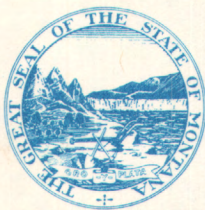
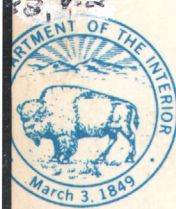
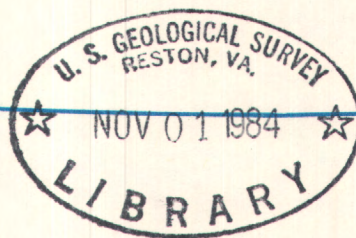
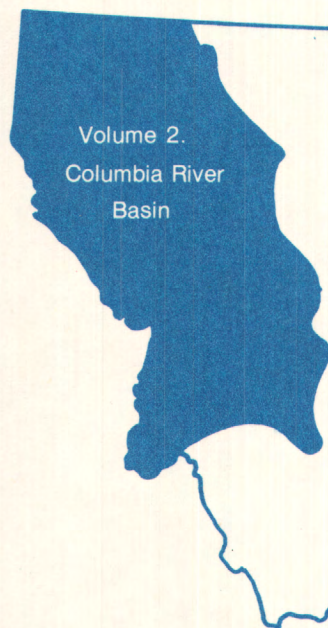


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Water Resources Data Montana Water Year 1983

Volume 2. Columbia River Basin



Volume 1.
Hudson Bay Basin
Missouri River Basin

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-83-2
Prepared in cooperation with the State of Montana
and with other agencies

CALENDAR FOR WATER YEAR 1983

1982

OCTOBER

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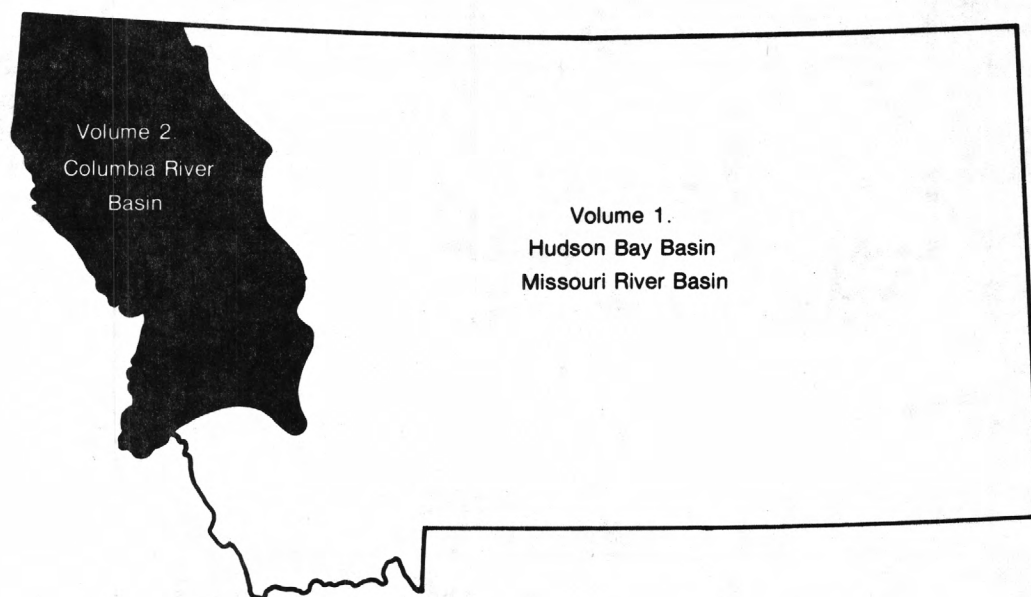
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Water Resources Data Montana Water Year 1983

Volume 2. Columbia River Basin

by R.R. Shields, J.R. Knapton, M.K. White, M.A. Jacobson, and M.L. Kasman



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-83-2
Prepared in cooperation with the State of Montana
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, SECRETARY

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in Montana write to
District Chief, Water Resources Division
U.S. Geological Survey
301 South Park Avenue
Federal Office Building, Room 428
Drawer 10076
Helena, Montana 59626

PREFACE

In the act that established the U.S. Geological Survey more than a century ago, the agency was charged by Congress with the responsibility for "...classification of the public lands, and examination of the geologic structure, mineral resources, and products of the national domain." This charge was simple recognition of the principle that factual information is essential to sound development and management decisions involving natural resources. In keeping with this principle, the Water Resources Division of the Survey publishes annually, by district, hydrologic records for water resources thought to be of particular usefulness to the public and to the scientific community.

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

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Stanley C. Wells typed the text of the report.

This report is one of a series issued State by State under the general direction of Philip Cohen, Chief Hydrologist, and J. E. Biesecker, Assistant Chief Hydrologist for Scientific Publications and Data Management. This report was prepared by the U.S. Geological Survey in cooperation with the State of Montana and with other agencies, under the supervision of G. M. Pike, District Chief, and A. Clebsch, Jr., Regional Hydrologist, Central Region.

Data for Montana are in two volumes as follows:

Volume 1. Hudson Bay and Missouri River
Basins

Volume 2. Columbia River Basin

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17. Document Analysis a. Descriptors *Montana, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water analyses. b. Identifiers/Open-Ended Terms c. COSATI Field/Group				
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GAGING STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

(Letter after station name designates types of data. (d) discharge.
(c) chemical, (b) biological, (m) microbiological, (t) water temperature,
(s) sediment, (e) elevations or contents)

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WATER RESOURCES DATA FOR MONTANA, 1983

Volume 1: Hudson Bay and Missouri River Basins
Volume 2: Columbia River Basin

INTRODUCTION

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

Water resources data for the 1983 water year for Montana consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels of ground-water wells. This volume contains records for water discharge at 54 gaging stations; stage and contents at 3 lakes and reservoirs; water quality at 24 gaging stations, 3 water-quality stations; and 3 lake stations; and water levels at 13 observation wells. Also included are data for 22 crest-stage partial-record stations and 20 smaller reservoirs. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. A few pertinent stations in bordering States are also included in this report. In volumes 1 and 2, the locations of gaging stations are shown in figure 4, ground-water observation wells are shown on figure 5, and water-quality stations are shown on figure 5. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities of the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, Virginia, 22304-4658.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report 83-2." These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (406) 449-5263.

COOPERATION

The U.S. Geological Survey and organizations of the State of Montana have had cooperative agreements for the systematic collection of streamflow records since 1906, for ground-water levels since 1964, and for water-quality records since 1946. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Montana Department of Natural Resources and Conservation
L. Berry, director

Montana State Highway Commission
G. Wicks, director of highways

Montana Department of Fish, Wildlife, and Parks
J. W. Flynn, director

Montana Department of Health and Environmental Sciences
Dr. J. J. Drynan, director

Montana State University
J. Jutila, vice-president for research

Montana Department of State Lands
D. Hemmer, commissioner of state lands

Montana Bureau of Mines and Geology
Dr. E.C. Bingler, director

The following organizations aided in collecting records:

The Montana Power Company, The Washington Power Company, and Pacific Power and Light Company.
Organizations that supplied data are acknowledged in station descriptions.

WATER RESOURCES DATA FOR MONTANA, 1983

GENERAL HYDROLOGIC SETTING

The upper Columbia River basin in western Montana is composed of three major river systems. They are: the Kootenai River, which flows through Montana from its headwaters in British Columbia, Canada; the Clark Fork (River) that originates in Montana; and the Flathead River, whose North Fork headwaters are in British Columbia. The Flathead River joins with the Clark Fork near Plains, Mont., and flows northwest from the State as the Clark Fork. The upper Columbia River basin lies in the Northern Rocky Mountain physiographic province, which is characterized by densely forested mountains and intermontane valleys where most of the area's population has settled. The range in elevation of the basin is dramatic. Where the Kootenai River flows from the State, the elevation is about 1,800 feet above sea level in contrast to an elevation of about 10,000 feet at the Continental Divide in Glacier National Park. The upper Columbia River basin occupies about 17 percent of the State; however, runoff from the basin is greater than 50 percent of the State's total streamflow.

Annual precipitation varies considerably throughout the basin, from about 15 inches in the lower valleys to about 120 inches along the Continental Divide in Glacier National Park. Much of this precipitation occurs as snow during the winter. Peak runoff from the basin can result from either spring snowmelt or spring snowmelt mixed with rain during May and June. The June 1964 flood is an example of this type of snow-rainfall runoff. The northwestern part of the basin is sometimes affected by warm, wet Pacific storm fronts during the winter that can bring intense rains and thawing conditions that can cause major flooding. The January 1974 flood is an example of this type of flood runoff.

Water generally is suitable for all uses throughout the basin, being a calcium bicarbonate type with relatively small concentrations of dissolved solids. Water supplies from alluvial, glacial-deposit, and bedrock aquifers supply most domestic and livestock needs. The largest supplies of ground water generally occur in the alluvium of the intermontane valleys.

WATER ISSUES--1983 WATER YEAR

Ten streamflow and water-quality stations were installed on the Flathead Indian Reservation during the 1983 water year to aid in the assessment of the reservation's water resources. One additional station was installed on Lake Creek near Troy, Mont., to fulfill the streamflow-gaging requirements of the Federal Energy Regulatory Commission license, project number 2594. Three streamflow stations were discontinued at the end of the water year.

Of continued concern to water managers in the basin are: potential hydrologic effects of large surface coal mines being developed or planned in Canadian watersheds of the Flathead River; a copper-silver mine with a 7-mile slurry pipeline to a tailing impoundment in the Lake Creek valley south of Troy; hazardous-waste sites near Libby where wood preservatives have been detected in the ground water; and a site at Milltown, Mont., where large concentrations of arsenic were detected in water from four domestic wells. Other major concerns are the effects on water quality of abandoned mines and mining activities in the upper Clark Fork drainage, and the development or potential development of small-scale diversion projects for hydroelectric power. To aid planners and developers of the mountain streams in western Montana, work was completed by Geological Survey personnel on an evaluation of streamflow characteristics of many streams. Once-monthly streamflow measurements were used to estimate long-term mean annual flow, mean monthly flow, and various points on the flow-duration curve for 72 sites in mountainous parts of the basin.

SUMMARY OF HYDROLOGIC CONDITIONS -- 1983 WATER YEAR

Precipitation and temperature

The 1983 water year in the upper Columbia River basin was characterized by minor variations in hydrologic conditions. Precipitation data published by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service for 41 stations in western Montana indicate that precipitation for the year was normal. The distribution of that precipitation, however, was not normal. The winter period, as indicated by precipitation data of the National Weather Service and snow data compiled by the U.S. Department of Agriculture, Soil Conservation Service, was less than normal. From October 1982 to March 1983 precipitation for the reporting stations in western Montana averaged 9.82 inches, which is a departure of -1.08 inches from normal. Most National Weather Service stations measure only valley precipitation. Mountain precipitation occurring as snow during the winter is listed by the Soil Conservation Service in the report "Water Supply Outlook for Montana." According to the April 1 and May 1, 1983 reports, snowpack generally was 70 to 90 percent of normal for most of the basin, with the Bitterroot River drainage in the southwestern part of the basin receiving less than 70 percent. Conversely, a small part of the Kootenai River basin had snowpack of 130 percent of normal.

From April 1983 through September 1983 precipitation, as reported by the National Weather Service, averaged 10.78 inches, a departure of +1.49 inches from normal, with most of the increase occurring during July. July precipitation was 160 percent of normal. Precipitation for the 1983 water year was 20.60 inches, a departure of +0.41 inch (2 percent) from normal.

Temperatures for the year generally were normal. However, from January to March temperatures averaged 6 to 8 degrees greater than normal.

Streamflow

Streamflow data for the 1983 water year are compared to data for the 1961-80 water years at three long-term streamflow stations (fig. 1). The effects of less than normal snowpack and greater than normal winter temperatures are apparent from the graph of the Middle Fork Flathead River near West Glacier (station 12358500). The effects of greater than normal snowpack in the Kootenai River basin are evident from the Yaak River graph. All three of the long-term stations reflect greater than normal precipitation in July. The Yaak River data show that flows were nearly the highest of record for July, undoubtedly reflecting the large quantity of precipitation and the earlier snowpack conditions. Even though the yearly precipitation was normal, the lack of snowpack in the Clark Fork and Flathead River drainages is apparent in the graphs showing yearly averages. Both long-term stations recorded 82 percent of the 1961-80 yearly mean discharge. However, in the Kootenai River basin where snowpack was greater than normal, the index station on the Yaak River recorded an annual flow that was 110 percent of the 1961-80 average.

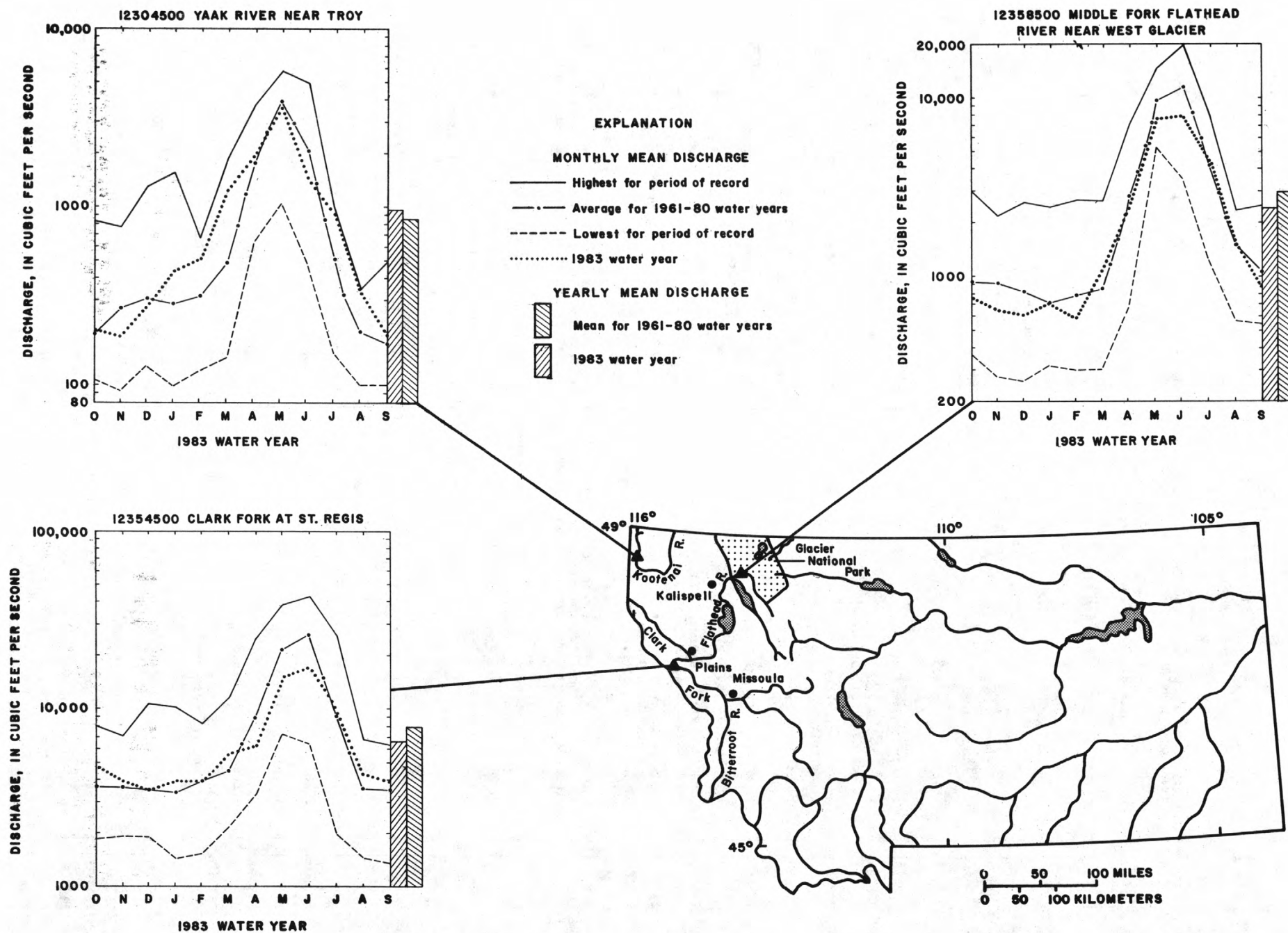


FIGURE 1.—STREAMFLOW DATA FOR THE 1983 WATER YEAR COMPARED TO DATA FOR THE 1981-80 WATER YEARS AT LONG-TERM STATIONS.

WATER RESOURCES DATA FOR MONTANA, 1983

No extraordinary flood flows were recorded during the 1983 water year. Peak discharges for several representative streamflow-gaging stations in the basin are listed in table 1.

Table 1.--Comparison of peak discharge for the 1983 water year with peak discharge for the period of record at long-term stations
[<, less than]

Station number	Station name	Drainage area (square miles)	Peak discharge, 1983 water year			Peak discharge, period of record	
			Date	Cubic feet per second	Recurrence interval (years)	Date	Cubic feet per second
12301300	Tobacco River near Eureka	440	04-25	1,400	<2	06-18-74	2,470
12304500	Yaak River near Troy	766	05-26	6,350	<2	05-21-56	12,100
12332000	Middle Fork Rock Creek near Philipsburg	123	05-30	869	<2	06-16-74	1,680
12335500	Nevada Creek above reservoir, near Finn	116	05-27	270	<2	06-02-53	1,800
12340000	Blackfoot River near Bonner	2,290	05-30	7,760	<2	06-10-64	19,200
12340500	Clark Fork above Missoula	5,999	05-30	13,900	<2	06-21-75	32,300
12354500	Clark Fork at St. Regis	10,709	05-31	36,600	<2	05-24-48	68,900
12355500	North Fork Flathead River near Columbia Falls	1,548	05-27	20,000	2	06-09-64	69,100
12358500	Middle Fork Flathead River near West Glacier	1,128	05-27	17,400	<2	06-09-64	140,000
12370000	Swan River near Bigfork	671	06-01	4,860	<2	06-20-74	8,890

No periods of extended low flows were recorded this year. Minimum daily discharge for the same streamflow-gaging stations used in the peak-flow comparison are listed in table 2. All low flows were less than the 2-year recurrence interval for the 1-day minimum flows and considerably greater than minimums for the period of record.

Table 2.--Comparison of minimum daily discharge for the 1983 water year with minimum discharge for the period of record at long-term stations
[>, greater than <, less than]

Station number	Station name	Drainage area (square miles)	Minimum daily discharge, 1983 water year			Minimum discharge, period of record	
			Date	Cubic feet per second	Recurrence interval (years)	Date	Cubic feet per second
12301300	Tobacco River near Eureka	440	12-25	60	>2	01-11-63	20
12304500	Yaak River near Troy	766	11-15	117	>2	12-09-72	50
12332000	Middle Fork Rock Creek near Philipsburg	123	11-24	20	>2	02-09-53	5.3
12335500	Nevada Creek above reservoir, near Finn	116	12-08	9.0	>2	At times 1944, 1957 1972, 1973	<2.0
12340000	Blackfoot River near Bonner	2,290	12-10	390	>2	01-4, 5-50	200
12340500	Clark Fork above Missoula	5,999	1-1, 2	1,150	>2	09-27-37	340
12354500	Clark Fork at St. Regis	10,709	01-02	2,000	>2	01-10-80	870
12355500	North Fork Flathead River near Columbia Falls	1,548	01-02	580	>2	01-08-53	198
12358500	Middle Fork Flathead River near West Glacier	1,128	01-02	389	>2	11-27-52	<173
12370000	Swan River near Bigfork	671	02-06	422	>2	01-26-29-30	193

WATER RESOURCES DATA FOR MONTANA, 1983

Quality of streamflow

Specific conductance can be used to approximate dissolved-solids concentrations in water, because it is related to the concentration and types of ions in the water. At Kootenai River below Libby Dam, near Libby (station 12301933) the following relationship exists:

$$\text{Dissolved-solids concentration} = 4.17 + (0.547 \times \text{specific conductance})$$

Specific conductance was measured at the station once a month during the 1983 water year. The mean value for the 12 measurements was 234 micromhos per centimeter at 25°C, with values ranging from 204 to 283 micromhos. Although the range was about the same as that measured the previous year, the mean value was slightly less than the mean of 247 micromhos for the 1982 water year as well as the mean of 259 micromhos for the period since impoundment of water in the reservoir. The slight decrease in specific conductance for 1983 based on the mean for the period of record may have resulted from streamflow during 1983, which was 4 percent larger than normal.

Both total phosphorous and dissolved orthophosphorous continued to remain at relatively small concentrations during the 1983 water year, with respective mean values of <0.008 and <0.003 milligram per liter. Nutrient enrichment in the Kootenai River and Lake Koocanusa has been a concern in the past, because of the discharge of phosphate-enriched effluent from an upstream fertilizer-processing plant. Maximum measured concentrations of dissolved phosphorous occurred near the end of the 1960's. Pollution-abatement practices then improved and concentrations gradually decreased through the early to mid-1970's. The mean dissolved phosphorous concentration at the station for 1975-82 was about 0.010 milligram per liter. Although dissolved phosphorous was not measured during the 1983 water year, results from the measurement of total phosphorous and dissolved orthophosphorous indicate that phosphorous concentration levels are normal when compared to those of the previous 9 years.

In the upper Columbia River basin, water quality is measured at the following three National Stream Quality Accounting Network (NASQAN) stations:

- 12353000 Clark Fork below Missoula, Montana;
- 12355000 Flathead River at Flathead, British Columbia; and
- 12363000 Flathead River at Columbia Falls, Montana.

The station, Clark Fork below Missoula (station 12353000), was sampled on a bimonthly schedule, with the remaining two stations being sampled quarterly. The mean dissolved-solids concentration for the 1983 water year at all three stations was slightly less than the mean concentration for the period of record, but in all instances was well within one standard deviation of the mean concentration for the period of record (fig. 2).

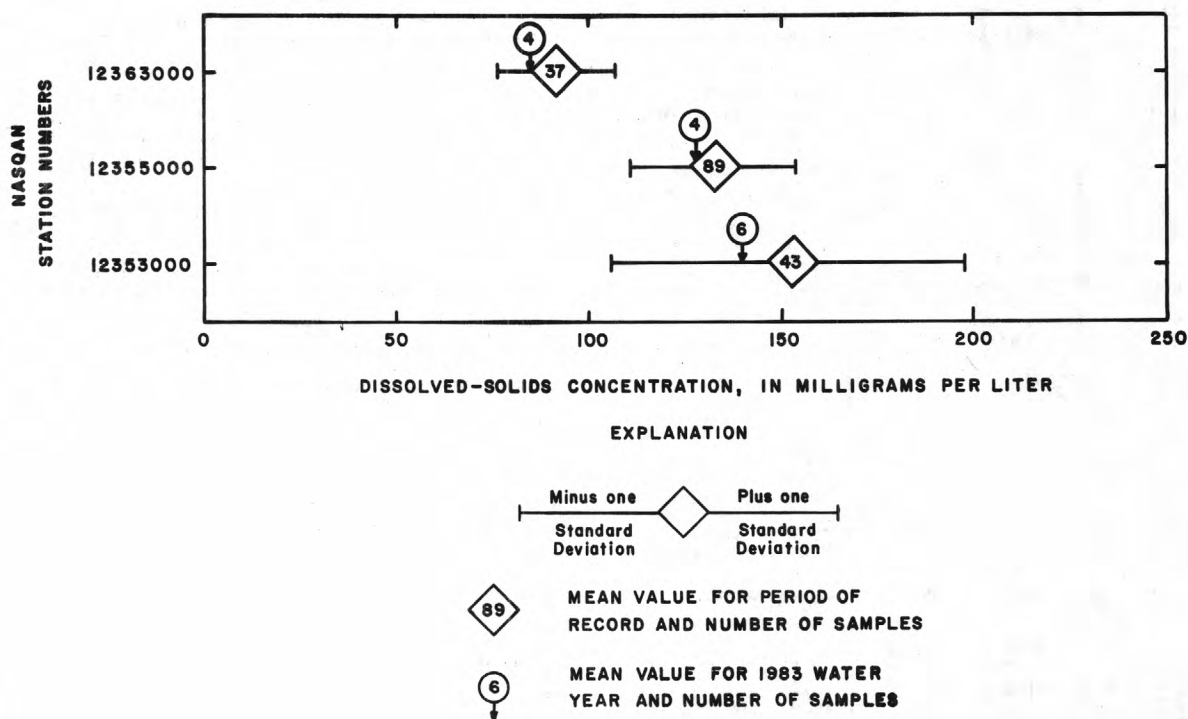


Figure 2.--Mean dissolved solids concentrations of NASQAN station

WATER RESOURCES DATA FOR MONTANA, 1983

Concentrations of major ions and minor elements were about normal at the three stations. Dissolved ammonia, among the nutrient constituents, showed larger than normal values at both Clark Fork below Missoula (station 12353000) and Flathead River at Flathead, British Columbia (station 12355000). During the February sampling at both stations, respective values of dissolved ammonia were 0.36 and 0.28 milligram per liter. Streamflow conditions were near normal and no reasons are known for the anomalies.

Ground water

In Montana the U.S. Geological Survey monitors several observation wells in the intermontane basins west of the Continental Divide (Region 12). Other wells, known as project wells, are used for specific (generally short-term) studies. Although the project wells are not part of the observation-well program, data obtained from them also are made available.

Ground-water levels in most areas were lower than average throughout the year and the same as or lower than the preceding year. In the Bitterroot Valley the water levels were about the same or somewhat higher than last year. In the downstream parts of the Flathead and Lake Creek drainages, water levels generally were lower than average and lower than last year. Water levels near Lake Koocanusa, on the Kootenai River, continued a trend of gradual rise since the reservoir was filled in 1972.

Industrial and irrigation pumpage continued to have little or no effect in the Kalispell and Missoula areas of the Clark Fork. Water levels in these areas were about average and about the same as last year.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report are defined below. See also the table for converting Inch-Pound units to International System of units (SI) on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,500 cubic feet or about 326,000 gallons or 1,233 cubic meters.

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

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

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

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

Fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at $44.5^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Non-ideal colony count (k) is a remark code used in reporting bacteria densities when plate counts fall outside of an ideal range. The lower limit of 20 colonies is set as the number below which statistically valid results become increasingly questionable. The upper limit, which differs according to type of bacteria, represents numbers above which interference from colony crowding, deposition of extraneous material, and other factors appear to result in increasingly questionable results.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C . In the laboratory these bacteria are defined as the organisms which produce colonies within 24 hours when incubated at $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

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Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

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

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

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

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

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

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

Cubic foot per second (FT³/s, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

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

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

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

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

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

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

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

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

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

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

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

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO₃).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Map; each hydrologic unit is identified by an 8-digit number.

Micrograms per gram (µg/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

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

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

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

Particle-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

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

Classification	Size (mm)	Method of analysis
Clay	0.00024 - 0.004	Sedimentation.
Silt004 - .062	Sedimentation.
Sand062 - 2.0	Sedimentation or sieve.
Gravel	2.0 - 64.0	Sieve.

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

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

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

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

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

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

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

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

Milligrams of carbon per area per unit time ($\text{mg C/m}^2 \cdot \text{time}$) for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

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

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

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

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

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

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

WATER RESOURCES DATA FOR MONTANA, 1983

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge (ft^3/s) times suspended-sediment concentration (mg/L) times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Sodium-absorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetables, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C . Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

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

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

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

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

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a $0.45\ \mu\text{m}$ membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determination of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sample that is retained on a $0.45\ \mu\text{m}$ membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determination of "suspended, total" constituents are made either by analyzing portions of material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Temperature recorder is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that records water temperature in a digital format on punched paper.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

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

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

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

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

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed in Formazin turbidity units (FTU), obtained from the Nephelometric method for turbidity determination which measures the intensity of light scattered by suspended particles at 90 degrees from the path of an incident light source. Formazin polymer is used as the reference turbidity standard suspension.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1983, is called the "1983 water year."

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

Wet deposition is a collective term for all material removed from the atmosphere when it is raining, snowing, and the like. Wet deposition includes gases, liquids, and solids that are dissolved in precipitation, as well as insoluble dust and other particulate matter that is either "rained out" or "washed out" of the atmosphere. Analyses are performed only on those constituents that become dissolved in wet deposition.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

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

DOWNSTREAM ORDER AND STATION NUMBER

All data stations, whether streamsite or well, in this report are assigned an identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and for surface-water stations where only miscellaneous measurements are made. Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated, with respect to the stream to which it is immediately tributary, is indicated by an indentation in a list of stations in the front of the report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 06090500, which appears just to the left of the station name includes the 2-digit part number "06" plus the 6-digit, downstream order number "090500". Records in this volume are in Part 12 (Columbia River basin). All records for a drainage basin encompassing more than one State can be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

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The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 3 below.

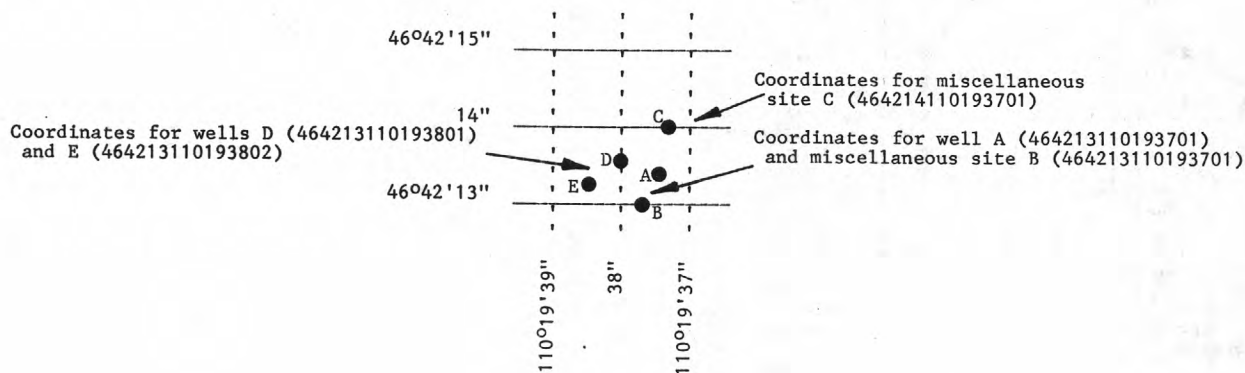


Figure 3. System for numbering wells and miscellaneous sites (latitude and longitude)

SPECIAL NETWORKS AND PROGRAMS

Some of the stations for which data are published in this report are included in special networks and programs. These stations are identified by their title, set in parentheses, under the station name.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. A real configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict a real variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality. Stations in this network in this volume are listed below:

12353000	Clark Fork below Missoula, MT
12355000	Flathead River at Flathead, British Columbia
12363000	Flathead River at Columbia Falls, MT

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and Computation of Data

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

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

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observation of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method, in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations in Montana the stage-discharge relation is usually affected by ice from November to March, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals, a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs, a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30. Records for some gaging stations on streams or canals in Canada and along the international boundary are published on an irrigation season basis and the tables of daily discharge generally show data from March through October. A calendar for the current water year is shown on the reverse side of the back cover to facilitate finding the day of the week for any date.

Information is provided with each complete record of discharge or lake content. Comments to follow clarify information under the various headings.

LOCATION.--Information on locations is obtained from the most accurate maps available. River mileages were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers or Montana Department of Natural Resources and Conservation, Water Resources Division.

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

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

REVISED RECORDS.--Previously, if a significant error in published records was discovered, a revision was published in the first report following discovery of the error. This paragraph then served to document for users all the reports in which revisions had been published for the station and the water years to which the revisions applied. However, beginning with the 1983 water year, revisions will no longer be published but appropriate changes will be made in WATSTORE files. All previous revisions are, of course, in WATSTORE, and users are encouraged to obtain all required data from the WATSTORE computer files (see the section, "Access to WATSTORE Data").

Under "Revised Records," a year listed without qualification indicates that daily, monthly, or annual discharges were revised. The qualifications (M), (m), and (P) mean that only the instantaneous maximum, the instantaneous or daily minimum, and flood peaks above the base, respectively, have been revised. A "W" for "WATSTORE" will be shown, replacing the name of the data report in which the revised values would previously have been published, for all revisions made after 1982. For example, the notation for indicating that the 1979 water-year daily values for a particular station in Virginia have been revised during the 1983 water year would no longer be "WDR VA-83-1: 1979," but "W 1983: 1979." If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

WATER RESOURCES DATA FOR MONTANA, 1983

GAGE.--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see "Definition of Terms"), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--The remarks contain information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station, and possibly to other pertinent items.

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

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

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

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record. For stations meeting certain criteria, information relative to peak discharges and stages greater than a selected base discharge is presented under this heading. Whereas there can be only one peak discharge for the year, there is a peak discharge for each major rise of the stream. The discharge peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks and are important in many types of detailed hydrologic studies. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. Minimums for the current water year appear below the table of peak data.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharges for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of Field Data and Computed Results

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

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

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 ft³/s; to tenths between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures above 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the figure. No rounding rules apply to discharges listed for partial-record stations and miscellaneous sites. Listed discharges are those actually computed.

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

Other Data Available

Information of a more detailed nature than that published for most of the gaging stations, such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made. Information of the availability of unpublished data or statistical analyses may be obtained from the district office.

Access to WATSTORE Data

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

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

General inquiries about WATSTORE may be directed to:

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

Publications

The annual series of water-supply papers that give information on quantity of surface waters in Montana are given in the following table. Data for the Hudson Bay basin is given in Part 5, for the Missouri River basin in Part 6, and for the Columbia River basin in Part 12.

Table 3.--Water-supply paper numbers containing results of stream measurements in Montana 1899-1970, including compilation reports.

Year	Part 5	Part 6	Part 12	Year	Part 5	Part 6	Part 12
1899	36	36,37	38				
1900	49	49	51,52				
1901	65,66,75	66,75	66,75	1936	805	806	812
1902	83,85	84	85	1937	825	826	832
1903	98,99,100	99	100	1938	855	856	862
1904	128,130	130	135	1939	875	876	882
1905	171	172	178	1940	895	896	902
1906	207	208	214	1941	925	926	932
1907	245	246	252	1942	955	956	962
1908	245	246	252	1943	975	976	982
1909	265	266	272	1944	1005	1006	1012
1910	285	286	292	1945	1035	1036	1042
1911	305	306	312	1946	1055	1056	1062
1912	325	326	332A	1947	1085	1086	1092
1913	355	356	362A	1948	1115	1116	1122
1914	385	386	392	1949	1145	1146	1152
1915	405	406	412	1950	1175	1176	1182
1916	435	436	442	1951	1208	1209	1216
1917	455	456	462	1952	1238	1239	1246
1918	475	476	482	1953	1278	1279	1286
1919	505	506	512	1954	1338	1339	1346
1920	505	506	512	1955	1388	1389	1396
1921	525	526	532	1956	1438	1439	1446
1922	545	546	552	1957	1508	1509	1516
1923	565	566	572	1958	1558	1559	1566
1924	585	586	592	1959	1628	1629	1636
1925	605	606	612	1960	1708	1709	1716
1926	625	626	632	1961-65	1913	1916	1933
1927	645	646	652	1966-70	2113	2116	2133
1928	665	666	672				
1929	685	686	692				
1930	700	701	707				
1931	715	716	722	1950	1308	1309	1316
1932	730	731	737	Compilation			
1933	745	746	752				
1934	760	761	767	1960	1728	1729	1736
1935	785	786	792	Compilation			

WATER RESOURCES DATA FOR MONTANA, 1983

Records of Discharge Collected by Agencies Other than
the Geological Survey

Records of discharge not published by the Geological Survey have been collected at numerous sites by many other Federal, State, County, City, local agencies, and by private organizations. The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of such sites. Information on records at specific sites can be obtained upon request.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and Examination of Data

Surface-water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, water temperatures, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water Analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

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

Prior to the 1968 water year, data for chemical constituents and concentrations of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit ($^{\circ}\text{F}$). In October 1967, the Geological Survey began reporting data for chemical constituents and concentrations of suspended sediment in milligrams per liter (mg/L) and water temperatures in degrees Celsius ($^{\circ}\text{C}$). In waters with a density of 1.000 gram per milliliter (g/mL), parts per million and milligrams per liter can be considered equal. In waters with a density greater than 1.000 g/mL, values in parts per million should be multiplied by the density to convert to milligrams per liter.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per liter instead of milligrams per liter. See "Definition of Terms" for converting English units to SI units.

Water Temperature

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

For stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

At stations where recording instruments are used, either maximum and minimum temperatures, or maximum, minimum, and mean temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross-section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

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

WATER RESOURCES DATA FOR MONTANA, 1983

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

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

Table 4.--Descriptor values for weather conditions.

0	Cloudless	70	Snow or sleet
1	Partly cloudy	71	Slight snow in flakes, intermittent
2	Cloudy	72	Slight snow in flakes, continuous
3	Overcast	73	Moderate snow in flakes, intermittent
10	Precipitation within sight	74	Moderate snow in flakes, continuous
13	Ugly, threatening sky	75	Heavy snow in flakes, intermittent
40	Fog	76	Heavy snow in flakes, continuous
50	Drizzle	77	Snow and fog
51	Slight drizzle, intermittent	78	Granular snow (frozen drizzles)
52	Slight drizzle, continuous	79	Ice crystals
53	Moderate drizzle, intermittent	80	Showers
54	Moderate drizzle, continuous	81	Slight or moderate rain shower (s)
55	Thick drizzle, intermittent	82	Heavy rain shower (s)
56	Thick drizzle, continuous	83	Slight or moderate snow shower (s)
57	Drizzle and fog	84	Heavy snow shower (s)
58	Slight or moderate drizzle and rain	85	Slight or moderate rain and snow shower (s)
59	Thick drizzle and rain	86	Heavy rain and snow shower (s)
60	Rain	87	Granular snow shower (s)
61	Slight rain, intermittent	88	Slight or moderate hail or rain and hail shower (s)
62	Slight rain, continuous	90	Thunderstorm
63	Moderate rain, intermittent	93	Slight thunderstorm with rain or snow
64	Moderate rain, continuous	94	Slight thunderstorm with hail
65	Heavy rain, intermittent	95	Moderate thunderstorm with rain or snow
66	Heavy rain, continuous	96	Moderate thunderstorm with hail
67	Rain and fog	97	Heavy thunderstorm with rain or snow
68	Slight or moderate mixed rain and snow	99	Heavy thunderstorm with hail
69	Heavy mixed rain and snow		

Water Quality Revisions

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

WATER RESOURCES DATA FOR MONTANA, 1983

Publications

The annual series of water-supply papers that give information on quality of surface waters in Montana are shown in the following table. Data for Hudson Bay and Missouri River basins are given in parts 5-6 and data for Upper Columbia River basin are given in part 12.

Table 5.--Water-supply paper numbers and parts, water years, 1947-70.

<u>Year</u>	<u>Parts</u> <u>5-6</u>	<u>Part</u> <u>12</u>	<u>Year</u>	<u>Parts</u> <u>5-6</u>	<u>Part</u> <u>12</u>
1947	1102	----	1959	1643	1645
1948	1132	----	1960	1743	1745
1949	1162	----	1961	1883	1885
1950	1187	----	1962	1943	1945
1951	1198	1200	1963	1949	1951
1952	1251	1253	1964	1956	1959
1953	1291	1293	1965	1963	1966
1954	1351	1353	1966	1993	1996
1955	1401	1403	1967	2013	2016
1956	1451	1453	1968	2095	2100
1957	1521	1523	1969	2145	2150
1958	1572	1574	1970	2155	2160

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the Data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 3.

Measurements are made in many types of wells, under varying conditions of access and at different temperature hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either National Geodetic Vertical Datum of 1929 or land-surface datum (lsd). National Geodetic Vertical Datum of 1929 is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above National Geodetic Vertical Datum of 1929 is given in the well description. The height, or the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

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

Publications

Publication of ground-water level data for the United States in water-supply papers was begun by the Geological Survey in 1935. From 1935 through 1939, a single water-supply paper for each year covering the entire nation was issued (Water-Supply Papers--777, 817, 840, 845, and 886). From 1940 through 1974, separate water-supply papers were issued for 6 sections of the United States. Water-level data for Montana are in the water-supply papers listed in the following table, each report containing one or more calendar years (January-December) of data. Data in this report are for the 12-month water year ending September 30.

Table 6.--Water-supply paper numbers for Northwestern United States, calendar years 1940-1974

<u>Year</u>	<u>WSP No.</u>	<u>Year</u>	<u>WSP No.</u>	<u>Year</u>	<u>WSP No.</u>
1940	910	1947	1100	1954	1325
1941	940	1948	1130	1955	1408
1942	948	1949	1160	1956-60	1760
1943	990	1950	1169	1961-65	1845
1944	1020	1951	1195	1966-70	1980
1945	1927	1952	1225	1971-74	2161
1946	1075	1953	1269		

Information about reports and other data on ground water in Montana may be obtained from the district office, at the address given on the back of the title page.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-seven manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604 South Pickett St., Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel and dispersion in streams by dye tracing*, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P. E. Greeson, T. A. Ehlike, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. I. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

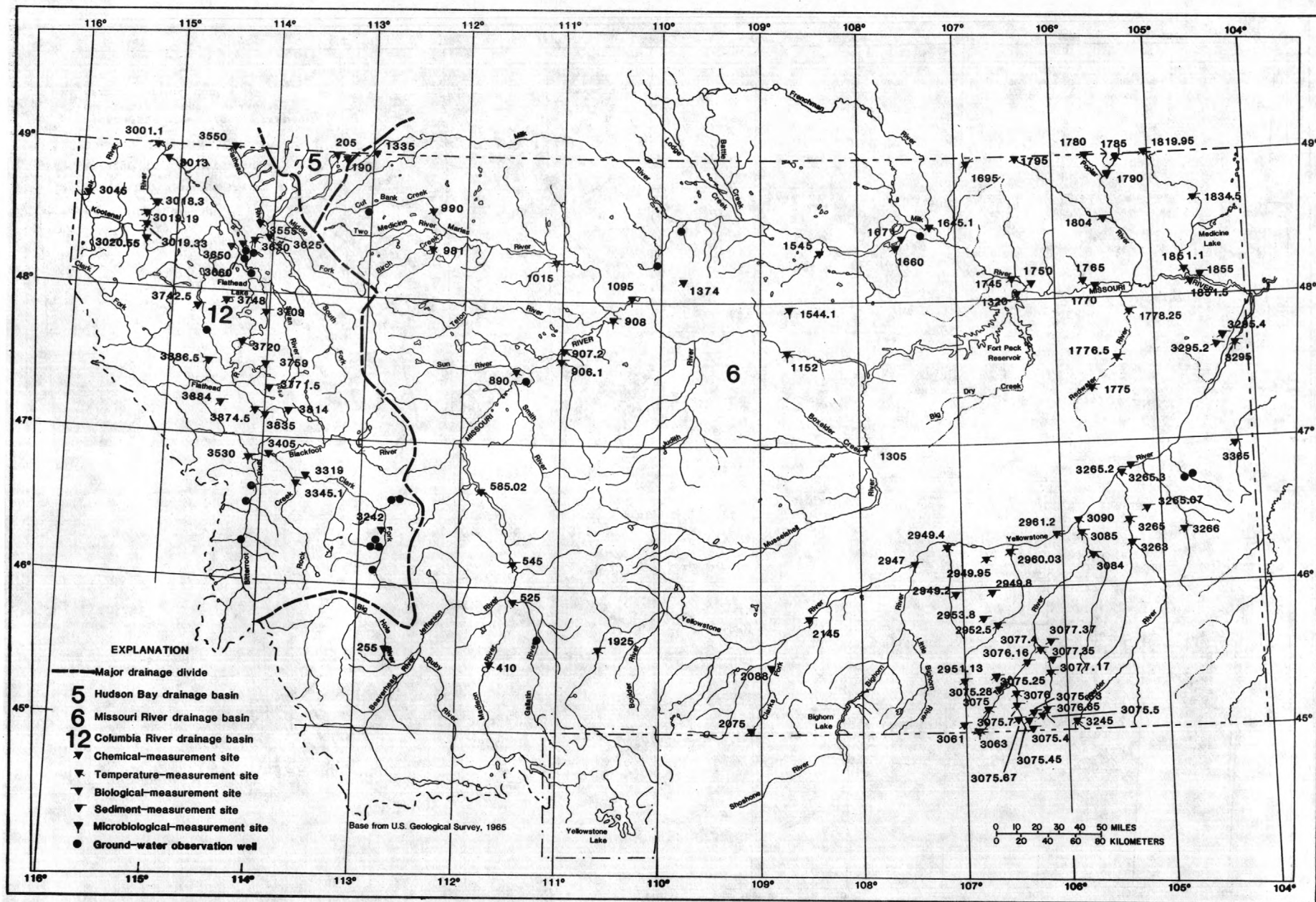


FIGURE 5.--LOCATION OF WATER-QUALITY STATIONS AND GROUND-WATER OBSERVATION WELLS, 1983 WATER YEAR.

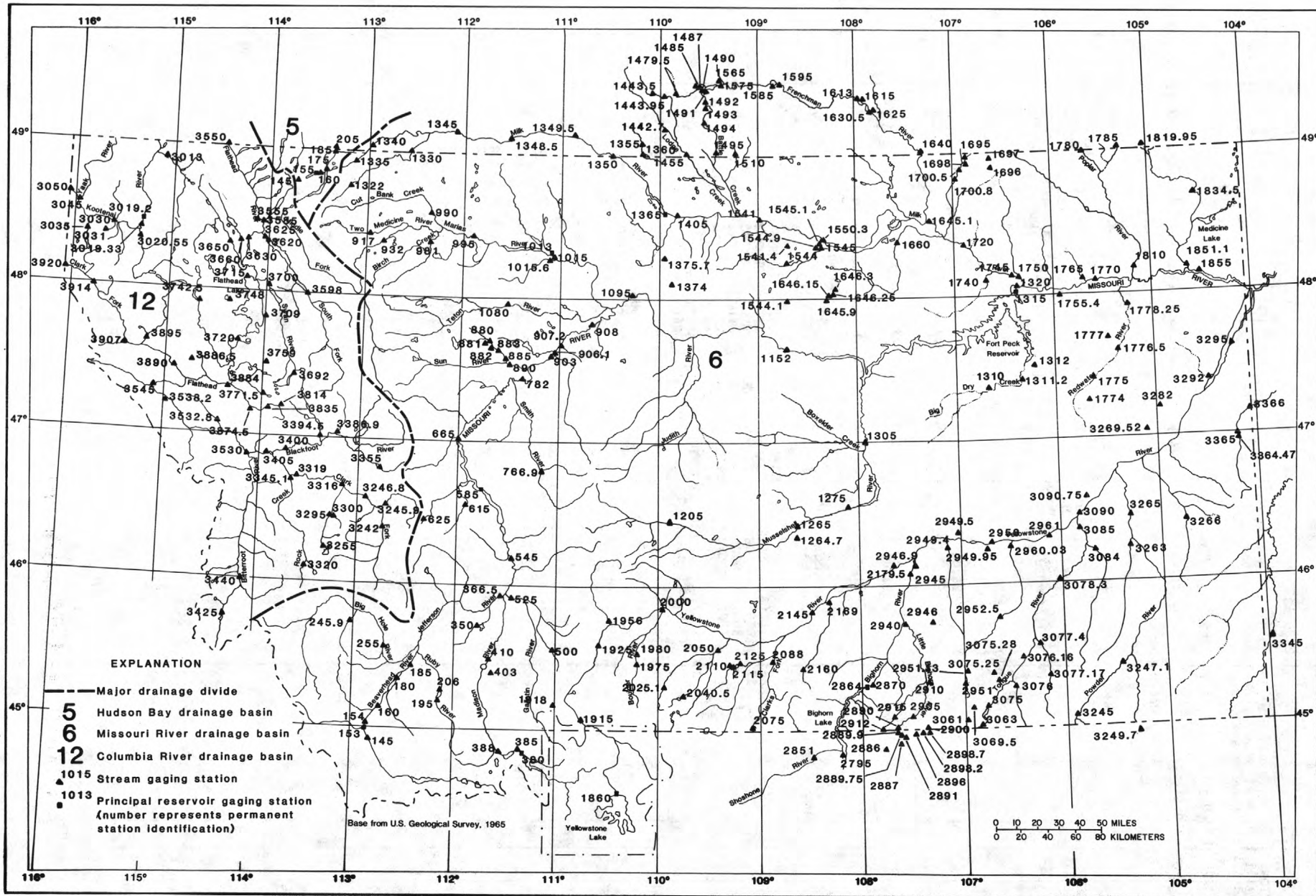


FIGURE 4.--LOCATION OF SURFACE-WATER GAGING STATIONS, 1983 WATER YEAR.

PART 12. UPPER COLUMBIA RIVER BASIN

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY

LOCATION.--Lat 48°59'44", long 115°10'43", in NE¼SW¼SE¼ sec.1, T.37 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, 0.3 mi south of international boundary, in middle of old channel 1.9 mi upstream from Young Creek, and 6.4 mi north of Rexford.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Depth-distribution profiles of primary productivity are available in files in Helena district office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	ELEV- ATION ABOVE NGVD (FEET) (72020)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT									
14...	1000	10	2456.00	40	210	8.5	10.0	13.8	9.2
14...	1100	139	2456.00	40	207	8.0	--	9.6	6.0
JUN									
15...	1000	10	2428.00	60	206	8.5	10.0	14.8	10.4
15...	1100	104	2428.00	60	184	8.2	--	10.6	9.8
JUL									
12...	1000	10	2453.00	2	201	8.4	19.0	16.1	9.5
12...	1004	30	--	--	200	8.3	--	15.1	9.5
12...	1100	130	2453.00	2	223	8.0	--	9.3	8.6
AUG									
17...	1030	10	2459.00	--	--	8.6	24.0	19.4	9.4
17...	1130	134	2459.00	--	240	7.7	--	9.2	7.3
SEP									
14...	1000	10	2457.00	--	197	8.6	--	16.8	9.0
14...	1100	132	2457.00	--	204	7.8	15.0	9.5	6.5

DATE	ALKA- LITY FIELD (MG/L AS CACO3) (00410)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT								
14...	92	4.3	<.10	.60	--	<.004	<.006	1.3
14...	94	6.4	.20	.60	.80	<.004	<.006	2.1
JUN								
15...	84	3.7	<.10	.20	--	.008	.002	2.0
15...	79	3.8	<.10	.10	--	.007	.006	1.3
JUL								
12...	84	3.8	<.10	.30	--	.010	.006	1.5
12...	84	--	--	--	--	--	--	--
12...	91	4.9	.10	.50	.60	.002	<.002	1.3
AUG								
17...	89	3.6	<.10	.30	--	<.005	<.002	1.8
17...	98	6.0	.20	.30	.50	<.005	.003	2.2
SEP								
14...	98	3.7	<.10	.40	--	<.005	<.002	1.0
14...	97	5.5	.20	.30	.50	<.005	.003	.7

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
OCT							
14...	0952	.0	210	8.5	13.8	9.2	37
14...	0956	2.0	210	8.5	13.8	9.2	37
14...	0958	5.0	210	8.5	13.8	9.2	37
14...	1000	10	210	8.5	13.8	9.2	37
14...	1002	15	210	8.5	13.8	9.2	37
14...	1004	20	210	8.5	13.8	9.2	37
14...	1006	30	210	8.5	13.8	9.2	37
14...	1010	40	210	8.5	13.8	9.3	37
14...	1014	50	211	8.5	13.8	9.3	37
14...	1016	60	213	8.5	13.7	9.3	37
14...	1020	70	217	8.5	13.4	9.3	37
14...	1024	80	217	8.5	13.0	9.3	37
14...	1026	90	228	8.4	12.2	9.3	20
14...	1028	100	228	8.3	11.9	9.2	7.3
14...	1030	105	227	8.3	11.9	9.2	7.3
14...	1032	110	227	8.3	11.8	9.2	7.3
14...	1035	115	227	8.3	11.8	9.2	7.3
14...	1040	120	223	8.2	11.8	9.0	5.8
14...	1045	125	224	8.2	11.7	8.5	4.9
14...	1050	129	230	8.2	10.5	7.3	4.9
14...	1055	130	200	8.1	9.9	6.3	4.9
14...	1100	139	207	8.0	9.6	6.0	2.1
14...	1105	149	206	8.0	9.6	6.0	.16
JUN							
15...	0945	.0	209	8.5	16.6	9.6	14
15...	0950	2.0	210	8.5	16.6	9.7	14
15...	0955	5.0	210	8.5	16.3	9.9	14
15...	1000	10	206	8.5	14.8	10.4	8.5
15...	1005	15	200	8.5	14.4	10.2	4.5
15...	1010	20	199	8.4	14.1	9.9	4.5
15...	1012	25	196	8.3	13.7	9.8	3.8
15...	1015	30	189	8.3	13.0	9.6	1.7
15...	1020	35	189	8.3	12.9	9.7	.81
15...	1025	40	186	8.3	12.8	9.7	.81
15...	1027	45	186	8.3	12.7	9.8	.62
15...	1030	50	185	8.3	12.5	9.8	.39
15...	1032	55	184	8.3	12.2	9.8	.28
15...	1035	60	182	8.2	12.1	9.9	.16
15...	1040	65	181	8.2	11.1	9.9	.01
15...	1045	75	180	8.2	10.7	9.9	<.01
15...	1050	85	184	8.2	10.6	9.8	<.01
15...	1055	95	184	8.2	10.6	9.8	<.01
15...	1100	104	184	8.2	10.6	9.8	<.01
15...	1105	114	184	8.2	10.6	9.8	<.01

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (0074)
JUL							
12...	0954	.0	--	8.5	16.2	9.4	50
12...	0956	2.0	--	8.5	16.3	9.4	66
12...	0958	5.0	--	8.7	16.2	9.4	.39
12...	1000	10	201	8.4	16.1	9.5	2.6
12...	1002	20	201	8.4	15.4	9.5	9.8
12...	1004	30	200	8.3	15.1	9.5	13
12...	1006	40	201	8.3	14.5	9.5	13
12...	1010	50	201	8.3	14.3	9.5	11
12...	1015	60	200	8.3	14.2	9.5	11
12...	1020	70	199	8.2	13.9	9.5	9.2
12...	1025	75	198	8.2	13.8	9.5	8.5
12...	1030	80	199	8.2	12.7	9.5	5.3
12...	1035	90	200	8.1	12.4	9.4	1.7
12...	1040	100	202	8.1	12.1	9.2	1.3
12...	1045	110	206	8.1	11.6	9.0	1.1
12...	1050	115	208	8.1	11.3	8.6	.92
12...	1055	120	217	8.0	9.8	8.7	.53
12...	1100	130	223	8.0	9.3	8.6	.46
12...	1105	140	231	8.0	9.2	8.3	.33
AUG							
17...	1018	.0	--	--	19.7	9.3	5.3
17...	1022	2.0	--	--	19.7	9.3	5.3
17...	1026	5.0	--	--	19.5	9.4	4.9
17...	1030	10	--	8.6	19.4	9.4	7.3
17...	1032	15	--	--	19.4	9.4	11
17...	1034	20	--	--	19.4	9.4	11
17...	1038	25	--	--	19.3	9.5	11
17...	1040	30	217	8.6	19.2	9.5	9.2
17...	1044	35	223	--	18.7	9.1	15
17...	1046	40	227	--	18.1	8.9	17
17...	1050	45	227	--	17.8	8.9	20
17...	1052	50	227	--	17.4	8.7	21
17...	1054	55	227	--	16.5	8.7	23
17...	1056	60	219	--	15.9	8.6	21
17...	1058	65	219	8.2	14.9	8.5	21
17...	1100	70	216	--	14.1	8.5	14
17...	1102	75	214	--	13.5	8.3	9.8
17...	1104	80	212	--	13.1	8.3	14
17...	1106	85	209	--	12.7	8.3	12
17...	1108	90	207	--	12.3	8.3	9.8
17...	1110	95	209	8.0	11.7	7.9	9.2
17...	1112	100	211	--	11.5	7.8	11
17...	1114	105	213	--	11.3	7.7	11
17...	1116	110	216	--	10.7	7.5	11
17...	1118	115	217	7.9	10.6	7.5	11
17...	1120	120	234	--	9.3	7.4	7.3
17...	1125	125	240	--	9.2	7.3	4.9
17...	1130	134	240	7.7	9.2	7.3	3.1
17...	1135	144	239	--	9.1	7.3	2.1

KOOTENAI RIVER BASIN

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12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
SEP							
14...	0950	.0	197	8.6	16.9	9.0	43
14...	0954	2.0	197	8.6	16.9	9.0	41
14...	0958	5.0	197	8.6	16.8	9.0	39
14...	1000	10	197	8.6	16.8	9.0	39
14...	1004	15	197	8.6	16.8	9.0	39
14...	1008	20	197	8.6	16.8	9.0	39
14...	1010	25	197	8.6	16.8	9.0	37
14...	1012	30	197	8.6	16.8	9.0	33
14...	1016	35	197	8.6	16.8	9.0	33
14...	1018	40	197	8.6	16.8	9.1	28
14...	1020	45	197	8.7	16.8	9.1	25
14...	1022	50	197	8.7	16.5	9.1	19
14...	1026	55	207	8.6	16.1	8.6	32
14...	1028	60	215	8.5	15.7	8.4	28
14...	1030	65	220	8.3	15.1	7.9	23
14...	1034	70	221	8.2	14.8	7.8	21
14...	1036	75	215	8.0	13.6	7.6	18
14...	1038	80	194	8.0	12.4	8.0	33
14...	1040	85	191	7.9	12.3	8.0	25
14...	1042	90	191	7.8	11.7	7.8	16
14...	1044	95	185	7.8	11.3	7.7	18
14...	1046	100	184	7.7	11.0	7.7	30
14...	1048	105	187	7.7	10.8	7.2	30
14...	1050	115	195	7.6	10.5	6.8	21
14...	1055	125	202	7.6	10.1	6.7	16
14...	1100	132	204	7.8	9.5	6.5	11
14...	1105	142	209	7.8	9.3	6.1	.02

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT

LOCATION.--Lat 48°53'37", long 115°05'13", in NW¼SE¼ sec.9, T.36 N., R.27 W., Lincoln County, Hydrologic Unit 17010101, on right bank 0.2 mi upstream from Indian Creek, 1.8 mi northwest of Eureka, and 2.8 mi upstream from Lake Kootenai flow line.

DRAINAGE AREA.--440 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,518.85 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Diversions for irrigation of about 4,500 acres above station.

