1913	May 28, 1913	7.30	17,000	1916	May 5, 1916	5.41	12,600
1914	May 15, 1914	3.40	7,070	1917	May 15, 1917	7.20	17,400

4145. St. Joe River at Calder, Idaho
(Published as "near Calder" prior to 1920)

Location.--Lat 47°16', long 116°11', in sec.3, T.45 N., R.2 E., on right bank 150 ft southwest of Chicago, Milwaukee, St. Paul, and Pacific Railway station at Calder.

Drainage area.--1,030 sq mi, approximately. At site April 1911 to September 1912, 1,050 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 4,210 ft.

Gage.--Nonrecording prior to Dec. 22, 1920; recording thereafter. At site 2½ miles downstream "near Calder", at different datum prior to Oct. 1, 1912. Datum of gage is 2,096.76 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 22,000 cfs, and extended to 46,100 cfs by logarithmic plotting.

Bankfull stage.--87 ft.

Remarks.--Base for partial-duration series, 8,500 cfs.

Peak stages and discharges of St. Joe River at Calder, Idaho

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	Apr. 25, 1911	8.1	12,600
	May 6, 1911	8.7	14,400
	May 18, 1911	6.82	8,660
	June 2, 1911	6.82	8,660
1912	Apr. 12, 1912	6.83	8,660
	May 10, 1912	8.4	13,500
	May 16, 1912	8.7	14,400
	May 21, 1912	9.1	15,700
	May 27, 1912	7.6	11,000
1921	Dec. 30, 1920	85.40	10,600
	Mar. 18, 1921	86.06	12,700
	Apr. 23, 1921	85.96	12,400
	May 8, 1921	87.52	17,400
	May 16, 1921	87.46	17,400
1922	Dec. 13, 1921	85.35	10,500
	May 5, 1922	85.48	10,800
	May 18, 1922	87.77	17,600
	June 5, 1922	86.07	12,000
1923	Apr. 18, 1923	86.14	12,000
	Apr. 28, 1923	85.83	11,100
	May 9, 1923	86.60	13,600
	May 26, 1923	85.50	10,200
	June 10, 1923	85.03	8,700
1924	May 3, 1924	86.16	12,300
	May 13, 1924	86.45	13,100
1925	Dec. 18, 1924	a87.65	-
	Feb. 4, 1925	a90.2	17,000
	Apr. 12, 1925	87.38	17,200
	Apr. 17, 1925	87.17	16,600
	May 7, 1925	86.37	13,800
	May 21, 1925	86.53	14,100
1926	Apr. 19, 1926	85.97	11,500
1927	Dec. 2, 1926	85.66	10,600
	Dec. 17, 1926	a85.96	-
	Apr. 28, 1927	87.92	17,700
	May 16, 1927	87.95	18,000
	June 9, 1927	86.76	14,000
1928	Nov. 7, 1927	85.84	10,900
	Nov. 25, 1927	87.03	14,600
	Dec. 3, 1927	85.60	10,300
	Dec. 20, 1927	a87.97	-
	Jan. 4, 1928	a85.98	-
	Jan. 13, 1928	a89.09	11,500
	Apr. 28, 1928	86.50	13,000
	May 8, 1928	87.47	16,600
1929	Apr. 29, 1929	84.92	8,510
	May 22, 1929	85.22	9,360
1930	Apr. 15, 1930	84.83	8,510
1931	May 3, 1931	85.00	8,790
1932	Feb. 27, 1932	86.05	12,100
	Apr. 14, 1932	86.63	14,100
	May 14, 1932	87.48	17,400
	May 22, 1932	86.83	14,800
1933	Apr. 28, 1933	87.19	15,900
	May 15, 1933	85.39	9,940
	May 27, 1933	86.48	13,400
	June 5, 1933	86.94	14,800
	June 9, 1933	88.23	19,600
1934	Nov. 3, 1933	86.78	14,100
	Dec 11, 1933	87.85	18,200
	Dec. 23, 1933	92.5	53,000
	Jan. 4, 1934	86.36	12,400
	Jan. 23, 1934	86.25	12,100
	Mar. 29, 1934	88.43	20,200
	Apr. 14, 1934	86.49	11,800
	Apr. 24, 1934	86.32	11,500
1935	Apr. 16, 1935	85.73	9,660
	Apr. 21, 1935	86.08	10,700
	May 6, 1935	86.71	12,700
	May 23, 1935	86.90	13,400
1936	Apr. 18, 1936	88.65	20,000
	May 5, 1936	87.00	13,800
	May 12, 1936	86.53	12,000
1937	May 4, 1937	86.68	12,700
	May 15, 1937	86.14	10,700
1938	Apr. 18, 1938	93.2	46,000
	May 1, 1938	86.80	13,800
	May 16, 1938	85.54	9,800
	May 26, 1938	85.98	11,000
1939	Apr. 22, 1939	86.03	10,700
	Apr. 30, 1939	86.90	13,800
1940	May 11, 1940	85.21	8,140
1941	May 18, 1941	83.86	5,280
1942	Dec. 3, 1941	85.99	10,400
	Apr. 14, 1942	85.76	10,100
	Apr. 22, 1942	85.60	9,510
1943	Apr. 16, 1943	87.33	14,800
	May 2, 1943	85.76	9,510
	May 26, 1943	86.69	12,400
	June 19, 1943	85.47	8,670
1944	May 16, 1944	84.04	5,470
1945	May 5, 1945	87.53	15,500
1946	Apr. 20, 1946	87.04	13,900
	Apr. 26, 1946	87.40	15,200
	May 6, 1946	87.22	14,600
	May 18, 1946	85.82	9,860
1947	Dec. 11, 1946	85.56	9,110
	Dec. 15, 1946	88.98	23,600
	Jan. 24, 1947	a86.40	-
	May 8, 1947	87.54	16,800
1948	Jan. 7, 1948	85.38	8,620
	Apr. 18, 1948	86.13	10,800
	Apr. 22, 1948	87.37	15,700
	Apr. 30, 1948	85.46	8,830
	May 8, 1948	86.40	11,800
	May 14, 1948	86.57	12,500
	May 28. 1948	89.04	23,700
1949	Apr. 19, 1949	86.73	11,800
	Apr. 29, 1949	87.27	14,000
	May 3, 1949	86.77	12,000
	May 13, 1949	88.38	19,200
1950	Feb. 25, 1950	a87.16	-
	Apr. 1, 1950	86.82	12,300
	Apr. 22, 1950	86.13	10,100
	May 14, 1950	88.34	18,400
	May 23, 1950	87.76	15,800
	June 6, 1950	87.54	15,000
	June 17, 1950	87.27	13,900
1951	Feb. 11, 1951	88.07	17,200
	Apr. 14, 1951	85.81	9,260
	May 12, 1951	86.42	11,000
1952	Apr. 19, 1952	86.56	11,400
	Apr. 27, 1952	87.83	16,200
	May 14, 1952	86.44	11,100
1953	Apr. 28, 1953	87.12	13,600
	May 7, 1953	86.46	11,400
	May 20, 1953	86.53	11,800
	June 2, 1953	86.13	10,600
	June 13, 1953	85.66	9,310

a Affected by ice.

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Peak stages and discharges of St. Joe River at Calder, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1954	Apr. 14, 1954	86.51	11,200	1956	Dec. 22, 1955	88.60	19,900
	Apr. 18, 1954	87.15	13,400		Apr. 22, 1956	88.21	18,100
	Apr. 25, 1954	85.61	8,760		May 9, 1956	89.71	17,000
	May 10, 1954	88.00	17,100		May 21, 1956	88.66	20,600
	May 19, 1954	88.60	20,400				
				1957	May 6, 1957	87.72	16,600
1955	May 13, 1955	86.34	10,800		May 20, 1957	87.73	16,700
	May 21, 1955	88.30	18,200				
	June 12, 1955	87.05	13,300				

4150. St. Maries River at Lotus, Idaho

Location.--Lat 47°14'40", long 116°37'30", in sec.17, T.45 N., R.2 W., on left bank 1 mile northwest of Lotus, 1 mile downstream from Carlton Creek, and 5½ miles southwest of St. Maries.

Drainage area.--437 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 3,560 ft.

Gage.--Nonrecording prior to Feb. 21, 1949; recording thereafter. At sites within 1.3 miles upstream at different datums prior to Oct. 1, 1945. Datum of gage is 2,143.36 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 4,000 cfs and extended to peak stage on basis of slope-area measurement at 7,500 cfs and logarithmic plotting.

Bankfull stage.--9 ft.

Remarks.--Only annual peaks, except significant ice peaks, listed through 1948, when recorder record starts. Base for partial-duration series, 2,200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1912	Apr. 11, 1912	7.0	4,670	1945	Jan. 13, 1945	-	c2,000
1921	Mar. 18, 1921	66.50	8,660	1946	Jan. 5, 1946	4.60	2,830
1922	Apr. 22, 1922	62.65	2,780	1947	Dec. 15, 1946	6.58	7,710
1923	Apr. 3, 1923	6.40	3,950		Jan. 26, 1947	a8.70	-
1924	Feb. 2, 1924	a6.50	-		Feb. 2, 1947	a6.20	-
				1948	Feb. 23, 1948	a12.0	-
1926	Feb. 8, 1926	5.46	2,800		Feb. 26, 1948	7.7	11,300
1927	Dec.22,1926 b/	a9.00	-				
	Feb. 21, 1927	6.2	3,810	1949	Feb. 23, 1949	a6.05	-
1928	Nov. 25, 1927	7.40	6,370		Mar. 20, 1949	5.21	3,750
1929	Apr. 15, 1929	4.95	1,500		Apr. 12, 1949	5.15	3,910
1930	Feb. 20, 1930	a7.00	-		Apr. 20, 1949	5.63	5,050
	Mar. 25, 1930	5.53	2,270		Apr. 29, 1949	5.19	4,040
					May 3, 1949	5.46	4,650
1931	Apr. 1, 1931	6.38	3,990		May 11, 1949	4.21	2,400
1932	Mar. 19, 1932	6.88	5,060				
1933	Apr. 27, 1933	6.40	3,740	1950	Feb.25,1950 b/	a12.95	-
1934	Dec. 22, 1933	12.1	23,800		Mar. 5, 1950	5.41	3,930
1935	Mar. 13, 1935	7.10	4,330		Mar. 18, 1950	6.86	8,670
					Apr. 1, 1950	6.60	7,920
1936	Apr. 18, 1936	6.92	3,880		Apr. 14, 1950	5.32	4,510
1937	Apr. 15, 1937	8.12	6,940		Apr. 17, 1950	5.15	4,130
1938	Dec. 30, 1937	a10.00	-		May 14, 1950	5.01	3,830
	Apr. 18, 1938	8.39	7,980		June 14, 1950	4.09	2,340
1939	Mar. 19, 1939	a7.08	-				
	Mar. 26, 1939	6.61	3,460	1951	Dec. 23, 1950	3.99	2,200
1940	Feb. 26, 1940	6.87	4,220		Feb. 9, 1951	a13.4	-
					Feb. 11, 1951	-	10,300
1941	Nov. 29, 1940	6.58	3,260		Apr. 6, 1951	4.49	2,650
1942	Dec. 3, 1941	6.08	2,570				
	Jan. 7, 1942	a7.74	-	1952	Mar. 28, 1952	4.27	2,360
	Jan. 28, 1942	a8.04	-		Apr. 7, 1952	5.62	4,680
1943	Jan. 19, 1943	a8.28	-		Apr. 19, 1952	5.44	4,330
	Apr. 1, 1943	7.34	5,950		Apr. 28, 1952	4.98	3,420
1944	Apr. 13, 1944	5.97	2,120				
1945	Dec. 29, 1944	a5.70	-	1953	Jan. 19, 1953	4.55	3,000

a Affected by ice.
b Approximately.
c Daily discharge.

Peak stages and discharges of St. Maries River at Lotus, Idaho--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Jan. 23, 1953	4.48	2,890	1956	Dec. 12, 1955	5.34	4,340
	Feb. 1, 1953	4.49	2,900		Dec. 22, 1955	-	8,500
	Feb. 4, 1953	4.98	3,770		Dec. 27, 1955	4.15	2,240
	Apr. 28, 1953	5.16	4,190		Mar. 26, 1956	-	-
1954	Dec. 20, 1953	5.42	4,580		Mar. 31, 1956	4.41	2,550
	Feb. 13, 1954	-	-		Apr. 16, 1956	6.04	5,200
	Feb. 22, 1954	-	-		Apr. 22, 1956	5.83	4,760
	Mar. 10, 1954	5.09	3,870		May 9, 1956	5.98	5,070
	Apr. 6, 1954	4.88	3,520	1957	Feb. 27, 1957	-	2,200
	Apr. 14, 1954	5.77	5,560		Mar. 7, 1957	4.67	2,970
1955	Apr. 11, 1955	4.76	3,230		Apr. 1, 1957	4.28	2,580
	Apr. 22, 1955	4.78	3,300		Apr. 6, 1957	5.15	3,820
	May 8, 1955	4.07	2,330		Apr. 15, 1957	4.96	3,540
	May 21, 1955	4.16	2,450		May 1, 1957	4.10	2,420
					May 20, 1957	7.64	10,800
1956	Nov. 16, 1955	a9.8	-				

a Affected by ice.

4160. Hayden Creek below North Fork, near Hayden Lake, Idaho

Location.--Lat 47°49'20", long 116°39'20", in NW¼SW¼ sec.25, T.52 N., R.3 W., on right bank 0.35 mile downstream from North Fork, 2¼ miles upstream from mouth, and 7 miles northeast of Hayden Lake Post Office.

Drainage area.--22.0 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 3,580 ft.

Gage.--Nonrecording prior to Nov. 2, 1948; recording thereafter. At site 200 ft downstream at datum 1.39 ft lower Nov. 2, 1948, to June 26, 1951. Altitude of gage is 2,370 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 30.0 cfs, and extended above on basis of slope-area measurement at 680 cfs.

Remarks.--Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	Apr. 17, 1948	4.38	680	1950	Apr. 13, 1950	2.81	318
	Apr. 21, 1948	-	a340		May 13, 1950	3.23	431
	May 9, 1948	-	a320	1951	Dec. 24, 1950	3.34	420
	May 25, 1948	-	a230		Feb. 11, 1951	b4.93	a600
1949	Apr. 8, 1949	3.01	246		Apr. 5, 1951	2.80	253
	Apr. 12, 1949	3.20	295	1952	Apr. 7, 1952	3.54	371
	Apr. 19, 1949	3.19	292		Apr. 15, 1952	3.10	265
	Apr. 29, 1949	2.84	201		Apr. 19, 1952	3.23	309
1950	Feb. 26, 1950	2.67	240	1953	Jan. 24, 1953	2.92	215
	Mar. 5, 1950	3.59	498		Feb. 1, 1953	4.39	744
	Mar. 18, 1950	4.73	774		Apr. 28, 1953	2.23	225
	Apr. 2, 1950	2.70	289				

a Daily discharge.
b Affected by ice.

4190. Spokane River near Post Falls, Idaho
(Published as "at Post Falls" prior to 1950)

Location.--Lat 47°42'10", long 116°58'40", in SW¼SW¼ sec.4, T.50 N., R.5 W., on right bank 1 mile downstream from powerplant of Washington Water Power Co., 1½ miles downstream from intake of Spokane Valley Farms Co.'s canal, and 1½ miles southwest of Post Falls.

Drainage area.--3,840 sq mi, approximately, of which about 122 sq mi in the vicinity of Hayden Lake is noncontributing.

Gage.--Nonrecording prior to Sept. 16, 1934; recording thereafter. At site 0.8 mile upstream Jan. 1, 1913, to Nov. 21, 1920, and Sept. 16, 1934, to Nov. 15, 1949. At site 0.6 mile upstream Nov. 22, 1920, to Sept. 15, 1934. All gages at present datum. Datum of gage is 2,003.00 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 41,000 cfs and extended above.

Remarks.--Flow regulated by storage in Coeur d'Alene Lake. Sometimes considerable diurnal fluctuation during flood peaks caused by powerplant 1 mile upstream. Spokane Valley Farms Co.'s canal and Rathdrum Prairie Canal divert water above gage during irrigation seasons. Base for partial-duration series, 16,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	Apr. 23, 1913	77.12	28,700	1937	May 8, 1937	75.00	23,100
	May 30, 1913	77.82	31,500				
1914	Apr. 19, 1914	74.80	20,600	1938	Apr. 22, 1938	77.39	33,500
1915	Apr. 21, 1915	72.32	12,000	1939	May 6, 1939	75.00	23,200
1916	May 9, 1916	76.73	27,900	1940	Mar. 9, 1940	-	a16,000
					Apr. 17, 1940	73.57	17,500
1917	May 18, 1917	79.23	39,800	1941	May 19, 1941	-	a15,200
1918	Jan. 3, 1918	79.12	39,200	1942	May 26, 1942	74.57	21,600
	May 6, 1918	74.45	19,600				
1919	May 2, 1919	76.00	25,800	1943	Apr. 22, 1943	77.68	34,900
					May 30, 1943	74.23	19,900
1920	May 17, 1920	74.25	19,400	1944	Apr. 13, 1944	71.30	10,000
1921	Mar. 22, 1921	72.95	19,000	1945	May 11, 1945	75.22	23,700
	May 21, 1921	74.32	25,900				
1922	May 22, 1922	74.12	24,900	1946	May 10, 1946	76.53	29,400
1923	May 13, 1923	73.35	21,400	1947	Dec. 18, 1946	75.68	25,700
					May 11, 1947	75.31	24,100
1924	May 17, 1924	72.52	17,500	1948	Jan. 11, 1948	73.87	18,200
					Apr. 27, 1948	76.53	29,400
1925	Feb. 8, 1925	73.70	22,800		May 30, 1948	78.98	40,300
	Apr. 19, 1925	75.22	30,600				
1926	Apr. 29, 1926	72.13	15,800	1949	May 17, 1949	77.64	34,300
1927	Dec. 5, 1926	72.25	16,200	1950	Mar. 8, 1950	67.70	19,800
	May 3, 1927	74.68	27,900		Mar. 21, 1950	67.73	19,900
	May 20, 1927	74.68	27,900		Apr. 24, 1950	69.49	24,300
					May 19, 1950	71.96	30,700
1928	Dec. 5, 1927	73.86	23,800	1951	Oct. 30, 1950	68.96	22,900
	Apr. 3, 1928	73.04	19,600		Dec. 28, 1950	66.72	17,400
	May 14, 1928	74.45	26,300		Feb. 14, 1951	70.68	27,400
					Apr. 20, 1951	67.91	20,300
1929	May 23, 1929	71.75	14,400	1952	Dec. 1, 1951	66.55	17,000
1930	Mar. 30, 1930	71.53	13,200		May 1, 1952	71.86	30,800
1931	Apr. 14, 1931	72.13	15,600	1953	Feb. 7, 1953	67.24	18,700
1932	May 15, 1932	75.72	32,400		May 2, 1953	68.48	22,000
1933	May 1, 1933	74.93	28,900	1954	May 22, 1954	71.89	32,000
	June 3, 1933	74.68	27,400	1955	May 25, 1955	70.40	27,500
1934	Dec. 25, 1933	-	50,100	1956	Dec. 12, 1955	67.49	19,400
	Jan. 26, 1934	73.63	23,600		Dec. 26, 1955	69.20	24,100
	Apr. 4, 1934	-	a26,300		Apr. 27, 1956	73.85	38,600
1935	May 9, 1935	75.47	25,500	1957	Mar. 9, 1957	66.30	16,400
1936	Apr. 26, 1936	77.81	35,400		May 25, 1957	72.80	35,000

a Daily discharge.

4195. Spokane River above Liberty Bridge, near Otis Orchards, Wash.

Location.--Lat 47°40'55", long 117°05'05", in NW¼ sec.11, T.25 N., R.45 E., on left bank 1.2 miles upstream from Liberty Bridge, 1¾ miles southeast of Otis Orchards, and 3.3 miles northeast of Greenacres.

Drainage area.--3,880 sq mi, approximately.

Gage.--Recording. Datum of gage is 2,000 ft above mean sea level (levels by Washington Water Power Co.).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flow partly regulated by powerplant at Post Falls, Idaho, and by Coeur d'Alene Lake. All peak discharges are affected. Gage-height record collected in cooperation with Washington Water Power Co. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1934	Dec. 25, 1933	22.24	a50,100	1954	May 22, 1954	18.79	29,700
				1955	May 25, 1955	17.99	26,100
1951	Feb. 15, 1951	18.24	26,200				
1952	May 1, 1952	18.95	30,400	1956	Apr. 26, 1956	20.43	38,800
1953	May 2, 1953	17.01	21,800	1957	May 25, 1957	19.53	35,400

a From unpublished records collected by Washington Water Power Co.

4215. Spokane River below Trent Bridge, near Spokane, Wash.

Location.--Lat 47°41'50", long 117°14'35", in NE¼ sec.4, T.25 N., R.44 E., on right bank half a mile downstream from Trent Bridge and 9 miles east of Spokane.

Drainage area.--4,210 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,907.49 ft above mean sea level (levels by Bureau of Reclamation).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--6 ft.

Remarks.--Minor diversions. Flow partly regulated by powerplant at Post Falls, Idaho, and by Coeur d'Alene Lake. All peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 30, 1948	18.5	40,100	1952	Apr. 30, 1952	16.20	31,900
1949	May 16, 1949	16.94	33,700	1953	May 2, 1953	13.56	21,900
1950	May 20, 1950	16.39	31,800	1954	May 23, 1954	16.06	31,300
1951	Feb. 14, 1951	15.13	27,100				

4225. Spokane River at Spokane, Wash.

Location.--Lat 47°39'35", long 117°26'50", in SW¼ sec.13, T.25 N., R.42 E., on right bank at Cochran Street in Spokane, half a mile upstream from Latah Creek.

Drainage area.--4,290 sq mi, approximately. Area of lakes and ponds, 60.9 sq mi; mean elevation, 3,550 ft.

Gage.--Recording and nonrecording at several sites within 4 miles of present site at various datums prior to July 1, 1921; recording thereafter. Datum of gage is 1,696.6 ft above mean sea level, datum of 1929 (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flow partly regulated by powerplant at Post Falls, Idaho, and by Coeur d'Alene Lake. All peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Gage-height record collected in cooperation with Washington Water Power Co. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1891	May 18, 1891	6.25	12,800	1925	Apr. 20, 1925	26.30	31,700
1892	May 31, 1892	9.00	21,800				
1893	May 21, 1893	11.45	37,500	1926	Apr. 22, 1926	23.07	15,800
1894	May 31, 1894	12.42	49,000	1927	May 20, 1927	25.7	28,200
1895	May 10, 1895	7.67	17,100	1928	May 15, 1928	25.38	26,600
				1929	May 25, 1929	22.80	14,700
1896	June 7, 1896	8.92	21,400	1930	Apr. 17, 1930	22.26	12,900
1897	Apr. 23, 1897	11.80	33,900				
1898	May 1, 1898	10.40	27,200	1931	Apr. 15, 1931	23.14	15,800
1899	May 29, 1899	10.80	28,900	1932	May 15, 1932	26.75	33,500
1900	Apr. 10, 1900	7.60	17,000	1933	May 1, 1933	25.9	28,500
				1934	Dec. 26, 1933	29.75	47,800
1901	May 20, 1901	9.10	22,200	1935	May 10, 1935	25.38	25,400
1902	May 26, 1902	9.80	24,800				
1903	June 6, 1903	9.85	23,900	1936	Apr. 27, 1936	27.1	33,700
1904	Apr. 23, 1904	12.10	27,900	1937	May 10, 1937	24.8	22,100
1905	June 8, 1905	6.01	9,510	1938	Apr. 22, 1938	26.86	32,700
				1939	May 5, 1939	25.0	23,300
1906	Apr. 27, 1906	9.31	18,400	1940	Apr. 17, 1940	23.53	16,500
1907	May 23, 1907	27.22	21,400				
1908	Apr. 27, 1908	27.35	21,700	1941	May 19, 1941	23.44	16,100
1909	June 7, 1909	25.80	17,700	1942	May 26, 1942	23.97	18,400
1910	Mar. 25, 1910	29.25	28,100	1943	Apr. 22, 1943	27.04	32,400
				1944	Apr. 15, 1944	22.10	11,400
1911	May 9, 1911	25.60	17,200	1945	May 11, 1945	25.03	22,800
1912	May 24, 1912	78.2	21,200				
1913	June 1, 1913	81.72	33,600	1946	May 10, 1946	26.17	28,400
1914	Apr. 19, 1914	77.6	19,600	1947	Dec. 18, 1946	25.48	25,000
1915	May 23, 1915	74.6	11,500	1948	May 31, 1948	28.35	39,600
				1949	May 16, 1949	27.23	34,200
1916	May 9, 1916	80.25	28,400	1950	May 20, 1950	26.89	32,700
1917	May 17, 1917	83.8	41,900				
1918	Jan. 4, 1918	83.50	39,600	1951	Feb. 15, 1951	26.02	28,200
1919	May 1, 1919	79.41	24,600	1952	May 1, 1952	26.79	32,100
1920	May 20, 1920	77.32	18,200	1953	May 5, 1953	24.73	22,400
				1954	May 21, 1954	26.75	31,000
1921	May 21, 1921	79.8	26,200	1955	May 25, 1955	25.70	27,000
1922	May 22, 1922	25.3	26,300				
1923	May 13, 1923	24.49	22,000	1956	Apr. 27, 1956	27.95	37,800
1924	May 17, 1924	23.6	17,800	1957	May 25, 1957	27.38	35,600

4240. Latah Creek at Spokane, Wash.

Location.--Lat 47°39'10", long 117°26'55", in NW¼ sec.24, T.25 N., R.42 E., on left bank in Spokane, three-quarters of a mile upstream from mouth.

Drainage area.--619 sq mi. Area of lakes and ponds, 0.25 sq mi; mean elevation, 2,710 ft.

Gage.--Nonrecording at site half a mile upstream at different datum prior to Nov. 22, 1948; recording thereafter. Altitude of gage is 1,720 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 7,300 cfs and extended on basis of slope-area and contracted-opening measurements at 11,900 cfs.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 9, 1948	15.38	5,970	1953	Jan. 18, 1953	8.50	3,560
	May 24, 1948	18.73	11,900				
	May 29, 1948	13.61	2,600	1954	Feb. 13, 1954	8.83	3,640
					Feb. 18, 1954	8.38	3,050
1949	Feb. 17, 1949	a9.26	4,480		Feb. 22, 1954	10.50	6,500
	Feb. 18, 1949	7.83	2,500				
	Feb. 24, 1949	10.17	6,210	1955	Feb. 8, 1955	9.42	4,730
	Mar. 8, 1949	8.13	2,840				
	Mar. 20, 1949	8.63	3,410	1956	Dec. 12, 1955	10.72	7,380
					Dec. 22, 1955	12.16	11,300
1950	Feb. 26, 1950	11.36	9,150		Dec. 27, 1955	8.86	3,850
	Mar. 5, 1950	9.89	5,590		Jan. 4, 1956	9.11	4,230
	Mar. 18, 1950	10.52	6,880		Jan. 23, 1956	7.95	2,680
					Mar. 3, 1956	9.14	4,270
1951	Jan. 26, 1951	9.03	4,380		Mar. 22, 1956	9.97	5,750
	Feb. 12, 1951	9.19	4,640				
	Mar. 15, 1951	9.98	6,080	1957	Feb. 27, 1957	11.23	9,320
					Mar. 10, 1957	7.93	2,900
1952	Feb. 6, 1952	9.22	4,800		May 20, 1957	10.86	7,240
	Mar. 26, 1952	11.3	9,140				

a Affected by ice.

4270. Little Spokane River at Elk, Wash.

Location.--Lat 48°01'20", long 117°16'20", in SE¼ sec.8, T.29 N., R.44 E., on right bank half a mile upstream from and northeast of Elk.

Drainage area.--115 sq mi. Area of lakes and ponds, 1.53 sq mi; mean elevation, 2,800 ft.

Gage.--Recording. Altitude of gage is 1,875 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--3 ft.