AVERAGE DISCHARGE.--25 years, 273 ft³/s, 8.42 in/yr, 197,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,470 ft³/s June 18, 1974, gage height, 6.86 ft; maximum gage height, 7.12 ft May 27, 1961; minimum daily discharge, 20 ft³/s Jan. 11, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 2,810 ft³/s, from slope-area measurement of peak flow at site 1.5 mi downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,400 ft³/s Apr. 25, gage height, 5.15 ft; minimum daily, 60 ft³/s Dec. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	102	102	80	100	149	246	554	966	446	277	121
2	106	100	100	112	98	157	246	545	863	446	264	128
3	116	98	102	110	98	165	240	554	829	522	258	125
4	108	98	123	106	92	176	231	581	846	540	252	123
5	104	102	123	108	90	170	228	600	813	488	240	123
6	104	112	108	112	95	167	225	638	770	446	225	119
7	102	119	90	110	105	170	231	713	770	426	213	116
8	102	112	75	170	100	173	243	749	770	434	210	112
9	102	108	70	152	98	176	246	703	765	414	204	110
10	100	104	65	149	96	210	255	634	754	387	204	112
11	100	102	65	149	95	246	249	572	728	368	207	119
12	100	102	90	137	95	274	237	531	658	346	204	119
13	98	102	108	125	106	277	222	514	596	357	192	114
14	98	102	110	116	105	274	219	509	549	663	181	110
15	96	90	112	100	104	271	216	522	568	703	173	104
16	96	106	128	95	104	258	222	545	596	643	167	102
17	96	110	135	125	104	249	237	586	549	596	154	104
18	98	119	121	119	108	228	277	643	568	545	152	102
19	96	123	114	102	114	204	342	658	536	492	149	100
20	94	123	110	106	112	207	426	624	492	483	142	98
21	94	116	108	98	114	204	509	673	454	505	140	98
22	92	92	104	98	121	192	619	765	430	467	137	98
23	114	90	85	98	125	225	698	818	418	430	152	102
24	119	92	70	98	130	237	879	948	446	402	165	98
25	112	92	60	94	135	222	1320	1050	438	398	160	92
26	112	92	65	94	144	207	1110	1140	410	383	149	92
27	110	96	70	102	149	198	835	1200	402	357	144	90
28	106	102	68	112	147	192	723	1150	387	339	137	94
29	106	106	66	102	---	189	634	1200	390	324	132	92
30	104	106	70	100	---	195	577	1260	450	311	128	90
31	102	---	75	100	---	237	---	1130	---	294	123	---
TOTAL	3195	3118	2892	3479	3084	6499	12942	23309	18211	13955	5635	3207
MEAN	103	104	93.3	112	110	210	431	752	607	450	182	107
MAX	119	123	135	170	149	277	1320	1260	966	703	277	128
MIN	92	90	60	80	90	149	216	509	387	294	123	90
CFSM	.23	.24	.21	.26	.25	.48	.98	1.71	1.38	1.02	.41	.24
IN.	.27	.26	.24	.29	.26	.55	1.09	1.97	1.54	1.18	.48	.27
AC-FT	6340	6180	5740	6900	6120	12890	25670	46230	36120	27680	11180	6360
CAL YR 1982	TOTAL	103441	MEAN 283	MAX 1470	MIN 50	CFSM .64	IN 8.75	AC-FT 205200				
WTR YR 1983	TOTAL	99526	MEAN 273	MAX 1320	MIN 60	CFSM .62	IN 8.41	AC-FT 197400				

KOOTENAI RIVER BASIN

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12301300 TOBACCO RIVER NEAR EUREKA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: December 1970 to current year.

INSTRUMENTATION.--Temperature recorder since Dec. 8, 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 25.0°C July 23, Aug. 2, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 20.0°C Aug. 5, 6, 7; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	10.5	6.0	8.5	6.5	4.5	5.5	2.5	2.0	2.0	.0	.0	.0
2	10.0	8.5	9.0	4.5	2.0	3.5	2.0	1.5	2.0	.0	.0	.0
3	10.5	7.5	9.0	4.0	2.0	3.0	3.0	1.5	2.0	.0	.0	.0
4	9.5	6.5	8.0	5.5	3.5	4.5	4.5	2.5	3.5	.0	.0	.0
5	9.0	5.5	7.0	5.5	4.5	5.0	2.5	.5	1.5	.0	.0	.0
6	7.5	5.0	6.5	5.5	4.0	4.5	.5	.0	.0	.5	.0	.0
7	9.5	7.0	8.0	5.0	3.0	4.0	.0	.0	.0	1.5	.0	.5
8	9.0	6.5	7.5	3.0	1.0	2.5	.0	.0	.0	1.5	1.0	1.0
9	8.0	4.5	6.5	2.5	1.0	2.0	.0	.0	.0	1.0	.0	.5
10	8.0	4.5	6.0	2.5	.5	1.5	.0	.0	.0	2.0	1.0	1.5
11	8.5	5.0	6.5	2.5	.5	1.5	.0	.0	.0	2.5	1.0	1.5
12	8.5	5.5	6.5	1.5	.5	1.0	.0	.0	.0	2.0	.0	1.0
13	9.0	5.5	7.0	2.0	.5	1.5	.0	.0	.0	2.0	.0	1.0
14	9.0	5.5	7.5	2.5	.5	1.5	.0	.0	.0	.5	.0	.0
15	9.5	6.0	8.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
16	12.0	8.5	10.0	2.5	1.5	2.0	.5	.0	.0	.0	.0	.0
17	10.0	7.0	8.5	3.5	2.5	3.0	1.0	.0	.5	.0	.0	.0
18	8.5	5.5	7.0	4.0	3.5	3.5	2.0	1.0	1.5	.5	.0	.5
19	8.5	6.0	7.0	4.0	3.5	3.5	1.5	1.0	1.5	.5	.5	.5
20	6.5	4.0	5.5	4.0	2.5	3.0	1.0	.0	.5	.5	.5	.5
21	5.5	3.0	4.5	2.5	.0	1.5	1.0	.0	.5	1.0	.0	.5
22	8.0	5.0	6.5	.0	.0	.0	1.5	.0	.5	1.5	.5	1.0
23	8.5	7.5	8.0	.5	.0	.0	.5	.0	.0	3.0	1.5	2.0
24	10.0	7.0	8.5	.5	.0	.0	.0	.0	.0	2.0	1.0	1.5
25	8.5	6.5	7.5	.5	.0	.0	.0	.0	.0	3.0	1.0	2.0
26	8.0	6.5	7.0	1.0	.0	.5	.0	.0	.0	2.5	1.5	2.0
27	8.5	6.0	7.0	1.5	.0	1.0	.0	.0	.0	3.0	2.0	2.5
28	6.5	5.5	6.0	2.5	1.5	2.0	.0	.0	.0	3.5	1.5	2.5
29	7.5	5.0	6.0	2.5	1.5	2.0	.0	.0	.0	1.5	.5	1.0
30	5.5	3.0	4.5	3.5	2.0	2.5	.0	.0	.0	.5	.5	.5
31	5.0	3.5	4.5	---	---	---	.0	.0	.0	2.0	.5	1.5
MONTH	12.0	3.0	7.0	6.5	.0	2.0	4.5	.0	.5	3.5	.0	1.0

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	2.5	1.0	1.5	4.0	2.0	3.0	7.0	4.0	5.5	10.0	5.0	7.5
2	1.5	.5	1.0	3.5	2.0	2.5	5.5	4.5	5.0	9.0	5.5	7.0
3	2.0	.5	1.0	4.5	2.0	3.0	6.0	3.5	4.5	9.5	6.0	7.5
4	.5	.5	.5	4.0	2.0	3.0	8.0	2.5	5.0	9.5	5.5	7.5
5	.5	.0	.5	3.5	1.5	2.5	8.0	2.5	5.0	10.0	5.0	7.5
6	.5	.5	.5	4.5	2.0	3.0	9.0	3.0	6.0	8.5	7.0	7.5
7	.5	.5	.5	4.5	2.0	3.0	6.5	5.0	5.5	9.0	5.5	7.0
8	.5	.5	.5	5.0	2.5	3.5	8.0	4.5	6.0	8.5	5.5	7.0
9	---	---	---	6.0	3.5	4.5	6.0	3.5	5.0	7.5	5.0	6.0
10	---	---	---	7.0	4.0	5.0	7.0	3.0	4.5	10.0	4.5	7.0
11	---	---	---	4.5	2.0	2.5	7.0	3.5	4.5	10.0	4.5	7.5
12	---	---	---	4.5	2.0	3.0	8.0	2.0	5.0	10.5	4.5	7.5
13	---	---	---	4.0	2.5	3.5	8.5	2.5	5.5	11.5	5.0	8.0
14	---	---	---	4.0	2.5	3.5	9.0	3.0	6.0	10.5	6.0	8.5
15	4.0	---	---	4.5	2.0	3.5	10.0	4.0	7.0	12.0	7.0	9.0
16	3.5	1.0	2.0	5.0	1.5	3.5	9.0	4.5	7.0	10.0	7.0	9.0
17	3.5	2.0	2.5	3.5	1.5	2.5	11.0	5.0	8.0	10.5	6.5	8.5
18	3.5	2.0	2.5	3.5	1.0	2.0	11.0	5.5	8.0	9.0	6.5	8.0
19	3.5	1.5	2.5	4.0	.0	1.5	11.5	5.5	8.5	9.0	5.5	7.0
20	3.0	1.5	2.5	4.5	.5	2.5	10.0	5.0	8.0	12.0	5.5	8.5
21	4.5	2.0	3.0	5.0	1.5	3.0	10.0	5.5	8.0	12.5	7.5	10.0
22	4.0	2.0	3.0	6.5	2.0	4.0	10.0	5.0	7.5	12.5	6.5	9.5
23	4.5	2.0	3.5	6.0	3.5	4.5	10.0	5.5	7.5	13.0	7.0	10.0
24	4.0	1.5	3.0	7.0	3.5	5.0	8.0	5.5	7.0	12.5	7.5	10.0
25	4.0	2.0	3.0	7.0	2.5	4.5	5.5	4.0	4.5	12.5	7.0	10.0
26	3.5	1.0	2.5	6.5	2.5	4.5	6.0	3.5	4.5	12.0	7.0	9.5
27	5.0	1.5	3.0	5.0	3.0	4.0	7.0	4.5	5.5	12.0	7.0	9.5
28	4.0	2.0	3.0	6.0	3.0	4.5	7.0	3.5	5.5	12.0	7.0	9.5
29	---	---	---	5.0	3.5	4.0	9.5	3.5	6.5	12.5	7.0	9.5
30	---	---	---	7.5	4.0	5.5	10.0	4.5	7.0	11.5	7.5	9.5
31	---	---	---	7.0	4.0	5.5	---	---	---	11.0	6.0	8.5
MONTH	5.0	.0	2.0	7.5	.0	3.5	11.5	2.0	6.0	13.0	4.5	8.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	9.5	7.0	8.5	12.0	10.0	11.0	19.0	13.5	16.0	16.0	13.0	14.5
2	8.5	7.5	8.0	12.5	10.0	11.0	19.5	13.5	16.5	14.5	12.0	13.0
3	10.5	7.5	9.0	10.5	9.0	9.5	18.0	14.0	16.0	13.5	11.5	12.5
4	11.0	7.5	9.5	15.0	8.0	11.0	19.5	12.5	16.0	13.0	10.5	12.0
5	10.0	7.5	9.0	16.0	9.5	13.0	20.0	13.5	16.5	15.0	10.5	12.5
6	12.5	7.0	10.0	15.0	11.0	13.0	20.0	13.0	16.5	15.0	8.5	12.0
7	11.5	8.0	10.0	15.5	10.5	13.0	20.0	13.0	16.5	15.0	10.5	12.5
8	11.5	8.0	10.0	14.0	11.5	12.5	18.5	14.5	16.5	12.5	9.0	11.0
9	12.0	8.5	10.5	14.5	10.5	12.0	19.5	14.0	16.5	12.5	10.0	11.0
10	10.0	8.0	8.5	13.5	10.5	12.0	17.5	14.0	16.0	10.5	8.0	9.0
11	10.5	7.5	9.0	15.0	10.0	12.0	17.5	14.5	15.5	13.5	8.5	11.0
12	10.0	7.5	8.5	12.5	11.0	11.5	17.5	13.0	15.5	13.0	8.5	11.0
13	12.0	7.0	9.5	12.5	10.5	11.5	19.0	12.0	15.5	13.5	8.0	11.0
14	14.0	8.0	11.0	13.0	10.0	11.5	18.0	12.5	15.0	14.5	9.5	12.0
15	11.5	9.0	10.0	10.5	9.0	9.5	19.5	12.5	16.0	14.0	8.5	11.5
16	10.5	8.0	9.0	13.0	8.5	10.5	19.0	13.0	16.0	13.0	9.5	11.5
17	10.0	8.0	9.0	13.0	8.5	10.5	19.0	12.5	16.0	12.5	9.0	11.0
18	11.0	8.0	9.5	15.5	9.5	12.0	18.0	12.5	15.5	10.0	8.0	9.0
19	11.5	7.5	8.5	16.0	10.0	13.0	18.5	11.5	15.0	9.5	5.5	7.5
20	10.0	7.5	8.5	13.5	10.5	11.5	18.5	12.0	15.5	10.5	5.0	7.5
21	12.0	7.0	9.0	15.0	9.0	12.0	18.5	12.0	15.5	11.0	5.5	8.0
22	14.0	8.0	11.0	16.0	9.5	12.5	16.0	12.5	14.5	11.5	6.0	9.0
23	15.5	10.0	12.5	13.5	10.5	12.0	15.5	12.5	14.0	12.5	7.0	10.0
24	13.5	10.5	12.0	15.5	10.5	13.0	15.0	12.5	13.5	12.5	8.5	10.5
25	14.5	8.5	11.5	15.0	10.5	13.0	16.5	11.0	13.5	13.5	8.0	11.0
26	15.5	9.0	12.0	15.0	10.5	12.5	15.0	11.5	13.0	12.5	8.0	10.5
27	13.0	11.0	12.0	13.0	9.5	11.5	16.5	11.0	13.5	12.0	9.0	10.5
28	17.0	10.0	13.0	14.5	9.5	11.5	18.0	12.0	15.0	11.0	8.0	9.5
29	14.0	11.5	13.0	16.5	10.0	13.0	18.0	12.0	15.0	9.5	5.5	7.5
30	14.5	10.5	12.0	18.0	10.5	14.0	18.0	12.0	15.0	10.0	6.5	8.0
31	---	---	---	18.0	11.5	14.5	17.5	12.0	15.0	---	---	---
MONTH YEAR	17.0 20.0	7.0 .0	10.0 6.5	18.0	8.0	12.0	20.0	11.0	15.5	16.0	5.0	10.5

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 15...	1425	95	308	12.0	8.0
NOV 15...	1515	89	309	4.0	1.0
JAN 18...	1040	116	314	-3.0	.0
APR 04...	1230	235	280	7.0	5.5
MAY 31...	0950	1130	147	18.0	6.5
JUL 21...	0920	508	211	13.5	9.5
SEP 08...	1000	113	225	12.0	9.0

KOOTENAI RIVER BASIN

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT

LOCATION.--Lat 48°35'06", long 115°13'52", in NW¼NE¼NW¼ sec.33, T.33 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, in middle of old channel at Tenmile Creek, and 20.1 mi northeast of Libby.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Depth-distribution profile of primary productivity are available in files in Helena district office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (000003)	ELEV- ATION ABOVE NGVD (FEET) (72020)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT										
12...	1300	10	2457.00	--	0	199	8.4	8.0	14.0	9.0
12...	1400	248	2457.00	--	0	279	8.0	--	5.9	7.4
APR										
13...	1230	10	2349.00	--	1	242	8.4	7.5	4.9	12.3
13...	1330	147	2349.00	--	1	284	8.1	--	3.6	11.6
MAY										
17...	1215	10	2370.00	50	1	270	8.3	--	8.8	10.8
17...	1315	166	2370.00	50	1	282	8.1	--	4.3	10.1
JUN										
14...	1230	10	2428.00	--	1	236	8.4	--	13.8	10.5
14...	1330	220	2428.00	--	1	276	7.9	23.0	4.3	9.4
JUL										
11...	1300	10	2452.00	--	1	205	8.5	23.0	16.2	9.9
11...	1312	40	--	--	--	199	8.2	--	13.4	9.5
11...	1319	65	--	--	--	--	--	--	--	--
11...	1400	244	2452.00	--	1	275	7.9	--	4.5	8.8
AUG										
16...	1300	10	2459.00	--	--	--	8.3	24.0	18.5	9.7
16...	1400	249	2459.00	--	--	282	7.7	--	4.6	8.1
SEP										
13...	1130	10	2457.00	--	1	185	8.8	18.0	16.8	9.3
13...	1300	243	2457.00	--	1	254	7.9	--	4.5	8.5

DATE	ALKA- LINITY FIELD (MG/L AS CACO3) (00410)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT									
12...	87	4.2	<.10	--	1.0	--	<.004	<.006	1.6
12...	118	6.5	.20	--	.50	.70	.012	<.006	1.4
APR									
13...	106	4.3	<.10	<.10	.70	--	.001	.002	2.0
13...	110	5.3	.10	<.10	.90	1.0	--	.014	2.4
MAY									
17...	106	5.1	<.10	--	.20	--	.010	.002	1.4
17...	127	5.0	<.10	--	1.6	--	.007	<.002	2.4
JUN									
14...	96	4.7	<.10	--	.30	--	.008	.002	2.0
14...	107	5.3	.10	--	.20	.30	.004	.005	.9
JUL									
11...	87	3.8	<.10	--	.60	--	.001	<.002	1.7
11...	83	--	--	--	--	--	--	--	--
11...	83	--	--	--	--	--	--	--	--
11...	111	5.2	.10	--	.20	.30	.001	<.002	.9
AUG									
16...	102	3.0	<.10	<.10	.40	--	<.005	<.002	2.5
16...	119	5.9	.10	.12	.40	.50	<.005	.003	.9
SEP									
13...	93	3.5	<.10	--	.30	--	<.005	<.002	1.3
13...	89	4.3	<.10	--	.20	--	<.005	.003	.9

KOOTENAI RIVER BASIN

31

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)
APR								
13...	1230	10	130	21	35	9.6	2.7	.1
13...	1330	147	150	35	40	11	3.5	.1
AUG								
16...	1300	10	110	6	31	7.5	2.0	.0
16...	1400	249	140	24	39	11	3.4	.1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)
APR							
13...	.6	109	19	2.4	.10	137	.19
13...	.7	123	26	3.2	.10	156	.21
AUG							
16...	.4	93	16	1.8	.10	123	.17
16...	.6	121	23	3.0	.10	157	.21

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
APR						
13...	1230	2	170	4	20	30
13...	1330	2	210	4	50	20
AUG						
16...	1300	1	120	1	<10	10
16...	1400	1	160	2	10	10

KOOTENAI RIVER BASIN

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)	DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70954)
OCT					JUL				
12...	1254	.5	.684	.029	11...	1252	.5	.516	.026
12...	1303	39	.643	.031	11...	1258	8.0	.840	.042
12...	1307	57	.594	.021	11...	1303	20	.879	.021
12...	1316	87	.385	.025	11...	1316	53	.469	.018
12...	1324	115	.197	.013	11...	1320	67	.388	<.017
12...	1400	248	.036	<.008	11...	1336	133	.218	<.009
APR					11...	1350	199	.128	<.008
13...	1222	.5	2.88	.021	AUG				
13...	1228	6.0	2.39	.021	16...	1252	.5	1.07	.019
13...	1232	15	3.32	.021	16...	1301	12	1.51	.046
13...	1246	52	2.16	<.021	16...	1308	30	1.49	.043
13...	1254	72	3.11	<.021	16...	1316	48	.901	.063
13...	1325	144	1.18	<.014	16...	1324	71	.147	.009
MAY					16...	1340	142	.032	.006
17...	1207	.5	1.21	.029	16...	1354	213	.063	.006
17...	1211	4.0	.912	.037	SEP				
17...	1217	11	.998	.028	13...	1122	.5	.709	.052
17...	1229	42	.732	.020	13...	1134	16	.561	.043
17...	1233	53	.641	.012	13...	1148	42	.736	.038
17...	1250	106	.402	.014	13...	1154	64	.386	.013
17...	1312	159	.276	.009	13...	1200	90	.138	.022
JUN					13...	1230	180	.020	.005
14...	1222	.5	.473	.033	13...	1300	243	.266	.043
14...	1232	12	1.42	.041					
14...	1246	36	.974	.036					
14...	1250	43	.469	.029					
14...	1300	86	.178	.025					
14...	1310	129	.201	.014					

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PRIMARY PRODUCTIVITY (MG C/M ² /DAY)	DATE	PRIMARY PRODUCTIVITY (MG C/M ² /DAY)
OCT		JUL	
12...	160	11...	170
APR		AUG	
13...	100	14...	250
MAY		SEP	
17...	150	13...	210
JUN			
14...	170		

(carbon-14, light and dark bottle method)

KOOTENAI RIVER BASIN

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12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
OCT							
12...	1252	.0	199	8.4	--	8.8	52
12...	1256	2.0	199	8.4	14.0	8.9	52
12...	1258	5.0	199	8.4	14.0	8.9	52
12...	1300	10	199	8.4	14.0	9.0	52
12...	1301	20	199	8.4	14.0	8.9	52
12...	1302	30	199	8.4	14.0	9.0	52
12...	1304	40	199	8.4	14.0	9.0	52
12...	1306	50	199	8.4	14.0	9.0	52
12...	1308	60	199	8.4	14.0	9.0	52
12...	1309	70	198	8.4	14.0	9.0	52
12...	1312	80	197	8.4	14.0	9.1	52
12...	1314	85	198	8.4	14.0	9.0	90
12...	1318	90	204	8.4	13.0	8.4	48
12...	1320	100	206	8.3	12.3	8.2	45
12...	1322	110	189	8.2	12.0	8.4	52
12...	1326	120	186	8.1	11.5	8.6	50
12...	1328	130	187	8.1	11.1	8.9	50
12...	1330	140	189	8.1	10.6	8.8	32
12...	1332	145	194	8.1	10.4	8.9	32
12...	1334	150	196	8.1	10.2	9.1	33
12...	1336	155	195	8.1	9.9	8.9	32
12...	1338	160	207	8.1	9.4	9.0	25
12...	1340	170	212	8.1	9.0	8.8	19
12...	1342	180	222	8.0	8.4	8.7	12
12...	1344	190	231	8.0	8.1	8.6	12
12...	1346	200	242	8.0	7.4	8.5	3.8
12...	1348	210	252	8.0	7.1	8.4	8.5
12...	1350	215	258	8.0	6.8	8.3	9.2
12...	1352	220	258	8.0	6.5	8.1	9.2
12...	1354	225	270	8.0	6.2	7.7	7.3
12...	1358	235	274	8.0	6.0	7.5	12
12...	1400	248	279	8.0	5.9	7.4	11
12...	1402	258	277	8.0	5.9	7.2	11
APR							
13...	1220	.0	242	--	5.6	12.3	--
13...	1224	2.0	242	--	5.6	12.3	23
13...	1226	5.0	242	--	5.1	12.3	20
13...	1230	10	242	8.4	4.9	12.3	20
13...	1234	20	243	--	4.8	12.3	19
13...	1238	30	243	--	4.8	12.3	19
13...	1242	40	243	--	4.7	12.3	20
13...	1244	50	243	--	4.6	12.3	20
13...	1250	60	247	--	4.5	12.3	20
13...	1252	70	254	8.2	4.1	12.2	20
13...	1256	80	264	--	4.0	12.2	16
13...	1258	90	267	--	4.0	12.1	11
13...	1300	100	270	--	3.9	12.0	9.2
13...	1305	110	275	--	3.8	12.0	6.3
13...	1310	120	279	--	3.8	11.9	3.4
13...	1315	130	283	--	3.7	11.7	3.8
13...	1320	140	284	--	3.7	11.7	1.3
13...	1330	147	284	8.1	3.6	11.6	.81
13...	1332	157	284	--	3.6	11.3	.23

KOOTENAI RIVER BASIN

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
MAY							
17...	1205	.0	269	8.3	8.9	10.8	16
17...	1209	2.0	269	8.3	8.9	10.8	16
17...	1213	5.0	270	8.3	8.9	10.8	15
17...	1215	10	270	8.3	8.8	10.8	15
17...	1219	15	270	8.3	8.8	10.8	15
17...	1223	25	270	8.3	8.6	10.8	14
17...	1227	35	268	8.3	8.5	10.8	15
17...	1231	45	273	8.3	8.0	10.6	20
17...	1235	55	273	8.2	7.6	10.5	8.5
17...	1237	65	273	8.2	6.5	10.9	12
17...	1239	75	276	8.2	6.2	11.0	23
17...	1241	85	266	8.2	5.1	11.0	23
17...	1243	95	269	8.1	4.7	10.8	18
17...	1245	105	271	8.1	4.5	10.8	2.6
17...	1300	115	273	8.1	4.4	10.7	8.5
17...	1302	125	276	8.1	4.3	10.5	5.8
17...	1305	135	278	8.1	4.3	10.4	1.1
17...	1307	145	279	8.1	4.3	10.3	.39
17...	1310	155	279	8.1	4.3	10.3	.07
17...	1315	166	282	8.1	4.3	10.1	.01
17...	1320	176	283	8.1	4.3	10.0	<.01
JUN							
14...	1220	.0	233	8.4	14.8	10.6	17
14...	1224	2.0	234	8.4	14.6	10.7	15
14...	1228	5.0	237	8.4	14.0	10.6	11
14...	1230	10	236	8.4	13.8	10.5	11
14...	1234	15	232	8.4	13.6	10.4	11
14...	1238	20	230	8.3	13.5	10.3	11
14...	1240	25	222	8.3	12.9	10.1	11
14...	1244	30	188	8.1	11.3	9.9	3.8
14...	1248	40	180	8.1	10.6	10.0	.19
14...	1252	50	180	8.1	10.4	10.1	.07
14...	1254	60	179	8.1	10.1	10.0	.04
14...	1256	70	182	8.1	10.0	10.0	.02
14...	1258	80	193	8.1	9.6	9.9	.01
14...	1302	90	219	8.1	9.2	9.8	.08
14...	1304	100	241	8.1	8.9	9.9	.07
14...	1306	110	253	8.1	8.6	9.9	6.8
14...	1308	120	257	8.1	8.2	9.9	12
14...	1312	130	263	8.0	7.7	10.0	12
14...	1314	140	261	8.0	6.7	10.2	13
14...	1316	150	268	8.0	5.5	10.5	18
14...	1318	160	268	8.0	4.7	10.2	21
14...	1320	170	270	8.0	4.5	10.0	11
14...	1322	180	271	8.0	4.4	9.8	9.2
14...	1324	190	272	7.9	4.4	9.8	4.5
14...	1326	200	273	7.9	4.3	9.7	5.3
14...	1328	210	274	7.9	4.3	9.6	5.3
14...	1330	220	276	7.9	4.3	9.4	4.9
14...	1332	230	277	7.9	4.3	9.2	4.9

KOOTENAI RIVER BASIN

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12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
JUL							
11...	1250	.0	--	8.6	17.1	9.9	37
11...	1254	2.0	--	8.6	16.9	9.8	35
11...	1256	5.0	--	8.6	16.6	9.9	32
11...	1300	10	205	8.5	16.2	9.9	32
11...	1301	15	205	8.5	15.9	9.9	25
11...	1303	20	203	8.5	15.3	9.8	32
11...	1306	25	203	8.4	14.9	9.8	35
11...	1308	30	199	8.3	14.3	9.6	39
11...	1312	40	199	8.2	13.4	9.5	33
11...	1314	50	198	8.2	12.7	9.4	30
11...	1318	60	198	8.1	12.0	9.4	24
11...	1322	70	196	8.1	11.6	9.4	25
11...	1324	80	196	8.1	11.2	9.5	25
11...	1326	90	196	8.0	10.2	9.5	24
11...	1328	100	200	8.0	10.1	9.6	18
11...	1330	110	208	8.0	10.0	9.6	18
11...	1332	120	224	8.0	9.6	9.6	30
11...	1334	130	243	8.0	9.1	9.7	20
11...	1338	140	253	8.0	8.4	9.7	23
11...	1340	150	258	8.0	7.9	9.7	19
11...	1342	160	264	8.0	7.1	9.8	24
11...	1344	170	266	8.0	6.4	9.7	24
11...	1346	175	267	8.0	6.0	9.7	24
11...	1348	185	270	8.0	5.1	9.5	5.3
11...	1354	200	270	8.0	4.8	9.4	3.4
11...	1356	215	272	7.9	4.5	9.1	3.1
11...	1358	230	272	7.9	4.5	9.1	1.7
11...	1400	244	275	7.9	4.5	8.8	1.5
11...	1402	245	280	7.9	4.5	8.4	1.3
AUG							
16...	1250	.0	--	8.4	20.9	8.9	25
16...	1254	2.0	--	8.4	20.4	9.2	25
16...	1256	5.0	--	8.4	19.9	9.3	23
16...	1300	10	--	8.3	18.5	9.7	20
16...	1302	15	--	8.1	15.9	9.2	20
16...	1304	20	203	8.0	15.5	8.7	35
16...	1306	25	203	7.9	15.3	8.4	37
16...	1308	30	204	7.8	14.9	8.1	39
16...	1310	35	204	7.8	14.6	8.1	43
16...	1312	40	205	7.8	14.4	7.9	45
16...	1314	45	203	7.8	14.2	7.9	50
16...	1318	50	202	7.8	13.8	8.0	50
16...	1320	60	204	7.7	13.2	8.0	50
16...	1322	70	205	7.7	12.8	8.0	48
16...	1326	80	205	7.7	12.4	8.1	50
16...	1328	90	204	7.7	11.9	8.2	52
16...	1330	100	205	7.7	11.5	8.3	55
16...	1332	110	205	7.7	10.8	8.4	52
16...	1334	120	214	7.7	9.9	8.5	50
16...	1336	130	226	7.7	9.4	8.5	50
16...	1338	140	235	7.7	8.8	8.5	50
16...	1342	150	247	7.7	8.3	8.6	48
16...	1344	160	258	7.7	7.7	8.6	52
16...	1346	170	263	7.7	7.2	8.6	50
16...	1348	180	270	7.7	6.4	8.5	41
16...	1350	190	275	7.7	5.9	8.5	37
16...	1352	205	280	7.7	4.9	8.3	27
16...	1356	220	282	7.7	4.6	8.2	20
16...	1358	235	282	7.7	4.6	8.1	19
16...	1400	249	282	7.7	4.6	8.1	19
16...	1402	259	282	7.7	4.5	8.0	17

KOOTENAI RIVER BASIN

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
SEP							
13...	1120	.0	--	8.7	17.0	9.3	52
13...	1124	2.0	--	8.7	16.9	9.3	50
13...	1126	5.0	--	8.8	16.9	9.3	50
13...	1130	10	185	8.8	16.8	9.3	50
13...	1132	15	185	8.7	16.8	9.3	48
13...	1136	20	185	8.7	16.8	9.3	52
13...	1138	25	183	8.7	16.8	9.4	50
13...	1142	30	182	8.7	16.7	9.3	50
13...	1144	35	181	8.7	16.7	9.4	50
13...	1146	40	181	8.7	16.5	9.3	50
13...	1150	50	187	8.3	15.2	8.6	52
13...	1152	60	182	8.2	13.9	8.6	60
13...	1156	70	180	8.2	13.3	8.6	60
13...	1158	80	177	8.2	13.0	8.7	60
13...	1200	90	178	8.2	12.5	8.8	60
13...	1202	100	176	8.2	11.9	8.9	60
13...	1204	110	180	8.3	11.4	9.2	60
13...	1206	120	183	8.3	10.2	9.4	60
13...	1208	130	195	8.4	9.7	9.4	60
13...	1210	140	205	8.4	9.1	9.5	60
13...	1215	150	217	8.3	8.5	9.4	52
13...	1220	160	223	8.3	7.9	9.4	55
13...	1225	170	228	8.1	7.5	9.2	55
13...	1230	180	234	8.1	6.7	9.0	45
13...	1235	190	244	8.0	6.2	9.0	39
13...	1240	200	248	8.0	5.4	9.0	39
13...	1245	210	252	7.9	5.1	8.8	33
13...	1250	220	253	7.9	4.6	8.7	37
13...	1255	230	254	7.9	4.6	8.6	37
13...	1300	243	254	7.9	4.5	8.5	37
13...	1305	253	255	7.9	4.4	8.3	37

KOOTENAI RIVER BASIN

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12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT

LOCATION.--Lat 48°24'43", long 115°18'33", in SW¼NW¼ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, in middle of old channel 0.2 mi upstream from Libby Dam, and 11.6 mi east of Libby.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Depth-distribution profiles of primary productivity are available in files in Helena district office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	ELEV- ATION ABOVE NGVD (FEET) (72020)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT									
13...	0830	10	2456.00	40	195	8.4	8.0	13.7	9.1
13...	0930	307	2456.00	40	279	8.0	--	5.3	7.6
APR									
14...	1000	10	2348.00	1	255	8.4	6.0	4.5	12.5
14...	1030	130	--	--	267	8.2	--	3.5	11.8
14...	1100	205	2348.00	1	281	8.1	--	3.1	11.1
MAY									
18...	0930	10	2371.00	2	245	8.3	--	8.1	11.3
18...	1030	225	2371.00	2	279	8.0	--	3.4	9.7
JUN									
16...	0900	10	2430.00	60	242	8.4	--	12.6	10.7
16...	1000	280	2430.00	60	277	7.9	11.0	3.5	9.3
JUL									
13...	0900	10	2454.00	54	210	8.4	17.0	14.9	10.3
13...	0908	50	--	--	210	8.1	--	12.6	9.3
13...	0914	80	--	--	207	8.1	--	11.5	9.3
13...	1000	303	2454.00	54	277	7.9	--	3.6	9.0
AUG									
18...	1015	10	2459.00	--	202	8.3	23.0	15.9	10.0
18...	1041	100	--	--	202	7.8	--	12.0	8.8
18...	1100	200	--	--	--	7.9	--	--	--
18...	1115	309	2459.00	--	275	7.9	--	3.8	8.6
SEP									
15...	0900	10	2457.00	--	186	8.7	--	16.7	9.3
15...	1000	307	2457.00	--	272	7.8	10.0	3.7	8.1

DATE	ALKA- LINITY FIELD (MG/L AS CACO3) (00410)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT								
13...	86	4.2	<.10	.80	--	.005	<.006	1.5
13...	119	6.1	.20	.80	1.0	.014	<.006	1.5
APR								
14...	103	<1.2	<.10	.50	--	.002	<.002	1.2
14...	106	--	--	--	--	--	--	--
14...	111	4.6	.10	1.6	1.7	.003	<.002	1.1
MAY								
18...	91	4.5	<.10	.90	--	.006	<.002	2.2
18...	110	5.2	<.10	1.0	--	.009	.002	1.5
JUN								
16...	95	4.6	<.10	.30	--	.003	<.002	2.0
16...	107	5.4	.10	.20	.30	.002	.003	.8
JUL								
13...	87	4.3	<.10	.50	--	.001	<.002	1.6
13...	85	--	--	--	--	--	--	--
13...	84	--	--	--	--	--	--	--
13...	108	5.6	.10	2.4	2.5	.010	.008	.9
AUG								
18...	89	3.7	<.10	.30	--	<.005	<.002	1.6
18...	89	--	--	--	--	--	--	--
18...	115	--	--	--	--	--	--	--
18...	116	5.9	.20	.30	.50	<.005	<.002	.8
SEP								
15...	89	3.4	<.10	.50	--	<.005	<.002	1.6
15...	113	6.0	.20	.20	.40	<.005	.002	.6

KOOTENAI RIVER BASIN

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
OCT							
13...	0822	.0	195	8.5	13.6	9.1	50
13...	0826	2.0	195	8.5	13.6	9.1	50
13...	0828	5.0	195	8.5	13.6	9.1	50
13...	0830	10	195	8.4	13.7	9.1	50
13...	0831	20	195	8.5	13.7	9.1	50
13...	0832	30	195	8.5	13.7	9.1	50
13...	0834	40	194	8.5	13.7	9.1	50
13...	0836	50	194	8.5	13.7	9.1	50
13...	0840	60	194	8.5	13.7	9.1	50
13...	0844	70	194	8.5	13.7	9.1	50
13...	0846	80	194	8.4	13.6	9.1	50
13...	0850	90	190	8.3	13.6	8.9	50
13...	0852	95	184	8.3	12.8	8.0	50
13...	0854	105	182	8.3	12.2	8.3	57
13...	0856	115	180	8.4	11.8	8.6	57
13...	0858	125	183	8.4	11.4	9.0	57
13...	0900	135	190	8.4	10.8	9.2	50
13...	0902	145	197	8.4	10.4	9.3	45
13...	0904	155	203	8.1	9.7	9.4	41
13...	0906	165	213	8.4	9.3	9.4	32
13...	0908	175	216	8.5	8.8	9.4	32
13...	0910	185	225	8.5	8.5	9.4	37
13...	0912	195	230	8.5	8.1	9.3	33
13...	0914	205	253	8.5	7.3	9.1	30
13...	0916	215	256	8.5	6.9	8.9	24
13...	0918	220	265	8.5	6.7	8.8	30
13...	0920	235	272	8.5	6.0	8.4	41
13...	0922	250	274	8.4	5.6	8.3	57
13...	0924	265	274	8.4	5.5	8.3	33
13...	0926	280	274	8.4	5.4	8.3	33
13...	0928	295	277	8.4	5.4	8.1	39
13...	0930	307	279	8.0	5.3	7.6	32
13...	0932	317	277	8.4	5.3	6.8	13
APR							
14...	0950	.0	254	--	4.7	12.5	33
14...	0956	2.0	254	--	4.6	12.5	33
14...	0958	5.0	255	--	4.6	12.5	17
14...	1000	10	255	8.4	4.5	12.5	16
14...	1004	20	258	--	4.3	12.3	15
14...	1008	30	260	--	4.1	12.1	12
14...	1012	40	260	--	4.1	12.1	12
14...	1014	50	261	--	4.0	12.0	12
14...	1016	60	261	--	3.9	12.0	12
14...	1018	70	262	--	3.8	12.0	12
14...	1020	80	263	--	3.8	12.0	12
14...	1022	90	263	--	3.7	12.0	12
14...	1024	100	264	--	3.7	12.0	11
14...	1026	110	264	--	3.7	11.9	11
14...	1028	120	265	--	3.7	11.9	11
14...	1030	130	267	8.2	3.5	11.8	11
14...	1035	145	275	--	3.2	11.5	11
14...	1040	160	277	--	3.1	11.4	5.8
14...	1045	175	279	--	3.1	11.3	3.4
14...	1050	190	279	--	3.1	11.2	2.6
14...	1100	205	281	8.1	3.1	11.1	2.6
14...	1102	215	281	--	3.2	10.8	2.6

KOOTENAI RIVER BASIN

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12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
MAY							
18...	0920	.0	243	8.4	8.3	11.0	30
18...	0924	2.0	243	8.4	8.4	11.2	30
18...	0926	5.0	242	8.4	8.2	11.3	30
18...	0930	10	245	8.3	8.1	11.3	28
18...	0940	20	249	8.3	7.8	11.1	28
18...	0945	30	256	8.3	7.7	11.0	30
18...	0950	40	253	8.3	7.2	10.9	28
18...	0955	50	253	8.3	6.9	11.1	28
18...	0957	60	252	8.3	6.7	11.0	28
18...	1002	70	257	8.2	6.4	11.1	28
18...	1005	80	251	8.2	5.4	11.1	28
18...	1007	90	251	8.2	4.8	11.2	28
18...	1010	105	263	8.1	3.8	10.9	27
18...	1012	120	270	8.1	3.5	10.6	24
18...	1015	135	274	8.1	3.4	10.4	20
18...	1017	150	276	8.0	3.4	10.3	17
18...	1020	165	277	8.0	3.4	10.2	15
18...	1022	180	277	8.0	3.4	10.1	12
18...	1025	195	277	8.0	3.4	10.0	4.9
18...	1027	210	278	8.0	3.4	9.8	2.1
18...	1030	225	279	8.0	3.4	9.7	.39
18...	1032	235	280	8.0	3.4	9.7	.33
JUN							
16...	0852	.0	243	8.5	13.4	10.4	14
16...	0856	2.0	243	8.5	13.4	10.6	14
16...	0858	5.0	241	8.4	13.1	10.8	14
16...	0900	10	242	8.4	12.6	10.7	14
16...	0904	15	236	8.3	12.0	10.3	16
16...	0906	20	237	8.3	11.7	10.1	18
16...	0908	30	236	8.3	11.2	10.0	16
16...	0912	40	231	8.2	10.9	9.9	17
16...	0915	50	230	8.2	10.6	9.8	15
16...	0918	60	230	8.2	10.5	9.8	14
16...	0920	70	226	8.2	10.2	9.8	12
16...	0922	80	226	8.2	10.1	9.8	8.5
16...	0925	90	236	8.2	10.0	9.9	11
16...	0928	100	246	8.2	9.9	10.0	18
16...	0930	110	252	8.2	8.3	10.1	25
16...	0932	120	252	8.1	7.7	10.4	23
16...	0935	130	253	8.1	5.6	10.8	21
16...	0938	145	259	8.1	4.6	10.8	28
16...	0940	160	264	8.1	4.1	10.5	30
16...	0942	175	269	8.0	3.6	10.5	19
16...	0945	190	271	8.0	3.6	10.3	30
16...	0948	205	272	8.0	3.5	10.2	27
16...	0950	220	274	8.0	3.5	10.0	20
16...	0952	235	274	8.0	3.5	9.9	16
16...	0955	250	275	7.9	3.5	9.8	13
16...	0958	265	276	7.9	3.5	9.6	8.5
16...	1000	280	277	7.9	3.5	9.3	4.9
16...	1005	290	278	7.9	3.5	9.1	4.5

KOOTENAI RIVER BASIN

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
JUL							
13...	0854	.0	210	8.5	16.0	10.3	28
13...	0856	2.0	211	8.5	16.0	10.4	27
13...	0858	5.0	210	8.5	15.8	10.5	27
13...	0900	10	210	8.4	14.9	10.3	30
13...	0902	20	211	8.4	14.0	10.1	32
13...	0904	30	213	8.3	13.5	9.9	33
13...	0906	40	212	8.2	13.0	9.6	37
13...	0908	50	210	8.1	12.6	9.3	45
13...	0910	60	209	8.1	12.3	9.3	37
13...	0912	70	208	8.1	11.9	9.4	39
13...	0914	80	207	8.1	11.5	9.3	33
13...	0916	90	215	8.0	10.7	9.4	33
13...	0918	100	226	8.0	10.3	9.3	35
13...	0920	110	235	8.1	9.9	9.4	32
13...	0922	120	247	8.1	9.5	9.6	32
13...	0924	130	257	8.0	8.6	9.7	32
13...	0926	140	258	8.1	8.0	9.9	28
13...	0928	145	262	8.1	7.2	10.1	32
13...	0930	155	261	8.1	6.4	10.5	32
13...	0932	165	261	8.1	5.5	10.6	30
13...	0934	175	260	8.1	5.2	10.5	30
13...	0936	185	266	8.0	4.4	10.4	27
13...	0938	200	269	8.0	4.1	10.2	24
13...	0940	215	270	8.0	3.9	10.0	21
13...	0942	230	272	8.0	3.8	9.9	24
13...	0944	245	273	8.0	3.8	9.7	24
13...	0946	260	273	7.9	3.7	9.7	19
13...	0950	275	274	7.9	3.6	9.5	19
13...	0955	290	275	7.9	3.6	9.3	21
13...	1000	303	277	7.9	3.6	9.0	18
13...	1005	313	279	7.9	3.6	9.8	8.5
AUG							
18...	1000	.0	201	8.6	17.6	10.9	21
18...	1006	2.0	200	8.5	16.9	10.9	19
18...	1010	5.0	201	8.5	16.2	10.7	18
18...	1015	10	202	8.3	15.9	10.0	20
18...	1017	15	202	8.2	15.6	9.6	24
18...	1018	20	202	8.1	15.4	9.3	28
18...	1020	25	201	8.0	15.1	8.9	30
18...	1021	30	202	7.9	14.9	8.7	35
18...	1023	35	201	7.9	14.6	8.5	39
18...	1025	40	201	7.9	14.5	8.5	41
18...	1027	45	201	7.9	14.3	8.4	43
18...	1029	50	201	7.8	14.3	8.4	45
18...	1033	60	200	7.9	13.6	8.4	48
18...	1035	70	202	7.8	13.3	8.5	48
18...	1037	80	201	7.8	12.6	8.6	50
18...	1039	90	201	7.8	12.4	8.7	50
18...	1041	100	202	7.8	12.0	8.8	50
18...	1043	105	204	7.8	11.6	8.9	50
18...	1045	115	205	7.8	11.2	9.0	50
18...	1047	125	225	7.8	10.3	9.2	48
18...	1049	135	240	7.9	9.5	9.2	50
18...	1051	145	252	7.9	9.0	9.4	48
18...	1053	155	257	7.9	7.8	9.7	50
18...	1055	165	265	7.9	7.3	9.9	50
18...	1057	175	263	7.9	6.7	10.0	50
18...	1059	190	266	7.9	5.5	9.7	48
18...	1101	205	268	7.9	4.9	9.6	41
18...	1103	220	270	7.9	4.5	9.4	37
18...	1105	235	271	7.9	4.2	9.3	37
18...	1107	250	272	7.9	4.0	9.2	37
18...	1109	265	273	7.9	3.9	9.2	37
18...	1111	280	273	7.9	3.9	9.1	37
18...	1113	295	274	7.9	3.8	8.8	33
18...	1115	309	275	7.9	3.8	8.6	30
18...	1118	319	279	7.9	3.8	8.1	28

KOOTENAI RIVER BASIN

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12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAM- PLING DEPTH (FEET) (00003)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	LIGHT TRANS- MISSION 1 METER PATH- LENGTH (%) (00074)
SEP							
15...	0850	.0	187	8.7	16.7	9.2	41
15...	0854	2.0	187	8.7	16.7	9.2	41
15...	0858	5.0	186	8.7	16.7	9.2	41
15...	0900	10	186	8.7	16.7	9.3	41
15...	0902	15	186	8.7	16.7	9.3	41
15...	0903	20	186	8.7	16.7	9.3	41
15...	0905	25	186	8.7	16.6	9.3	39
15...	0906	30	186	8.7	16.5	9.3	39
15...	0907	35	186	8.7	16.5	9.3	39
15...	0909	40	186	8.7	16.5	9.3	39
15...	0910	45	185	8.7	16.4	9.3	37
15...	0911	50	186	8.6	16.3	9.4	41
15...	0912	55	182	8.4	15.8	9.2	41
15...	0916	60	186	8.3	14.9	8.5	50
15...	0918	65	179	8.2	14.2	8.4	52
15...	0920	75	183	8.2	13.6	8.3	60
15...	0924	85	184	8.2	12.5	8.6	55
15...	0926	95	184	8.2	12.2	8.8	60
15...	0928	105	183	8.2	11.4	9.0	57
15...	0930	115	188	8.3	10.6	9.1	55
15...	0932	125	200	8.3	10.1	9.2	55
15...	0934	135	220	8.4	9.6	9.3	55
15...	0936	145	235	8.4	8.8	9.4	48
15...	0938	155	244	8.4	8.1	9.6	50
15...	0940	165	248	8.3	7.5	9.7	55
15...	0942	175	252	8.2	7.1	9.7	55
15...	0944	185	252	8.2	6.3	9.8	55
15...	0946	200	258	8.0	5.3	9.6	41
15...	0948	215	258	8.0	4.6	9.5	41
15...	0950	230	261	7.9	4.3	9.2	45
15...	0952	245	262	7.8	4.0	9.1	43
15...	0954	260	264	7.8	3.8	9.0	45
15...	0956	275	265	7.8	3.7	8.7	43
15...	0958	290	267	7.8	3.7	8.5	41
15...	1000	307	272	7.8	3.7	8.1	41
15...	1005	317	274	7.8	3.7	7.5	28

KOOTENAI RIVER BASIN

12301920 LAKE KOOCANUSA NEAR LIBBY, MT

LOCATION.--Lat 48°24'38", long 115°18'47", in NW¼ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101 Kootenai National Forest, in block 18 of Libby Dam on Kootenai River, 11 mi east of Libby and at mile 221.9.

DRAINAGE AREA.--8,985 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 2, 1973, nonrecording gage on upstream face of dam at same datum.

REMARKS.--Reservoir and flow completely controlled by gravity type dam with taintor gated spillway; construction began in 1967; completed in 1973. Storage began Mar. 21, 1972. Usable capacity, 5,748,000 acre-ft between elevation 2,201.5 ft, bottom of sluice gate, and 2,459 ft, controlled spillway elevation. Dead storage, 121,200 acre-ft below elevation 2,201.5 ft. Minimum operating level, 768,700 acre-ft, elevation 2,287.0 ft for on-site power generation. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Capacity table and elevations furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,753,000 acre-ft Aug. 6, 1976 and Aug. 16, 1982, maximum elevation, 2,459.12 ft Aug. 16, 1982; minimum contents observed since normal low operating level reached in May 1972, 139,600 acre-ft Dec. 16-21, 1972, elevation, 2,226.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 5,739,000 acre-ft Aug. 7, elevation, 2,458.81 ft; minimum, 1,949,000 acre-ft Apr. 15, elevation, 2,348.28 ft.

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

Elevation	Contents	Elevation	Contents
2,340	1,759,000	2,420	4,085,000
2,360	2,232,000	2,440	4,899,000
2,380	2,765,000	2,460	5,795,000
2,400	3,367,000		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2457.98	2448.50	2427.19	2407.32	2377.81	2352.64	2348.56	2359.50	2404.71	2443.89	2458.71	2458.57
2	2458.14	2447.88	2426.41	2406.44	2376.76	2351.98	2348.56	2360.06	2407.13	2444.77	2458.69	2458.57
3	2458.27	2447.22	2425.57	2405.54	2375.69	2351.31	2348.60	2360.64	2409.40	2445.72	2458.63	2458.63
4	2458.37	2446.59	2424.92	2404.63	2375.03	2350.69	2348.67	2361.21	2412.63	2446.63	2458.58	2458.72
5	2458.49	2445.96	2424.24	2403.78	2374.74	2349.97	2348.68	2361.59	2413.69	2447.50	2458.50	2458.71
6	2458.57	2445.32	2423.43	2402.89	2374.66	2349.26	2348.57	2361.99	2415.45	2448.39	2458.63	2458.72
7	2458.26	2444.73	2422.57	2402.01	2373.86	2348.82	2348.54	2363.03	2417.18	2449.30	2458.81	2458.76
8	2457.95	2444.09	2421.63	2401.19	2372.90	2348.78	2348.61	2364.04	2418.97	2450.08	2458.75	2458.72
9	2457.67	2443.45	2420.84	2400.74	2371.84	2348.70	2348.76	2364.62	2420.75	2450.97	2458.70	2458.40
10	2457.49	2442.73	2419.95	2399.47	2370.80	2348.72	2348.80	2365.01	2422.49	2451.64	2458.59	2458.38
11	2457.18	2442.02	2419.04	2398.63	2369.73	2348.73	2348.88	2365.57	2424.11	2452.29	2458.43	2458.33
12	2456.85	2441.33	2418.20	2397.67	2368.72	2348.82	2348.79	2366.18	2425.49	2452.90	2458.36	2457.98
13	2456.44	2440.60	2417.40	2396.80	2367.65	2348.99	2348.57	2366.96	2426.72	2453.91	2458.54	2457.40
14	2455.91	2439.88	2416.58	2395.92	2366.60	2349.03	2348.37	2367.79	2427.76	2455.38	2458.69	2456.90
15	2455.32	2439.13	2415.74	2394.99	2365.55	2349.06	2348.28	2368.73	2428.80	2456.54	2458.74	2456.56
16	2454.95	2438.40	2415.26	2394.01	2364.46	2349.11	2348.35	2369.59	2429.89	2457.40	2458.72	2456.34
17	2454.59	2437.72	2414.76	2393.01	2363.43	2349.13	2348.40	2369.87	2430.89	2457.85	2458.73	2456.09
18	2454.15	2437.03	2414.53	2392.02	2362.53	2349.07	2348.52	2370.77	2431.95	2458.06	2458.67	2456.07
19	2453.59	2436.31	2414.15	2391.03	2361.84	2349.02	2348.72	2371.89	2432.95	2458.19	2458.44	2455.93
20	2453.02	2435.63	2413.66	2390.04	2361.14	2349.03	2349.03	2373.08	2433.90	2458.29	2458.46	2455.87
21	2452.43	2434.98	2413.10	2389.01	2360.38	2348.99	2349.47	2374.29	2434.66	2458.43	2458.47	2455.54
22	2451.88	2434.20	2412.51	2388.01	2359.42	2348.97	2350.11	2375.77	2435.42	2458.47	2458.46	2455.17
23	2451.54	2433.36	2412.10	2386.98	2358.39	2348.93	2350.96	2377.56	2436.19	2458.45	2458.51	2454.77
24	2451.23	2432.56	2411.98	2385.96	2357.29	2348.97	2351.93	2379.71	2437.04	2458.30	2458.53	2454.65
25	2450.85	2431.75	2411.91	2384.93	2356.29	2348.90	2353.54	2382.20	2438.19	2458.30	2458.63	2454.55
26	2450.26	2431.05	2411.92	2383.93	2355.27	2348.90	2355.03	2385.16	2439.21	2458.41	2458.58	2454.24
27	2449.76	2430.18	2411.44	2382.90	2354.25	2348.86	2356.32	2388.38	2440.12	2458.56	2458.65	2453.97
28	2449.18	2429.40	2410.67	2381.92	2353.33	2348.88	2357.30	2391.61	2440.96	2458.65	2458.71	2453.75
29	2448.69	2428.68	2409.83	2380.89	---	2348.69	2357.98	2394.93	2441.92	2458.65	2458.65	2453.49
30	2448.79	2427.94	2409.00	2379.85	---	2348.75	2358.83	2398.38	2442.87	2458.72	2458.66	2453.19
31	2448.84	---	2408.15	2378.84	---	2348.60	---	2401.81	---	2458.73	2458.60	---
MAX	2458.57	2448.50	2427.19	2407.32	2377.81	2352.64	2358.83	2401.81	2442.87	2458.73	2458.81	2458.76
MIN	2448.69	2427.94	2408.15	2378.84	2353.33	2348.60	2348.28	2359.50	2404.71	2443.89	2458.36	2453.19
CAL YR 1982	MAX	2459.12	MIN	2342.09								
WTR YR 1983	MAX	2458.81	MIN	2348.28								

†	5286	4398	3645	2732	2069	1956	2203	3427	5023	5736	5730	5481
††	-410000	-888000	-753000	-913000	-663000	-113000	+247000	+1224000	+1596000	+713000	-6000	-249000

CAL YR 1982..... †† -10000
WTR YR 1983..... †† -215000

† Contents, in thousands of acre-ft, at end of month.
†† Change in contents, in acre-ft.

KOOTENAI RIVER BASIN

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT

LOCATION.--Lat 48°24'03", long 115°19'11", in SW¼SW¼SW¼ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on right bank 0.7 mi downstream from Libby Dam, 2.8 mi upstream from Fisher River, 11 mi east of Libby, and at mile 221.0.

DRAINAGE AREA.--8,985 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,100.00 ft National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Feb. 13, 1974, nonrecording gage at site 0.4 mi upstream at same datum.

REMARKS.--Water-discharge records good. Flow completely regulated by Lake Koocanusa since Mar. 21, 1972 (see preceding page). Diversions for irrigation of about 14,000 acres, from tributaries above station in Canada and the United States.

AVERAGE DISCHARGE.--12 years, 11,460 ft³/s 17.32 in/yr, 8,303,000 acre-ft/yr, adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,200 ft³/s Aug. 5, 1974, gage height, 27.50 ft; minimum daily, 1,900 ft³/s Jan. 29, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft³/s Nov. 26, gage height, 22.93 ft; minimum daily, 3,900 ft³/s Apr. 20, May 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4060	14300	20000	18800	18700	13300	5610	3900	4020	3980	13500	7450
2	4120	19700	20600	18900	18800	13200	4010	6100	4020	3980	13400	7010
3	4100	19700	20600	19500	18700	13100	3920	6900	3980	3950	14500	6050
4	4100	19800	20600	20300	10100	13100	3950	8100	4060	3980	14500	6180
5	4180	20000	20700	19800	7310	13100	4000	10500	4000	4000	14100	6150
6	4120	20100	20600	19800	4080	13100	5520	10800	3980	3980	7640	6280
7	14000	20100	20600	19900	16900	9510	4960	4100	3950	3990	6700	6310
8	14400	19800	20600	20100	17300	5120	3980	4000	3980	4020	12400	6370
9	13700	20000	20600	20100	18200	5190	3980	10200	4080	3990	12600	14200
10	10300	19900	20200	20100	18300	5250	4000	10900	4060	4020	13100	7610
11	13600	19900	20100	20200	18300	5110	3990	7900	4060	4040	14400	7580
12	13700	20000	20300	20200	18400	4320	5690	6300	4020	3940	14000	14900
13	15300	20100	20100	20200	18400	4320	7100	4000	4020	4130	7560	19200
14	19100	20100	20500	19800	18300	5010	6720	4100	4020	6130	7590	18500
15	18800	20100	20300	19400	18300	5040	5300	4100	4000	9760	8930	14300
16	14800	20200	15400	19400	18100	5230	4200	5800	4070	11700	9400	14500
17	14900	20300	14200	19400	18100	5000	4200	9900	4300	18100	9470	7610
18	15300	20400	9960	19500	16100	5070	4100	9440	4060	19700	11000	7580
19	19200	20500	11600	19600	13400	4340	4200	5810	4060	19700	13100	6840
20	19300	20600	15300	19600	13500	4320	3900	3980	4040	19600	7600	6780
21	19300	20800	15300	19600	14300	5050	4000	3980	4010	19500	7580	13700
22	18900	20800	15300	19500	16500	4340	4000	3980	4010	19600	7680	14100
23	14800	20700	12400	19600	17800	4330	4000	3980	4280	19600	7170	14000
24	15000	20800	4450	19500	17900	4350	4000	3950	4180	19500	7200	7500
25	15300	20800	4420	19500	17900	4360	4000	4060	4010	19400	7190	7550
26	19400	20500	4470	19300	17700	4020	4000	3980	3990	14700	8560	11800
27	19500	20500	11300	19300	17600	4050	4100	4020	4000	14500	6410	11000
28	19600	20600	18500	19200	16000	4020	4000	4060	4000	14500	6370	10900
29	17700	20500	18500	19200	---	5740	6100	4020	4010	14500	9300	10700
30	4100	20500	18700	19100	---	4780	4000	4020	4000	12700	7300	10700
31	4110	---	18800	18800	---	5390	---	4060	---	12600	8470	---
TOTAL	408790	602100	515000	607200	454990	202160	135530	180940	121270	337790	308720	303350
MEAN	13190	20070	16610	19590	16250	6521	4518	5837	4042	10900	9959	10110
MAX	19600	20800	20700	20300	18800	13300	7100	10900	4300	19700	14500	19200
MIN	4060	14300	4420	18800	4080	4020	3900	3900	3950	3940	6370	6050
AC-FT	810800	1194000	1022000	1204000	902500	401000	268800	358900	240500	670000	612300	601700
MEAN †	6518	5142	4375	4733	4312	4684	8668	25740	30860	22490	9860	5927
CFSM †	0.73	0.57	0.49	0.53	0.48	0.52	0.96	2.86	3.43	2.50	1.10	0.66
IN †	0.84	0.64	0.56	0.61	0.50	0.60	1.08	3.30	3.83	2.89	1.27	0.74
AC-FT †	400800	306000	269000	291000	239500	288000	515800	1582900	1836500	1383000	606300	352700

OBSERVED

CAL YR 1982	TOTAL	4360970	MEAN	11950	MAX	21800	MIN	3650	AC-FT	8649800
WTR YR 1983	TOTAL	4177840	MEAN	11450	MAX	20800	MIN	3900	AC-FT	8286500

ADJUSTED

CAL YR 1982	TOTAL	4355836	MEAN	11930	CFSM	1.33	IN	18.03	AC-FT	8639800
WTR YR 1983	TOTAL	4069322	MEAN	11150	CFSM	1.24	IN	16.84	AC-FT	8071500

(†) Adjusted for change in contents in Lake Koocanusa.

KOOTENAI RIVER BASIN

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.

REMARKS.--"Prior to March 25, 1974, at site 3.2 mi downstream."