Remarks.--Base for partial-duration series, 100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1949	Mar. 21, 1949	1.68	110	1954	Jan. 20, 1954	a2.32	-
	Apr. 20, 1949	1.68	110		Mar. 10, 1954	1.52	86
1950	Mar. 19, 1950	1.83	141	1955	Mar. 4, 1955	a2.23	-
	Apr. 2, 1950	1.82	139		Apr. 23, 1955	1.59	94
1951	Feb. 11, 1951	1.63	101	1956	Feb. 1, 1956	a3.06	-
	Apr. 4, 1951	1.70	114		Apr. 7, 1956	1.87	148
1952	Dec. 24, 1951	a2.85	-	1957	Jan. 16, 1957	a2.96	-
	Apr.8,9,14,15, 18-22, 1952	1.75	128		May 20, 1957	1.63	108
1953	Jan. 23, 1953	1.56	89				

a Backwater from ice.

4310. Little Spokane River at Dartford, Wash.

Location.--Lat 47°47'00", long 117°24'50", in NE¼ sec.6, T.26 N., R.43 E., on right bank 50 ft downstream from highway bridge at Dartford, 6 miles upstream from mouth, and 8 miles north of Spokane.

Drainage area.--665 sq mi. Area of lakes and ponds, 3.56 sq mi; mean elevation, 2,400 ft.

Gage.--Nonrecording prior to Mar. 16, 1951; recording thereafter. Altitude of gage is 1,580 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,400 cfs and extended by logarithmic plotting.

Bankfull stage.--5 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 480 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	Apr. 25, 1929	2.04	439	1951	Apr. 7, 1951	3.78	1,240
1930	Feb. 5, 1930	2.84	730	1952	Feb. 5, 1952	3.08	834
					Mar. 28, 1952	4.28	1,580
1931	Apr. 2, 1931	2.00	260				
				1953	Jan. 10, 1953	2.53	535
1932	Jan. 11, 1932	2.55	595		Jan. 24, 1953	2.85	708
	Feb. 27, 1932	4.63	1,900		Feb. 4, 1953	3.00	790
	Mar. 25, 1932	4.07	1,530		Mar. 17, 1953	2.86	713
	May 23, 1932	2.96	840		Apr. 29, 1953	-	950
1947	Jan. 26, 1947	2.70	640	1954	Dec. 21, 1953	2.42	463
	Feb. 15, 1947	2.65	615		Feb. 22, 1954	3.05	801
					Mar. 10, 1954	3.59	1,110
1948	Jan. 8, 1948	3.00	820		Apr. 14, 1954	2.77	652
	Feb. 18, 1948	3.86	1,360				
	Feb. 26, 1948	3.95	1,420	1955	Dec. 31, 1954	2.54	486
	Apr. 18, 1948	3.85	1,360		Mar. 10, 1955	2.72	564
	May 13, 1948	4.12	1,540		Apr. 23, 1955	4.28	1,320
	May 24, 1948	4.30	1,660				
				1956	Dec. 23, 1955	3.33	788
1949	Mar. 8, 1949	3.40	1,070		Jan. 4, 1956	3.78	1,050
	Mar. 22, 1949	4.25	1,620		Jan. 23, 1956	3.10	670
					Mar. 3, 1956	3.27	848
1950	Mar. 6, 1950	4.36	1,700		Mar. 26, 1956	4.83	1,860
	Mar. 18, 1950	5.1	2,240				
				1957	Dec. 10, 1956	2.60	560
1951	Dec. 23, 1950	2.60	570		Dec. 18, 1956	2.68	600
	Jan. 27, 1961	2.55	545		Feb. 27, 1957	4.98	2,060
	Feb. 11, 1951	4.25	1,560		May 21, 1957	3.78	1,220

4330. Spokane River at Long Lake, Wash.

Location.--Lat 47°50'15", long 117°50'25", in SW¼ sec.13, T.27 N., R.39 E., on left bank at Long Lake powerhouse, 1½ miles upstream from Chamokane Creek and 12 miles north of Reardan.

Drainage area.--5,920 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,299.00 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flow partly regulated by Coeur d'Alene and Long Lakes, and by powerplants of Washington Water Power Co. All peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges of Spokane River at Long Lake, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	May 6, 1939	70.95	29,300	1950	May 23, 1950	78.30	48,200
1940	Mar. 8, 1940	70.08	26,100				
				1951	Apr. 15, 1951	77.20	44,900
1941	May 19, 1941	68.18	19,800	1952	May 9, 1952	74.90	38,000
1942	May 27, 1942	68.91	22,200	1953	Apr. 30, 1953	72.40	34,100
1943	Apr. 22, 1943	74.42	38,900	1954	May 25, 1954	75.82	44,400
				1955	June 15, 1955	71.48	28,600
1946	May 15, 1946	76.15	41,800				
1947	May 12, 1947	76.26	42,200	1956	Apr. 25, 1956	75.90	45,100
1948	May 24, 1948	78.66	49,400	1957	May 24, 1957	76.53	47,400
1949	May 17, 1949	74.33	36,400				

4335. Spokane River below Little Falls, near Long Lake, Wash.

Location.--Lat 47°49'30", long 117°56'25", in W½ sec.19, T.27 N., R.39 E., on left bank 1½ miles downstream from Little Falls powerplant of Washington Water Power Co. and 4½ miles west of Long Lake.

Drainage area.--6,220 sq mi, approximately.

Gage.--Recording. Datum of gage is 1,200 ft above mean sea level, unadjusted.

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flow partly regulated by Coeur d'Alene ard Long Lakes and by powerplants of Washington Water Power Co. All peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1913	June 1, 1913	88.68	31,900	1929	May 2, 1929	83.59	18,200
1914	Apr. 18, 1914	85.23	22,500	1930	Mar. 26, 1930	86.09	26,200
1915	May 22, 1915	82.5	15,300				
				1931	May 5, 1931	84.56	21,300
1916	Mar. 28, 1916	87.94	29,800	1932	May 16, 1932	89.05	34,400
1917	May 18, 1917	90.32	41,300	1933	May 1, 1933	90.2	38,300
1918	Jan. 3, 1918	89.8	39,400	1934	Dec. 26, 1933	93.10	48,000
1919	May 3, 1919	86.6	27,900	1935	May 9, 1935	86.95	28,100
1920	Mar. 15, 1920	84.8	21,900				
				1936	Apr. 28, 1936	89.46	36,000
1921	May 21, 1921	87.0	29,300	1937	May 13, 1937	86.25	25,600
1922	May 23, 1922	86.70	28,200	1938	Apr. 22, 1938	89.29	35,300
1923	June 18, 1923	87.33	30,400	1939	May 6, 1939	86.2	25,400
1924	May 12, 1924	84.3	20,300	1940	Feb. 6, 1940	86.2	25,400
1925	Apr. 16, 1925	89.0	36,500				
				1941	May 20, 1941	83.53	17,600
1926	Apr. 22, 1926	83.78	18,800				
1927	May 19, 1927	88.32	34,000				
1928	(a)	87.6	31,500				

a Occurred Nov. 30, Dec. 2, 1927, and May 15, 1928.

SANPOIL RIVER BASIN

4345. Sanpoil River near Keller, Wash.

Location.--Lat 48°06'30", long 118°41'50", in SE¼ sec.7, T.30 N., R.33 E., on right bank 0.3 mile upstream from Brush Creek and 2¼ miles north of Keller.

Drainage area.--890 sq mi, approximately.

Gage.--Recording prior to Oct. 1, 1955; crest-stage gage thereafter. Datum of gage is 1,464.08 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--11 ft.

Remarks.--Only annual peaks are shown for 1948, 1956, and 1957. Base for partial-duration series, 500 cfs.

Peak stages and discharges of Sanpoil River near Keller, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	June 1, 1948	-	a3,290	1955	Apr. 10, 1955	6.08	938
					Apr. 23, 1955	6.39	1,120
1953	Apr. 29, 1953	8.08	2,210		May 22, 1955	6.09	944
1954	Mar. 11, 1954	5.51	580	1956	May 26, 1956	10.02	b3,920
	Apr. 18, 1954	6.33	1,070	1957	Feb. 27, 1957	6.85	1,420
	May 12, 1954	6.55	1,200				

a At site 2½ miles downstream.
b Maximum discharge known since 1900.

4350. Sanpoil River at Keller, Wash.

Location.--Lat 48°02'00", long 118°40'10", in SW¼ sec.4, T.29 N., R.33 E., on right bank at Keller, 100 ft downstream from highway bridge.

Drainage area.--940 sq mi, approximately. Area of lakes and ponds, 0.69 sq mi; mean elevation, 3,820 ft.

Gage.--Nonrecording. Altitude of gage is 1,200 ft (estimated).

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs and extended above.

Remarks.--Peaks are from graphs based on gage readings. Base for partial-duration series, 500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 20, 1911	3.43	1,420	1915	Apr. 4, 1915	3.30	1,330
					May 26, 1915	3.10	1,150
1912	May 4, 1912	2.52	690				
	May 24, 1912	2.38	630	1916	Apr. 13, 1916	3.78	1,920
					Apr. 29, 1916	3.73	1,820
1913	Apr. 15, 1913	3.02	1,060				
				1917	Apr. 29, 1917	2.90	1,090
1914	Jan. 8, 1914	2.35	602		May 15, 1917	3.60	1,720
	Apr. 17, 1914	4.25	2,310				

COLUMBIA RIVER MAIN STEM

4365. Columbia River at Grand Coulee Dam, Wash.

(Published as "at Grand Coulee, near Nespelem," prior to 1936, and as "at Grand Coulee," 1936-42)

Location.--Lat 47°58'00", long 118°58'45", opposite lot 4, sec.36, T.29 N., R.30 E., in pier 3 of highway bridge, 2,500 ft downstream from Grand Coulee Dam and 14 miles upstream from Nespelem River.

Drainage area.--74,100 sq mi, approximately.

Gage.--Nonrecording at site half a mile upstream at datum 2.4 ft lower prior to Apr. 1, 1931; recording thereafter. At site 850 ft downstream at present datum Apr. 1, 1931, to Dec. 31, 1935. Auxiliary recording gage 6 miles downstream since June 12, 1955. Datum of gage is at mean sea level, Bureau of Reclamation adjustment of 1937.

Stage-discharge relation.--Defined by current-meter measurements below 590,000 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Minor diversions. Flow regulated by Franklin D. Roosevelt Lake at Grand Coulee Dam since April 1938, and by reservoirs in Kootenai, Pend Oreille, and Spokane River basins. Flood peaks are slightly affected. Only annual peaks are shown.

Peak stages and discharges of Columbia River at Grand Coulee Dam, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 1894	-	725,000	1941	May 9, 1941	56.19	170,000
				1942	June 13, 1942	69.16	315,100
1913	June 15, 1913	-	492,000	1943	June 21, 1943	69.53	319,900
				1944	June 16, 1944	61.05	218,000
1923	June 17, 1923	79.48	395,000	1945	June 6, 1945	70.59	333,700
1928	June 1, 1928	85.8	490,000	1946	June 1, 1946	75.52	402,000
1929	June 18, 1929	73.64	319,000	1947	June 10, 1947	72.54	352,000
1930	June 15, 1930	67.6	251,000	1948	June 12, 1948	87.90	637,800
				1949	May 21, 1949	72.70	362,800
1931	June 14, 1931	62.70	243,000	1950	June 25, 1950	81.66	507,500
1932	June 19, 1932	73.20	363,000				
1933	June 23, 1933	79.88	469,000	1951	May 28, 1951	73.70	376,800
1934	June 3, 1934	73.38	378,000	1952	May 25, 1952	72.12	354,700
1935	June 18, 1935	71.77	355,000	1953	June 17, 1953	73.50	374,000
				1954	July 10, 1954	75.50	403,500
1936	June 4, 1936	74.42	387,000	1955	June 28, 1955	79.13	414,100
1937	June 25, 1937	65.71	271,000				
1938	June 8, 1938	72.80	364,000	1956	June 8, 1956	83.80	522,000
1939	June 1, 1939	67.25	290,000	1957	May 26, 1957	77.20	401,800
1940	June 5, 1940	65.30	265,600				

NESPELEM RIVER BASIN

4375. Nespelem River at Nespelem, Wash.

Location.--Lat 48°10'20", long 118°58'40", in NE¼ sec.24, T.31 N., R.30 E., on left bank near Indian Service bridge, half a mile upstream from millpond and three-quarters of a mile northwest of Nespelem.

Drainage area.--107 sq mi. Area of lakes and ponds, 0.25 sq mi; mean elevation, 3,100 ft.

Gage.--Nonrecording gage and concrete control. Prior to July 29, 1913, at site 1,000 ft upstream at different datum. Altitude of gage is 1,820 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks are from graphs based on gage readings, or are observed readings equivalent thereto. Base for partial-duration series, 80 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 19, 1911	3.87	234	1919	Apr. 5, 1919	4.90	483
1912	May 1, 1912	3.32	162	1920	May 10, 1920	1.14	34
	May 22, 1912	3.0	138				
				1921	Apr. 15, 1921	4.23	387
1913	Apr. 20, 1913	3.52	176	1922	May 4, 1922	2.55	189
	May 13, 1913	3.05	140				
1914	Apr. 16, 1914	4.90	464	1923	Apr. 19, 1923	1.75	102
1915	Apr. 4, 1915	3.54	255	1924	Apr. 15, 1924	1.44	66
	May 19, 1915	2.46	144				
				1925	Apr. 12, 1925	3.87	334
1916	Mar. 23, 1916	3.64	271	1926	Apr. 17, 1926	1.17	38
	Apr. 11, 1916	4.50	379				
	May 7, 1916	4.10	331	1927	Apr. 27, 1927	4.30	327
1917	May 14, 1917	4.20	397	1928	May 1,2, 1928	2.10	107
1918	Mar. 3, 1918	1.28	51	1929	Mar. 10, 1929	1.32	46
1919	Feb. 16, 1919	1.70	107				

4385. Okanagan River at Okanagan Falls, British Columbia (International gaging station)

Location.--Lat 49°21', long 119°35', on right bank 0.1 mile downstream from dam at outlet of Skaha Lake at Okanagan Falls.

Drainage area.--2,650 sq mi, approximately. Area of lakes and ponds, 20.2 sq mi; mean elevation, 3,700 ft.

Gage.--Nonrecording prior to Apr. 14, 1936; recording thereafter. At sites 600 and 700 ft upstream at different datums prior to Oct. 2, 1933. At site 200 ft upstream Oct. 2, 1933, to Nov. 12, 1954. Datum of gage is 1,092.82 ft above mean sea level (Geodetic Survey of Canada, 1947 joint adjustment).

Stage-discharge relation.--Defined by current-meter measurements below 1,600 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Numerous diversions. Flow regulated by control dam at outlets of Okanagan and Skaha Lakes. Peak discharges are affected. This station is maintained by Canada under agreement with the United States. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1921	June 15, 1921	5.2	2,500	1940	Oct.6,12,1939	1.45	292
1923	June 22,23,1923	-	1,150	1941	Sept.26, 1941	2.00	571
1924	Feb. 2, 1924	-	558	1942	July 4, 1942	3.06	1,310
1925	May 20,22,23, 1925	-	1,160	1943	Nov. 19, 1942	2.54	913
				1944	June 4, 1944	2.31	802
				1945	June 7, 1945	2.89	1,250
1926	Mar. 16, 1926	-	705				
1927	May 22, 1927	-	740	1946	May 13, 1946	3.03	1,360
1928	June 10, 1928	-	2,680	1947	Oct. 25, 1946	2.52	956
1929	Oct. 1, 1928	-	1,060	1948	June 18, 1948	3.19	1,550
1930	May 15, 1930	-	402	1949	Nov. 7, 1948	3.15	1,510
				1950	June 15, 1950	2.94	1,310
1931	Oct. 30, 1930	.82	167				
1932	May 7, 1932	2.60	970	1951	May 13, 1951	3.08	1,440
1933	May 30, 1933	2.85	1,300	1952	May 20, 1952	2.98	1,410
1934	Apr. 24, 1934	2.73	1,160	1953	May 22, 1953	2.57	1,040
1935	May 24, 1935	2.64	1,110	1954	July 11, 1954	2.66	1,190
				1955	June 10,14,1955	1.59	1,030
1936	May 15, 1936	4.10	2,340				
1937	June 3, 1937	2.63	1,080	1956	July 15, 1956	2.07	1,540
1938	May 28, 1938	2.76	1,270	1957	Aug. 27, 1957	2.13	1,670
1939	May 8, 1939	1.95	543				

4395. Okanogan River at Oroville, Wash.

Location.--Lat 48°55'55", long 119°25'05", in SW¼ sec.27, T.40 N., R.27 E., on left bank in Oroville, 20 ft downstream from Great Northern Railroad trestle, half a mile downstream from Tonasket Creek, and 1½ miles downstream from Osoyoos Lake.

Drainage area.--3,210 sq mi, approximately.

Gage.--Nonrecording at Zosel's milldam 200 ft upstream at present datum prior to Oct. 26, 1944; recording thereafter. Auxiliary nonrecording gage used May 15, 1946, to Apr. 9, 1948. Auxiliary recording gage at site half a mile downstream used during high-water periods since Apr. 10, 1948. Datum of gage is 899.77 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--10 ft.

Remarks.--Diversions in Canada for irrigation. Natural regulation in several large lakes and artificial regulation in Okanagan Lake affect peak flow. Only annual peaks are shown.

Peak stages and discharges of Okanogan River at Oroville, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	May 6,7, 1943	7.54	1,170	1951	May 15, 1951	12.37	2,500
1944	June 3, 1944	7.70	1,130		May 24,25, 1951	a13.62	-
				1952	May 20, 1952	a11.26	-
1945	June 1, 1945	a12.35	-		May 22, 1952	10.63	2,080
	June 8,9, 1945	-	1,880	1953	May 21, 1953	9.57	1,250
					June 14, 1953	a10.87	-
1946	May 17, 1946	10.27	2,230	1954	May 21, 1954	a12.03	-
	May 29, 1946	a11.80	-		July 2, 1954	10.62	1,710
1947	May 9, 1947	a9.84	-	1955	June 14, 1955	a14.49	-
1948	May 31, 1948	a16.50	-		June 16,17,1955	-	2,320
	June 2, 1948	15.80	3,430				
1949	May 17, 1949	a14.32	-	1956	May 25, 1956	a13.94	-
	May 19, 1949	13.00	2,350		May 29, 1956	12.89	2,480
1950	June 18, 1950	a14.92	-	1957	May 21, 1957	a13.50	-
	June 23, 1950	13.62	2,950		May 23, 1957	12.81	1,800

a Backwater from Similkameen River.

4405. Sinlahekin Creek above Blue Lake, near Loomis, Wash.

Location.--Lat 48°41'30", long 119°43'00", in NE¼ sec.20, T.37 N., R.25 E., on right bank 1,800 ft upstream from Blue Lake diversion dam and 9½ miles southwest of Loomis.

Drainage area.--41.7 sq mi.

Gage.--Recording. Altitude of gage is 2,100 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 60 cfs and extended by logarithmic plotting.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1924	May 12, 1924	1.31	34	1927	June 7, 1927	2.08	284
1925	May 19, 1925	1.46	99	1928	May 8, 1928	1.55	118
				1929	June 10, 1929	1.22	37
1926	Apr. 19, 1926	1.04	20	1930	June 22, 1930	1.12	26

4420. Toats Coulee Creek near Loomis, Wash.

Location.--Lat 48°50'00", long 119°41'30", in SE¼ sec.33, T.39 N., R.25 E., on left bank just downstream from Deer Creek, 1,200 ft upstream from intake of Whitestone Irrigation District flume and 3 miles northwest of Loomis.

Drainage area.--132 sq mi.

Gage.--Recording. Altitude of gage is 1,780 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 570 cfs and extended above.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1920	June 15, 1920	3.05	183	1925	May 20, 1925	3.07	313
1921	May 19, 1921	5.1	607	1926	Apr. 30, 1926	2.41	81
1922	June 3, 1922	4.8	925				
1923	June 5, 1923	3.36	480	1948	May 1948	-	6,010
1924	May 16, 1924	3.15	274				

4425. Similkameen River near Nighthawk, Wash.
(Published as "near Oroville" prior to 1929)
(International gaging station)

Location.--Lat 48°59'10", long 119°37'00", in NW¼ sec.7, T.40 N., R.26 N., on left bank three-quarters of a mile upstream from Oroville-Tonaskett Irrigation District canal intake, about 1¾ miles downstream from and northeast of Nighthawk, and 12 miles upstream from mouth.

Drainage area.--3,550 sq mi, approximately. At site "near Oroville" prior to October 1938, 3,570 sq mi, approximately. Area of lakes and ponds, 7.75 sq mi; mean elevation, 4,310 ft.

Gage.--Nonrecording prior to Sept. 11, 1928, at sites 7 miles downstream at various datums; recording thereafter. Datum of gage is 1,137.70 ft above mean sea level, international joint adjustment of 1917.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Regulation at peak stages by Palmer Lake. Peaks for period of nonrecording gage are from graphs based on gage readings. This station is maintained by the United States under agreement with Canada. Base for partial-duration series, 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 15, 1911	16.05	16,500	1929	June 9, 1929	8.94	8,100
1912	May 16, 1912	13.18	12,100	1930	May 17, 1930	8.93	8,100
	May 22, 1912	13.7	12,800		June 8, 1930	9.08	8,500
1913	June 4, 1913	17.1	18,300	1931	May 3, 1931	9.05	8,330
1914	May 3, 1914	10.46	8,200		May 15, 1931	9.49	9,380
	May 17, 1914	13.80	13,000	1932	Feb. 28, 1932	9.22	8,590
	June 3, 1914	12.90	11,600		May 11, 1932	10.0	10,200
	June 17, 1914	11.70	9,880		June 14, 1932	9.46	9,190
1915	May 30, 1915	8.70	5,920	1933	June 7, 1933	11.45	14,600
1916	May 6, 1916	13.70	12,800		June 17, 1933	13.30	20,900
	June 19, 1916	18.30	20,600	1934	Apr. 26, 1934	14.96	27,200
1917	May 29, 1917	15.70	16,400		May 16, 1934	11.00	13,400
	June 9, 1917	14.38	14,300		May 30, 1934	10.77	12,800
	June 17, 1917	14.88	15,100	1935	May 31, 1935	11.42	14,600
1918	May 5, 1918	12.80	11,900		June 7, 1935	11.29	14,300
	May 16, 1918	13.86	13,600	1936	May 5, 1936	9.50	9,310
	May 31, 1918	11.67	10,300		May 15, 1936	10.34	11,400
	June 14, 1918	16.20	17,200		June 3, 1936	9.91	10,300
1919	May 28, 1919	18.0	20,100	1937	June 4, 1937	11.90	16,100
	June 21, 1919	13.09	12,400	1938	May 1, 1938	9.50	9,310
1920	June 22, 1920	11.87	10,400		May 27, 1938	13.60	21,900
	July 2, 1920	11.35	9,700	1939	May 16, 1939	-	10,000
1921	May 26, 1921	18.23	20,800		May 29, 1939	9.52	9,310
	June 8, 1921	18.00	20,400	1940	May 25, 1940	8.74	7,550
1922	May 19, 1922	14.70	14,200	1941	June 8, 1941	7.23	4,750
	June 5, 1922	18.54	21,400	1942	May 27, 1942	13.09	20,000
1923	May 10, 1923	13.20	11,600	1943	May 28, 1943	11.11	13,400
	May 23, 1923	13.25	11,600		June 10, 1943	11.14	13,400
	June 10, 1923	15.80	16,200	1944	June 2, 1944	9.72	9,740
1924	May 17, 1924	79.3	18,300	1945	June 1, 1945	12.40	17,600
1925	May 21, 1925	79.30	18,300	1946	May 12, 1946	11.69	15,300
1926	Apr. 30, 1926	72.05	5,840		May 28, 1946	11.93	15,900
1927	May 18, 1927	73.68	8,320		June 15, 1946	10.38	11,500
	June 9, 1927	78.84	17,300	1947	May 9, 1947	11.43	14,300
1928	May 23, 1928	80.55	20,700		May 27, 1947	10.43	11,500
1929	May 23, 1929	9.14	8,500				

Peak stages and discharges of Similkameen River near Nighthawk, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	May 30, 1948	17.62	38,700	1953	May 19, 1953	11.05	13,900
					June 14, 1953	11.79	16,200
1949	May 15, 1949	14.76	26,900				
	June 7, 1949	10.96	13,800	1954	May 21, 1954	12.85	19,700
					June 13, 1954	11.11	14,100
1950	Nov. 28, 1949	9.82	10,300		July 2, 1954	11.85	16,400
	May 17, 1950	10.43	12,000				
	June 6, 1950	12.44	18,200	1955	May 20, 1955	9.26	9,170
	June 17, 1950	15.47	29,700		June 13, 1955	15.13	28,200
					June 23, 1955	11.69	15,900
1951	May 24, 1951	13.71	22,700				
	June 19, 1951	10.18	11,400	1956	May 22, 1956	14.19	24,500
					June 11, 1956	10.78	13,100
1952	May 20, 1952	11.23	14,400		June 20, 1956	10.50	12,300
1953	May 8, 1953	9.69	10,200	1957	May 21, 1957	13.70	23,200

4450. Okanogan River near Tonasket, Wash.
(International gaging station)

Location.--Lat 48°38'00", long 119°27'50", in lot 3, sec.8, T.36 N., R.27 E., on right bank 1,000 ft upstream from Chewilliken Creek and 5½ miles south of Tonasket.

Drainage area.--7,270 sq mi, approximately. Area of lakes and ponds, 39.7 sqmi; mean elevation, 4,310 ft.

Gage.--Recording. Datum of gage is 860.78 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--12 ft.

Remarks.--Flow affected at peak stages by regulation of Okanagan and Skaha Lakes, and by natural regulation in other lakes. This station is maintained by the United States under agreement with Canada. Base for partial-duration series, 8,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 25, 1929	10.14	8,310	1944	June 3, 1944	13.43	10,200
	June 10, 1929	10.16	8,500				
				1945	June 2, 1945	15.74	18,200
1930	June 9, 1930	10.06	8,310				
				1946	May 13, 1946	14.72	16,000
1931	May 16, 1931	10.23	8,480		May 29, 1946	15.12	16,900
1932	May 12, 1932	11.52	10,600	1947	May 10, 1947	13.47	13,400
	June 15, 1932	10.80	9,340		May 29, 1947	12.29	11,000
1933	June 7, 1933	13.47	15,600	1948	May 31, 1948	21.79	40,900
	June 18, 1933	15.37	20,200				
				1949	May 17, 1949	18.05	27,200
1934	Apr. 27, 1934	18.31	26,600				
				1950	Nov. 28, 1949	11.59	10,100
1935	June 2, 1935	14.08	14,900		June 18, 1950	18.66	29,600
1936	May 16, 1936	12.60	11,800	1951	May 25, 1951	16.77	23,600
	June 4, 1936	12.18	11,000		June 16, 1951	13.79	15,200
1937	June 5, 1937	14.16	15,100	1952	May 21, 1952	14.04	16,200
1938	May 28, 1938	16.51	21,400	1953	May 9, 1953	11.76	10,700
					May 21, 1953	13.33	14,400
1939	May 17, 1939	12.35	11,200		June 15, 1953	13.86	15,800
	May 30, 1939	11.39	9,210				
				1954	May 22, 1954	15.21	19,100
1940	May 26, 1940	10.61	7,540		June 14, 1954	13.56	15,000
					July 3, 1954	14.32	17,000
1941	May 3, 1941	9.81	5,180				
				1955	June 14, 1955	18.12	27,600
1942	May 28, 1942	15.78	18,900				
				1956	May 26, 1956	17.37	25,000
1943	May 28, 1943	13.18	13,100				
	June 11, 1943	13.41	13,500	1957	May 22, 1957	16.71	23,600

4460. Okanogan River at Okanogan, Wash.

Location.--Lat 48°21'40", long 119°34'50", in NW¼ sec.16, T.33 N., R.26 E., on right bank at highway bridge at Okanogan, a quarter of a mile upstream from Salmon Creek, and 4 miles downstream from Omak.

Drainage area.--7,900 sq mi, approximately.

Gage.--Nonrecording. At site 300 ft upstream at present datum Oct. 21, 1915, to June 10, 1920. Datum of gage is 810.06 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Peak flow subject to natural regulation by several lakes and to artificial regulation at Okanagan Lake for navigation and storage. Peaks are from graphs based on gage readings. Base for partial-duration series, 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 3, 1911	9.90	13,900	1918	June 1, 1918	9.10	11,300
	June 16, 1911	10.66	16,100		June 15, 1918	11.18	16,200
1912	May 22, 1912	9.62	13,700	1919	May 30, 1919	12.27	18,700
1913	June 6, 1913	11.24	18,800		June 23, 1919	10.31	13,900
1914	May 18, 1914	9.80	14,300	1920	June 19, 1920	7.96	11,000
	June 4, 1914	9.30	12,800	1921	May 27, 1921	12.10	20,100
	June 18, 1914	8.71	11,000		June 9, 1921	12.50	21,000
1915	May 26, 1915	6.98	7,220	1922	May 20, 1922	9.45	13,900
1916	May 8, 1916	9.81	14,300		June 7, 1922	12.50	20,600
	June 20, 1916	12.21	22,200	1923	May 24, 1923	8.67	12,000
1917	May 31, 1917	11.20	16,200		June 12, 1923	10.43	16,200
	June 18, 1917	11.28	16,500	1924	May 20, 1924	10.94	17,800
1918	May 6, 1918	9.27	11,700	1925	May 22, 1925	11.38	19,200
	May 16, 1918	9.80	12,900				

4465. Salmon Creek near Conconully, Wash.
(Published with Salmon Creek near Okanogan, 1910-12)

Location.--Lat 48°32'00", long 119°44'50", in sec.18, T.35 N., R.25 E., on right bank half a mile downstream from Conconully Reservoir, 2 miles south of Conconully, and about 14 miles northwest of Okanogan.

Drainage area.--121 sq mi.

Gage.--Nonrecording gage and weir-type control. Altitude of gage is 2,200 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions. Flow completely regulated by Conconully and Salmon Lake Reservoirs. Peak discharges are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	July 21, 1911	1.36	107	1918	June 13, 1918	1.58	143
1912	June 9, 1912	1.37	126	1919	June 11, 1919	1.96	200
1913	July 24, 1913	-	120	1920	Aug. 6, 1920	.98	68
1914	May 24, 1914	-	247				
1915	May 29, 1915	2.45	292	1921	July 21, 1921	1.29	104
				1922	May 20, 1922	1.26	100
1916	July 3, 1916	3.00	410				
1917	June 2, 1917	2.25	252	1948	May 30, 1948	-	782

4470. Salmon Creek near Okanogan, Wash.
(Published as "near Malott," 1903-8)

Location.--Lat 48°24', long 119°37', in sec.31, T.34 N., R.26 E., on left bank at Jones Ranch, about 3 miles northwest of Okanogan and 3½ miles upstream from mouth.

Drainage area.--156 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,350 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks are observed, equivalent to graphs based on gage readings. Base for partial-duration series, 160 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1903	May 14, 1903	2.04	173	1908	June 9, 1908	2.25	214
	June 3, 1903	3.1	429				
				1909	May 28, 1909	2.08	166
1904	Apr. 28, 1904	3.7	609		June 18, 1909	2.08	166
1905	Apr. 26, 1905	2.04	202	1910	Mar. 3, 1910	2.00	150
	June 4, 1905	2.83	410				
				1948	May 30, 1948	-	a735
1906	May 27, 1906	2.75	386				
1907	May 20, 1907	2.67	363				

a At site 3 miles downstream.

METHOW RIVER BASIN

4495. Methow River at Twisp, Wash.

Location.--Lat 48°21'40", long 120°06'50", in NW¼ sec.17, T.33 N., R.22 E., on left bank a quarter of a mile downstream from Twisp River and 0.3 mile east of center of Twisp.

Drainage area.--1,330 sq mi, approximately. Area of lakes and ponds, 1.75 sq mi; mean elevation, 5,180 ft.

Gage.--Nonrecording at several sites in immediate vicinity at different datum prior to Oct. 1, 1929; recording thereafter. Altitude of gage is 1,580 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 18,000 cfs and extended on basis of slope-area measurement at 40,600 cfs.

Bankfull stage.--13 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 6,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1920	June 16, 1920	6.00	4,480	1927	June 8, 1927	9.92	12,400
1921	May 22, 1921	9.93	12,300	1928	May 21, 1928	8.95	10,400
	June 5, 1921	10.50	13,600				
	June 22, 1921	7.20	6,630	1929	May 23, 1929	6.24	5,010
					June 8, 1929	6.16	5,010
1922	May 18, 1922	8.60	9,470				
	June 4, 1922	10.04	12,500	1934	Apr. 24, 1934	10.02	15,200
					May 16, 1934	7.15	7,870
1923	May 10, 1923	7.60	7,410		May 30, 1934	7.89	9,100
	May 22, 1923	7.20	6,630				
	June 9, 1923	8.10	8,420	1935	May 23, 1935	7.78	9,580
					May 31, 1935	7.91	9,840
1924	May 16, 1924	9.21	10,800		June 7, 1935	8.06	10,400
1925	May 20, 1925	9.47	11,400	1936	June 3, 1936	8.72	12,000
1926	Apr. 30, 1926	5.10	3,050	1937	May 27, 1937	6.84	7,060

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Peak stages and discharges, of Methow River at Twisp, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1937	June 3, 1937	8.03	10,100	1949	June 7, 1949	5.83	7,330
	June 17, 1937	8.76	12,300				
				1950	May 15, 1950	5.94	7,900
1938	May 27, 1938	9.15	13,300		June 5, 1950	7.30	12,600
	June 8, 1938	7.80	9,560		June 18, 1950	8.95	19,800
	June 22, 1938	6.72	6,680		June 30, 1950	6.76	10,800
1939	May 17, 1939	5.99	5,020	1951	Apr. 18, 1951	5.52	6,600
					May 12, 1951	8.46	17,600
1940	May 24, 1940	7.57	9,020		May 23, 1951	8.19	16,400
					June 15, 1951	6.80	10,800
1941	May 2, 1941	6.10	5,240				
				1952	May 19, 1952	6.50	10,000
1942	May 26, 1942	10.76	21,300				
	June 7, 1942	7.60	9,180	1953	May 7, 1953	5.75	7,280
					May 19, 1953	6.68	10,100
1943	May 26, 1943	7.47	8,890		May 30, 1953	6.22	8,670
	June 10, 1943	7.40	8,600		June 13, 1953	7.19	12,700
	July 1, 1943	6.69	6,770				
				1954	May 11, 1954	5.83	7,520
1944	May 16, 1944	6.12	5,570		May 19, 1954	7.31	12,900
					June 13, 1954	5.67	7,050
1945	May 31, 1945	8.42	11,700		July 1, 1954	-	-
1946	May 10, 1946	7.89	9,590	1955	June 12, 1955	8.22	16,600
	May 28, 1946	8.29	10,700		June 23, 1955	6.64	10,700
	June 14, 1946	7.26	8,120				
				1956	Apr. 23, 1956	5.73	7,790
1947	May 8, 1947	7.72	8,920		May 10, 1956	5.70	7,700
	May 28, 1947	6.81	6,940		May 21, 1956	8.23	17,400
					June 1, 1956	8.23	17,400
1948	May 29, 1948	12.94	40,800		June 10, 1956	6.00	9,160
	June 6, 1948	7.39	11,800		June 19, 1956	5.59	7,870
	June 17, 1948	7.27	11,500				
				1957	May 9, 1957	6.97	12,700
1949	May 13, 1949	8.45	15,500		May 19, 1957	8.63	19,000

4505. Methow River at Pateros, Wash.

Location.--Lat 48°02'50", long 119°54'40", in sec.2, T.29 N., R.23 E., on left bank at Pateros, three-quarters of a mile upstream from highway bridge and 1 mile upstream from mouth.

Drainage area.--1,810 sq mi, approximately. Area of lakes and ponds, 2.06 sq mi; mean elevation, 4,780 ft.

Gage.--Nonrecording. Datum of gage is 738.74 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 13,000 cfs and extended above.

Bankfull stage.--12 ft.

Remarks.--Peak discharges are affected by diversions during irrigation season. All peaks are from graphs based on gage readings. Base for partial-duration series, 6,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	Apr. 29, 1904	10.0	9,640	1910	May 11, 1910	11.8	15,400
	May 23, 1904	11.0	11,800		May 25, 1910	10.8	12,900
					June 13, 1910	9.50	9,650
1905	June 10, 1905	10.5	12,200				
				1911	June 2, 1911	10.2	11,400
1906	May 26, 1906	10.73	12,600		June 13, 1911	11.0	a13,400
1907	May 17, 1907	9.90	10,600	1912	May 21, 1912	10.4	10,500
	June 1, 1907	10.9	13,200		June 9, 1912	8.80	7,040
1908	June 10, 1908	10.3	11,600	1913	June 3, 1913	10.8	11,400
1909	June 3, 1909	10.7	12,600	1914	May 16, 1914	9.90	9,420
					June 3, 1914	10.25	10,100
1910	Apr. 26, 1910	10.7	12,600		June 17, 1914	9.50	8,540

a Revised.

Peak stages and discharges of Methow River at Pateros, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Apr. 20, 1915	7.95	5,400	1918	June 14, 1918	10.10	9,730
1916	May 5, 1916	10.0	9,780	1919	May 27, 1919	10.04	9,510
	June 18, 1916	11.95	14,800		June 20, 1919	9.25	7,750
1917	May 29, 1917	10.1	10,000	1920	June 22, 1920	7.65	4,550
	June 16, 1917	10.1	10,000				

CHELAN RIVER BASIN

4510. Stehekin River at Stehekin, Wash.

Location.--Lat 48°19'30", long 120°41'20", in SE¼ sec.26, T.33 N., R.17 E., on left bank 1,200 ft upstream from Boulder Creek, 1¾ miles upstream from Lake Chelan, and 2 miles northwest of Stehekin.

Drainage area.--372 sq mi, includes that of Boulder Creek. Area of lakes and ponds, 1.06 sq mi; mean elevation, 5,130 ft.

Gage.--Nonrecording prior to Oct. 31, 1915; recording thereafter. At site three-eighths of a mile upstream from mouth at different datums prior to Aug. 17, 1911. At site a quarter of a mile downstream from Boulder Creek at different datum Aug. 17, 1911, to Oct. 21, 1915. Datum of gage is 1,100 ft above mean sea level (unadjusted).

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended on basis of slope-area measurement at 18,800 cfs.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Gage-height record collected in cooperation with Washington Water Power Co. to June 30, 1955, and by Public Utility District No. 1 of Chelan County thereafter. Base for partial-duration series, 5,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	May 4, 1911	3.7	5,280	1932	Feb. 27, 1932	26.11	10,200
	June 1, 1911	5.2	9,190		June 13, 1932	25.01	7,800
	June 13, 1911	6.5	12,200		June 21, 1932	24.15	6,120
	July 16, 1911	3.9	5,190	1933	Nov. 17, 1932	24.30	6,330
1912	May 14, 1912	5.40	6,420		June 4, 1933	23.89	5,560
	May 20, 1912	5.74	a7,090		June 15, 1933	26.94	12,100
	June 13, 1912	5.15	5,980		July 2, 1933	23.86	5,560
	June 19, 1912	5.55	6,860		July 8, 1933	23.98	5,750
	June 25, 1912	5.46	6,640		July 16, 1933	24.40	6,570
1913	May 25, 1913	5.40	6,420	1934	Oct. 27, 1933	23.72	5,190
					Nov. 22, 1933	23.86	5,560
1914	May 23, 1914	5.14	5,620		Apr. 14, 1934	23.56	5,010
	June 2, 1914	5.90	7,290		Apr. 24, 1934	26.02	10,000
	June 17, 1914	5.37	6,230		May 15, 1934	24.14	5,950
	July 3, 1914	4.88	5,220		May 29, 1934	25.14	8,050
					June 11, 1934	24.17	6,150
1915	May 9, 1915	3.94	3,530	1935	Jan. 26, 1935	24.65	6,990
1927	May 17, 1927	23.98	6,080		May 22, 1935	24.48	6,780
	June 8, 1927	26.39	11,100		May 31, 1935	24.36	6,570
	June 22, 1927	24.30	6,310		June 8, 1935	24.90	7,620
					July 14, 1935	23.74	5,190
1928	May 22, 1928	26.62	11,400				
	May 25, 1928	25.88	9,830	1936	Apr. 19, 1936	23.57	5,130
	June 23, 1928	24.04	5,850		May 14, 1936	24.48	6,850
					May 31, 1936	25.84	9,590
1929	Oct. 9, 1928	24.04	5,850		June 2, 1936	27.18	12,900
	May 23, 1929	24.13	6,050				
	June 8, 1929	23.98	5,850	1937	May 25, 1937	23.94	5,690
					June 3, 1937	25.56	9,150
1930	May 16, 1930	23.50	4,720		June 7, 1937	24.64	7,050
					June 16, 1937	24.70	7,250
1931	May 1, 1931	24.50	6,850		June 21, 1937	24.43	6,650
	May 14, 1931	24.91	7,670		June 28, 1937	24.46	6,850
	May 31, 1931	24.16	6,000				
	June 8, 1931	24.18	6,000	1938	Oct. 28, 1937	24.56	7,050

a Revised.

Peak stages and discharges of Stehekin River at Stehekin, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)
1938	Apr. 18, 1938	23.72	5,340
	May 24, 1938	25.39	8,720
	June 7, 1938	25.01	7,880
	June 24, 1938	25.56	9,150
1939	May 16, 1939	24.48	6,850
	May 29, 1939	25.60	9,150
	June 29, 1939	23.80	5,510
1940	May 10, 1940	24.27	6,450
	May 23, 1940	25.09	7,990
	May 31, 1940	23.81	5,560
	June 12, 1940	23.64	5,220
1941	Oct. 19, 1940	22.97	4,210
1942	May 25, 1942	25.27	8,370
1943	May 26, 1943	25.17	8,160
	June 9, 1943	24.84	7,330
	June 17, 1943	24.45	6,540
	June 30, 1943	24.80	7,330
	July 7, 1943	23.96	5,780
1944	May 15, 1944	23.66	5,420
1945	May 31, 1945	25.36	8,590
	June 20, 1945	24.00	5,780
1946	Oct. 26, 1945	23.69	5,240
	May 9, 1946	24.65	7,110
	May 27, 1946	24.84	7,530
	June 3, 1946	24.10	6,130
	June 14, 1946	24.02	5,940
	June 20, 1946	24.47	6,910
1947	Oct. 25, 1946	24.16	6,320
	May 8, 1947	25.00	7,960
	May 28, 1947	24.70	7,320
1948	May 29, 1948	29.00	18,900
	June 7, 1948	26.25	11,800
1949	May 15, 1949	25.72	10,600
1949	June 6, 1949	24.69	8,310
1950	Nov. 27, 1949	23.81	18,400
	June 5, 1950	23.67	6,290
	June 21, 1950	27.50	15,000
	June 30, 1950	23.63	12,500
	July 18, 1950	24.14	6,100
1951	May 11, 1951	26.89	12,700
	May 23, 1951	23.51	8,990
	June 15, 1951	23.12	8,250
1952	May 13, 1952	23.45	5,120
	May 19, 1952	24.33	6,750
	May 28, 1952	23.79	5,720
	June 5, 1952	24.65	7,400
1953	May 7, 1953	23.53	5,260
	May 17, 1953	24.32	6,730
	June 8, 1953	24.25	6,590
	July 8, 1953	24.29	6,680
1954	May 11, 1954	24.01	6,130
	May 19, 1954	23.53	9,440
	June 13, 1954	23.63	5,430
	July 1, 1954	25.07	8,310
	July 8, 1954	24.53	7,150
1955	June 11, 1955	23.65	12,400
	June 23, 1955	23.73	9,750
	July 16, 1955	24.83	7,280
1956	Oct. 25, 1955	23.96	12,900
	Nov. 4, 1955	23.46	5,140
	Nov. 10, 1955	23.37	9,030
	June 1, 1956	27.22	13,100
1957	May 1, 1957	24.88	7,020
	May 6, 1957	23.76	8,890
	May 18, 1957	23.68	8,720
	June 2, 1957	23.57	8,470
	June 11, 1957	23.65	6,580

4515. Railroad Creek at Lucerne, Wash.

Location.--Lat 48°11'45", long 120°35'50", in sec.9, T.31 N., R.18 E., on left bank half a mile upstream from mouth and half a mile southwest of Lucerne.

Drainage area.--64.8 sq mi. Area of lakes and ponds, 0.27 sq mi; mean elevation, 4,930 ft.

Gage.--Nonrecording at site 1,800 ft downstream at different datum Dec. 6, 1912, to June 30, 1913; recording thereafter. Altitude of gage is 1,250 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,500 cfs and extended on basis of slope-area and contracted-opening measurement at 3,900 cfs.

Bankfull stage.--Not subject to overflow.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Gage-height record collected in cooperation with Washington Water Power Co. to June 30, 1955, and by Public Utility District No. 1 of Chelan County thereafter. Base for partial-duration series, 800 cfs.

Peak stages and discharges of Railroad Creek at Lucerne, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 14, 1911	3.05	924
1912	May 20, 1912	3.0	900
	June 12, 1912	2.8	806
	June 25, 1912	2.82	806
1913	June 10, 1913	2.80	806
1927	May 17, 1927	4.64	824
	June 8, 1927	5.32	1,910
	June 22, 1927	4.52	1,040
1928	May 22, 1928	5.10	1,860
	May 26, 1928	4.66	1,360
	June 24, 1928	4.20	885
1929	May 24, 1929	4.30	981
	June 9, 1929	4.34	876
1930	June 10, 1930	4.18	674
1931	May 14, 1931	4.38	843
1932	Feb. 27, 1932	4.46	884
	June 14, 1932	4.54	956
	June 23, 1932	4.46	884
1933	June 4, 1933	4.46	970
	June 15, 1933	4.95	1,460
	July 2, 1933	4.42	932
	July 8, 1933	4.38	896
	July 16, 1933	4.45	961
1934	Apr. 24, 1934	4.75	1,580
	May 16, 1934	4.15	885
	May 30, 1934	4.57	1,360
	June 9, 1934	4.27	1,020
1935	Jan. 25, 1935	5.20	1,150
	May 22, 1935	4.16	896
	May 31, 1935	4.22	962
	June 8, 1935	4.45	1,230
1936	May 14, 1936	4.15	900
	June 3, 1936	4.86	1,670
1937	June 3, 1937	4.60	1,250
	June 10, 1937	4.53	1,170
	June 17, 1937	4.59	1,380
	June 21, 1937	4.54	1,310
	June 29, 1937	4.47	1,220
1938	May 29, 1938	4.44	1,160
	June 8, 1938	4.50	1,240
	June 23, 1938	4.82	1,700
1939	May 16, 1939	4.06	859
	May 29, 1939	4.34	1,200
1940	May 23, 1940	4.43	1,250
	May 31, 1940	4.18	862
1940	June 13, 1940	4.18	862
1941	June 13, 1941	3.87	622
1942	May 25, 1942	4.63	1,620
1943	May 26, 1943	4.45	1,130
	June 9, 1943	4.32	951
	June 17, 1943	4.33	1,050
	July 2, 1943	4.45	1,180
	July 7, 1943	4.19	848
1944	May 15, 1944	4.06	698
1945	May 31, 1945	4.61	1,530
	June 20, 1945	4.25	1,080
1946	May 10, 1946	4.15	815
	May 28, 1946	4.46	1,190
	June 3, 1946	4.34	1,040
	June 14, 1946	4.23	966
	June 21, 1946	4.43	1,150
1947	May 8, 1947	4.51	1,200
	May 27, 1947	4.33	1,140
1948	May 28, 1948	8.1	3,900
	June 7, 1948	-	-
1949	May 12, 1949	3.40	1,340
	June 7, 1949	2.63	860
1950	Nov. 27, 1949	7.06	(a)
	June 20, 1950	-	-
	June 30, 1950	4.91	1,200
1951	May 11, 1951	5.42	2,440
	May 23, 1951	4.48	1,500
	June 15, 1951	4.34	1,300
1952	May 19, 1952	4.09	1,110
	June 5, 1952	4.15	1,160
1953	May 18, 1953	-	-
	June 13, 1953	4.00	980
	July 8, 1953	4.23	1,180
1954	May 20, 1954	4.17	1,260
	July 1, 1954	4.34	1,340
1955	June 12, 1955	4.92	2,820
	June 23, 1955	4.56	2,070
	July 17, 1955	4.23	1,520
1956	Oct. 25, 1955	4.00	840
	Nov. 10, 1955	4.56	1,220
	May 31, 1956	6.41	3,030
	June 19, 1956	5.12	1,160
	July 13, 1956	4.63	945
1957	May 18, 1957	5.42	1,560

a Annual maximum discharge not determined.

4525. Chelan River at Chelan, Wash.
(Published as "below Chelan Lake," 1904-5)

Location.--Lat 47°50'05", long 120°00'40", in SE¼ sec.13, T.27 N., R.22 E., near right bank in forebay upstream from control dam at outlet of Lake Chelan and a quarter of a mile south of Chelan.

Drainage area.--951 sq mi.

Gage.--Nonrecording prior to Nov. 11, 1928; recording thereafter. At site 800 ft downstream prior to Jan. 7, 1927. At site 1,000 ft below dam Jan. 7 to Sept. 30, 1927. At sites 2½ miles downstream Oct. 1, 1927, to Mar. 19, 1939. Gages at previous sites at present datum. Datum of gage is at mean sea level, adjustment of 1912.

Stage-discharge relation.--Spillway discharge defined by current-meter measurements. Total discharge determined by adding spillway discharge to turbine discharge and Beebe irrigation canal flow.

Remarks.--Minor diversions. Flow regulated by Lake Chelan. All peak discharges are affected. Gage-height records collected in cooperation with Washington Water Power Co. to June 30, 1955, and by Public Utility District No. 1 of Chelan County thereafter. Only annual observed peaks are shown prior to 1928, and maximum daily discharges thereafter.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	June 7, 1904	10.65	8,280	1931	June 9, 1931	-	7,880
1905	June 12-14,1905	10.6	8,280	1932	June 15, 1932	-	10,200
				1933	June 18, 1933	-	8,710
1906	May 13-15,1906	8.70	5,100	1934	Apr. 27, 1934	-	12,300
1907	June 4,5,1907	10.7	8,460	1935	June 1, 1935	-	7,920
1908	June 17, 1908	10.9	8,820				
1909	June 16-21,1909	10.25	7,600	1936	June 3, 1936	-	12,800
1910	May 14, 1910	10.7	8,460	1937	June 30, 1937	-	10,000
				1938	June 23, 1938	-	11,900
1911	June 17,18,1911	10.0	7,260	1939	June 30, 1939	-	6,500
1912	June 29, 30, July 1,2,1912	10.0	7,260	1940	June 20, 1940	-	7,200
1913	June 10,11,1913	11.1	9,070	1941	June 13, 1941	-	5,610
1914	May 26, 1914	9.8	6,820	1942	May 27, 1942	-	8,510
1915	Apr. 7, 1915	8.05	3,980	1943	July 1, 1943	-	8,950
				1944	(a)	-	2,130
1916	June 20, 1916	11.48	9,780	1945	June 22, 1945	-	6,690
1917	June 22, 1917	10.13	7,490				
1918	June 14,15,1918	10.30	8,140	1946	June 21, 1946	-	7,220
1919	May 29, 1919	10.0	7,600	1947	June 19, 1947	-	7,680
1920	July 4, 1920	9.0	5,580	1948	May 30, 1948	-	16,000
				1949	June 23, 1949	-	5,870
1921	June 8, 1921	12.3	11,600	1950	June 22, 1950	-	14,100
1922	June 7,8, 1922	10.6	8,420				
1923	June 11-13,1923	10.1	7,520	1951	June 16, 1951	-	10,400
1924	May 22-24,1924	10.4	7,950	1952	Jan. 6, 1952	-	7,490
1925	May 21,23,1925	10.8	8,760	1953	July 8, 1953	-	10,600
				1954	July 6, 1954	-	10,100
1926	May 4-5, 1926	7.8	3,800	1955	July 14, 1955	-	10,100
1927	June 15,17, 1927	-	7,730				
1928	May 27, 1928	-	9,700	1956	June 3, 1956	-	12,100
1929	July 15, 1929	-	3,790	1957	June 3, 1957	-	10,500
1930	July 14, 1930	-	5,650				

a Occurred Nov. 3, 6, 7, 14, 24, 27, 28, 1943, Jan. 13, 1944.

4530. Entiat River at Entiat, Wash.

Location.--Lat 47°39'40", long 120°13'30", in SE¼ sec.17, T.25 N., R.21 E., on right bank at Entiat and a quarter of a mile upstream from mouth.

Drainage area.--419 sq mi. Area of lakes and ponds, 0.22 sq mi; mean elevation, 4,390 ft.

Gage.--Nonrecording prior to Oct. 1, 1925; recording thereafter. At site three-quarters of a mile upstream at different datum October 1910 to Sept. 30, 1925. Altitude of gage is 690 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--13 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 13, 1911	4.0	3,060	1923	June 10, 1923	4.00	3,120
1912	May 21, 1912	4.05	3,150	1924	May 16, 1924	4.22	3,460
1913	June 4, 1913	4.41	3,800	1925	May 21, 1925	4.22	3,670
1914	June 3, 1914	3.95	2,960				
1915	May 10, 1915	3.08	1,640	1948	May 29, 1948	-	10,800
1916	June 18, 1916	5.07	5,380	1952	May 19, 1952	4.45	2,360
1917	May 30, 1917	4.04	3,120	1953	June 13, 1953	4.65	2,660
1918	June 11, 1918	4.06	3,290	1954	July 1, 1954	5.08	3,210
1919	May 29, 1919	3.94	2,950	1955	June 13, 1955	5.89	4,800
1920	June 22, 1920	2.55	1,030				
				1956	June 1, 1956	5.71	4,960
1921	June 6, 1921	4.74	4,360	1957	May 19, 1957	5.10	3,790
1922	June 5, 1922	4.26	3,640				

WENATCHEE RIVER BASIN

4550. Wenatchee River below Wenatchee Lake, Wash.

Location.--Lat 47°48'30", long 120°43'20", in sec.28, T.27 N., R.17 E., on left bank 0.1 mile downstream from lake outlet, 4¾ miles northwest of Plain, and 17 miles northwest of Leavenworth.

Drainage area.--276 sq mi. Area of lakes and ponds, 6.25 sq mi; mean elevation, 4,720 ft.

Gage.--Nonrecording prior to Jan. 5, 1935; recording thereafter. At site 2¾ miles upstream from outlet at present datum prior to Sept. 7, 1956. Datum of gage is 1,860.00 ft above mean sea level, datum of 1912. Gage readings have been reduced to elevations 1,800 ft above mean sea level.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--80 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Natural regulation in lake. Base for partial-duration series, 4,800 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1932	Feb. 28, 1932	76.14	7,550	1935	June 8, 1935	75.20	6,200
	June 15, 1932	75.12	6,050				
				1936	May 5, 1936	75.28	4,890
1933	Nov. 14, 1932	75.69	6,950		May 15, 1936	75.35	6,290
	Nov. 18, 1932	75.17	6,200		June 3, 1936	75.55	6,640
	June 8, 1933	74.31	4,920				
	June 16, 1933	76.57	8,310	1937	June 3, 1937	75.35	6,290
					June 22, 1937	74.86	5,620
1934	Nov. 4, 1933	75.69	6,950				
	Dec. 23, 1933	75.70	6,950	1938	Apr. 19, 1938	74.80	5,540
	Mar. 31, 1934	74.49	5,200		May 26, 1938	75.59	6,630
	Apr. 24, 1934	76.08	7,550		June 8, 1938	74.74	5,460
					June 24, 1938	74.64	5,330
1935	Jan. 27, 1935	76.19	7,700				

Peak stages and discharges of Wenatchee River below Wenatchee Lake, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1939	May 16, 1939	74.62	6,090	1950	May 15, 1950	74.20	4,950
	May 30, 1939	74.33	5,630		June 5, 1950	74.87	5,860
					June 21, 1950	77.05	8,720
1940	May 24, 1940	74.46	5,690		July 1, 1950	75.93	7,160
1941	May 1, 1941	72.52	2,750	1951	Feb. 11, 1951	-	-
					May 12, 1951	76.46	7,990
1942	May 26, 1942	74.39	5,010		May 24, 1951	75.05	5,990
					June 16, 1951	74.40	5,210
1943	May 26, 1943	75.53	6,490				
	June 10, 1943	75.07	5,890	1952	May 19, 1952	74.19	5,180
	June 18, 1943	74.86	5,620				
	July 2, 1943	75.14	5,980	1953	May 19, 1953	73.95	4,840
					June 13, 1953	-	-
1944	May 16, 1944	73.16	3,490		July 9, 1953	74.10	5,050
1945	May 31, 1945	74.91	5,680	1954	May 11, 1954	74.08	5,020
					May 20, 1954	75.59	6,990
1946	May 10, 1946	74.80	5,540		June 16, 1954	74.02	4,950
	May 27, 1946	75.55	6,520		July 2, 1954	74.75	5,900
	June 15, 1946	74.62	5,310				
	June 21, 1946	74.71	5,420	1955	June 13, 1955	77.28	9,620
					June 23, 1955	75.32	6,750
1947	May 8, 1947	74.89	5,860		July 16, 1955	74.65	5,810
	May 28, 1947	75.09	6,120				
				1956	Nov. 5, 1955	74.93	6,200
1948	May 29, 1948	79.65	13,700		May 21, 1956	77.13	9,400
	June 9, 1948	77.33	9,190		June 1, 1956	77.08	9,320
					June 20, 1956	74.64	5,800
1949	May 16, 1949	77.21	9,030				
	June 7, 1949	75.32	6,380	1957	May 9, 1957	75.47	7,040
					May 19, 1957	74.66	5,900
1950	Nov. 27, 1949	78.32	11,000		June 3, 1957	74.69	5,950

4560. Phelps Creek near Plain, Wash.

Location.--Lat 48°04'25", long 120°50'55", on right bank a quarter of a mile upstream from mouth and 25 miles northwest of Plain.