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 13...	1400	19100	--	1	224	8.1	10.5	10.0
NOV 15...	1330	20300	--	3	228	8.0	.0	9.5
DEC 20...	1330	14700	--	76	224	8.1	-1.0	7.0
JAN 17...	1400	19400	99	2	233	8.0	2.0	5.5
FEB 15...	1330	18200	88	2	230	8.2	6.0	4.5
MAR 16...	1200	5920	90	2	264	8.2	6.5	3.5
APR 14...	1330	7500	10	2	283	8.3	8.5	4.5
MAY 18...	1330	12800	90	2	261	8.2	15.0	6.5
JUN 16...	1200	4000	99	3	243	8.2	15.0	10.0
JUL 12...	1430	3950	100	51	208	8.1	20.0	12.0
AUG 17...	1700	9520	20	1	207	8.3	28.5	12.5
SEP 14...	1615	19200	--	1	204	8.4	21.0	14.5

DATE	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT 13...	713	9.4	89	4.9	.10	.90	<.004	<.006	2.0
NOV 15...	625	8.9	95	4.6	.20	.70	.017	<.001	1.6
DEC 20...	697	10.2	92	4.6	.10	.40	.020	.004	1.5
JAN 17...	702	10.4	90	4.4	<.10	.30	.010	<.002	1.5
FEB 15...	704	11.1	93	4.4	<.10	.70	.008	<.002	1.1
MAR 16...	708	12.2	99	4.9	<.10	.50	.010	<.002	1.8
APR 14...	702	12.6	106	4.8	.10	.80	.002	<.002	1.2
MAY 18...	704	11.6	102	4.6	<.10	.20	.007	.004	1.7
JUN 16...	701	11.2	108	4.9	<.10	.20	.002	<.002	2.0
JUL 12...	703	11.0	111	4.6	<.10	.60	.001	<.002	1.5
AUG 17...	701	9.0	92	4.3	<.10	.60	<.005	<.002	1.3
SEP 14...	705	9.2	98	4.0	<.10	.30	<.005	<.002	1.7

KOOTENAI RIVER BASIN

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12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)
OCT 13...	1400	100	6	29	7.9	2.0	.0	.5	99
NOV 15...	1330	100	6	29	7.7	2.0	.0	.6	98
DEC 20...	1330	110	31	32	8.4	2.4	.1	.5	84
JAN 17...	1400	110	12	31	8.1	2.2	.0	.6	99
FEB 15...	1330	110	15	32	8.4	2.2	.0	.6	100
MAR 16...	1200	130	20	36	9.9	2.8	.1	.6	111
APR 14...	1330	130	12	37	10	3.0	.1	.7	122
AUG 17...	1615	110	15	31	8.1	2.2	.0	.5	96

DATE	TIME	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT 13...	1400	18	1.9	.10	124	.17	6380	.15
NOV 15...	1330	18	2.0	<.10	123	.17	6720	.16
DEC 20...	1330	20	2.3	.10	121	.16	4790	.11
JAN 17...	1400	20	2.0	.10	128	.17	6690	<.10
FEB 15...	1330	19	2.1	.20	129	.18	6330	<.10
MAR 16...	1200	23	2.6	.20	147	.20	2340	<.10
APR 14...	1330	23	2.8	.20	155	.21	3130	<.10
AUG 17...	1615	17	2.0	.10	123	.17	3160	<.10

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT 13...	1400	2	40	3	10	10
NOV 15...	1330	2	100	2	<10	10
DEC 20...	1330	1	50	2	80	20
JAN 17...	1400	2	30	2	30	10
FEB 15...	1330	1	80	4	10	20
MAR 16...	1200	2	60	<1	20	10
APR 14...	1330	2	1000	4	20	60
AUG 17...	1700	5	120	2	<10	20

KOOTENAI RIVER BASIN

12302055 FISHER RIVER NEAR LIBBY, MT

LOCATION.--Lat 48°21'20", long 115°18'50", in NW¼NE¼NW¼ sec.21, T.30 N., R.29 W., Lincoln County, Hydrologic Unit 17010102, on left bank 0.8 mi upstream from mouth and 11.4 mi east of Libby.

DRAINAGE AREA.--838 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,134.10 ft National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Water-discharge records good. Diversions of about 700 acres above station.

AVERAGE DISCHARGE.--16 years, 503 ft³/s, 8.15 in/yr, 364,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,720 ft³/s Jan. 16, 1974, gage height, 9.29 ft; minimum, 29 ft³/s Jan. 2, 1977, gage height, 2.37 ft, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 6,560 ft³/s, by slope-area measurement at site 0.5 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,110 ft³/s Apr. 25, gage height, 5.87 ft; minimum daily, 100 ft³/s Dec. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	142	140	160	223	583	681	1060	1070	382	190	118
2	138	142	135	170	217	577	681	1060	1110	377	184	120
3	152	138	142	180	214	607	681	1060	1060	400	178	122
4	152	135	250	190	178	675	681	1060	974	368	170	118
5	145	138	282	200	173	760	656	1060	904	346	165	120
6	140	152	239	250	207	753	638	1110	845	334	157	116
7	140	154	192	290	210	788	626	1220	830	329	152	113
8	145	150	145	465	207	830	632	1240	823	325	152	111
9	142	142	135	650	201	874	626	1190	809	309	150	111
10	138	138	130	632	195	974	626	1100	809	301	147	116
11	135	135	125	788	192	1110	607	982	845	264	154	133
12	135	131	130	663	192	1180	577	912	740	257	160	135
13	135	133	140	571	210	1160	542	866	650	267	152	128
14	135	128	160	491	207	1140	508	845	601	530	145	122
15	135	118	173	424	207	1090	491	852	595	491	142	118
16	135	133	195	386	214	1020	486	866	626	429	135	113
17	140	135	226	355	220	950	502	881	577	396	133	111
18	145	165	210	313	275	881	553	974	595	359	140	111
19	140	201	190	305	368	809	638	1060	565	329	133	124
20	138	184	187	286	382	747	788	1010	524	317	128	122
21	135	170	190	271	391	714	974	1120	470	317	128	118
22	140	160	181	257	405	681	1250	1230	444	293	126	116
23	150	150	173	250	415	650	1430	1280	434	267	135	113
24	162	142	147	243	439	620	1730	1430	449	257	150	111
25	162	140	100	236	465	595	2060	1550	419	267	154	109
26	160	140	110	229	524	565	1900	1630	386	250	142	111
27	162	138	115	233	583	553	1560	1570	391	236	138	109
28	157	135	120	243	595	542	1380	1470	410	226	131	107
29	152	142	130	233	---	530	1230	1440	400	214	131	105
30	147	142	140	229	---	589	1120	1440	386	204	126	105
31	145	---	150	226	---	663	---	1310	---	198	120	---
TOTAL	4477	4353	5082	10419	8309	24210	26854	35878	19741	9839	4548	3486
MEAN	144	145	164	336	297	781	895	1157	658	317	147	116
MAX	162	201	282	788	595	1180	2060	1630	1110	530	190	135
MIN	135	118	100	160	173	530	486	845	386	198	120	105
CFSM	.17	.17	.20	.40	.35	.93	1.07	1.38	.79	.38	.18	.14
IN.	.20	.19	.23	.46	.37	1.07	1.19	1.59	.88	.44	.20	.15
AC-FT	8880	8630	10080	20670	16480	48020	53260	71160	39160	19520	9020	6910
CAL YR 1982	TOTAL	224652	MEAN 615	MAX 3120	MIN 65	CFSM .73	IN 9.97	AC-FT	445600			
WTR YR 1983	TOTAL	157196	MEAN 431	MAX 2060	MIN 100	CFSM .51	IN 6.98	AC-FT	311800			

KOOTENAI RIVER BASIN
12302055 FISHER RIVER NEAR LIBBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: September 1967 to current year.

INSTRUMENTATION.--Temperature recorder since September 1967.

REMARKS.--Periods of missing record due to sensing and recording equipment malfunctions.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum (water years 1967-82), 26.0°C July 23, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	11.5	7.5	9.5	6.0	4.0	5.0	3.5	3.0	3.0	.0	.0	.0
2	10.0	8.5	9.5	4.5	2.5	3.5	3.0	2.5	2.5	.0	.0	.0
3	11.5	9.5	10.0	4.0	2.5	3.5	3.5	1.5	2.5	.0	.0	.0
4	10.0	7.5	9.0	5.5	4.0	4.5	4.0	3.0	3.5	.0	.0	.0
5	10.0	7.5	8.5	5.5	5.0	5.5	3.0	2.0	2.5	.0	.0	.0
6	8.0	6.0	7.5	5.5	4.5	5.0	2.0	.5	1.5	.0	.0	.0
7	9.0	7.5	8.0	5.0	3.5	4.0	.0	.0	.0	.0	.0	.0
8	9.0	7.0	7.5	3.5	2.5	3.0	.0	.0	.0	.5	.0	.0
9	8.5	5.0	6.5	3.0	2.0	2.5	.0	.0	.0	1.5	.0	.5
10	9.0	5.0	7.0	3.0	2.0	2.5	.0	.0	.0	2.5	1.5	2.0
11	9.5	5.5	7.5	3.0	1.5	2.5	.0	.0	.0	2.5	2.0	2.0
12	9.5	7.0	8.0	1.5	.0	1.0	.0	.0	.0	2.0	1.0	1.5
13	10.0	8.0	8.5	2.0	.5	1.5	.0	.0	.0	2.0	.5	1.5
14	10.5	7.5	9.0	1.5	.0	.5	.0	.0	.0	1.5	.0	.5
15	11.0	8.0	9.5	.0	.0	.0	.0	.0	.0	.5	.0	.0
16	12.5	10.0	11.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
17	11.0	8.5	10.0	3.5	1.0	2.5	.5	.0	.0	1.0	.0	.5
18	8.5	7.5	8.0	3.5	3.5	3.5	1.0	.0	.5	.5	.0	.0
19	8.0	5.5	7.0	4.0	3.5	3.5	1.5	.0	1.0	.5	.0	.0
20	6.5	3.5	5.0	3.5	2.5	3.0	.5	.0	.0	1.0	.0	.5
21	5.5	2.5	4.5	2.5	1.0	2.0	1.0	.0	.5	1.5	1.0	1.5
22	7.0	4.5	5.5	1.0	.5	1.0	1.5	.0	1.0	2.0	1.0	1.5
23	9.5	7.0	8.0	.5	.0	.5	1.5	.0	1.0	3.0	1.5	2.0
24	9.0	8.0	8.5	.5	.0	.0	.0	.0	.0	2.5	1.5	2.0
25	8.5	7.5	8.0	.0	.0	.0	.0	.0	.0	2.5	1.5	2.0
26	8.5	7.5	8.0	.0	.0	.0	.0	.0	.0	2.5	1.5	2.0
27	7.5	6.5	7.0	.5	.0	.0	.0	.0	.0	3.5	2.5	3.0
28	6.5	6.0	6.5	2.0	.5	1.0	.0	.0	.0	3.5	2.0	3.0
29	8.0	5.0	6.5	2.5	2.0	2.0	.0	.0	.0	2.0	1.0	1.5
30	5.5	3.5	4.5	3.5	1.5	3.0	.0	.0	.0	1.5	.5	1.0
31	5.0	4.0	4.5	---	---	---	.0	.0	.0	2.5	1.5	2.0
MONTH	12.5	2.5	7.5	6.0	.0	2.0	4.0	.0	.5	3.5	.0	1.0

KOOTENAI RIVER BASIN

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12302055 FISHER RIVER NEAR LIBBY, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT					
06...	1010	138	231	2.0	6.0
NOV					
15...	1040	108	242	-10.0	.0
JAN					
17...	1000	364	172	-5.0	.0
FEB					
15...	1030	208	251	-3.0	2.5
APR					
28...	1000	1410	100	5.0	5.5
JUN					
24...	1020	465	118	15.0	14.5
AUG					
11...	1500	154	184	26.0	20.0

KOOTENAI RIVER BASIN

12303000 KOOTENAI RIVER AT LIBBY, MT

LOCATION.--Lat 48°24'03", long 115°33'08", in SW¼SE¼SW¼ sec.34, T.31 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, on right bank 1,800 ft downstream from highway bridge at Libby, 0.8 mi downstream from Libby Creek, and at mile 204.3.

DRAINAGE AREA.--10,240 mi², approximately.

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1316. REVISED RECORDS.--WSP 1042: 1933. WSP 1246: 1912(M), 1915(M), 1916, 1918-19(M), 1924-27(M).

GAGE.--Water-stage recorder. Datum of gage is 2,041.54 ft National Geodetic Vertical Datum of 1929. Prior to Apr. 28, 1931, nonrecording gages at site 1,800 ft upstream at different datum.

REMARKS.--Records excellent except those below 10,000 ft³/s, which are good. Flow regulated by Lake Koocanusa (station number 12301920) since Mar. 21, 1972. Diversions for irrigation of about 14,500 acres from tributaries above station in Canada and the United States. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report. AVERAGE DISCHARGE.--73 years, 12,160 ft³/s, 16.12 in/yr, 8,810,000 acre-ft/yr, adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft³/s June 21, 1916, gage height, 20.7 ft, present datum, derived from gage-relation study; minimum observed, 895 ft³/s Jan. 11, 1930, result of discharge measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,600 ft³/s Jan. 11, gage height, 7.11 ft; minimum daily, 4,330 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4330	11900	20300	18800	18900	13900	6950	5730	6160	4810	12900	7580
2	4390	20100	20800	18900	19000	13900	5020	7800	6320	4810	14100	7120
3	4430	20300	20900	19600	19000	13800	4960	8440	6150	4850	14700	6190
4	4430	20300	21200	20400	15500	14000	4930	9580	6010	4770	14700	6270
5	4450	20400	21400	20000	7460	14100	4920	11000	5840	4750	14700	6260
6	4410	20500	21200	20300	4390	14000	5750	12300	5690	4770	8670	6280
7	12000	20500	21000	20300	12000	12000	6440	7200	5680	4760	7230	6400
8	15300	20300	20900	20900	17600	6430	4960	6100	5740	4780	11100	6350
9	13700	20500	20900	21200	18300	6540	4960	10900	5850	4650	13000	13000
10	12100	20400	20500	21100	18400	6830	4960	12400	5790	4580	12900	8650
11	12100	21000	20300	21500	18400	6990	4910	10700	5870	4570	14600	7580
12	14000	20500	20400	21200	18500	6240	6450	7650	5510	4520	14600	13100
13	14900	20600	20300	21100	18500	6160	7180	5350	5260	4800	8430	19300
14	19500	20700	20700	20700	18500	6770	7760	5370	5200	7100	7730	19300
15	19500	20700	20600	20100	18300	6650	5870	5430	5250	11000	8650	14400
16	15000	20800	16300	19900	18300	6470	4790	7160	5330	11800	9440	14400
17	15100	20900	15100	19900	18200	6440	4790	10200	5440	18200	9480	8590
18	15100	21100	9980	19900	17000	6380	4860	11000	5400	20400	10600	7560
19	19600	21100	10800	20000	13700	5570	5010	8320	5280	20300	13400	6950
20	19700	21100	15300	20000	13800	5460	5320	5770	5110	20200	8170	6770
21	19800	21200	15300	19900	14600	6060	5760	6170	4930	20100	7670	12500
22	19900	21200	15300	19800	16200	5350	6140	6440	4840	20100	7820	14100
23	15300	21100	13700	19900	18200	5270	6550	6590	5020	20000	7190	14200
24	15500	21000	4690	19800	18400	5230	7290	7010	5290	20000	7350	8660
25	15400	21000	4540	19800	18500	5220	7550	7340	4930	19900	7340	7620
26	20200	20800	4620	19500	18600	4940	7050	7490	4840	15700	8560	10700
27	20300	20800	10000	19500	18400	4880	6510	7330	4920	14800	6780	11500
28	20500	20800	18400	19600	17600	4830	6130	7110	4940	14800	6520	10900
29	20300	20800	18500	19400	---	5630	7850	7090	4940	14700	9130	10800
30	5470	20800	18700	19400	---	6400	5750	7190	4890	13200	7320	10800
31	4490	---	18800	19100	---	5850	---	6790	---	12800	8770	---
TOTAL	421200	613200	521430	621500	464250	238290	177370	244950	162420	356520	313550	303830
MEAN	13590	20440	16820	20050	16580	7687	5912	7902	5414	11500	10110	10130
MAX	20500	21200	21400	21500	19000	14100	7850	12400	6320	20400	14700	19300
MIN	4330	11900	4540	18800	4390	4830	4790	5350	4840	4520	6520	6190
AC-FT	835500	1216000	1034000	1233000	920800	472600	351800	485900	322200	707200	621900	602600
MEAN †	6,920	5,512	4,570	5,204	4,642	5,848	10,060	27,810	32,240	23,100	10,020	5,942
CFSM †	0.68	0.54	0.45	0.51	0.45	0.57	0.98	2.72	3.15	2.26	0.98	0.58
IN †	0.78	0.60	0.51	0.59	0.47	0.66	1.10	3.13	3.51	2.60	1.13	0.65
AC-FT †	425,500	328,000	281,000	320,000	257,800	359,600	598,800	1,709,900	1,918,200	1,420,200	615,900	353,600

OBSERVED

CAL YR 1982	TOTAL 4,745,720	MEAN 13,000	MAX 21,400	MIN 4,020	AC-FT 9,413,000
WTR YR 1983	TOTAL 4,438,510	MEAN 12,160	MAX 21,500	MIN 4,330	AC-FT 8,804,000

ADJUSTED

CAL YR 1982	TOTAL 4,740,357	MEAN 12,990	CFSM 1.27	IN 17.22	AC-FT 9,402,000
WTR YR 1983	TOTAL 4,329,972	MEAN 11,860	CFSM 1.16	IN 15.73	AC-FT 8,588,000

(†) Adjusted for change in contents in Lake Koocanusa.

KOOTENAI RIVER BASIN

12303100 FLOWER CREEK NEAR LIBBY, MT

LOCATION---Lat 48°20'41", long 115°36'20", in NW¼SE¼SE¼ sec.19, T.30 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on left bank 30 ft downstream from road bridge, 0.3 mi upstream from South Fork, 1.0 mi upstream from reservoir, 4.0 mi southwest of Libby, and at mile 4.5 mi.

DRAINAGE AREA---11.1 mi².

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

REVISED RECORDS---WDR MT-1972: Drainage area.

GAGE---Water-stage recorder. Altitude of gage is 2,866 ft, from topographic map.

REMARKS---Records good. No known regulation or diversion above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE---23 years, 27.1 ft³/s, 33.14 in/yr, 19,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD---Maximum discharge, 709 ft³/s Jan. 16, 1974, gage height, 5.53 ft; maximum gage height, 6.10 ft Jan. 15, 1974 (backwater from ice); minimum discharge, 3.1 ft³/s Nov. 20, 1979; minimum gage height, 1.35 ft Jan. 11, 1975.

EXTREMES FOR CURRENT YEAR---Peak discharges above base of 200 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 25	2300	*231	*3.37	May 29	2345	215	3.31

Minimum daily discharge, 6.2 ft³/s Dec. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.8	11	8.3	6.9	8.5	14	15	34	114	51	17	8.3		
2	9.6	9.9	8.0	6.9	8.3	15	15	36	126	48	17	9.1		
3	15	9.9	11	6.9	8.0	17	15	38	117	50	17	8.8		
4	12	9.9	21	6.9	7.6	19	14	37	111	46	15	8.5		
5	11	10	14	7.3	7.4	19	13	40	109	44	15	8.3		
6	10	10	12	8.3	7.0	18	13	48	101	44	14	8.0		
7	11	9.9	9.0	8.5	7.5	18	14	50	107	44	14	7.5		
8	10	9.1	8.0	16	7.8	21	15	46	111	41	14	7.3		
9	9.9	9.6	7.5	15	7.5	24	15	40	121	37	13	7.8		
10	9.6	9.1	7.0	13	7.5	34	14	34	111	33	13	8.3		
11	9.3	8.8	6.2	13	7.3	37	13	32	98	30	15	11		
12	9.3	8.8	7.0	13	8.0	32	12	31	80	30	14	9.1		
13	9.3	8.8	7.5	12	8.0	30	12	32	71	37	13	8.8		
14	9.1	8.5	8.0	11	7.8	28	12	36	71	96	12	8.3		
15	9.1	8.0	8.5	11	7.8	24	12	40	76	81	12	8.0		
16	9.1	8.5	9.9	10	7.5	22	13	41	77	75	11	7.8		
17	9.9	8.9	10	9.9	8.0	20	15	45	71	59	11	7.3		
18	9.9	11	9.9	9.6	9.9	19	20	63	78	48	11	7.8		
19	9.3	11	9.9	9.3	9.6	17	28	60	66	42	11	8.0		
20	9.1	10	9.6	8.8	9.6	15	37	65	53	42	10	8.0		
21	8.8	9.9	9.6	8.8	9.6	15	47	109	44	40	9.9	7.8		
22	9.9	9.3	9.3	8.5	9.9	14	58	114	41	36	9.9	7.8		
23	20	8.0	9.1	8.3	10	13	75	135	45	32	10	7.8		
24	17	7.5	8.5	8.3	11	13	109	164	75	30	11	7.8		
25	15	7.0	8.2	8.0	12	13	88	175	59	28	10	7.5		
26	15	7.5	8.0	8.0	13	12	63	190	53	26	9.6	7.3		
27	15	8.0	7.8	9.6	15	12	46	175	61	24	9.6	7.3		
28	13	8.5	7.5	9.6	14	12	38	175	60	22	9.1	7.3		
29	13	8.3	7.3	9.1	---	12	34	185	58	21	8.8	7.1		
30	12	8.5	7.1	8.8	---	14	33	180	55	19	8.5	6.9		
31	11	---	7.1	8.8	---	16	---	147	---	18	8.5	---		
TOTAL	350.0	273.2	281.8	299.1	255.1	589	908	2597	2420	1274	373.9	240.6		
MEAN	11.3	9.11	9.09	9.65	9.11	19.0	30.3	83.8	80.7	41.1	12.1	8.02		
MAX	20	11	21	16	15	37	109	190	126	96	17	11		
MIN	8.8	7.0	6.2	6.9	7.0	12	12	31	41	18	8.5	6.9		
CFSM	1.02	.82	.82	.87	.82	1.71	2.73	7.55	7.27	3.70	1.09	.72		
IN.	1.17	.92	.94	1.00	.85	1.97	3.04	8.70	8.11	4.27	1.25	.81		
AC-FT	694	542	559	593	506	1170	1800	5150	4800	2530	742	477		
CAL YR 1982	TOTAL	11665.7	MEAN	32.0	MAX	215	MIN	4.0	CFSM	2.88	IN	39.09	AC-FT	23140
WTR YR 1983	TOTAL	9861.7	MEAN	27.0	MAX	190	MIN	6.2	CFSM	2.43	IN	33.05	AC-FT	19560

KOOTENAI RIVER BASIN

12303500 LAKE CREEK AT TROY, MT

LOCATION.--Lat 48°26'49", long 115°52'34" in SE¼NW¼SW¼ sec.18, T.31 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on right bank 1,000 ft upstream from bridge on U.S. Highway 2, 0.4 mi upstream from mouth, 0.6 mi downstream from Montana Light and Power Company Dam (Troy Dam), and 1.3 mi southeast of Troy.

DRAINAGE AREA.--210 mi², revised.

PERIOD OF RECORD.--January 1945 to September 1957, October 1982 to September 1983.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,900 ft, from topographic map. Prior to Nov. 1, 1946, wire-weight gage at site 0.2 mi upstream at different datum. Jan. 11, 1945, to Sept. 30, 1957, water-stage recorder at same site at different datum.

REMARKS.--Records good. Diurnal fluctuation caused by small hydroelectric plant 0.6 mi upstream.

AVERAGE DISCHARGE.--13 years (1946-57, 1982-83), 510 ft³/s, 369,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,250 ft³/s May 30, 1948, gage height, 8.28 ft; minimum, 2.0 ft³/s Sept. 1, 1947, Sept. 15, 1948.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,960 ft³/s May 30, gage height, 4.63 ft; minimum daily, 100 ft³/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	174	166	177	297	359	401	624	1590	665	341	196
2	124	158	166	177	291	380	391	627	1730	649	329	198
3	183	162	206	185	278	386	386	632	1560	655	321	198
4	161	163	714	182	267	411	381	642	1470	629	313	191
5	162	178	440	249	259	419	370	683	1400	591	305	186
6	157	188	338	292	255	415	369	709	1300	588	295	186
7	155	183	297	294	250	426	367	732	1290	568	288	191
8	179	177	267	452	248	459	366	738	1280	550	282	270
9	165	175	256	449	245	486	358	720	1290	528	278	135
10	164	165	232	539	246	588	361	699	1250	489	273	140
11	162	163	226	538	232	609	354	627	1240	477	282	199
12	162	165	222	458	262	619	342	629	1130	455	270	191
13	159	167	216	441	265	587	333	619	1010	472	258	186
14	162	162	216	417	254	554	331	628	991	914	251	182
15	155	159	210	381	257	568	329	640	1000	758	258	181
16	157	160	260	359	266	547	328	664	1000	746	232	179
17	166	185	260	349	304	531	334	688	947	695	234	175
18	158	217	260	332	367	502	351	790	957	624	224	171
19	160	214	242	317	346	469	374	827	906	593	233	169
20	161	211	232	306	344	456	442	835	831	562	217	170
21	157	206	236	298	346	448	484	1030	771	560	217	165
22	162	191	232	291	352	427	519	1120	735	520	216	168
23	207	182	219	298	358	421	628	1230	726	475	223	163
24	198	174	219	306	355	407	905	1450	887	455	235	164
25	182	168	216	274	367	393	956	1600	800	461	226	155
26	188	168	206	285	387	380	840	1730	734	437	217	161
27	190	163	197	335	380	375	777	1760	778	412	217	160
28	176	168	200	336	367	375	703	1740	756	394	206	154
29	181	174	197	313	---	366	633	1800	729	380	203	155
30	174	166	194	304	---	414	635	1930	681	371	203	155
31	172	---	191	303	---	411	---	1850	---	354	196	---
TOTAL	5139	5286	7733	10237	8445	14188	14348	30993	31769	17027	7843	5294
MEAN	166	176	249	330	302	458	478	1000	1059	549	253	176
MAX	207	217	714	539	387	619	956	1930	1730	914	341	270
MIN	100	158	166	177	232	359	328	619	681	354	196	135
CFSM	.79	.84	1.19	1.57	1.44	2.18	2.28	4.76	5.04	2.61	1.21	.84
IN.	.91	.94	1.37	1.81	1.50	2.51	2.54	5.49	5.63	3.02	1.39	.94
AC-FT	10190	10480	15340	20310	16750	28140	28460	61470	63010	33770	15560	10500

WTR YR 1983 TOTAL 158302 MEAN 434 MAX 1930 MIN 100 CFSM 2.07 IN 28.04 AC-FT 314000

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT

LOCATION.--Lat 48°33'43", long 115°58'09", in NE¼SE¼SE¼ sec.5, T.32 N., R.34 W., Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, on right bank 500 ft upstream from bridge on U.S. Highway 2, 0.2 mi upstream from mouth, and 7.7 mi northwest of Troy.

DRAINAGE AREA.--766 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to September 1916 (fragmentary record), March 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,839.2 ft National Geodetic Vertical Datum of 1929. Oct. 15, 1910, to Sept. 30, 1916, nonrecording gage at several sites within 11 mi of present site at various datums.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 30 acres above station.

AVERAGE DISCHARGE.--27 years, 903 ft³/s, 16.01 in/yr, 654,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s May 21, 1956, gage height, 9.70 ft, in gage well, 10.8 ft, from outside gage; minimum daily, 50 ft³/s Dec. 9, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a stage of 11.0 ft from floodmarks; discharge, 12,500 ft³/s. Flood in May 1954 reached a stage of 11.4 ft from floodmarks; discharge, 13,400 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 25	0330	5,630	7.53	May 26	0030	*6,350	*7.79

Minimum, 117 ft³/s Nov. 15, gage height, 3.04 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	196	203	186	180	381	842	1140	2640	3750	965	555	223
2	189	193	174	170	367	926	1120	2690	3540	957	519	220
3	213	180	189	200	353	1190	1110	2740	3320	1030	479	213
4	203	180	750	250	308	1310	1060	2790	3120	990	452	213
5	196	196	691	300	271	1210	1010	2840	2820	872	431	227
6	183	206	490	350	279	1110	1010	3020	2580	798	411	223
7	189	203	304	450	334	1050	1080	3180	2490	747	386	213
8	196	186	216	600	325	1010	1150	3340	2380	718	371	203
9	186	174	209	700	317	1080	1150	3110	2310	697	357	196
10	177	165	193	739	304	1730	1110	2870	2150	637	348	203
11	174	162	183	872	295	2200	1040	2630	2110	592	357	227
12	171	153	209	805	304	2090	965	2530	1730	573	401	223
13	168	156	256	684	401	1960	918	2450	1510	677	371	213
14	162	153	271	579	411	1900	887	2470	1400	1730	339	203
15	162	135	264	496	411	1730	895	2610	1370	1680	317	193
16	159	156	295	442	406	1530	942	2850	1300	1530	295	186
17	165	180	325	457	416	1390	1060	3000	1180	1310	283	177
18	171	260	317	431	650	1260	1320	3360	1130	1170	267	177
19	165	287	291	401	732	1120	1680	3280	1090	1020	260	196
20	162	264	271	371	670	1060	2180	3190	990	950	252	183
21	156	234	260	357	684	1010	2610	3770	903	1060	249	177
22	162	180	252	343	691	950	3020	4150	850	950	241	174
23	304	165	241	339	711	926	3410	4530	910	842	256	171
24	362	148	200	325	790	918	4760	5060	1230	783	334	165
25	299	140	180	317	887	910	5570	5470	1110	805	334	162
26	256	162	200	308	934	880	4860	5680	918	880	291	159
27	256	186	190	339	903	872	3930	5570	1020	820	275	156
28	238	193	180	442	865	857	3340	5290	1110	732	264	156
29	231	196	200	436	---	835	2890	5240	950	691	249	156
30	220	196	200	411	---	981	2690	5130	918	630	241	156
31	209	---	190	396	---	1170	---	4430	---	592	227	---
TOTAL	6280	5592	8377	13490	14400	38007	59907	111910	52189	28428	10412	5744
MEAN	203	186	270	435	514	1226	1997	3610	1740	917	336	191
MAX	362	287	750	872	934	2200	5570	5680	3750	1730	555	227
MIN	156	135	174	170	271	835	887	2450	850	573	227	156
CFSM	.27	.24	.35	.57	.67	1.60	2.61	4.71	2.27	1.20	.44	.25
IN.	.30	.27	.41	.66	.70	1.85	2.91	5.43	2.53	1.38	.51	.28
AC-FT	12460	11090	16620	26760	28560	75390	118800	222000	103500	56390	20650	11390

CAL YR 1982	TOTAL	367262	MEAN	1006	MAX	6670	MIN	95	CFSM	1.31	IN	17.84	AC-FT	728500
WTR YR 1983	TOTAL	354736	MEAN	972	MAX	5680	MIN	135	CFSM	1.27	IN	17.23	AC-FT	703600

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Seasonally 1963-73, March 1975 to current year.

INSTRUMENTATION.--Temperature recorder since Mar. 25, 1975.

REMARKS.--Periods of missing record due to equipment malfunctions. Record for period Apr. 4-28 rated fair. Prior to Mar. 25, 1975 records furnished by Corps of Engineers, U.S. Army.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 26.0°C July 19, Aug. 1, 2, 10, 1979; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 21.0°C Aug. 8, 9; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	8.0	9.0	6.0	4.5	5.0	1.0	.0	.5	.0	.0	.0
2	9.5	8.5	9.0	4.0	2.0	3.0	.5	.0	.5	.0	.0	.0
3	10.5	8.0	9.0	4.0	2.0	3.0	1.0	.0	.5	.0	.0	.0
4	9.0	7.5	8.5	4.5	3.5	4.0	1.0	.0	.5	.0	.0	.0
5	9.5	7.0	7.5	4.5	4.0	4.5	.5	.0	.0	.0	.0	.0
6	7.0	6.0	6.5	4.5	3.0	4.0	.0	.0	.0	.0	.0	.0
7	8.5	6.5	7.5	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
8	9.0	6.5	7.0	2.5	1.0	1.5	.0	.0	.0	---	---	---
9	8.0	5.5	6.5	2.0	.5	1.0	.0	.0	.0	---	---	---
10	7.5	5.5	6.0	1.5	.5	1.0	.0	.0	.0	---	---	---
11	8.0	5.5	6.5	2.0	.5	1.0	.0	.0	.0	---	---	---
12	8.0	6.5	7.0	.5	.0	.5	.0	.0	.0	---	---	---
13	9.0	6.5	7.5	1.0	.0	.5	.0	.0	.0	---	---	---
14	9.5	7.0	8.0	1.0	.0	.0	.0	.0	.0	---	---	---
15	10.0	7.5	8.5	.0	.0	.0	.0	.0	.0	---	---	---
16	11.5	8.5	9.5	.0	.0	.0	.0	.0	.0	---	---	---
17	9.5	7.0	9.0	1.0	.0	.5	.0	.0	.0	---	---	---
18	7.5	5.5	6.5	1.0	.5	.5	.5	.0	.0	---	---	---
19	7.0	4.5	5.5	2.0	1.0	1.5	.5	.0	.0	1.0	---	---
20	5.5	3.5	4.5	2.0	1.5	1.5	.0	.0	.0	.5	.0	.0
21	5.0	3.0	4.0	1.5	.5	1.0	.0	.0	.0	1.0	.5	.5
22	6.5	4.0	5.5	.5	.0	.0	1.0	.0	.5	1.0	.5	1.0
23	7.5	6.0	7.0	.0	.0	.0	.5	.0	.0	1.5	1.0	1.0
24	8.0	7.0	7.5	.0	.0	.0	.0	.0	.0	1.5	1.0	1.0
25	8.0	6.5	7.0	.0	.0	.0	.0	.0	.0	1.5	1.0	1.5
26	7.5	7.0	7.0	.0	.0	.0	.0	.0	.0	2.0	1.5	1.5
27	7.0	6.0	6.5	.0	.0	.0	.0	.0	.0	2.0	1.5	1.5
28	6.0	5.5	5.5	.0	.0	.0	.0	.0	.0	2.5	1.5	1.5
29	6.5	5.0	5.5	.0	.0	.0	.0	.0	.0	2.0	.0	1.0
30	5.0	4.5	4.5	.5	.0	.0	.0	.0	.0	1.0	.5	1.0
31	4.5	4.0	4.0	---	---	---	.0	.0	.0	2.0	1.0	1.5
MONTH	11.5	3.0	7.0	6.0	.0	1.0	1.0	.0	.0	2.5	.0	.5

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	2.0	1.0	1.5	---	---	---	---	---	---	8.0	4.5	6.0
2	1.5	.5	1.0	---	---	---	---	---	---	7.0	5.0	6.0
3	1.5	.5	1.0	---	---	---	---	---	---	7.0	5.5	6.5
4	.5	.0	.0	---	---	---	7.0	---	---	7.5	4.5	6.0
5	.0	.0	.0	---	---	---	7.0	3.0	5.0	8.0	5.0	6.5
6	.0	.0	.0	---	---	---	7.5	3.0	5.5	7.0	5.0	6.0
7	.0	.0	.0	---	---	---	5.5	4.0	5.0	7.0	5.0	5.5
8	.5	.0	.0	---	---	---	6.5	4.5	5.0	7.5	5.5	6.5
9	.5	.0	.0	---	---	---	5.5	4.0	5.0	7.0	5.0	6.0
10	1.0	.0	.5	---	---	---	5.5	3.5	4.5	7.5	5.0	6.0
11	1.5	.5	1.0	---	---	---	5.5	3.0	4.0	8.0	5.0	6.5
12	1.5	1.0	1.5	---	---	---	6.0	2.5	4.0	8.5	4.5	6.0
13	2.5	1.0	2.0	---	---	---	6.5	2.5	4.5	8.5	4.5	6.5
14	2.5	1.5	2.0	---	---	---	7.0	2.5	5.0	8.0	4.5	6.5
15	3.0	2.0	2.5	---	---	---	7.5	3.0	5.5	8.0	5.5	7.0
16	---	1.5	---	---	---	---	7.5	3.5	5.5	8.0	5.5	6.5
17	---	---	---	---	---	---	8.5	4.0	6.0	8.5	5.5	7.0
18	---	---	---	---	---	---	9.0	4.0	6.5	8.0	5.5	6.5
19	---	---	---	---	---	---	9.0	5.5	7.0	7.5	5.0	6.0
20	---	---	---	---	---	---	7.5	5.5	6.5	9.0	4.5	7.0
21	---	---	---	---	---	---	7.0	4.5	6.0	9.5	5.5	7.0
22	---	---	---	---	---	---	7.5	5.0	6.0	9.5	5.0	7.0
23	---	---	---	---	---	---	7.5	4.5	6.0	9.5	5.5	7.5
24	---	---	---	---	---	---	6.0	5.0	5.5	9.5	5.5	7.5
25	---	---	---	---	---	---	5.0	4.5	4.5	9.5	5.5	7.5
26	---	---	---	---	---	---	5.5	4.0	5.0	10.0	6.0	8.0
27	---	---	---	---	---	---	6.5	4.5	5.5	10.5	7.0	8.5
28	---	---	---	---	---	---	6.5	4.5	5.5	10.5	7.0	8.5
29	---	---	---	---	---	---	8.0	3.5	5.5	11.0	7.0	9.0
30	---	---	---	---	---	---	8.5	4.0	5.5	10.5	7.5	9.0
31	---	---	---	---	---	---	---	---	---	10.5	7.0	8.5
MONTH	3.0	.0	1.0	---	---	---	9.0	2.5	5.5	11.0	4.5	7.0
JUNE				JULY				AUGUST			SEPTEMBER	
1	11.0	7.5	9.0	13.5	12.0	12.5	19.0	14.5	17.0	17.5	16.0	17.0
2	9.5	7.5	8.0	12.5	11.0	12.0	19.5	15.5	18.0	15.5	14.0	15.0
3	10.0	7.0	8.5	11.5	10.5	10.5	19.5	16.0	18.0	15.5	14.0	14.5
4	10.5	8.0	9.5	15.0	9.0	12.0	19.5	15.5	18.0	15.5	14.0	14.5
5	11.0	7.5	9.5	16.5	11.0	13.5	20.5	16.5	18.5	15.0	13.0	14.0
6	12.0	8.0	10.0	17.0	12.5	14.5	20.0	16.0	18.5	14.5	11.0	12.5
7	12.5	8.5	10.5	17.5	13.5	15.5	20.0	16.0	18.5	16.0	13.0	14.0
8	13.0	9.0	11.0	16.0	14.0	14.5	21.0	17.5	19.5	13.5	11.5	12.5
9	12.5	10.0	11.0	15.5	12.5	14.0	21.0	18.0	19.5	12.5	10.5	11.5
10	11.5	9.5	10.0	15.0	13.0	14.0	20.5	18.0	19.5	10.5	9.0	9.5
11	10.5	9.0	9.5	15.0	12.5	14.0	20.0	17.5	18.5	13.0	9.0	11.0
12	10.5	8.0	9.5	15.5	13.0	14.0	19.0	15.5	17.5	13.5	10.5	12.0
13	12.5	8.5	10.0	15.5	13.5	14.0	19.5	15.5	17.5	14.0	11.0	12.5
14	13.5	9.0	11.0	14.0	12.0	13.0	19.5	16.0	18.0	15.0	12.0	13.0
15	12.5	10.5	11.5	12.5	11.0	11.5	19.5	16.0	18.0	14.5	11.5	12.5
16	12.0	10.0	11.0	12.5	11.0	11.5	19.5	16.0	18.0	13.5	12.0	12.5
17	11.0	9.5	10.5	14.0	10.0	12.0	19.0	15.5	17.5	13.0	10.0	11.5
18	11.0	9.0	10.0	16.0	11.0	13.0	19.0	16.0	17.5	10.0	8.5	9.5
19	---	---	---	17.0	11.5	14.0	19.0	16.0	17.5	9.5	6.5	7.5
20	---	---	---	15.5	12.5	13.5	19.0	16.0	17.5	9.5	6.0	7.5
21	---	---	---	16.0	11.5	13.5	19.0	15.5	17.5	10.5	7.0	8.0
22	13.5	---	---	16.5	11.5	14.0	17.5	16.0	16.5	12.0	8.0	9.0
23	15.5	11.5	13.5	15.5	12.0	14.0	17.5	16.0	16.5	12.5	8.5	10.0
24	14.0	11.5	12.5	16.5	13.0	14.5	16.5	15.5	16.0	13.0	9.5	10.5
25	15.0	10.0	12.5	15.5	13.0	14.0	17.5	14.0	16.0	14.0	10.0	11.5
26	16.0	10.5	13.0	16.0	12.5	14.0	17.0	14.5	16.0	13.5	10.0	11.0
27	14.5	12.5	13.0	14.5	12.0	13.0	17.5	14.5	16.0	12.5	10.0	11.0
28	17.0	11.5	14.0	14.5	11.5	13.0	18.0	15.5	17.0	10.0	7.5	8.5
29	15.0	13.0	14.0	17.0	12.0	14.0	19.0	16.0	17.5	9.5	6.5	7.5
30	15.5	12.0	13.5	17.5	12.5	15.0	19.0	16.0	17.5	10.5	7.0	8.0
31	---	---	---	17.5	13.5	15.5	18.5	16.5	17.5	---	---	---
MONTH YEAR	17.0 21.0	7.0 .0	11.0 7.5	17.5	9.0	13.5	21.0	14.0	17.5	17.5	6.0	11.5

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 07...	1405	217	114	9.0	7.5
NOV 22...	1220	155	114	3.5	.0
JAN 19...	1300	426	85	.0	.5
FEB 09...	1150	315	93	1.0	.0
APR 04...	1155	1080	86	9.0	4.0
MAY 18...	1830	3270	59	16.0	7.5
26...	1845	5400	42	29.0	9.0
JUN 22...	1125	854	72	19.0	9.5

KOOTENAI RIVER BASIN

12305000 KOOTENAI RIVER AT LEONIA, ID

LOCATION.--Lat 48°37'04", long 116°02'47", in NW¼NW¼NW¼ sec.20, T.33 N., R.34 W., Principal meridian, Lincoln County, MT, Hydrologic Unit 17010104, on right bank at Leonia, 450 ft east of Montana-Idaho State line, 0.5 mi upstream from Boulder Creek, and at mile 171.6.

DRAINAGE AREA.--11,740 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,790.25 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1970, at datum 90 ft lower. Prior to Nov. 13, 1928, nonrecording gage on bridge 250 ft upstream at datum 90.41 ft lower.

REMARKS.--Records good. Diversions upstream from station for irrigation of about 14,600 acres. Flow regulated by Lake Koocanusa since Mar. 21, 1972. U.S. Army Corps of Engineers radio telemeter at station.

AVERAGE DISCHARGE.--55 years, 13,990 ft³/s, 16.19 in/yr, 10,140,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft³/s May 28, 1948, gage height, 33.40 ft; minimum, 996 ft³/s Dec. 9, 1936; minimum gage height, 7.56 ft Dec. 10, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of June 1894 and 1916 reached stages of 34.6 ft and 31.6 ft, respectively, present datum, from information by Great Northern Railway.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,400 ft³/s Dec. 4, gage height, 17.62 ft; minimum, 4,670 ft³/s Oct. 2, gage height, 10.64 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4840	8170	20600	18500	19200	16000	10300	10600	14500	7190	13800	8600
2	4780	20100	20700	18600	19200	16000	7850	12400	14800	7160	14700	7560
3	5000	20200	21300	19000	19200	16300	7650	13400	14000	7360	15300	7600
4	4980	20300	24600	20400	18400	16600	7500	14100	13400	7230	15400	7120
5	4920	20400	23200	20000	8920	16800	7390	14800	12600	6920	15300	7140
6	4940	20600	22400	20400	5990	16500	7420	17500	12000	6810	11400	7070
7	8620	20600	21700	20400	9550	16200	9630	15200	11800	6800	8870	7200
8	15500	20400	21300	21800	17900	9610	7510	12300	11700	6700	9780	7250
9	14000	20400	21200	22700	18500	9670	7450	14600	11600	6350	13900	10900
10	14500	20400	20900	22500	18700	10900	7420	17100	11400	6250	13300	11900
11	10400	20400	20500	23100	18700	11900	7270	16900	11400	6200	14900	6800
12	14200	20400	20700	22700	19000	11100	8460	12800	10300	6200	15100	8000
13	15100	20500	20700	22300	19200	10700	8710	10300	9400	7200	11200	15000
14	19400	20600	20800	21700	19200	11100	10600	10100	9050	11000	9000	17500
15	19400	20500	20800	20800	19000	10800	8150	10300	8970	13500	9320	15800
16	15300	20700	18100	20400	19000	10300	7050	11900	8970	15000	10500	14500
17	15400	20800	16300	20400	18900	9970	7100	13900	8720	18500	10400	11800
18	15400	21300	12200	20200	19300	9660	7560	17000	8800	21500	10800	8540
19	19500	21400	11300	20300	15500	8640	8230	16200	8530	22200	13400	8210
20	19500	21300	15500	20300	15300	8300	9370	12100	8070	22500	10600	7760
21	19600	21300	15900	20000	16100	8660	10600	13300	7580	22400	8750	10200
22	19700	21300	15900	20000	16800	7950	11700	14400	7250	22000	8820	14300
23	15900	21100	15700	20000	19600	7760	12800	15400	7340	21500	7800	14400
24	16000	21000	7120	20000	19900	7650	16000	17200	8570	21000	8500	11800
25	15900	21000	5620	19900	20300	7570	17400	18400	7960	20000	8430	8520
26	20000	20800	5510	19600	20400	7310	15600	19400	7360	19000	8480	9170
27	20100	20700	7140	19800	20200	7080	13500	19100	7600	16000	9050	12600
28	20200	20800	18100	20000	20100	7020	12200	18400	7780	15900	7530	11300
29	20200	20900	18300	19800	---	6920	12900	18400	7470	15800	8380	11200
30	10100	20700	18400	19700	---	9640	10900	18500	7270	14700	9300	11300
31	5180	---	18600	19500	---	7870	---	16800	---	13900	9890	---
TOTAL	428560	609070	541090	634800	492060	332480	296220	462800	296190	414770	341900	311040
MEAN	13820	20300	17450	20480	17570	10730	9874	14930	9873	13380	11030	10370
MAX	20200	21400	24600	23100	20400	16800	17400	19400	14800	22500	15400	17500
MIN	4780	8170	5510	18500	5990	6920	7050	10100	7250	6200	7530	6800
AC-FT	850000	1208000	1073000	1259000	976000	659500	587600	918000	587500	822700	678200	616900
CAL YR 1982	TOTAL	5685890	MEAN	15580	MAX	35000	MIN	4610	AC-FT	11280000		
WTR YR 1983	TOTAL	5160980	MEAN	14140	MAX	24600	MIN	4780	AC-FT	10240000		

PEND OREILLE RIVER BASIN

12324200 CLARK FORK AT DEER LODGE, MT

LOCATION.--Lat 46°23'52", long 112°44'31", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.33, T.8 N., R.9 W., Powell County, Hydrologic Unit 17010201, on left bank 35 ft upstream from Milwaukee Avenue Bridge in Deer Lodge, 0.05 mi upstream from Taylor Creek, 0.24 mi downstream from Tin Cup Joe Creek, and at mile 461.2.

DRAINAGE AREA.--1,005 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 4,502.24 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for December, January, July, and August, which are fair. Diversions above station for irrigation of about 31,000 acres. Some regulation by settling ponds on Silver Bow Creek near Anaconda.

AVERAGE DISCHARGE.--5 years, 365 ft³/s, 264,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,500 ft³/s May 23, 1981, gage height, 5.35 ft; minimum daily, 68 ft³/s Aug. 8, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,190 ft³/s July 10, gage height, 4.09 ft; minimum, 126 ft³/s Aug. 7-9, gage height, 2.50 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	464	406	345	240	332	345	301	332	700	357	145	216
2	442	392	351	240	326	345	290	338	604	404	140	221
3	435	385	364	260	301	358	290	332	531	411	137	221
4	442	392	371	280	284	378	278	332	482	393	140	230
5	450	392	371	330	260	378	273	326	497	352	145	241
6	464	399	371	380	260	385	284	345	484	340	132	230
7	427	392	345	435	270	371	290	364	461	359	130	230
8	442	371	290	507	270	364	284	332	455	358	126	216
9	427	406	270	450	284	358	284	392	466	352	128	245
10	413	392	260	392	295	358	295	385	494	822	185	257
11	420	392	270	385	295	358	284	364	497	884	211	259
12	413	364	280	385	307	364	278	345	502	711	263	269
13	378	364	290	378	345	378	273	332	438	609	230	259
14	385	351	310	364	345	392	267	313	381	503	209	255
15	385	351	332	345	345	378	267	301	334	486	187	252
16	378	345	358	345	351	364	267	345	384	460	199	248
17	378	358	385	332	351	351	256	338	375	408	183	244
18	392	378	378	326	371	326	262	319	387	379	154	249
19	399	392	371	313	392	295	273	345	408	340	192	290
20	385	392	364	307	358	301	284	364	350	318	172	340
21	406	371	358	313	358	307	301	319	332	313	234	348
22	435	358	371	319	351	313	313	301	344	280	241	354
23	413	326	364	326	364	313	326	307	325	249	290	366
24	406	313	358	326	371	326	371	332	314	229	241	362
25	406	301	326	326	385	319	442	364	324	209	262	344
26	471	290	310	332	378	301	420	471	298	197	273	344
27	471	270	290	332	364	307	392	537	306	179	301	350
28	450	280	270	338	358	307	371	608	361	171	246	350
29	427	300	240	326	---	307	364	680	388	168	225	350
30	420	320	240	332	---	307	338	747	375	156	225	350
31	413	---	230	332	---	301	---	740	---	146	221	---
TOTAL	13037	10743	10033	10596	9271	10555	9218	12250	12597	11543	6167	8490
MEAN	421	358	324	342	331	340	307	395	420	372	199	283
MAX	471	406	385	507	392	392	442	747	700	884	301	366
MIN	378	270	230	240	260	295	256	301	298	146	126	216
AC-FT	25860	21310	19900	21020	18390	20940	18280	24300	24990	22900	12230	16840
CAL YR 1982	TOTAL	164444	MEAN	451	MAX	1420	MIN	100	AC-FT	326200		
WTR YR 1983	TOTAL	124500	MEAN	341	MAX	884	MIN	126	AC-FT	246900		

12324200 CLARK FORK AT DEER LODGE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-71, 1979 to September 1983 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1978 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since October 1, 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.0°C on several days in 1979, 1980 and 1983; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 23.0°C Aug. 6, 7, 10; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	7.0	6.5	6.5	4.5	4.0	4.0	1.5	1.5	1.5	.0	.0	.0
2	8.0	6.0	7.0	4.0	2.5	3.5	2.0	1.0	1.5	.0	.0	.0
3	8.5	7.5	8.0	3.0	1.5	2.5	2.5	1.5	2.0	.0	.0	.0
4	8.0	6.5	7.0	4.5	3.0	3.5	4.0	2.5	3.0	.5	.0	.0
5	7.5	6.0	6.5	5.5	4.0	5.0	2.5	1.5	2.0	.5	.0	.5
6	7.5	5.0	6.5	5.5	4.0	5.0	2.0	.0	1.5	.5	.0	.0
7	7.5	6.0	6.5	3.5	1.5	2.5	.0	.0	.0	2.0	.0	1.0
8	6.0	5.0	5.5	2.5	1.0	1.5	.0	.0	.0	2.0	1.5	2.0
9	6.5	3.5	5.0	3.0	1.5	2.5	.0	.0	.0	1.0	.0	.5
10	6.0	4.0	5.0	2.5	1.5	2.0	.0	.0	.0	2.0	.5	1.0
11	8.5	5.0	6.5	1.5	.0	1.0	.0	.0	.0	2.5	1.0	2.0
12	9.0	6.5	8.0	.0	.0	.0	.0	.0	.0	2.5	1.5	2.0
13	9.5	6.5	8.0	1.0	.0	.5	.5	.0	.0	2.0	1.0	1.5
14	10.0	7.5	8.5	.5	.0	.0	.5	.0	.0	1.5	.0	1.0
15	10.5	8.0	9.5	.0	.0	.0	1.0	.0	.5	.5	.0	.0
16	11.0	9.5	10.0	1.0	.0	.5	1.0	.5	.5	.0	.0	.0
17	9.5	5.5	8.0	3.0	1.0	2.0	2.0	1.0	1.5	.5	.0	.0
18	6.0	4.5	5.0	3.5	2.0	3.0	1.0	.5	1.0	1.5	.0	.5
19	6.0	4.0	5.0	4.0	3.0	3.5	1.5	.5	1.0	1.0	.0	.5
20	5.5	3.0	4.5	3.0	1.0	2.0	2.0	.5	1.0	.5	.0	.5
21	6.0	3.5	5.0	1.0	.5	1.0	3.0	2.0	2.5	2.0	.5	1.0
22	7.5	5.0	6.5	1.0	.0	.5	3.0	1.5	2.0	2.0	.5	1.5
23	9.5	7.0	8.0	.0	.0	.0	1.5	.5	1.0	2.5	1.0	1.5
24	9.0	7.0	8.0	.0	.0	.0	.5	.0	.0	1.5	1.0	1.5
25	8.0	6.5	7.0	.0	.0	.0	.0	.0	.0	2.0	.5	1.5
26	7.5	6.0	6.5	.5	.0	.0	.0	.0	.0	3.0	1.0	2.0
27	6.0	5.0	5.5	.5	.0	.0	.0	.0	.0	3.5	2.0	3.0
28	5.0	3.5	4.5	1.0	.0	.5	.0	.0	.0	3.5	2.0	2.5
29	5.0	4.0	4.5	2.0	.5	1.5	.0	.0	.0	2.0	.5	1.0
30	6.0	4.5	5.0	2.0	1.0	1.5	.0	.0	.0	1.5	1.0	1.0
31	5.0	4.0	4.5	---	---	---	.0	.0	.0	2.5	1.0	1.5
MONTH	11.0	3.0	6.5	5.5	.0	1.5	4.0	.0	.5	3.5	.0	1.0

12324200 CLARK FORK AT DEER LODGE, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	2.0	1.5	1.5	5.0	3.0	4.0	8.0	4.5	6.5	13.0	8.5	10.5
2	2.0	.5	1.0	5.5	4.0	5.0	6.5	4.0	5.5	11.5	10.0	10.5
3	1.5	.0	1.0	6.5	3.5	5.0	6.0	2.5	4.0	12.0	8.5	10.0
4	.5	.0	.0	7.0	5.0	6.0	6.0	3.0	4.0	13.5	8.5	11.0
5	.0	.0	.0	5.5	4.0	4.5	6.5	1.5	4.0	12.5	9.0	11.0
6	.0	.0	.0	5.0	3.5	4.0	8.0	3.0	5.5	10.5	8.5	9.5
7	1.0	.0	.5	4.5	3.0	3.5	7.5	4.5	6.0	13.0	7.5	10.0
8	.5	.0	.5	5.5	3.0	4.5	8.5	5.0	6.5	11.0	9.0	10.0
9	2.0	.0	1.0	8.0	4.5	6.0	8.0	5.0	6.5	8.5	6.5	7.5
10	2.5	.5	1.0	8.0	5.0	6.5	7.0	5.0	6.0	7.5	5.0	6.0
11	2.5	.5	1.5	8.5	5.5	7.0	9.0	4.5	6.5	6.5	4.5	5.5
12	4.0	2.0	3.0	8.0	6.0	7.0	7.0	4.0	5.5	8.0	3.5	5.5
13	4.0	3.0	3.5	7.5	4.5	6.0	6.0	2.5	4.5	11.0	4.5	7.5
14	4.5	2.5	3.5	6.5	4.5	5.5	8.5	3.0	5.5	12.5	6.5	9.5
15	4.0	2.5	3.5	5.0	3.5	4.5	9.0	4.5	7.0	11.5	8.5	10.0
16	4.5	3.0	3.5	6.0	3.0	4.5	10.5	5.0	8.0	12.5	8.0	10.0
17	3.5	2.5	2.5	4.5	3.0	4.0	11.5	6.0	9.0	11.5	7.5	9.5
18	4.5	3.0	3.5	3.0	1.0	2.0	12.0	7.5	10.0	10.5	9.0	10.0
19	4.0	3.0	3.5	3.0	.0	1.0	12.0	8.5	10.5	11.0	8.0	9.5
20	4.0	1.5	3.0	4.5	.0	2.0	11.5	8.0	10.0	15.0	9.5	12.0
21	5.0	2.5	3.5	5.5	2.0	3.5	13.0	8.0	10.5	14.0	11.0	12.5
22	5.5	3.0	4.0	6.0	3.0	4.5	13.5	9.5	11.5	16.0	10.0	13.0
23	5.5	3.0	4.0	5.5	3.5	4.5	13.5	10.5	12.0	17.5	11.5	14.5
24	6.0	3.0	4.5	7.0	4.0	5.5	11.5	8.5	10.5	18.0	12.0	15.0
25	5.5	4.0	4.5	7.0	4.0	5.0	9.5	6.5	8.0	19.0	13.0	16.0
26	5.0	3.5	4.5	7.0	3.0	5.0	9.5	6.5	8.0	18.0	13.5	15.5
27	4.0	2.0	3.0	6.5	4.0	5.0	10.0	7.0	8.5	17.5	11.0	---
28	4.5	2.5	3.5	6.0	4.0	5.0	11.0	6.0	8.5	---	---	---
29	---	---	---	6.5	3.5	5.0	12.0	7.0	9.5	---	---	---
30	---	---	---	6.5	4.5	5.5	12.5	8.0	10.5	---	---	---
31	---	---	---	6.5	3.5	5.5	---	---	---	14.5	---	---
MONTH	6.0	.0	2.5	8.5	.0	4.5	13.5	1.5	7.5	19.0	3.5	10.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	15.5	11.5	13.5	15.0	13.0	14.0	21.5	17.0	19.0	19.5	14.5	17.0
2	14.0	12.5	13.0	14.5	11.5	13.0	20.5	16.0	18.5	18.0	14.0	16.0
3	15.5	11.0	13.0	12.5	10.5	11.5	21.0	15.5	18.5	15.5	12.5	14.0
4	16.5	12.0	14.0	16.5	9.0	12.5	21.0	15.5	18.5	14.5	11.0	13.0
5	14.5	12.0	13.5	19.0	13.0	16.0	22.5	16.0	19.5	15.0	11.0	13.0
6	17.0	11.5	14.0	19.5	15.0	17.5	23.0	16.5	20.0	15.5	10.0	12.5
7	17.5	12.5	15.0	20.5	15.5	18.0	23.0	17.5	20.0	16.0	11.5	13.5
8	17.5	13.5	15.5	20.0	15.5	18.0	21.0	18.5	19.5	15.5	12.0	14.0
9	17.5	13.5	15.5	18.0	12.5	14.5	21.5	17.5	19.5	14.0	12.0	13.0
10	16.5	13.0	15.0	12.5	10.5	11.5	23.0	17.0	20.0	12.0	9.0	10.5
11	14.0	11.0	12.0	15.5	10.0	12.5	19.5	17.5	18.0	13.0	10.0	11.0
12	11.0	9.0	10.0	17.5	13.5	15.5	20.0	14.5	17.5	15.0	10.0	12.5
13	14.0	9.5	11.0	19.0	14.5	17.0	21.0	14.5	18.0	14.5	10.5	12.5
14	17.5	10.5	13.5	18.0	13.0	15.5	19.5	16.0	18.0	14.0	11.5	13.0
15	15.5	13.0	14.0	14.0	10.5	12.0	17.5	15.0	16.5	14.5	10.0	12.5
16	13.5	11.0	12.5	15.0	10.0	12.5	20.0	13.5	16.5	13.5	10.0	12.0
17	17.5	10.5	14.0	15.0	12.0	13.5	20.5	14.5	17.5	12.5	9.5	10.5
18	17.0	12.5	14.5	19.0	12.5	15.5	19.5	15.0	17.5	9.0	6.0	8.0
19	14.0	11.0	12.0	20.0	14.5	17.5	19.5	14.5	17.5	7.0	4.0	5.5
20	14.5	9.5	12.0	18.0	15.0	16.5	18.5	16.0	17.0	7.5	3.5	5.5
21	14.0	11.0	12.5	19.0	13.0	16.0	18.5	15.0	17.0	9.0	4.5	6.5
22	17.0	10.5	13.5	20.0	14.5	17.5	19.5	15.0	---	10.5	6.0	8.5
23	18.5	13.5	16.0	19.0	15.5	17.5	19.5	14.5	17.0	11.5	8.0	10.0
24	17.0	13.0	15.0	20.5	14.5	17.5	18.5	14.0	16.5	12.5	8.5	10.5
25	18.0	11.5	14.5	21.0	15.5	18.0	19.0	14.5	17.0	13.0	9.0	11.0
26	18.0	12.5	15.5	19.5	15.0	17.5	19.0	15.0	17.0	13.0	9.5	11.5
27	16.0	14.0	15.0	18.5	14.0	16.5	19.0	14.5	17.0	12.0	10.0	11.0
28	15.0	13.0	14.0	20.0	14.0	17.0	18.5	14.5	16.5	10.5	7.5	9.0
29	17.0	12.5	14.5	21.5	15.5	18.5	18.0	13.0	15.5	9.5	7.5	8.5
30	18.0	13.5	15.0	22.0	15.5	19.0	18.5	13.5	16.0	7.5	6.0	6.5
31	---	---	---	21.5	16.5	19.0	18.0	13.5	16.0	---	---	---
MONTH YEAR	18.5 23.0	9.0 .0	14.0 8.0	22.0	9.0	16.0	23.0	13.0	18.0	19.5	3.5	11.0

PEND OREILLE RIVER BASIN

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12324200 CLARK FORK AT DEER LODGE, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT					
05...	1530	449	557	17.5	7.0
NOV					
15...	1300	337	622	-2.0	.0
JAN					
03...	0815	262	603	-6.0	.0
FEB					
22...	1700	355	564	11.0	5.5
APR					
05...	1010	269	590	4.0	2.0
MAY					
19...	0715	353	495	7.5	8.0
31...	0900	779	272	4.5	10.5
JUL					
14...	1330	510	415	7.0	15.5
AUG					
22...	0815	213	545	10.0	15.0

PEND OREILLE RIVER BASIN

12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT

LOCATION.--Lat 46°32'12", long 112°43'33", in SE¼NE¼ sec.16, T.9 N., R.9 W., Powell County, Hydrologic Unit 17010201, on left bank 200 ft downstream from bridge on county road, 4 mi east of Garrison, and at mile 4.0.