Drainage area.--16.0 sq mi.

Gage.--Nonrecording and, since 1929, artificial control. At site 300 ft downstream at present datum prior to June 5, 1930. Datum of gage is 2,772.75 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 330 cfs and extended by logarithmic plotting.

Remarks.--All peaks are from graphs based on gage readings. Base for partial-duration series, 160 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1927	May 17, 1927	2.15	347	1930	Apr. 22, 1930	1.60	182
	June 7, 1927	4.0	1,140		May 14, 1930	1.70	208
					June 9, 1930	1.80	195
1928	May 24, 1928	2.96	658		June 21, 1930	1.65	166
1929	May 22, 1929	1.88	270	1948	May 29, 1948	-	a1,530
	June 9, 1929	1.85	256				

a Only annual peak shown.

4565. Chiwawa River near Plain, Wash.
(Published as "near Leavenworth," 1911-14)

Location.--Lat 47°50'30", long 120°39'40", in SE¼ sec.13, T.27 N., R.17 E., on right bank half a mile upstream from Goose Creek, 6 miles north of Plain, 7 miles upstream from mouth, and 11 miles northeast of Chiwaukum.

Drainage area.--170 sq mi. At site May 1911 to October 1914, 181 sq mi. Area of lakes and ponds, 0.69 sq mi; mean elevation, 4,440 ft.

Gage.--Nonrecording prior to Nov. 1, 1914; recording thereafter. At site 3 miles downstream at different datum May 29, 1911, to Oct. 21, 1914. Altitude of gage is 2,100 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 5,600 cfs and extended above.

Bankfull stage.--9 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 1,600 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1911 a/	June 13, 1911	3.2	2,290
1912 a/	May 8, 1912	3.3	2,410
1913 a/	July 7,8, 1913	2.5	1,670
1914	Apr. 25, 1914	2.8	2,020
	May 15, 1914	3.1	2,400
	June 3, 1914	3.0	2,270
	June 17, 1914	2.8	2,020
1937	June 3, 1937	7.44	2,880
	June 17, 1937	7.30	2,700
1938	May 1, 1938	6.51	1,810
	May 25, 1938	7.66	3,210
	June 8, 1938	7.39	2,860
	June 23, 1938	7.39	2,860
1939	May 16, 1939	6.83	2,170
	May 29, 1939	6.78	2,110
1940	May 24, 1940	7.14	2,540
	May 31, 1940	6.60	1,910
1941	May 2, 1941	6.04	1,360
1942	May 26, 1942	7.12	2,510
1943	May 26, 1943	7.55	3,060
	June 10, 1943	7.25	2,680
	June 18, 1943	7.27	2,680
	July 2, 1943	7.30	2,740
1944	May 16, 1944	6.04	1,360
1945	May 31, 1945	7.27	2,700
	June 21, 1945	6.58	1,890
1946	May 27, 1946	7.55	3,060
	June 14, 1946	7.05	2,430
	June 21, 1946	7.03	2,410
1947	May 8, 1947	7.50	3,000
	May 28, 1947	7.32	2,770
1948	May 29, 1948	9.17	5,880
	June 8, 1948	8.41	4,420
1949	May 16, 1949	8.31	4,250
	June 7, 1949	7.51	3,020
1955	May 21, 1955	6.13	1,710
	June 13, 1955	8.26	4,730
	June 23, 1955	7.64	3,690
	July 15, 1955	6.96	2,710
1956	Oct. 25, 1955	6.46	2,080
	Nov. 10, 1955	6.17	1,760
	Apr. 23, 1956	6.38	1,740
	May 20, 1956	8.75	4,900
	June 1, 1956	8.87	5,080
	June 20, 1956	7.47	3,040
1957	May 9, 1957	7.62	3,250
	May 19, 1957	7.77	3,460
	June 3, 1957	7.16	2,660

a Maximum for year not determined; partial year.

4570. Wenatchee River at Plain, Wash.
(Published as "near Leavenworth" prior to 1930)

Location.--Lat 47°45'50", long 120°39'30", in lot 8, sec.12, T.26 N., R.17 E., on left bank at Plain, a quarter of a mile downstream from Beaver Creek, 7½ miles downstream from Nason Creek, and 12 miles north of Leavenworth.

Drainage area.--591 sq mi. Area of lakes and ponds, 6.25 sq mi; mean elevation, 4,540 ft.

Gage.--Nonrecording at site a quarter of a mile downstream at different datum prior to Jan. 8, 1932; recording thereafter. Altitude of gage is 1,805 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 19,000 cfs and extended above.

Bankfull stage.--26 ft.

Remarks.--Minor diversion. Flood peaks affected by natural regulation by Wenatchee Lake. Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 7,000 cfs.

Peak stages and discharges of Wenatchee River at Plain, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)
1911	June 2, 1911	7.8	9,300
	June 14, 1911	8.2	10,400
1912	May 15, 1912	8.02	9,840
	May 21, 1912	8.62	11,500
	June 9, 1912	7.72	9,030
	June 20, 1912	7.58	8,760
	June 27, 1912	7.27	7,970
1913	May 10, 1913	7.67	7,600
	June 4, 1913	9.65	14,300
	June 20, 1913	7.90	9,570
	July 7, 1913	6.97	7,200
1914	May 16, 1914	7.66	8,840
	June 3, 1914	7.30	7,760
	June 17, 1914	6.96	7,000
1915	Apr. 3, 1915	6.56	6,020
1916	May 5, 1916	8.00	9,680
	June 18, 1916	10.27	16,700
	June 27, 1916	8.42	10,800
	July 3, 1916	7.67	8,840
	July 10, 1916	7.82	9,120
1917	May 30, 1917	8.42	11,000
	June 9, 1917	7.47	8,490
	June 17, 1917	8.41	11,000
	July 4, 1917	7.89	9,570
1918	Dec. 19, 1917	7.64	8,760
	Dec. 30, 1917	11.13	18,700
	May 5, 1918	7.30	7,970
	June 14, 1918	8.60	11,500
1919	May 28, 1919	8.67	11,800
	June 6, 1919	7.05	7,200
	June 22, 1919	7.71	9,030
	July 5, 1919	7.05	7,200
1920	July 1, 1920	6.70	6,470
1921	May 19, 1921	8.70	11,800
	June 7, 1921	9.58	14,300
	June 25, 1921	7.54	8,490
1922	Dec. 13, 1921	11.90	21,100
	May 18, 1922	9.47	14,000
	June 4, 1922	8.84	12,100
1923	June 10, 1923	8.15	10,400
1924	Feb. 12, 1924	8.30	11,300
	May 15, 1924	8.93	13,000
1925	Dec. 14, 1924	7.34	7,970
	Apr. 13, 1925	7.32	7,970
	May 20, 1925	9.04	12,600
	June 21, 1925	7.30	7,970
1926	Apr. 29, 1926	6.5	6,200
1927	May 17, 1927	7.65	8,980
	June 9, 1927	9.68	14,900
	June 22, 1927	7.55	8,980
1928	May 23, 1928	9.54	14,300
1929	May 24, 1929	7.37	8,460
1932	Feb. 28, 1932	8.91	10,800
	May 14, 1932	7.32	7,570
	June 15, 1932	8.50	9,990
	June 23, 1932	7.24	7,380
1933	Nov. 13, 1932	7.99	9,190
	Nov. 18, 1932	7.77	8,750
	June 6, 1933	7.84	8,750
	June 16, 1933	9.71	13,800
	July 16, 1933	7.56	8,330
1934	Nov. 3, 1933	8.24	9,640
	Dec. 23, 1933	8.41	10,100
	Mar. 31, 1934	7.39	7,910
	Apr. 24, 1934	9.59	13,500
	May 16, 1934	7.29	7,710
	May 30, 1934	8.09	9,410
1935	Jan. 27, 1935	8.90	11,500
	May 23, 1935	7.76	8,750
	May 31, 1935	7.75	8,750
	June 8, 1935	8.48	10,400
1936	Apr. 23, 1936	6.97	7,000
	May 5, 1936	7.42	7,790
	May 15, 1936	8.58	10,600
	June 3, 1936	8.77	11,200
1937	May 27, 1937	7.05	7,100
	June 3, 1937	8.58	10,600
	June 17, 1937	8.17	9,540
	June 30, 1937	7.45	7,900
1938	Apr. 18, 1938	7.80	8,650
	May 1, 1938	7.06	7,110
	May 26, 1938	8.97	11,700
	June 8, 1938	8.26	9,760
	June 23, 1938	8.01	9,140
1939	May 16, 1939	7.85	9,060
	May 29, 1939	7.52	8,310
1940	May 11, 1940	7.16	7,540
	May 24, 1940	7.72	8,770
1941	May 1, 1941	5.73	4,850
1942	May 26, 1942	7.70	8,720
1943	Apr. 16, 1943	6.99	7,200
	May 26, 1943	8.71	11,200
	June 10, 1943	8.25	9,900
	June 18, 1943	8.07	9,660
	July 2, 1943	8.22	9,900
1944	May 16, 1944	6.41	6,000
1945	May 31, 1945	8.24	9,900
1946	May 27, 1946	8.79	11,400
	June 15, 1946	7.83	8,950
	June 21, 1946	7.90	9,180
1947	May 8, 1947	8.40	10,400
	May 28, 1947	8.38	10,400
1948	May 29, 1948	12.43	22,700
	June 9, 1948	10.35	16,000
1949	May 16, 1949	10.38	16,000
	June 7, 1949	8.69	11,200
1950	Nov. 27, 1949	10.54	16,300
	May 15, 1950	7.77	8,950
	June 21, 1950	10.24	15,400
1951	Feb. 11, 1951	7.82	9,000
	May 12, 1951	10.18	15,300
	May 24, 1951	8.87	11,600
	June 16, 1951	8.09	9,640
1952	May 19, 1952	7.77	9,060
	June 5, 1952	7.33	8,070
1953	May 7, 1953	7.16	7,650
	May 19, 1953	7.56	8,540
	June 13, 1953	7.51	8,420
	July 9, 1953	7.55	8,520
1954	May 20, 1954	9.14	12,400
	July 2, 1954	8.46	10,700
1955	June 13, 1955	10.51	17,000
	June 23, 1955	8.88	12,300
	July 16, 1955	7.96	9,800
1956	Nov. 5, 1955	7.77	9,250
	Apr. 23, 1956	7.21	7,900
	May 21, 1956	10.62	17,100
	June 1, 1956	10.47	16,600
	June 20, 1956	8.41	10,900
1957	May 9, 1957	9.02	12,700
	May 19, 1957	8.58	11,400
	June 3, 1957	8.30	10,700

4580. Icicle Creek above Snow Creek, near Leavenworth, Wash.

Location.--Lat 47°32'25", long 120°42'55", in SE¼ sec.28, T.24 N., R.17 E., on right bank three-eighths of a mile upstream from Snow Creek and 4½ miles southwest of Leavenworth.

Drainage area.--193 sq mi. At site at "Icicle Creek near Leavenworth," 1911-14, 211 sq mi. Area of lakes and ponds, 0.92 sq mi; mean elevation, 5,260 ft.

Gage.--Nonrecording June 1911 to October 1914, at site 3 miles downstream at different datum; recording thereafter. Altitude of gage is 1,450 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 7,000 cfs and extended on basis of slope-area measurement at 17,500 cfs.

Remarks.--Peaks for period 1911-14 at "Icicle Creek near Leavenworth" are from graphs based on gage readings, and peak discharges have been adjusted to "Icicle Creek above Snow Creek" by ratio of eight-tenths power of drainage areas. Base for partial-duration series, 2,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1911 a/	June 13, 1911	-	3,650
1912	May 15, 1912	-	3,220
	May 20, 1912	-	4,380
	June 8, 1912	-	3,040
	June 20, 1912	-	2,800
1913	June 3, 1913	-	4,430
	June 19, 1913	-	3,040
1914	May 15, 1914	-	2,920
	June 2, 1914	-	2,750
1937	May 26, 1937	8.37	2,540
	June 3, 1937	10.10	4,320
	June 21, 1937	9.34	3,410
1938	Apr. 18, 1938	8.92	3,000
	May 25, 1938	9.89	4,080
	June 7, 1938	9.41	3,520
	June 23, 1938	9.66	3,850
1939	May 16, 1939	9.29	3,410
	May 29, 1939	9.5	3,630
1940	May 10, 1940	8.73	2,770
	May 23, 1940	9.12	3,170
1941	May 31, 1941	7.15	1,640
1942	May 25, 1942	9.16	3,310
1943	May 26, 1943	9.7	3,880
	June 9, 1943	8.98	3,090
	June 17, 1943	9.39	3,530
	July 2, 1943	9.10	3,200
1944	May 15, 1944	8.32	2,400
1945	May 31, 1945	9.45	3,530
1946	May 26, 1946	9.37	3,530
	June 3, 1946	9.08	3,200
	June 14, 1946	9.37	3,530
	June 20, 1946	8.82	2,890
1947	May 8, 1947	9.69	3,880
	May 28, 1947	9.78	4,000
1948	Oct. 19, 1947	9.18	3,290
	May 28, 1948	13.93	11,600
	June 7, 1948	11.4	6,260
1949	May 15, 1949	10.58	5,110
	June 6, 1949	9.90	4,190
1950	Nov. 27, 1949	12.25	8,020
	June 5, 1950	9.23	3,390
	June 21, 1950	10.64	5,110
	June 30, 1950	9.89	4,190
1951	Feb. 11, 1951	8.54	2,950
	May 11, 1951	11.12	6,110
	May 23, 1951	9.42	3,930
	June 15, 1951	8.97	3,480
1952	May 19, 1952	8.55	3,000
	May 28, 1952	8.20	2,650
	June 5, 1952	8.41	2,860
1953	May 7, 1953	8.18	2,530
	May 19, 1953	8.46	2,770
	June 13, 1953	8.49	2,800
	July 8, 1953	8.65	2,940
1954	May 11, 1954	8.33	2,850
	May 19, 1954	10.08	4,910
	June 15, 1954	8.10	2,640
	July 1, 1954	9.28	3,880
1955	May 20, 1955	7.94	2,500
	June 12, 1955	11.08	6,010
	June 22, 1955	9.65	4,220
	July 14, 1955	8.70	3,200
1956	Nov. 4, 1955	9.20	3,720
	Nov. 10, 1955	9.15	3,660
	May 20, 1956	11.20	6,220
	June 1, 1956	11.38	6,470
	June 10, 1956	8.74	3,050
1957	Dec. 10, 1956	8.87	2,980
	May 1, 1957	8.73	2,840
	May 9, 1957	9.76	4,020
	May 18, 1957	9.67	3,900
	June 2, 1957	9.16	3,290

a Maximum for year not determined; partial year.

4590. Wenatchee River at Peshastin, Wash.

Location.--Lat 47°34'50", long 120°37'00", in SE¼SW¼ sec.8, T.24 N., R.18 E., on right bank 1 mile northwest of Peshastin and 3½ miles upstream from Peshastin Creek.

Drainage area.--1,000 sq mi, approximately. Area of lakes and ponds, 9.44 sq mi; mean elevation, 4,590 ft.

Gage.--Nonrecording prior to Mar. 24, 1932, at site 1¼ miles downstream at different datum; recording thereafter. Datum of gage is 1,028.04 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements below 25,000 cfs and extended above.

Bankfull stage.--15 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Base for partial-duration series, 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1929	May 24, 1929	7.20	11,900	1946	May 27, 1946	10.68	15,900
					June 15, 1946	9.52	12,900
1930	May 17, 1930	5.78	8,310				
				1947	May 8, 1947	10.24	14,300
1931	May 2, 1931	7.20	11,700		May 28, 1947	10.33	14,500
	May 15, 1931	7.37	12,500				
				1948	May 28, 1948	15.88	32,300
1932	Feb. 28, 1932	8.63	16,000		June 11, 1948	13.37	23,600
	June 15, 1932	9.86	14,100				
				1949	May 16, 1949	12.96	22,700
1933	Nov. 13, 1932	9.14	12,400		June 7, 1949	10.70	16,100
	Nov. 18, 1932	9.14	12,400				
	June 6, 1933	9.35	13,100	1950	Nov. 28, 1949	12.37	20,900
	June 16, 1933	11.82	20,400		May 15, 1950	9.14	11,900
					June 5, 1950	10.24	14,800
1934	Nov. 3, 1933	10.36	16,000		June 21, 1950	12.67	21,800
	Dec. 23, 1933	10.64	16,600		July 1, 1950	11.23	17,500
	Apr. 24, 1934	11.2	18,400				
	May 30, 1934	9.48	13,400	1951	Feb. 11, 1951	9.29	12,400
					May 12, 1951	12.31	20,600
1935	Jan. 27, 1935	9.53	14,200		May 24, 1951	10.80	16,400
	June 8, 1935	9.88	15,400		June 15, 1951	9.88	14,000
1936	May 5, 1936	8.68	12,000	1952	May 19, 1952	9.29	12,900
	May 15, 1936	10.09	16,000		June 5, 1952	8.73	11,500
	May 29, 1936	10.26	16,600				
				1953	May 19, 1953	9.02	12,200
1937	June 3, 1937	10.03	14,800		June 13, 1953	8.92	11,900
	June 22, 1937	9.64	13,600		July 9, 1953	9.01	12,200
1938	Apr. 19, 1938	8.87	12,100	1954	May 11, 1954	9.13	12,000
	May 26, 1938	10.78	17,500		May 20, 1954	11.19	17,900
	June 24, 1938	9.78	14,600		July 1, 1954	10.18	14,800
1939	May 16, 1939	9.08	12,700	1955	June 13, 1955	12.98	23,400
	May 29, 1939	8.81	11,900		June 23, 1955	10.63	16,600
					July 16, 1955	9.42	13,600
1940	May 24, 1940	9.09	12,700				
				1956	Nov. 4, 1955	9.05	12,200
1941	May 1, 1941	6.79	6,730		Nov. 10, 1955	8.92	11,900
					Apr. 23, 1956	8.94	12,000
1942	May 26, 1942	9.38	13,100		May 10, 1956	9.00	12,100
					May 21, 1956	13.20	24,200
1943	May 26, 1943	10.58	15,700		June 1, 1956	13.16	24,100
	June 10, 1943	9.96	14,000		June 20, 1956	10.21	15,300
	June 18, 1943	9.90	13,700		June 28, 1956	8.99	12,100
	July 2, 1943	9.89	13,700		July 13, 1956	9.22	12,700
1944	May 16, 1944	7.79	8,800	1957	May 9, 1957	11.10	17,800
					May 19, 1957	10.39	15,800
1945	May 31, 1945	9.90	13,900		June 3, 1957	10.13	15,100

4610. Wenatchee River at Dryden, Wash.
(Published as "at Cashmere" prior to 1912)

Location.--Lat 47°32'40", long 120°33'40", in SW¼ sec.26, T.24 N., R.18 E., on left bank a quarter of a mile northwest of Dryden, 1 mile downstream from intake of Wenatchee Valley Canal, and 4 miles northwest of Cashmere.

Drainage area.--1,160 sq mi, approximately. At site below Mission Creek, 1904-9, 1,280 sq mi, approximately. At site above Mission Creek, 1910-11, 1,200 sq mi, approximately.

Gage.--Nonrecording. At site 4 miles downstream (half a mile below Mission Creek) at different datum prior to Oct. 13, 1909. At site 3 miles downstream at different datum Oct. 13, 1909, to Sept. 30, 1911. Altitude of gage is 905 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peaks are from graphs based on gage readings or from observed readings equivalent thereto. Base for partial-duration series, 11,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1905	Apr. 26, 1905	6.25	11,400	1911	Nov. 21, 1910	5.8	12,600
	June 4, 1905	7.10	14,900		June 1, 1911	6.1	13,800
	June 10, 1905	6.9	14,100		June 14, 1911	6.5	15,500
1906	May 3, 1906	6.30	11,600	1912	May 21, 1912	7.3	18,400
	May 11, 1906	6.2	11,200		June 10, 1912	6.4	14,400
1907 a/	Oct. 26, 1906	6.8	13,600	1913	June 3, 1913	8.80	24,100
	Nov. 15 or 16, 1906	-	-		June 20, 1913	6.5	14,600
	June 1, 1907	8.0	19,000	1914	May 16, 1914	6.50	14,600
	June 26, 1907	6.2	11,200		June 3, 1914	6.0	12,700
1908 a/	June 12, 1908	-	-	1915	Apr. 3, 1915	5.20	9,880
	July 4, 1908	6.7	13,200	1916	May 5, 1916	7.00	15,000
1909 b/	May 27, 1909	6.8	13,600		June 18, 1916	9.85	24,500
	June 3, 1909	8.50	21,400				
	June 12, 1909	7.70	17,600	1917	May 30, 1917	7.85	16,200
1910	Nov. 30, 1909	7.75	20,900		June 17, 1917	7.85	16,200
	Apr. 26, 1910	7.3	18,900	1918	Dec.30 or 31, 1917	11.1	27,100
	May 10, 1910	7.2	18,500				
	May 24, 1910	6.8	16,800				
	June 12, 1910	5.51	11,500	1948	May 28, 1948	-	34,600

a Maximum for year not determined.
b Partial year; maximum for year not determined.

DOUGLAS CREEK BASIN

4630. Douglas Creek near Alstown, Wash.

Location.--Lat 47°35'00", long 120°00'50", in S½ sec.12, T.24 N., R.22 E., on left bank 1½ miles northwest of Alstown and 2.9 miles south of Douglas.

Drainage area.--114 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 2,800 ft.

Gage.--Recording and concrete control prior to Oct. 1, 1955; nonrecording thereafter. Since 1956, crest-stage gage. Altitude of gage is 2,260 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 760 cfs and extended on basis of slope-area measurement at 6,420 cfs.

Bankfull stage.--12 ft.

Remarks.--Base for partial-duration series, 400 cfs.

Peak stages and discharges of Douglas Creek near Alstown, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	June 10, 1948	13.05	6,420	1954	Feb. 23, 1954	4.43	987
					Feb. 24, 1954	5.14	1,680
1950	Mar. 4, 1950	4.10	406		Feb. 25, 1954	6.47	3,160
	Mar. 17, 1950	5.86	1,000				
	Apr. 1, 1950	4.68	583	1955	Feb. 8, 1955	4.61	563
	June 18, 1950	6.70	1,350		Mar. 29, 1955	4.43	509
1951	Mar. 26, 1951	3.82	293	1956	Aug. 25, 1956	4.0	400
1952	Mar. 25, 1952	3.39	214	1957	Feb. 26, 1957	6.0	1,500
					Mar. 18, 1957	8.7	3,360
1953	Aug. 26, 1953	2.67	73				

4640. Douglas Creek at Palisades, Wash.

Location.--Lat 47°25', long 119°56', in SE¼ sec.10, T.22 N., R.23 E., on left bank three-quarters of a mile south of Palisades.

Drainage area.--844 sq mi. Area of lakes and ponds, 2.56 sq mi; mean elevation, 2,360 ft.

Gage.--Recording. Altitude of gage is 955 ft (by barometer).

Stage-discharge relation.--Defined by current-meter measurements below 260 cfs and extended by logarithmic plotting.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1948	June 10, 1948	-	3,680	1954	Feb. 25, 1954	6.40	1,020
				1955	Mar. 29, 1955	4.62	347
1951	Mar. 26, 1951	7.22	1,990				
1952	Mar. 25, 1952	4.55	442	1957	Feb. 26, 1957	-	a2,600
1953	-	-	0				

a Estimated on basis of contracted-opening measurements at site 10 miles downstream.

COLUMBIA RIVER MAIN STEM

4645. Columbia River at Trinidad, Wash.

(Published as "at Wenatchee" prior to 1917, and as "at Vernita" 1917-30)

Location.--Lat 47°13'30", long 120°00'50", in SE¼ sec.13, T.20 N., R.22 E., on left bank half a mile southwest of Trinidad, 8½ miles downstream from Colocham Creek, and 12 miles downstream from Rock Island Dam.

Drainage area.--89,700 sq mi, approximately; 88,500 sq mi, approximately, at Wenatchee; 95,500 sq mi, approximately, at Vernita. Area of lakes and ponds, 1,091 sq mi; mean elevation 4,650 ft.

Gage.--Nonrecording prior to Oct. 1, 1930; recording thereafter. At site 24 miles upstream (1 mile above Wenatchee highway bridge) at datum 583 ft above mean sea level, unadjusted, prior to Jan. 1, 1916. At site on Wenatchee highway bridge pier at datum 579.30 ft above mean sea level, unadjusted, Jan. 1 to Dec. 31, 1916. At site at Vernita ferry (50 miles upstream) at datum 388.7 ft above mean sea level, unadjusted, Jan. 14, 1917, to Sept. 30, 1930. Datum of gage is 499.3 ft above mean sea level (river-profile survey).

Stage-discharge relation.--Defined by current-meter measurements below 640,000 cfs and extended above.

Bankfull stage.--Not subject to overflow.

Remarks.--Diversion for irrigation is small percentage of flow past gage. Flow regulated by Franklin D. Roosevelt Lake since 1938 and reservoirs in Kootenai, Pend Oreille, Spokane, Okanogan, and Chelan River basins. Flood peaks are affected by diversion and regulation. Only annual peaks are shown.

Peak stages and discharges of Columbia River at Trinidad, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1894	June 7, 1894	-	a740,000	1935	June 18, 1935	47.13	378,000
1913	June 15,16,1913	45.7	528,000	1936	June 5, 1936	48.55	413,000
1914	June 21, 1914	32.9	b343,000	1937	June 22,25,1937	42.75	290,000
1915	May 31, 1915	24.2	b232,000	1938	June 8, 1938	48.24	393,000
				1939	June 1, 1939	43.21	298,000
1916	June 30, July 1, 1916	46.4	b520,000	1940	June 5, 1940	41.88	274,000
1917	June 23, 1917	29.12	432,000	1941	May 10, 1941	35.18	173,300
1918	June 25, 1918	29.14	432,000	1942	June 16, 1942	44.50	321,000
1919	June 1,2, 1919	26.4	368,000	1943	July 3, 1943	45.45	355,300
1920	July 15-18,1920	25.95	359,000	1944	June 17, 1944	39.06	239,700
				1945	June 7, 1945	46.00	366,500
1921	June 11, 1921	31.3	484,000				
1922	June 16, 1922	28.8	424,000	1946	June 2, 1946	49.50	425,500
1923	June 19, 1923	29.0	429,000	1947	June 11, 1947	46.73	368,900
1924	May 25, 1924	25.10	339,000	1948	June 12, 1948	59.35	692,600
1925	May 28, 1925	29.2	434,000	1949	May 22, 1949	48.33	406,100
				1950	June 24,July 1, 1950	53.40	525,300
1926	May 8, 1926	17.15	197,000				
1927	June 19, 1927	30.5	471,000				
1928	May 31, 1928	32.62	523,000	1951	May 28, 1951	48.42	408,000
1929	June 18, 1929	25.20	347,000	1952	May 27, 1952	46.60	369,800
1930	June 15, 1930	21.5	270,000	1953	June 17, 1953	47.82	395,100
				1954	July 15, 1954	49.00	420,800
1931	June 16, 1931	40.40	259,000	1955	July 1, 1955	50.00	448,500
1932	June 18, 1932	48.0	387,000				
1933	June 23, 1933	52.5	508,000	1956	June 6, 1956	54.50	553,900
1934	June 2,3, 1934	48.2	404,000	1957	May 26, 1957	49.30	427,400

a Maximum known.
b Maximum daily discharge.

CRAB CREEK BASIN

4650. Crab Creek at Irby, Wash.

Location.--Lat 47°21'30", long 118°51'00", in NW¼ sec.31, T.22 N., R.32 E., on right bank 8 ft upstream from highway bridge at Irby, 5 miles downstream from Lake Creek, and 7 miles west of Odessa.

Drainage area.--974 sq mi. Area of lakes and ponds, 4.06 sq mi; mean elevation, 2,200 ft.

Gage.--Recording. Datum of gage is 1,386.30 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--10 ft.

Remarks.--Base for partial-duration series, 300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Mar. 31, 1943	4.34	304	1950	Mar. 5, 1950	8.96	3,070
					Mar. 19, 1950	6.22	980
1944	Feb. 8, 1944	6.37	840				
	Mar. 12, 1944	4.65	350	1951	Feb. 11, 1951	7.61	1,730
					Mar. 16, 1951	8.40	2,410
1945	Feb. 3, 1945	4.44	310				
	Feb. 7, 1945	5.45	532	1952	Feb. 5, 1952	6.65	1,300
					Mar. 21, 1952	3.63	315
1946	Dec. 31, 1945	4.99	426				
	Feb. 6, 1946	5.08	449	1953	Feb. 19, 1953	2.66	103
	Feb. 25, 1946	6.65	965				
	Mar. 1, 1946	6.44	880	1954	Feb. 23, 1954	5.51	744
1947	Feb. 17, 1947	3.09	159	1955	Feb. 8, 1955	8.15	2,160
					Mar. 10, 1955	5.72	846
1948	Feb. 19, 1948	6.23	860				
	Feb. 27, 1948	6.87	1,130	1956	Dec. 23, 1955	8.03	2,060
	May 26, 1948	5.55	617		Jan. 5, 1956	9.40	3,670
	June 12, 1948	6.97	1,180		Feb. 22, 1956	9.28	3,500
					Mar. 2, 1956	9.73	4,170
1949	Feb. 18, 1949	8.66	2,700		Mar. 20, 1956	7.18	1,450
	Feb. 24, 1949	8.88	2,970				
				1957	Feb. 24, 1957	6.16	976
1950	Feb. 19, 1950	7.08	1,390		Feb. 27, 1957	11.94	8,370
	Feb. 27, 1950	8.46	2,480				

4655. Wilson Creek at Wilson Creek, Wash.

Location.--Lat 47°26', long 119°06', in SW¼ sec.6, T.22 N., R.30 E., on right bank half a mile upstream from mouth and town of Wilson Creek.

Drainage area.--About 470 sq mi. Area of lakes and ponds, 1.12 sq mi; mean elevation, 2,240 ft.

Gage.--Recording. Altitude of gage is about 1,280 ft (from Great Northern Railway).

Stage-discharge relation.--Defined by current-meter measurements and extended on basis of slope-area measurement at 12,900 cfs.

Bankfull stage.--13 ft.

Remarks.--Flow regulated by storage for irrigation above station. Considerable effect on flood peaks. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1951	Mar. 16, 1951	9.59	1,420	1955	Mar. 31, 1955	6.58	294
1952	Apr. 9, 1952	7.01	421				
1953	-	-	0	1956	Mar. 23, 1956	8.88	1,270
1954	Feb. 22, 1954	8.14	811	1957	Feb. 26, 1957	20.74	12,900

4670. Crab Creek near Moses Lake, Wash.

Location.--Lat 47°11'25", long 119°16'00", in SW¼SE¼ sec.26, T.20 N., R.28 E., on left bank on downstream side of highway bridge, 3 miles upstream from Parker Horn and 4 miles north of town of Moses Lake.

Drainage area.--About 2,040 sq mi. Area of lakes and ponds, 12.6 sq mi; mean elevation, 2,150 ft.

Gage.--Recording. At site 300 ft upstream at present datum prior to July 14, 1956. Datum of gage is 1,070.39 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 1,900 cfs and extended by logarithmic plotting.

Remarks.--Numerous small diversions. Most of natural flow from upper basin passes this station underground. Beginning in 1952, return flow from irrigation on Columbia Basin project has increased runoff. Peak discharges are affected. Only annual peaks are shown for 1952-55, and 1957. Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Apr. 28, 1943	2.38	6.9	1951	Feb. 14, 1951	5.16	1,440
					Mar. 5, 1951	4.05	425
1944	Apr. 1, 1944	1.58	1.6		Mar. 18, 1951	5.26	1,590
					Mar. 22, 1951	4.83	1,030
1945	Dec. 1, 1944	1.25	.4		Mar. 29, 1951	4.38	650
1946	Mar. 2, 1946	3.47	420	1952	Apr. 6, 1952	3.42	195
				1953	Aug. 27, 1953	3.25	109
1947	Oct. 20, 1946	1.28	.4	1954	Aug. 20, 1954	3.17	95
				1955	Feb. 14, 1955	4.10	355
1948	June 16, 1948	3.75	618				
				1956	Jan. 10, 1956	5.84	1,310
1949	Feb. 24, 1949	4.56	1,310		Jan. 28, 1956	4.71	665
	Feb. 27, 1949	5.57	2,810		Feb. 26, 1956	6.82	2,000
					Mar. 5, 1956	8.19	3,090
1950	Mar. 2, 1950	5.07	1,940		Mar. 26, 1956	5.71	1,230
	Mar. 8, 1950	5.43	2,620				
	Mar. 22, 1950	3.73	634	1957	Feb. 28, 1957	6.81	10,400

4685. Park Creek below Park Lake, near Coulee City, Wash.

Location.--Lat 47°34'20", long 119°25'10", in SW¼ sec.15, T.24 N., R.27 E., on left bank at highway crossing, 100 ft upstream from mouth, 500 ft downstream from Park Lake, and 6½ miles southwest of Coulee City.

Drainage area.--About 400 sq mi, of which 38.4 sq mi is contributing to surface runoff. Area of lakes and ponds, 1.31 sq mi; mean elevation, 1,950 ft.

Gage.--Recording and, since September 1954, concrete control. Datum of gage is 1,091.52 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--3 ft.

Remarks.--Occasional regulation resulting from cleaning of fish screens at outlet of Park Lake, having considerable effect on peak discharges. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1946	Jan. 7, 1946	2.15	9.2	1953	Dec. 17, 1952	2.51	27
1947	Dec. 17, 1946	2.19	10.4	1954	Jan. 20, 1954	2.95	-
	Feb. 16, 1947	-	10.4		Jan. 22, 1954	2.56	27
1948	Feb. 10, 1948	2.56	24	1955	Dec. 1, 1954	2.27	19.5
1949	Feb. 25, 1949	2.46	26		Feb. 27, 1955	a2.41	-
1950	Jan. 28, 1950	a3.05	-				
	Feb. 12, 1950	2.50	25	1956	Dec. 14, 1955	a2.95	-
					Feb. 29, 1956	2.32	24
1951	Feb. 9, 1951	2.71	47	1957	Dec. 6, 1956	a2.93	-
1952	Dec.13,14,1951	2.48	24		Mar. 15, 1957	2.31	23
	Jan. 21, 1952	a2.49	-				

a Backwater from ice.

4705. Rocky Ford Creek near Ephrata, Wash.

Location.--Lat 47°18'20", long 119°26'50", in NW¼NW¼ sec.21, T.21 N., R.27 E., on right bank 1½ miles downstream from source at Rocky Ford Springs, 5 miles east of Ephrata, and 7 miles upstream from mouth.

Drainage area.--About 500 sq mi, of which 11.7 sq mi is contributing to surface runoff. Area of lakes and ponds, 1.8 sq mi; mean elevation, 1,200 ft.

Gage.--Recording. Aug. 19, 1942, to May 23, 1945, at site 3½ miles downstream at datum 5.37 ft lower. Datum of gage is 1,064.88 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 140 cfs and extended above.

Bankfull stage.--5 ft.

Remarks.--Minor diversions. Slight regulation by fish hatchery. Peak flows are affected. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Oct.2,3, 1942	1.95	71	1951	June 28, 1951	2.48	108
1944	May 14,15,1944	1.68	57	1952	Aug. 31, 1952	2.66	106
1945	July 4, 1945	1.95	73	1953	Oct. 13, 1952	2.67	109
				1954	Aug. 20, 1954	2.64	100
1946	Sept.22, 1946	2.15	94	1955	July 24, 1955	2.44	109
1947	Oct. 1, 1946	2.07	86				
1948	Aug. 20, 1948	2.49	109	1956	Apr.15-18,1956	3.58	212
1949	Apr. 23, 1949	2.84	143	1957	Oct. 5, 1956	2.36	142
1950	Apr.27, May 1-9, 12, 1950	2.76	135				

4715. Crab Creek near Warden, Wash.

Location.--Lat 46°57'00", long 119°15'20", in SW¼NW¼ sec.24, T.17 N., R.28 E., on left bank 0.5 mile upstream from Goose Lake, 2¼ miles downstream from O'Sullivan Dam, 5 miles northwest of Othello, and 12 miles south of Warden.

Drainage area.--About 4,150 sq mi, of which 500 sq mi in the vicinity of Soap Lake is probably noncontributing.

Gage.--Recording gage and timber control; prior to May 8, 1958, rock and culvert control. At site 1.6 miles upstream at different datum October 1942 to September 1950. At site 2 miles upstream at different datum October 1950 to September 1955. Datum of gage is 880 ft above mean sea level (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 720 cfs and extended by logarithmic plotting.

Bankfull stage.--4 ft.

Remarks.--Prior to 1949, flow regulated by dam at outlet of Moses Lake and, since 1948, by O'Sullivan Dam. Storage began in Potholes Reservoir above O'Sullivan Dam in September 1952, and between then and September 1955 discharge consisted of small part of dam seepage. Discharge at present location includes most of the seepage. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Feb. 7, 1943	4.25	3,000	1950	Apr. 7, 1950	10.87	750
1944	Feb. 3, 15, Mar.14,1944	8.38	27	1951	Apr. 11, 1951	3.09	a472
1945	Feb. 3, 1945	9.08	120	1952	Feb. 1, 1952	.78	23
1946	Feb. 7, 1946	11.03	617	1953	May 22, 1953	2.31	12
1947	Feb. 25, 1947	11.48	596	1956	Feb. 21, 1956	1.24	37
1948	July 17, 1948	9.10	96	1957	June 1, 1957	1.29	35
1949	Feb. 18, 1949	11.71	855				

a May have been slightly higher during period of no gage-height record.

4725. Crab Creek near Smyrna, Wash.

Location.--Lat 46°50'35", long 119°36'25", in SE¼ sec.30, T.16 N., R.26 E., on left bank at highway bridge, 2½ miles east of Smyrna and 17 miles upstream from mouth.

Drainage area.--About 4,500 sq mi, of which about 500 sq mi in the vicinity of Soap Lake is probably noncontributing.

Gage.--Recording. Datum of gage is 530.83 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 1,000 cfs and extended above.

Bankfull stage.--3 ft.

Remarks.--Many diversions for irrigation. Some regulation by Potholes Reservoir, Moses Lake, and lakes on headwaters. Since 1952, complete flow above O'Sullivan Dam has been stored in Potholes Reservoir and released through irrigation canals. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1943	Feb. 8, 1943	7.5	3,300	1951	Feb. 10, 1951	4.98	620
1944	Feb. 17, 1944	2.46	32	1952	Feb. 3, 1952	3.01	98
1945	Feb. 5, 1945	3.12	87	1953	Jan. 21, 1953	2.28	34
				1954	Apr. 18, 1954	3.13	98
1946	Feb. 9, 1946	4.49	302	1955	Oct. 22, 1954	2.53	53
1947	Feb. 15, 1947	2.41	32				
1948	Feb. 18, 1948	2.55	46	1956	Feb. 23, 1956	3.46	134
1949	Feb. 25, 1949	5.39	1,010	1957	Feb. 13, 1957	3.18	110
1950	Apr. 9, 1950	5.01	831				

4745. Yakima River near Martin, Wash.

Location.--Lat 47°19'10", long 121°20'10", in NE¼ sec.12, T.21 N., R.11 E., on left bank 800 ft downstream from dam at outlet of Keechelus Lake, 3½ miles northwest of Martin, and 9½ miles northwest of Easton.

Drainage area.--55.8 sq mi.

Gage.--Nonrecording prior to July 20, 1923; recording thereafter. Masonry channel since 1917. At several sites within 2 miles at different datums prior to July 20, 1923. Datum of gage is 2,422.40 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Flow regulated by Keechelus Lake. All peak discharges are affected. Spillway discharge, which bypasses gage, is added to flow at station. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	May 23, June 5-7, 1904	9.40	1,040	1932	July 28, Aug. 15, 1932	8.50	1,610
1905	May 31, June 3, 1905	8.90	1,000	1933	June 15, 1933	-	1,890
				1934	Dec. 14, 1933, Jan. 9, 1934	8.50	1,500
1906	May 1, 1906	8.80	1,010	1935	Jan. 27, 1935	6.01	1,230
1907	Nov. 15, 1906	14.25	6,500				
1908	June 11, 1908	9.47	1,780	1936	May 27, 1936	-	1,630
1909	June 2, 1909	9.64	1,950	1937	June 21, 1937	-	1,320
1910	Nov. 23, 1909	12.60	4,670	1938	May 24, 25, 1938	-	1,260
				1939	July 9-14, 1939	8.70	1,390
1911	Nov. 21, 1910	10.40	2,590	1940	May 11, 1940	-	1,030
1912	Nov. 19, 1911	12.8	4,910				
1913	June 2, 3, 1913	9.70	a1,720	1941	July 11, 1941	9.30	1,720
1914	May 15, 1914	9.62	1,660	1942	Aug. 8, 24-29, 1942	6.76	747
1915	Mar. 26, 1915	-	7,370				
				1943	June 9, 1943	-	1,270
1916	May 5, 1916	7.79	1,650	1944	Aug. 12-30, 1944	7.65	1,020
1917	Sept. 13, 1917	9.95	1,860	1945	May 31, 1945	-	1,390
1918	Aug. 9-16, 1918	9.2	1,840				
1919	Sept. 4-6, 1919	8.5	1,400	1946	June 15, 1946	-	1,680
1920	July 19, 1920	-	2,370	1947	Apr. 20, 1947	-	1,490
				1948	May 29, 1948	-	4,150
1921	Aug. 1-10, 1921	9.47	1,790	1949	June 6-12, 1949	-	1,030
1922	Aug. 6-14, 1922	9.40	1,840	1950	June 30, 1950	-	1,930
1923	June 14, 1923	-	4,680				
1924	Aug. 31, 1924	9.02	1,730	1951	Aug. 18-21, 1951	8.21	1,220
1925	May 16, 1925	-	1,630	1952	July 18, 19, 1952	7.03	789
				1953	June 13, 14, 1953	8.22	1,170
1926	Aug. 5, 1926	8.03	1,220	1954	July 1, 1954	-	1,280
1927	Aug. 31, 1927	8.47	1,420	1955	June 23, 1955	-	1,300
1928	Aug. 9, 1928	9.21	1,890				
1929	Aug. 13, 1929	9.32	1,980	1956	Aug. 12, 1956	8.33	1,240
1930	July 19-28, 1930	8.60	1,590	1957	May 9, 1957	-	1,360
1931	July 20, 1931	7.68	1,190				

a Maximum daily discharge.

4760. Kachess River near Easton, Wash.

Location.--Lat 47°15'30", long 121°11'50", in NE¼ sec.3, T.20 N., R.13 E., on left bank three-quarters of a mile downstream from Kachess Lake and 2 miles northwest of Easton.

Drainage area.--63.6 sq mi.

Gage.--Nonrecording prior to July 22, 1913; recording thereafter. At site a quarter of a mile upstream at different datum prior to Aug. 15, 1916. At site half a mile downstream at different datum Aug. 15, 1916, to Oct. 8, 1927. At present site at datum 1.33 ft higher Oct. 9, 1927, to Oct. 30, 1951. Datum of gage is 2,188.10 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Flow regulated by Kachess Lake. All peak discharges are affected. Gage-height records collected in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges of Kachess River near Easton, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	June 6, 1904	6.3	1,020	1932	July 25-27,1932	5.51	1,380
1905	June 1-2, 1905	6.0	932	1933	Aug. 14, 1933	5.90	1,590
				1934	Dec.24,25,1933	5.90	1,590
1906	May 2-4, 1906	5.5	735	1935	Jan. 25, 1935	5.92	1,540
1907	Nov. 16, 1906	8.0	1,760				
1908	June 12, 1908	6.8	1,230	1936	May 25 to June 13, 1936	5.00	1,090
1909	June 4, 1909	6.2	1,020				
1910	Dec. 1, 1909	7.2	1,580	1937	July 21,22,1937	5.60	1,380
				1938	June 6, 1938	5.90	1,530
1911	Nov. 23, 1910	6.54	1,120	1939	July 30, 1939	5.85	1,570
1912	Aug. 1-2, 1912	6.85	1,040	1940	July 6-15, 1940	4.31	795
1913	June 3-9, 1913	6.70	992				
1914	Oct. 6, 1913	6.82	1,040	1941	July 11, 1941	6.53	1,960
1915	July 2, 1915	6.72	985	1942	Aug. 20, 1942	5.36	1,300
				1943	June 27, 1943	4.40	748
1916	Aug. 3, 1916	7.12	1,080	1944	Aug.8-23, 1944	5.6	1,360
1917	Sept. 6, 1917	6.68	1,460	1945	July 15, 1945	4.81	950
1918	Sept. 6, 1918	6.38	1,290				
1919	Aug. 2, 1919	-	1,770	1946	May 27,28, 1946	5.29	1,240
1920	Aug. 27, 1920	-	2,240	1947	May 2, 1947	4.58	890
				1948	May 28, 1948	7.12	2,530
1921	Aug. 24, 1921	7.17	1,840	1949	Oct. 26, 1948	5.95	1,660
1922	July 20, 1922	6.17	1,610	1950	June 22, 1950	5.33	1,280
1923	July 22, 1923	6.50	1,920				
1924	June 30, 1924	6.20	1,720	1951	July 17-19,1951	5.45	1,320
1925	Sept.12, 1925	6.12	1,660	1952	June 16, 1952	7.13	1,560
				1953	July 20, 1953	6.40	1,170
1926	July 18, 1926	6.06	1,600	1954	Aug. 2, 1954	6.50	1,220
1927	Sept. 9, 1927	4.97	958	1955	June 12, 1955	7.15	1,570
1928	Jan. 13, 1928	5.75	1,310				
1929	Aug. 9, 1929	5.22	1,130	1956	June 8, 1956	6.17	1,050
1930	July 16, 1930	6.32	1,940	1957	May 11, 1957	6.69	1,390
1931	July 18, 1931	5.54	1,400				

4770. Yakima River at Easton, Wash.

Location.--Lat 47°14'20", long 121°10'40", in SE¼ sec.11, T.20 N., R.13 E., on right bank at Easton, 20 ft downstream from highway bridge, a quarter of a mile downstream from Easton Dam, and 1½ miles downstream from Kachess River.

Drainage area.--182 sq mi.

Gage.--Nonrecording prior to Oct. 10, 1915, at approximately same site at different datums; recording thereafter. Altitude of gage is 2,140 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--Not subject to overflow.

Remarks.--Flow regulated by Keechelus and Kachess Lakes. Diversions for irrigation. All peak discharges are affected. Records collected and prepared in cooperation with Bureau of Reclamation prior to 1915; records for 1941-54 furnished by Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910	Apr. 26, 1910	5.20	4,360	1946	June 3, 1946	5.89	2,660
				1947	Dec. 14, 1946	6.43	3,250
1911	Nov. 23, 1910	4.48	3,220	1948	May 28, 1948	9.20	9,050
1912	Nov. 19, 1911	6.11	5,900	1949	June 6, 1949	5.70	2,910
1913	June 2,3, 1913	4.50	3,480	1950	Nov. 27, 1949	5.88	3,130
1914	May 16, 1914	4.41	2,570				
1915	Mar. 26, 1915	7.18	7,280	1951	Dec. 24, 1950, Feb.11,1951	5.57	2,750
1941	July 11, 1941	5.60	2,900	1952	May 27, 1952	4.02	1,200
1942	Nov. 24, 1941	4.78	1,920	1953	Feb. 1, 1953	6.04	2,580
1943	June 18, 1943	5.34	2,410	1954	June 23, 1954	5.56	2,020
1944	June 29, 1944	10.15	8,400				
1945	Jan. 13, 1945	4.84	2,010				

4790. Cle Elum River near Roslyn, Wash.

Location.--Lat 47°14'30", long 121°03'00", in NW¼ sec.11, T.20 N., R.14 E., on left bank 1,000 ft downstream from dam at Cle Elum Lake and 4 miles northwest of Roslyn.

Drainage area.--203 sq mi.

Gage.--Nonrecording prior to Oct. 14, 1913, and Sept. 4, 1931, to Apr. 19, 1933; recording Oct. 14, 1913, to Sept. 3, 1931, and since Apr. 20, 1933. All gages at about same site at same datum. Datum of gage is 2,102.10 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 6,600 cfs and extended by logarithmic plotting.

Remarks.--Flow regulated by Cle Elum Lake. Peak discharges are affected. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904	May 24, 1904	7.20	4,520	1931	May 2, 1931	6.98	4,510
1905	June 1,2,4,1905	5.9	2,990	1932	Feb. 28, 1932	8.39	6,480
				1933	Dec.19-20,1932	4.47	3,260
1906	Apr.23,May 2, 1906	6.1	3,320	1934	Apr. 26, 1934	9.51	3,610
				1935	June 8, 1935	9.62	3,730
1907	Nov. 15, 1906	14.05	18,700				
1908	June 11, 1908	7.7	5,380	1936	May 16, 1936	10.72	4,970
1909	June 3, 1909	7.7	5,380	1937	June 3, 1937	10.05	4,170
1910	Nov. 24, 1909	10.50	9,940	1938	Apr. 18, 1938	11.34	5,690
				1939	May 16, 1939	10.10	4,220
1911	Nov. 22, 1910	7.2	4,650	1940	May 11, 1940	10.03	4,100
1912	May 21, 1912	7.49	4,950				
1913	June 3, 1913	8.20	6,200	1941	July 31, 1941	8.37	2,530
1914	May 16, 1914	6.5	4,050	1942	July 12, 1942	8.06	2,200
1915	Apr. 3, 1915	6.75	4,220	1943	May 27, 1943	10.98	5,500
				1944	June 30, 1944	8.43	2,470
1916	June 18, 1916	8.60	6,650	1945	May 31, 1945	10.04	4,250
1917	May 29, 1917	7.91	5,680				
1918	Dec.29-30,1917	13.42	14,800	1946	May 27, 1946	9.77	3,970
1919	May 28, 1919	7.50	5,230	1947	May 9, 1947	10.23	4,450
1920	Jan. 19, 1920	5.42	2,700	1948	May 28, 1948	14.00	11,000
				1949	June 7, 1949	10.19	4,690
1921	June 5, 1921	7.60	5,060	1950	June 23, 1950	9.81	4,290
1922	Dec. 13, 1921	12.50	13,300				
1923	May 10, 1923	7.51	5,030	1951	May 25, 1951	9.37	3,800
1924	Feb. 13, 1924	8.75	6,780	1952	June 5, 1952	8.81	3,180
1925	May 17, 1925	7.60	5,370	1953	June 13, 1953	9.37	3,760
				1954	July 1, 1954	9.52	3,940
1926	Apr. 17, 1926	5.62	2,910	1955	June 12, 1955	11.51	6,620
1927	June 8, 1927	8.05	6,000				
1928	May 22, 1928	7.90	5,790	1956	June 23, 1956	9.26	3,630
1929	May 24, 1929	6.73	4,180	1957	May 9, 1957	10.49	5,000
1930	Apr. 23, 1930	5.77	3,010				

4795. Yakima River at Cle Elum, Wash.

Location.--Lat 47°11'20", long 120°56'40", in sec.27, T.20 N., R.15 E., on left bank at highway bridge at Cle Elum, just upstream from Roslyn Creek and 7 miles upstream from Teanaway River.

Drainage area.--500 sq mi, approximately. Area of lakes and ponds, 0 sq mi; mean elevation, 3,700 ft.

Gage.--Nonrecording prior to July 12, 1911; recording July 12, 1911, to June 27, 1923; nonrecording June 28, 1923, to Oct. 21, 1924; recording thereafter. At highway bridge at different datum prior to Aug. 12, 1910. At various sites within vicinity of bridge at datum 2.0 ft higher Aug. 12, 1910, to Oct. 21, 1924. Datum of gage is 1,902.27 ft above mean sea level (levels by Bureau of Reclamation).

Stage-discharge relation.--Defined by current-meter measurements below 19,200 cfs and extended above.

Remarks.--Diversions for irrigation. Flow regulated by Keechelus, Kachess, and Cle Elum Lakes. All peak discharges are affected. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges of Yakima River at Cle Elum, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	Nov. 14, 1906	12.5	25,600	1933	June 16, 1933	6.97	5,690
1908	June 11, 1908	7.12	9,480	1934	Dec. 22, 1933	10.16	14,000
1909	June 3, 1909	7.30	9,720	1935	Jan. 26, 1935	7.48	7,160
1910	Nov. 24, 1909	9.50	17,300	1936	May 15, 1936	-	8,380
1911	Nov. 22, 1910	7.30	10,000	1937	June 22, 1937	7.89	7,160
1912	Nov.19,20, 1911	7.10	9,410	1938	Apr. 18, 1938	8.87	8,760
1913	June 3, 1913	7.70	11,300	1939	May 17, 1939	7.48	5,200
1914	May 17, 1914	6.22	6,850	1940	May 11, 1940	7.85	5,560
1915	Mar. 27, 1915	6.63	7,360	1941	July 12, 1941	6.54	3,200
1916	June 18, 1916	8.02	10,800	1942	July 27, 1942	6.26	2,740
1917	May 30, 1917	7.70	10,100	1943	May 27-29, 1943	8.34	6,360
1918	Dec. 30, 1917	11.0	19,900	1944	June 30, 1944	7.90	5,570
1919	May 28, 1919	6.90	8,690	1945	May 31, 1945	8.13	5,640
1920	Jan. 19, 1920	5.21	4,870	1946	May 26,28, 1946	8.68	7,010
1921	May 25, 1921	6.95	8,820	1947	May 9, 1947	8.65	6,130
1922	Dec. 13, 1921	10.80	19,500	1948	May 29, 1948	12.31	16,700
1923	Jan. 8, 1923	6.20	7,330	1949	June 7, 1949	10.27	8,100
1924	Feb. 13, 1924	6.99	8,570	1950	June 30, July 1, 1950	10.09	6,800
1925	May 17, 1925	7.00	8,590				
1926	Apr. 17, 1926	4.78	3,840	1951	May 25, 1951	9.25	4,880
1927	June 8, 1927	6.54	7,490	1952	June 6, 1952	8.43	3,520
1928	Jan. 13, 1928	7.70	10,600	1953	June 14, 1953	9.72	6,010
1929	May 24, 1929	5.15	5,530	1954	July 2, 1954	9.04	5,720
1930	Apr. 23, 1930	4.27	4,490	1955	June 12, 1955	10.68	10,000
1931	May 2, 1931	7.30	6,820	1956	June 11, 1956	9.28	5,740
1932	Feb. 28, 1932	8.57	9,420	1957	May 9, 1957	10.46	8,280

4805. Teanaway River near Cle Elum, Wash.
(Published as "near Clealum" prior to 1913)

Location.--Lat 47°11'40", long 120°46'50", in SW¼ sec.25, T.20 N., R.16 E., on right bank 100 ft upstream from highway bridge, 4 miles upstream from mouth, and 8 miles east of Cle Elum.