DRAINAGE AREA.--398 mi².

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

GAGE.--Water-stage recorder. Altitude of gage is 4,430 ft, from topographic map.

REMARKS.--Records good except those for December and January, which are fair. A few minor irrigation holding reservoirs in upper reaches of drainage. Diversions for irrigation of about 10,500 acres. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--11 years, 190 ft³/s, 137,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,650 ft³/s May 21, 1981, gage height, 8.79 ft, from floodmark; minimum, 6.0 ft³/s Aug. 24, 1977, gage height, 2.94 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 959 ft³/s May 27, gage height, 5.03 ft, only peak above base of 900 ft³/s; minimum, 42 ft³/s Feb. 4, gage height, 2.60 ft, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	115	86	50	68	117	112	263	654	145	138	68
2	107	115	86	50	67	176	112	263	584	157	132	68
3	112	108	87	60	67	203	112	268	552	149	129	63
4	114	113	97	70	54	197	110	271	505	142	125	62
5	118	112	111	85	50	143	103	280	475	139	99	59
6	112	113	95	100	55	129	105	318	444	155	94	60
7	108	106	70	110	60	117	110	345	402	148	88	62
8	104	96	50	110	66	114	111	336	366	134	83	63
9	105	96	45	100	65	141	115	374	350	127	84	72
10	107	94	55	90	65	190	117	384	324	631	87	74
11	105	91	65	80	64	193	109	372	336	513	93	91
12	108	80	75	85	73	206	108	367	354	338	103	94
13	104	75	85	94	107	181	101	362	333	281	109	87
14	102	70	100	82	112	179	98	407	299	250	106	83
15	100	65	105	70	100	158	101	443	271	250	101	82
16	99	75	110	65	116	141	101	453	270	239	100	84
17	102	90	114	65	113	140	104	484	249	231	93	80
18	108	102	94	70	215	127	113	506	264	228	84	82
19	110	105	87	65	245	118	126	609	259	216	76	87
20	109	100	85	65	172	113	147	578	234	200	67	89
21	110	94	86	70	179	120	164	597	214	203	69	89
22	110	88	87	65	194	122	181	654	206	198	78	93
23	109	65	85	71	202	120	211	691	188	186	99	95
24	108	55	82	70	200	120	258	750	171	191	82	95
25	107	58	67	70	190	117	308	794	166	189	72	93
26	126	62	60	69	168	107	306	867	145	178	74	91
27	126	75	55	71	125	108	293	891	138	170	76	87
28	124	88	50	76	118	110	287	877	159	163	75	94
29	123	87	45	69	---	105	274	842	167	162	74	92
30	127	88	48	68	---	113	269	793	156	151	74	96
31	118	---	45	69	---	113	---	732	---	145	71	---
TOTAL	3433	2681	2412	2334	3310	4338	4766	16171	9235	6609	2835	2435
MEAN	111	89.4	77.8	75.3	118	140	159	522	308	213	91.5	81.2
MAX	127	115	114	110	245	206	308	891	654	631	138	96
MIN	99	55	45	50	50	105	98	263	138	127	67	59
AC-FT	6810	5320	4780	4630	6570	8600	9450	32080	18320	13110	5620	4830

CAL YR 1982 TOTAL 82054 MEAN 225 MAX 1280 MIN 36 AC-FT 162800
WTR YR 1983 TOTAL 60559 MEAN 166 MAX 891 MIN 45 AC-FT 120100

PEND OREILLE RIVER BASIN

12324680 CLARK FORK AT GOLDCREEK, MT

LOCATION.--Lat 46°35'26", long 112°55'40", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.25, T.10 N., R.11 W., Powell County, Hydrologic Unit 17010203, on right bank at county road bridge, 0.4 mi north of the town of Gold Creek, 1.1 mi downstream from Goldcreek, and at mile 436.9.

DRAINAGE AREA.--1,704 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 4,172.80 ft National Geodetic Vertical Datum of 1929. June 13 to Oct. 21, 1982, nonrecording gage at site 350 ft downstream at same datum.

REMARKS.--Records good except those for October through January, which are fair. Some regulation by settling ponds on Silver Bow Creek near Anaconda. Diversions for irrigation of about 40,100 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--6 years, 723 ft³/s, 523,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s May 22, 1981, gage height, 11.17 ft, from flood-marks, from rating curve extended above 6,500 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 108 ft³/s Aug. 10, 11, 1979, gage height, 3.64 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,600 ft³/s July 10, gage height, 6.85 ft; minimum, 256 ft³/s Aug. 8, gage height, 4.50 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	722	664	571	320	480	525	489	697	1770	664	368	393
2	757	648	567	330	473	599	484	694	1540	706	351	399
3	731	632	576	400	460	639	485	686	1410	714	319	409
4	731	640	605	500	410	664	470	688	1300	689	316	419
5	731	640	639	600	416	599	455	691	1270	624	301	426
6	731	648	620	700	410	590	465	728	1210	594	281	420
7	714	640	553	824	447	573	474	800	1120	579	275	426
8	731	609	431	935	441	556	475	768	1060	549	263	410
9	714	632	400	873	435	566	471	864	1060	542	270	455
10	697	632	370	707	435	638	482	895	1080	1660	300	487
11	697	617	400	740	435	651	475	871	1100	1970	349	520
12	664	594	450	664	601	680	465	847	1160	1400	417	529
13	656	594	500	632	714	660	448	825	1050	1210	409	510
14	656	579	580	586	632	668	438	853	912	1060	387	493
15	640	563	647	556	586	638	441	887	807	1020	364	482
16	640	609	690	540	594	597	439	925	825	974	364	477
17	656	603	716	540	586	580	442	953	811	903	353	463
18	656	623	678	540	731	548	455	928	820	864	309	469
19	656	642	624	520	867	495	475	1090	862	802	315	517
20	656	631	603	520	656	501	492	1070	800	730	299	590
21	672	608	612	514	640	512	522	1060	740	699	327	614
22	714	583	641	500	657	521	556	1100	706	651	400	616
23	689	534	615	500	674	520	594	1130	656	597	498	604
24	681	503	598	493	668	530	678	1220	609	581	461	602
25	681	497	500	493	661	524	836	1320	609	548	413	562
26	766	509	450	486	629	500	826	1570	579	505	463	547
27	784	550	400	507	562	500	792	1860	549	477	470	529
28	748	551	370	549	545	501	760	1980	648	466	431	535
29	714	571	340	493	---	492	742	2080	672	446	405	533
30	706	574	340	493	---	506	718	2130	681	401	407	557
31	681	---	320	486	---	500	---	2010	---	380	404	---
TOTAL	21672	17920	16406	17541	15845	17573	16344	34220	28416	24005	11289	14993
MEAN	699	597	529	566	566	567	545	1104	947	774	364	500
MAX	784	664	716	935	867	680	836	2130	1770	1970	498	616
MIN	640	497	320	320	410	492	438	686	549	380	263	393
AC-FT	42990	35540	32540	34790	31430	34860	32420	67880	56360	47610	22390	29740

CAL YR 1982 TOTAL 317953 MEAN 871 MAX 3010 MIN 200 AC-FT 630700
WTR YR 1983 TOTAL 236224 MEAN 647 MAX 2130 MIN 263 AC-FT 468600

PEND OREILLE RIVER BASIN

12325500 FLINT CREEK NEAR SOUTHERN CROSS, MT

LOCATION.--Lat 46°13'59", long 113°17'56", in SE¼NW¼ sec.36, T.6 N., R.14 W., Granite County, Hydrologic Unit 17010202, on left wing of weir 0.5 mi downstream from power plant, 2.0 mi downstream from Georgetown Dam, 3.5 mi northwest of Southern Cross, 6.8 mi south of Philipsburg, and at mile 36.8.

DRAINAGE AREA.--52.6 mi².

PERIOD OF RECORD.--October 1940 to current year.

REVISED RECORDS.--WSP 1216: 1942(M). WSP 1246: Drainage area.

GAGE.--Water-stage recorder and sharp-crested, contracted, rectangular weir. Altitude of gage is 5,630 ft, from topographic map. Prior to June 3, 1982, nonrecording gage at same site and datum. Prior to Nov. 27, 1973, gage at same site and datum 0.20 ft higher.

REMARKS.--Records good. Flow regulated by Georgetown Lake (station number 12325000). Several observations of water temperature and specific conductance were made during the water year and are published as miscellaneous water-quality data in the back of this report. Flow may be augmented by transbasin diversion from Silver Lake to Georgetown Lake or reduced by pumping from Georgetown Lake to Silver Lake.

COOPERATION.--Gage-height record furnished by The Montana Power Company under general supervision of Geological Survey in connection with a Federal Power Commission project.

AVERAGE DISCHARGE.--43 years, 29.8 ft³/s, 21,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 174 ft³/s June 13, 1942, gage height, 1.86 ft; maximum gage height observed, 2.60 ft June 19-23, 1980; probably no flow for parts of May 23, 1942, Aug. 20, 1943, Oct. 6, 1954, Nov. 29, Dec. 1, 1966, and no flow Nov. 30, 1966, when generator was shut down.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 98 ft³/s July 14, gage height, 1.86 ft; minimum daily, 22 ft³/s on Apr. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	38	27	27	27	61	25	25	26	95	31	27
2	61	38	27	27	27	61	25	25	26	95	29	27
3	60	38	27	27	27	61	25	26	26	95	29	27
4	59	38	27	27	27	61	25	25	26	95	29	27
5	59	38	27	27	27	61	25	25	26	95	29	27
6	59	38	27	27	27	61	25	25	26	88	29	27
7	52	38	27	27	27	61	25	25	26	78	29	27
8	41	38	27	27	27	61	25	25	26	64	29	27
9	40	38	27	27	27	61	25	25	26	53	29	27
10	40	38	27	27	27	61	25	25	26	62	29	27
11	40	38	27	27	27	61	25	25	26	71	29	27
12	39	38	27	27	27	60	25	25	26	70	28	27
13	38	38	27	27	27	60	25	25	26	69	28	27
14	37	38	27	27	36	60	25	25	26	73	28	27
15	37	34	27	27	59	60	25	25	26	83	28	27
16	37	26	27	27	61	60	25	25	26	82	28	27
17	37	26	27	27	61	60	25	26	26	82	28	27
18	38	26	27	27	61	60	25	26	26	80	28	27
19	38	26	27	27	61	59	24	26	26	73	28	27
20	38	26	27	27	61	59	25	26	26	63	28	27
21	38	26	27	27	61	51	22	26	26	58	28	27
22	38	26	27	27	61	28	26	27	26	59	28	27
23	38	26	27	27	61	27	25	27	26	58	29	27
24	38	26	27	27	61	27	26	27	26	58	28	27
25	38	27	27	27	61	27	26	27	26	59	28	27
26	38	27	27	27	60	26	26	26	26	59	27	28
27	38	26	27	27	60	26	26	26	26	54	27	28
28	38	26	27	27	61	26	26	26	26	48	27	28
29	38	27	27	27	---	26	26	26	43	43	27	28
30	38	27	27	27	---	26	25	26	80	40	27	28
31	38	---	27	27	---	26	---	26	---	35	27	---
TOTAL	1330	960	837	837	1237	1525	753	795	851	2137	876	815
MEAN	42.9	32.0	27.0	27.0	44.2	49.2	25.1	25.6	28.4	68.9	28.3	27.2
MAX	62	38	27	27	61	61	26	27	80	95	31	28
MIN	37	26	27	27	27	26	22	25	26	35	27	27
AC-FT	2640	1900	1660	1660	2450	3020	1490	1580	1690	4240	1740	1620

CAL YR 1982 TOTAL 18884 MEAN 51.7 MAX 119 MIN 26 AC-FT 37460
WTR YR 1983 TOTAL 12953 MEAN 35.5 MAX 95 MIN 22 AC-FT 25690

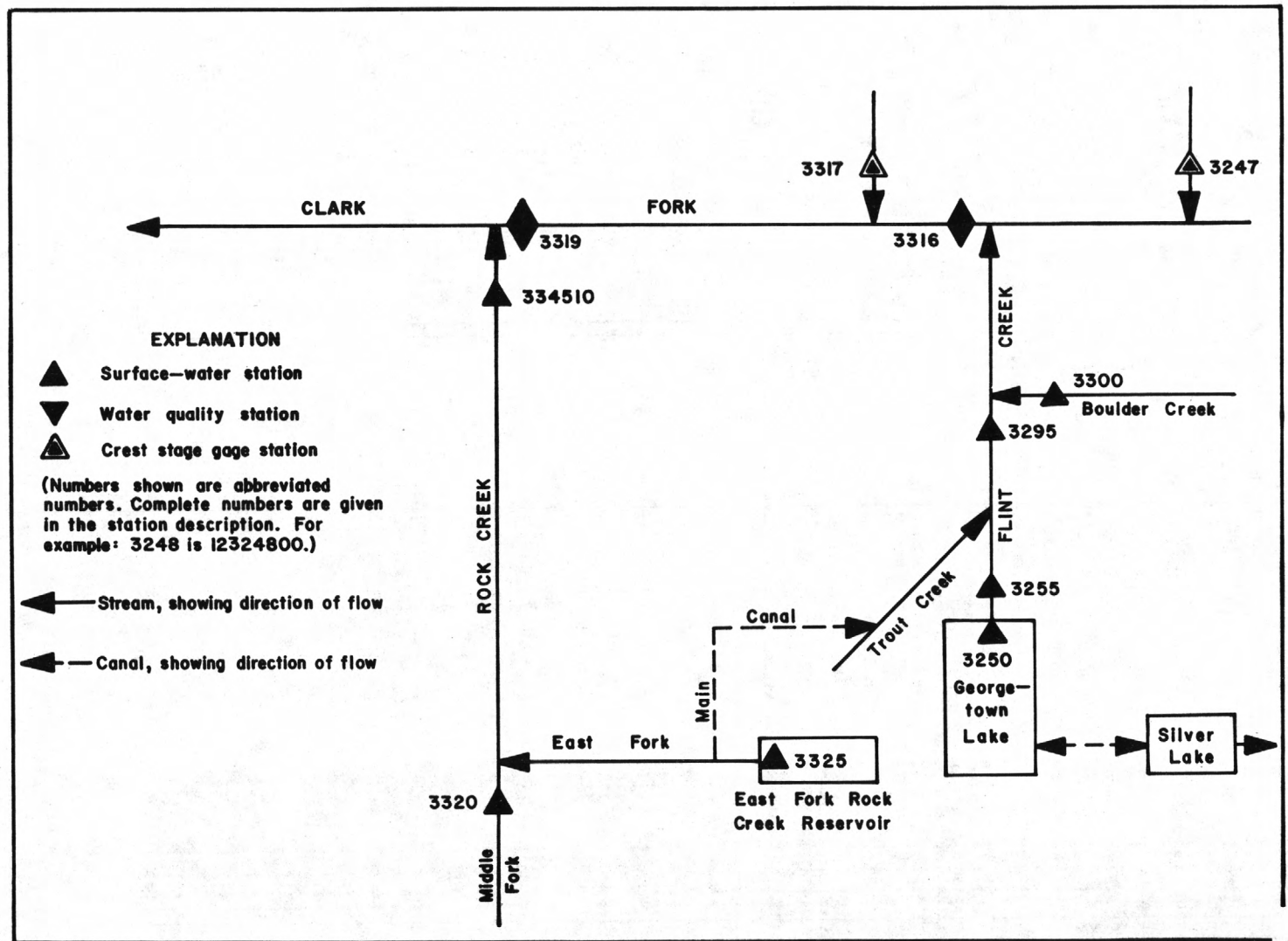


Figure 7.- Schematic diagram showing diversion from Rock Creek basin to Flint Creek basin.

PEND OREILLE RIVER BASIN

12329500 FLINT CREEK AT MAXVILLE, MT

LOCATION.--Lat 46°27'50", long 113°14'20", in NE¼SW¼NW¼ sec.9, T.8 N., R.13 W., Granite County, Hydrologic Unit 17010202, on right bank 0.4 mi west of Maxville and 1.0 mi upstream from Boulder Creek.

DRAINAGE AREA.--208 mi².

PERIOD OF RECORD.--August 1941 to current year. April 1939 to September 1941 at site 0.5 mi upstream (above Maxville siding); records not equivalent owing to diversions.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,828.38 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for November and February, which are fair, and those for December and January, which are poor. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report. Some regulation by Georgetown Lake (station number 12325000). 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.14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek.

AVERAGE DISCHARGE.--42 years, 102 ft³/s, 73,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft³/s Mar. 28, 1943, gage height, 6.79 ft, from rating curve extended above 600 ft³/s; maximum gage height, 8.08 ft Feb. 4, 1963 (backwater from ice); minimum daily discharge, 15 ft³/s Feb. 25, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 569 ft³/s July 11, gage height, 5.07 ft; minimum daily, 40 ft³/s Dec. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	114	77	45	63	112	74	83	109	167	139	136
2	176	113	78	50	60	142	73	83	103	184	136	154
3	177	110	78	60	55	148	74	78	101	183	135	148
4	183	114	81	70	50	144	72	74	102	173	135	148
5	182	113	80	80	45	134	69	74	105	161	130	150
6	168	113	80	80	50	124	71	76	103	157	118	148
7	172	109	70	84	55	119	71	77	99	159	109	137
8	154	105	55	80	50	115	71	74	105	130	106	119
9	142	107	45	80	55	120	70	81	113	116	107	137
10	137	106	40	82	60	135	70	93	123	316	108	124
11	135	104	44	84	70	136	68	93	154	454	129	125
12	130	100	48	80	94	147	68	90	154	303	124	124
13	128	90	55	75	112	130	67	90	116	234	124	122
14	127	80	65	70	101	129	66	89	97	218	123	123
15	125	75	70	66	113	122	67	91	91	227	122	133
16	124	85	75	62	120	115	66	109	102	215	123	131
17	128	91	82	56	115	115	67	108	99	206	122	124
18	130	91	76	56	188	110	69	104	115	204	120	121
19	124	89	76	56	204	105	71	110	127	201	118	134
20	121	85	77	56	131	111	73	112	112	197	116	130
21	121	80	78	56	142	110	76	119	105	199	121	123
22	120	79	79	60	155	94	78	127	109	189	124	125
23	118	70	78	65	160	82	88	130	107	182	159	115
24	118	65	72	63	134	80	102	139	109	195	151	107
25	120	60	60	65	133	77	120	137	111	192	146	107
26	133	63	56	65	128	74	105	132	104	184	144	108
27	127	66	56	65	115	74	96	118	114	177	139	107
28	122	70	52	65	110	75	91	109	161	179	136	109
29	120	74	45	63	---	74	88	110	174	174	135	108
30	117	77	45	60	---	76	84	130	189	155	134	108
31	116	---	43	63	---	76	---	127	---	143	135	---
TOTAL	4277	2698	2016	2062	2868	3405	2325	3167	3513	6174	3968	3785
MEAN	138	89.9	65.0	66.5	102	110	77.5	102	117	199	128	126
MAX	183	114	82	84	204	148	120	139	189	454	159	154
MIN	116	60	40	45	45	74	66	74	91	116	106	107
AC-FT	8480	5350	4000	4090	5690	6750	4610	6280	6970	12250	7870	7510

CAL YR 1982 TOTAL 55069 MEAN 151 MAX 500 MIN 40 AC-FT 109200
WTR YR 1983 TOTAL 40258 MEAN 110 MAX 454 MIN 40 AC-FT 79850

PEND OREILLE RIVER BASIN

12330000 BOULDER CREEK AT MAXVILLE, MT

LOCATION.--Lat 46°28'20", long 113°13'59", in SE¼NE¼SW¼ sec.4, T.8 N., R.13 W., Granite County, Hydrologic Unit 17010202, on right bank 0.2 mi upstream from mouth and 0.7 mi north of Maxville.

DRAINAGE AREA.--71.3 mi².

PERIOD OF RECORD.--April 1939 to current year. Monthly discharge only for some periods, published in WSP 1316.

GAGE.--Water-stage recorder. Altitude of gage is 4,750 ft, from topographic map. Apr. 15, 1939, to July 7, 1941, nonrecording gage at site 75 ft upstream at different datum. July 8-20, 1941, nonrecording gage at site 175 ft upstream at datum 1.03 ft higher.

REMARKS.--Records good except those for the winter period, which are poor. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report. Diversions for irrigation of about 238 acres, all of which lies below station.

AVERAGE DISCHARGE.--44 years, 48.3 ft³/s, 34,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,460 ft³/s June 19, 1975, gage height, 4.55 ft, in gage well, 4.80 ft, from floodmarks; minimum, 3.0 ft³/s about Mar. 24, 1964, gage height, 0.73 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 220 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 29	2400	*495	*3.53	July 10	0800	289	2.95
June 11	0300	280	2.92				

Minimum daily discharge, 16 ft³/s Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	37	31	19	25	24	24	32	295	108	47	26
2	33	34	29	19	23	24	24	32	264	122	45	31
3	36	34	30	22	21	24	24	32	233	106	44	29
4	38	36	32	25	18	24	24	33	243	94	43	27
5	37	35	32	27	16	24	23	37	228	84	41	26
6	35	35	31	29	17	24	24	42	211	79	39	25
7	35	32	25	29	19	24	23	40	213	76	34	24
8	34	31	19	26	18	24	23	42	233	70	30	24
9	32	31	20	26	17	24	23	41	248	72	34	32
10	32	32	20	26	18	26	22	40	250	228	34	30
11	32	30	20	28	19	28	22	41	264	189	40	37
12	32	28	20	30	19	30	22	42	200	158	35	34
13	32	26	20	30	20	28	22	39	160	125	31	30
14	33	26	21	27	20	28	22	37	142	115	30	28
15	34	28	23	25	20	27	22	38	143	113	29	28
16	37	30	25	23	21	26	21	39	147	102	28	30
17	38	32	26	21	21	26	20	40	131	95	27	29
18	38	33	25	21	21	26	21	42	176	87	27	30
19	38	33	24	21	22	26	22	44	143	80	26	33
20	37	32	23	21	22	27	23	44	121	78	28	31
21	37	31	24	21	23	27	24	59	112	74	31	32
22	37	30	27	21	23	27	27	66	105	68	32	35
23	39	25	24	22	24	27	30	86	102	65	48	38
24	40	27	23	23	24	26	40	117	105	64	36	37
25	40	24	21	23	24	26	40	168	102	65	33	35
26	52	26	21	24	24	25	36	240	94	60	38	34
27	48	28	22	25	23	24	34	329	104	56	32	35
28	42	30	19	25	23	24	32	372	116	53	30	36
29	40	32	17	25	---	24	31	427	113	51	28	35
30	39	31	19	24	---	25	31	431	127	49	27	36
31	38	---	19	25	---	24	---	348	---	48	27	---
TOTAL	1149	919	732	753	585	793	776	3420	5125	2834	1054	937
MEAN	37.1	30.6	23.6	24.3	20.9	25.6	25.9	110	171	91.4	34.0	31.2
MAX	52	37	32	30	25	30	40	431	295	228	48	38
MIN	32	24	17	19	16	24	20	32	94	48	26	24
AC-FT	2280	1820	1450	1490	1160	1570	1540	6780	10170	5620	2090	1860

CAL YR 1982	TOTAL	23101	MEAN 63.3	MAX 484	MIN 12	AC-FT	45820
WTR YR 1983	TOTAL	19077	MEAN 52.3	MAX 431	MIN 16	AC-FT	37840

PEND OREILLE RIVER BASIN

12331600 CLARK FORK AT DRUMMOND, MT

LOCATION.--Lat 46°39'45", long 113°08'57", in SE¼NW¼SE¼ sec.31, T.11 N., R.12 W., Granite County, Hydrologic Unit 17010201, at bridge on old U.S. Highway 10A, 0.4 mi southwest of Drummond, 0.9 mi downstream from Flint Creek, and at mile 417.0.

DRAINAGE AREA.--2,378 mi².

PERIOD OF RECORD.--March 1967 to June 1968, October 1970, June 1971 to September 1972 (occasional discharge measurements and gage heights only). October 1972 to Sept. 30, 1983 (discontinued).

GAGE.--Nonrecording gage read once or twice daily and crest-stage gage since Aug. 12, 1977. Datum of gage is 3,937.95 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Some regulation by settling ponds on Silver Bow Creek near Anaconda and by Georgetown Lake (station number 12325000) on Flint Creek. Diversions for irrigation of about 86,500 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--11 years, 889 ft³/s, 644,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s May 23, 1981, gage height, 12.44 ft, from flood-marks; minimum daily, 58 ft³/s Aug. 15, 20, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1908 reached a stage of about 15.5 ft present datum (discharge not determined), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 2,990 ft³/s July 11, gage height, 6.89 ft; minimum daily, 405 ft³/s Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	904	765	450	650	772	696	807	2010	942	657	582
2	1050	888	737	450	663	866	703	807	1750	1070	594	638
3	1090	873	772	500	657	991	710	800	1670	1080	570	631
4	1170	888	793	600	576	934	676	779	1510	1030	540	638
5	1140	896	765	750	552	881	650	772	1490	950	512	625
6	1110	904	744	900	570	866	657	779	1440	919	478	606
7	1120	866	700	1020	606	822	657	896	1280	911	446	612
8	1080	836	600	1040	644	822	676	873	1230	779	425	600
9	1060	829	550	1070	619	800	676	927	1200	779	405	638
10	1040	851	500	873	650	851	683	1020	1240	1820	430	683
11	1030	851	550	958	619	911	663	999	1260	2990	576	779
12	1010	822	600	866	670	927	663	950	1470	2070	588	779
13	966	758	700	829	904	942	638	950	1270	1680	606	744
14	942	737	800	772	896	927	619	966	1090	1640	612	717
15	958	723	815	730	822	927	657	983	974	1490	529	723
16	958	800	822	696	844	858	638	999	950	1430	570	696
17	958	800	851	690	822	822	606	1050	942	1320	552	683
18	950	822	829	744	873	779	619	1010	958	1280	523	690
19	958	793	800	696	1050	730	631	1160	1090	1200	495	793
20	966	779	765	663	911	751	644	1180	983	1150	500	866
21	991	779	772	676	927	765	683	1160	866	1130	517	881
22	991	772	822	690	974	751	723	1210	836	1030	558	904
23	983	690	800	676	950	737	758	1210	800	958	744	873
24	966	644	765	670	942	744	822	1260	730	991	696	866
25	966	663	663	663	950	703	991	1370	730	974	612	836
26	1060	663	620	650	950	690	1030	1540	737	851	690	807
27	1030	696	580	676	822	696	991	1900	696	815	631	800
28	1020	710	540	723	822	703	934	2220	836	772	638	815
29	991	717	500	696	---	690	911	2280	950	744	612	815
30	983	737	500	676	---	717	851	2380	1040	696	619	866
31	942	---	470	676	---	717	---	2210	---	631	600	---
TOTAL	31559	23691	21490	22769	21935	25092	21856	37447	34028	36122	17525	22186
MEAN	1018	790	693	734	783	809	729	1208	1134	1165	565	740
MAX	1170	904	851	1070	1050	991	1030	2380	2010	2990	744	904
MIN	942	644	470	450	552	690	606	772	696	631	405	582
AC-FT	62600	46990	42630	45160	43510	49770	43350	74280	67490	71650	34760	44010
CAL YR 1982	TOTAL	415239	MEAN	1138	MAX	3670	MIN	250	AC-FT	823600		
WTR YR 1983	TOTAL	315700	MEAN	865	MAX	2990	MIN	405	AC-FT	626200		

PEND OREILLE RIVER BASIN

12331900 CLARK FORK NEAR CLINTON, MT

LOCATION.--Lat 46°43'05", long 113°35'17", in SE¼SW¼SE¼ sec.10, T.11 N., R.16 W., Missoula County, Hydrologic Unit 17010201, on downstream side of county road bridge, 4.5 mi above Rock Creek, 6.5 mi southeast of Clinton, and at mile 386.6.

DRAINAGE AREA.--2,629 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR MT-81-2: Drainage area.

GAGE.--Nonrecording gage and crest-stage gage. Altitude of gage is 3,580 ft, from topographic map.

REMARKS.--Water-discharge records fair. Several observations of specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report. Some regulation by settling ponds on Silver Bow Creek near Anaconda and by Georgetown Lake (station number 12325000) on Flint Creek. Diversions for irrigation of about 88,400 acres above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s May 24, 1981, gage height, 10.90 ft, from flood-marks; minimum daily, 200 ft³/s Aug. 10, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,420 ft³/s July 11, gage height, 7.25 ft; minimum daily, 477 ft³/s Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1160	995	826	520	660	872	769	887	2000	1130	741	642
2	1100	992	830	500	590	934	762	860	1860	1250	668	655
3	1120	967	834	560	570	1020	762	841	1760	1280	661	687
4	1160	958	856	680	600	1050	741	834	1510	1210	612	687
5	1180	955	840	800	630	983	720	834	1470	1150	582	687
6	1070	942	800	1320	790	934	714	903	1380	1120	514	668
7	1170	959	750	1040	668	926	716	942	1300	1120	498	655
8	1150	926	700	1310	630	910	720	918	1210	1040	493	660
9	1130	918	600	1290	668	872	714	1030	1220	983	514	694
10	1110	910	580	975	655	992	720	1090	1230	2000	477	727
11	1100	879	600	1050	642	1030	714	1100	1310	3380	612	834
12	1080	830	650	975	674	1060	707	1030	1430	2200	642	834
13	1050	800	750	895	1090	1030	680	1010	1290	2000	636	804
14	1030	780	820	841	1000	1010	661	1020	1110	1640	642	776
15	1010	760	834	780	934	1000	674	1030	1010	1630	594	800
16	1030	840	856	760	959	950	661	1080	1020	1570	594	790
17	1010	903	918	730	975	926	655	1130	992	1450	570	769
18	1040	895	903	769	1050	910	655	1100	1000	1340	547	783
19	1030	910	860	694	1520	834	700	1260	1020	1270	520	826
20	1030	918	834	694	1090	826	734	1240	992	1210	536	903
21	1030	895	834	748	1020	826	769	1220	959	1160	525	934
22	1030	840	895	741	1030	834	769	1210	926	1120	564	942
23	1030	780	864	762	1100	826	819	1260	910	1060	800	942
24	1030	700	826	741	1070	819	879	1310	834	1030	734	950
25	1010	700	760	741	1040	800	1090	1450	826	1000	650	903
26	1100	720	700	734	1000	783	1070	1600	800	967	714	879
27	1100	760	650	741	926	790	1010	1900	804	895	668	872
28	1080	780	600	826	880	776	983	2060	1030	879	694	887
29	1040	819	560	741	---	783	942	2300	1070	841	661	864
30	1030	826	540	741	---	783	910	2390	1190	790	640	903
31	1000	---	520	734	---	790	---	2420	---	770	655	---
TOTAL	33240	25857	23390	25433	24461	27879	23420	39259	35463	40485	18958	23957
MEAN	1072	862	755	820	874	899	781	1266	1182	1306	612	799
MAX	1180	995	918	1320	1520	1060	1090	2420	2000	3380	800	950
MIN	1000	700	520	500	570	776	655	834	800	770	477	642
AC-FT	65930	51290	46390	50450	48520	55300	46450	77870	70340	80300	37600	47520
CAL YR 1982	TOTAL	463830	MEAN	1271	MAX	3880	MIN	350	AC-FT	920000		
WTR YR 1983	TOTAL	341802	MEAN	936	MAX	3380	MIN	477	AC-FT	678000		

PEND OREILLE RIVER BASIN

12331900 CLARK FORK NEAR CLINTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: August 1979 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since Aug. 16, 1979.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.5°C Aug. 7, 1983; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 23.5°C Aug. 7; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.0	8.0	8.5	6.0	5.0	5.5	1.5	1.0	1.5	.0	.0	.0
2	9.5	8.5	9.0	5.0	4.0	4.5	2.0	1.5	1.5	.0	.0	.0
3	10.0	9.0	9.5	4.5	3.5	4.0	3.0	2.0	2.5	.0	.0	.0
4	9.5	8.5	9.0	5.0	4.0	4.5	4.5	3.0	4.0	.0	.0	.0
5	9.5	7.5	8.5	6.5	5.0	6.0	3.5	3.0	3.5	1.0	.0	.5
6	8.5	7.0	8.0	6.5	5.5	6.0	3.0	1.5	2.5	1.0	.0	.5
7	8.5	7.5	8.0	5.0	4.0	4.5	1.5	.0	.5	2.0	.5	1.5
8	7.5	6.5	7.0	3.5	2.5	3.0	.0	.0	.0	1.5	.5	1.0
9	7.5	5.5	6.5	3.5	2.5	3.0	.0	.0	.0	1.0	.0	.5
10	7.0	6.0	6.5	3.5	2.5	3.0	.0	.0	.0	2.5	1.0	1.5
11	8.5	6.0	7.5	2.5	1.5	2.5	.0	.0	.0	2.0	1.5	2.0
12	10.0	8.0	9.0	1.5	.5	1.0	.0	.0	.0	2.0	1.0	1.5
13	10.5	8.5	9.5	1.5	.0	1.0	.0	.0	.0	1.5	.5	1.5
14	10.5	9.0	10.0	1.0	.0	.5	.5	.0	.0	1.5	1.0	1.0
15	11.0	9.5	10.5	.0	.0	.0	1.5	.0	.5	1.0	.0	.5
16	12.0	10.5	11.0	1.0	.0	.5	2.0	1.0	1.5	.0	.0	.0
17	10.5	8.0	9.5	2.0	1.0	1.5	2.0	1.0	1.5	1.0	.0	.5
18	7.5	6.5	7.0	3.0	1.5	2.0	1.5	1.0	1.5	1.5	.0	1.0
19	7.0	5.5	6.5	4.5	3.0	4.0	2.0	1.0	1.5	1.0	.0	.5
20	6.5	5.0	6.0	3.5	2.5	3.5	2.0	1.0	1.5	1.0	.0	.5
21	6.5	5.0	6.0	2.5	1.5	2.5	2.5	1.5	2.0	2.0	1.0	1.5
22	8.0	6.0	7.0	1.5	1.0	1.5	2.5	2.0	2.5	2.0	1.0	1.5
23	9.5	7.5	8.5	.5	.0	.0	2.0	1.5	1.5	2.5	1.0	1.5
24	10.0	9.0	9.5	.0	.0	.0	1.5	.0	1.0	1.5	1.0	1.5
25	9.0	8.5	9.0	.0	.0	.0	.0	.0	.0	2.5	1.5	2.0
26	8.5	7.0	8.0	.0	.0	.0	.0	.0	.0	3.0	2.0	2.5
27	7.0	5.5	6.5	.5	.0	.0	.0	.0	.0	3.5	2.0	3.0
28	6.0	5.0	5.5	2.0	.5	1.0	.0	.0	.0	4.0	3.0	3.5
29	6.5	5.5	6.0	2.0	1.0	1.5	.0	.0	.0	3.0	1.5	2.0
30	7.0	5.5	6.0	2.0	1.0	1.5	.0	.0	.0	2.0	1.0	1.5
31	6.0	5.5	5.5	---	---	---	.0	.0	.0	3.0	2.0	2.5
MONTH	12.0	5.0	8.0	6.5	.0	2.5	4.5	.0	1.0	4.0	.0	1.0

PEND OREILLE RIVER BASIN

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12331900 CLARK FORK NEAR CLINTON, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	3.0	2.5	3.0	6.0	4.0	5.0	9.0	6.0	7.5	13.5	10.5	12.0
2	3.5	2.0	2.5	7.0	5.5	6.0	8.0	6.5	7.5	13.0	11.0	12.0
3	2.5	1.0	2.0	7.0	5.0	6.0	7.0	5.0	6.0	12.0	10.5	11.5
4	1.0	.0	.5	7.5	6.0	6.5	6.5	5.0	5.5	13.5	9.5	11.5
5	.0	.0	.0	6.5	5.5	6.0	8.0	4.0	6.0	13.5	11.0	12.5
6	.0	.0	.0	6.0	4.5	5.5	9.0	5.0	7.0	12.0	10.5	11.5
7	1.0	.0	.5	5.5	4.5	5.0	8.5	6.5	7.5	12.0	9.5	11.0
8	1.5	.0	1.0	6.5	4.5	5.5	9.5	7.0	8.5	11.5	10.0	10.5
9	2.0	1.0	1.0	8.0	6.0	7.0	8.5	7.0	8.0	9.5	6.5	8.0
10	2.5	1.0	2.0	8.5	6.5	7.5	8.5	7.0	7.5	8.0	6.0	7.0
11	2.5	1.0	2.0	8.5	7.0	8.0	9.0	5.5	7.5	8.5	6.0	7.0
12	3.0	1.5	2.5	8.5	7.0	8.0	9.0	6.0	7.5	9.5	6.5	8.0
13	4.0	2.5	3.0	8.0	6.5	7.5	9.0	5.0	7.0	11.5	7.0	9.0
14	4.0	3.0	3.5	7.0	6.0	6.5	9.5	6.0	7.5	12.5	9.0	10.5
15	4.5	3.0	4.0	6.5	5.0	6.0	10.5	7.0	8.5	12.5	10.5	11.5
16	5.0	4.0	4.5	6.5	4.5	5.5	11.0	7.5	9.0	13.0	9.5	10.5
17	4.5	3.5	4.0	5.5	4.0	5.0	12.0	8.0	10.0	13.5	10.5	11.5
18	4.5	4.0	4.5	4.5	3.0	4.0	13.0	9.0	11.0	12.0	11.0	11.5
19	4.5	3.0	3.5	4.0	1.5	3.0	13.5	10.0	12.0	11.5	9.5	11.0
20	4.0	2.5	3.5	5.5	2.5	4.0	13.5	11.0	12.5	14.0	10.0	12.0
21	5.5	4.0	4.5	6.0	3.0	4.5	13.0	10.5	12.0	15.0	12.0	13.5
22	5.5	4.5	5.0	6.5	4.5	5.5	13.5	10.5	12.0	15.5	11.0	13.5
23	5.5	4.0	5.0	6.5	5.0	6.0	14.5	11.5	13.0	16.5	13.0	14.5
24	6.0	4.0	5.0	7.5	5.0	6.5	13.0	10.5	12.0	17.0	13.5	15.5
25	5.5	4.5	5.0	7.5	6.0	7.0	10.5	9.0	9.5	17.5	14.0	16.0
26	5.5	4.5	5.0	7.0	5.0	6.0	9.5	8.0	8.5	17.5	14.0	16.0
27	5.0	3.5	4.5	7.0	5.5	6.0	10.5	7.5	9.0	17.0	14.0	15.5
28	5.5	4.0	5.0	7.0	5.0	6.0	11.5	8.0	9.5	17.0	14.0	15.5
29	---	---	---	7.5	5.0	6.5	12.5	9.0	10.5	17.0	15.5	16.0
30	---	---	---	7.5	6.5	7.0	13.0	9.5	11.5	16.5	15.0	15.5
31	---	---	---	7.5	5.5	6.5	---	---	---	15.0	13.0	14.0
MONTH	6.0	.0	3.0	8.5	1.5	6.0	14.5	4.0	9.0	17.5	6.0	12.0
JUNE			JULY			AUGUST			SEPTEMBER			
1	14.5	13.5	14.0	17.0	15.5	16.0	21.0	19.0	20.0	19.5	17.0	18.0
2	14.5	13.5	14.0	16.0	14.5	15.5	21.5	19.0	20.5	18.5	17.0	17.5
3	15.5	13.5	14.0	15.0	12.5	13.5	21.0	19.5	20.5	17.0	15.0	15.5
4	16.0	14.0	15.0	16.5	11.5	13.5	21.0	18.5	20.0	15.0	14.0	15.0
5	16.0	14.5	15.5	19.0	15.0	17.0	22.0	19.0	20.5	14.5	13.0	14.0
6	16.5	14.5	15.5	19.0	17.5	18.0	22.5	19.5	21.0	15.0	12.5	13.5
7	18.0	15.0	16.5	20.5	17.0	18.5	23.5	20.5	22.0	16.0	13.5	14.5
8	18.0	16.0	17.0	21.0	19.0	20.0	23.0	21.5	22.0	16.5	14.5	15.5
9	18.0	16.5	17.5	19.5	14.5	17.0	22.0	20.0	21.0	15.5	14.0	14.5
10	17.5	16.0	17.0	14.5	12.0	13.0	22.0	19.5	20.5	13.5	12.0	12.5
11	16.5	13.5	14.5	14.5	11.5	13.0	21.0	20.0	20.5	13.5	11.5	12.5
12	13.5	12.0	12.5	17.0	14.5	15.5	19.5	17.5	18.5	15.0	12.5	13.5
13	14.0	11.5	12.5	19.0	16.5	17.5	20.0	17.5	19.0	15.5	13.0	14.5
14	16.0	12.0	14.0	18.5	15.0	17.0	19.5	18.5	19.0	15.0	13.5	14.5
15	16.0	15.0	15.0	14.5	13.0	13.5	19.0	17.0	18.0	15.0	13.0	14.0
16	15.0	14.0	14.5	15.0	12.5	13.5	19.0	16.5	18.0	14.5	13.0	13.5
17	16.5	13.5	15.0	14.5	14.0	14.0	20.0	17.5	18.5	13.5	11.5	12.5
18	16.0	14.5	15.0	16.5	13.5	15.0	19.5	17.5	18.5	11.0	8.5	10.0
19	14.5	13.0	13.5	18.0	16.5	17.0	19.5	17.5	18.5	8.5	7.5	8.0
20	14.0	12.0	13.0	18.0	17.0	17.5	19.5	18.0	18.5	8.5	7.0	8.0
21	14.5	13.0	13.5	17.5	15.5	16.5	18.5	17.0	18.0	9.0	7.5	8.5
22	17.0	13.0	15.0	19.0	16.5	17.5	19.0	17.5	18.0	10.5	8.5	9.5
23	18.5	15.5	17.0	19.0	18.5	18.5	19.0	17.0	18.0	11.5	10.0	10.5
24	18.5	16.5	17.5	19.0	17.5	18.0	19.0	17.0	18.0	12.0	10.5	11.0
25	18.5	15.0	17.0	19.5	18.0	18.5	19.5	17.5	18.5	12.5	11.0	12.0
26	19.0	16.0	17.5	19.5	17.5	18.5	19.5	17.5	18.5	13.0	11.5	12.5
27	18.0	16.5	17.0	19.0	17.5	18.0	19.5	17.0	18.5	13.0	11.5	12.5
28	16.5	15.0	15.5	19.0	16.5	17.5	19.0	17.0	18.0	11.5	10.0	10.5
29	17.0	15.0	16.0	20.5	17.5	19.0	19.0	16.5	18.0	10.5	9.5	10.0
30	17.5	16.0	16.5	21.0	18.0	19.5	18.5	16.5	17.5	9.5	8.0	8.5
31	---	---	---	21.0	19.0	20.0	18.5	17.0	18.0	---	---	---
MONTH YEAR	19.0 23.5	11.5 .0	15.5 9.0	21.0	11.5	16.5	23.5	16.5	19.0	19.5	7.0	12.5

PEND OREILLE RIVER BASIN

12331900 CLARK FORK NEAR CLINTON, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT					
13...	1100	1050	486	12.0	9.0
NOV					
18...	0930	846	502	.0	1.5
DEC					
30...	--	--	533	--	--
JAN					
06...	1130	1270	358	1.0	1.5
FEB					
09...	1200	684	491	1.5	1.5
MAR					
24...	0900	803	484	4.5	5.0
MAY					
06...	1115	838	430	6.5	11.0
31...	1625	2310	261	27.0	14.5
JUN					
23...	1200	938	458	22.5	16.5
AUG					
04...	1057	619	466	18.5	18.5
SEP					
16...	0740	797	493	6.0	12.5

PEND OREILLE RIVER BASIN

12332000 MIDDLE FORK ROCK CREEK NEAR PHILIPSBURG, MT

LOCATION.--Lat 46°11'42", long 113°30'00", in SW¼SE¼ sec.8, T.5 N., R.15 W., Granite County, Hydrologic Unit 17010202, on right bank 0.3 mi upstream from East Fork, 2.3 mi upstream from West Fork, and 13.7 mi southwest of Philipsburg.

DRAINAGE AREA.--123 mi².

PERIOD OF RECORD.--September 1937 to current year. Monthly discharges only January to March 1938, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 5,385.84 ft National Geodetic Vertical Datum of 1929. Sept. 21, 1937, to May 10, 1942, nonrecording gage at site 600 ft upstream at different datum. May 11, 1942, to May 11, 1954, nonrecording gages at site 400 ft downstream at different datum. May 12, 1954, to Sept. 30, 1955, nonrecording gage at site 300 ft upstream at datum 5.74 ft higher.

REMARKS.--Records good except those for winter periods, which are poor. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report. A few small diversions for irrigation above station.

AVERAGE DISCHARGE.--46 years, 124 ft³/s, 13.69 in/yr, 89,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft³/s June 16, 1974, gage height, 5.58 ft; minimum daily, 5.3 ft³/s Feb. 9, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0430	*875	*4.41	July 10	1000	492	3.69

Minimum daily discharge, 20 ft³/s Nov. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	55	49	30	33	33	34	84	615	329	127	70
2	53	52	49	35	30	33	34	87	542	368	124	79
3	58	49	49	40	30	33	34	90	482	329	122	79
4	61	53	47	44	28	34	33	96	497	292	118	74
5	59	52	47	45	28	34	32	109	482	265	118	71
6	54	52	45	46	30	34	32	116	445	262	113	70
7	54	48	35	47	30	34	32	113	436	262	105	65
8	55	49	30	48	30	34	32	121	473	256	105	64
9	54	50	30	47	30	34	32	118	492	246	105	70
10	53	48	32	45	30	35	32	114	492	423	105	70
11	53	48	35	42	30	35	30	107	506	372	122	74
12	53	43	35	39	30	36	29	101	450	333	114	76
13	53	49	35	38	30	35	29	98	380	300	101	71
14	53	39	40	36	30	34	28	96	329	286	92	66
15	53	39	45	35	30	34	30	94	314	279	90	64
16	50	45	45	33	30	34	30	105	321	265	87	59
17	54	56	45	33	30	33	31	103	300	237	85	59
18	57	61	42	32	30	32	34	107	348	222	80	61
19	54	49	40	33	32	30	39	111	329	210	80	66
20	54	43	40	34	32	30	42	109	296	204	85	64
21	53	42	43	34	32	30	47	129	275	202	92	62
22	50	40	43	35	33	31	52	142	265	183	90	64
23	53	30	40	35	33	33	61	168	252	178	101	64
24	57	20	40	35	33	34	99	213	282	172	98	61
25	55	25	38	35	33	33	109	275	292	165	87	58
26	65	40	35	35	33	34	94	392	275	163	87	55
27	66	50	33	35	33	33	84	552	303	153	85	57
28	59	49	32	35	33	33	80	665	352	148	79	58
29	57	50	30	35	---	33	77	782	380	142	77	57
30	57	49	30	35	---	34	79	811	376	137	74	59
31	55	---	30	35	---	35	---	717	---	129	71	---
TOTAL	1717	1375	1209	1166	866	1034	1431	6925	11581	7512	3019	1967
MEAN	55.4	45.8	39.0	37.6	30.9	33.4	47.7	223	386	242	97.4	65.6
MAX	66	61	49	48	33	36	109	811	615	423	127	79
MIN	50	20	30	30	28	30	28	84	252	129	71	55
CFSM	.45	.37	.32	.31	.25	.27	.39	1.81	3.14	1.97	.79	.53
IN.	.52	.42	.37	.35	.26	.31	.43	2.09	3.50	2.27	.91	.59
AC-FT	3410	2730	2400	2310	1720	2050	2840	13740	22970	14900	5990	3900
CAL YR 1982	TOTAL	53696	MEAN 147	MAX 1060	MIN 15	CFSM 1.20	IN 16.24	AC-FT	106500			
WTR YR 1983	TOTAL	39802	MEAN 109	MAX 811	MIN 20	CFSM .89	IN 12.04	AC-FT	78950			

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT

LOCATION.--Lat 46°43'21", long 113°40'56", in NE¼SW¼ sec.12, T.11 N., R.17 W., Missoula County, Hydrologic Unit 17010202, on left bank 100 ft downstream from private road bridge, 0.2 mi upstream from mouth, and 3.7 mi southeast of Clinton.

DRAINAGE AREA.--885 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 3,519.46 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for December and January, which are poor. Some regulation by East Fork Rock Creek Reservoir (station number 12332500). During irrigation season water is diverted from East Fork Rock Creek in sec.5, T.4 N., R.14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Diversions for irrigation of about 16,100 acres.

AVERAGE DISCHARGE.--11 years, 604 ft³/s, 9.27 in/yr, 437,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,520 ft³/s June 20, 1975, gage height, 7.49 ft, rating then in use; maximum gage height, 7.53 ft May 22, 1981, and June 17, 1982; minimum discharge, 45 ft³/s Jan. 3, 1974, gage height, 1.65 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 8.52 ft, from floodmark, discharge, 6,500 ft³/s; local residents report flood of 1927 reached a stage of about 9.5 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,610 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	1500	*2,870	*6.70	July 10	2030	2,110	6.28

Minimum daily discharge, 120 ft³/s Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	370	298	234	170	190	229	238	476	2330	1180	564	329
2	355	293	235	150	179	260	238	489	2080	1170	530	359
3	355	279	236	160	171	303	240	505	1940	1110	510	359
4	375	281	245	200	139	315	235	519	1890	956	502	338
5	388	287	234	230	130	316	224	562	1830	845	483	324
6	368	290	233	240	120	296	217	646	1770	763	454	305
7	365	282	216	250	200	271	221	663	1700	765	432	282
8	357	253	140	260	185	259	226	662	1680	717	419	269
9	344	258	165	250	185	262	225	713	1700	677	425	282
10	334	271	180	240	186	316	231	668	1690	1420	449	291
11	329	256	185	237	182	347	224	619	1700	1600	487	324
12	326	239	190	214	193	390	218	578	1640	1150	485	343
13	322	244	200	200	202	383	216	552	1490	982	438	329
14	317	227	215	204	206	375	211	542	1310	894	411	309
15	314	225	220	181	200	345	210	552	1220	913	396	296
16	313	230	230	170	201	314	213	622	1200	866	385	305
17	321	259	240	190	200	295	218	642	1130	811	369	305
18	332	265	230	205	226	287	235	684	1240	776	353	309
19	324	268	224	196	282	260	262	820	1280	750	348	343
20	311	257	218	182	243	249	300	835	1130	733	353	338
21	305	243	220	193	236	251	332	919	1040	784	396	338
22	303	227	232	201	245	256	373	1080	1010	717	425	338
23	302	198	225	200	263	254	443	1210	923	676	458	343
24	310	180	210	192	253	246	532	1430	916	668	444	338
25	317	190	170	196	262	241	686	1670	904	653	418	324
26	334	210	190	195	259	236	633	1990	863	622	405	309
27	345	225	200	204	240	231	557	2280	904	600	390	300
28	336	240	180	205	229	236	512	2490	1150	571	369	309
29	320	245	160	181	---	228	479	2650	1300	564	353	305
30	311	248	200	181	---	237	467	2780	1330	537	338	314
31	304	---	190	199	---	250	---	2640	---	523	329	---
TOTAL	10307	7468	6447	6276	5807	8738	9616	33488	42290	25993	13118	9557
MEAN	332	249	208	202	207	282	321	1080	1410	838	423	319
MAX	388	298	245	260	282	390	686	2780	2330	1600	564	359
MIN	302	180	140	150	120	228	210	476	863	523	329	269
CFSM	.38	.28	.24	.23	.23	.32	.36	1.22	1.59	.95	.48	.36
IN.	.43	.31	.27	.26	.24	.37	.40	1.41	1.78	1.09	.55	.40
AC-FT	20440	14810	12790	12450	11520	17330	19070	66420	83880	51560	26020	18960

CAL YR 1982	TOTAL	270297	MEAN	741	MAX	4490	MIN	100	CFSM	.84	IN	11.36	AC-FT	536100
WTR YR 1983	TOTAL	179105	MEAN	491	MAX	2780	MIN	120	CFSM	.56	IN	7.53	AC-FT	355300

PEND OREILLE RIVER BASIN
12334510 ROCK CREEK NEAR CLINTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: September 1979 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since Sept. 6, 1979.