Drainage area.--200 sq mi. At site Apr. 2, 1909, to Sept. 30, 1914, 205 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 3,700 ft.

Gage.--Nonrecording prior to Oct. 2, 1946; recording thereafter. At site 3½ miles downstream at different datum Apr. 2, 1909, to Sept. 30, 1914. At site 100 ft downstream at datum 32.08 ft lower Oct. 2, 1946, to Oct. 20, 1949. Datum of gage is 1,931.91 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 2,900 cfs and extended above.

Remarks.--Peaks prior to 1913 are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Base for partial-duration series, 2,900 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910	Nov. 24, 1909	7.25	4,130	1947	Dec. 14, 1946	35.15	2,900
	Nov. 30, 1909	6.90	3,450	1948	May 28, 1948	35.57	4,170
	Mar. 1, 1910	-	-				
	Mar. 20, 1910	7.35	4,330	1949	Apr. 19, 1949	35.59	2,900
	Apr. 26, 1910	6.75	3,220		May 14, 1949	35.96	3,160
1911	Nov. 21, 1910	6.30	2,620	1950	Nov. 27, 1949	6.05	2,950
1913	Apr.12,19-20, 1913	6.00	1,930		May 13, 1950	6.75	3,820
1914	Apr. 15, 1914	5.45	1,460	1951	Feb. 11, 1951	6.91	2,880
1947	Dec. 11, 1946	35.25	3,170	1952	Apr. 26, 1952	5.62	2,030

4835. Manastash Creek near Ellensburg, Wash.

Location.--Lat 46°59'00", long 120°41'40", in sec.15, T.17 N., R.17 E., on left bank 1½ miles upstream from mouth of Manastash Canyon, 2 miles downstream from North Fork, and 8½ miles west of Ellensburg.

Drainage area.--75.8 sq mi.

Gage.--Nonrecording. Datum of gage is 2,117.70 ft above mean sea level, adjustment of 1912.

Stage-discharge relation.--Defined by current-meter measurements below 300 cfs and extended by logarithmic plotting.

Remarks.--All peaks are from graphs based on gage readings. Records furnished by Bureau of Reclamation since April 1912. Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910	Nov. 24, 1909	2.45	244	1912	Apr. 28, 1912	2.50	264
	Mar. 20, 1910	4.20	1,360		May 15, 1912	2.90	430
	Apr. 26, 1910	3.10	530		May 20, 1912	2.83	410
	May 10, 1910	3.10	530				
				1913	June 3, 1913	2.95	430
1911	June 2, 1911	2.50	264				
				1914	Apr. 14, 1914	2.50	264
1912	Apr. 10, 1912	2.45	244		May 15, 1914	2.60	300

4845. Yakima River at Umtanum, Wash.

Location.--Lat 46°51'45", long 120°28'30", in NW¼ sec.20, T.16 N., R.19 E., on right bank at Umtanum half a mile upstream from Umtanum Creek and 10 miles south of Ellensburg.

Drainage area.--1,590 sq mi, approximately.

Gage.--Nonrecording prior to Sept. 28, 1911; recording thereafter. At approximately same site at different datum prior to Sept. 28, 1911. At site 300 ft upstream at datum 26.70 ft higher Sept. 28, 1911, to Nov. 23, 1936. Datum of gage is 1,300.00 ft above mean sea level, datum of 1929.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--42 ft.

Remarks.--Diversions for irrigation. Flow regulated by Keechelus, Kachess, and Cle Elum Lakes. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1907	Nov. 15, 1906	14.2	41,000	1925	May 17, 1925	8.14	10,000
1908	Apr. 21, 1908	7.58	9,960				
1909	June 4, 1909	7.7	10,600	1926	Apr. 17, 1926	6.29	4,960
1910	Nov. 25, 1909	10.50	22,900	1927	May 17, 1927	7.85	8,770
1911	Nov. 23, 1910	7.76	10,700	1929	May 24, 1929	6.86	6,150
1912	Nov. 20, 1911	8.15	13,000	1930	Apr. 1, 1930	6.56	5,350
1913	June 3,4, 1913	8.4	a13,100				
1914	May 16, 1914	6.87	7,740	1931	May 3, 1931	7.17	6,940
1915	Apr. 4, 1915	7.41	9,350	1932	Feb.28,29,1932	9.11	12,200
				1933	Apr. 29, 1933	-	8,450
1916	May 5, 1916	8.78	14,000	1934	Dec. 23, 1933	12.83	32,200
1917	May 30, 1917	8.56	13,100	1935	Jan. 26, 1935	9.07	13,700
1919	May 28, 1919	7.9	9,960	1936	May 15, 1936	8.2	10,200
				1937	June 22, 1937	34.28	10,200
1921	May 17,19, 1921	8.30	11,700	1938	Apr. 19, 1938	35.72	13,000
				1939	May 17, 1939	33.56	5,900
1923	May 10, 1923	7.95	9,480	1940	May 12, 1940	33.83	6,770

a Maximum daily discharge.

Peak stages and discharges of Yakima River at Umtanum, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1941	Apr. 2, 1941	32.29	3,100	1950	May 13, 1950	34.71	9,680
1942	July 17, 1942	32.48	3,450				
1943	May 27,28, 1943	34.42	8,330	1951	Feb. 12, 1951	35.34	12,000
1944	June 30, 1944	33.06	4,620	1952	June 6, 1952	32.78	4,220
1945	June 1, 1945	33.84	6,690	1953	June 14, 1953	34.01	7,430
				1954	May 19, 1954	33.83	6,900
1946	May 27, 1946	34.75	9,930	1955	June 13, 1955	35.39	12,800
1947	Dec. 14, 1946	34.47	8,920				
1948	May 29, 1948	38.98	27,800	1956	Apr. 22, 1956	35.16	11,900
1949	May 12, 1949	34.51	8,900	1957	May 10, 1957	35.19	12,000

4880. Bumping River near Nile, Wash.

Location.--Lat 46°52', long 121°18', in NE¼ sec. 23, T.16 N., R.12 E., on left bank a quarter of a mile downstream from spillway of Bumping Lake Dam and 19 miles west of Nile.

Drainage area.--68.6 sq mi. Area of lakes and ponds, 1.34 sq mi; mean elevation, 4,830 ft.

Gage.--Nonrecording prior to June 13, 1913; recording thereafter. At site 1,300 ft upstream at different datum Aug. 7, 1909, to June 23, 1912. At site three-eighths of a mile upstream at different datum June 24, 1912, to June 13, 1913. Datum of gage is 3,367.10 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 1,700 cfs and extended by logarithmic plotting.

Historical data.--Peak of Nov. 15, 1906, probably approached that of Dec. 29, 1917.

Remarks.--Flow regulated by Bumping Lake. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910	Nov. 23, 1909	6.80	3,320	1935	June 8, 1935	4.60	1,630
1911	Nov. 24, 1910	4.25	1,040	1936	May 28, 1936	4.90	1,740
				1937	June 21,22,1937	4.66	1,660
1914	June 3, 1914	4.32	1,050	1938	May 28, 1938	4.97	1,880
1915	Aug. 8, 1915	4.12	932	1939	May 29, 1939	4.37	1,390
				1940	May 11, 1940	3.92	956
1916	July 3, 1916	5.44	1,830				
1917	June 17, 1917	5.11	1,610	1941	Apr. 23, 1941	3.38	666
1918	Dec. 29, 1917	9.33	5,180	1942	May 23, 1942	3.80	919
1919	May 29, 1919	4.49	1,280	1943	May 26, 1943	4.55	1,520
1920	June 15, 1920	3.82	846	1944	May 16, 1944	3.39	691
				1945	May 31, 1945	4.20	1,250
1921	June 7, 1921	5.22	1,890				
1922	June 9, 1922	4.43	1,270	1946	May 27, 1946	4.61	1,550
1923	June 9, 1923	4.72	1,480	1947	May 8, 1947	4.34	1,140
1924	May 18, 1924	4.33	1,190	1948	June 8, 1948	5.35	1,860
1925	May 21, 1925	5.04	1,760	1949	May 16, 1949	5.31	1,900
				1950	June 21, 1950	5.16	1,960
1926	Apr. 18, 1926	3.88	862				
1927	June 8, 1927	5.49	2,020	1951	June 16, 1951	4.28	1,240
1928	May 22, 1928	5.23	1,820	1952	June 6, 1952	4.28	1,270
1929	June 15, 1929	4.17	1,000	1953	June 13, 1953	4.30	1,240
1930	May 21, 1930	3.99	890	1954	June 23, 1954	4.48	1,400
				1955	June 12, 1955	5.20	2,100
1931	May 14, 1931	4.48	1,220				
1932	June 15, 1932	4.87	1,620	1956	June 1, 1956	5.58	2,510
1933	June 15, 1933	5.57	2,140	1957	May 9, 1957	4.94	1,840
1934	Dec. 22, 1933	7.70	3,710				

4885. American River near Nile, Wash.

Location.--Lat 46°58'30", long 121°10'10", in SW¼ sec.12, T.17 N., R.13 E., on right bank 300 ft upstream from Bumping Lake road crossing, three-quarters of a mile upstream from mouth, and 16 miles northwest of Nile.

Drainage area.--78.9 sq mi. Area of lakes and ponds, 0.14 sq mi, mean elevation, 4,860 ft.

Gage.--Nonrecording prior to Sept. 12, 1915, at site 300 ft downstream at different datum; recording thereafter. Datum of gage is 2,700.00 ft above mean sea level (Washington State Highway Department bench mark).

Stage-discharge relation.--Defined by current-meter measruements.

Bankfull stage.--78 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Base for partial-duration series, 700 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)
1909	May 4, 1909	3.6	900
	June 2, 1909	4.55	1,580
1910a/	June 12, 1910	3.7	955
1911a/	Nov. 11, 1910	4.0	1,180
	Nov. 21, 1910	-	-
	June 2, 1911	4.10	1,240
	June 13, 1911	4.30	1,400
1940	May 24, 1940	74.74	1,100
1941	May 17, 1941	74.26	745
1942	Dec. 2, 1941	74.96	1,240
	May 24, 1942	74.49	898
1943	Apr. 16, 1943	75.02	1,270
	May 26, 1943	75.06	1,340
	June 18, 1943	74.69	1,030
	July 1, 1943	74.41	865
1944	May 29, 1944	73.86	517
1945	May 5, 1945	-	-
	May 31, 1945	74.87	1,100
1946	Apr. 26, 1946	74.54	900
	May 10, 1946	75.05	1,240
	May 27, 1946	75.17	1,300
	June 15, 1946	74.71	990
	June 21, 1946	74.90	1,130
1947	Dec. 15, 1946	74.26	730
	May 8, 1947	74.73	1,020
	May 28, 1947	74.72	990
1948	Oct. 19, 1947	75.37	1,460
	May 27, 1948	76.6	2,600
	June 11, 1948	75.39	1,660
1949	May 16, 1949	75.72	1,860
	June 7, 1949	75.10	1,380
1950	Nov. 27, 1949	76.01	2,120
	May 14, 1950	74.68	1,170
1950	June 5, 1950	75.00	1,380
	June 21, 1950	75.27	1,560
	June 30, 1950	74.82	1,240
1951	Nov. 27, 1950	74.59	1,040
	Dec. 24, 1950	74.23	925
	Feb. 11, 1951	74.43	1,020
	Apr. 18, 1951	74.03	722
	May 11, 1951	75.44	1,700
	May 23, 1951	74.73	1,240
	June 15, 1951	74.46	1,040
1952	Apr. 28, 1952	74.22	826
	May 20, 1952	74.47	972
	June 5, 1952	74.35	900
1953	Apr. 28, 1953	74.17	776
	May 7, 1953	74.39	894
	May 19, 1953	74.61	1,030
	May 30, 1953	74.11	738
	June 13, 1953	74.66	1,060
	July 9, 1953	74.39	894
1954	May 19, 1954	75.43	1,760
	June 16, 1954	74.27	872
	June 23, 1954	74.58	1,080
1955	May 20, 1955	74.25	860
	June 12, 1955	75.37	1,790
	June 22, 1955	74.44	1,050
1956	Nov. 4, 1955	74.42	964
	Nov. 10, 1955	74.32	902
	Apr. 22, 1956	74.55	1,060
	May 20, 1956	76.25	2,440
	May 31, 1956	75.92	2,200
	June 11, 1956	74.70	1,160
	June 20, 1956	74.61	1,100
	June 28, 1956	74.55	1,060
	July 11, 1956	74.58	1,080
1957	May 2, 1957	74.65	1,120
	May 9, 1957	75.03	1,380
	May 19, 1957	74.40	940
	June 2, 1957	74.55	1,040
	June 6, 1957	74.53	1,030

a Maximum for year not determined; partial year.

4890. Naches River at Anderson Ranch, near Nile, Wash.

Location.--Lat 46°55', long 121°03', in SE¼ sec.35, T.17 N., R.14 E. (unsurveyed), on left bank at Anderson Ranch, half a mile downstream from Lost Creek and 11 miles north of Nile.

Drainage area.--392 sq mi.

Gage.--Nonrecording. Altitude of gage is 2,300 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Minor diversions for irrigation. Flow partly regulated by Bumping Lake since 1910. Peaks for water years 1910 and 1911 are from graphs based on gage readings. Records furnished by Bureau of Reclamation and reviewed by Geological Survey after April 1912. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1910	Nov. 24, 1909	6.0	9,500	1912	May 16, 1912	3.6	4,290
				1913	June 2, 1913	4.20	6,020
1911	Nov. 21, 1910	3.6	4,350	1914	June 3, 1914	3.10	3,050

4895. Naches River at Oak Flat, near Nile, Wash.

Location.--Lat 46°45'10", long 120°49'10", in NW¼ sec.34, T.15 N., R.16 E., on left bank just upstream from Oak Flat, 2 miles upstream from Tieton River and 7 miles northwest of Naches.

Drainage area.--638 sq mi. Area of lakes and ponds, 0.16 sq mi; mean elevation, 4,420 ft.

Gage.--Nonrecording prior to Sept. 19, 1911, at site 800 ft downstream at different datum; recording thereafter. Altitude of gage is 1,660 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Only annual peaks are shown after 1910. Peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation since April 1912. Base for partial-duration series, 4,000 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1905	June 3, 1905	6.16	4,350	1910	Nov. 23, 1909	9.3	11,000
					Mar. 21, 1910	8.0	7,470
1906	Apr. 22, 1906	6.23	4,880		Apr. 26, 1910	8.2	8,100
	May 3, 1906	6.1	4,480		May 11, 1910	8.0	7,470
					May 25, 1910	7.3	5,370
1907	Nov. 15, 1906	10.3	21,900				
	May 18, 1907	6.25	5,510	1911	June 2, 1911	7.26	5,220
	June 1, 1907	6.05	5,040	1912	May 21, 1912	7.60	6,210
				1913	June 4, 1913	8.17	6,900
1908	Apr. 20, 1908	6.20	6,060	1914	May 15, 1914	7.00	3,910
	June 12, 1908	6.30	6,340	1915	Apr. 3, 1915	8.05	4,430
	July 3, 1908	5.60	4,450				
				1916	July 3, 1916	8.80	8,070
1909	June 2, 1909	7.45	5,770	1917	June 17, 1917	8.18	6,550

4915. Tieton River at Tieton Dam, near Naches, Wash.
(Published as "at McAllister Meadows near Naches" prior to 1915, and as "at Rimrock" 1918-19)

Location.--Lat 46°39'30", long 121°07'20", in sec.31, T.14 N., R.14 E. (unsurveyed), on left bank 900 ft upstream from Wildcat Creek, 1,200 ft downstream from Tieton Dam, 19 miles upstream from Oak Creek, and 22 miles southwest of Naches.

Drainage area.--187 sq mi.

Gage.--Nonrecording prior to Sept. 5, 1925; recording thereafter. At site a third of a mile upstream at different datum prior to Oct. 1, 1914. At site about 800 ft downstream at different datum Oct. 1, 1918, to Mar. 31, 1919, Apr. 27, 1925, to Apr. 23, 1933. At present site at datum 2.0 ft higher Apr. 24, 1933, to Dec. 11, 1934. Datum of gage is 2,680.99 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements below 2,600 cfs and extended above.

Remarks.--Flow regulated by Tieton Reservoir after April 1925. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Gage-height record collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	June 2, 1909	4.0	1,930	1938	Apr. 30, 1938	7.02	3,280
1910	Nov. 23, 1909	6.35	4,380	1939	May 29, 1939	5.27	1,610
1911	Nov. 10, 1910	5.00	2,800	1940	May 24, 1940	4.92	1,320
1912	May 15, 1912	3.97	1,770	1941	July 17, 1941	5.50	1,820
1919	Jan. 23, 1919	6.40	2,770	1942	Aug. 19, 1942	4.88	1,320
1920	June 15, 1920	3.55	1,100	1943	June 18, 1943	5.55	1,870
1925	May 29, 1925	5.55	2,390	1944	July 13, 1944	4.82	1,240
1926	May 14, 1926	4.94	1,860	1945	June 28, 1945	4.63	1,120
1927	June 22, 1927	6.58	3,530	1946	May 27, 1946	5.51	1,960
1928	June 1, 1928	7.80	5,260	1947	May 28, 1947	5.42	1,910
1929	Aug. 17, 1929	5.74	2,590	1948	June 11, 1948	6.53	2,930
1930	Sept. 1, 1930	5.22	2,060	1949	July 14, 1949	5.49	1,900
1931	Sept. 3, 1931	5.00	1,630	1950	July 12, 1950	5.90	2,110
1932	July 6, 1932	7.01	3,220	1951	June 10, 1951	6.04	2,240
1933	June 10, 1933	8.10	6,180	1952	July 17, 1952	5.10	1,530
1934	Dec. 22, 1933	9.24	8,450	1953	June 13, 1953	5.30	1,600
1935	May 25, 1935	5.80	a2,090	1954	June 27, 1954	5.53	1,750
1936	May 28, 1936	5.72	1,930	1955	June 12, 1955	6.62	2,960
1937	June 22, 1937	5.90	2,210	1956	June 9, 1956	6.36	2,980
				1957	May 9, 1957	6.38	2,480

a Revised.

4925. Tieton River, at headworks of Tieton Canal, near Naches, Wash.

Location.--Lat 46°40'10", long 121°00'20", in sec.30, T.14 N., R.15 E. (unsurveyed), on right bank 1,000 ft downstream from headworks of Tieton Canal, 12 miles upstream from Oak Creek, and 16 miles southwest of Naches.

Drainage area.--239 sq mi.

Gage.--Nonrecording prior to July 28, 1909; recording thereafter. At present site or sites within 1½ miles downstream referred to present datum prior to July 28, 1909. Datum of gage is 2,280.44 ft above mean sea level, unadjusted.

Stage-discharge relation.--Defined by current-meter measurements below 2,900 cfs and extended above.

Bankfull stage.--9 ft.

Remarks.--Diversion for irrigation by Tieton Canal since 1910. Flow regulated by Tieton Reservoir after April 1925. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges of Tieton River at headworks of Tieton Canal, near Naches, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908	Mar. 15, 1908	7.70	3,900	1933	June 10, 1933	8.10	6,120
1909	June 2, 1909	5.4	2,450	1934	Dec. 22, 1933	9.70	8,910
1910	Nov. 24, 1909	7.15	5,400	1935	May 26, 1935	4.71	1,980
1911	June 13, 1911	5.50	2,290	1936	May 28, 1936	4.60	1,860
1912	June 9, 1912	5.16	1,880	1937	June 21, 1937	4.98	2,240
1913	June 3, 1913	5.75	2,740	1938	Apr. 30, 1938	5.98	3,340
1914	Jan. 6, 1914	5.23	1,950	1939	May 29, 1939	4.05	1,260
1915	Apr. 3, 1915	4.92	1,550	1940	May 24, 1940	3.86	1,100
1916	June 18, 1916	6.42	3,530	1941	July 17-20, 1941	4.29	1,540
1917	June 17, 1917	5.48	2,280	1942	Aug. 21, 1942	3.67	954
				1943	June 18, 1943	4.53	1,790
1919	May 27, 1919	5.15	1,940	1944	July 24, 1944	3.63	920
1920	Jan. 28, 1920	4.03	850	1945	June 28, 1945	3.44	770
1921	June 7, 1921	5.68	2,580	1946	May 27, 1946	4.61	1,840
1922	Dec. 13, 1921	8.15	6,150	1947	May 28, 1947	4.32	1,540
1923	Jan. 7, 1923	5.42	2,260	1948	June 11, 1948	5.67	2,990
1924	Feb. 12, 1924	5.22	2,000	1949	July 16, 1949	4.26	1,460
1925	Dec. 24, 1924	5.58	2,480	1950	July 13, 1950	4.76	1,950
1926	May 14, 1926	4.86	1,690	1951	June 10, 1951	4.93	2,150
1927	June 22, 1927	6.38	3,580	1952	July 22, 1952	3.92	1,200
1928	May 28, 1928	6.72	4,000	1953	June 13, 1953	4.20	1,410
1929	Aug. 17, 1929	5.63	2,410	1954	June 26, 1954	4.13	1,430
1930	Sept. 1, 1930	4.98	1,810	1955	June 13, 1955	5.02	2,380
1931	Sept. 3, 1931	4.95	1,770	1956	June 3, 1956	5.00	2,330
1932	July 6, 1932	5.50	2,430	1957	May 9, 1957	5.17	2,480

4930. Tieton River above and below Oak Creek, near Naches, Wash.
(Published as "near North Yakima" prior to 1906, as "near Naches" 1906-7, and as "at Cobb's ranch, near Naches" 1909-13)

Location.--Lat 46°43'30", long 120°48'20", in SE¼ sec.3, T.14 N., R.16 E., on left bank 200 ft downstream from Oak Creek, 2 miles upstream from mouth, and 8 miles northwest of Naches.

Drainage area.--296 sq mi. At sites Mar. 6, 1906, to Apr. 20, 1909, 264 sq mi.

Gage.--Nonrecording. At sites within 1 mile upstream at different datums Mar. 6, 1906, to Apr. 20, 1909. Altitude of gage is 1,690 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 7,300 cfs and extended above.

Remarks.--Diversions for irrigation since 1910. Peak discharges thereafter are affected. All peaks are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Base for partial-duration series, 1,500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1903	Jan. 3, 1903	11.3	3,880	1907	Dec. 21, 1906	7.40	2,440
	May 14, 1903	9.90	1,870				
	June 2, 1903	10.8	3,040	1910	Nov. 23, 1909	10.87	8,010
	June 10, 1903	11.2	3,700		Mar. 3, 1910	7.40	2,360
	June 16, 1903	11.55	4,340		Mar. 20, 1910	8.34	3,510
					Apr. 26, 1910	7.95	a2,990
1904	Oct. 6, 1903	9.20	1,830		May 11, 1910	7.55	a2,530
	Nov. 6, 1903	9.00	1,590		May 24, 1910	7.05	a2,000
	Dec. 1, 1903	9.30	1,950				
	Apr. 14, 1904	11.20	3,270	1911 b/	June 17, 1911	6.7	1,660
	Apr. 28, 1904	11.0	3,010				
	May 23, 1904	11.1	3,140	1912	May 15,16, 1912	7.20	2,150
	June 18, 1904	10.6	2,490		June 8, 1912	7.00	a1,950
	July 5, 1904	9.90	1,750				
				1913	May 10, 1913	6.70	a1,510
1905	June 3, 1905	9.90	1,750		May 27, 1913	7.80	a2,630
					June 2,3, 1913	8.10	a3,080
1906	May 4, 1906	7.80	1,460		June 23, 1913	6.90	a1,690
1907	Nov. 14, 1906	16.1	22,400				

a Maximum daily discharge. b Partial year.

4940. Naches River below Tieton River, near Naches, Wash.

Location.--Lat 46°44'40", long 120°46'00", in SW¼NE¼ sec.36, T.15 N., R.16 E., on left bank half a mile downstream from Wapatox power canal, three-quarters of a mile downstream from Tieton River, and 3½ miles northwest of Naches.

Drainage area.--941 sq mi.

Gage.--Nonrecording prior to Dec. 7, 1916; recording thereafter. At site five-eighths of a mile upstream at different datums prior to Sept. 9, 1936. Datum of gage is 1,549.67 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements below 11,000 cfs and extended above.

Bankfull stage.--18 ft.

Remarks.--Several diversions for irrigation. Station bypassed by Tieton and Selah Valley Canals, city of Yakima diversion at Oak Flat, and since 1936 by Wapatox Canal. Flow regulated by Bumping Lake and Tieton Reservoir. Peak discharges are affected. Peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	June 3, 1909	6.9	9,180	1935	May 30, 1935	8.50	6,350
1910	Nov. 24, 1909	9.0	19,400				
				1936	May 14, 1936	9.54	6,680
1911	June 13, 1911	6.2	7,500	1937	June 22, 1937	14.78	6,650
1912	May 15, 1912	6.35	7,960	1938	May 28, 1938	15.48	8,400
				1939	May 29, 1939	13.70	3,900
1916	June 18, 1916	7.82	11,700	1940	May 11, 1940	13.98	4,520
1917	June 17, 1917	8.30	8,440				
1918	Dec. 30, 1917	12.7	16,800	1941	May 17, 1941	12.40	1,740
1919	Jan. 23, 1919	9.70	11,100	1942	May 25, 1942	13.17	2,880
1920	May 9, 1920	4.83	2,860	1943	Apr. 20, 1943	14.97	6,650
				1944	May 31, 1944	12.50	1,800
1921	June 8, 1921	8.46	9,800	1945	May 5, 1945	14.08	4,720
1922	Dec. 13, 1921	10.0	14,500				
1923	May 10, 1923	7.15	7,380	1946	May 27, 1946	15.28	7,200
1924	Feb. 12, 1924	7.35	7,840	1947	May 8, 1947	14.60	5,610
1925	May 21, 1925	7.85	8,000	1948	May 28, 1948	17.58	12,600
				1949	May 16, 1949	16.39	9,090
1926	Apr. 18, 1926	5.02	3,190	1950	June 21, 1950	15.79	7,530
1927	June 9, 1927	8.45	9,560				
1928	May 25, 1928	8.10	8,470	1951	May 11, 1951	16.48	9,370
1929	May 24, 1929	5.50	3,520	1952	May 20, 1952	14.21	4,130
1930	Apr. 23, 1930	5.35	3,300	1953	June 13, 1953	14.96	5,740
				1954	May 19, 1954	15.90	7,520
1931	May 3, 1931	6.20	4,680	1955	June 12, 1955	16.63	9,740
1932	May 10, 11, June 16,1932	6.15	4,500	1956	June 1, 1956	17.78	13,300
1933	June 15, 1933	9.05	10,600	1957	May 10, 1957	16.79	10,600
1934	Dec.22,23,1933	14.33	32,200				

4990. Naches River near North Yakima, Wash.

Location.--Lat 46°37'30", long 120°31'10", in sec.12, T.13 N., R.18 E., on right bank half a mile upstream from mouth and 2 miles north of Yakima (formerly North Yakima).

Drainage area.--1,100 sq mi, approximately.

Gage.--Nonrecording. At site about 800 ft downstream at different datums prior to June 19, 1908. Altitude of gage is 1,070 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Peak discharges affected by diversions for irrigation, storage reservoirs, and power development. Peaks prior to 1913 are from graphs based on gage readings. Records for 1913-14 furnished by Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges of Naches River near North Yakima, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1900	Jan. 13, 1900	10.00	10,700	1907	Nov. 14, 1906	11.65	26,000
				1908	Apr. 20, 1908	10.50	10,100
1901	Mar. 1, 1901	9.65	9,550	1909	June 2, 1909	7.45	10,000
1902	May 28, 1902	9.45	8,910	1910	Nov. 24, 1909	9.95	28,000
1903	June 10, 1903	10.20	11,300				
1904	Apr. 14, 1904	10.40	12,000	1912	May 15, 1912	7.80	7,800
1905	June 4, 1905	7.70	3,690	1913	June 2-4, 1913	8.4	a9,920
				1914	June 3, 1914	7.10	a5,390
1906	May 4, 1906	7.15	5,000				

a Maximum daily discharge.