REMARKS.--Missing record period July 3 to Aug. 9 due to water damage to equipment.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 20.5°C July 23, 1980; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 20.0°C Aug. 10; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	9.0	7.5	8.0	6.0	4.5	5.0	1.5	.5	1.0	.5	.0	.0
2	9.5	7.0	8.5	5.0	3.0	4.0	1.5	1.0	1.0	.5	.0	.0
3	9.5	8.0	9.0	4.0	2.5	3.5	2.0	1.0	1.5	.5	.0	.0
4	8.0	7.5	7.5	5.0	3.0	4.0	3.0	1.5	2.0	.5	.0	.0
5	9.0	7.0	7.5	6.0	4.5	5.0	1.5	1.0	1.5	.0	.0	.0
6	7.5	5.5	6.5	6.0	4.0	5.5	1.5	.5	1.0	.0	.0	.0
7	8.0	6.5	7.0	3.5	2.5	3.0	.5	.0	.0	.0	.0	.0
8	6.5	5.5	6.0	2.5	1.0	2.0	.0	.0	.0	1.0	.0	.5
9	7.5	4.0	5.5	2.5	2.0	2.0	.0	.0	.0	1.0	.5	.5
10	7.0	4.0	5.5	3.0	1.0	2.0	.0	.0	.0	1.5	1.0	1.0
11	8.5	4.5	6.5	2.0	1.0	1.5	.0	.0	.0	2.0	.5	1.0
12	9.5	6.0	7.5	1.0	.0	.5	.5	.0	.0	2.0	.0	.5
13	9.5	6.5	8.0	2.0	.5	1.0	.0	.0	.0	2.0	.0	.5
14	10.0	6.5	8.0	.5	.0	.0	.5	.0	.0	1.0	.0	.5
15	10.5	7.0	8.5	.0	.0	.0	.0	.0	.0	.5	.0	.0
16	11.5	8.5	9.5	.5	.0	.0	1.0	.0	.5	.5	.0	.0
17	8.5	6.5	7.5	1.5	.5	1.0	1.0	.5	.5	.0	.0	.0
18	6.5	5.5	6.0	2.0	1.0	1.5	1.0	.5	1.0	.0	.0	.0
19	6.5	4.0	5.0	3.0	1.5	2.5	1.5	.5	1.0	1.0	.0	.0
20	6.0	3.0	4.5	2.5	1.5	2.0	1.5	.5	1.0	.5	.0	.0
21	6.0	3.0	4.5	2.0	1.0	1.5	1.5	1.0	1.0	1.5	.5	1.0
22	7.5	4.5	6.0	1.0	.0	.5	1.5	1.0	1.0	1.5	.5	1.0
23	8.5	6.0	7.0	.0	.0	.0	1.0	.5	.5	2.5	.5	1.0
24	9.0	7.0	8.0	.0	.0	.0	1.0	.0	.5	1.5	.5	1.0
25	8.0	6.5	7.0	.0	.0	.0	.0	.0	.0	2.0	.5	1.0
26	7.0	6.0	6.5	.0	.0	.0	.0	.0	.0	2.5	.5	1.5
27	6.0	5.0	5.5	.0	.0	.0	.0	.0	.0	2.5	1.0	1.5
28	6.0	4.5	5.0	.5	.0	.0	.5	.0	.0	2.5	.5	1.5
29	6.0	4.5	5.0	1.0	.5	1.0	.0	.0	.0	1.5	.0	.5
30	7.0	5.0	5.5	1.5	1.0	1.0	.5	.0	.0	2.0	.5	1.0
31	5.5	5.0	5.0	---	---	---	.5	.0	.0	2.5	1.0	1.5
MONTH	11.5	3.0	6.5	6.0	.0	1.5	3.0	.0	.5	2.5	.0	.5

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	2.0	1.0	1.5	5.0	2.0	3.5	8.5	4.0	6.0	12.0	7.0	9.0
2	2.0	.0	1.0	5.5	3.5	4.0	6.0	4.5	5.0	10.0	7.5	8.5
3	2.5	.0	1.0	6.5	3.0	4.5	5.5	3.5	4.5	9.0	6.5	8.0
4	.5	.0	.0	6.0	4.0	5.0	5.0	2.0	3.0	11.5	6.0	8.5
5	.0	.0	.0	5.0	3.5	4.0	7.5	1.5	4.0	10.5	7.0	9.0
6	.0	.0	.0	4.5	2.5	3.5	7.0	2.5	4.5	9.5	7.5	8.0
7	.5	.0	.0	5.0	2.5	3.5	7.0	4.0	5.5	10.5	6.0	8.0
8	.5	.0	.0	5.5	3.0	4.5	8.5	4.5	6.0	9.0	6.5	7.5
9	.5	.0	.5	7.5	4.0	5.5	6.5	4.0	5.5	6.5	4.5	5.0
10	1.5	.0	1.0	8.0	3.5	5.5	6.0	4.0	5.0	6.5	4.0	5.0
11	2.5	.5	1.0	6.5	4.5	5.5	8.5	2.5	5.0	6.5	4.0	5.0
12	2.5	1.0	1.5	6.5	4.5	5.5	7.5	3.0	5.0	8.5	4.0	6.0
13	3.0	1.5	2.0	6.5	4.0	5.0	8.0	2.5	5.0	10.5	4.5	7.5
14	3.5	1.0	2.0	5.5	4.0	4.5	9.0	2.5	5.5	9.5	5.5	8.0
15	3.5	1.0	2.0	6.0	3.5	4.0	9.0	4.0	6.5	9.5	7.0	8.0
16	3.0	1.0	2.0	5.5	2.0	3.5	10.0	4.0	7.0	8.5	5.5	7.0
17	2.5	1.0	1.5	4.5	2.5	3.5	11.5	5.0	8.0	10.0	6.5	8.0
18	2.5	1.5	2.0	4.0	1.5	2.5	12.0	6.0	8.5	10.0	8.0	8.5
19	2.5	1.0	1.5	3.5	.0	1.5	12.0	7.0	9.0	9.5	7.5	8.5
20	3.0	.5	1.5	4.5	.0	2.0	10.5	7.0	8.5	12.0	7.5	9.5
21	3.5	1.5	2.5	5.5	1.0	3.0	11.0	6.5	8.5	12.0	8.5	10.0
22	3.5	1.0	2.0	6.0	2.5	4.0	11.5	6.5	9.0	12.5	8.0	10.0
23	3.5	.5	2.0	7.0	3.5	5.0	11.5	7.5	9.5	13.0	8.5	10.5
24	4.5	.5	2.0	6.0	3.0	4.5	9.5	7.5	8.5	13.0	8.5	10.5
25	3.5	1.0	2.0	6.5	4.0	5.0	8.0	5.5	6.5	12.5	9.0	11.0
26	4.0	1.5	2.5	7.0	2.5	4.5	7.0	5.0	6.0	12.0	9.0	10.5
27	4.0	.5	2.0	5.5	3.0	4.0	8.0	4.0	6.0	11.5	8.5	10.0
28	4.0	1.5	2.5	6.0	3.0	4.5	10.0	5.5	7.5	12.0	8.5	10.0
29	---	---	---	6.0	2.5	4.5	10.5	5.0	7.5	12.0	9.0	10.5
30	---	---	---	6.0	4.5	5.0	11.0	6.0	8.5	11.0	9.0	10.0
31	---	---	---	6.0	3.5	4.5	---	---	---	10.5	7.5	9.0
MONTH	4.5	.0	1.5	8.0	.0	4.0	12.0	1.5	6.5	13.0	4.0	8.5
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	8.0	9.5	13.0	11.5	12.0	---	---	---	18.0	14.0	16.0
2	9.5	8.5	9.0	13.0	11.0	11.5	---	---	---	16.5	13.5	14.5
3	11.0	8.0	9.5	---	---	---	---	---	---	14.5	11.5	13.0
4	11.5	8.5	10.0	---	---	---	---	---	---	13.5	11.0	12.5
5	11.0	9.5	10.5	---	---	---	---	---	---	14.0	10.5	12.0
6	12.5	9.0	11.0	---	---	---	---	---	---	14.5	9.5	12.0
7	13.0	9.5	11.5	---	---	---	---	---	---	14.5	10.5	12.5
8	13.0	10.5	11.5	---	---	---	---	---	---	15.5	12.0	13.0
9	13.5	10.5	12.0	---	---	---	18.5	---	---	13.0	10.5	12.0
10	13.0	10.5	12.0	---	---	---	20.0	15.0	17.0	10.5	8.0	9.5
11	11.5	9.5	10.0	---	---	---	18.0	16.0	17.0	12.5	9.5	10.5
12	9.5	8.5	9.0	---	---	---	18.0	13.5	15.5	14.0	9.5	11.5
13	11.0	8.5	9.5	---	---	---	19.0	13.0	16.0	14.0	10.0	12.0
14	13.5	8.0	10.5	---	---	---	16.5	14.0	15.0	13.5	10.5	12.0
15	12.0	10.5	11.0	---	---	---	16.0	13.0	14.5	14.0	9.5	11.5
16	11.5	9.5	10.5	---	---	---	18.0	12.5	15.0	13.5	9.0	11.0
17	14.0	9.0	11.5	---	---	---	19.0	13.0	15.5	11.0	9.0	10.0
18	12.5	10.5	11.5	---	---	---	18.5	13.5	15.5	9.0	6.0	8.0
19	12.0	9.5	10.5	---	---	---	18.0	13.0	15.5	7.5	5.0	6.0
20	12.0	8.5	10.0	---	---	---	16.0	14.5	15.0	8.5	4.0	6.0
21	11.5	9.5	10.5	---	---	---	17.0	13.5	15.0	10.0	5.0	7.0
22	14.0	8.5	11.0	---	---	---	16.5	13.5	15.0	11.0	6.0	8.5
23	15.0	11.0	13.0	---	---	---	17.5	13.0	15.0	11.5	7.0	9.0
24	15.0	12.0	13.5	---	---	---	17.5	13.0	15.0	12.0	7.5	9.5
25	15.5	10.5	13.0	---	---	---	18.0	13.5	15.5	12.5	8.0	10.0
26	16.0	11.5	13.5	---	---	---	17.5	13.5	15.5	12.0	8.5	10.0
27	14.0	12.5	13.0	---	---	---	18.0	13.0	15.5	10.5	9.0	10.0
28	12.0	11.0	11.5	---	---	---	18.0	13.0	15.0	10.0	6.5	8.5
29	13.5	10.5	12.0	---	---	---	18.0	12.5	15.0	8.0	7.0	7.5
30	14.0	11.0	12.5	---	---	---	17.5	13.0	15.5	7.5	6.0	6.5
31	---	---	---	---	---	---	17.5	13.5	15.0	---	---	---
MONTH YEAR	16.0 20.0	8.0 .0	11.0 6.0	13.0	11.0	12.0	20.0	12.5	15.5	18.0	4.0	10.5

PEND OREILLE RIVER BASIN

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12334510 ROCK CREEK NEAR CLINTON, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT					
07...	1415	373	147	8.5	7.5
NOV					
17...	0910	250	155	-2.0	1.0
DEC					
29...	0930	153	164	-12.0	.0
FEB					
09...	1030	191	155	.0	.5
MAR					
23...	1000	269	148	4.0	4.0
MAY					
06...	0830	630	110	6.5	7.5
26...	1200	2120	68	25.0	10.0
31...	1240	2570	60	23.5	9.0
JUN					
02...	1410	2060	66	24.0	8.5
06...	1750	1780	78	25.0	12.5
23...	0840	898	114	15.0	11.0
JUL					
21...	1720	795	117	26.0	15.0
AUG					
04...	0740	517	136	15.0	14.0
24...	1255	435	163	23.5	14.5
SEP					
15...	0847	314	145	6.0	9.5

PEND OREILLE RIVER BASIN

12335500 NEVADA CREEK ABOVE RESERVOIR, NEAR FINN, MT

LOCATION.--Lat 46°46'42", long 112°46'00", SW1/4SW1/4 sec.20, T.12 N., R.9 W., Powell County, Hydrologic Unit 17010203, on right bank 0.7 mi upstream from Nevada Lake, 1.1 mi downstream from Gallagher Creek, and 4.0 mi west of Finn.

DRAINAGE AREA.--116 mi².

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

GAGE.--Water-stage recorder. Altitude of gage is 4,640 ft, from topographic map. Prior to Apr. 30, 1942, non-recording gage at site 1.0 mi downstream at different datum. Apr. 30, 1942, to July 26, 1953, water-stage recorder at site 0.2 mi downstream at different datum. July 26, 1953, to Nov. 6, 1978, water-stage recorder at site 0.8 mi upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 2,900 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--44 years, 38.7 ft³/s, 28,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft³/s June 2, 1953, gage height, 6.00 ft, site and datum then in use, from rating curve extended above 400 ft³/s on basis of inflow-outflow study of Nevada Lake; maximum gage height, 7.40 ft May 29, 1953, site and datum then in use (backwater from diversion dam); minimum discharge, probably less than 2.0 ft³/s at times in 1944, 1957, 1972, and 1973.

EXTREMES FOR CURENT YEAR.--Maximum discharge, 293 ft³/s July 10, gage height, 2.86 ft, no peak above base of 290 ft³/s; maximum gage height, 3.56 ft Feb. 24 (backwater from ice); minimum daily discharge, 9.0 ft³/s Dec. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	29	19	14	17	15	23	26	146	29	32	18
2	12	29	18	13	16	16	23	26	121	42	31	12
3	15	25	18	14	14	18	24	26	106	29	29	11
4	15	25	20	15	9.5	22	23	26	90	26	30	11
5	15	28	21	17	9.5	20	21	25	80	25	27	11
6	14	30	18	19	10	19	20	46	73	24	25	11
7	14	27	13	20	10	18	21	43	60	26	24	11
8	13	22	9.0	26	11	18	20	42	55	23	24	13
9	13	23	10	24	11	20	20	63	53	24	24	17
10	13	24	11	22	12	25	23	72	46	206	25	21
11	14	22	12	23	13	35	20	67	45	106	36	20
12	18	16	13	24	13	30	20	68	43	80	31	19
13	22	13	14	19	13	29	19	73	40	80	25	19
14	21	14	17	15	13	28	18	106	36	77	24	19
15	20	15	20	13	13	25	20	108	35	73	26	19
16	20	16	22	12	13	24	19	81	37	62	27	18
17	22	17	25	12	13	23	20	70	35	58	25	17
18	23	19	23	13	14	21	21	123	56	53	24	18
19	24	22	21	14	14	20	19	137	37	48	23	21
20	22	20	20	14	13	19	14	112	31	47	24	20
21	23	18	20	13	13	20	14	123	31	52	23	19
22	25	16	21	13	14	21	18	149	29	45	28	19
23	25	15	19	14	14	23	22	160	26	50	31	19
24	24	15	16	14	14	23	31	185	25	48	27	19
25	26	14	12	15	17	22	39	209	22	52	24	18
26	43	15	14	16	16	21	39	241	20	46	21	18
27	32	17	16	17	15	21	35	253	23	40	20	18
28	29	19	15	19	15	21	33	240	33	37	19	18
29	32	22	13	19	---	21	29	214	30	36	18	18
30	31	20	14	18	---	26	27	199	33	33	19	21
31	29	---	15	16	---	23	---	174	---	32	19	---
TOTAL	661	607	519.0	517	370.0	687	695	3487	1497	1609	785	513
MEAN	21.3	20.2	16.7	16.7	13.2	22.2	23.2	112	49.9	51.9	25.3	17.1
MAX	43	30	25	26	17	35	39	253	146	206	36	21
MIN	12	13	9.0	12	9.5	15	14	25	20	23	18	11
AC-FT	1310	1200	1030	1030	734	1360	1380	6920	2970	3190	1560	1020
CAL YR 1982	TOTAL	17188.2	MEAN 47.1	MAX 300	MIN 5.7	AC-FT 34090						
WTR YR 1983	TOTAL	11947.0	MEAN 32.7	MAX 253	MIN 9.0	AC-FT 23700						

PEND OREILLE RIVER BASIN

12338690 MONTURE CREEK NEAR OVANDO, MT

LOCATION.--Lat 47°02'44", long 113°11'23", in SW¼NE¼NW¼ sec.24, T.15 N., R.13 W., Powell County, Hydrologic Unit 17010203, on right bank 450 ft upstream from bridge on State Highway 200, 0.15 mi downstream from Dick Creek, 3.2 mi northwest of Ovando, and at mile 3.7.

DRAINAGE AREA.--140 mi².

PERIOD OF RECORD.--September 1973 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 3,987.13 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 1,700 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--10 years, 192 ft³/s, 139,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 ft³/s June 16, 1974, gage height, 4.18 ft; minimum daily, 20 ft³/s Jan. 5, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,340 ft³/s May 30, gage height, 3.56 ft; minimum daily, 27 ft³/s Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	50	42	36	32	35	78	213	953	289	119	69
2	55	51	42	36	32	39	78	223	810	280	111	71
3	55	49	42	37	31	42	80	230	748	277	111	69
4	55	49	43	39	30	44	74	237	775	264	108	68
5	55	49	43	41	29	44	71	252	724	241	104	68
6	55	50	42	43	28	44	71	315	666	227	97	66
7	55	49	40	45	27	43	69	334	665	222	93	65
8	54	47	35	46	28	43	69	346	680	211	89	65
9	53	47	32	47	28	52	69	362	683	211	88	66
10	53	47	32	47	29	60	73	335	684	322	87	65
11	52	46	33	49	30	68	71	303	666	295	101	74
12	52	45	33	47	32	102	69	277	576	252	93	69
13	52	45	35	46	33	87	68	254	487	231	85	65
14	52	44	36	45	33	97	68	240	435	223	84	63
15	51	44	37	44	33	91	68	239	408	224	82	62
16	51	45	39	43	33	85	68	240	391	211	80	60
17	50	46	39	42	33	83	68	240	365	200	78	58
18	50	46	40	41	34	78	71	259	437	187	76	60
19	51	46	40	40	35	71	78	285	407	176	76	60
20	50	47	40	39	34	69	89	286	361	178	76	60
21	50	46	40	38	34	69	104	346	325	176	74	58
22	50	46	42	37	34	69	132	428	299	159	80	58
23	50	44	41	36	34	69	193	541	280	149	82	58
24	52	42	38	35	34	71	298	719	277	147	76	57
25	51	40	37	34	34	71	369	913	264	146	74	55
26	53	39	36	32	35	69	320	1130	249	136	74	55
27	52	39	36	34	36	68	278	1250	255	129	73	55
28	50	40	35	34	35	69	248	1180	283	124	71	55
29	51	43	35	33	---	69	227	1190	296	119	71	55
30	51	42	35	32	---	76	213	1270	305	114	69	57
31	50	---	35	32	---	80	---	1140	---	110	69	---
TOTAL	1618	1363	1175	1230	900	2057	3832	15577	14754	6230	2651	1866
MEAN	52.2	45.4	37.9	39.7	32.1	66.4	128	502	492	201	85.5	62.2
MAX	57	51	43	49	36	102	369	1270	953	322	119	74
MIN	50	39	32	32	27	35	68	213	249	110	69	55
AC-FT	3210	2700	2330	2440	1790	4080	7600	30900	29260	12360	5260	3700
CAL YR 1982	TOTAL	92625	MEAN 254	MAX 1880	MIN 25	AC-FT 183700						
WTR YR 1983	TOTAL	53253	MEAN 146	MAX 1270	MIN 27	AC-FT 105600						

PEND OREILLE RIVER BASIN

12339450 CLEARWATER RIVER NEAR CLEARWATER, MT

LOCATION.--Lat 47°01'09", long 113°23'12", in NW¼NW¼ sec.33, T.15 N., R.14 W., Missoula County, Hydrologic Unit 17010203, Clearwater State Forest, on left bank 700 ft upstream from Blanchard Lake, 1.3 mi northwest of Clearwater, and at mile 4.9.

DRAINAGE AREA.--345 mi².

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,814.23 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Dec. 7 to Feb. 6, which are fair. A few minor diversions for irrigation above station. During summer months Elbow Lake, 1.5 mi upstream, maybe regulated for recreational purposes. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--9 years, 305 ft³/s, 12.00 in/yr, 221,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,900 ft³/s May 17, 1975, gage height, 7.85 ft; minimum, 27 ft³/s Aug. 25, 26, 1977, gage height, 3.69 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,250 ft³/s May 30, gage height, 6.47 ft; minimum, 46 ft³/s part of each day Sept. 28-30, gage height, 3.90 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	83	87	73	67	84	207	664	1170	419	170	62
2	83	82	85	75	66	86	218	633	1060	413	165	62
3	82	83	85	77	64	88	229	614	934	404	162	63
4	83	84	86	78	60	94	235	605	865	395	159	61
5	83	90	87	80	56	96	236	600	832	390	153	60
6	81	94	90	85	60	99	236	622	785	384	144	58
7	82	95	90	90	60	102	235	657	746	374	137	57
8	80	96	84	94	60	107	235	689	725	358	129	57
9	80	93	76	97	61	111	237	713	706	342	122	56
10	78	90	78	100	62	116	245	716	702	356	114	55
11	76	88	78	103	63	125	251	690	691	366	116	56
12	76	85	76	101	64	144	254	646	660	361	115	58
13	75	86	75	98	64	167	253	598	607	348	109	58
14	74	85	76	96	64	191	250	551	556	334	101	57
15	76	82	76	93	64	206	247	516	520	323	94	55
16	82	80	79	89	65	217	244	499	499	313	93	53
17	85	79	84	84	67	219	247	486	478	303	90	51
18	87	80	86	82	71	218	255	484	483	292	87	50
19	85	82	88	80	78	215	273	507	493	277	83	50
20	84	84	87	78	80	210	304	543	477	266	80	50
21	82	84	89	76	83	207	358	566	448	262	77	49
22	81	85	92	75	84	206	424	596	415	257	77	49
23	82	83	93	74	84	204	505	644	387	248	77	49
24	82	78	88	73	84	202	615	716	373	217	78	48
25	80	75	86	73	84	198	776	821	365	228	79	48
26	81	72	80	72	85	194	874	962	350	217	78	48
27	81	76	82	71	85	191	870	1110	336	206	76	47
28	80	83	81	71	84	191	826	1190	346	196	74	47
29	82	86	77	70	---	190	765	1190	371	187	71	46
30	83	86	79	68	---	193	710	1230	398	176	67	46
31	82	---	74	67	---	198	---	1230	---	167	64	---
TOTAL	2513	2529	2574	2543	1969	5069	11614	22288	17778	9379	3241	1606
MEAN	81.1	84.3	83.0	82.0	70.3	164	387	719	593	303	105	53.5
MAX	87	96	93	103	85	219	874	1230	1170	419	170	63
MIN	74	72	74	67	56	84	207	484	336	167	64	46
CFSM	.24	.24	.24	.24	.20	.48	1.12	2.08	1.72	.88	.30	.16
IN.	.27	.27	.28	.27	.21	.55	1.25	2.40	1.92	1.01	.35	.17
AC-FT	4980	5020	5110	5040	3910	10050	23040	44210	35260	18600	6430	3190

CAL YR 1982	TOTAL	136016	MEAN	373	MAX	2000	MIN	43	CFSM	1.08	IN	14.67	AC-FT	269800
WTR YR 1983	TOTAL	83103	MEAN	228	MAX	1230	MIN	46	CFSM	.66	IN	8.96	AC-FT	164800

PEND OREILLE RIVER BASIN

12340000 BLACKFOOT RIVER NEAR BONNER, MT

LOCATION.--Lat 46°53'59", long 113°45'20", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.9, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, Lolo National Forest, on right bank 5.0 mi downstream from Union Creek, 5.6 mi northeast of Bonner, and at mile 7.3.

DRAINAGE AREA.--2,290 mi².

PERIOD OF RECORD.--July to November 1898, March 1899 to September 1901, May 1903 to January 1905, March to October 1905, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "at Bonner" 1898-99 and as Big Blackfoot near Bonner 1903-05.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,344.76 ft National Geodetic Vertical Datum of 1929. July 7, 1898, to June 30, 1901, and May 15, 1903, to Oct. 31, 1905, nonrecording gage at site 7 mi downstream at different datum. Oct. 4, 1939, to Sept. 30, 1955, nonrecording gage at site 1.3 mi downstream at datum 21.82 ft lower.

REMARKS.--Records good except those for Dec. 7 to Feb. 14, which are poor. Diversions for irrigation of about 20,000 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--47 years (water years 1900-01, 1904, 1940-83), 1,651 ft³/s, 9.79 in/yr, 1,196,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s June 10, 1964, gage height, 10.89 ft; minimum daily, 200 ft³/s Jan. 4, 5, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,760 ft³/s May 30, gage height, 7.27 ft; minimum daily, 390 ft³/s Dec. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	823	736	647	410	540	719	902	1730	6500	2430	1210	710		
2	801	729	636	400	540	731	914	1690	5810	2410	1170	722		
3	798	720	642	440	540	806	927	1700	5300	2380	1140	712		
4	799	714	653	500	500	884	912	1690	5100	2280	1130	714		
5	810	716	629	600	450	893	886	1720	4940	2140	1110	703		
6	796	735	649	660	450	824	873	1930	4680	2020	1060	690		
7	789	727	560	720	500	793	869	2140	4500	1970	1010	682		
8	796	712	450	820	520	768	869	2240	4470	1900	976	680		
9	799	698	420	840	540	794	870	2390	4460	1820	953	685		
10	794	700	390	820	540	884	887	2440	4450	2220	952	687		
11	794	681	430	780	540	978	882	2360	4410	2920	1050	751		
12	789	647	500	720	560	1170	871	2230	4150	2700	1090	773		
13	786	640	600	700	580	1260	854	2120	3740	2370	1020	760		
14	780	610	660	660	610	1250	841	2040	3370	2190	967	729		
15	779	590	700	620	649	1170	834	2010	3160	2130	926	706		
16	782	620	731	605	683	1100	830	2040	3030	2060	913	694		
17	791	660	739	600	666	1050	836	2050	2890	1970	898	679		
18	809	680	716	610	660	1000	868	2160	2970	1880	864	679		
19	805	683	704	610	794	932	917	2420	3130	1810	828	712		
20	770	679	686	580	1030	898	997	2620	2900	1750	810	707		
21	755	668	673	580	901	890	1100	2830	2690	1750	785	709		
22	742	656	702	590	771	884	1230	3180	2510	1710	806	711		
23	734	606	680	590	766	873	1420	3700	2350	1610	842	704		
24	736	550	660	580	813	865	1730	4360	2250	1550	842	706		
25	733	520	560	580	843	852	2130	5280	2200	1530	817	700		
26	753	560	500	580	848	832	2240	6350	2140	1510	798	687		
27	777	600	550	580	823	821	2150	7150	2090	1430	778	678		
28	764	620	500	580	748	823	2030	7270	2200	1360	764	672		
29	760	669	420	580	---	822	1900	7320	2370	1300	750	667		
30	755	653	450	560	---	866	1800	7550	2410	1260	731	685		
31	742	---	430	540	---	906	---	7210	---	1210	714	---		
TOTAL	24141	19779	18267	19035	18405	28338	35369	103920	107170	59570	28704	21094		
MEAN	779	659	589	614	657	914	1179	3352	3572	1922	926	703		
MAX	823	736	739	840	1030	1260	2240	7550	6500	2920	1210	773		
MIN	733	520	390	400	450	719	830	1690	2090	1210	714	667		
CFSM	.34	.29	.26	.27	.29	.40	.52	1.46	1.56	.84	.40	.31		
IN.	.39	.32	.30	.31	.30	.46	.57	1.69	1.74	.97	.47	.34		
AC-FT	47880	39230	36230	37760	36510	56210	70150	206100	212600	118200	56930	41840		
CAL YR 1982	TOTAL	739484	MEAN	2026	MAX	9950	MIN	350	CFSM	.89	IN	12.01	AC-FT	1467000
WTR YR 1983	TOTAL	483792	MEAN	1325	MAX	7550	MIN	390	CFSM	.58	IN	7.86	AC-FT	959600

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT

LOCATION.--Lat 46°52'38", long 113°55'53", in NW¼NW¼ sec.19, T.13 N., R.18 W., Missoula County, Hydrologic Unit 17010204, on right bank 0.2 mi downstream from county road bridge, 2.8 mi east of Missoula, 2.8 mi downstream from Milltown Dam, 3.0 mi downstream from Blackfoot River, and at mile 361.6.

DRAINAGE AREA.--5,999 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year. Monthly discharge only for some period, published in WSP 1316.

REVISED RECORDS.--WSP 1042: 1936. WSP 1152: 1942. WSP 1246: 1929-30, 1935, drainage area. WSP 1316: 1932-33.

GAGE.--Water-stage recorder. Datum of gage is 3,198.30 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 27, 1929, nonrecording gage.

REMARKS.--Water-discharge records good. Diurnal fluctuation caused by powerplant at Milltown. Diversions for irrigation of about 120,000 acres above station.

AVERAGE DISCHARGE.--54 years, 3,050 ft³/s, 2,210,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s June 21, 1975, gage height, 13.75 ft; minimum, 115 ft³/s Oct. 25, 1943, gage height, 0.64 ft, powerplant shutdown; minimum daily, 340 ft³/s Sept. 27, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a discharge of 48,000 ft³/s, furnished by The Montana Power Company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,900 ft³/s May 20, gage height, 8.78 ft; minimum, 1,040 ft³/s Feb. 5, gage height, 2.46 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2430	2110	1720	1150	1500	1920	1980	3260	11600	4700	2610	1770
2	2360	2040	1700	1150	1480	1920	1970	3150	10200	4540	2470	1820
3	2330	2000	1710	1300	1450	2150	1990	3170	9310	4660	2380	1840
4	2360	1970	1750	1500	1300	2280	1970	3170	8790	4410	2310	1830
5	2420	1970	1760	1800	1170	2320	1920	3180	8460	4080	2250	1800
6	2390	1990	1800	2200	1180	2200	1870	3600	8050	3820	2150	1770
7	2380	1990	1700	2540	1340	2100	1910	3840	7670	3750	2040	1740
8	2350	1940	1400	2400	1430	2040	1850	3950	7490	3590	1920	1720
9	2320	1890	1300	2730	1420	2010	1870	4230	7450	3370	1900	1710
10	2270	1920	1250	2420	1420	2170	1910	4360	7430	4460	1900	1730
11	2250	1900	1250	2380	1410	2380	1900	4210	7420	7410	2080	1900
12	2230	1780	1400	2290	1430	2670	1870	4070	7280	6410	2300	2010
13	2180	1780	1600	2040	1770	2840	1850	3890	6680	5410	2220	1980
14	2150	1770	1800	1920	1930	2800	1810	3760	6000	4920	2150	1920
15	2130	1590	1870	1680	1800	2700	1760	3770	5460	4810	2010	1870
16	2120	1660	1890	1580	1830	2550	1770	3900	5240	4610	2120	1850
17	2130	1850	1960	1590	1870	2420	1780	4000	5120	4400	1930	1830
18	2200	1860	1930	1630	1900	2340	1820	4130	5110	4160	1860	1810
19	2180	1890	1870	1600	2470	2200	1900	4560	5510	4010	1670	1850
20	2140	1870	1780	1520	2580	2040	2030	4900	5150	3850	1660	1960
21	2100	1840	1770	1530	2270	2060	2220	5130	4740	3870	1790	2020
22	2080	1740	1790	1570	2110	2060	2410	5600	4470	3690	1810	2060
23	2090	1640	1800	1570	2150	2070	2740	6300	4180	3500	1990	2070
24	2080	1450	1700	1530	2200	1990	3160	7160	3610	3340	2080	2030
25	2080	1420	1470	1540	2210	1960	3880	8490	3820	3310	2020	2010
26	2180	1460	1320	1520	2220	1940	4120	10100	3790	3200	1940	1980
27	2260	1560	1450	1530	2160	1870	3920	11700	3670	3050	1940	1950
28	2250	1710	1300	1560	1980	1900	3720	12500	4070	2860	1910	1910
29	2150	1790	1200	1540	---	1890	3440	12800	4550	2780	1880	1890
30	2140	1760	1250	1480	---	1900	3340	13300	4700	2680	1800	1890
31	2050	---	1200	1500	---	1990	---	12900	---	2470	1750	---
TOTAL	68780	54140	49690	54290	49980	67680	70680	183080	187020	126120	62840	56520
MEAN	2219	1805	1603	1751	1785	2183	2356	5906	6234	4068	2027	1884
MAX	2430	2110	1960	2730	2580	2840	4120	13300	11600	7410	2610	2070
MIN	2050	1420	1200	1150	1170	1870	1760	3150	3610	2470	1660	1710
AC-FT	136400	107400	98560	107700	99140	134200	140200	363100	371000	250200	124600	112100

CAL YR 1982	TOTAL	1520380	MEAN	4165	MAX	18100	MIN	900	AC-FT	3016000
WTR YR 1983	TOTAL	1030820	MEAN	2824	MAX	13300	MIN	1150	AC-FT	2045000

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-71, 1977 to September 1983 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since June 20, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.5°C Aug. 7, 8, 1983; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 22.5°C Aug. 7, 8; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	9.5	8.5	9.0	5.5	5.5	5.5	.5	.5	.5	.0	.0	.0
2	9.5	9.0	9.0	5.5	4.5	5.0	1.0	.5	1.0	.0	.0	.0
3	9.5	9.0	9.5	4.0	3.5	4.0	1.5	1.0	1.0	.0	.0	.0
4	9.5	8.5	9.0	4.5	3.5	4.0	2.0	1.5	2.0	.0	.0	.0
5	8.5	8.0	8.5	6.0	4.5	5.0	2.0	1.5	2.0	.0	.0	.0
6	8.5	7.5	7.5	6.0	5.5	6.0	2.0	1.0	1.5	.0	.0	.0
7	8.0	7.5	8.0	5.5	4.0	4.5	1.0	.0	.5	.0	.0	.0
8	7.5	7.0	7.5	4.0	2.5	3.0	.0	.0	.0	.0	.0	.0
9	7.0	6.0	6.5	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
10	6.5	6.0	6.5	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
11	7.5	6.0	6.5	2.5	2.0	2.0	.0	.0	.0	.0	.0	.0
12	8.5	7.0	8.0	2.0	1.0	1.0	.0	.0	.0	.0	.0	.0
13	9.0	8.0	8.5	1.0	1.0	1.0	.0	.0	.0	.5	.0	.0
14	9.5	8.5	9.0	1.0	.0	.5	.0	.0	.0	.5	.0	.0
15	10.0	9.0	9.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
16	11.0	10.0	10.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
17	10.5	9.0	9.5	.5	.0	.5	.0	.0	.0	.0	.0	.0
18	8.5	7.0	7.5	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
19	7.0	6.0	6.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
20	6.0	5.0	5.5	2.5	2.5	2.5	.0	.0	.0	.0	.0	.0
21	5.5	5.0	5.0	2.5	2.0	2.0	.5	.0	.5	.5	.0	.5
22	7.0	5.5	6.0	2.0	1.0	1.5	1.0	.5	1.0	1.0	.5	.5
23	8.0	7.0	7.5	1.0	.0	.5	1.0	.5	.5	1.0	.5	1.0
24	9.5	8.0	9.0	.0	.0	.0	.5	.0	.5	1.0	.5	1.0
25	9.0	8.5	8.5	.0	.0	.0	.0	.0	.0	1.0	1.0	1.0
26	8.5	7.5	8.0	.0	.0	.0	.0	.0	.0	1.5	1.0	1.0
27	7.5	6.0	7.0	.0	.0	.0	.0	.0	.0	2.0	1.5	1.5
28	6.5	5.5	6.0	.5	.0	.0	.0	.0	.0	2.0	1.5	2.0
29	6.0	5.5	6.0	.0	.0	.0	.0	.0	.0	1.5	1.0	1.0
30	6.0	6.0	6.0	.5	.0	.5	.0	.0	.0	1.5	1.0	1.0
31	6.0	5.5	5.5	---	---	---	.0	.0	.0	1.5	1.0	1.5
MONTH	11.0	5.0	7.5	6.0	.0	2.0	2.0	.0	.5	2.0	.0	.5

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	1.5	1.5	1.5	5.0	3.5	4.0	7.5	6.0	6.5	12.0	9.5	11.0
2	1.5	1.5	1.5	6.0	5.0	5.0	7.5	6.0	6.5	12.0	10.5	10.5
3	1.5	1.0	1.5	6.5	5.0	5.5	6.0	6.0	6.0	10.5	9.5	10.0
4	1.0	.0	.5	6.5	5.5	6.0	6.0	4.5	5.0	11.5	9.0	10.0
5	.5	.0	.0	6.0	5.5	6.0	6.5	4.5	5.0	11.5	9.5	10.5
6	.5	.0	.0	5.5	4.5	5.0	7.5	5.5	6.5	11.0	9.5	10.0
7	.5	.0	.0	5.0	4.0	4.5	7.5	7.0	7.0	10.5	9.0	9.5
8	.0	.0	.0	5.5	4.5	5.0	7.5	7.0	7.5	10.5	9.0	9.5
9	.0	.0	.0	6.5	5.5	6.0	7.5	6.5	7.0	9.5	6.5	7.5
10	.5	.0	.5	7.5	6.0	6.5	7.5	6.5	7.0	7.0	6.0	6.5
11	1.5	.5	1.0	7.5	6.5	7.0	7.5	6.0	6.5	7.5	6.0	6.5
12	1.5	1.0	1.5	7.0	6.5	7.0	7.5	6.5	7.0	8.5	6.0	7.5
13	2.5	1.5	2.0	7.0	6.0	6.5	7.5	6.0	6.5	10.5	7.0	8.5
14	3.0	2.5	2.5	6.5	5.5	6.0	8.0	6.5	7.0	11.0	8.5	9.5
15	3.0	2.0	2.5	6.0	5.0	5.5	9.0	7.5	8.0	10.5	9.5	10.0
16	3.0	2.5	3.0	5.5	4.5	5.0	9.0	8.0	8.5	10.5	9.0	9.5
17	3.0	2.5	2.5	5.5	4.5	4.5	10.0	8.5	9.0	11.5	9.0	10.5
18	3.0	2.5	2.5	4.5	3.5	4.0	10.5	9.5	10.0	11.5	10.0	10.5
19	3.0	2.5	2.5	3.5	2.0	3.0	11.5	10.5	11.0	10.0	9.0	9.5
20	2.0	1.5	2.0	4.0	2.5	3.0	11.5	10.5	11.0	12.5	9.5	10.5
21	3.0	2.0	2.5	5.0	3.5	4.0	11.5	10.5	11.0	13.0	11.0	12.0
22	3.5	2.5	3.0	6.0	4.5	5.0	12.0	10.5	11.0	13.5	10.5	12.0
23	4.0	3.0	3.5	6.0	5.0	5.5	13.0	11.0	12.0	14.0	11.5	12.5
24	4.0	3.0	3.5	6.5	5.5	6.0	13.0	10.0	11.0	14.0	11.5	12.5
25	4.0	3.5	4.0	7.0	5.5	6.0	10.0	8.5	9.0	13.5	11.5	12.5
26	4.5	4.0	4.0	7.0	5.5	6.0	8.5	7.5	8.0	13.0	11.5	12.5
27	4.0	3.0	3.5	6.5	5.5	5.5	9.0	7.0	8.0	12.5	11.5	12.0
28	4.0	3.5	3.5	6.0	5.5	5.5	10.0	7.5	8.5	13.5	11.5	12.5
29	---	---	---	6.0	5.5	5.5	11.0	8.0	9.5	13.5	12.0	13.0
30	---	---	---	7.0	6.5	6.5	11.5	9.0	10.0	13.0	12.0	12.5
31	---	---	---	6.5	6.0	6.0	---	---	---	12.5	10.5	11.5
MONTH	4.5	.0	2.0	7.5	2.0	5.5	13.0	4.5	8.0	14.0	6.0	10.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	12.5	11.0	11.5	15.5	14.0	15.0	---	---	---	19.0	18.0	18.5
2	12.0	11.0	11.5	14.5	13.5	14.0	---	---	---	18.5	16.5	17.5
3	13.0	11.0	12.0	14.0	12.0	12.5	21.0	---	---	16.5	15.0	15.5
4	13.5	11.5	12.5	15.5	11.0	12.5	21.0	19.0	20.0	15.0	14.0	14.5
5	13.0	12.0	12.5	18.0	13.5	15.5	21.5	19.5	20.0	14.0	13.0	13.5
6	14.5	11.5	13.0	18.0	16.0	17.0	21.5	20.0	20.5	14.5	13.0	13.5
7	15.0	12.5	13.5	19.5	15.5	17.0	22.5	21.0	21.5	14.5	14.0	14.5
8	15.0	13.0	14.0	19.5	17.0	18.5	22.5	21.5	22.0	15.5	14.5	15.0
9	15.5	13.5	14.5	19.5	15.5	17.0	22.0	20.0	21.0	15.0	13.5	14.5
10	14.5	13.0	14.0	15.5	13.0	13.5	21.5	19.5	20.0	13.5	12.0	12.5
11	13.0	11.5	12.5	15.0	11.5	13.0	21.5	19.5	20.0	12.5	11.5	12.0
12	11.5	10.5	11.0	16.5	13.5	15.0	20.0	18.0	19.0	14.0	12.0	13.0
13	12.5	10.5	11.5	18.5	15.5	17.0	19.5	17.5	18.5	14.5	13.0	14.0
14	14.5	11.0	12.5	18.0	14.5	16.0	19.5	17.5	18.5	15.0	14.0	14.5
15	13.5	13.0	13.5	14.5	12.5	13.0	18.5	17.0	17.5	14.0	13.0	14.0
16	14.0	11.5	12.5	15.0	12.0	13.5	19.0	16.5	17.5	14.0	13.0	13.5
17	15.0	11.5	13.5	15.0	12.5	13.5	19.0	17.0	18.0	13.0	11.0	12.0
18	14.0	13.0	13.5	17.0	13.0	14.5	19.0	17.5	18.0	11.0	9.0	10.0
19	12.5	11.5	12.0	19.0	15.0	16.5	19.0	17.0	18.0	9.0	8.0	8.0
20	13.0	11.0	12.0	18.5	16.0	16.5	19.0	18.0	18.5	8.5	7.0	7.5
21	13.5	11.0	12.0	17.5	14.0	15.5	18.0	17.5	18.0	9.5	7.5	8.5
22	15.5	11.0	13.0	19.5	15.0	17.0	18.0	17.5	17.5	10.5	8.5	9.5
23	17.5	13.5	15.5	19.0	17.0	18.0	18.0	17.0	17.5	11.0	10.0	10.5
24	17.0	14.5	15.5	19.0	16.5	17.5	18.5	17.0	17.5	12.0	10.5	11.0
25	16.5	14.0	15.0	20.0	16.5	18.0	19.0	17.5	18.0	12.5	11.5	12.0
26	17.5	14.0	15.5	19.5	17.5	18.5	19.0	18.0	18.5	12.5	11.5	12.0
27	17.0	15.0	15.5	19.0	16.5	17.5	19.0	17.5	18.5	12.5	11.5	12.0
28	15.5	14.0	14.0	18.5	16.5	17.5	19.0	17.5	18.0	11.5	10.0	10.5
29	16.0	13.0	14.5	20.0	17.0	18.5	18.5	17.0	18.0	10.5	9.5	10.0
30	16.0	14.0	15.0	20.5	18.0	19.0	18.5	17.5	18.0	9.5	8.5	8.5
31	---	---	---	---	---	---	18.5	17.5	18.0	---	---	---
MONTH YEAR	17.5 22.5	10.5 .0	13.5 8.0	20.5	11.0	16.0	22.5	16.5	19.0	19.0	7.0	12.5

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV 17...	1130	1840	375	3.0	.5
DEC 27...	--	--	395	--	--
FEB 02...	0815	1520	361	-3.5	1.5
MAR 23...	--	--	328	--	--
MAY 05...	1450	3100	248	18.5	10.0
JUN 02...	0730	9130	184	12.0	10.0
06...	1345	7920	187	29.0	10.5
22...	1350	4270	256	21.5	13.0
AUG 03...	0750	2360	282	17.0	20.0
SEP 15...	1515	1770	345	22.5	13.5

PEND OREILLE RIVER BASIN

12342500 WEST FORK BITTERROOT RIVER NEAR CONNER, MT

LOCATION.--Lat 45°43'30", long 114°16'50", in SE¼NE¼NW¼ sec.26, T.1 S., R.22 W., Ravalli County, Hydrologic Unit 17010205, on right bank 0.6 mi downstream from Painted Rocks Lake, 6.4 mi upstream from Nez Perce Creek, 16.1 mi southwest of Conner, and at mile 19.2.

DRAINAGE AREA.--317 mi².

PERIOD OF RECORD.--April 1941 to current year.

REVISED RECORDS.--WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,581.4 ft National Geodetic Vertical Datum of 1929 (U.S. Forest Service bench mark).

REMARKS.--Records excellent. Flow regulated by Painted Rocks Lake (station 12342000). Diversions for irrigation of about 200 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--42 years, 290 ft³/s, 210,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,060 ft³/s May 9, 1947, gage height, 6.18 ft; minimum, 0.2 ft³/s Nov. 25, 1952; minimum daily, 0.6 ft³/s May 3-7, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,970 ft³/s May 30, gage height, 4.30 ft; minimum daily, 98 ft³/s May 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	113	111	107	104	100	102	111	1560	303	160	214
2	111	113	111	107	104	100	102	111	1360	306	155	213
3	112	113	109	107	104	100	102	111	1210	308	150	213
4	113	113	109	107	104	100	102	98	1120	287	152	213
5	113	113	109	107	104	101	102	98	1040	271	149	213
6	113	113	109	107	103	101	102	99	959	258	141	211
7	113	113	109	107	103	101	102	100	899	244	134	210
8	113	113	109	107	103	101	102	100	864	225	130	210
9	113	113	109	107	103	101	102	101	835	221	177	210
10	113	113	109	107	102	102	102	102	801	341	224	198
11	113	113	109	107	102	102	101	102	786	351	224	128
12	113	113	109	105	102	102	101	102	737	300	223	128
13	113	113	109	105	102	102	101	102	674	274	220	128
14	113	113	109	105	102	102	100	102	601	268	220	189
15	113	112	109	104	102	102	100	104	556	280	220	235
16	113	111	109	104	102	102	100	104	533	271	220	235
17	114	111	109	104	102	103	100	104	496	255	220	235
18	113	111	109	104	102	103	100	104	501	240	220	234
19	113	111	109	104	102	102	100	104	488	228	220	234
20	113	111	109	104	102	102	101	104	465	223	220	231
21	113	111	109	104	102	102	102	106	428	222	221	231
22	113	111	109	104	102	102	102	107	401	207	220	231
23	113	111	108	105	102	102	103	274	371	197	218	231
24	113	111	107	104	102	102	105	758	349	200	217	230
25	114	111	107	104	102	102	106	1070	332	196	217	228
26	113	111	107	104	102	102	107	1380	316	183	217	227
27	113	111	107	104	101	102	108	1680	352	175	217	227
28	113	111	107	104	100	102	109	1820	364	170	217	227
29	113	111	107	104	---	102	109	1910	333	164	217	227
30	113	111	107	104	---	102	110	1920	326	157	217	227
31	113	---	107	104	---	102	---	1790	---	153	214	---
TOTAL	3500	3359	3366	3261	2867	3151	3085	14878	20057	7478	6171	6368
MEAN	113	112	109	105	102	102	103	480	669	241	199	212
MAX	114	113	111	107	104	103	110	1920	1560	351	224	235
MIN	111	111	107	104	100	100	100	98	316	153	130	128
AC-FT	6940	6660	6680	6470	5690	6250	6120	29510	39780	14830	12240	12630

CAL YR 1982 TOTAL 133600 MEAN 366 MAX 3000 MIN 40 AC-FT 265000
WTR YR 1983 TOTAL 77541 MEAN 212 MAX 1920 MIN 98 AC-FT 153800

PEND OREILLE RIVER BASIN

12344000 BITTERROOT RIVER NEAR DARBY, MT

LOCATION.--Lat 45°58'20", long 114°08'26", in SW¼SE¼NE¼ sec.36, T.3 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, on left bank 45 ft downstream from bridge on U.S. Highway 93, 0.3 mi downstream from Chaffin Creek, 4.1 mi southeast of Darby, and at mile 77.2.

DRAINAGE AREA.--1,049 mi².

PERIOD OF RECORD.--April 1937 to current year. Monthly discharge only for April 1937, published in WSP 1316.

REVISED RECORDS.--WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,943.14 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1939, nonrecording gage at highway bridge 45 ft upstream at same datum.

REMARKS.--Records good except those for November through February, which are fair. Some regulation by Painted Rocks Lake (station number 12342000). Diversions for irrigation of about 5,000 acres above station. Ditch bypassing station irrigates about 500 acres below. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--46 years, 931 ft³/s, 674,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s May 9, 1947, gage height, 8.18 ft; maximum gage height, 8.42 ft June 17, 1974 (backwater from log jam); minimum discharge observed, about 71 ft³/s Feb. 9, 1939; minimum gage height, 0.04 ft Nov. 21, 1979, result of freezeup and regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,190 ft³/s May 29, gage height, 5.75 ft; minimum daily, 150 ft³/s Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	338	352	266	160	240	355	321	900	4370	1470	502	436
2	326	335	259	150	234	378	324	976	3910	1680	546	455
3	343	321	261	190	217	388	319	988	3520	1480	526	454
4	380	338	283	248	196	400	305	1010	3530	1280	515	445
5	369	331	273	300	190	404	293	1120	3280	1170	492	429
6	340	334	275	338	180	405	299	1190	3060	1190	452	420
7	344	314	253	355	229	401	312	1080	2970	1200	421	411
8	351	285	182	382	221	399	305	1050	3090	1140	409	406
9	337	317	175	379	224	385	303	1000	3060	1090	426	411
10	326	311	170	381	215	404	307	928	3020	1840	544	409
11	330	294	170	387	213	434	297	851	3000	1600	616	422
12	343	263	175	386	225	556	297	788	2560	1330	553	417
13	357	299	185	384	239	530	289	747	2260	1220	499	370
14	362	234	220	376	240	530	283	707	2030	1250	479	367
15	381	222	247	348	246	476	292	726	2020	1210	474	423
16	397	290	254	331	260	435	295	761	2000	1060	461	419
17	411	312	266	342	274	425	313	754	1860	943	450	413
18	411	315	256	327	349	414	372	787	2180	876	430	417
19	384	313	249	309	387	360	448	851	1900	852	417	450
20	368	292	242	302	372	349	529	868	1700	852	461	446
21	367	270	253	294	356	365	655	1110	1540	840	494	449
22	360	239	283	292	353	364	794	1380	1430	748	521	445
23	369	208	288	292	362	345	1040	1730	1430	692	550	445
24	394	190	254	286	370	332	1420	2570	1600	698	522	440
25	390	190	196	279	385	326	1460	3400	1530	692	508	430
26	421	200	224	278	386	316	1170	4350	1370	647	504	420
27	424	230	235	287	375	316	962	5180	1650	588	487	425
28	393	270	200	287	364	312	854	5400	1660	550	472	430
29	381	279	195	264	---	305	804	5720	1570	515	462	425
30	372	273	187	267	---	344	837	5660	1660	480	448	440
31	359	---	175	260	---	341	---	5050	---	463	440	---
TOTAL	11428	8421	7151	9461	7902	12094	16499	59632	70760	31646	15081	12769
MEAN	369	281	231	305	282	390	550	1924	2359	1021	486	426
MAX	424	352	288	387	387	556	1460	5720	4370	1840	616	455
MIN	326	190	170	150	180	305	283	707	1370	463	409	367
AC-FT	22670	16700	14180	18770	15670	23990	32730	118300	140400	62770	29910	25330
CAL YR 1982	TOTAL	442606	MEAN	1213	MAX	8540	MIN	145	AC-FT	877900		
WTR YR 1983	TOTAL	262844	MEAN	720	MAX	5720	MIN	150	AC-FT	521400		

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT

LOCATION.--Lat 46°52'09", long 114°07'33", in NW¼NE¼SE¼ sec.21, T.13 N., R.20 W., Missoula County, Hydrologic Unit 17010204, on right bank 1.0 mi downstream from Bitterroot River, 4.5 mi west of Missoula, and at mile 349.5.

DRAINAGE AREA.--9,003 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1042: 1931. WSP 1246: Drainage area. WSP 1316: 1932(M), 1935(M), 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 3,083.88 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Water-discharge records excellent. Some diurnal fluctuation at low flow caused by powerplant at Milltown 14.9 mi upstream. Diversions for irrigation of about 235,000 acres above station.

AVERAGE DISCHARGE.--54 years, 5,541 ft³/s, 4,014,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,800 ft³/s May 23, 1948, gage height, 12.08 ft; minimum, 388 ft³/s Jan. 18, 1933; minimum gage height, 0.30 ft about Jan. 16, 1954, Mar. 24, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,500 ft³/s May 30, gage height, 8.67 ft; minimum, 1,570 ft³/s Jan. 2, gage height, 1.12 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3970	3560	2840	1820	2460	3130	3260	5450	24200	10200	4480	2910
2	3840	3470	2810	1630	2400	3090	3210	5440	21400	10100	4390	2990
3	3780	3380	2800	1780	2360	3340	3210	5570	19700	10500	4190	3070
4	3840	3370	2850	2230	2190	3540	3180	5610	18800	9670	4080	3080
5	3970	3390	2920	2910	1950	3650	3100	5650	18000	8670	3930	3030
6	3940	3380	2950	3520	1850	3620	3020	6410	16900	8110	3720	2960
7	3870	3390	2810	4020	2100	3550	3020	6810	15900	8090	3520	2910
8	3840	3300	2210	4020	2310	3470	2950	6790	15700	7780	3340	2870
9	3800	3190	1880	4300	2330	3410	2940	7050	16000	7310	3240	2860
10	3730	3230	1850	4020	2350	3530	3000	7110	16200	8890	3180	2910
11	3680	3200	1870	3820	2340	3850	2980	6840	16300	13500	3490	3160
12	3670	3080	1910	3640	2340	4290	2930	6510	15400	11800	3930	3410
13	3620	2980	2120	3310	2660	4690	2880	6240	13500	10000	3860	3450
14	3600	2990	2720	3110	2990	4740	2830	5960	11800	9230	3660	3310
15	3580	2700	2900	2840	2860	4620	2770	5840	10800	9240	3480	3170
16	3610	2720	2920	2580	2840	4380	2750	6020	10700	8790	3500	3140
17	3660	3040	3090	2610	2890	4150	2760	6130	10300	8150	3380	3090
18	3750	3140	3130	2730	2990	3990	2820	6270	10700	7590	3220	3070
19	3750	3170	3010	2660	3630	3780	2960	6820	11700	7230	3000	3190
20	3650	3140	2890	2540	3950	3530	3260	7290	10400	6990	2810	3380
21	3560	3070	2870	2560	3550	3490	3630	7690	9370	7170	2980	3460
22	3510	2930	2950	2590	3330	3480	4120	8830	8610	6780	3080	3490
23	3500	2750	3040	2600	3300	3460	4940	10400	8050	6300	3340	3510
24	3560	2350	2890	2550	3380	3360	6210	12500	7810	6000	3550	3440
25	3650	2230	2450	2540	3380	3280	7680	15700	8230	5910	3500	3390
26	3760	2290	2130	2530	3440	3210	7750	19800	7960	5700	3370	3310
27	3950	2510	2250	2520	3400	3140	7060	23600	7740	5360	3340	3270
28	3950	2740	2280	2550	3220	3120	6410	25800	8990	5000	3280	3210
29	3790	2930	1960	2550	---	3100	5850	26900	10100	4750	3210	3180
30	3670	2910	1920	2460	---	3090	5580	28000	10300	4500	3110	3190
31	3540	---	1920	2460	---	3260	---	27400	---	4230	2930	---
TOTAL	115590	90530	79140	88000	78790	112340	119060	332430	391560	243540	108090	95410
MEAN	3729	3018	2553	2839	2814	3624	3969	10720	13050	7856	3487	3180
MAX	3970	3560	3130	4300	3950	4740	7750	28000	24200	13500	4480	3510
MIN	3500	2230	1850	1630	1850	3090	2750	5440	7740	4230	2810	2860
AC-FT	229300	179600	157000	174500	156300	222800	236200	659400	776700	483100	214400	189200
CAL YR 1982	TOTAL	2774400	MEAN	7601	MAX	40800	MIN	1140	AC-FT	5503000		
WTR YR 1983	TOTAL	1854480	MEAN	5081	MAX	28000	MIN	1630	AC-FT	3678000		

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TUR- BID- ITY (NTU) (00076)
NOV 01...	1445	3520	--	51	278	8.2	5.0	7.0	686	2.6
DEC 06...	1330	2970	--	3	270	7.8	.0	1.5	684	.50
FEB 22...	1415	3200	95	2	270	8.1	8.0	4.5	683	1.7
MAY 12...	1430	6530	25	1	192	8.2	12.0	8.5	685	1.7
JUN 08...	1130	15600	50	1	118	8.0	20.5	13.0	678	2.0
AUG 09...	1400	3240	100	53	250	8.4	22.5	20.5	683	1.9

DATE	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
NOV 01...	11.0	101	<10	K2	160	130	38	9.3	7.4
DEC 06...	13.0	103	<10	K6	K18	130	37	9.6	7.2
FEB 22...	11.6	100	<10	K7	410	130	37	9.2	7.1
MAY 12...	11.7	111	15	K15	52	91	25	6.9	4.9
JUN 08...	9.5	102	13	110	66	58	16	4.3	2.6
AUG 09...	8.8	109	16	100	69	120	32	8.9	6.0

DATE	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
NOV 01...	.3	2.0	117	36	2.7	.20	13	175	179
DEC 06...	.3	1.9	116	33	2.5	.20	13	171	174
FEB 22...	.3	3.3	110	33	3.2	.20	14	160	174
MAY 12...	.2	1.5	81	19	1.9	.10	12	118	120
JUN 08...	.2	1.1	55	9.5	.9	<.10	9.6	72	78
AUG 09...	.3	1.9	111	20	2.3	.20	13	146	152

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

		SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	
	DATE										
	NOV 01...	.24	1660	9	<.10	.12	.50	.01	.02	.01	
	DEC 06...	.23	1370	8	.14	.15	1.6	.05	.01	<.01	
	FEB 22...	.22	1380	15	.20	.59	1.7	.12	.15	.10	
	MAY 12...	.16	2080	<1	<.10	.22	2.5	.03	.02	.02	
	JUN 08...	.10	3030	<1	<.10	.41	.50	.04	.05	.01	
	AUG 09...	.20	1280	9	<.10	.47	1.0	.05	.04	.02	
DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 01...	1445	20	4	98	<1	2	<1	<3	7	12	11
FEB 22...	1415	30	4	95	<1	<1	<1	<3	7	33	1
JUN 08...	1130	30	2	67	<1	<1	<1	<3	4	26	3
AUG 09...	1400	20	5	120	<1	<1	<1	<3	7	16	3
DATE		LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 01...		16	8	<.1	<10	3	<1	<1	150	<6.0	41
FEB 22...		19	18	.1	<10	3	<1	<1	150	<6.0	10
JUN 08...		<4	9	.1	<10	<1	1	<1	61	<6.0	7
AUG 09...		13	7	<.1	<10	11	<1	<1	130	<6.0	10

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 01...	1445	7.0	3520	28	266	92
DEC 06...	1330	1.5	2970	7	56	81
FEB 22...	1415	4.5	3200	11	95	99
MAY 12...	1430	8.5	6530	10	176	81
JUN 08...	1130	13.0	15600	35	1470	67
AUG 09...	1400	20.5	3240	5	44	54

PEND OREILLE RIVER BASIN

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12353000 CLARK FORK BELOW MISSOULA, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV							
01...	1445	--	3520	51	278	5.0	7.0
DEC							
06...	1330	--	2970	3	270	.0	1.5
JAN							
12...	0930	--	3580	--	323	-4.0	.5
FEB							
01...	1045	--	2470	--	339	1.0	2.0
22...	1415	--	3200	2	270	8.0	4.5
MAR							
16...	1145	--	4350	--	292	6.0	6.5
APR							
04...	1600	3180	--	--	307	7.5	8.0
MAY							
12...	1430	--	6530	1	192	12.0	8.5
JUN							
08...	1130	--	15600	1	118	20.5	13.0
30...	1700	10300	--	--	155	20.5	16.0
AUG							
09...	1400	--	3240	53	250	22.5	20.5
10...	0845	--	3170	--	248	20.0	18.5
SEP							
19...	1130	3190	--	--	268	5.5	9.0

PEND OREILLE RIVER BASIN

12353280 NINEMILE CREEK NEAR HUSON, MT

LOCATION.--Lat 47°03'47", long 114°24'46", near center of NW¼ sec.17, T.15 N., R.22 W., Missoula County, Hydrologic Unit 17010204, on right bank, 0.7 mi southwest of Ninemile Ranger Station, 2.8 mi upstream from mouth, and 4.8 mi northwest of Huson.

DRAINAGE AREA.--170 mi².

PERIOD OF RECORD.--August 1973 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 3,027.66 ft National Geodetic Vertical Datum of 1929 (Missoula County bench mark).

REMARKS.--Records good except those for December to February, which are poor. Diversions for irrigation of about 2,100 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--10 years, 132 ft³/s, 10.54 in/yr, 95,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 1,700 ft³/s Jan. 16, 1974; maximum gage height, 6.7 ft Jan. 15, 1974 (ice jam); minimum discharge, 9.4 ft³/s Dec. 23, 1974, gage height, 3.14 ft, result of freezeup; minimum gage height, 2.78 ft Aug. 18, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May-June 1948 reached a discharge of 1,870 ft³/s, by slope-area measurement of peak flow at site 4 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 703 ft³/s May 27, gage height, 5.39 ft, only peak above base of 650 ft³/s; minimum daily, 18 ft³/s Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	35	30	25	24	69	95	223	450	130	69	31
2	36	35	28	25	22	113	99	228	406	142	65	43
3	41	34	30	26	21	143	99	232	363	141	58	35
4	41	33	32	28	20	156	94	233	329	135	56	33
5	41	33	31	30	19	177	90	243	309	129	53	31
6	40	36	31	34	18	189	87	300	286	127	50	31
7	40	34	30	38	20	184	88	299	259	124	48	30
8	39	31	28	40	23	175	87	291	245	116	49	31
9	38	34	27	41	25	171	86	280	231	115	46	33
10	37	34	25	42	23	189	87	265	216	136	45	33
11	36	32	24	42	22	217	84	242	210	123	51	53
12	36	28	26	41	22	241	81	227	197	113	50	45
13	35	34	28	38	24	242	78	215	180	108	44	38
14	34	25	30	36	24	236	75	207	164	110	43	36
15	33	21	33	34	24	213	75	205	159	108	43	33
16	34	31	36	33	27	189	76	215	161	107	45	32
17	43	35	40	33	29	175	83	209	149	102	39	30
18	44	34	37	33	47	159	103	221	168	96	37	33
19	38	37	35	34	56	140	131	241	157	92	35	41
20	37	36	33	35	46	128	162	245	145	104	34	37
21	36	35	33	35	42	120	207	278	135	103	34	35
22	36	33	36	34	45	112	331	321	127	91	35	34
23	38	22	33	33	47	108	392	386	120	89	43	34
24	38	20	31	33	53	99	488	492	118	89	38	33
25	36	25	28	30	61	97	479	594	111	90	36	32
26	39	30	29	29	68	91	382	664	103	83	34	31
27	38	35	28	29	71	87	311	668	100	80	32	31
28	36	34	27	29	70	84	268	620	153	77	30	30
29	38	33	27	27	---	81	236	611	141	73	28	30
30	37	33	26	27	---	88	225	595	137	69	26	31
31	35	---	26	25	---	98	---	526	---	67	24	---
TOTAL	1169	952	938	1019	993	4571	5179	10576	6029	3269	1320	1030
MEAN	37.7	31.7	30.3	32.9	35.5	147	173	341	201	105	42.6	34.3
MAX	44	37	40	42	71	242	488	668	450	142	69	53
MIN	33	20	24	25	18	69	75	205	100	67	24	30
CFSM	.22	.19	.18	.19	.21	.87	1.02	2.01	1.18	.62	.25	.20
IN.	.26	.21	.21	.22	.22	1.00	1.13	2.31	1.32	.72	.29	.23
AC-FT	2320	1890	1860	2020	1970	9070	10270	20980	11960	6480	2620	2040
CAL YR 1982	TOTAL	60800	MEAN 167	MAX 1030	MIN 20	CFSM .98	IN 13.30	AC-FT 120600				
WTR YR 1983	TOTAL	37045	MEAN 101	MAX 668	MIN 18	CFSM .59	IN 8.11	AC-FT 73480				

PEND OREILLE RIVER BASIN

12353820 DRY CREEK NEAR SUPERIOR, MT

LOCATION.--Lat 47°13'17", long 114°58'19", in NW¼SE¼NE¼ sec.24, T.17 N., R.27 W., Mineral County, Hydrologic Unit 17010204, at bridge on county road 700 ft downstream from Murphy Creek, 0.5 mi upstream from mouth, and 4.3 mi northwest of Superior.

DRAINAGE AREA.--46.3 mi².

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

GAGE.--Water-stage recorder. Altitude of gage is 2,700 ft, from topographic map.

REMARKS.--Records fair. Upstream diversion may seriously affect low flow periods. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 404 ft³/s May 26, 1982, gage height, 3.98 ft; no flow on many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 319 ft³/s May 30, gage height, 3.66 ft; no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	20	208	49	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	24	195	59	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	22	188	62	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	26	175	51	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	32	160	46	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	53	148	42	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	48	143	39	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	48	142	35	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	43	141	31	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	37	134	30	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	32	127	24	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	28	107	22	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	26	95	20	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	26	88	29	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	28	89	25	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	26	92	23	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	26	86	20	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	40	101	16	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	46	85	14	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	48	74	15	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	73	65	12	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	93	57	9.8	.00	.00
23	.00	.00	.00	.00	.00	.00	5.5	123	56	8.5	.00	.00
24	.00	.00	.00	.00	.00	.00	46	169	57	8.6	.00	.00
25	.00	.00	.00	.00	.00	.00	51	216	51	9.3	.00	.00
26	.00	.00	.00	.00	.00	.00	36	251	47	5.5	.00	.00
27	.00	.00	.00	.00	.00	.00	27	249	49	3.8	.00	.00
28	.00	.00	.00	.00	.00	.00	22	250	74	2.5	.00	.00
29	.00	.00	.00	.00	---	.00	19	267	62	.84	.00	.00
30	.00	.00	.00	.00	---	.00	20	291	53	.07	.00	.00
31	.00	---	.00	.00	---	.00	---	252	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	226.50	2913	3149	712.91	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	7.55	94.0	105	23.0	.000	.000
MAX	.00	.00	.00	.00	.00	.00	51	291	208	62	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	20	47	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.000	.16	2.03	2.27	.50	.000	.000
IN.	.00	.00	.00	.00	.00	.00	.18	2.34	2.53	.57	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	449	5780	6250	1410	.00	.00

WTR YR 1983 TOTAL 7001.41 MEAN 19.2 MAX 291 MIN .00 CFSM .42 IN 5.63 AC-FT 13890

PEND OREILLE RIVER BASIN

12354500 CLARK FORK AT ST. REGIS, MT

LOCATION.--Lat 47°18'07", long 115°05'11", in NW¼SE¼SW¼ sec.19, T.18 N., R.27 W., Mineral County, Hydrologic Unit 17010204, on left bank at St. Regis, 0.4 mi downstream from St. Regis River, and at mile 270.3.

DRAINAGE AREA.--10,709 mi².

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1316: 1916-17, 1920, 1929-31(M), 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 2,600.37 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Nov. 29, 1933, nonrecording gage at same site and datum.

REMARKS.--Records good. Diversions for irrigation of about 244,000 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--73 years, 7,583 ft³/s, 5,494,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,900 ft³/s May 24, 1948, gage height, 19.96 ft, from graph based on gage readings; minimum, 870 ft³/s Jan. 10, 1980, gage height, 3.48 ft; minimum gage height, 3.36 ft Dec. 17, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36,600 ft³/s May 31, gage height, 14.94 ft; minimum daily, 2,000 ft³/s Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	4760	4270	3540	2200	3190	4430	4780	8110	33100	12100	5060	3590		
2	4620	4290	3480	2000	3170	4430	4750	8110	29200	11800	5270	3630		
3	4570	4170	3470	2200	3120	4520	4700	8140	26300	12500	5060	3670		
4	4530	4090	3640	2660	3030	4820	4630	8330	24400	12100	4890	3700		
5	4590	4100	3690	3130	2850	5130	4550	8480	23400	11100	4760	3690		
6	4660	4160	3700	4020	2620	5310	4460	9410	22000	10100	4590	3650		
7	4620	4110	3670	4540	2680	5330	4380	9970	20800	9650	4390	3580		
8	4590	4060	3350	5070	2860	5310	4360	10100	19900	9510	4220	3560		
9	4530	3970	2860	5250	3030	5280	4290	9980	20000	9050	4050	3520		
10	4480	3880	2610	5290	3060	5400	4290	10100	20000	8840	3950	3500		
11	4410	3890	2460	4980	3050	5750	4280	9750	20100	11900	4010	3690		
12	4370	3850	2590	4770	3040	6140	4240	9260	19500	14400	4290	3900		
13	4340	3740	2840	4510	3110	6530	4160	8870	17700	12200	4560	4030		
14	4300	3670	2940	4200	3420	6850	4100	8530	15700	11000	4440	4030		
15	4280	3570	3430	3950	3650	6750	4050	8310	14100	10400	4290	3900		
16	4260	3380	3630	3640	3570	6520	4010	8340	13500	10400	4150	3790		
17	4330	3460	3720	3520	3620	6220	4050	8440	13200	9750	4170	3760		
18	4390	3740	3820	3510	3860	5930	4150	8800	13200	9110	3990	3740		
19	4430	3880	3780	3540	4130	5660	4360	9280	14000	8560	3850	3810		
20	4410	3870	3690	3450	4670	5380	4790	9860	13700	8250	3650	3880		
21	4310	3830	3590	3360	4770	5120	5360	10800	12200	8130	3540	4010		
22	4240	3750	3610	3370	4490	5020	6150	11900	11100	8110	3650	4060		
23	4250	3590	3650	3390	4340	4960	7240	13700	10400	7610	3780	4090		
24	4260	3360	3670	3380	4370	4910	8900	16400	9970	7200	4030	4090		
25	4300	2990	3460	3330	4470	4770	10600	20000	9720	6980	4170	4030		
26	4360	2930	3120	3300	4570	4650	11200	24700	9890	6790	4110	3980		
27	4490	3020	2880	3310	4640	4560	10500	29400	9520	6500	3990	3910		
28	4640	3200	2870	3320	4600	4470	9540	32700	10100	6170	3950	3860		
29	4620	3430	2700	3320	---	4430	8830	34500	11300	5800	3870	3820		
30	4480	3560	2500	3290	---	4560	8320	36000	11900	5530	3800	3790		
31	4370	---	2350	3200	---	4660	---	36100	---	5260	3690	---		
TOTAL	137790	111810	101310	113000	101980	163800	174020	446370	499900	286800	130220	114260		
MEAN	4445	3727	3268	3645	3642	5284	5801	14400	16660	9252	4201	3809		
MAX	4760	4290	3820	5290	4770	6850	11200	36100	33100	14400	5270	4090		
MIN	4240	2930	2350	2000	2620	4430	4010	8110	9520	5260	3540	3500		
CFSM	.42	.35	.31	.34	.34	.49	.54	1.35	1.56	.86	.39	.36		
IN.	.48	.39	.35	.39	.35	.57	.60	1.55	1.74	1.00	.45	.40		
AC-FT	273300	221800	200900	224100	202300	324900	345200	885400	991600	568900	258300	226600		
CAL YR 1982	TOTAL	3623350	MEAN	9927	MAX	48300	MIN	1600	CFSM	.93	IN	12.59	AC-FT	7187000
WTR YR 1983	TOTAL	2381260	MEAN	6524	MAX	36100	MIN	2000	CFSM	.61	IN	8.27	AC-FT	4723000

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA

(International gaging station)

LOCATION.--Lat 49°00'02", long 114°28'35", Hydrologic Unit 17010206, on right bank 45 ft north of international boundary at Flathead, British Columbia, 1.6 mi upstream from Sage Creek, 6.5 mi northwest of Trail Creek, MT, and at mile 216.6.

DRAINAGE AREA.--427 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year (no winter records prior to 1952). Prior to October 1934, published as Flathead River near Trail Creek, MT. October 1970 to September 1972, published as North Fork Flathead River at Flathead, British Columbia.

REVISED RECORDS.--WSP 1092: 1933 (maximum gage height only).

GAGE.--Water-stage recorder. Datum of gage is 3,968.16 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1949, nonrecording gage, and Sept. 1, 1949, to Oct. 4, 1964, water-stage recorder, at site 1,200 ft upstream at datum 7.80 ft higher. Oct. 5, 1964, to Aug. 1, 1973, water-stage recorder at site on left bank 155 ft upstream at datum 1.42 ft lower.

REMARKS.--Water-discharge records good.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--32 years (1951-83), 947 ft³/s, 30.11 in/yr, 686,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft³/s June 8, 1964, gage height, 8.00 ft, in gage well, 8.6 ft, from outside floodmarks, site and datum then in use, from rating curve extended above 8,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 62 ft³/s Jan. 2, 1977, but may have been less during periods of no winter record.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,800 ft³/s May 27, gage height, 5.97 ft; minimum daily, 109 ft³/s Jan. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	302	333	213	130	121	172	206	1290	5050	1380	756	314		
2	302	309	215	129	123	171	210	1300	4340	1290	724	317		
3	316	287	293	133	121	173	208	1400	3920	1330	692	330		
4	313	287	310	140	118	173	214	1500	3920	1340	653	323		
5	315	288	257	143	136	171	207	1610	3920	1240	625	321		
6	308	298	225	145	170	170	208	1880	3740	1200	597	320		
7	300	286	180	142	209	171	213	2160	3810	1210	565	310		
8	299	274	175	210	191	170	226	2190	3780	1410	558	300		
9	287	257	171	228	164	174	231	2020	3710	1420	554	296		
10	286	254	170	192	141	190	242	1810	3670	1240	533	296		
11	280	253	170	197	124	207	237	1710	3380	1130	523	298		
12	277	258	170	185	120	216	228	1710	2740	1070	523	292		
13	273	260	170	172	139	223	222	1750	2320	1220	512	287		
14	263	248	187	141	140	231	226	1890	2170	2940	491	284		
15	255	204	210	113	132	222	233	2000	2160	2480	477	273		
16	250	229	237	131	131	214	255	2080	2100	2000	452	266		
17	251	261	261	148	134	210	289	2370	1960	1850	434	271		
18	262	265	240	134	170	208	352	2830	2010	1660	424	273		
19	261	250	219	120	170	200	456	2620	1840	1490	417	268		
20	250	240	205	123	167	208	643	2570	1700	1390	406	263		
21	249	227	187	124	166	202	936	3440	1550	1360	392	255		
22	260	191	173	124	168	200	1300	4170	1430	1230	381	250		
23	417	183	159	124	168	197	1640	4770	1390	1140	381	245		
24	540	194	147	123	171	200	2280	5650	1490	1150	403	238		
25	466	195	150	109	172	197	2760	6220	1480	1130	388	237		
26	427	200	152	118	172	196	2170	7270	1380	1090	367	238		
27	413	214	150	127	174	194	1720	7380	1320	1010	357	234		
28	396	228	143	138	170	197	1450	6780	1310	950	344	244		
29	378	233	139	131	---	198	1320	6820	1290	893	333	249		
30	360	219	133	125	---	204	1300	7170	1380	851	326	240		
31	336	---	131	120	---	206	---	6140	---	805	317	---		
TOTAL	9892	7425	5942	4419	4282	6065	22182	104500	76260	41899	14905	8332		
MEAN	319	248	192	143	153	196	739	3371	2542	1352	481	278		
MAX	540	333	310	228	209	231	2760	7380	5050	2940	756	330		
MIN	249	183	131	109	118	170	206	1290	1290	805	317	234		
CFSM	.75	.58	.45	.34	.36	.46	1.73	7.90	5.95	3.17	1.13	.65		
IN.	.86	.65	.52	.38	.37	.53	1.93	9.10	6.64	3.65	1.30	.73		
AC-FT	19620	14730	11790	8770	8490	12030	44000	207300	151300	83110	29560	16530		
CAL YR 1982	TOTAL	314241	MEAN	861	MAX	6890	MIN	95	CFSM	2.02	IN	27.38	AC-FT	623300
WTR YR 1983	TOTAL	306103	MEAN	839	MAX	7380	MIN	109	CFSM	1.97	IN	26.67	AC-FT	607200

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1965, 1970, 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: November 1974 to current year.

INSTRUMENTATION.--Temperature recorder since Oct. 1, 1975.

REMARKS.--Many days of missing record due to equipment malfunctions. Probably many days of 0.0°C temperatures during those periods.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum (water years 1975-80, 1982-83), 19.5°C Aug. 2, 1977; minimum, 0.0°C on many day during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 17.0°C Aug. 5-7; minimum, 0.0°C Feb. 7-11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	TUR- BID- ITY (NTU) (00076)
NOV 02...	1200	309	--	1	274	8.4	-6.0	2.0	666	.80
FEB 07...	1130	209	98	2	294	8.1	-4.0	.0	650	.70
MAY 24...	1300	5780	1	1	173	8.1	22.0	6.0	657	20
AUG 24...	1000	388	98	2	249	8.3	15.0	10.5	658	.90
DATE		OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L) (00340)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
NOV 02...	12.6	104	<10	K4	<1	130	0	39	8.1	.9
FEB 07...	12.4	100	<10	K6	K2	150	0	44	9.4	1.0
MAY 24...	10.9	102	15	K49	K38	98	11	30	5.6	.7
AUG 24...	10.2	106	14	K15	100	140	7	43	9.0	1.0
DATE		SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
NOV 02...		.0	.3	134	6.0	.4	.10	4.3	143	140
FEB 07...		.0	.3	149	6.0	.4	<.10	4.5	147	155
MAY 24...		.0	.4	87	5.0	.5	<.10	4.2	89	99
AUG 24...		.0	.4	138	4.9	.7	.10	4.7	135	147

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)
NOV 02...	.19	119	4	<.10	.080	.30	<.005	<.005	<.001
FEB 07...	.20	83.0	<1	<.10	.280	.90	.049	.003	.003
MAY 24...	.12	1390	244	<.10	.260	.70	.150	.008	.008
AUG 24...	.18	141	1	<.10	.140	.60	<.005	<.005	.002

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 02...	1200	10	1	54	<1	<1	<1	<3	<1	3	6
FEB 07...	1130	10	1	60	<1	<1	<1	<3	<1	<3	<1
MAY 24...	1300	20	<1	41	<1	<1	<1	<3	2	23	2
AUG 24...	1000	<10	<1	61	<1	<1	<1	<3	8	<3	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 02...	12	<1	<.1	<10	2	<1	<1	53	<6.0	5
FEB 07...	13	1	<.1	<10	<1	<1	<1	61	<6.0	4
MAY 24...	<4	9	<.1	<10	1	<1	<1	43	<6.0	55
AUG 24...	9	2	<.1	<10	30	<1	<1	59	<6.0	6

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.0	4.5	6.5	---	---	---	---	---	---	---	---	---
2	8.0	7.0	7.5	---	---	---	---	---	---	---	---	---
3	8.0	6.0	7.0	---	---	---	---	---	---	---	---	---
4	7.0	5.0	6.0	---	---	---	---	---	---	---	---	---
5	6.5	4.0	5.5	---	---	---	---	---	---	---	---	---
6	6.5	4.5	5.5	---	---	---	---	---	---	---	---	---
7	7.5	6.0	6.5	---	---	---	---	---	---	---	---	---
8	6.5	5.0	6.0	---	---	---	---	---	---	---	---	---
9	5.5	3.0	4.5	---	---	---	---	---	---	---	---	---
10	6.5	3.0	5.0	---	---	---	---	---	---	---	---	---
11	7.0	4.0	5.5	---	---	---	---	---	---	---	---	---
12	7.5	4.0	6.0	---	---	---	---	---	---	---	---	---
13	8.0	4.5	6.5	---	---	---	---	---	---	---	---	---
14	8.0	5.0	6.5	---	---	---	---	---	---	---	---	---
15	9.0	5.0	7.0	---	---	---	---	---	---	---	---	---
16	7.5	5.0	6.5	---	---	---	---	---	---	---	---	---
17	5.0	3.5	4.5	---	---	---	---	---	---	---	---	---
18	5.5	4.0	5.0	---	---	---	---	---	---	---	---	---
19	4.5	2.5	3.5	---	---	---	---	---	---	---	---	---
20	4.5	1.5	3.5	---	---	---	---	---	---	---	---	---
21	5.5	3.5	4.5	---	---	---	---	---	---	---	---	---
22	6.5	5.5	6.0	---	---	---	---	---	---	---	---	---
23	7.0	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	9.0	1.5	5.5	---	---	---	---	---	---	---	---	---
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	---	---	---	5.0	3.0	4.0	6.5	3.0	4.5
2	---	---	---	---	---	---	4.0	2.5	3.0	6.5	3.0	4.5
3	---	---	---	---	---	---	5.0	1.5	3.5	6.0	3.5	4.5
4	---	---	---	---	---	---	6.5	1.5	4.0	6.5	2.5	4.5
5	---	---	---	---	---	---	6.5	1.0	4.0	8.0	3.0	5.5
6	---	---	---	---	---	---	7.5	2.0	4.5	6.0	4.5	5.0
7	.0	.0	.0	---	---	---	5.0	3.0	4.0	5.5	3.5	4.5
8	.0	.0	.0	---	---	---	6.5	3.0	4.5	6.0	3.0	4.5
9	.0	.0	.0	---	---	---	4.0	2.0	3.0	4.5	3.0	4.0
10	.0	.0	.0	---	---	---	5.0	1.0	3.0	7.5	2.5	5.0
11	.0	.0	.0	---	---	---	4.5	1.5	3.0	8.0	3.0	5.5
12	---	---	---	---	---	---	6.0	.5	3.5	8.0	3.0	5.5
13	---	---	---	---	---	---	7.0	1.0	4.0	8.0	3.0	6.0
14	---	---	---	---	---	---	7.0	1.5	4.5	7.5	3.5	6.0
15	---	---	---	---	---	---	8.0	2.5	5.0	7.0	4.0	5.5
16	---	---	---	---	---	---	6.5	2.5	5.0	8.0	4.0	6.0
17	---	---	---	---	---	---	9.0	2.5	5.5	8.0	4.0	6.0
18	---	---	---	---	---	---	8.5	3.0	5.5	6.0	4.5	5.0
19	---	---	---	---	---	---	8.5	3.0	5.5	6.5	3.0	5.0
20	---	---	---	---	---	---	7.5	3.0	5.0	9.0	3.5	6.0
21	---	---	---	---	---	---	6.5	3.0	4.5	9.0	4.5	6.5
22	---	---	---	---	---	---	6.5	2.5	4.5	9.0	4.0	6.0
23	---	---	---	---	---	---	6.0	2.5	4.0	9.0	4.0	6.5
24	---	---	---	---	---	---	4.5	2.5	3.5	9.0	4.5	6.5
25	---	---	---	---	---	---	2.5	1.0	1.5	9.5	4.5	6.5
26	---	---	---	---	---	---	4.5	1.5	3.0	9.0	4.5	6.5
27	---	---	---	---	---	---	5.5	2.5	4.0	9.5	5.0	7.0
28	---	---	---	---	---	---	6.0	2.0	4.0	9.5	5.0	7.0
29	---	---	---	3.5	---	---	7.5	2.0	4.5	10.0	5.5	7.5
30	---	---	---	5.0	1.5	3.5	7.0	3.0	5.0	9.0	5.5	7.5
31	---	---	---	6.5	2.0	4.0	---	---	---	9.5	4.5	7.0
MONTH	.0	.0	.0	6.5	1.5	4.0	9.0	.5	4.0	10.0	2.5	5.5

PEND OREILLE RIVER BASIN

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12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN JUNE	MEAN	MAX	MIN JULY	MEAN	MAX	MIN AUGUST	MEAN	MAX	MIN SEPTEMBER	MEAN
1	7.5	5.5	6.0	10.5	7.5	9.0	16.5	11.5	14.0	15.0	11.5	13.0
2	6.0	5.0	5.5	11.5	8.0	9.5	16.5	11.0	14.0	12.0	10.0	10.5
3	8.0	5.5	6.5	9.5	7.5	8.5	16.5	12.0	14.0	12.0	9.5	10.5
4	9.0	5.5	7.5	13.5	7.5	10.5	16.5	10.5	13.5	10.5	8.0	9.5
5	9.0	6.0	7.5	14.5	8.5	11.5	17.0	11.5	14.5	11.0	8.5	9.5
6	10.5	5.5	8.0	13.0	9.5	11.0	17.0	11.0	14.0	12.0	6.5	9.5
7	10.0	6.5	8.0	13.0	9.0	11.0	17.0	11.5	14.5	13.0	9.0	10.5
8	9.5	6.0	8.0	12.0	9.5	10.5	15.0	12.5	14.0	10.5	7.5	9.0
9	10.5	6.5	8.5	13.0	9.0	11.0	16.0	11.5	13.5	10.0	7.5	8.5
10	8.5	6.5	7.5	11.5	9.0	10.5	14.5	11.5	13.0	8.0	6.0	7.0
11	9.0	5.5	7.0	11.5	8.5	10.0	14.5	12.5	13.5	11.0	7.0	8.5
12	8.0	6.0	7.0	12.0	9.0	10.0	14.5	11.0	12.5	11.0	7.0	9.0
13	11.0	6.0	8.0	10.5	9.5	10.0	16.0	9.5	13.0	12.0	7.0	9.5
14	12.0	6.5	9.0	11.0	9.0	10.0	15.5	10.5	13.0	12.0	8.0	10.0
15	10.0	7.0	8.0	10.5	7.5	9.0	15.5	10.5	13.5	11.0	7.0	9.5
16	9.5	6.5	7.5	11.0	7.5	9.0	16.0	10.5	13.0	11.5	7.5	9.5
17	9.5	6.5	8.5	11.0	7.0	9.5	16.0	10.5	13.0	9.5	7.0	8.0
18	8.0	7.0	7.5	13.5	7.5	10.5	15.5	10.5	13.0	7.0	5.5	6.5
19	8.5	6.0	7.5	14.0	8.5	11.5	15.5	9.5	13.0	7.0	4.5	5.5
20	8.0	6.0	7.0	12.5	9.5	10.5	15.5	10.5	13.0	8.0	3.0	5.5
21	9.5	5.5	7.5	13.5	8.0	10.5	15.5	11.0	13.5	9.0	4.5	7.0
22	12.0	6.0	9.0	14.5	8.0	11.5	13.5	10.5	12.0	10.0	5.5	8.0
23	13.0	8.5	11.0	12.5	9.5	11.0	13.5	10.5	12.0	10.5	6.0	8.5
24	11.5	8.5	10.5	12.0	9.5	11.0	12.5	10.5	11.5	10.0	6.5	8.5
25	12.5	7.5	10.0	13.0	9.0	11.0	13.0	9.0	11.0	11.5	7.0	9.5
26	13.0	7.5	10.5	13.5	9.5	11.0	13.5	9.0	11.5	11.5	6.5	9.0
27	11.5	9.0	9.5	12.0	8.5	10.5	14.5	9.0	12.0	10.0	7.0	9.0
28	13.0	8.0	10.5	13.0	8.0	11.0	14.5	10.0	12.5	8.0	5.5	7.0
29	11.5	9.5	10.5	14.5	9.0	11.5	15.0	10.0	12.5	6.5	4.0	6.0
30	12.0	8.5	10.0	15.5	9.5	12.5	15.5	10.0	13.0	8.0	5.0	6.5
31	---	---	---	16.0	10.0	13.0	15.5	10.5	13.0	---	---	---
MONTH	13.0	5.0	8.5	16.0	7.0	10.5	17.0	9.0	13.0	15.0	3.0	8.5
YEAR	17.0	.0	8.0									

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV						
02...	1200	2.0	309	4	3.3	77
FEB						
07...	1130	.0	209	3	1.7	69
MAY						
24...	1300	6.0	5780	244	3810	61
AUG						
24...	1000	10.5	388	3	3.1	83

PEND OREILLE RIVER BASIN

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°29'44", long 114°07'36", in NE¼SW¼NW¼ sec.35, T.32 N., R.20 W., Flathead County, Hydrologic Unit 17010206, on right bank 1.5 mi downstream from Canyon Creek, 3.8 mi upstream from Middle Fork, 8.8 mi northeast of Columbia Falls, and at mile 162.1.

DRAINAGE AREA.--1,548 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to September 1917 (no winter records in water years 1913, 1916, 1917), April 1929 to February 1935 (incomplete), June 1935 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as Flathead River near Columbia Falls 1915-17, 1929-70.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1246: 1911, 1912(M), 1915-17(M), 1929 (M), 1938-39(M), 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 3,145.59 ft National Geodetic Vertical Datum of 1929. September 1910 to September 1917 and April to August 1929, nonrecording gages, and May 1, 1930, to Sept. 30, 1962, water-stage recorder, all at site 2.7 mi downstream at different datums.

REMARKS.--Water-discharge records good. No gage-height record May 26-31. A few small diversions from tributaries for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--52 years (1910-12, 1913-15, 1935-83), 2,989 ft³/s, 26.22 in/yr, 2,166,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,100 ft³/s June 9, 1964, gage height, 18.60 ft, from floodmark, from rating curve extended above 37,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 198 ft³/s Jan. 8, 1953, gage height, 0.86 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,000 ft³/s May 27, gage height, 9.59 ft, from floodmark; minimum daily, 580 ft³/s Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	1120	778	610	800	820	1320	4730	14700	5820	2740	1280
2	1040	1100	698	580	780	846	1320	4650	12700	5470	2680	1300
3	1100	1050	754	640	750	854	1320	4650	11200	5400	2620	1330
4	1120	1030	1020	720	700	889	1310	4810	11000	5470	2590	1320
5	1110	1030	1050	780	660	898	1260	5020	11100	5080	2500	1350
6	1080	1080	907	850	650	880	1260	5560	10400	4890	2410	1320
7	1070	1060	762	850	700	872	1290	6400	10400	4910	2330	1250
8	1040	1010	675	1100	746	863	1330	6830	10700	5000	2270	1210
9	1020	970	706	1220	730	880	1370	6620	10800	5100	2240	1190
10	1010	933	762	1180	722	988	1430	5980	11000	4690	2150	1190
11	988	898	778	1120	675	1180	1350	5420	10700	4290	2190	1240
12	970	880	800	1060	652	1300	1300	5120	9530	3970	2190	1220
13	952	863	850	1010	675	1350	1260	4940	8300	3950	2170	1170
14	942	837	880	907	691	1400	1230	5000	7430	5910	2070	1140
15	933	762	920	803	683	1420	1230	5270	7280	8350	1970	1110
16	924	812	940	916	675	1370	1310	5510	7410	7110	1910	1070
17	933	880	950	1100	675	1320	1470	5870	6860	6470	1810	1040
18	952	942	940	1090	698	1250	1790	6690	7260	5760	1730	1040
19	952	979	880	916	698	1130	2220	7110	7160	5150	1670	1030
20	942	942	863	916	683	1120	2810	6790	6540	4790	1610	998
21	933	898	846	933	683	1140	3680	7480	5730	4770	1560	979
22	924	754	812	940	691	1090	4690	9270	5170	4410	1520	961
23	1010	698	762	940	691	1060	5670	10700	4870	4080	1510	942
24	1240	710	714	920	722	1060	7130	12600	5320	4140	1550	924
25	1310	730	680	880	762	1040	9300	14800	5560	4100	1560	916
26	1260	740	720	890	803	1040	8600	17000	5250	3920	1510	907
27	1280	760	740	900	820	1040	6880	19000	5080	3660	1360	898
28	1240	780	700	900	820	1040	5870	18000	5190	3470	1420	898
29	1230	800	680	850	---	1040	5170	17000	5150	3240	1380	889
30	1200	812	660	780	---	1190	4810	18000	5820	3050	1330	889
31	1150	---	640	800	---	1330	---	17900	---	2880	1300	---
TOTAL	32915	26860	24867	28101	20035	33700	90980	274720	245610	149300	59850	33001
MEAN	1062	895	802	906	716	1087	3033	8862	8187	4816	1931	1100
MAX	1310	1120	1050	1220	820	1420	9300	19000	14700	8350	2740	1350
MIN	924	698	640	580	650	820	1230	4650	4870	2880	1300	889
CFSM	.69	.58	.52	.59	.46	.70	1.96	5.73	5.29	3.11	1.25	.71
IN.	.79	.65	.60	.68	.48	.81	2.19	6.60	5.90	3.59	1.44	.79
AC-FT	65290	53280	49320	55740	39740	66840	180500	544900	487200	296100	118700	65460
CAL YR 1982	TOTAL	1150476	MEAN	3152	MAX	18600	MIN	375	CFSM	2.04	IN	27.65
WTR YR 1983	TOTAL	1019939	MEAN	2794	MAX	19000	MIN	580	CFSM	1.81	IN	24.51
									AC-FT	2282000	AC-FT	2023000

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1970, 1976 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1975 to current year.

INSTRUMENTATION.--Temperature recorder since Oct. 1, 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 19.0°C July 22, 23, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 18.5°C Aug. 5; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	8.0	6.0	7.0	4.0	3.0	3.5	1.0	.0	.5	.0	.0	.0
2	7.5	7.0	7.5	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
3	8.0	7.0	7.5	2.5	2.0	2.5	.5	.0	.0	.0	.0	.0
4	7.5	6.0	6.5	3.5	2.5	3.0	1.5	1.0	1.5	.0	.0	.0
5	6.0	5.5	6.0	4.0	3.5	3.5	1.5	1.0	1.5	.0	.0	.0
6	6.0	4.5	5.5	3.5	3.0	3.5	1.0	.0	.0	.0	.0	.0
7	7.0	6.0	6.5	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
8	6.5	5.5	6.0	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
9	5.5	4.5	5.5	1.5	.5	1.0	.0	.0	.0	.5	.0	.5
10	5.5	4.5	5.0	2.0	1.0	1.5	.0	.0	.0	1.0	.0	.5
11	6.0	4.5	5.5	1.0	.0	.5	.0	.0	.0	1.5	1.0	1.5
12	6.5	5.0	6.0	---	---	---	.0	.0	.0	1.0	.0	.5
13	7.0	5.5	6.5	---	---	---	.0	.0	.0	1.0	.0	.5
14	7.0	6.0	6.5	---	---	---	.0	.0	.0	.5	.0	.0
15	7.5	6.0	7.0	---	---	---	.0	.0	.0	.0	.0	.0
16	8.5	7.5	8.0	---	---	---	.0	.0	.0	.0	.0	.0
17	8.0	6.0	7.0	---	---	---	.0	.0	.0	.0	.0	.0
18	6.0	5.0	5.5	---	---	---	.0	.0	.0	.0	.0	.0
19	5.0	4.0	4.5	1.0	---	---	.0	.0	.0	.0	.0	.0
20	4.5	3.5	4.0	1.5	1.0	1.0	.0	.0	.0	.0	.0	.0
21	3.5	2.5	3.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
22	4.5	3.0	3.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	6.5	5.0	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	7.0	6.0	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0	.5	.0	.5
26	6.0	5.0	5.5	.0	.0	.0	.0	.0	.0	1.0	.5	.5
27	5.0	4.5	5.0	.0	.0	.0	.0	.0	.0	1.5	1.0	1.5
28	4.5	4.0	4.0	.0	.0	.0	.0	.0	.0	1.5	1.0	1.5
29	4.5	4.0	4.0	.0	.0	.0	.0	.0	.0	1.0	.0	.0
30	4.0	3.0	3.5	1.0	.0	1.0	.0	.0	.0	.0	.0	.0
31	3.5	3.0	3.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	8.5	2.5	5.5	4.0	.0	1.5	1.5	.0	.0	1.5	.0	.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	1.0	.0	.5	3.0	2.5	3.0	5.0	4.0	4.5	7.0	5.5	6.5
2	1.0	.5	.5	3.0	2.0	2.5	4.0	3.5	3.5	6.5	5.0	5.5
3	1.0	.0	.5	4.0	2.5	3.0	5.0	3.0	4.0	6.5	5.5	6.0
4	.0	.0	.0	3.5	1.5	2.5	5.0	3.0	4.5	7.0	5.0	6.0
5	.0	.0	.0	2.5	1.0	1.5	5.5	3.0	4.5	8.0	5.0	6.5
6	.0	.0	.0	3.0	1.5	2.0	6.0	3.5	5.0	7.5	6.0	6.5
7	.0	.0	.0	3.0	2.5	3.0	5.5	4.5	5.0	6.0	5.0	5.5
8	.0	.0	.0	4.0	3.0	3.5	5.0	4.0	4.5	7.0	4.5	5.5
9	.0	.0	.0	4.0	3.5	4.0	5.0	4.0	4.5	6.5	5.0	5.5
10	.0	.0	.0	4.0	3.5	4.0	4.5	2.5	3.5	7.0	4.0	5.5
11	.0	.0	.0	3.5	2.0	2.5	4.5	2.5	3.5	7.5	5.0	6.0
12	1.5	.0	.5	3.0	1.5	2.5	5.0	2.5	4.0	8.0	5.0	6.5
13	2.0	1.5	1.5	3.0	2.5	3.0	5.5	3.0	4.5	8.5	5.5	7.0
14	2.0	1.5	2.0	3.5	2.5	3.0	6.0	3.5	5.0	9.0	6.0	7.5
15	2.0	1.5	1.5	4.0	2.5	3.5	7.0	4.5	6.0	8.5	6.5	7.5
16	2.0	.5	1.5	4.5	2.0	3.5	7.0	4.5	6.0	8.5	6.5	7.0
17	1.5	1.5	1.5	4.0	2.0	3.0	7.5	5.0	6.5	8.5	6.5	7.5
18	2.5	1.5	2.0	3.0	1.5	2.5	7.5	5.5	6.5	8.0	6.5	7.0
19	2.5	2.0	2.5	2.0	.0	1.5	7.5	5.0	6.5	6.5	5.0	6.0
20	2.0	1.5	2.0	3.0	.5	2.0	7.5	5.0	6.5	9.0	5.5	7.0
21	4.0	2.0	2.5	4.0	2.0	3.0	7.5	5.0	6.5	9.0	7.5	8.5
22	2.5	2.0	2.5	4.0	2.0	3.0	7.0	5.0	6.0	9.0	6.5	8.0
23	4.0	2.5	3.0	4.0	3.0	3.5	7.0	4.5	6.0	9.5	7.0	8.0
24	4.0	3.0	3.5	5.0	3.5	4.0	6.5	4.5	5.0	9.5	7.5	8.5
25	3.5	2.5	3.0	5.0	3.0	4.5	4.5	3.0	3.5	9.0	7.0	8.0
26	3.5	2.0	3.0	6.0	3.5	4.5	5.0	3.0	3.5	9.0	7.0	8.0
27	3.5	2.0	3.0	4.5	3.5	4.0	5.0	3.5	4.5	9.5	7.0	8.0
28	3.0	2.0	2.5	4.0	3.5	4.0	5.5	4.0	5.0	9.5	7.5	8.5
29	---	---	---	4.0	3.5	4.0	7.0	3.5	5.5	10.0	8.0	9.0
30	---	---	---	5.0	3.5	4.5	7.5	5.0	6.0	9.5	8.5	9.0
31	---	---	---	5.0	4.0	4.5	---	---	---	9.5	7.0	8.5
MONTH	4.0	.0	1.5	6.0	.0	3.0	7.5	2.5	5.0	10.0	4.0	7.0
JUNE				JULY			AUGUST			SEPTEMBER		
1	9.0	8.0	8.5	12.0	10.0	11.0	18.0	15.5	17.0	16.0	14.5	15.0
2	7.5	7.0	7.5	12.0	10.0	11.0	18.0	15.5	17.0	15.0	12.5	13.5
3	9.5	7.0	8.0	11.0	9.5	10.0	18.0	15.5	17.0	12.5	11.5	12.0
4	9.5	8.0	8.5	13.5	9.0	11.0	18.0	15.5	16.5	12.0	11.5	12.0
5	9.5	8.0	9.0	14.5	11.0	13.0	18.5	16.0	17.5	12.5	11.0	11.5
6	10.5	8.0	9.0	14.5	12.0	13.5	18.0	15.5	17.0	12.5	10.0	11.5
7	10.5	9.0	9.5	15.0	11.5	13.5	18.0	15.5	17.0	13.5	11.5	12.5
8	11.0	8.5	9.5	14.5	13.0	13.5	17.5	16.0	16.5	12.0	10.5	11.0
9	11.0	9.0	10.0	14.0	11.5	12.5	18.0	15.5	16.5	11.0	10.0	10.5
10	10.5	8.5	9.0	13.5	12.0	12.5	17.5	16.0	16.5	9.5	8.5	9.0
11	9.5	8.0	8.5	13.5	11.0	12.0	17.0	15.5	16.0	10.5	8.5	9.5
12	9.0	8.0	8.5	13.0	11.5	12.0	16.0	14.0	14.5	11.5	9.5	10.5
13	10.5	7.5	9.0	12.5	11.5	12.0	16.5	13.5	15.0	11.5	9.5	11.0
14	12.0	8.5	10.5	12.5	11.5	12.0	16.5	14.5	15.5	12.5	10.5	11.5
15	11.5	9.0	9.5	12.0	10.5	11.0	16.5	14.0	15.5	12.0	10.0	11.0
16	9.5	8.0	8.5	12.5	10.5	11.5	17.0	14.5	15.5	11.5	10.0	11.0
17	11.5	8.5	10.0	13.0	11.0	12.0	16.5	14.0	15.5	11.0	9.5	10.5
18	10.5	9.0	9.5	14.5	11.0	13.0	16.5	14.0	15.5	10.0	7.5	8.5
19	10.0	8.0	8.5	15.5	12.5	14.0	16.0	13.5	15.0	7.5	6.0	7.0
20	10.0	8.0	9.0	15.0	12.5	13.5	15.5	14.0	15.0	7.5	5.5	6.5
21	10.0	7.5	9.0	14.5	11.0	12.5	16.0	13.5	15.0	8.5	6.0	7.5
22	12.0	8.0	10.0	15.5	12.0	13.5	16.0	14.0	15.5	9.5	7.0	8.5
23	14.0	10.5	12.0	15.0	13.0	14.0	15.5	13.5	14.5	10.0	8.0	9.0
24	13.0	11.0	11.5	15.0	13.0	14.0	15.0	13.5	14.0	10.5	8.5	10.0
25	12.5	9.5	11.0	14.5	12.5	13.5	14.5	12.0	13.5	11.0	9.0	10.0
26	13.5	10.0	11.5	15.0	12.5	14.0	15.0	12.5	13.5	11.0	9.0	10.0
27	13.0	11.5	12.0	14.0	12.0	13.0	15.5	13.0	14.5	11.0	9.5	10.0
28	13.5	10.5	12.0	14.0	11.5	13.0	15.5	13.5	14.5	9.5	8.0	9.0
29	13.0	11.5	12.0	15.5	12.5	14.0	15.5	13.0	14.5	8.5	7.0	8.0
30	12.5	10.5	11.5	16.0	13.0	14.5	15.5	13.0	14.5	7.5	7.0	7.5
31	---	---	---	17.0	13.5	15.5	16.0	13.5	15.0	---	---	---
MONTH	14.0	7.0	10.0	17.0	9.0	13.0	18.5	12.0	15.5	16.0	5.5	10.0
YEAR	18.5	.0	6.0									

PEND OREILLE RIVER BASIN

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12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued
ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 04...	1000	1120	211	3.0	6.0
NOV 19...	1120	997	200	1.0	1.0
JAN 05...	1000	821	213	2.0	.0
APR 26...	1030	8680	148	4.0	3.0
MAY 31...	0950	17900	137	12.0	7.0
JUN 23...	1350	4810	152	22.0	11.5
SEP 07...	0900	1260	173	13.0	11.0

PEND OREILLE RIVER BASIN

12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT

LOCATION.--Lat 48°29'43", long 114°00'33", in S½SW¼NE¼ sec.34, T.32 N., R.19 W., Flathead County, Hydrologic Unit 17010207, on left bank 0.8 mi downstream from McDonald Creek, 1.3 mi west of West Glacier, and at mile 3.8.

DRAINAGE AREA.--1,128 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1947, published as "near Belton."

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,128.72 ft National Geodetic Vertical Datum of 1929. Prior to Nov. 22, 1950, nonrecording gage at present site and datum.

REMARKS.--Records good. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--44 years, 2,935 ft³/s, 35.34 in/yr, 2,126,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 140,000 ft³/s June 9, 1964, gage height, 36.46 ft, from floodmarks, from rating curve extended above 31,000 ft³/s, on basis of contracted opening measurement at gage height, 19.42 ft and flood volume-hydrographic comparison; minimum, less than 173 ft³/s Nov. 27, 1952 (stage below intake pipe).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,400 ft³/s May 27, gage height, 7.78 ft; minimum, 370 ft³/s Jan. 2, gage height, 1.45 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	766	787	585	422	612	787	1180	3580	12200	6460	2440	919
2	756	777	551	389	585	808	1190	3560	10500	5830	2400	977
3	787	756	577	442	577	819	1190	3600	10000	6060	2340	989
4	798	736	766	486	518	840	1170	3820	11000	6390	2260	953
5	787	746	851	551	478	851	1130	4130	10400	5950	2140	1070
6	777	787	798	667	478	851	1100	4750	9860	5680	2070	1110
7	766	777	696	658	534	851	1110	5860	10100	5680	1960	1010
8	756	726	520	851	551	862	1140	5980	10200	5490	1900	942
9	736	687	500	965	542	885	1150	5740	10700	5130	1830	953
10	716	677	480	919	526	977	1170	5180	10500	4620	1770	953
11	687	677	520	989	518	1140	1130	4670	10200	4310	1770	977
12	677	639	577	977	518	1390	1090	4310	8990	4010	1850	1000
13	667	621	696	930	534	1460	1060	3960	7730	4160	1780	977
14	658	603	696	896	526	1550	1040	3840	6990	5570	1600	953
15	667	585	677	830	518	1520	1030	3940	7020	5630	1490	919
16	677	577	696	766	509	1460	1050	4060	7080	4910	1450	885
17	716	603	726	798	518	1420	1140	4230	6490	4490	1390	862
18	756	677	677	808	568	1340	1370	4800	7420	4130	1330	840
19	756	726	639	726	612	1270	1770	5320	7390	3940	1260	819
20	746	706	630	726	621	1220	2440	5130	6390	4010	1210	798
21	736	677	639	726	612	1150	3190	6090	5570	4310	1170	766
22	726	551	621	726	621	1130	4260	7990	5040	3940	1110	746
23	777	493	594	726	630	1090	5180	9490	4940	3680	1100	736
24	840	534	542	677	658	1060	6360	12000	5950	3650	1110	716
25	851	534	493	649	696	1030	7110	14000	5890	3720	1100	696
26	873	542	534	677	746	1010	6210	16000	5350	3490	1040	687
27	873	551	542	658	766	1000	5260	16700	5350	3210	1000	677
28	862	585	501	658	766	989	4570	15600	6090	2950	977	706
29	840	603	493	639	---	989	4010	15800	6120	2730	953	696
30	819	603	478	577	---	1100	3770	16500	6420	2580	930	667
31	787	---	470	603	---	1190	---	14600	---	2460	907	---
TOTAL	23636	19543	18765	22112	16338	34039	74570	235230	237880	139170	47637	25999
MEAN	762	651	605	713	584	1098	2486	7588	7929	4489	1537	867
MAX	873	787	851	989	766	1550	7110	16700	12200	6460	2440	1110
MIN	658	493	470	389	478	787	1030	3560	4940	2460	907	667
CFSM	.68	.58	.54	.63	.52	.97	2.20	6.73	7.03	3.98	1.36	.77
IN.	.78	.64	.62	.73	.54	1.12	2.46	7.76	7.84	4.59	1.57	.86
AC-FT	46880	38760	37220	43860	32410	67520	147900	466600	471800	276000	94490	51570

CAL YR 1982	TOTAL	1163029	MEAN	3186	MAX	20100	MIN	300	CFSM	2.82	IN	38.36	AC-FT	2307000
WTR YR 1983	TOTAL	894919	MEAN	2452	MAX	16700	MIN	389	CFSM	2.17	IN	29.51	AC-FT	1775000

PEND OREILLE RIVER BASIN

12362000 HUNGRY HORSE RESERVOIR NEAR HUNGRY HORSE, MT

LOCATION.--Lat 48°20'28", long 114°00'48", in NE¼NE¼NW¼ sec.27, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, in block 14 of Hungry Horse Dam on South Fork Flathead River, 3.8 mi southeast of Hungry Horse, and at mile 5.2.

DRAINAGE AREA.--1,654 mi².

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

GAGE.--Water-stage recorder equipped with remote indicator in power house. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). During construction and prior to May 1, 1953, various types of nonrecording gages were used.

REMARKS.--Reservoir and flow completely controlled by concrete arch-gravity dam; construction began in 1948; completed in 1952. Storage began Sept. 21, 1951. Usable capacity, 3,451,000 acre-ft, top of 1.0 ft flashboards; 3,428,000 acre-ft between elevations 3,196 ft, lowest outlet, and 3,560 ft, controlled spillway elevation. Dead storage, 40,140 acre-ft below elevation 3,196 ft. Minimum operating level, 445,900 acre-ft, elevation, 3,336 ft for on-site power generation. Water is used for power production, flood control, irrigation and recreation. Controlled spillway is an adjustable ring gate with 1.0 ft flashboards. Figures given herein represent usable contents.

COOPERATION.--Capacity table and daily elevations furnished by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 3,461,000 acre-ft July 3, 4, 1955, Aug. 6, 1956; maximum elevation observed, 3,561.40 ft July 3, 4, 1955; minimum contents observed since normal low operating level reached in May 1952, 607,700 acre-ft Jan. 13, 1953, elevation, 3,362.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 3,452,000 acre-ft Aug. 14, elevation, 3,561.00 ft; minimum observed, 2,472,000 acre-ft May 6, elevation, 3,515.46 ft.

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

3,480	1,859,000	3,540	2,974,000
3,500	2,186,000	3,565	3,548,000
3,520	2,560,000		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2359

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3560.48	3559.59	3556.36	3550.95	3543.92	3533.14	3526.20	3516.95	3536.98	3560.04	3560.89	3559.42
2	3560.53	3559.48	3556.23	3550.67	3543.65	3533.08	3525.43	3516.62	3538.22	3560.17	3560.83	3559.31
3	3560.57	3559.40	3556.16	3550.29	3543.40	3532.99	3524.67	3516.28	3539.46	3560.43	3560.76	3559.23
4	3560.62	3559.34	3556.12	3549.81	3543.12	3532.81	3523.84	3516.00	3540.78	3560.68	3560.72	3559.09
5	3560.60	3559.27	3556.05	3549.53	3542.52	3532.74	3523.19	3515.63	3542.00	3560.87	3560.67	3559.02
6	3560.56	3559.23	3555.94	3549.36	3541.72	3532.62	3522.38	3515.46	3543.12	3560.64	3560.77	3558.94
7	3560.56	3559.18	3555.81	3549.03	3541.02	3532.52	3521.62	3515.70	3544.30	3560.44	3560.86	3558.82
8	3560.60	3559.05	3555.61	3548.90	3540.38	3532.37	3521.08	3516.19	3545.45	3560.21	3560.81	3558.73
9	3560.64	3558.98	3555.40	3548.83	3539.75	3532.29	3520.60	3516.19	3546.68	3560.29	3560.78	3558.22
10	3560.68	3558.86	3555.20	3548.80	3539.08	3532.22	3520.13	3515.96	3547.91	3560.66	3560.79	3557.71
11	3560.71	3558.76	3555.00	3548.78	3538.44	3532.16	3519.58	3515.82	3549.06	3560.77	3560.77	3557.10
12	3560.75	3558.63	3554.82	3548.76	3537.85	3532.16	3519.10	3515.81	3550.01	3560.83	3560.86	3556.57
13	3560.78	3558.51	3554.64	3548.71	3537.28	3532.16	3518.72	3515.78	3550.80	3560.83	3560.93	3555.89
14	3560.82	3558.37	3554.51	3548.66	3536.73	3532.16	3518.38	3515.96	3551.48	3560.81	3561.00	3555.26
15	3560.75	3558.21	3554.40	3548.58	3536.06	3532.13	3518.03	3516.14	3552.20	3560.69	3560.92	3554.66
16	3560.68	3558.10	3554.26	3548.25	3535.61	3532.09	3517.70	3516.22	3552.90	3560.63	3560.87	3554.03
17	3560.61	3558.00	3554.08	3548.06	3535.50	3532.01	3517.44	3516.05	3553.54	3560.36	3560.82	3553.40
18	3560.53	3557.92	3553.89	3547.94	3535.35	3531.92	3517.21	3516.34	3554.43	3560.28	3560.72	3552.75
19	3560.44	3557.91	3553.67	3547.80	3535.24	3531.86	3516.98	3516.74	3555.21	3560.20	3560.62	3552.28
20	3560.35	3557.86	3553.47	3547.64	3535.10	3531.76	3516.86	3517.24	3555.83	3560.30	3560.61	3551.77
21	3560.25	3557.70	3553.29	3547.48	3534.95	3531.38	3516.81	3518.03	3556.32	3560.43	3560.65	3551.01
22	3560.15	3557.57	3553.12	3546.97	3534.44	3531.00	3516.93	3519.07	3556.80	3560.55	3560.54	3550.30
23	3560.12	3557.44	3552.90	3546.25	3533.94	3530.59	3517.22	3520.15	3557.28	3560.67	3560.43	3549.96
24	3560.07	3557.29	3552.75	3545.53	3533.80	3530.17	3517.62	3521.60	3557.73	3560.78	3560.40	3549.83
25	3559.93	3557.12	3552.56	3545.03	3533.64	3529.75	3518.17	3523.37	3558.28	3560.83	3560.29	3549.69
26	3559.87	3556.97	3552.39	3544.79	3533.53	3529.66	3518.26	3525.57	3558.74	3560.81	3560.15	3549.39
27	3559.83	3556.84	3552.19	3544.65	3533.42	3529.54	3518.14	3527.75	3558.97	3560.79	3560.05	3548.88
28	3559.78	3556.75	3551.93	3544.50	3533.29	3528.94	3517.89	3529.74	3559.19	3560.73	3559.92	3548.17
29	3559.74	3556.63	3551.75	3544.36	---	3528.29	3517.57	3531.78	3559.34	3560.68	3559.81	3547.40
30	3559.69	3556.50	3551.48	3544.21	---	3527.55	3517.25	3533.81	3559.62	3560.79	3559.70	3546.68
31	3559.64	---	3551.22	3544.05	---	3526.94	---	3535.58	---	3560.94	3559.53	---
MAX	3560.82	3559.59	3556.36	3550.95	3543.92	3533.14	3526.20	3535.58	3559.62	3560.94	3561.00	3559.42
MIN	3559.64	3556.50	3551.22	3544.05	3533.29	3526.94	3516.81	3515.46	3536.98	3560.04	3559.53	3546.68
CAL YR 1982	MAX	3560.95	MIN	3481.00								
WTR YR 1983	MAX	3561.00	MIN	3515.46								
†	3,420	3,347	3,224	3,062	2,831	2,699	2,507	2,879	3,419	3,451	3,417	3,121
††	-20,000	-73,000	-123,000	-162,000	-231,000	-132,000	-192,000	+372,000	+540,000	+32,000	-34,000	-296,000
CAL YR 1982				††	+621,000							
WTR YR 1983				††	-319,000							

† Contents, in thousands of acre-feet, at end of month.

†† Change in contents, in acre-feet.

PEND OREILLE RIVER BASIN

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'24", long 114°02'12", in SW¼SE¼SW¼ sec.16, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, on right bank 1.7 mi downstream from Hungry Horse Dam, 3.5 mi upstream from mouth, and 6.8 mi east of Columbia Falls and at mile 152.2.

DRAINAGE AREA.--1,663 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to January 1911 (discharge measurements only), February 1911 to September 1913 (no winter records), October 1913 to August 1916 (scattered daily discharge only), water years 1917-22 (annual maximum), April 1923 to November 1924 (no winter records), July to October 1925, May to November 1927, May 1928 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1923-24(M), 1926-27(M), 1932(M), 1935-36(M). WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Datum of gage is 3,040 ft National Geodetic Vertical Datum of 1929 (levels by the U.S. Bureau of Reclamation). September 1910 to September 1916, nonrecording gage, and Apr. 23, 1923, to Sept. 30, 1928, water-stage recorder at site 3 mi downstream at different datum. Oct. 1, 1928, to Sept. 30, 1952, water-stage recorder at site 1.5 mi downstream at different datum.

REMARKS.--Water-discharge records excellent. Flow regulated by Hungry Horse Reservoir since Sept. 21, 1951 (see preceding page).

AVERAGE DISCHARGE.--55 years (water years, 1929-83), 3,564 ft³/s, 29.10 in/yr, 2,582,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,200 ft³/s June 19, 1916, gage height, 16.6 ft, site and datum then in use, from rating curve extended above 20,000 ft³/s; minimum observed, 7.3 ft³/s Sept. 24, 1951, gage height, 0.52 ft, dam closure, site and datum then in use; minimum daily, 7.3 ft³/s Sept. 24, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,300 ft³/s Apr. 15, gage height, 11.24 ft; minimum daily, 135 ft³/s June 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	928	1760	2260	3670	2330	2400	9700	7530	440	3510	2920	2300
2	176	1860	2270	3670	3590	2390	9620	8140	309	6530	2850	2300
3	174	1860	2320	5650	3490	2390	9670	8150	165	5630	3140	2040
4	172	1850	2310	6640	3530	2400	9660	8310	166	4540	2380	2000
5	1100	1850	2070	5420	7250	2390	8190	8970	155	5690	2400	1960
6	1090	1850	2180	3110	9250	2390	9380	9080	155	9020	204	2000
7	1100	1850	2280	5490	8630	2390	9580	5150	159	8250	194	2300
8	181	1920	2730	4010	7570	3170	6680	2500	164	8920	2410	2300
9	162	1890	3010	2470	7900	2380	6460	7280	171	4230	2020	6840
10	166	2030	2990	2730	8300	2390	6460	9030	170	299	1130	7010
11	184	2190	2970	2140	7590	2390	6670	7060	168	4040	2250	9060
12	177	2300	3070	1440	7200	2400	6480	5270	158	4340	182	7000
13	184	2300	3080	1440	7190	2400	4860	5030	147	4820	180	9030
14	167	2310	2340	1470	6680	2400	4690	2650	150	6910	620	8410
15	1840	2300	2320	1820	7930	2390	4760	2450	146	6920	2180	7980
16	2010	2300	2950	4690	6000	2390	4510	4000	142	6930	1780	8160
17	2020	2310	3110	2990	2360	2400	4480	7310	144	6920	1900	8190
18	2020	2320	3290	2320	2370	2400	4770	3800	156	5030	2320	8210
19	2020	2280	3390	2320	2360	2400	4790	2280	141	4650	2380	6390
20	2020	2280	3350	2320	2360	2400	4790	2220	140	2650	922	6600
21	2020	2290	3410	2320	2360	5270	4780	265	135	2010	502	9200
22	2020	2280	3300	6910	6240	5580	4800	209	155	2000	2230	9200
23	2030	2290	2740	9310	5980	5560	4520	2170	155	2030	2260	4570
24	2020	2280	2330	9030	2390	5570	4800	1830	782	2000	1480	2170
25	1830	2280	2780	6720	2390	5670	4840	1400	142	2950	2340	2330
26	1690	2280	3020	3320	2410	2390	7020	217	140	3110	2290	4220
27	1600	2290	2880	2330	2400	2390	7970	213	4430	3100	2290	6010
28	1600	2280	3630	2330	2400	7220	8090	215	6030	3110	2290	9090
29	1600	2270	2750	2330	---	8320	7910	222	6540	3180	2290	9150
30	1600	2260	3660	2330	---	9650	7520	225	5910	709	2050	8990
31	1630	---	3670	2330	---	8280	---	207	---	163	2310	---
TOTAL	37531	64410	88460	115070	140450	114560	198450	123383	27965	134191	56694	175010
MEAN	1211	2147	2854	3712	5016	3695	6615	3980	932	4329	1829	5834
MAX	2030	2320	3670	9310	9250	9650	9700	9080	6540	9020	3140	9200
MIN	162	1760	2070	1440	2330	2380	4480	207	135	163	180	1960
CFSM	.73	1.29	1.72	2.23	3.02	2.22	3.98	2.39	.56	2.60	1.10	3.51
IN.	.84	1.44	1.98	2.57	3.14	2.56	4.44	2.76	.63	3.00	1.27	3.91
AC-FT	74440	127800	175500	228200	278600	227200	393600	244700	55470	266200	112500	347100
MEAN †	885	921	854	1077	857	1548	3388	10030	10010	4850	1277	859
CFSM †	0.53	0.55	0.51	0.65	0.52	0.93	2.04	6.03	6.02	2.92	0.77	0.52
IN †	0.61	0.62	0.59	0.75	0.54	1.07	2.27	6.95	6.71	3.36	0.89	0.58
AC-FT †	54440	54800	52500	66200	47600	95200	201600	616700	595470	298200	78500	51100

OBSERVED

CAL YR 1982	TOTAL	1171526	MEAN	3210	MAX	13000	MIN	141	AC-FT	2323890
WTR YR 1983	TOTAL	1276174	MEAN	3496	MAX	9700	MIN	135	AC-FT	2531310

ADJUSTED

CAL YR 1982	TOTAL	1484692	MEAN	4068	CFSM	2.45	IN	33.20	AC-FT	2944890
WTR YR 1983	TOTAL	1115357	MEAN	3056	CFSM	1.84	IN	24.94	AC-FT	2212310

† Adjusted for change in contents in Hungry Horse Reservoir.

PEND OREILLE RIVER BASIN

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12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1965-68, 1979 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1964 to September 1968, March 1979 to current year.

INSTRUMENTATION.--Temperature recorder since Mar. 30, 1979.