5005. North Fork Ahtanum Creek near Tampico, Wash.

Location.--Lat 46°33'40", long 120°55'10", in NW¼ sec.2, T.12 N., R.15 E., on left bank 150 ft downstream from Nasty Creek, 3½ miles upstream from Tampico and confluence with South Fork, and 20 miles west of Yakima.

Drainage area.--68.9 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,700 ft.

Gage.--Nonrecording prior to Apr. 2, 1913; recording thereafter. Concrete control Nov. 11, 1915, to December 1933 and sharp-crested weir since September 1934. At site 50 ft upstream at different datum prior to Sept. 20, 1934. Altitude of gage is 2,450 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 530 cfs and extended above.

Bankfull stage.--4 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings. Records prepared in cooperation with Bureau of Indian Affairs. Base for partial-duration series, 200 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908	June 11, 1908	2.90	407	1934	Apr. 24, 1934	-	-
1910	Mar. 1, 1910	3.45	766	1935	Jan. 24, 1935	2.02	292
					May 22, 1935	1.93	271
1911	June 1,2, 1911	2.8	411				
				1936	Apr. 22, 1936	1.78	237
1912	May 20, 1912	3.20	629		May 4, 1936	1.86	255
					May 13,14, 1936	2.05	298
1913	June 3, 1913	3.46	427		May 27, 1936	1.79	239
					June 7, 1936	1.85	252
1914	Apr. 14, 1914	3.08	340				
				1937	Apr. 14, 1937	1.71	221
1915	Apr. 2, 1915	3.00	272		May 3, 1937	1.80	241
	Apr. 19, 1915	2.81	228		May 27, 1937	1.90	264
					June 3, 1937	1.94	273
1916	June 18, 1916	4.60	728		June 21, 1937	1.68	215
1917	June 8, 1917	3.60	412	1938	Apr. 18, 1938	2.21	356
					May 1, 1938	2.26	370
1918	June 10, 1918	3.13	275		May 15, 1938	2.15	340
					May 24, 1938	2.52	446
1919	May 27, 1919	3.40	354		June 7, 1938	2.12	331
1920	May 8, 1920	2.92	208	1939	May 16, 1939	1.35	158
1921	June 5, 1921	3.85	512	1940	May 10,11, 1940	1.71	233
1932	May 9,12, 1932	3.16	255	1941	Apr. 1, 1941	1.47	173
	June 12, 1932	3.01	218				
				1942	May 22, 1942	1.81	258
1933	Apr. 27, 1933	3.35	316				
	May 30, 1933	3.45	344	1943	Apr. 19, 1943	1.91	298
	June 4, 1933	3.47	350		May 25, 1943	1.96	339
	June 14, 1933	3.76	433		June 9, 1943	1.71	261
1934	Dec. 10, 1933	3.25	286	1944	May 15, 1944	1.31	127
	Dec. 22, 1933	4.45	755				
	Jan. 23, 1934	3.71	532	1945	May 4, 1945	1.70	227

Peak stages and discharges of North Fork Ahtanum Creek near Tampico, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1945	May 31, 1945	1.70	232	1952	Apr. 26, 1952	1.63	282
					May 18, 1952	1.67	293
1946	Apr. 25, 1946	1.58	212		May 25, 1952	1.60	273
	May 26, 1946	1.98	320		June 4, 1952	1.50	245
1947	Dec. 11, 1946	2.35	439	1953	Apr. 27, 1953	1.76	323
	May 8, 1947	2.18	319		May 6, 1953	1.66	290
	May 27, 1947	1.99	263		May 18, 1953	1.73	311
	June 8, 1947	2.00	266		June 12, 1953	1.76	320
1948	May 27, 1948	2.97	770	1954	Apr. 17, 1954	1.44	235
	June 11, 1948	2.64	637		May 10, 1954	1.73	317
	June 16, 1948	2.52	578		May 18, 1954	2.11	438
					June 12, 1954	1.56	256
1949	Feb. 17, 1949	-	-		June 20, 1954	1.55	259
	Apr. 19, 1949	1.58	267				
	May 16, 1949	2.43	547	1955	May 19, 1955	1.43	224
	June 6, 1949	1.89	360		May 29, 1955	1.38	209
					June 5, 1955	1.92	360
1950	May 13, 1950	1.92	369				
	May 21, 1950	1.87	354	1956	Dec. 12, 1955	1.38	210
	June 5, 1950	1.95	379		Mar. 25, 1956	1.40	215
	June 16, 1950	1.99	392		Apr. 22, 1956	2.65	597
	June 30, 1950	1.68	296		May 10, 1956	2.11	414
					May 20, 1956	3.00	823
1951	Dec. 24, 1950	1.36	209		May 31, 1956	2.71	681
	Feb. 10, 1951	2.33	532				
	Apr. 17, 1951	1.67	655	1957	Apr. 14, 1957	1.35	202
	May 11, 1951	2.70	655		Apr. 30, 1957	1.74	311
	May 22, 1951	2.11	432		May 6, 1957	2.13	442
	June 14, 1951	1.83	341		May 9, 1957	2.34	520
					June 1, 1957	1.55	251
1952	Apr. 18, 1952	1.39	216		June 5, 1957	1.53	245

5010. South Fork Ahtanum Creek at Conrad Ranch, near Tampico, Wash.

Location.--Lat 46°30'30", long 120°54'50", in SW¼ sec.23, T.12 N., R.15 E., on left bank at Conrad Ranch, 2½ miles upstream from confluence with North Fork, 2¾ miles southwest of Tampico, and 20 miles southwest of Yakima.

Drainage area.--24.8 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 4,280 ft.

Gage.--Nonrecording prior to Mar. 23, 1951; recording thereafter. Concrete control effective Sept. 6, 1916, to December 1933. At present site at datum 1.00 ft lower prior to Aug. 9, 1918. Altitude of gage is 2,400 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--3 ft.

Remarks.--Peaks for period of nonrecording gage are from graphs based on gage readings, or from observed readings equivalent thereto. Gage-height records collected in cooperation with Bureau of Indian Affairs. Base for partial-duration series, 40 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1915	Apr. 3, 1915	1.50	62	1919	May 27, 1919	1.24	85
	Apr. 20, 1915	1.38	52				
				1920	May 9, 1920	.83	34
1916	June 19, 1916	3.10	216				
				1921	Apr. 2, 1921	1.04	62
1917	May 11-12, 1917	2.03	48		May 25, 1921	1.76	144
	May 29, 1917	2.45	100		June 7, 1921	1.73	151
	June 16, 1917	2.40	93				
				1922	Apr. 8, 1922	1.01	48
1918	May 4, 1918	1.98	53		May 5, 1922	.95	42
	May 15, 1918	1.95	50		May 18, 1922	1.63	131
	June 8, 1918	1.93	47		June 4, 1922	1.73	144
1919	Apr. 4, 1919	1.05	60	1923	Apr. 3, 1923	1.21	71
	May 4, 1919	1.00	53		Apr. 17, 1923	1.12	59

Peak stages and discharges of South Fork Ahtanum Creek at Conrad Ranch, near Tampico, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)
1923	May 10, 1923	1.35	90
	June 11, 1923	1.19	69
1924	May 13, 1924	1.13	61
1931	May 3, 1931	.95	40
1932	Feb. 26, 1932	1.60	128
	Mar. 19, 1932	1.06	52
	May 13, 1932	1.11	58
1933	Apr. 29, 1933	1.12	62
	June 16, 1933	1.43	110
1934	Dec. 23, 1933	3.10	424
	Jan. 23, 1934	3.00	315
	Apr. 25, 1934	1.69	78
1935	Dec. 22, 1934	1.42	50
	Jan. 25, 1935	2.05	121
	May 23, 1935	1.63	75
1936	Apr. 23, 1936	1.39	47
	May 14, 1936	1.60	76
	June 7, 1936	1.42	55
1937	Mar. 28, 1937	1.42	49
	Apr. 14, 1937	1.78	108
	May 4, 1937	1.36	53
	May 26, 1937	1.43	60
1938	Dec. 30, 1937	1.30	45
	Mar. 15, 1938	1.54	70
	Apr. 18, 1938	1.96	127
	May 27, 1938	1.81	104
1939	May 15-17, 1939	1.10	34
1940	May 11, 1940	1.06	45
1941	Mar. 1, 1941	.96	34
1942	Mar. 9, 1942	1.12	52
	Apr. 12, 1942	1.09	49
	May 25, 1942	1.22	64
1943	Jan. 15, 1943	1.10	50
	Mar. 29, 1943	1.64	109
	Apr. 20, 1943	1.55	96
	May 27, 1943	1.60	91
	June 10, 1943	1.55	88
1944	May 8,9, 1944	.89	25
1945	May 5-7, 1945	1.08	40
1946	Apr. 19, 1946	1.09	40
	May 27, 1946	1.61	79
1947	Dec. 11, 1946	2.50	249
	Feb. 15, 1947	1.30	52
	May 8, 1947	1.46	69
1948	Mar. 30, 1948	1.28	43
	Apr. 22, 1948	1.36	61
	May 27, 1948	2.02	191
	June 16, 1948	2.34	263
1949	Feb. 17, 1949	1.60	115
	Mar. 19, 1949	1.20	58
	Apr. 19, 1949	1.27	66
	May 14-16, 1949	1.70	133
1950	Mar. 4, 1950	1.18	56
	Apr. 1, 1950	1.12	49
	Apr. 22, 1950	1.14	51
	June 5, 1950	1.46	92
	June 18, 1950	1.56	108
1951	Nov. 27, 1950	1.00	42
	Dec. 24, 1950	1.29	80
	Jan. 31, 1951	a2.51	-
	Feb. 10, 1951	2.50	365
	Apr. 18, 1951	1.24	73
	May 11, 1951	1.79	173
	June 15, 1951	1.26	82
1952	Mar. 27-28, 1952	1.03	46
	Apr. 7, 1952	1.05	55
	Apr. 27, 1952	1.09	63
	May 19-20, 1952	1.16	70
1953	Jan. 9, 1953	1.03	50
	Jan. 12, 1953	1.18	72
	Apr. 27, 1953	1.21	77
	May 19, 1953	1.16	70
	June 6, 1953	1.22	79
	June 12, 1953	1.15	70
1954	Apr. 18, 1954	1.08	56
	May 19, 1954	1.42	107
	June 15, 1954	1.14	64
1955	Apr. 23, 1955	1.05	52
	June 9, 1955	1.28	84
1956	Dec. 12, 1955	1.08	61
	Mar. 25, 1956	1.82	192
	Apr. 15, 1956	1.89	171
	Apr. 22, 1956	2.10	168
	May 20, 1956	2.25	196
	June 1, 1956	2.20	187
1957	Dec. 9, 1956	a2.33	-
	Apr. 14, 1957	1.30	74
	May 9, 1957	1.58	96

a Backwater from ice.

5015. South Fork Ahtanum Creek near Tampico, Wash.

Location.--Lat 46°31'10", long 120°53'20", in NW¼ sec.24, T.12 N., R.15 E., on right bank at Shannafelt Ranch, 1½ miles upstream from confluence with North Fork and 2 miles southwest of Tampico.

Drainage area.--29.1 sq mi.

Gage.--Nonrecording prior to Mar. 16, 1914, at site 100 ft downstream at different datum; recording thereafter. Altitude of gage is 2,200 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 150 cfs and extended above.

Remarks.--Maximums only are from graphs based on gage readings. Records collected and prepared in cooperation with Bureau of Indian Affairs. Base for partial-duration series, 40 cfs.

Peak stages and discharges of South Fork Ahtanum Creek near Tampico, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908 a/	June 12, 1908	2.65	120	1912	Apr.10,11,1912	3.60	52
					May 20, 1912	3.85	74
1909 a/	Mar.28,29, 1909	2.05	52	1913	Jan. 3, 1913	3.65	56
	May 4, 1909	2.1	56		Apr. 15, 1913	3.58	55
	June 2, 1909	-	150		May 10, 1913	3.82	76
1910	Nov. 24, 1909	3.3	211		May 28, 1913	4.50	153
	Jan. 24, 1909	3.20	131	1914	Jan. 7, 1914	3.45	45
	Mar. 2, 1910	5.50	362		Mar. 9, 1914	3.85	78
	Mar. 16, 1910	4.90	254		Mar. 14, 1914	3.95	88
	Mar. 20, 1910	4.70	220		Mar.23,24,1914	3.25	100
	Apr. 26, 1910	4.00	124		Apr.17-20,1914	3.6	125
	May 11, 1910	4.20	148		May 15, 1914	4.10	162
1911	Mar. 26, 1911	3.40	57				
	June 13, 1911	4.35	141				

a Maximum for year not determined; partial year.

5020. Ahtanum Creek at The Narrows, near Tampico, Wash.

Location.--Lat 46°31'40", long 120°48'20", in NE¼ sec.15, T.12 N., R.16 E., on right bank at The Narrows, 3 miles downstream from confluence of North and South Forks, 3½ miles east of Tampico, and 18 miles southwest of Yakima.

Drainage area.--121 sq mi.

Gage.--Nonrecording. Altitude of gage is 1,830 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 580 cfs and extended above.

Remarks.--Maximums only are from graphs based on gage readings. Base for partial-duration series, 300 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	June 3, 1909	2.65	419	1911	June 2, 1911	2.10	390
					June 12, 1911	4.10	1,390
1910	Nov. 24, 1909	2.88	512				
	Jan. 24, 1910	2.50	364	1912	May 15, 1912	2.20	430
	Jan. 30, 1910	2.85	499				
	Mar. 1, 1910	4.85	1,900	1913	May 10, 1913	2.20	373
	Mar. 21, 1910	3.00	780		May 27, 1913	2.75	615
	Apr. 26, 1910	2.40	502				
	May 10, 1910	2.45	524				

5025. Ahtanum Creek at Union Gap, Wash.
(Published as "near Yakima" prior to 1951)

Location.--Lat 46°32'10", long 120°28'15", in SW¼ sec.8, T.12 N., R.19 E., on left bank just upstream from Union Pacific Railway bridge, a quarter of a mile upstream from mouth and 1 mile south of Union Gap.

Drainage area.--171 sq mi.

Gage.--Nonrecording prior to Sept. 30, 1914; recording thereafter. At approximately same site at different datums prior to Sept. 30, 1914. Altitude of gage is 940 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 570 cfs and extended above.

Remarks.--Records collected and prepared in cooperation with Bureau of Reclamation. Base for partial-duration series, 230 cfs.

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Peak stages and discharges of Ahtanum Creek at Union Gap, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1904 a/	May 23-26, 1904	6.5	530	1914	Apr. 16, 1914	1.70	325
1908	Mar. 16, 1908	5.90	419		May 25, 1914	1.85	369
	June 12-15, 1908	5.90	419	1951 a/	May 12, 1951	2.75	780
1910	Mar. 3, 1910	8.90	1,530		June 6, 1951	2.44	467
	Mar. 22, 1910	7.6	1,000	1952	Mar. 28, 1952	2.04	226
	May 12, 1910	6.5	596		Apr. 8, 1952	2.02	222
1912	May 17, 1912	1.75	258		May 20-21, 1952	2.10	255
1913	June 4, 1913	3.30	447	1933 a/	Jan. 10, 1953	2.24	329
					Jan. 13, 1953	2.12	265
1914	Mar. 20, 1914	1.60	242		Jan. 21, 1953	2.13	270

a Maximum for year not determined; partial year.

5030. Yakima River at Union Gap, near Yakima, Wash.
(Published as Yakima River near Yakima prior to 1913)

Location.--Lat 46°31'40", long 120°28'20", in NW¼ sec.17, T.12 N., R.19 E., on right bank 600 ft downstream from mouth of Ahtanum Creek, 600 ft upstream from New Reservation canal intake, and 1 mile south of Union Gap (formerly Yakima).

Drainage area.--3,640 sq mi, approximately.

Gage.--Nonrecording prior to Dec. 31, 1909; recording thereafter. At present site at different datums prior to July 28, 1912. Altitude of gage is 930 ft (from river-profile map).

Stage-discharge relation.--Defined by current-meter measurements below 21,000 cfs and extended above.

Bankfull stage.--8 ft.

Remarks.--Major diversions for irrigation. All discharges are affected. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1897	Nov. 16, 1896	15.00	45,600	1906	Apr. 24, 1906	8.60	13,800
1898	Nov. 20, 1897	11.60	25,100	1907	Nov. 15, 1906	15.68	63,900
1899	June 13,14, 1899	10.1	18,400	1908	Mar. 16, 1908	9.20	17,600
1900	Jan. 12,14,15, 1900	10.7	21,400	1909	June 3, 1909	-	17,000
				1910	Nov. 25, 1909	-	33,400
1901	Mar. 2, 1901	11.2	23,900	1911	Nov. 23, 1910	-	15,700
1902	May 28, 1902	10.2	18,600	1912	May 16,22, 1912	6.20	15,500
1903	June 11, 1903	11.9	26,200	1913	June 3,4, 1913	7.0	22,900
1904	Apr. 16, 1904	-	27,900	1914	Apr. 16, 1914	5.08	14,400
1905	June 4, 1905	9.10	14,700				

5050. Yakima River near Parker, Wash.
(Published as "near Wapato" prior to 1917)

Location.--Lat 46°29'40", long 120°26'10", in sec.28, T.12 N., R.19 E., on left bank 700 ft downstream from Sunnyside diversion dam, 1½ miles east of Parker, and 3 miles downstream from Ahtanum Creek.

Drainage area.--3,650 sq mi, approximately.

Gage.--Nonrecording prior to Aug. 17, 1915; recording thereafter. At site 25 ft above headgate of Sunnyside Canal at different datum prior to Jan. 1, 1909. At site 200 ft upstream at datum 1.82 ft higher Jan. 1, 1909, to Dec. 31, 1913. At site 200 ft upstream at datum 0.18 ft lower Jan. 1, 1914, to Feb. 2, 1919. At present site at datum 0.18 ft lower Feb. 3, 1919, to Oct. 20, 1940. At site 300 ft downstream at datum 0.18 ft lower Oct. 21, 1940, to Aug. 9, 1953. Datum of gage is 886.23 ft above mean sea level (Bureau of Reclamation bench mark).

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--13 ft.

Remarks.--Flow regulated by Keechelus, Kachess, Cle Elum, and Bumping Lakes and Tieton Reservoir. Major diversions for irrigation. As much as 5,500 cfs bypasses the station in canals. All peak discharges are affected. Most peaks for period of nonrecording gage are from graphs based on gage readings. Records collected and prepared in cooperation with the Bureau of Reclamation and Bureau of Indian Affairs. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1908	June 11,12,1908	4.26	16,400	1933	June 16, 1933	9.45	14,500
1909	June 3, 1909	7.32	16,300	1934	Dec. 23, 1933	15.00	65,000
1910	Nov. 25, 1909	10.00	35,000	1935	Jan. 26, 1935	9.80	19,600
1911	Nov. 23, 1910	7.23	16,400	1936	May 15, 1936	8.60	13,600
1912	May 16, 1912	7.60	16,200	1937	June 22, 1937	9.32	16,200
1913	June 2, 3,1913	8.80	22,600	1938	Apr. 19, 1938	9.47	17,200
1914	May 16, 1914	8.54	11,400	1939	Mar. 25, 1939	6.52	6,300
1915	Apr. 4, 1915	9.44	15,500	1940	May 12, 1940	7.40	7,760
1916	June 19, 1916	11.32	24,800	1941	Apr. 3, 1941	5.26	3,850
1917	May 30, 1917	10.34	19,800	1942	Dec. 8, 1941	5.72	4,440
1918	Dec. 30, 1917	15.0	52,900	1943	Apr. 16, 1943	9.28	13,600
1919	Jan. 23, 1919	9.80	20,600	1944	Dec. 5, 1943	5.25	3,500
1920	Jan. 20, 1920	6.41	6,650	1945	June 1, 1945	7.35	7,300
1921	May 17, 1921	9.19	17,600	1946	May 27, 1946	9.90	13,600
1922	Dec.13,14,1921	12.58	35,800	1947	Dec.15-16,1946	10.20	14,400
1923	Jan. 8, 1923	9.16	15,600	1948	May 29, 1948	13.82	37,700
1924	Feb. 13, 1924	9.35	18,400	1949	May 16, 1949	9.67	14,500
1925	May 21, 1925	8.78	15,500	1950	May 13, 1950	9.12	13,000
1926	Mar. 16, 1926	6.17	5,990	1951	Feb. 12, 1951	10.75	19,300
1927	June 9, 1927	9.00	16,200	1952	Aug. 10, 1952	6.70	6,570
1928	Jan. 17, 1928	9.70	19,600	1953	Feb. 1, 1953	8.00	10,200
1929	May 24, 1929	6.31	6,050	1954	May 19, 1954	8.72	10,700
1930	Mar. 30, 1930	6.70	6,400	1955	June 12, 1955	10.68	18,400
1931	May 3, 1931	7.35	7,850	1956	May 20, 1956	10.91	19,600
1932	Feb.28,29,1932	9.90	17,100	1957	May 10, 1957	10.83	18,300

5060. Toppenish Creek near Fort Simcoe, Wash.

Location.--Lat 46°18'40", long 120°47'10", in sec.35, T.10 N., R.16 E., on left bank 30 ft upstream from dam and headworks of Toppenish feeder canal, 3 miles southeast of Fort Simcoe, and 5½ miles southeast of White Swan.

Drainage area.--120 sq mi. At sites prior to Oct. 1, 1922, 122 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 3,610 ft.

Gage.--Nonrecording prior to Aug. 19, 1915; recording thereafter. At site 1½ miles downstream at different datum Feb. 27, 1909, to July 22, 1913. At site 1½ miles downstream at different datums July 23, 1913, to Sept. 30, 1922. Altitude of gage is 1,300 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,100 cfs and extended above.

Remarks.--Records collected and prepared in cooperation with Bureau of Indian Affairs. Base for partial-duration series, 300 cfs.

Peak stages and discharges of Toppenish Creek near Fort Simcoe, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909a/	Mar. 29, 1909	2.7	376	1916	Mar. 20, 1916	4.58	1,210
	Apr. 14, 1909	2.9	435		Mar. 27, 1916	3.64	749
	May 4, 1909	3.1	500		Apr. 15, 1916	4.34	1,090
					May 4, 1916	5.52	1,680
1910	Nov. 23, 1909	3.62	683				
	Jan. 24, 1910	2.62	364	1917	May 11, 1917	4.22	585
	Mar. 3, 1910	5.42	1,260				
	Mar. 21, 1910	4.72	1,030	1918	Dec. 18, 1917	5.07	1,000
	Apr. 6, 1910	2.92	456		Dec. 29, 1917	3.97	468
1911	Mar. 24, 1911	2.82	424	1919	Jan. 19, 1919	4.66	798
	Mar. 31, 1911	2.90	450		Jan. 23, 1919	6.18	1,630
	Apr. 25, 1911	2.70	348		Apr. 4, 1919	3.11	484
	May 28, 1911	2.60	320		Apr. 20, 1919	2.87	370
1912	Apr. 11, 1912	2.80	378	1920	Mar. 14, 1920	3.32	396
	Apr. 30, 1912	2.60	320				
	May 9, 1912	2.60	320	1921	Dec. 30, 1920	4.85	1,070
					Feb. 12, 1921	4.18	870
1913	Jan. 3, 1913	2.65	334		Mar. 18, 1921	4.46	995
	Apr. 21, 1913	3.3	530		Apr. 22, 1921	3.42	442
	Apr. 26, 1913	3.3	530				
	May 8, 1913	3.2	498	1922	Dec. 1, 1921	3.20	345
					Apr. 8, 1922	3.18	339
1914	Jan. 6, 1914	5.9	1,000		May 5, 1922	3.36	401
	Mar. 18, 1914	4.0	510		May 18, 1922	3.70	532
	Apr. 15, 1914	5.0	770				
				1923	Jan. 7, 1923	2.92	1,030
1916	Dec. 21, 1915	4.94	1,640		Apr. 3, 1923	1.49	360
	Jan. 23, 1916	2.48	467				
	Feb. 10, 1916	4.30	1,300	1924	Feb. 2, 1924	1.42	320
	Feb. 17, 1916	3.14	537		Feb. 13, 1924	1.45	340
	Mar. 11, 1916	4.35	1,100				

a Maximum for year not determined; partial year.

5065. Simcoe Creek below Spring Creek, near Fort Simcoe, Wash.
(Published as "Simcoe Creek near Fort Simcoe" prior to 1916)

Location.--Lat 46°23'40", long 120°48'30", in sec.34, T.11 N., R.16 E., on left bank just downstream from Spring Creek, 4 miles northeast of Fort Simcoe and 4 miles west of White Swan.

Drainage area.--81.5 sq mi. At site prior to November 1915, 79.9 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 3,720 ft.

Gage.--Nonrecording prior to Nov. 20, 1915, at site 600 ft upstream and above Spring Creek at different datum; recording and concrete control thereafter. Altitude of gage is 1,150 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 280 cfs and extended above.

Remarks.--Records collected and prepared in cooperation with Bureau of Indian Affairs. Base for partial-duration series, 100 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1909	Mar. 29, 1909	2.6	95	1915	Mar. 13, 1915	2.7	110
					Apr. 4, 1915	2.95	148
1910	Jan. 24, 1910	5.7	957				
	Mar. 1, 1910	7.2	1,750	1916	Dec. 21, 1915	4.6	504
	Mar. 21, 1910	5.0	693		Feb. 10, 1916	6.14	731
					Feb. 16, 1916	-	-
1911	June 13, 1911	2.4	86		Mar. 12, 1916	4.44	449
					Mar. 21, 1916	4.17	421
1912	Feb. 17, 1912	2.80	142		May 5, 1916	3.05	266
1913	Apr. 25, 1913	3.00	156	1917	May 28,29, 1917	1.51	131
1914	Jan. 7, 1914	4.4	462	1918	Dec. 19, 1917	2.42	239
	Jan. 26, 1914	2.9	140		Dec. 22, 1917	2.76	282
	Feb. 1, 1914	2.9	140		Dec. 30, 1917	2.85	296
	Feb. 28, 1914	3.5	252		Feb. 6, 1918	1.68	152
	Mar. 20, 1914	3.6	274				
	Apr. 17, 1914	3.4	232	1919	Jan. 17, 1919	1.61	143
					Jan. 23, 1919	3.5	379
1915	Mar. 1, 1915	3.2	192				

Peak stages and discharges of Simcoe Creek below Spring Creek, near Fort Simcoe, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1920	May 10, 1920	0.84	30	1921	Mar. 22, 1921	2.79	151
					May 18, 1921	2.37	116
1921	Dec. 30, 1920	3.08	179				
	Jan. 3, 1921	3.61	231	1922	Dec. 1, 1921	4.13	357
	Jan. 14, 1921	2.40	120		Dec. 13, 1921	1.98	126
	Feb. 10, 1921	4.10	290		May 18, 1922	2.27	126
	Feb. 13, 1921	4.15	296				
	Feb. 24, 1921	2.64	139	1923	Jan. 7, 1923	5.2	515

5076.5. Shenando Creek near Goldendale, Wash.

Location.--Lat 46°01'10", long 120°37'50", in center of W½ sec.12, T.6 N., R.17 E., at U.S. Highway 97, 3 miles northeast of Satus Pass and 15 miles northeast of Goldendale.

Drainage area.--7.9 sq mi. Area of lakes and ponds, 0 sq mi; mean altitude of basin, 3,300 ft.

Gage.--Crest-stage gage. Datum of gage is 23.84 ft below upstream invert of culvert.

Stage-discharge relation.--Peak discharges are from computations of discharge through a 5- by 5-foot concrete box culvert.

Remarks.--Peaks occurred on or about the dates shown. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953	Jan. 9, 1953	32.60	287	1956	Dec. 21, 1955	32.42	281
1954	(a)	-	-	1957	Mar. 15, 1957	28.29	148
1955	Apr. 13, 1955	25.43	35.3				

a No record.

5085. Satus Creek below Dry Creek, near Toppenish, Wash.

Location.--Lat 46°15'00", long 120°22'40", in sec.24, T.9 N., R.19 E., on left bank at dam site, 1 mile downstream from Dry Creek, 6 miles downstream from Logy Creek, and 9 miles southwest of Toppenish.

Drainage area.--434 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 2,820 ft.

Gage.--Recording. Altitude of gage is 880 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,300 cfs and extended above.

Remarks.--Records collected and prepared in cooperation with Bureau of Indian Affairs. Base for partial-duration series, 500 cfs.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1914	Jan. 4, 1914	5.51	1,200	1916	Mar. 21, 1916	-	-
	Jan. 22, 1914	4.90	1,010		Mar. 27, 1916	6.28	1,840
	Feb. 27, 1914	4.86	997				
	Apr. 15, 1914	3.60	594	1917	Mar. 29, 1917	4.00	635
					Apr. 8, 1917	3.76	542
1915	Mar. 16, 1915	4.5	1,000				
				1918	Dec. 19, 1917	5.44	1,330
1916	Dec. 8, 1915	3.23	507		Dec. 27, 1917	4.95	1,090
	Dec. 22, 1915	9.15	3,870		Dec. 31, 1917	5.35	1,280
	Jan. 24, 1916	-	-		Mar. 23, 1918	3.72	603
	Feb. 10, 1916	8.22	3,110				
	Feb. 18, 1916	5.38	1,380	1919	Jan. 18, 1919	6.00	1,580
	Mar. 10, 1916	6.11	1,740		Jan. 19, 1919	5.08	1,140

Peak stages and discharges of Satus Creek below Dry Creek, near Toppenish, Wash.--Continued

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1919	Jan. 23, 1919	7.0	2,160	1921	Mar. 18, 1921	5.31	1,230
	Mar. 3, 1919	3.77	584				
	Mar. 19, 1919	3.64	548	1922	Dec. 1, 1921	-	(a)
	Apr. 4, 1919	3.75	584		Mar. 22, 1922	4.37	822
					Apr. 4, 1922	4.56	900
1920	Mar. 14, 1920	3.67	548		Apr. 7, 1922	-	-
1921	Dec. 30, 1920	6.31	1,740	1923	Jan. 6, 1923	8.8	3,400
	Jan. 3, 1921	4.38	841				
	Feb. 11, 1912	7.4	2,400	1924	Feb. 13, 1924	5.7	1,430

a Maximum discharge not determined.

5095. Yakima River near Prosser, Wash.

Location.--Lat 46°13'00", long 119°45'00", in SE¼ sec.36, T.9 N., R.24 E., on right bank 1¼ miles northeast of Prosser and 1¼ miles downstream from Prosser Falls.

Drainage area.--5,440 sq mi, approximately.

Gage.--Nonrecording prior to Oct. 13, 1906; recording thereafter. At approximately present site at different datum Feb. 1 to Oct. 12, 1906. Altitude of gage is 600 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements.

Remarks.--Flow regulated by Keechelus, Kachess, Cle Elum, and Bumping Lakes and Tieton Reservoir. Major diversions for irrigation. All peak discharges are affected. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1906	Apr. 24, 1906	10.7	11,700	1923	May 11, 1923	8.67	12,760
1907	Nov. 17, 1906	a20.2	62,800	1924	Feb. 15, 1924	9.60	15,900
				1925	May 22, 1925	9.40	15,500
1914	Apr. 17, 1914	8.10	11,300				
1915	Apr. 5, 1915	9.12	14,200	1926	Mar. 17, 1926	6.00	6,250
				1927	June 10, 1927	9.57	16,000
1916	May 7, 1916	11.65	24,000	1928	Jan. 15, 1928	10.23	18,400
1917	June 1, 1917	10.43	18,200	1929	May 25, 1929	6.21	6,680
1918	Dec. 31, 1917	-	53,800	1930	Mar. 31, 1930	6.60	7,520
1920	Jan. 20, 1920	6.22	6,590	1931	May 5, 1931	7.16	8,720
				1932	Mar. 1, 1932	10.35	18,300
1921	May 21, 1921	10.28	18,300	1933	Nov. 19, 1932	7.10	8,540
1922	Dec. 15, 1921	13.78	32,000				

a Flood of December 1933 known to be higher.

5105. Yakima River at Kiona, Wash.

Location.--Lat 46°15'10", long 119°28'50", in sec.19, T.9 N., R.27 E., on left bank at highway bridge in Kiona, 3½ miles downstream from intake of Kiona Canal and 25 miles upstream from mouth.

Drainage area.--5,600 sq mi, approximately.

Gage.--Nonrecording prior to Mar. 31, 1915, and Feb. 6, 1933, to July 26, 1934; recording thereafter. Datum of gage is 454.41 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Stage-discharge relation.--Defined by current-meter measurements.

Bankfull stage.--15 ft.

Remarks.--Flow regulated by Keechelus, Kachess, Cle Elum, and Bumping Lakes, and Tieton Reservoir. Major diversions for irrigation. All peak discharges are affected. Records collected and prepared in cooperation with Bureau of Reclamation. Only annual peaks are shown.

Peak stages and discharges of Yakima River at Kiona, Wash.

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1897	Nov. 18, 1896	16.07	38,000	1937	June 24, 1937	11.76	17,100
1898	Feb. 17, 1898	13.27	23,100	1938	Apr. 21, 1938	11.17	15,500
1899	June 20, 1899	11.45	16,400	1939	Mar. 27, 1939	7.41	7,140
1900	Jan. 15, 1900	12.24	19,000	1940	May 13, 1940	8.32	8,850
1901	Mar. 3, 1901	14.00	26,400	1941	Apr. 3, 1941	5.92	4,520
1902	May 13, 1902	11.60	16,900	1942	Dec. 5, 1941	6.00	4,680
1903	June 14, 1903	14.00	26,400	1943	Apr. 21, 1943	10.37	13,400
1904	Apr. 17, 1904	15.05	32,000	1944	Dec. 6, 1943	5.43	3,960
1905	June 5, 1905	10.40	13,200	1945	June 2, 1945	8.12	8,470
1906	Apr. 24, 1906	9.90	11,800	1946	May 29, 1946	11.14	15,300
1907	Nov. 17, 1906	20.12	66,000	1947	Dec. 16, 1946	10.96	15,100
1908	June 13, 1908	11.50	16,600	1948	May 31, 1948	17.20	37,900
1909	June 5, 1909	11.32	16,000	1949	May 18, 1949	11.24	15,500
1910	Nov. 26, 1909	14.80	30,600	1950	June 23, 1950	10.97	15,000
1911	Nov. 23, 1910	10.70	13,600	1951	Feb. 13, 1951	12.99	20,900
1912	May 23, 1912	11.45	16,100	1952	Mar. 28, 1952	6.85	6,270
1913	June 5, 1913	13.1	20,900	1953	June 15, 1953	9.49	11,500
1914	Apr. 17, 1914	10.1	11,300	1954	May 21, 1954	9.70	12,000
				1955	June 14, 1955	12.18	18,300
1934	Dec. 23, 1933	21.57	67,000				
1935	Jan. 28, 1935	12.16	18,100	1956	May 22, 1956	12.73	20,100
				1957	May 12, 1957	12.61	19,600
1936	May 16, 1936	10.69	14,100				

ESQUATZEL COULEE BASIN

5125. Providence Coulee at Cunningham, Wash.

Location.--Lat 46°49'20", long 118°48'30", near township line in NW¼ sec.4, T.15 N., R.32 E., on west side of Northern Pacific Railroad tracks at Cunningham.

Drainage area.--27.8 sq mi.

Gage.--Recording. Altitude of gage is 1,160 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 340 cfs and extended on basis of slope-area measurement at 2,160 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953a/	-	-	-	1956	Feb. 21, 1956	10.04	2,160
1954a/	-	-	-	1957	Feb. 24, 1957	4.74	250
1955	Feb. 7, 1955	3.48	106				

a No flow.

5130. Esquatzel Coulee at Connell, Wash.

Location.--Lat 46°39'40", long 118°51'40", in NE¼ sec.36, T.14 N., R.31 E., on right bank 30 ft downstream from Main Street in Connell.

Drainage area.--240 sq mi. Area of lakes and ponds, 0 sq mi; mean elevation, 1,370 ft.

Gage.--Recording. Altitude of gage is 840 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 2,300 cfs and extended on basis of slope-area measurement at 5,560 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953a/	-	-	-	1956	Feb. 21, 1956	12.68	5,560
1954a/	-	-	-	1957	Feb. 24, 1957	6.33	1,350
1955	Feb. 7, 1955	4.69	229				

a No flow.

5135. Esquatzel Coulee at Eltopia, Wash.

Location.--Lat 46°27'40", long 119°01'00", in SE¼ sec.2, T.11 N., R.30 E., on left bank on upstream side of railroad bridge at Eltopia.

Drainage area.--394 sq mi.

Gage.--Recording. Altitude of gage is 580 ft (from topographic map).

Stage-discharge relation.--Defined by current-meter measurements below 1,910 cfs and extended on basis of slope-area measurement at 3,740 cfs.

Remarks.--Only annual peaks are shown.

Peak stages and discharges

Water year	Date	Gage height (feet)	Discharge (cfs)	Water year	Date	Gage height (feet)	Discharge (cfs)
1953 a/	-	-	-	1956	Feb. 22, 1956	18.23	3,740
1954 a/	-	-	-	1957 a/	-	-	-
1955 a/	-	-	-				

a No flow.

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Base map by U.S. Weather Bureau

MAP SHOWING AVERAGE ANNUAL RUNOFF, IN INCHES, FOR PERIOD 1930–57

Base map by U.S. Weather Bureau

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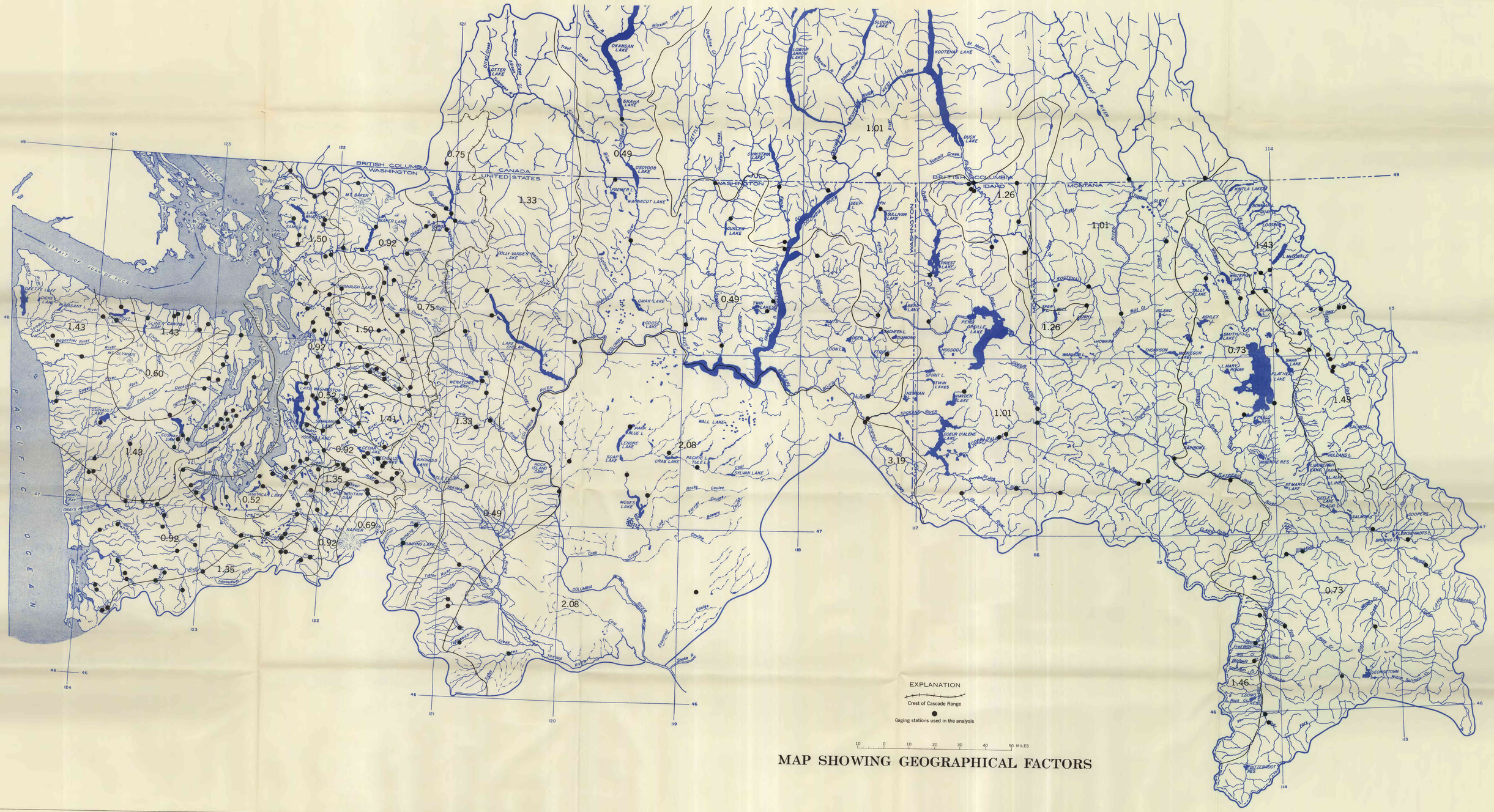

MAP SHOWING GEOGRAPHICAL FACTORS

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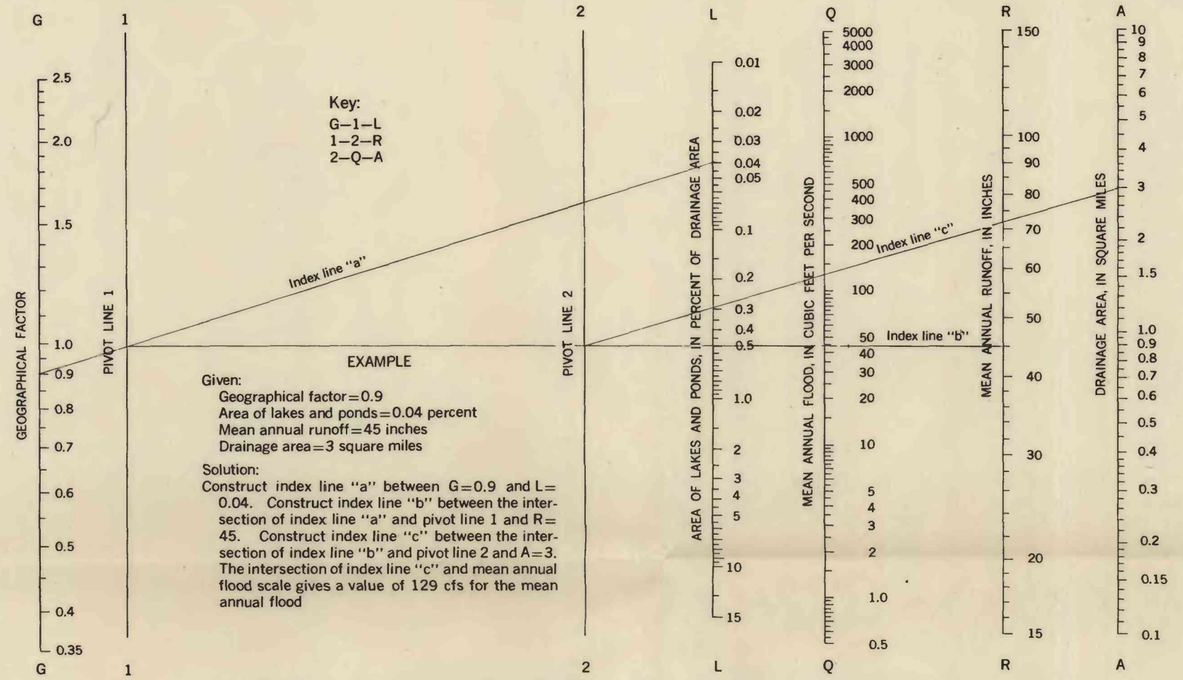
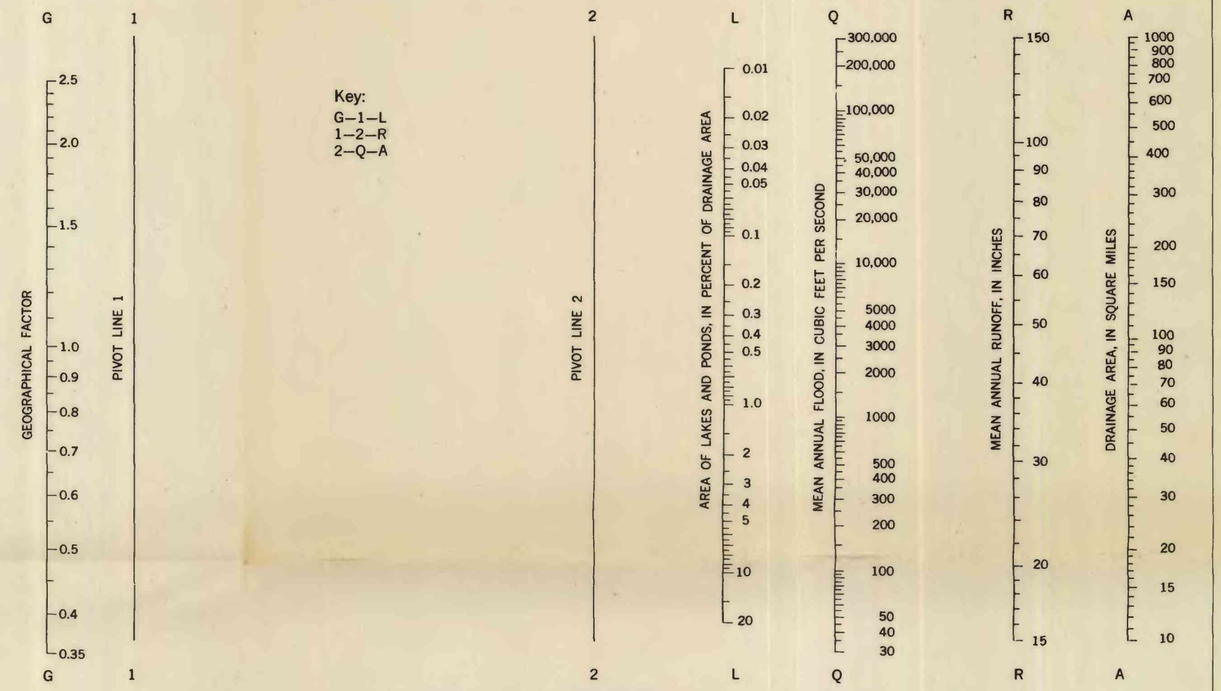
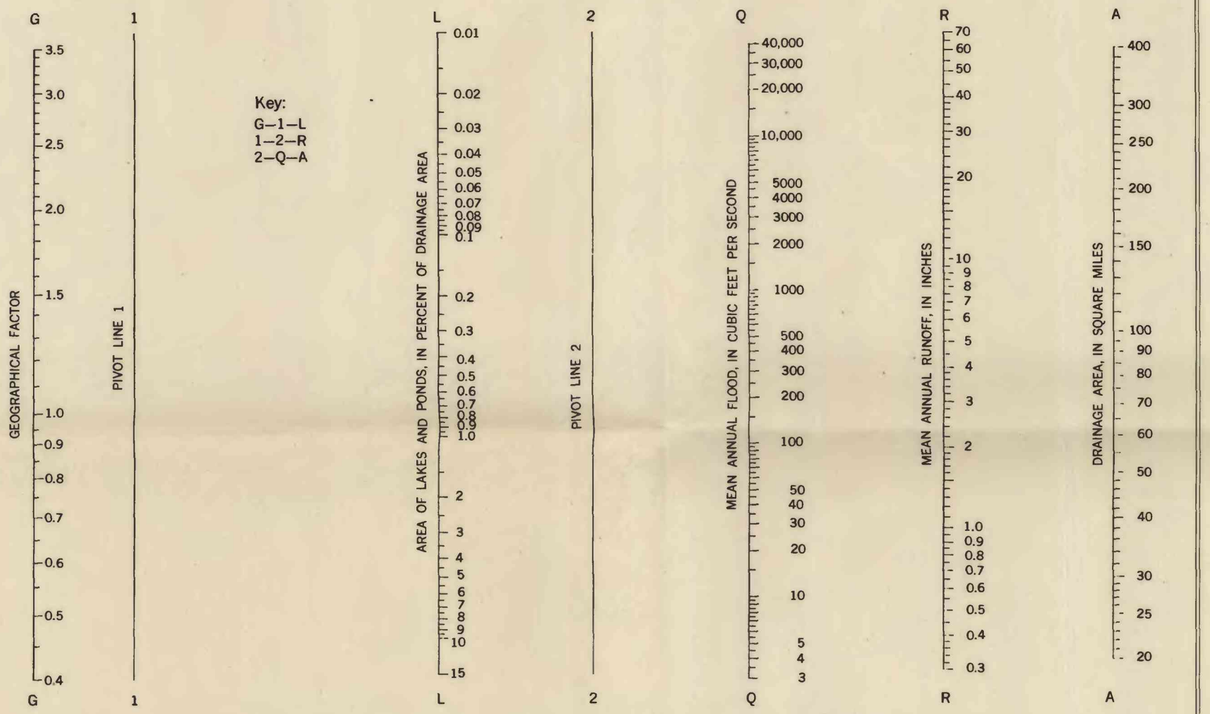


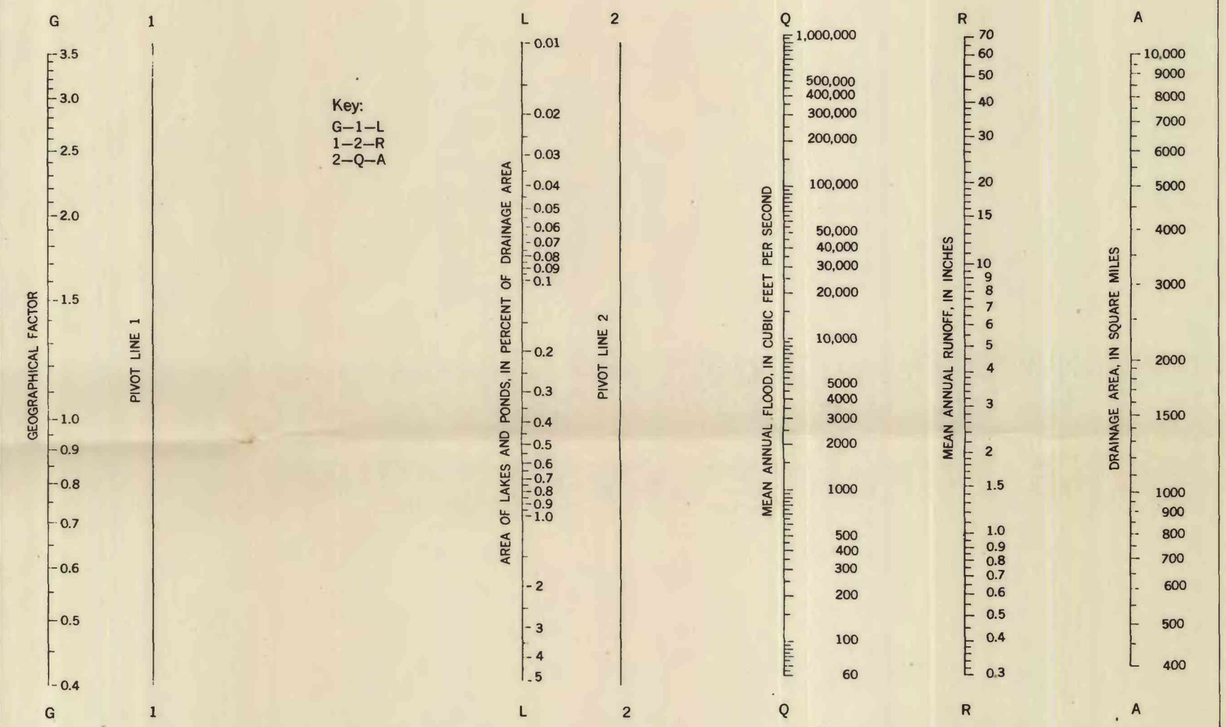
A. DRAINAGE AREAS OF 0.1 TO 10 SQUARE MILES IN PACIFIC SLOPE BASINS



B. DRAINAGE AREAS OF 10 TO 1000 SQUARE MILES IN PACIFIC SLOPE BASINS



C. DRAINAGE AREAS OF 20 TO 400 SQUARE MILES IN UPPER COLUMBIA RIVER BASIN



D. DRAINAGE AREAS OF 400 TO 10,000 SQUARE MILES IN UPPER COLUMBIA RIVER BASIN

NOMOGRAPHS FOR COMPUTING MEAN ANNUAL FLOODS

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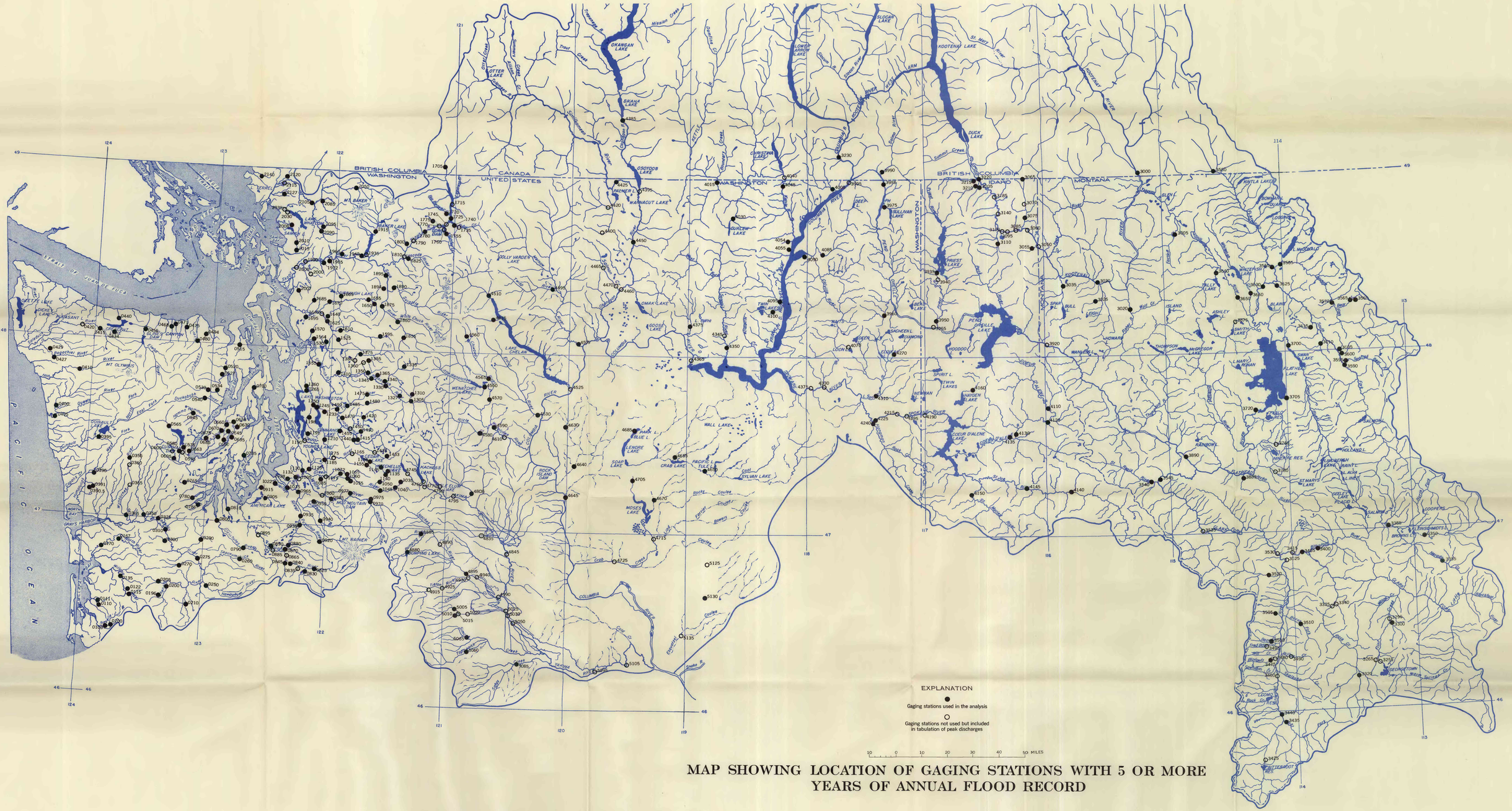

MAP SHOWING LOCATION OF GAGING STATIONS WITH 5 OR MORE YEARS OF ANNUAL FLOOD RECORD

Base map by U.S. Weather Bureau

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