REMARKS.--Missing record due to equipment malfunction. Prior to March 1979, thermograph records furnished by Montana Department of Fish, Wildlife, and Parks. The temperature recorder malfunctioned during parts of July and August 1968; the maximum temperature of 19.0°C could have been exceeded during that time.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 19.0°C Aug. 9-11, 1966, Aug. 2-6, 1968; minimum (water years 1965-68, 1979-81, 1983), 2.0°C on many days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 8.0°C on several days in June and July; minimum recorded, 3.0°C Nov. 24.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	5.0	4.5	5.0	5.5	4.5	5.0	4.5	4.0	4.0	---	---	---
2	6.0	5.0	5.5	5.0	4.5	5.0	4.0	3.5	4.0	---	---	---
3	6.0	5.5	5.5	5.0	4.5	4.5	---	---	---	---	---	---
4	5.5	5.0	5.5	5.5	5.0	5.5	---	---	---	---	---	---
5	5.5	4.5	5.0	5.0	4.5	5.0	---	---	---	4.5	4.5	---
6	5.0	4.5	5.0	4.5	4.5	4.5	---	---	---	4.5	4.5	4.5
7	5.5	4.5	5.0	4.5	4.0	4.5	---	---	---	4.5	4.5	4.5
8	5.5	5.0	5.5	5.0	4.5	5.0	---	---	---	4.5	4.5	4.5
9	6.0	5.0	5.5	5.0	4.5	5.0	---	---	---	4.5	4.5	4.5
10	6.0	5.5	5.5	4.5	4.5	4.5	---	---	---	4.5	4.5	4.5
11	6.0	5.0	5.5	5.0	4.5	5.0	---	---	---	4.5	4.5	4.5
12	6.0	5.0	5.5	5.0	5.0	5.0	---	---	---	4.5	4.5	4.5
13	6.0	5.0	5.5	5.5	5.0	5.0	---	---	---	4.5	4.0	4.5
14	6.0	5.5	5.5	5.0	4.5	4.5	---	---	---	5.0	4.0	4.5
15	5.5	4.5	4.5	5.0	4.5	4.5	---	---	---	5.0	4.0	4.5
16	4.5	4.0	4.5	5.0	5.0	5.0	---	---	---	4.5	4.0	4.5
17	4.5	4.5	4.5	5.5	5.0	5.0	---	---	---	5.0	4.0	4.5
18	5.0	4.0	4.5	5.0	5.0	5.0	---	---	---	5.0	4.0	4.5
19	4.5	4.0	4.5	5.0	4.5	4.5	---	---	---	5.0	4.0	4.5
20	5.0	4.5	4.5	4.5	4.5	4.5	---	---	---	4.5	4.0	4.5
21	5.0	4.5	4.5	5.0	4.5	4.5	---	---	---	5.0	4.0	4.5
22	4.5	4.5	4.5	5.0	4.5	4.5	---	---	---	4.5	4.5	4.5
23	4.5	4.5	4.5	5.0	4.0	4.5	---	---	---	4.5	4.5	4.5
24	5.0	4.5	4.5	4.0	3.0	3.5	---	---	---	4.5	4.5	4.5
25	5.0	4.5	5.0	4.0	3.5	3.5	---	---	---	4.5	4.5	4.5
26	5.0	5.0	5.0	4.0	3.5	3.5	---	---	---	4.5	4.0	4.5
27	5.0	4.5	4.5	3.5	3.5	3.5	---	---	---	4.5	4.5	4.5
28	5.0	4.5	4.5	4.0	3.5	4.0	---	---	---	4.5	4.0	4.5
29	5.0	5.0	5.0	4.0	3.5	4.0	---	---	---	4.5	4.5	4.5
30	5.0	4.5	4.5	4.5	3.5	4.0	---	---	---	4.5	4.0	4.5
31	4.5	4.5	4.5	---	---	---	---	---	---	4.5	4.5	4.5
MONTH	6.0	4.0	5.0	5.5	3.0	4.5	4.5	3.5	4.0	5.0	4.0	4.5

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
2	5.0	3.5	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
3	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
4	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
5	4.5	4.0	4.0	4.5	4.5	4.5	4.0	3.5	4.0	4.0	4.0	4.0
6	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
7	4.5	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
8	4.5	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
9	4.5	3.5	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
10	5.0	4.0	4.0	4.5	4.5	4.5	4.0	3.5	4.0	4.0	4.0	4.0
11	4.0	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
12	4.5	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
13	4.0	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
14	4.5	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.0	4.5
15	4.5	4.0	4.0	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5
16	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5
17	4.5	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5
18	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5
19	4.5	4.5	4.5	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.5
20	4.5	4.0	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.5
21	4.5	4.5	4.5	4.0	3.5	4.0	4.0	4.0	4.0	6.5	4.5	5.0
22	4.5	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	6.5	5.0	5.5
23	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.5	4.0	4.5
24	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.5	4.5
25	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	5.5	4.5	4.5
26	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	7.0	4.5	5.5
27	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	7.0	5.0	6.0
28	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	7.5	5.0	6.0
29	---	---	---	4.0	3.5	3.5	4.0	4.0	4.0	7.5	5.0	6.0
30	---	---	---	4.0	3.5	3.5	4.0	4.0	4.0	7.0	5.0	6.0
31	---	---	---	4.0	3.5	4.0	---	---	---	7.0	5.0	6.0
MONTH	5.0	3.5	4.5	4.5	3.5	4.0	4.0	3.5	4.0	7.5	4.0	4.5
		JUNE			JULY			AUGUST			SEPTEMBER	
1	6.5	4.5	5.5	6.0	4.5	5.0	7.5	4.5	5.5	5.0	4.5	5.0
2	6.5	4.5	5.5	4.5	4.5	4.5	6.0	4.5	5.0	5.0	4.5	5.0
3	7.0	6.0	6.5	5.0	4.5	4.5	5.5	4.5	5.0	5.0	5.0	5.0
4	7.0	5.5	6.5	5.0	4.5	4.5	6.0	4.5	5.0	5.0	5.0	5.0
5	7.0	6.0	6.5	5.5	4.0	4.5	6.0	4.5	5.0	5.0	5.0	5.0
6	8.0	5.5	6.5	4.5	4.5	4.5	7.5	5.0	6.5	5.0	5.0	5.0
7	7.5	6.0	7.0	4.5	4.5	4.5	7.5	6.0	6.5	5.0	5.0	5.0
8	8.0	6.0	7.0	4.5	4.5	4.5	6.5	4.5	5.5	5.0	5.0	5.0
9	8.0	6.0	7.0	6.0	4.5	5.0	6.5	5.0	5.5	5.0	5.0	5.0
10	7.5	6.0	6.5	6.5	4.5	5.5	6.5	5.0	5.5	5.0	5.0	5.0
11	7.0	6.0	6.5	6.0	4.5	5.0	6.0	4.5	5.0	5.0	5.0	5.0
12	6.5	6.0	6.5	5.5	4.5	4.5	6.5	4.5	6.0	5.0	5.0	5.0
13	7.5	6.0	6.5	5.5	4.5	4.5	7.5	6.0	6.5	5.0	4.5	5.0
14	8.0	6.0	7.0	5.0	4.5	4.5	7.0	5.0	6.0	5.0	5.0	5.0
15	7.5	6.0	6.5	5.0	4.5	5.0	5.5	4.5	5.0	5.5	5.0	5.0
16	7.0	6.0	6.5	5.0	4.5	4.5	6.0	5.0	5.0	5.5	5.0	5.0
17	8.0	6.0	7.0	5.0	4.5	4.5	6.0	5.0	5.0	5.0	5.0	5.0
18	7.5	6.5	6.5	4.5	4.5	4.5	6.0	5.0	5.0	5.5	5.0	5.0
19	6.5	6.0	6.0	5.0	4.5	4.5	6.0	5.0	5.0	5.5	5.0	5.0
20	7.0	6.0	6.5	5.5	4.5	5.0	6.5	5.0	5.5	5.5	5.0	5.0
21	7.0	5.5	6.5	6.0	4.5	5.0	6.5	5.5	5.5	5.5	5.0	5.0
22	8.0	6.0	7.0	5.5	4.5	5.0	5.5	5.0	5.0	5.0	5.0	5.0
23	8.0	6.0	7.0	6.0	5.0	5.0	5.5	4.5	5.0	5.5	5.0	5.5
24	7.0	4.5	5.5	6.0	5.0	5.5	5.0	4.5	5.0	5.5	5.0	5.5
25	8.0	6.0	7.0	6.0	5.0	5.0	5.0	4.5	5.0	5.5	5.0	5.5
26	8.0	6.0	7.0	6.0	4.5	5.0	5.0	4.5	5.0	5.5	5.0	5.5
27	8.0	4.5	5.5	5.5	4.5	5.0	5.0	5.0	5.0	5.5	5.0	5.5
28	5.0	4.5	4.5	6.0	4.5	5.0	5.0	5.0	5.0	5.5	5.0	5.5
29	4.5	4.5	4.5	6.0	4.5	5.0	5.0	4.5	5.0	5.5	5.0	5.5
30	5.0	4.5	4.5	6.5	4.5	5.5	5.0	5.0	5.0	5.5	5.0	5.5
31	---	---	---	8.0	6.0	7.0	5.0	5.0	5.0	---	---	---
MONTH	8.0	4.5	6.5	8.0	4.0	5.0	7.5	4.5	5.5	5.5	4.5	5.0
YEAR	8.0	3.0	5.0									

PEND OREILLE RIVER BASIN

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV 18...	1440	2460	150	3.0	5.0
MAY 02...	0900	10000	148	7.0	4.0
JUN 02...	1235	153	167	14.0	5.5

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'43", long 114°11'02", in NW¼NW¼SE¼ sec.17, T.30 N., R.20 W., Flathead County, Hydrologic Unit 17010208, on right bank 200 ft downstream from county road bridge at Columbia Falls, 5.7 mi downstream from South Fork, and at mile 143.0.
DRAINAGE AREA.--4,464 mi².

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--May 1922 to September 1923 (fragmentary), June 1928 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1092: 1923. WSP 1216: Drainage area. WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Datum of gage is 2,977.67 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Nov. 12, 1928, nonrecording gage on bridge 200 ft upstream at datum 0.19 ft higher.

REMARKS.--Water-discharge records good. South Fork Flathead River, which contributes about one-third of flow, completely regulated by Hungry Horse Reservoir 10.9 mi upstream since Sept. 21, 1951 (see station number 12362000).
AVERAGE DISCHARGE.--55 years, 9,737 ft³/s, 29.62 in/yr, 7,054,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 176,000 ft³/s June 9, 1964, gage height, 25.58 ft, from floodmarks, from rating curve extended above 95,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 798 ft³/s Dec. 8, 1982, gage height, -0.08 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 22.7 ft, from floodmarks, discharge 142,000 ft³/s, from rating curve extended above 95,000 ft³/s on basis of slope-area measurement of peak flow in 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36,700 ft³/s May 30, gage height, 11.72 ft; minimum daily, 1,880 ft³/s Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2760	3970	3870	4940	3980	4340	12600	16000	28600	15800	8060	4810
2	2130	4040	3790	4880	4880	4390	12500	16400	25100	18400	8170	4890
3	2180	3960	3850	6710	5080	4430	12600	16600	22500	17500	8360	4720
4	2250	3900	4260	8100	4920	4480	12500	17100	23100	17300	7550	4630
5	3170	3900	4300	7280	7780	4490	11100	18200	22400	16900	7400	4730
6	3140	4020	4160	4890	10400	4480	12000	19300	21400	20000	5400	4820
7	3120	4000	3930	7210	10100	4480	12400	17700	21400	19300	4820	4960
8	2130	3940	3860	5940	9090	5270	9760	16000	21800	20000	6790	4820
9	2060	3800	4340	5280	9250	4520	8840	19500	22400	15100	6260	8630
10	2000	3890	4320	5220	9740	4680	9490	20500	22500	11000	5370	9500
11	1980	4010	4250	4770	9100	5030	9600	17700	22000	12700	6510	11600
12	1940	4110	4370	3910	8590	5430	9290	14900	19800	12800	4670	9600
13	1920	4070	4620	3770	8620	5610	7720	14200	17200	13100	4470	11600
14	1880	4040	4110	3620	8000	5770	7360	11900	15300	18100	4390	11100
15	3400	3930	4030	3720	9440	5750	7430	11900	14900	21600	5990	10200
16	3870	3960	4590	5710	8170	5640	7270	13700	15300	19600	5690	10500
17	3920	4060	5160	5430	3900	5530	7440	17100	14300	18400	5260	10500
18	4000	4190	5090	4300	3940	5410	8150	15500	15100	15600	5380	10500
19	4010	4280	5130	4190	4000	5210	8930	14900	15500	14200	5550	9320
20	3980	4220	5030	4050	3980	5130	10000	14400	13900	12300	4550	8120
21	3960	4140	5080	4050	3980	7740	11500	13900	12300	11600	3470	11300
22	3940	3890	4950	7370	7130	8130	13500	17400	11100	10900	5160	11300
23	4070	3720	4350	10400	8220	8050	15300	22100	10500	10300	4980	7350
24	4340	3760	3780	11000	4100	8020	18200	26600	12400	10200	4440	4190
25	4340	3790	4040	8390	4170	8070	21600	30400	12300	11100	5350	4280
26	4170	3820	4450	5250	4270	5020	22200	33400	11500	11000	5210	5890
27	4070	3850	4410	4260	4320	4810	20700	35900	14700	10400	5120	7190
28	4020	3920	4720	4090	4330	6620	18900	34800	17700	9920	5030	11000
29	3990	3960	4250	4030	---	10700	17400	34500	18200	9120	4950	11100
30	3930	3940	4890	3850	---	12200	16200	36000	19100	7220	4650	11000
31	3880	---	4990	3890	---	11200	---	34000	---	5910	4840	---
TOTAL	100550	119080	136970	170500	183480	190630	372480	642500	534300	437370	173840	244150
MEAN	3244	3969	4418	5500	6553	6149	12420	20730	17810	14110	5608	8138
MAX	4340	4280	5160	11000	10400	12200	22200	36000	28600	21600	8360	11600
MIN	1880	3720	3780	3620	3900	4340	7270	11900	10500	5910	3470	4190
CFSM	.73	.89	.99	1.23	1.47	1.38	2.78	4.64	3.99	3.16	1.26	1.82
IN.	.84	.99	1.14	1.42	1.53	1.59	3.10	5.35	4.45	3.64	1.45	2.03
AC-FT	199400	236200	271700	338200	363900	378100	738800	1274000	1060000	867500	344800	484300
MEAN †	2918	2743	2418	2866	2393	4002	9189	26770	26890	14629	5055	3164
CFSM †	0.65	0.61	0.54	0.64	0.54	0.90	2.06	6.00	6.02	3.28	1.13	0.71
IN †	0.75	0.69	0.62	0.74	0.56	1.03	2.30	6.91	6.72	3.78	1.31	0.79
AC-FT †	179400	163200	148700	176200	132900	246100	546800	1646000	1600000	899500	310800	188300

OBSERVED

CAL YR 1982	TOTAL	3592700	MEAN	9834	MAX	38800	MIN	1880	AC-FT	7126400
WTR YR 1983	TOTAL	3305850	MEAN	9057	MAX	36000	MIN	1880	AC-FT	6556900

ADJUSTED

CAL YR 1982	TOTAL	3905924	MEAN	10700	CFSM	2.40	IN	32.54	AC-FT	7747400
WTR YR 1983	TOTAL	3144895	MEAN	8616	CFSM	1.93	IN	26.20	AC-FT	6237900

† Adjusted for change in contents in Hungry Horse Reservoir.

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1963-67, 1970, 1979 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: January 1949 to September 1950, August 1963 to September 1969, March 1979 to current year.

INSTRUMENTATION.--Temperature recorder since Mar. 27, 1979.

REMARKS.--Water years 1968-69 temperature records published as Flathead River near Kalispell (station 12363500) 15 mi downstream. No appreciable inflow or outflow occurs between the two points.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 21.0°C Aug. 23, 1963, Aug. 8, 1968; minimum, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 18.5°C Aug. 6, 7; minimum, 1.0°C Jan. 15.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)
NOV 01...	1400	3890	--	68	175	8.2	6.0	5.5	682
FEB 08...	1200	8630	90	1	161	8.0	.0	3.5	675
MAY 23...	1200	24900	--	--	148	8.1	21.0	7.5	679
AUG 23...	0830	3410	80	2	167	8.3	13.0	13.0	681
DATE	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L AS CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 01...	.70	11.6	103	K2	K2	85	0	24	6.0
FEB 08...	1.2	11.6	99	<1	K1	78	0	22	5.5
MAY 23...	29	11.0	103	K43	K75	77	1	22	5.3
AUG 23...	.60	9.2	98	K3	140	95	2	27	6.7
DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CAC03) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
NOV 01...	1.0	.0	.3	89	6.0	.4	<.10	4.2	82
FEB 08...	.8	.0	.4	82	5.0	.4	<.10	3.9	83
MAY 23...	.8	.0	.3	75	5.0	.8	<.10	4.4	81
AUG 23...	1.1	.1	.5	93	5.0	.3	<.10	4.3	94

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
NOV 01...	96	.11	861	<.10	.110	.40	<.005	<.005	<.001	12
FEB 08...	88	.11	1930	<.10	.360	.40	.002	.002	<.002	--
MAY 23...	84	.11	5450	.13	.060	.40	.079	<.001	.004	--
AUG 23...	101	.13	865	<.10	.180	.40	<.005	<.005	<.002	--

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 01...	1400	10	1	100	1	<1	<1	<3	1	5	1
FEB 08...	1200	10	1	97	<1	<1	<1	<3	<1	3	1
MAY 23...	1200	20	<1	76	<1	<1	<1	<3	2	11	2
AUG 23...	0830	<10	1	100	<1	<1	<1	<3	2	4	4

DATE	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 01...	14	2	<.1	<10	5	<1	<1	43	<6.0	8
FEB 08...	12	2	<.1	<10	<1	<1	<1	36	<6.0	5
MAY 23...	<4	3	<.1	<10	1	<1	<1	41	<6.0	5
AUG 23...	6	1	<.1	<10	2	<1	<1	50	<6.0	6

PEND OREILLE RIVER BASIN

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12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

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

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN JUNE	MEAN	MAX	MIN JULY	MEAN	MAX	MIN AUGUST	MEAN	MAX	MIN SEPTEMBER	MEAN
1	9.5	8.5	8.5	11.0	8.5	10.0	16.5	12.0	14.0	12.0	10.5	11.0
2	8.0	7.5	8.0	10.5	8.5	9.0	16.0	12.0	13.5	10.5	9.0	10.0
3	9.0	8.0	8.5	10.0	7.5	8.5	16.0	11.5	13.0	10.0	8.5	9.0
4	9.5	8.0	9.0	10.0	7.5	9.0	17.0	12.0	14.0	10.0	8.5	9.0
5	9.5	8.5	9.0	11.5	9.5	10.5	18.0	11.5	14.0	10.0	8.5	9.0
6	10.5	8.5	9.5	10.5	9.5	10.0	18.5	12.0	16.5	10.5	8.0	9.5
7	10.5	9.5	10.0	12.0	9.5	10.5	18.5	16.0	17.5	11.0	8.5	9.5
8	11.0	9.5	10.0	10.5	10.0	10.5	17.5	11.5	14.5	9.0	8.0	8.5
9	11.0	10.0	10.5	12.5	9.5	11.0	17.5	11.0	14.5	8.0	5.5	7.0
10	10.5	9.0	9.5	12.5	10.0	11.5	17.5	11.5	15.0	7.0	5.5	6.0
11	9.5	8.5	9.0	11.5	9.5	10.5	16.5	10.5	13.5	6.5	5.5	6.0
12	9.0	8.5	8.5	12.0	9.0	10.0	15.5	10.5	14.0	8.0	6.0	6.5
13	10.0	8.5	9.0	11.5	9.0	9.5	16.5	13.5	15.0	7.0	6.0	6.5
14	11.5	9.5	10.5	10.0	9.0	9.5	16.5	14.0	15.5	7.5	6.0	6.5
15	11.5	9.5	10.5	10.0	9.0	9.5	15.5	10.5	12.5	7.0	6.5	7.0
16	9.5	8.5	9.0	9.5	9.0	9.5	16.5	10.5	12.5	7.0	6.0	6.5
17	11.5	9.0	10.0	10.0	9.0	9.5	16.5	10.0	13.5	6.5	5.5	6.0
18	11.5	9.5	10.0	11.5	9.5	10.5	16.0	9.5	12.5	6.0	5.5	6.0
19	9.5	8.0	8.5	12.0	10.5	11.5	16.0	9.5	12.0	6.0	5.5	5.5
20	9.0	8.5	8.5	13.5	10.5	12.0	15.0	9.5	12.5	6.0	5.0	5.5
21	10.0	8.5	9.0	12.0	11.0	11.5	16.0	13.5	15.0	6.0	5.0	5.5
22	11.5	9.0	10.0	13.0	11.5	12.0	14.5	9.5	12.0	6.5	5.0	5.5
23	13.5	11.5	12.5	14.0	11.0	12.5	15.0	9.0	12.0	7.5	5.5	6.5
24	13.5	11.0	12.0	14.0	11.5	12.5	13.5	9.0	11.5	9.0	6.5	8.0
25	11.5	10.0	11.0	14.0	10.0	12.0	11.5	9.5	10.5	9.5	7.0	8.0
26	13.0	10.5	11.5	13.0	10.0	11.5	12.0	9.5	10.5	8.0	6.5	7.0
27	13.0	9.0	11.0	12.5	9.5	11.0	12.5	10.0	11.0	7.5	5.5	7.0
28	11.0	9.0	10.0	12.0	10.0	11.0	12.5	10.0	11.0	6.5	5.5	6.0
29	11.5	9.0	10.0	13.5	10.5	12.0	12.0	10.0	11.0	6.5	5.0	5.5
30	11.0	9.0	9.5	15.0	10.0	13.5	13.5	9.5	11.0	6.0	5.0	5.5
31	---	---	---	17.0	14.5	15.5	12.5	10.0	11.0	---	---	---
MONTH YEAR	13.5 18.5	7.5 1.0	10.0 6.5	17.0	7.5	11.0	18.5	9.0	13.0	12.0	5.0	7.0

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 01...	1400	5.5	3890	3	32	83
FEB 08...	1200	3.5	8630	3	70	42
MAY 23...	1200	7.5	24900	213	14300	67
AUG 23...	0830	13.0	3410	1	9.2	100

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV 01...	1400	3890	68	175	6.0	5.5
FEB 08...	1200	8630	1	161	.0	3.5
APR 27...	0900	22400	--	154	2.0	4.0
MAY 23...	1200	24900	--	148	21.0	7.5
JUN 23...	0900	10100	--	147	18.0	11.5
AUG 23...	0830	3410	2	167	13.0	13.0

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT

LOCATION.--Lat 48°19'08", long 114°23'11", in NE¼SW¼ sec.34, T.30 N., R.22 W., Flathead County, Hydrologic Unit 17010210, on right bank 600 ft downstream from road bridge, 6.2 mi southwest of Whitefish, 10.6 mi upstream from Whitefish River, and at mile 13.6.

DRAINAGE AREA.--524 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October and November 1930 (monthly discharge only, published in WSP 1316), December 1930 to September 1950, October 1972 to current year.

REVISED RECORDS.--WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,953.26 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 200 acres above station.

AVERAGE DISCHARGE.--31 years (water years 1931-50, 1973-1983), 339 ft³/s, 8.79 in/yr, 245,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,330 ft³/s May 26, 1948, gage height, 20.90 ft, from floodmark; minimum daily, 40 ft³/s Dec. 24, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,450 ft³/s May 30, gage height, 10.98 ft; minimum daily, 60 ft³/s Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	127	118	60	97	140	323	1240	1430	583	372	188
2	166	125	114	65	95	150	343	1160	1390	589	358	184
3	163	120	116	75	93	160	364	1090	1340	588	343	180
4	161	117	120	85	90	170	375	1050	1270	585	332	180
5	160	117	125	92	86	180	375	1040	1200	582	318	179
6	156	121	136	100	84	184	372	1040	1130	573	308	182
7	152	127	93	107	88	186	368	1070	1070	565	295	183
8	150	129	75	110	92	200	368	1130	1010	561	284	181
9	148	125	70	113	96	215	368	1190	962	546	276	177
10	143	121	65	118	100	228	373	1220	918	522	269	175
11	141	119	66	120	103	250	380	1220	885	496	274	181
12	139	115	70	123	105	274	375	1190	872	472	284	193
13	138	112	75	121	105	297	363	1130	858	455	281	198
14	135	112	80	118	108	315	349	1080	826	454	273	193
15	133	130	84	110	110	326	340	1030	782	471	264	189
16	132	116	87	105	110	331	336	996	762	486	264	181
17	131	112	86	96	108	331	336	999	744	499	266	176
18	131	114	84	98	107	326	344	1020	730	515	251	169
19	130	120	82	100	105	319	368	1050	712	515	239	164
20	129	130	80	100	105	305	409	1090	691	509	228	161
21	126	134	78	102	108	298	474	1110	667	503	220	157
22	125	126	76	105	112	292	547	1130	642	505	212	154
23	127	116	74	105	118	285	633	1150	613	495	207	151
24	132	138	72	107	120	286	727	1180	593	488	209	150
25	133	141	70	107	120	288	892	1220	571	482	219	148
26	134	141	68	106	125	285	1080	1280	551	476	221	144
27	134	127	67	106	130	283	1220	1340	536	459	216	142
28	135	120	66	103	132	283	1310	1390	532	440	209	140
29	134	117	64	102	---	283	1340	1430	533	424	205	137
30	133	116	63	100	---	286	1310	1450	552	405	200	133
31	131	---	62	98	---	300	---	1450	---	389	195	---
TOTAL	4354	3685	2586	3157	2952	8056	16762	36165	25372	15632	8092	5070
MEAN	140	123	83.4	102	105	260	559	1167	846	504	261	169
MAX	172	141	136	123	132	331	1340	1450	1430	589	372	198
MIN	125	112	62	60	84	140	323	996	532	389	195	133
CFSM	.27	.24	.16	.20	.20	.50	1.07	2.23	1.62	.96	.50	.32
IN.	.31	.26	.18	.22	.21	.57	1.19	2.57	1.80	1.11	.57	.36
AC-FT	8640	7310	5130	6260	5860	15980	33250	71730	50330	31010	16050	10060

CAL YR 1982	TOTAL	145581	MEAN	399	MAX	1930	MIN	52	CFSM	.76	IN	10.34	AC-FT	288800
WTR YR 1983	TOTAL	131883	MEAN	361	MAX	1450	MIN	60	CFSM	.69	IN	9.36	AC-FT	261600

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1977 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since July 12, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.5°C July 23, Aug. 2, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 21.5°C Aug. 5; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN OCTOBER	MEAN	MAX	MIN NOVEMBER	MEAN	MAX	MIN DECEMBER	MEAN	MAX	MIN JANUARY	MEAN
1	10.0	8.5	9.0	5.0	5.0	5.0	.0	.0	.0	.0	.0	.0
2	10.0	9.5	9.5	5.0	4.0	4.5	.5	.0	.0	.0	.0	.0
3	10.0	9.5	9.5	4.0	3.5	3.5	.0	.0	.0	.0	.0	.0
4	10.0	9.0	9.5	4.0	3.5	4.0	.0	.0	.0	.0	.0	.0
5	9.5	8.5	8.5	4.0	4.0	4.0	.0	.0	.0	.0	.0	.0
6	8.5	7.0	7.5	4.0	4.0	4.0	.0	.0	.0	.0	.0	.0
7	8.0	7.5	8.0	4.0	4.0	4.0	1.0	.0	.5	.0	.0	.0
8	8.0	7.5	7.5	3.5	2.5	3.0	.5	.0	.0	.0	.0	.0
9	7.5	7.0	7.5	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
10	7.5	6.5	7.0	2.5	2.0	2.0	.0	.0	.0	.0	.0	.0
11	7.0	6.0	7.0	2.0	1.5	1.5	.0	.0	.0	.0	.0	.0
12	7.5	6.5	7.0	1.5	1.0	1.0	.0	.0	.0	.0	.0	.0
13	7.5	6.5	7.0	1.0	.5	1.0	.0	.0	.0	.0	.0	.0
14	8.0	7.0	7.5	.5	.0	.5	.0	.0	.0	.0	.0	.0
15	8.5	7.5	8.0	1.0	.0	.5	.0	.0	.0	.5	.0	.0
16	9.0	8.5	8.5	1.0	.0	.5	.0	.0	.0	.5	.0	.0
17	9.0	9.0	9.0	.5	.5	.5	.0	.0	.0	.0	.0	.0
18	8.5	8.0	8.5	1.0	.5	1.0	.0	.0	.0	.0	.0	.0
19	8.0	7.0	8.0	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
20	7.0	5.5	6.0	2.0	2.0	2.0	.0	.0	.0	.0	.0	.0
21	6.0	5.0	5.0	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
22	5.5	5.0	5.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
23	6.5	5.5	6.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
24	7.0	6.5	6.5	.0	.0	.0	.5	.0	.0	.0	.0	.0
25	7.5	6.5	7.0	.0	.0	.0	.5	.0	.0	.0	.0	.0
26	7.5	7.5	7.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
27	7.5	7.0	7.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
28	6.5	6.0	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	6.5	6.0	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	6.0	5.0	5.0	.0	.0	.0	.0	.0	.0	.5	.0	.0
31	5.0	5.0	5.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	10.0	5.0	7.5	5.0	.0	1.5	1.0	.0	.0	.5	.0	.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN FEBRUARY	MEAN	MAX	MIN MARCH	MEAN	MAX	MIN APRIL	MEAN	MAX	MIN MAY	MEAN
1	.0	.0	.0	.0	.0	.0	5.5	5.0	5.5	9.5	7.5	8.5
2	.5	.0	.0	.0	.0	.0	5.5	4.5	5.0	9.5	8.0	8.5
3	.0	.0	.0	.0	.0	.0	4.5	4.5	4.5	9.0	8.5	8.5
4	.5	.0	.0	.0	.0	.0	5.0	4.0	4.5	9.0	7.5	8.5
5	.5	.0	.0	2.0	.0	1.0	5.5	3.5	5.0	9.5	7.5	8.5
6	.0	.0	.0	2.0	1.5	2.0	6.0	4.5	5.0	10.0	8.5	9.5
7	.0	.0	.0	2.5	2.0	2.5	6.0	5.5	5.5	9.5	8.5	9.0
8	.0	.0	.0	3.0	2.0	2.5	6.0	5.5	5.5	8.5	7.5	8.5
9	.0	.0	.0	4.0	3.0	3.5	6.0	5.5	5.5	9.0	8.0	8.5
10	.0	.0	.0	4.0	3.0	3.5	6.0	5.5	5.5	8.5	7.0	7.5
11	.0	.0	.0	4.0	3.0	3.5	5.5	5.0	5.5	9.5	7.5	8.0
12	.0	.0	.0	3.0	3.0	3.0	5.5	5.0	5.5	8.5	7.5	8.0
13	.0	.0	.0	2.5	2.5	2.5	6.0	5.0	5.5	9.0	7.5	8.0
14	.0	.0	.0	2.5	2.5	2.5	6.5	5.0	6.0	9.5	7.5	8.5
15	.0	.0	.0	3.0	2.5	2.5	7.0	6.0	6.5	9.5	8.5	9.0
16	.0	.0	.0	3.0	2.5	3.0	7.5	6.5	7.0	10.0	9.0	9.5
17	.0	.0	.0	3.0	2.5	2.5	8.0	7.0	7.5	10.0	9.0	9.5
18	.0	.0	.0	3.0	2.5	2.5	9.0	7.5	8.0	10.5	9.5	10.0
19	.0	.0	.0	2.5	2.0	2.5	9.5	8.5	9.0	9.5	9.0	9.5
20	.0	.0	.0	2.5	2.0	2.5	10.5	8.5	9.5	10.0	8.5	9.0
21	.0	.0	.0	3.5	2.5	3.0	10.5	9.0	9.5	12.0	9.5	10.5
22	.0	.0	.0	4.0	3.5	3.5	10.5	9.5	10.0	12.0	10.0	11.0
23	.0	.0	.0	4.0	4.0	4.0	10.5	9.0	9.5	13.0	10.5	12.0
24	.0	.0	.0	4.5	4.0	4.5	10.5	9.5	10.0	14.0	11.5	12.5
25	.0	.0	.0	5.0	4.0	4.5	10.0	6.5	8.5	14.0	11.5	13.0
26	.0	.0	.0	5.0	4.5	4.5	6.5	5.5	6.0	14.5	12.5	13.5
27	.0	.0	.0	4.5	4.5	4.5	7.0	5.5	6.5	15.0	12.5	14.0
28	.0	.0	.0	4.5	4.5	4.5	7.5	6.5	7.0	15.5	13.0	14.5
29	---	---	---	4.5	4.5	4.5	8.0	6.5	7.0	16.5	14.5	15.5
30	---	---	---	5.5	4.5	5.0	9.5	7.0	8.0	17.5	15.5	16.5
31	---	---	---	5.5	5.0	5.0	---	---	---	17.0	15.5	16.0
MONTH	.5	.0	.0	5.5	.0	3.0	10.5	3.5	7.0	17.5	7.0	10.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	16.0	15.0	15.5	18.0	16.5	17.0	19.5	19.0	19.5	19.0	18.0	18.5
2	15.5	15.0	15.0	17.0	16.0	16.5	20.5	19.5	20.0	18.5	17.0	17.0
3	15.0	14.5	14.5	16.5	15.5	16.0	20.5	20.0	20.0	17.0	16.0	16.5
4	15.5	14.0	14.5	16.0	14.5	15.0	20.5	20.0	20.0	16.0	15.0	15.5
5	15.0	14.0	14.5	18.0	15.0	16.0	21.5	20.5	21.0	15.0	14.5	15.0
6	15.5	14.0	14.5	18.5	16.5	17.5	21.0	20.0	20.5	15.0	14.0	14.5
7	16.5	14.0	15.0	19.0	17.0	18.0	21.0	20.0	20.5	15.0	14.0	14.5
8	16.5	14.5	15.5	19.0	18.0	18.5	20.5	20.0	20.5	14.5	13.5	13.5
9	17.5	15.0	16.0	18.5	18.0	18.0	21.0	19.5	20.5	14.0	13.0	13.5
10	16.5	16.0	16.5	18.0	17.0	17.5	20.5	20.0	20.5	13.0	12.0	12.0
11	15.5	14.5	15.0	17.0	16.0	16.5	21.0	20.5	20.5	12.5	11.5	12.0
12	15.0	14.0	14.5	16.5	15.5	16.0	20.5	19.5	20.0	12.5	11.5	12.0
13	15.0	13.5	14.0	16.0	15.5	15.5	19.5	18.5	19.0	13.5	12.0	12.5
14	15.5	13.5	14.5	16.5	15.5	16.0	19.0	18.0	18.5	14.0	12.5	13.5
15	15.5	14.0	14.5	16.5	16.0	16.0	19.0	18.0	18.5	14.0	12.5	13.5
16	15.0	14.0	14.5	16.0	15.0	15.5	19.5	18.0	18.5	14.0	13.0	13.5
17	15.0	13.5	14.5	16.5	15.0	15.5	19.0	18.0	18.5	14.0	13.0	13.0
18	15.0	14.0	14.5	17.5	15.5	16.5	19.0	17.5	18.5	13.0	11.5	12.0
19	14.5	14.0	14.0	19.0	17.0	17.5	19.0	17.0	18.0	11.5	10.5	10.5
20	14.0	13.5	13.5	19.0	18.0	18.5	18.5	17.0	18.0	10.5	9.0	9.5
21	14.0	12.5	13.5	18.5	17.0	18.0	19.0	17.0	18.0	9.5	8.5	9.0
22	15.0	12.5	13.5	19.0	17.0	18.0	18.5	17.0	17.5	10.0	8.5	9.0
23	16.5	14.0	15.0	19.0	18.0	18.5	18.5	17.5	18.0	10.5	9.0	10.0
24	17.0	15.5	16.0	19.0	18.0	18.5	18.5	17.5	18.0	11.0	10.0	10.5
25	16.5	14.0	15.5	19.0	18.5	18.5	18.0	17.0	17.5	11.5	10.5	11.0
26	17.0	14.5	15.5	18.5	18.0	18.0	17.5	16.5	17.0	12.0	10.5	11.5
27	17.0	15.5	16.0	18.5	17.0	17.5	18.0	16.5	17.5	12.0	11.5	11.5
28	17.5	16.0	16.5	17.5	17.0	17.0	18.0	17.0	17.5	11.5	10.5	11.0
29	18.0	17.0	17.0	18.0	17.0	17.5	18.5	17.0	17.5	11.0	10.0	10.5
30	18.0	16.5	17.5	18.5	17.5	18.0	18.5	17.0	17.5	10.0	9.5	10.0
31	---	---	---	19.0	18.0	18.5	18.5	17.0	18.0	---	---	---
MONTH	18.0	12.5	15.0	19.0	14.5	17.0	21.5	16.5	19.0	19.0	8.5	12.5
YEAR	21.5	.0	8.0									

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT					
20...	1350	128	255	10.0	6.0
NOV					
18...	1115	113	267	7.0	.5
JAN					
07...	1150	107	272	6.0	.0
FEB					
28...	1320	132	265	4.0	.0
APR					
21...	0810	468	245	7.0	9.0
MAY					
12...	0930	1190	208	3.0	7.5
JUN					
01...	1320	1400	170	23.0	14.5
JUL					
27...	0935	460	172	18.0	17.0

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT

LOCATION.--Lat 48°19'13", long 114°16'39", in SW¼SE¼NW¼ sec.34, T.30 N., R.21 W., Flathead County, Hydrologic Unit 17010210, on right bank 160 ft upstream from road bridge, 8.0 mi north of Kalispell, and at mile 8.3.

DRAINAGE AREA.--170 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to November 1928, April 1929 to September 1950, annual maximum, water year 1964, October 1972 to current year. Prior to 1964, published as Whitefish Creek near Kalispell.

GAGE.--Water-stage recorder. Datum of gage is 2,969.83 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 16, 1930, nonrecording gage at site 200 ft downstream at datum 10.00 ft lower. Oct. 16, 1930, to Sept. 30, 1950, water-stage recorder on left bank at same datum.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Some regulation by Whitefish Lake. Diversions for irrigation of about 650 acres above station.

AVERAGE DISCHARGE.--32 years (1929-50, 1972-83), 193 ft³/s, 139,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,580 ft³/s June 24, 1974, gage height, 4.91 ft; minimum, 4.5 ft³/s Oct. 18, 1934, gage height, 0.83 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 803 ft³/s June 4, gage height, 3.51 ft; minimum daily, 40 ft³/s Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	65	58	40	57	80	125	390	789	416	224	115
2	75	63	58	42	56	84	130	390	789	408	215	118
3	75	65	58	44	55	95	140	390	793	404	209	115
4	75	65	59	47	54	104	140	386	793	408	206	113
5	75	65	63	51	53	97	138	386	789	397	200	115
6	74	69	61	60	52	95	135	390	780	383	195	113
7	74	69	50	70	54	95	135	423	766	368	195	108
8	73	67	47	72	56	111	135	430	757	365	195	106
9	72	65	42	74	60	125	135	438	748	347	189	106
10	72	65	43	78	63	123	138	430	739	334	183	106
11	72	63	44	77	65	128	140	419	735	323	192	113
12	71	63	46	76	68	135	138	404	717	307	203	115
13	71	63	48	72	69	143	135	390	699	300	195	111
14	70	61	50	68	70	140	133	383	669	317	189	108
15	70	59	52	66	72	138	130	383	643	323	183	106
16	69	59	55	64	73	130	135	383	634	317	178	106
17	69	59	54	62	72	128	135	386	617	310	169	104
18	68	63	53	60	71	123	143	390	609	297	164	104
19	67	71	52	61	70	115	153	404	584	290	159	101
20	67	71	51	62	69	118	164	416	559	283	153	101
21	65	69	50	63	68	115	178	423	531	290	148	101
22	65	67	49	64	70	113	198	434	511	283	143	95
23	67	65	48	66	72	113	212	453	491	274	140	93
24	69	63	47	67	73	115	255	484	476	274	140	90
25	69	61	46	66	75	113	354	527	457	274	140	88
26	67	59	45	65	78	111	397	572	434	274	135	86
27	69	58	45	64	80	111	404	622	416	267	135	86
28	69	58	44	62	82	111	401	664	419	261	133	84
29	69	58	43	60	---	113	394	699	412	248	128	82
30	67	58	42	59	---	118	390	739	427	242	123	82
31	65	---	41	58	---	123	---	766	---	233	118	---
TOTAL	2178	1906	1544	1940	1857	3563	5940	14394	18783	9817	5279	3071
MEAN	70.3	63.5	49.8	62.6	66.3	115	198	464	626	317	170	102
MAX	78	71	63	78	82	143	404	766	793	416	224	118
MIN	65	58	41	40	52	80	125	383	412	233	118	82
AC-FT	4320	3780	3060	3850	3680	7070	11780	28550	37260	19470	10470	6090
CAL YR 1982	TOTAL	74629	MEAN	204	MAX	873	MIN	32	AC-FT	148000		
WTR YR 1983	TOTAL	70272	MEAN	193	MAX	793	MIN	40	AC-FT	139400		

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: August 1977 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since Aug. 8, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.5°C July 22, 1979; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 23.5°C Aug. 5; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	9.0	10.0	6.5	6.0	6.0	2.0	1.5	2.0	.0	.0	.0
2	11.5	10.5	11.0	6.0	5.0	5.5	2.0	1.0	1.5	.0	.0	.0
3	11.5	11.0	11.0	5.0	4.0	4.5	2.0	1.0	1.0	.0	.0	.0
4	11.0	9.5	10.0	5.5	4.5	5.0	2.5	2.0	2.0	.0	.0	.0
5	10.0	8.5	9.0	6.0	5.5	5.5	3.0	2.5	2.5	.0	.0	.0
6	9.5	8.0	8.5	6.0	5.5	5.5	2.5	1.0	1.5	.0	.0	.0
7	9.5	8.5	9.0	5.5	4.5	5.0	1.0	.0	.0	.0	.0	.0
8	9.0	8.5	9.0	4.5	3.5	3.5	.0	.0	.0	.0	.0	.0
9	8.5	7.5	8.0	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
10	8.5	7.0	8.0	3.5	3.0	3.5	.0	.0	.0	.0	.0	.0
11	9.0	7.5	8.5	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
12	9.5	7.5	8.5	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
13	9.5	8.0	9.0	2.0	1.5	1.5	.0	.0	.0	.0	.0	.0
14	10.0	8.5	9.0	2.0	1.5	2.0	.0	.0	.0	.0	.0	.0
15	10.5	8.5	9.5	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
16	11.0	9.5	10.5	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
17	10.5	9.0	10.0	3.5	2.5	2.5	.0	.0	.0	.0	.0	.0
18	8.5	7.5	---	4.0	3.5	3.5	.0	.0	.0	.0	.0	.0
19	8.0	---	---	4.0	3.5	4.0	.0	.0	.0	.0	.0	.0
20	7.5	6.5	7.0	4.0	3.5	3.5	.0	.0	.0	.0	.0	.0
21	7.0	5.5	6.0	3.5	2.0	3.0	.0	.0	.0	.0	.0	.0
22	7.5	6.0	6.5	2.0	1.0	1.0	.0	.0	.0	.0	.0	.0
23	9.0	7.5	8.0	.5	.0	.5	.0	.0	.0	.0	.0	.0
24	9.5	8.5	9.0	.5	.0	.5	.0	.0	.0	.0	.0	.0
25	9.0	8.0	8.5	1.0	.5	.5	.0	.0	.0	.0	.0	.0
26	9.0	8.5	8.5	1.0	.5	.5	.0	.0	.0	.0	.0	.0
27	8.5	7.5	8.0	1.0	.5	1.0	.0	.0	.0	.0	.0	.0
28	7.5	7.0	7.0	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
29	7.0	6.5	7.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
30	7.0	5.5	6.0	2.5	2.0	2.0	.0	.0	.0	.0	.0	.0
31	6.5	5.5	6.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	11.5	5.5	8.5	6.5	.0	3.0	3.0	.0	.5	.0	.0	.0

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 19...	0920	68	173	.5	7.5
JAN 07...	0935	69	200	5.0	.0
FEB 25...	0930	78	226	3.0	1.5
APR 21...	1110	180	147	12.5	9.5
MAY 12...	1300	416	172	12.0	8.0
JUN 02...	1710	772	160	14.0	14.0
JUL 27...	1230	264	168	22.0	17.5
SEP 08...	1400	106	160	15.0	16.0

PEND OREILLE RIVER BASIN

12369200 SWAN RIVER NEAR CONDON, MT

LOCATION.--Lat 47°25'21", long 113°40'12", NE¼SW¼NW¼ sec.8, T.19 N., R.16 W., Missoula County, Hydrologic Unit 17010211, Flathead National Forest, on right bank 25 ft downstream from road bridge, 0.5 mi downstream from Beaver Creek, 4.0 mi downstream from Lindberg Lake, 8.1 mi southeast of Condon, and at mile 66.5.

DRAINAGE AREA.--69.1 mi².

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

REVISED RECORDS.--WDR MT-80-2: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,015 ft, by barometer.

REMARKS.--Records good except those for December to February, which are poor. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--11 years, 166 ft³/s, 32.62 in/yr, 120,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft³/s June 18, 1974, gage height, 4.88 ft; minimum daily, 22 ft³/s Dec. 8, 1972; minimum gage height, 1.37 ft Apr. 11, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 691 ft³/s May 30, gage height, 3.63 ft; minimum daily, 30 ft³/s Feb. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	83	46	40	36	51	75	199	606	539	187	66
2	65	83	45	40	35	56	73	207	558	521	185	69
3	75	78	46	42	34	61	72	215	536	535	184	67
4	83	75	57	48	32	63	70	217	546	504	187	66
5	83	73	55	50	31	64	67	222	533	431	185	66
6	80	80	54	53	30	66	66	249	505	379	179	64
7	78	78	50	56	31	67	65	259	499	358	174	62
8	76	70	49	59	32	71	67	272	510	356	168	60
9	73	67	47	61	33	75	65	269	531	364	161	59
10	70	62	47	63	34	81	67	250	573	404	155	58
11	65	59	48	65	35	91	65	224	588	405	161	69
12	64	58	49	61	36	103	62	197	551	377	158	82
13	62	61	50	57	36	110	61	176	480	359	150	83
14	62	58	48	55	35	116	60	159	420	363	143	83
15	61	55	46	51	35	115	59	151	394	367	137	81
16	62	55	48	48	36	110	59	153	383	353	130	79
17	75	57	51	50	37	104	60	158	373	330	123	75
18	80	58	50	46	45	97	65	199	418	294	116	73
19	83	61	49	42	50	89	74	246	436	265	110	72
20	81	59	48	41	49	83	93	239	407	261	106	69
21	80	59	49	40	48	80	124	257	356	281	101	66
22	78	57	51	39	48	77	176	295	310	280	100	64
23	80	54	49	39	49	74	229	335	282	271	98	62
24	81	51	47	39	49	71	299	392	282	259	92	60
25	81	50	44	40	51	68	337	467	291	250	87	58
26	83	49	45	39	52	66	313	545	298	244	82	56
27	87	47	44	39	51	63	278	600	335	234	78	54
28	87	47	44	39	51	62	245	616	406	223	74	52
29	87	49	44	38	---	61	217	650	467	211	71	51
30	85	47	43	38	---	72	199	681	523	198	68	50
31	81	---	41	37	---	76	---	665	---	189	66	---
TOTAL	2355	1840	1484	1455	1121	2443	3762	9764	13397	10405	4016	1976
MEAN	76.0	61.3	47.9	46.9	40.0	78.8	125	315	447	336	130	65.9
MAX	87	83	57	65	52	116	337	681	606	539	187	83
MIN	61	47	41	37	30	51	59	151	282	189	66	50
CFSM	1.04	.84	.65	.64	.55	1.08	1.71	4.30	6.10	4.58	1.77	.90
IN.	1.20	.93	.75	.74	.57	1.24	1.91	4.96	6.80	5.28	2.04	1.00
AC-FT	4670	3650	2940	2890	2220	4850	7460	19370	26570	20640	7970	3920
CAL YR 1982	TOTAL	74051	MEAN 203	MAX 1030	MIN 40	CFSM 2.77	IN 37.58	AC-FT 146900				
WTR YR 1983	TOTAL	54018	MEAN 148	MAX 681	MIN 30	CFSM 2.02	IN 27.41	AC-FT 107100				

PEND OREILLE RIVER BASIN

12370000 SWAN RIVER NEAR BIGFORK, MT

LOCATION.--Lat 48°01'28", long 113°58'44", near center of S½SW¼ sec.11, T.26 N., R.19 W., Lake County, Hydrologic Unit 17010211, on left bank 0.2 mi downstream from Johnson Creek, 0.4 mi downstream from Swan Lake, 5.1 mi south-east of Bigfork, and at mile 14.0.

DRAINAGE AREA.--671 mi².

PERIOD OF RECORD.--October 1910 to May 1911 (gage heights only), April 1922 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1246: 1923-24(M), 1930. WSP 1316: 1923.

GAGE.--Water-stage recorder. Datum of gage is 3,062.6 ft National Geodetic Vertical Datum of 1929 (from river-profile survey). Oct. 10, 1910, to May 22, 1911, nonrecording gage at site 10 mi upstream at different datum. Apr. 28, 1922, to Oct. 14, 1930, nonrecording gage at site 800 ft upstream at datum 1.9 ft higher.

REMARKS.--Records good. Diversions for irrigation of about 360 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--61 years, 1,170 ft³/s, 23.68 in/yr, 847,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,890 ft³/s June 20, 1974, gage height, 7.34 ft; minimum observed, 193 ft³/s Jan. 26-29, 1930, gage height, 0.04 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,790 ft³/s June 1, gage height, 5.45 ft; minimum, 422 ft³/s Feb. 6, gage height, 2.26 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	577	687	540	490	483	679	907	1520	4710	3070	1280	600
2	562	679	530	469	483	712	926	1460	4360	3140	1230	623
3	569	671	540	469	476	763	935	1430	4030	3170	1190	623
4	569	663	550	476	469	824	935	1430	3820	3210	1160	623
5	569	663	560	504	455	870	907	1430	3740	3140	1140	607
6	577	679	570	569	435	916	879	1490	3650	2920	1090	607
7	577	695	577	615	429	935	851	1590	3510	2710	1050	584
8	577	679	569	663	435	954	824	1690	3450	2550	1020	592
9	569	663	504	695	449	964	815	1740	3430	2470	1000	600
10	562	639	497	729	462	1010	815	1760	3520	2410	984	600
11	554	639	490	754	462	1060	807	1720	3670	2400	964	607
12	547	631	483	780	449	1170	798	1620	3730	2340	984	615
13	540	600	490	754	449	1240	780	1530	3560	2280	974	607
14	540	592	511	695	449	1310	754	1420	3220	2260	945	607
15	525	569	525	687	462	1330	729	1340	2970	2210	935	607
16	525	562	540	655	469	1320	720	1300	2840	2190	888	607
17	540	562	569	623	476	1280	703	1320	2720	2150	870	600
18	562	584	577	607	490	1220	703	1350	2740	2050	833	577
19	607	615	569	592	532	1140	720	1510	2900	1940	807	562
20	639	631	577	577	569	1080	746	1670	2970	1870	780	540
21	639	623	577	562	577	1010	798	1720	2800	1900	754	540
22	639	607	577	554	569	984	879	1790	2570	1890	746	532
23	639	615	569	547	592	935	1040	2000	2320	1820	720	532
24	663	562	562	540	600	907	1260	2210	2160	1770	720	532
25	663	540	569	532	607	879	1590	2580	2150	1700	695	532
26	679	525	532	525	623	861	1890	3030	2130	1650	687	518
27	679	518	532	518	647	842	1940	3610	2130	1580	671	504
28	687	525	525	518	655	824	1890	4170	2260	1490	663	504
29	695	540	518	511	---	815	1770	4380	2490	1420	655	504
30	695	550	511	497	---	824	1630	4530	2740	1370	639	504
31	687	---	504	490	---	870	---	4730	---	1300	631	---
TOTAL	18652	18308	16744	18197	14253	30528	30941	65070	93290	68350	27705	17190
MEAN	602	610	540	587	509	985	1031	2099	3110	2205	894	573
MAX	695	695	577	780	655	1330	1940	4730	4710	3210	1280	623
MIN	525	518	483	469	429	679	703	1300	2130	1300	631	504
CFSM	.90	.91	.81	.88	.76	1.47	1.54	3.13	4.64	3.29	1.33	.85
IN.	1.03	1.01	.93	1.01	.79	1.69	1.72	3.61	5.17	3.79	1.54	.95
AC-FT	37000	36310	33210	36090	28270	60550	61370	129100	185000	135600	54950	34100

CAL YR 1982	TOTAL	495311	MEAN	1357	MAX	5600	MIN	354	CFSM	2.02	IN	27.46	AC-FT	982400
WTR YR 1983	TOTAL	419228	MEAN	1149	MAX	4730	MIN	429	CFSM	1.71	IN	23.24	AC-FT	831500

PEND OREILLE RIVER BASIN

12370900 TEEPEE CREEK NEAR POLSON, MT

LOCATION.--Lat 47°49'15", long 114°01'23", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.22, T.24 N., R.19 W., Lake County, Hydrologic Unit 17010208, Flathead Indian Reservation, on left bank at upstream end of culvert crossing on State Highway 35, 100 ft upstream from mouth, 0.6 mi south of Bluebay, and 11 mi northeast of Polson.

DRAINAGE AREA.--2.18 mi². Prior to 1974, published as 2.55 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1959 to September 1974 (annual maximums only), October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 2,910 ft, from topographic map. June 1959 to September 1974 crest-stage gage at same site at datum 2.0 ft lower.

REMARKS.--Water-discharge records good. No known regulation or diversions upstream of station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44 ft³/s June 8, 1964, gage height, 2.15 ft, datum then in use; minimum, 0.30 ft³/s Feb. 8-10, 1983, gage height, 1.58 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10 ft³/s June 9, gage height, 2.32 ft; minimum, 0.30 ft³/s Feb. 8-10, gage height, 1.58 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	.49	.43	.34	.32	.50	.53	1.5	4.9	6.2	1.4	.98
2	.65	.46	.39	.34	.32	.55	.57	1.6	4.2	4.7	1.4	.98
3	.65	.46	.43	.34	.32	.62	.57	1.7	4.4	4.9	1.4	.92
4	.61	.49	.43	.34	.32	.65	.53	1.7	4.7	4.6	1.4	.92
5	.61	.49	.43	.39	.32	.65	.53	1.8	4.1	3.9	1.3	.86
6	.57	.49	.43	.36	.32	.63	.57	2.0	3.8	3.2	1.3	.80
7	.57	.49	.43	.36	.32	.61	.61	2.3	3.9	2.8	1.2	.80
8	.53	.46	.43	.49	.32	.60	.61	2.3	5.1	2.4	1.3	.86
9	.53	.46	.43	.49	.32	.60	.61	2.4	7.0	2.0	1.3	.86
10	.49	.46	.43	.46	.32	.70	.61	2.3	7.4	2.0	1.3	.86
11	.49	.46	.43	.43	.32	.90	.57	2.0	7.0	1.9	1.3	.98
12	.49	.46	.43	.43	.32	1.1	.57	2.0	6.2	1.8	1.3	.92
13	.49	.46	.43	.43	.32	1.1	.57	1.9	5.1	1.8	1.2	.92
14	.49	.43	.43	.43	.32	1.1	.57	1.9	4.7	1.9	1.2	.86
15	.49	.43	.46	.43	.32	1.0	.57	1.8	5.1	2.4	1.1	.80
16	.49	.46	.46	.43	.34	.90	.65	1.8	4.9	3.1	1.1	.80
17	.49	.49	.43	.39	.34	.85	.70	1.9	4.2	3.3	1.1	.80
18	.53	.53	.39	.39	.43	.82	.86	2.5	7.0	2.8	1.1	.80
19	.49	.53	.39	.39	.43	.80	1.1	2.9	5.9	2.5	1.1	.80
20	.49	.49	.36	.36	.39	.80	1.4	2.6	4.2	2.8	1.1	.75
21	.49	.46	.39	.36	.36	.80	1.5	3.3	3.1	2.0	1.1	.75
22	.49	.46	.39	.34	.36	.75	1.9	4.4	2.6	1.9	1.1	.80
23	.49	.43	.36	.34	.39	.75	2.4	4.9	2.4	1.9	1.1	.75
24	.49	.43	.36	.34	.43	.65	3.5	5.7	2.4	1.8	1.1	.75
25	.49	.43	.34	.34	.49	.61	4.1	6.8	2.1	1.8	1.1	.70
26	.53	.43	.34	.34	.53	.61	3.2	7.9	1.9	1.6	.98	.70
27	.49	.43	.34	.34	.52	.57	2.5	7.6	1.9	1.6	.98	.70
28	.49	.43	.34	.34	.51	.57	1.9	6.6	3.3	1.5	.98	.65
29	.49	.43	.34	.34	---	.57	1.6	6.8	3.8	1.5	.98	.65
30	.49	.43	.34	.34	---	.53	1.5	7.0	6.8	1.4	.92	.65
31	.46	---	.34	.34	---	.53	---	6.4	---	1.4	.92	---
TOTAL	16.25	13.85	12.35	11.78	10.32	22.42	37.40	108.3	134.1	79.4	36.16	24.37
MEAN	.52	.46	.40	.38	.37	.72	1.25	3.49	4.47	2.56	1.17	.81
MAX	.70	.53	.46	.49	.53	1.1	4.1	7.9	7.4	6.2	1.4	.98
MIN	.46	.43	.34	.34	.32	.50	.53	1.5	1.9	1.4	.92	.65
CFSM	.24	.21	.18	.17	.17	.33	.57	1.60	2.05	1.17	.54	.37
IN.	.28	.24	.21	.20	.18	.38	.64	1.85	2.29	1.35	.62	.42
AC-FT	32	27	24	23	20	44	74	215	266	157	72	48

WTR YR 1983 TOTAL 506.70 MEAN 1.39 MAX 7.9 MIN .32 CFSM .64 IN 8.64 AC-FT 1010

PEND OREILLE RIVER BASIN

12370900 TEEPEE CREEK NEAR POLSON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)
NOV 01...	1100	.49	--	57	95	7.6	6.0	5.0	686	11.5	100	44
MAR 23...	1330	.75	100	64	91	8.0	4.0	3.0	679	12.0	100	44
MAY 25...	1200	6.6	0	0	48	7.7	24.0	6.0	681	10.8	97	23
JUN 27...	1230	1.9	80	2	60	7.6	17.0	8.5	682	10.6	101	28
AUG 01...	1230	1.4	0	0	85	7.7	22.5	10.5	685	10.2	102	35
SEP 22...	1100	.80	0	0	83	7.8	9.0	6.0	688	11.6	103	41

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
NOV 01...	0	12	3.4	1.7	.1	.8	50	5.0	.5	<.10	10
MAR 23...	0	12	3.4	1.8	.1	.6	49	2.8	.4	<.10	11
MAY 25...	0	6.8	1.5	1.0	.0	.5	26	2.0	.2	<.10	8.1
JUN 27...	0	7.9	1.9	1.2	.1	.4	34	1.3	.5	<.10	8.6
AUG 01...	0	10	2.4	1.5	.1	.5	40	2.1	1.0	<.10	9.8
SEP 22...	0	12	2.7	1.6	.1	.7	43	1.7	.2	--	9.6

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 01...	63	.09	.08	<.10	.26	.64	.90	.01	<10	<3
MAR 23...	61	.08	.12	<.10	.07	.53	.60	.03	<10	<3
MAY 25...	36	.05	.64	<.10	.44	.00	.40	.01	<10	12
JUN 27...	42	.06	.22	<.10	.23	.47	.70	.02	<10	7
AUG 01...	51	.07	.19	<.10	.71	.59	1.3	.04	<10	<3
SEP 22...	54	.07	.12	<.10	.33	.17	.50	.01	10	<3

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)
SEP 22...	1100	30	<2	<2	<2	13	<40

PEND OREILLE RIVER BASIN

12370900 TEEPEE CREEK NEAR POLSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 22...	<2	1	<20	<10	<2	32	<3

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAR 23...	1330	3.0	.75	1	<.01	90
MAY 25...	1200	6.0	6.6	11	.20	75
JUN 27...	1230	8.5	1.9	4	.02	65
AUG 01...	1230	10.5	1.4	2	<.01	86
SEP 22...	1100	6.0	.80	7	.02	65

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 05...	1320	.58	--	92	9.0	6.5
NOV 01...	1100	.49	57	95	6.0	5.0
DEC 07...	0950	.35	--	106	-1.0	.5
JAN 13...	1145	.45	--	105	4.0	3.0
FEB 24...	1235	.42	--	115	3.0	3.5
MAR 23...	1330	.75	64	91	4.0	3.0
APR 27...	1230	2.4	--	61	5.5	4.5
MAY 25...	1200	6.6	0	48	24.0	6.0
JUN 27...	1230	1.9	2	60	17.0	8.5
AUG 01...	1230	1.4	0	85	22.5	10.5
SEP 22...	1100	.80	0	83	9.0	6.0

PEND OREILLE RIVER BASIN

12371500 FLATHEAD LAKE AT SOMERS, MT

LOCATION.--Lat 48°04'22", long 114°13'30", in NE¼NE¼SE¼ sec.26, T.27 N., R.21 W., Flathead County, Hydrologic Unit 17010208, at steamboat dock at Somers.

DRAINAGE AREA.--7,086 mi².

PERIOD OF RECORD.--April to August 1900, daily lake elevations only, at site near Holt, 6 mi east of Somers (datum unknown). August 1908 to November 1909 (fragmentary), January 1910 to current year. Monthend contents only for some periods, published in WSP 1316. Prior to April 1923, published as "at Polson." Oct. 1, 1941, to current year, unpublished daily lake elevations at Polson are available in files of Helena district office.

GAGE.--Water-stage recorder. Datum of gage is at Somers datum. Subtract 1.00 ft to convert Somers datum to National Geodetic Vertical Datum of 1929, supplementary adjustment of 1947. July 1 to Dec. 12, 1923, non-recording gage at same site and datum.

REMARKS.--Natural storage in Flathead Lake increased by construction of Kerr Dam 4 mi downstream from natural lake outlet; storage began Apr. 11, 1938. Usable capacity, 1,791,000 acre-ft at controlled spillway elevation 2,893.00 ft. Dead storage unknown below 2,878 ft, elevation of natural outlet. Minimum operating level, 572,300 acre-ft, elevation, 2,883.00 ft for on-site power generation. Water is used for power production, flood control, recreation, and irrigation. Figures given herein represent usable contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,208,000 acre-ft June 19, 1933, elevation, 2,896.26 ft; minimum, 347,000 acre-ft Dec. 5, 1936, elevation, 2,881.07 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Lake reached an elevation of 2,900 ft during flood in June 1894.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,807,000 acre-ft July 16, elevation, 2,893.13 ft; minimum, 705,000 acre-ft Mar. 20, elevation, 2,884.12 ft.

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

2,884	690,700	2,890	1,417,000
2,886	930,300	2,892	1,665,000
2,888	1,172,000	2,894	1,917,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2891.92	2891.11	2890.00	2888.83	2886.24	2884.47	2884.53	2886.29	2890.72	2892.93	2892.95	2892.85
2	2891.90	2891.05	2889.95	2888.77	2886.13	2884.46	2884.66	2886.37	2890.90	2893.03	2892.97	2892.83
3	2891.85	2891.03	2889.97	2888.68	2886.03	2884.44	2884.72	2886.45	2891.08	2893.02	2892.97	2892.76
4	2891.82	2891.05	2889.88	2888.64	2885.91	2884.44	2884.79	2886.52	2891.34	2892.97	2893.02	2892.72
5	2891.78	2891.04	2889.78	2888.63	2885.83	2884.36	2884.85	2886.64	2891.59	2892.93	2893.01	2892.70
6	2891.79	2891.01	2889.73	2888.57	2885.78	2884.36	2884.89	2886.79	2891.81	2892.98	2892.97	2892.66
7	2891.74	2890.91	2889.70	2888.55	2885.77	2884.28	2884.95	2886.96	2892.03	2892.91	2892.89	2892.66
8	2891.64	2890.88	2889.63	2888.51	2885.74	2884.32	2884.95	2887.08	2892.20	2892.85	2892.87	2892.67
9	2891.59	2890.82	2889.62	2888.44	2885.72	2884.28	2884.95	2887.26	2892.32	2892.85	2892.86	2892.71
10	2891.57	2890.80	2889.58	2888.37	2885.69	2884.26	2884.95	2887.44	2892.50	2892.92	2892.84	2892.77
11	2891.52	2890.76	2889.56	2888.28	2885.65	2884.21	2884.92	2887.59	2892.54	2892.96	2892.90	2892.87
12	2891.46	2890.72	2889.52	2888.18	2885.62	2884.23	2884.92	2887.69	2892.57	2893.02	2892.85	2892.91
13	2891.42	2890.71	2889.55	2888.06	2885.57	2884.21	2884.92	2887.75	2892.60	2893.02	2892.76	2892.99
14	2891.38	2890.68	2889.50	2887.92	2885.51	2884.20	2884.90	2887.78	2892.69	2893.07	2892.80	2893.00
15	2891.36	2890.67	2889.46	2887.82	2885.45	2884.22	2884.87	2887.80	2892.83	2893.12	2892.78	2892.98
16	2891.38	2890.66	2889.42	2887.69	2885.45	2884.23	2884.84	2887.87	2892.88	2893.04	2892.75	2892.97
17	2891.32	2890.64	2889.44	2887.62	2885.36	2884.24	2884.80	2887.94	2892.92	2892.98	2892.75	2892.92
18	2891.30	2890.65	2889.39	2887.49	2885.27	2884.17	2884.79	2888.06	2892.92	2892.95	2892.75	2892.85
19	2891.26	2890.65	2889.33	2887.39	2885.15	2884.14	2884.79	2888.12	2892.97	2893.01	2892.78	2892.83
20	2891.24	2890.62	2889.30	2887.28	2885.05	2884.12	2884.80	2888.19	2892.92	2893.07	2892.85	2892.78
21	2891.23	2890.54	2889.28	2887.16	2884.95	2884.14	2884.86	2888.24	2892.87	2893.09	2892.83	2892.75
22	2891.22	2890.52	2889.25	2887.08	2884.88	2884.15	2884.93	2888.30	2892.80	2893.06	2892.83	2892.75
23	2891.23	2890.48	2889.23	2887.06	2884.89	2884.18	2885.01	2888.46	2892.78	2892.98	2892.88	2892.72
24	2891.22	2890.41	2889.22	2887.07	2884.81	2884.22	2885.21	2888.73	2892.83	2892.98	2892.83	2892.63
25	2891.23	2890.34	2889.17	2887.01	2884.71	2884.23	2885.43	2889.09	2892.92	2893.01	2892.79	2892.50
26	2891.27	2890.30	2889.13	2886.94	2884.64	2884.25	2885.66	2889.45	2892.94	2893.02	2892.74	2892.43
27	2891.27	2890.25	2889.08	2886.87	2884.57	2884.24	2885.86	2889.82	2893.01	2893.02	2892.75	2892.33
28	2891.23	2890.19	2889.03	2886.72	2884.52	2884.21	2885.99	2890.07	2893.01	2892.99	2892.77	2892.33
29	2891.18	2890.14	2888.98	2886.61	---	2884.27	2886.14	2890.24	2893.07	2892.95	2892.77	2892.32
30	2891.18	2890.07	2888.95	2886.48	---	2884.35	2886.17	2890.39	2893.03	2892.92	2892.78	2892.37
31	2891.15	---	2888.92	2886.36	---	2884.44	---	2890.58	---	2892.93	2892.80	---
MAX	2891.92	2891.11	2890.00	2888.83	2886.24	2884.47	2886.17	2890.58	2893.07	2893.12	2893.02	2893.00
MIN	2891.15	2890.07	2888.92	2886.36	2884.52	2884.12	2884.53	2886.29	2890.72	2892.85	2892.74	2892.32

CAL YR 1982 MAX 2893.04 MIN 2884.03
WTR YR 1983 MAX 2893.12 MIN 2884.12

(†) 1,560 1,426 1,284 973.8 752.8 743.2 950.8 1,489 1,791 1,782 1,766 1,712
(††) -95,000 -134,000 -142,000 -310,200 -221,000 -9,600 +207,600 +538,200 +302,000 -9,000 -16,000 -54,000

CAL YR 1982 †† +113,000
WTR YR 1983 †† + 57,000

† Contents, in thousands of acre-feet, at end of month.
†† Change in contents, in acre-feet.

PEND OREILLE RIVER BASIN

12372000 FLATHEAD RIVER NEAR POLSON, MT

LOCATION.--Lat 47°40'49", long 114°14'45", in SW¼NE¼SE¼ sec. 11, T.22 N., R.21 W., Lake County, Hydrologic Unit 17010212, on left bank 0.5 mi downstream from Kerr Dam, 4.0 mi west of Polson, 5.0 mi downstream from Flathead Lake, and at mile 71.5.

DRAINAGE AREA.--7,096 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1907 to current year.

REVISED RECORDS.--WSP 652: 1926. WSP 752: 1932. WSP 1182: 1948. WSP 1216: Drainage area. WSP 1246: 1928(M). WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Datum of gage is 2,692.70 ft National Geodetic Vertical Datum of 1929 (levels by The Montana Power Co.). Prior to Oct. 1, 1941, nonrecording gages or water-stage recorder at several sites near highway bridge at old site of Michell's ferry 6 mi downstream from present site, all at datum 2,629.20 ft National Geodetic Vertical Datum of 1929 (from river-profile survey).

REMARKS.--Water-discharge records excellent. Flow regulated by Flathead Lake (Kerr Dam) since April 1938 (station number 12371500) and Hungry Horse Reservoir (station number 12362000) since September 1951. Diversions above station for irrigation of about 10,000 acres. Flathead project pumps can divert up to 12,000 acre-ft per month when required for irrigation of lands downstream from station.

AVERAGE DISCHARGE.--76 years, 11,720 ft³/s, 22.43 in/yr, 8,491,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir and Flathead Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft³/s May 29, 1928, gage height, 17.2 ft, site and datum then in use; minimum probably less than 5.0 ft³/s Apr. 13, 1938; minimum daily, 32 ft³/s Apr. 12, 1938.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of about 21 ft, present datum; discharge, about 110,000 ft³/s, from lake elevation-discharge study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38,300 ft³/s May 30, gage height, 13.74 ft; minimum daily, 3,310 ft³/s Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4820	5810	8280	10600	11600	7740	8630	14900	26100	27200	7270	5090
2	4840	6960	8220	9890	11500	8020	8130	13700	22700	18600	7360	6510
3	3510	5490	6810	11100	11400	8590	9160	13600	16400	20600	7620	7590
4	4760	4840	8460	10800	12300	8020	8890	14500	12600	22800	6860	5280
5	5130	5440	8320	10400	12200	7930	9560	13600	12400	22100	8250	4920
6	3820	6370	6690	10200	12800	7540	10500	13200	12700	21000	10100	6700
7	7450	7260	7680	9890	11700	7940	10100	11100	11900	28900	10300	4810
8	7290	7270	7480	10700	11900	7130	10200	12400	16600	26600	8360	5380
9	5090	8570	6130	11000	11900	8200	10500	11800	18800	19700	7780	5470
10	3830	5850	6900	10200	11600	7850	10500	12500	17500	13700	7870	5580
11	5760	7010	6100	9870	11800	8160	10400	11800	23500	10300	7230	5530
12	6910	6460	6960	11200	11500	8460	10900	12200	24300	10400	8330	6660
13	4810	6790	6400	11700	12200	8100	9530	14100	20400	17400	8700	7740
14	5220	4850	6750	12100	11700	7800	10000	13800	13000	19500	6180	11300
15	5160	5780	7460	11900	12100	8050	10400	12900	12900	20900	6760	11400
16	5890	5750	7240	12300	12300	8010	10100	13000	15700	26500	6500	11700
17	6490	6030	7310	12000	11600	7930	10200	13200	18700	25000	5150	11200
18	5750	5950	8120	11600	11400	8110	9650	12600	18500	20600	4970	11700
19	5280	5620	8150	11600	11300	8080	9510	13400	17900	15200	3590	12100
20	5150	6070	8640	11300	10400	7950	9890	14100	18600	12800	3660	11600
21	4940	7070	8410	11400	10900	7610	9610	13200	18600	11900	3310	11800
22	5430	5900	5130	12300	10100	7180	8760	16200	18600	13700	5170	11200
23	6110	6280	7220	12400	10200	8250	10900	12900	16000	16700	3700	10800
24	4900	8610	5170	11600	10500	7510	11000	11800	11400	15100	7500	11400
25	4850	8320	8100	11900	9850	8570	10300	11900	8880	11700	7840	12100
26	3720	7830	6130	11700	9610	8190	11200	13600	12100	12200	8650	11400
27	4370	7290	8020	11100	10000	7830	12800	16600	16000	11900	4750	11800
28	6630	8380	7410	11600	8600	8010	14200	24400	21600	12800	4900	8500
29	6610	8190	8590	12200	---	5990	14400	30200	22000	13800	4560	10200
30	5820	8040	7450	12000	---	7070	14600	32100	23900	11200	5220	11300
31	6680	---	6930	12000	---	8010	---	29300	---	9580	4790	---
TOTAL	167020	200080	226660	350550	314960	243830	314520	474600	520280	540380	203230	268760
MEAN	5388	6669	7312	11310	11250	7865	10480	15310	17340	17430	6556	8959
MAX	7450	8610	8640	12400	12800	8590	14600	32100	26100	28900	10300	12100
MIN	3510	4840	5130	9870	8600	5990	8130	11100	8880	9580	3310	4810
CFSM	.76	.94	1.03	1.59	1.59	1.11	1.48	2.16	2.44	2.46	.92	1.26
IN	.88	1.05	1.19	1.84	1.65	1.28	1.65	2.49	2.73	2.83	1.07	1.41
AC-FT	331300	396900	449600	695300	624700	483600	623900	941400	1032000	1072000	403100	533100
†	-115000	-207000	-265000	-472200	-452000	-141600	+15600	+910200	+842000	+23000	-50000	-350000
MEAN ††	3518	3191	2992	3628	3110	5562	10750	30110	31490	17810	5743	3077
CFSM ††	0.50	0.45	0.42	0.51	0.44	0.78	1.51	4.24	4.44	2.51	0.81	0.43
IN ††	0.57	0.50	0.49	0.59	0.46	0.90	1.69	4.89	4.95	2.89	0.93	0.48
AC-FT††	216300	189900	184000	223100	172700	342000	639500	1851600	1874000	1095000	353100	183100

OBSERVED												
CAL YR 1982	TOTAL	4247710	MEAN	11640	MAX	41900	MIN	2710	AC-FT	8424500	(†)	+734000
WTR YR 1983	TOTAL	3824870	MEAN	10480	MAX	32100	MIN	3310	AC-FT	7586900	(†)	-262000

ADJUSTED												
CAL YR 1982	TOTAL	4617041	MEAN	12649	CFSM	1.78	IN	24.20	AC-FT	9158500		
WTR YR 1983	TOTAL	3692614	MEAN	10120	CFSM	1.43	IN	19.35	AC-FT	7324900		

† Change in contents, in acre-ft, in Hungry Horse Reservoir and Flathead Lake.

†† Adjusted for change in contents.

PEND OREILLE RIVER BASIN

12372000 FLATHEAD RIVER NEAR POLSON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to September 1983 (discontinued).

INSTRUMENTATION.--Temperature recorder since June 27, 1977.

REMARKS.--Period of missing record Aug. 10-30 due to battery failure.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.5°C Aug. 16, 17, 1981; minimum, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 22.5°C Aug. 7-9; minimum, 0.5°C Dec. 12-16.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

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

PEND OREILLE RIVER BASIN

12372000 FLATHEAD RIVER NEAR POLSON, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
DEC 01...	1120	10700	177	.5	3.0
MAR 24...	1315	4300	174	3.5	5.5
JUN 20...	1240	19400	173	15.0	15.0

PEND OREILLE RIVER BASIN

12374250 MILL CREEK ABOVE BASSOO CREEK, NEAR NIARADA, MT

LOCATION---Lat 47°49'49", long 114°41'45", in SE¼NW¼NE¼ sec.20, T.24 N., R.24 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 0.2 mi upstream from Flathead Indian Reservation boundary and Bassoo Creek, and 4.1 mi northwest of Niarada.

DRAINAGE AREA.--19.6 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 3,000 ft, from topographic map.

REMARKS.--Water-discharge records good except those for winter period, which are poor. No known regulation or diversion upstream of station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42 ft³/s May 27, 1983, gage height, 2.01 ft; minimum daily, 2.0 ft³/s Jan. 1, 1983.EXTREMES FOR CURRENT YEAR.--Maximum discharge, 42 ft³/s May 27, gage height, 2.01 ft; minimum daily, 2.0 ft³/s Jan. 1.DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	2.5	3.3	2.0	2.4	4.4	6.4	14	28	8.1	5.0	2.7
2	3.2	2.4	3.5	2.2	2.2	5.0	6.4	14	27	8.5	4.7	2.9
3	3.2	2.4	3.7	2.5	2.2	5.3	6.8	14	24	8.1	4.7	3.2
4	2.9	2.4	4.0	3.0	2.1	5.7	6.4	14	22	8.1	4.7	3.2
5	2.9	2.4	4.3	3.5	2.1	6.0	6.0	14	21	7.6	4.4	3.2
6	2.9	2.7	3.5	4.0	2.2	6.0	5.7	16	19	7.6	4.1	2.9
7	2.9	2.7	2.8	4.5	2.2	6.0	5.7	17	17	7.6	4.1	2.7
8	2.9	2.7	2.3	5.0	2.3	6.4	6.0	19	16	7.6	3.8	2.7
9	2.9	2.7	2.2	6.0	2.4	7.2	6.0	20	15	7.6	3.8	2.9
10	2.7	2.7	2.3	5.5	2.4	8.1	6.0	20	15	7.6	4.4	2.9
11	2.7	2.7	2.4	5.0	2.4	9.9	6.0	19	14	7.2	9.0	3.2
12	2.7	2.6	2.5	4.5	2.4	11	6.0	18	14	6.8	5.3	3.5
13	2.7	2.6	2.7	4.0	2.4	11	5.7	17	13	6.8	4.7	3.2
14	2.7	2.5	3.0	3.5	2.4	11	5.3	16	12	8.5	4.1	2.9
15	2.6	2.4	3.3	3.0	2.4	9.9	5.0	15	11	8.1	4.1	2.7
16	2.6	2.7	3.5	3.1	2.4	8.5	5.0	15	11	7.6	4.1	2.7
17	2.5	3.8	3.4	3.2	2.4	8.1	5.7	15	10	7.2	3.8	2.4
18	2.5	5.7	3.3	3.3	3.2	7.6	6.8	16	11	6.8	3.5	2.4
19	2.7	6.4	3.2	3.4	4.1	7.0	8.5	18	9.9	6.4	3.5	2.9
20	2.7	6.0	3.2	3.2	3.2	6.5	9.9	21	9.9	6.4	3.5	2.9
21	2.6	5.0	3.2	2.9	3.2	6.0	12	22	9.4	6.4	3.5	2.9
22	2.6	4.1	3.2	2.9	3.2	5.7	14	25	9.0	6.0	3.2	2.9
23	2.6	3.5	2.9	2.9	3.5	5.7	15	28	8.5	5.7	3.2	2.9
24	2.8	3.8	2.9	2.7	3.5	5.7	17	31	8.5	6.0	3.5	2.7
25	2.8	4.1	2.8	2.7	3.2	5.3	21	35	8.1	6.0	3.5	2.4
26	2.7	4.1	2.7	2.7	3.5	5.0	20	38	7.6	6.0	3.5	2.4
27	2.7	3.8	2.5	2.7	3.8	4.7	18	40	7.6	5.3	3.5	2.4
28	2.6	3.5	2.4	2.7	4.4	4.7	17	38	9.9	5.3	3.2	2.7
29	2.6	3.5	2.3	2.4	---	4.7	17	34	9.0	5.7	3.2	2.7
30	2.5	3.5	2.2	2.4	---	5.7	15	32	8.5	5.3	2.9	2.7
31	2.5	---	2.1	2.4	---	6.4	---	29	---	5.3	2.9	---
TOTAL	85.1	101.9	91.6	103.8	78.1	210.2	291.3	684	405.9	213.2	125.4	84.8
MEAN	2.75	3.40	2.95	3.35	2.79	6.78	9.71	22.1	13.5	6.88	4.05	2.83
MAX	3.2	6.4	4.3	6.0	4.4	11	21	40	28	8.5	9.0	3.5
MIN	2.5	2.4	2.1	2.0	2.1	4.4	5.0	14	7.6	5.3	2.9	2.4
CFSM	.14	.17	.15	.17	.14	.35	.50	1.13	.69	.35	.21	.14
IN.	.16	.19	.17	.20	.15	.40	.55	1.30	.77	.40	.24	.16
AC-FT	169	202	182	206	155	417	578	1360	805	423	249	168

WTR YR 1983 TOTAL 2475.3 MEAN 6.78 MAX 40 MIN 2.0 CFSM .35 IN 4.70 AC-FT 4910

PEND OREILLE RIVER BASIN

12374250 MILL CREEK ABOVE BASSOO CREEK, NEAR NIARADA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	CLOUD COVER (PER- CENT)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (STAND- ARD UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	
		(00061)	(00032)	(00041)	(00095)	(00400)	(00020)	(00010)	(00025)	(00300)	(00301)	
NOV 02...	1215	2.4	--	0	42	7.0	5.5	1.5	693	12.8	100	
MAR 23...	1030	5.3	100	53	44	7.7	2.0	1.5	678	12.4	99	
MAY 24...	1200	32	0	0	20	7.6	20.0	8.0	681	10.4	98	
JUN 24...	1230	8.5	100	2	27	7.6	15.5	9.5	674	10.2	101	
AUG 02...	1330	5.0	0	0	34	8.0	29.0	14.0	681	9.4	102	
SEP 21...	0900	3.2	--	--	38	7.2	.5	3.5	691	12.2	101	
DATE		HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
NOV 02...	12	0	3.2	.9	4.1	.5	.8	24	5.0	.9	<.10	
MAR 23...	13	0	3.4	1.0	4.1	.5	.7	22	4.2	.8	.10	
MAY 24...	6	0	1.5	.6	2.0	.4	.5	11	3.4	.2	<.10	
JUN 24...	8	0	2.2	.7	2.6	.4	.5	17	1.5	.1	<.10	
AUG 02...	10	0	2.7	.8	3.4	.5	.6	20	2.2	.4	.20	
SEP 21...	11	0	3.0	.9	3.8	.5	.8	21	2.5	.6	<.10	
DATE		SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 02...	18	47	.06	.31	<.10	.18	.52	.70	.01	<10	35	
MAR 23...	20	48	.07	.68	<.10	.09	.61	.70	.04	<10	65	
MAY 24...	14	29	.04	2.5	<.10	.27	.03	.30	.02	<10	48	
JUN 24...	14	32	.04	.73	<.10	.46	.34	.80	.02	<10	46	
AUG 02...	15	37	.05	.50	<.10	.16	.24	.40	.04	<10	32	
SEP 21...	16	40	.06	.35	<.10	.22	.28	.50	.01	<10	39	
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)					
SEP 21...	0900	80	<2	<2	<2	68	<40					

PEND OREILLE RIVER BASIN

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12374250 MILL CREEK ABOVE BASSOO CREEK, NEAR NIARADA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 21...	<2	2	<20	<10	<2	29	<3

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 02...	1215	1.5	2.4	5	.03	88
MAR 23...	1030	1.5	5.3	3	.04	77
MAY 24...	1200	8.0	32	13	1.1	89
JUN 24...	1230	9.5	8.5	5	.11	98
AUG 02...	1330	14.0	5.0	8	.11	85
SEP 21...	0900	3.5	3.2	12	.10	87

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV 02...	1215	2.4	0	42	5.5	1.5
DEC 08...	1310	2.3	--	48	-8.0	.0
JAN 14...	1400	3.4	--	43	.0	.0
FEB 23...	0940	3.2	--	49	5.0	1.0
MAR 23...	1030	5.3	53	44	2.0	1.5
APR 27...	0835	19	--	29	5.0	3.0
MAY 24...	1200	32	0	20	20.0	8.0
JUN 24...	1230	8.5	2	27	15.5	9.5
AUG 02...	1330	5.0	0	34	29.0	14.0
SEP 21...	0900	3.2	--	38	.5	3.5

PEND OREILLE RIVER BASIN

12374800 CROMWELL CREEK NEAR NIARADA, MT

LOCATION.--Lat 47°52'54", long 114°30'04", in NW¼NW¼SE¼ sec.36, T.25 N., R.23 W., Flathead County, Hydrologic Unit 17010212, on left bank 6.7 mi northeast of Niarada and 8.2 mi northwest of Elmo.

DRAINAGE AREA.--14.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 3,220 ft, from topographic map.

REMARKS.--Water-discharge records good except those for period of no gage-height record, Jan. 14 to Feb. 23, which are poor. No known regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3.4 ft³/s July 14, 1983, gage height, 1.22 ft; maximum gage height, 1.43 ft Jan. 8, 1983 (backwater from ice); minimum discharge, 0.02 ft³/s Dec. 11, 1982, gage height, 0.65 ft (result of freezeup).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3.4 ft³/s July 14, gage height, 1.22 ft; maximum gage height, 1.43 ft Jan. 8 (backwater from ice); minimum discharge, 0.02 ft³/s Dec. 11, gage height, 0.65 ft (result of freezeup).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.22	.17	.07	.25	.60	.82	.87	.40	1.8	.54	.27
2	.17	.22	.17	.07	.25	.66	.82	.82	.40	1.7	.54	.33
3	.17	.27	.17	.08	.24	.71	.87	.82	.40	1.4	.47	.27
4	.17	.27	.22	.09	.22	.71	.82	.76	.47	1.3	.47	.22
5	.17	.27	.22	.09	.20	.82	.76	.76	.47	1.1	.40	.22
6	.17	.27	.22	.10	.19	.82	.76	.87	.47	1.0	.33	.22
7	.17	.27	.20	.10	.18	.82	.76	.87	.47	.98	.33	.22
8	.17	.22	.18	.30	.17	.82	.71	.82	.47	.92	.40	.22
9	.17	.22	.12	.54	.16	.82	.71	.82	.47	.92	.40	.27
10	.17	.22	.07	.47	.15	.82	.71	.87	.47	.92	.40	.27
11	.17	.22	.06	.47	.18	.87	.71	.82	.47	.87	.66	.33
12	.17	.22	.07	.40	.21	.98	.71	.76	.47	.87	.54	.27
13	.17	.22	.08	.40	.24	.98	.66	.76	.47	.87	.47	.27
14	.17	.21	.08	.35	.24	.98	.66	.76	.47	1.8	.40	.27
15	.17	.20	.08	.35	.24	.92	.66	.71	.54	1.4	.40	.22
16	.17	.21	.15	.35	.26	.92	.66	.71	.54	1.4	.40	.22
17	.17	.22	.22	.35	.28	.92	.66	.82	.98	1.3	.33	.22
18	.22	.33	.17	.33	.40	.87	.66	.92	1.0	1.2	.27	.22
19	.22	.33	.17	.31	.50	.92	.66	1.0	.71	.98	.27	.22
20	.17	.22	.12	.30	.50	1.0	.66	.98	.66	.98	.27	.22
21	.17	.22	.12	.30	.52	.82	.66	.92	.60	.98	.27	.22
22	.17	.22	.08	.31	.52	.82	.66	.87	.60	.82	.33	.22
23	.22	.21	.08	.31	.54	.82	.66	.76	.54	.76	.33	.22
24	.22	.18	.08	.30	.54	.82	.82	.76	.66	.76	.27	.22
25	.22	.15	.08	.29	.54	.82	.87	.71	.60	.76	.22	.22
26	.22	.12	.07	.29	.54	.82	.87	.66	.54	.76	.22	.22
27	.22	.12	.07	.29	.60	.82	.87	.60	.82	.71	.22	.22
28	.22	.12	.06	.29	.60	.82	.92	.54	1.8	.71	.22	.22
29	.22	.12	.06	.28	---	.76	.92	.54	1.6	.66	.22	.22
30	.22	.12	.05	.27	---	.76	.87	.54	2.2	.60	.22	.22
31	.22	---	.06	.26	---	.76	---	.47	---	.54	.22	---
TOTAL	5.82	6.41	3.75	8.71	9.46	25.80	22.56	23.89	20.76	31.77	11.03	7.17
MEAN	.19	.21	.12	.28	.34	.83	.75	.77	.69	1.02	.36	.24
MAX	.22	.33	.22	.54	.60	1.0	.92	1.0	2.2	1.8	.66	.33
MIN	.17	.12	.05	.07	.15	.60	.66	.47	.40	.54	.22	.22
CFSM	.01	.02	.008	.02	.02	.06	.05	.05	.05	.07	.03	.02
IN.	.02	.02	.01	.02	.02	.07	.06	.06	.05	.08	.03	.02
AC-FT	12	13	7.4	17	19	51	45	47	41	63	22	14

WTR YR 1983 TOTAL 177.13 MEAN .49 MAX 2.2 MIN .05 CFSM .03 IN .46 AC-FT 351

PEND OREILLE RIVER BASIN

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12374800 CROMWELL CREEK NEAR NIARADA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	
NOV 03...	1200	.22	--	2	272	7.9	3.0	2.5	683	12.5	102	
MAR 08...	1030	.82	--	--	236	7.9	8.0	3.5	678	12.2	103	
APR 26...	1330	.87	10	1	239	8.1	7.0	5.0	674	11.0	98	
JUN 06...	1145	.47	0	0	247	8.3	18.0	12.0	678	10.0	105	
AUG 03...	1100	.47	0	0	279	8.3	23.0	14.5	678	8.8	97	
SEP 21...	1300	.22	0	0	264	8.2	14.0	6.5	686	11.0	100	
DATE	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)
NOV 03...	100	0	26	9.5	16	.7	2.1	134	10	2.2	.20	31
MAR 08...	98	0	25	8.6	15	.7	2.3	120	11	2.4	.20	31
APR 26...	93	0	24	8.1	15	.7	2.3	114	11	2.1	.20	32
JUN 06...	98	0	25	8.6	16	.7	2.4	128	9.4	1.8	.20	32
AUG 03...	110	0	28	9.3	17	.7	2.7	142	10	2.3	.30	34
SEP 21...	110	0	29	9.6	17	.7	2.2	137	9.9	2.6	.20	32
DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)		
NOV 03...	177	.24	.11	<.10	.14	.26	.40	.11	<10	5		
MAR 08...	167	.23	.37	<.10	.14	.26	.40	.11	<10	36		
APR 26...	163	.22	.38	<.10	.25	.95	1.2	.14	<10	75		
JUN 06...	172	.23	.22	<.10	.43	.37	.80	.16	<10	14		
AUG 03...	189	.26	.24	<.10	.18	1.0	1.2	.19	<10	23		
SEP 21...	185	.25	.11	<.10	.19	.21	.40	.10	<10	12		
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)					
SEP 21...	1300	70	<2	<2	<2	42	<40					

PEND OREILLE RIVER BASIN

12374800 CROMWELL CREEK NEAR NIARADA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 21...	4	2	<20	<10	<2	136	<3

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 03...	1200	2.5	.22	23	.01	95
MAR 08...	1030	3.5	.82	17	.04	94
APR 26...	1330	5.0	.87	29	.07	97
JUN 06...	1145	12.0	.47	2	<.01	94
AUG 03...	1100	14.5	.47	17	.02	93
SEP 21...	1300	6.5	.22	95	.06	96

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV 03...	1200	.22	2	272	3.0	2.5
DEC 09...	1000	.17	--	300	-7.0	.0
JAN 13...	0925	.38	--	268	.0	.5
FEB 24...	0920	.55	--	257	2.0	2.0
MAR 08...	1030	.82	--	236	8.0	3.5
APR 26...	1330	.87	1	239	7.0	5.0
JUN 06...	1145	.47	0	247	18.0	12.0
AUG 03...	1100	.47	0	279	23.0	14.5
SEP 21...	1300	.22	0	264	14.0	6.5

PEND OREILLE RIVER BASIN

12375900 SOUTH CROW CREEK NEAR RONAN, MT

LOCATION.--Lat 47°29'30", long 114°01'33", in NW¼SW¼ sec.16, T.20 N., R.19 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 200 ft upstream of Pablo Feeder Canal, 2.2 mi northeast of Kicking Horse Reservoir, and 4.5 mi southeast of Ronan.

DRAINAGE AREA.--7.57 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 3,320 ft, from topographic map.

REMARKS.--Water-discharge records good. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 360 ft³/s June 30, 1983, gage height, 3.60 ft; minimum, 6.0 ft³/s Feb. 3-9, 1983, gage height, 1.78 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 175 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	Unknown	200	3.19	June 30	0130	*360	*3.60
June 28	1200	220	3.26				

Minimum discharge, 6.0 ft³/s Feb. 3-9, gage height, 1.78 ft.DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	15	9.1	7.0	6.4	7.9	8.3	24	90	147	33	14
2	12	15	8.8	7.2	6.2	9.4	8.7	24	69	148	35	16
3	14	14	8.9	7.2	6.1	9.9	8.8	23	66	125	34	14
4	14	14	9.5	7.2	6.0	10	8.6	22	82	91	32	14
5	14	14	9.5	7.8	6.0	10	8.3	22	77	78	31	13
6	13	14	9.3	8.1	6.0	9.7	8.2	26	77	74	28	13
7	12	13	8.6	8.2	6.1	9.2	8.2	26	82	75	27	12
8	12	12	8.5	9.0	6.2	9.1	8.2	25	95	77	26	13
9	12	12	8.3	8.7	6.0	9.1	7.8	26	117	74	25	12
10	11	12	8.0	8.7	6.2	9.8	7.7	25	138	94	24	12
11	11	11	8.0	8.4	6.2	12	7.4	23	130	91	24	15
12	11	11	8.0	8.5	6.2	13	7.1	22	88	75	24	14
13	11	12	9.0	8.2	6.2	13	6.7	21	73	73	23	13
14	11	12	8.8	7.8	6.4	13	6.5	21	69	86	21	12
15	11	11	8.8	7.5	6.2	12	6.4	23	74	90	21	12
16	11	11	9.2	7.2	6.5	11	6.7	24	82	85	20	12
17	13	11	9.1	7.2	6.7	9.9	7.0	23	75	76	19	11
18	14	11	8.7	7.1	7.4	9.6	8.9	29	136	65	18	11
19	15	12	8.4	6.9	8.0	8.8	11	32	94	58	18	11
20	14	11	8.2	6.8	7.4	8.8	16	27	74	69	17	11
21	14	11	8.2	6.7	7.4	8.8	16	38	63	74	17	11
22	14	11	8.3	6.7	7.2	8.3	22	42	58	64	17	11
23	17	9.7	8.0	6.9	7.2	8.3	31	53	57	57	17	11
24	18	9.4	7.7	6.9	7.7	8.2	47	83	65	52	16	11
25	17	9.4	7.3	6.9	8.9	7.9	38	100	67	49	16	10
26	18	9.4	7.6	6.9	9.7	7.7	29	110	67	45	15	10
27	19	9.6	7.6	6.9	9.0	7.5	26	140	84	45	15	10
28	18	9.9	7.3	6.9	8.3	7.4	24	130	177	40	15	9.8
29	17	9.5	7.2	6.7	---	7.4	23	140	136	37	14	9.7
30	16	9.4	7.2	6.7	---	7.4	22	150	276	35	14	9.7
31	15	---	7.0	6.5	---	7.8	---	100	---	33	14	---
TOTAL	431	346.3	258.1	229.4	193.8	291.9	444.5	1574	2838	2282	670	358.2
MEAN	13.9	11.5	8.33	7.40	6.92	9.42	14.8	50.8	94.6	73.6	21.6	11.9
MAX	19	15	9.5	9.0	9.7	13	47	150	276	148	35	16
MIN	11	9.4	7.0	6.5	6.0	7.4	6.4	21	57	33	14	9.7
CFSM	1.84	1.52	1.10	.98	.91	1.24	1.96	6.71	12.5	9.72	2.85	1.57
IN.	2.12	1.70	1.27	1.13	.95	1.43	2.18	7.73	13.94	11.21	3.29	1.76
AC-FT	855	687	512	455	384	579	882	3120	5630	4530	1330	710

WTR YR 1983 TOTAL 9917.2 MEAN 27.2 MAX 276 MIN 6.0 CFSM 3.59 IN 48.73 AC-FT 19670

PEND OREILLE RIVER BASIN

12375900 SOUTH CROW CREEK NEAR RONAN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

		STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)			
	DATE												
	OCT 27...	1030	19	--	3	95	7.3	4.0	5.5	680	11.0		
	APR 06...	1700	8.2	20	1	105	7.9	11.0	5.0	675	11.4		
	MAY 17...	1300	22	50	1	89	7.9	12.5	8.0	680	10.6		
	JUN 01...	1350	84	25	1	84	7.9	19.0	6.0	668	11.1		
	30...	0900	292	50	1	74	7.8	8.5	7.5	673	10.9		
	SEP 21...	0830	11	0	0	108	7.7	.5	6.0	686	11.6		
		OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)		
	DATE												
	OCT 27...	98	52	16	2.9	1.0	.0	.5	56	5.0	.4		
	APR 06...	101	48	16	2.0	1.3	.0	.6	57	2.2	.3		
	MAY 17...	100	48	15	2.6	1.0	.0	.5	48	1.9	.2		
	JUN 01...	102	44	14	2.2	.6	.0	.4	44	2.0	.1		
	30...	103	37	12	1.8	.5	.0	.4	38	1.9	.1		
	SEP 21...	104	52	16	2.9	1.1	.0	.5	55	2.6	.3		
		FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
	DATE												
	OCT 27...	<.10	4.5	64	.09	3.3	<.10	.10	.20	.30	<.01	<10	6
	APR 06...	<.10	5.4	62	.08	1.4	<.10	.32	.28	.60	.01	<10	3
	MAY 17...	<.10	4.8	55	.08	3.3	<.10	.59	.51	1.1	.01	<10	6
	JUN 01...	<.10	2.9	49	.07	11.0	.10	.30	.70	1.0	.02	<10	6
	30...	<.10	3.2	43	.06	33.7	<.10	.44	.56	1.0	.03	<10	11
	SEP 21...	<.10	4.7	61	.08	1.8	<.10	.17	.63	.80	.01	<10	4
					ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)			
	DATE		TIME										
	SEP 21...		0830		30	<2	<2	<2	52	<40			

PEND OREILLE RIVER BASIN

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12375900 SOUTH CROW CREEK NEAR RONAN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 21...	<2	4	<20	10	<2	34	<3

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 27...	1030	5.5	19	2	.10	80
APR 06...	1700	5.0	8.2	2	.04	62
MAY 17...	1300	8.0	22	2	.12	90
JUN 01...	1350	6.0	84	2	.45	78
30...	0900	7.5	292	26	20	56
SEP 21...	0830	6.0	11	1	.03	83

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 27...	1030	19	3	95	4.0	5.5
DEC 08...	1230	9.2	--	114	-8.0	.0
JAN 11...	1400	7.9	--	113	3.5	2.5
FEB 25...	0830	8.7	--	110	2.5	3.5
APR 06...	1700	8.2	1	105	11.0	5.0
MAY 17...	1300	22	1	89	12.5	8.0
25...	1145	70	--	94	23.5	8.0
JUN 01...	1350	84	1	84	19.0	6.0
30...	0900	292	1	74	8.5	7.5
JUL 11...	1500	87	--	91	20.5	10.0
AUG 11...	0930	25	--	112	18.0	16.5
SEP 21...	0830	11	0	108	.5	6.0

PEND OREILLE RIVER BASIN

12377150 MISSION CREEK ABOVE RESERVOIR, NEAR ST. IGNATIUS, MT

LOCATION.--Lat 47°19'23", long 113°58'43", in NW¼SW¼NE¼ sec.14, T.18 N., R.19 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank, 0.2 mi southwest of upper BIA campground, 0.5 mi upstream from Mission Reservoir, and 5.3 mi east of St. Ignatius.

DRAINAGE AREA.--12.4 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 3,460 ft, from topographic map.

REMARKS.--Water-discharge records good. No known regulation or diversions above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 547 ft³/s June 30, 1983, gage height, 4.19 ft; minimum discharge, 8.2 ft³/s Feb. 5-7, 1983, gage height, 0.84 ft, but may have been less during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	0615	304	3.25	June 30	0645	*547	*4.19
June 28	1930	401	3.65				

Minimum discharge, 8.2 ft³/s Feb. 5-7, gage height, 0.84 ft, but may have been less during period of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	37	17	11	9.5	10	10	30	195	276	123	46
2	26	35	17	11	9.2	11	11	34	181	295	121	58
3	31	33	18	11	9.0	11	11	36	187	237	120	49
4	31	31	18	11	8.7	11	11	33	212	173	112	41
5	30	30	17	12	8.5	11	11	33	187	154	112	39
6	28	30	17	12	8.2	11	10	39	170	182	107	36
7	28	29	16	13	8.3	11	10	40	197	230	99	34
8	28	27	14	13	8.7	11	10	38	226	251	97	33
9	26	27	15	13	8.7	11	10	42	252	203	94	32
10	25	26	15	12	8.9	11	10	40	277	215	87	33
11	24	26	14	12	9.1	12	9.8	34	245	207	97	40
12	24	26	15	12	9.3	14	9.5	31	181	182	87	43
13	25	26	16	12	9.3	15	9.3	29	136	203	72	41
14	27	24	17	11	9.2	15	9.1	30	125	231	64	41
15	32	23	17	11	9.2	15	9.1	31	148	205	62	43
16	42	23	17	11	9.5	14	9.4	33	172	172	64	40
17	56	23	16	10	9.6	12	9.9	33	158	148	62	38
18	54	23	15	10	10	12	11	43	253	132	57	36
19	46	24	15	10	11	11	13	47	209	148	54	34
20	41	23	15	10	11	10	17	41	141	203	53	33
21	38	23	15	10	11	10	22	48	110	210	52	31
22	36	22	15	10	10	9.8	36	62	96	166	50	30
23	40	18	14	10	10	9.7	45	83	106	156	49	29
24	49	19	14	9.8	9.8	9.7	62	121	170	151	47	28
25	52	20	13	9.8	10	9.7	59	181	166	153	45	27
26	54	19	13	10	11	9.3	45	259	163	148	43	27
27	53	19	13	10	11	9.3	35	264	218	133	42	26
28	47	19	12	10	11	9.2	30	236	359	114	41	26
29	44	18	12	9.9	---	9.2	27	262	344	108	41	26
30	40	18	12	9.5	---	9.3	26	281	469	106	40	25
31	37	---	11	9.5	---	9.5	---	239	---	105	40	---
TOTAL	1141	741	465	336.5	268.7	343.7	598.1	2753	6053	5597	2234	1065
MEAN	36.8	24.7	15.0	10.9	9.60	11.1	19.9	88.8	202	181	72.1	35.5
MAX	56	37	18	13	11	15	62	281	469	295	123	58
MIN	24	18	11	9.5	8.2	9.2	9.1	29	96	105	40	25
CFSM	2.97	1.99	1.21	.88	.77	.90	1.61	7.16	16.3	14.6	5.82	2.86
IN.	3.42	2.22	1.39	1.01	.81	1.03	1.79	8.26	18.16	16.79	6.70	3.19
AC-FT	2260	1470	922	667	533	682	1190	5460	12010	11100	4430	2110

WTR YR 1983 TOTAL 21596.0 MEAN 59.2 MAX 469 MIN 8.2 CFSM 4.77 IN 64.78 AC-FT 42840

PEND OREILLE RIVER BASIN

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12377150 MISSION CREEK ABOVE RESERVOIR, NEAR ST. IGNATIUS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT 27...	1545	52	--	3	112	7.4	6.0	5.0	677	11.2	99
APR 06...	1100	10	0	0	155	8.0	4.0	2.5	675	12.1	100
MAY 17...	0900	33	100	2	148	8.1	7.5	4.5	678	11.5	100
JUN 01...	0930	196	5	0	124	7.9	9.0	5.0	665	11.3	102
29...	1245	316	90	2	115	8.1	15.0	8.0	670	10.3	99
SEP 20...	1500	32	0	0	133	8.0	8.5	7.0	685	11.3	104
DATE	HARD- NESS (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
OCT 27...	63	17	5.1	.6	.0	.2	65	5.0	.3	<.10	2.6
APR 06...	82	20	7.9	.9	.0	.2	85	3.4	.3	<.10	3.2
MAY 17...	83	21	7.5	.7	.0	.2	81	3.1	.3	<.10	3.2
JUN 01...	73	21	5.0	.6	.0	.1	67	2.0	.1	<.10	2.6
29...	63	18	4.5	.5	.0	.2	65	1.7	.1	<.10	2.6
SEP 20...	67	18	5.4	.6	.0	.2	69	2.2	.1	<.10	2.8
DATE	SOLIDS, SUM OF CONSTI- TENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	
OCT 27...	70	.10	9.8	<.10	.08	.12	.20	<.01	<10	7	
APR 06...	87	.12	2.3	.10	.20	.30	.50	<.01	<10	4	
MAY 17...	85	.12	7.5	<.10	.69	.31	1.0	.01	<10	4	
JUN 01...	72	.10	38	.20	.23	.57	.80	.02	<10	3	
29...	68	.09	58	<.10	.13	.87	1.0	.02	<10	4	
SEP 20...	71	.10	6.1	<.10	.49	.41	.90	<.01	<10	<3	
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)				
SEP 20...	1500	<30	<2	3	2	19	<40				

PEND OREILLE RIVER BASIN

12377150 MISSION CREEK ABOVE RESERVOIR, NEAR ST. IGNATIUS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 20...	<2	2	<20	<10	2	20	7

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 27...	1545	5.0	52	2	.28	82
APR 06...	1100	2.5	10	2	.05	54
MAY 17...	0900	4.5	33	1	.09	85
JUN 01...	0930	5.0	196	8	4.2	82
29...	1245	8.0	316	21	18	78
SEP 20...	1500	7.0	32	1	.09	70

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 27...	1545	52	3	112	6.0	5.0
DEC 07...	1245	16	--	140	-3.0	1.0
JAN 11...	1115	12	--	147	.5	2.0
FEB 24...	1545	10	--	151	7.5	3.5
APR 06...	1100	10	0	155	4.0	2.5
MAY 17...	0900	33	2	148	7.5	4.5
25...	0845	171	--	143	12.0	5.5
JUN 01...	0930	196	0	124	9.0	5.0
29...	1245	316	2	115	15.0	8.0
JUL 07...	1045	236	--	123	20.0	9.0
AUG 11...	1200	100	--	117	18.5	14.0
SEP 20...	1500	32	0	133	8.5	7.0

PEND OREILLE RIVER BASIN

12381400 SOUTH FORK JOCKO RIVER NEAR ARLEE, MT

LOCATION.--Lat 47°11'44", long 113°50'59", in NE1/4 sec.35, T.17 N., R.18 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 600 ft upstream from confluence with Jocko River and Twin Campground, and 12 mi northeast of Arlee, MT.

DRAINAGE AREA.--56.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983. Records published as "near Jocko" 1912-16 and in WSP 1246, 1316 are not equivalent.

GAGE.--Water-stage recorder. Altitude of gage is 3,970 ft, from topographic map.

REMARKS.--Water-discharge records good except those for the winter period, which are poor. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 553 ft³/s May 30, 1983, gage height recorded, 2.66 ft, 2.93 ft, from crest-stage gage; maximum gage height recorded, 3.21 ft Nov. 28, 1982 (backwater from ice); minimum daily discharge, 4.5 ft³/s Dec. 8, 1982.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s and maximums (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 28	0100	Ice jam	*a3.21	May 30	0300	*553	b2.93
May 30	0300	*553	a2.66				

a -- From recorded gage height.

b -- From crest-stage gage.

Minimum daily discharge, 4.5 ft³/s Dec. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	24	21	6.5	12	13	14	67	347	107	75	35
2	30	23	22	7.0	11	14	14	71	342	109	68	39
3	31	22	23	8.5	10	15	14	76	329	108	66	35
4	31	23	21	10	7.0	15	14	78	297	106	66	34
5	32	23	20	12	6.0	16	15	84	234	103	61	34
6	30	25	20	13	6.0	16	15	97	207	101	59	30
7	30	24	6.0	12	8.0	16	16	103	206	99	58	30
8	30	22	4.5	14	7.0	15	15	110	204	91	56	29
9	29	24	5.5	13	9.0	16	15	106	210	88	54	29
10	28	22	5.0	12	10	17	15	98	217	125	53	30
11	27	22	6.5	14	12	19	14	93	222	116	64	52
12	27	19	7.0	17	15	22	14	91	216	104	59	44
13	27	20	8.0	16	14	23	14	88	210	100	53	36
14	27	18	11	13	13	24	15	86	168	102	51	32
15	26	15	15	10	12	23	15	85	168	101	50	29
16	26	18	20	9.0	13	21	16	88	164	104	48	29
17	27	21	24	9.0	12	21	17	88	153	98	45	27
18	28	23	22	10	12	20	21	134	231	91	45	28
19	27	24	20	10	12	17	29	182	217	89	44	29
20	25	21	19	11	13	15	36	179	161	93	42	28
21	25	21	18	11	13	16	44	235	142	90	41	28
22	25	19	18	12	13	17	52	246	127	85	43	27
23	26	16	18	13	13	16	67	242	119	81	44	27
24	27	14	16	13	13	15	88	295	115	80	42	25
25	26	13	12	13	13	15	93	380	112	82	39	24
26	27	14	13	13	14	14	86	434	109	77	37	24
27	28	13	11	13	14	14	77	470	113	76	36	24
28	26	15	8.5	13	13	15	70	427	118	73	35	24
29	26	17	7.0	12	---	15	65	473	116	70	34	24
30	26	19	8.0	11	---	16	66	471	114	68	33	25
31	24	---	6.0	12	---	15	---	379	---	68	33	---
TOTAL	856	594	436.0	363.0	320.0	526	1046	6056	5688	2885	1534	911
MEAN	27.6	19.8	14.1	11.7	11.4	17.0	34.9	195	190	93.1	49.5	30.4
MAX	32	25	24	17	15	24	93	473	347	125	75	52
MIN	24	13	4.5	6.5	6.0	13	14	67	109	68	33	24
CFSM	.49	.35	.25	.21	.20	.30	.62	3.48	3.39	1.66	.88	.54
IN.	.57	.39	.29	.24	.21	.35	.69	4.02	3.78	1.92	1.02	.61
AC-FT	1700	1180	865	720	635	1040	2070	12010	11280	5720	3040	1810

WTR YR 1983 TOTAL 21215.0 MEAN 58.1 MAX 473 MIN 4.5 CFSM 1.04 IN 14.09 AC-FT 42080

PEND OREILLE RIVER BASIN

12381400 SOUTH FORK JOCKO RIVER NEAR ARLEE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	
OCT 28...	1600	26	--	3	235	8.0	6.0	4.5	659	11.1	99	
APR 05...	1630	14	10	1	250	8.3	6.0	2.5	662	11.9	101	
MAY 13...	0830	88	0	0	208	8.2	4.0	2.5	665	11.9	100	
31...	1500	361	0	0	167	8.2	20.0	8.0	651	10.4	103	
JUN 28...	1145	115	100	54	190	8.3	13.0	8.5	660	10.3	102	
SEP 20...	1130	27	0	0	255	8.2	4.0	2.5	672	12.5	104	
DATE		HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 28...	130	0	38	8.0	1.2	.0	.6	134	5.0	.4	<.10	
APR 05...	140	0	42	9.0	1.3	.0	.5	156	2.8	.4	<.10	
MAY 13...	120	2	37	7.4	1.2	.0	.6	121	2.4	.4	<.10	
31...	96	3	30	5.2	.9	.0	.5	93	2.4	.1	<.10	
JUN 28...	110	0	35	6.5	1.0	.0	.5	118	1.9	.4	<.10	
SEP 20...	130	0	39	7.5	1.1	.0	.6	134	2.5	.3	<.10	
DATE		SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 28...	6.8	140	.19	9.9	<.10	.11	.59	.70	<.01	<10	7	
APR 05...	6.6	156	.21	5.9	<.10	.31	.59	.90	.01	<10	360	
MAY 13...	6.4	128	.17	30.4	<.10	.71	.89	1.6	.01	<10	<3	
31...	5.5	100	.14	97.8	.10	.15	.55	.70	.01	<10	4	
JUN 28...	5.7	122	.17	37.8	<.10	.18	.82	1.0	.04	<10	<3	
SEP 20...	6.3	138	.19	10.0	<.10	.21	.29	.50	.01	<10	<3	
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)					
SEP 20...	1130	30	<2	<2	4	16	<40					

PEND OREILLE RIVER BASIN

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12381400 SOUTH FORK JOCKO RIVER NEAR ARLEE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 20...	<2	2	<20	<10	<2	27	6

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 28...	1600	4.5	26	2	.14	69
APR 05...	1630	2.5	14	17	.64	78
MAY 13...	0830	2.5	88	2	.48	77
MAY 31...	1500	8.0	361	8	7.8	85
JUN 28...	1145	8.5	115	8	2.5	99
SEP 20...	1130	2.5	27	1	.07	93

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 28...	1600	26	3	235	6.0	4.5
DEC 07...	0920	6.3	--	259	-10.0	.5
JAN 10...	1345	12	--	246	2.0	.0
FEB 23...	1000	13	--	254	2.0	1.5
APR 05...	1630	14	1	250	6.0	2.5
APR 26...	1030	86	--	215	7.5	3.0
MAY 13...	0830	88	0	208	4.0	2.5
MAY 18...	1115	121	--	208	7.0	5.0
MAY 24...	1530	286	--	182	23.5	9.0
MAY 31...	1500	361	0	167	20.0	8.0
JUN 28...	1145	115	54	190	13.0	8.5
JUL 07...	1545	98	--	214	27.5	14.0
AUG 11...	1500	64	--	227	17.5	14.0
SEP 20...	1130	27	0	255	4.0	2.5

PEND OREILLE RIVER BASIN

12383500 BIG KNIFE CREEK NEAR ARLEE, MT

LOCATION (REVISED).--Lat 47°08'51", long 113°58'24", in NW¼SW¼NW¼ sec.14, T.16 N., R.19 W., Lake County, Hydrologic Unit 17020212, Flathead Indian Reservation, on left bank, 150 ft upstream of S Canal, 1 mi upstream of mouth, and 5.5 mi east of Arlee.

DRAINAGE AREA.--6.88 mi², revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1910 to September 1916 (no winter records), October 1982 to September 1983. Monthly discharge only for some periods, published in WSP 1316. Published as "near Jocko" 1910-16 and in WSP 916, and as "above Big Knife Canal, near Jocko" in WSP 1246, 1316.

REVISED RECORDS.--WSP 1246: 1916. WSP 1316: 1910-12, 1915-16.

GAGE.--Water-stage recorder. Altitude of gage is 3,720 ft, from topographic map.

REMARKS.--Water-discharge records good. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 78 ft³/s June 30, 1916, gage height, 3.65 ft, site and datum then in use; minimum discharge, 4.3 ft³/s Apr. 17, 1911, gage height, 1.83 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s May 30, gage height, 1.61 ft; minimum daily, 4.5 ft³/s Feb. 7-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	9.6	7.6	6.0	5.1	5.1	5.1	7.7	33	29	20	14
2	11	9.3	7.6	5.9	5.1	5.1	5.2	7.8	32	29	20	14
3	11	9.2	7.6	5.9	5.1	5.1	5.4	8.0	34	29	20	13
4	11	9.2	7.6	5.6	5.0	5.1	5.1	8.0	33	29	20	13
5	11	9.2	7.6	5.7	4.8	5.1	4.9	8.0	31	29	20	13
6	11	9.1	7.6	5.7	4.6	5.1	4.8	9.1	29	28	19	13
7	11	8.8	7.3	5.6	4.5	5.4	4.8	9.2	29	27	19	12
8	11	8.8	7.2	5.9	4.5	5.4	4.8	9.6	28	26	19	12
9	11	8.8	7.3	6.0	4.5	5.4	4.8	9.6	29	25	19	12
10	11	8.7	6.9	6.0	4.5	5.4	4.8	9.6	30	28	19	12
11	11	8.4	6.8	6.0	4.5	5.7	4.8	9.6	31	30	19	13
12	10	8.4	6.6	6.0	4.5	6.4	4.8	9.6	30	30	18	12
13	10	8.4	6.6	6.0	4.5	6.3	4.8	9.2	27	27	18	12
14	10	8.4	6.6	6.0	4.5	6.3	4.8	9.2	26	28	17	12
15	10	8.4	6.6	6.0	4.5	6.3	4.8	9.2	26	28	17	12
16	10	8.4	6.6	5.8	4.5	6.0	4.8	9.7	26	28	17	12
17	10	8.4	6.6	5.6	4.5	5.7	4.8	9.9	26	28	16	11
18	10	8.4	6.6	5.4	4.7	5.6	4.8	11	32	27	16	11
19	10	8.6	6.6	5.2	4.8	5.6	4.8	12	32	27	16	11
20	10	8.4	6.6	5.1	4.8	5.4	4.8	13	29	25	16	11
21	10	8.4	6.6	5.1	4.8	5.4	5.0	14	27	25	16	11
22	10	8.1	6.6	5.1	4.8	5.4	5.6	17	25	24	16	11
23	10	8.0	6.6	5.1	4.9	5.4	6.7	20	24	24	16	11
24	10	8.0	6.6	5.1	5.1	5.4	9.3	24	23	23	15	11
25	10	8.0	6.6	5.1	5.1	5.4	11	28	23	23	15	11
26	10	7.6	6.6	5.1	5.1	5.1	9.7	32	23	22	14	11
27	10	7.6	6.6	5.1	5.1	5.1	9.2	37	23	22	14	10
28	10	7.6	6.6	5.1	5.1	5.1	8.5	36	26	22	14	10
29	10	7.6	6.4	5.1	---	5.1	8.1	36	29	21	14	10
30	9.9	7.6	6.3	5.1	---	5.1	8.0	40	29	21	13	10
31	9.6	---	6.1	5.1	---	5.1	---	36	---	20	13	---
TOTAL	320.5	253.4	212.1	171.5	133.5	169.1	178.8	509.0	845	804	525	351
MEAN	10.3	8.45	6.84	5.53	4.77	5.45	5.96	16.4	28.2	25.9	16.9	11.7
MAX	11	9.6	7.6	6.0	5.1	6.4	11	40	34	30	20	14
MIN	9.6	7.6	6.1	5.1	4.5	5.1	4.8	7.7	23	20	13	10
CFSM	1.50	1.23	.99	.80	.69	.79	.87	2.38	4.10	3.77	2.46	1.70
IN.	1.73	1.37	1.15	.93	.72	.91	.97	2.75	4.57	4.35	2.84	1.90
AC-FT	636	503	421	340	265	335	355	1010	1680	1590	1040	696

WTR YR 1983 TOTAL 4472.9 MEAN 12.3 MAX 40 MIN 4.5 CFSM 1.79 IN 24.18 AC-FT 8870

PEND OREILLE RIVER BASIN

12383500 BIG KNIFE CREEK NEAR ARLEE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT 28...	1145	10	--	3	190	8.0	6.5	5.0	669	11.1	99
APR 05...	1130	4.8	0	0	200	8.2	5.0	4.0	672	11.6	100
MAY 16...	1245	9.6	100	2	192	8.2	9.0	6.0	668	10.9	100
JUN 03...	0915	35	95	2	162	8.0	14.0	5.5	666	11.0	100
SEP 28...	1615	29	100	61	177	8.2	15.5	7.5	667	10.7	102
SEP 20...	0900	11	0	0	200	7.8	-4.0	3.0	680	12.3	103
DATE	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 28...	100	0	30	6.8	1.0	.0	.5	109	5.0	.3	<.10
APR 05...	110	0	33	7.8	1.1	.0	.6	115	3.0	.5	<.10
MAY 16...	110	0	31	7.4	1.2	.0	.5	111	3.1	.4	<.10
JUN 03...	83	2	25	5.0	.7	.0	.3	81	2.2	.2	<.10
SEP 28...	94	0	28	5.8	.9	.0	.5	97	1.7	.6	<.10
SEP 20...	110	2	31	6.7	1.0	.0	.5	103	2.4	.4	<.10
DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 28...	5.9	115	.16	3.1	<.10	.16	.54	.70	.01	<10	5
APR 05...	5.8	121	.16	1.6	<.10	.24	.46	.70	.01	<10	7
MAY 16...	5.6	116	.16	3.0	<.10	1.4	.50	1.9	<.01	<10	4
JUN 03...	4.8	87	.12	8.2	<.10	.33	.47	.80	.04	<10	5
SEP 28...	5.3	101	.14	7.9	<.10	.21	.79	1.0	.02	<10	5
SEP 20...	5.7	109	.15	3.3	<.10	.35	.35	.70	.01	<10	<3
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)				
SEP 20...	0900	<30	<2	<2	5	24	<40				

PEND OREILLE RIVER BASIN

12383500 BIG KNIFE CREEK NEAR ARLEE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 20...	<2	8	<20	<10	<2	22	10

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 28...	1145	5.0	10	2	.05	75
APR 05...	1130	4.0	4.8	3	.04	46
MAY 16...	1245	6.0	9.6	2	.05	90
JUN 03...	0915	5.5	35	7	.66	87
28...	1615	7.5	29	5	.39	97
SEP 20...	0900	3.0	11	2	.06	65

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 28...	1145	10	3	190	6.5	5.0
DEC 09...	1045	7.2	--	205	-4.5	1.0
JAN 10...	1730	6.2	--	205	5.0	4.0
FEB 23...	1430	5.1	--	202	12.5	6.0
APR 05...	1130	4.8	0	200	5.0	4.0
MAY 16...	1245	9.6	2	192	9.0	6.0
24...	1745	25	--	198	26.5	10.0
JUN 03...	0915	35	2	162	14.0	5.5
28...	1615	29	61	177	15.5	7.5
AUG 11...	1730	19	--	197	23.5	11.0
SEP 20...	0900	11	0	200	-4.0	3.0

PEND OREILLE RIVER BASIN

12387450 VALLEY CREEK NEAR ARLEE, MT

LOCATION.--Lat 47°10'11", long 114°13'52", in NE¼SE¼SE¼ sec.3, T.16 N., R.21 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank, 1.4 mi upstream of East Fork, 6.7 mi west of Arlee, and 7.4 mi southwest of Ravalli.

DRAINAGE AREA.--15.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983. No winter records.

GAGE.--Water-stage recorder. Altitude of gage is 3,450 ft, from topographic map.

REMARKS.--Seasonal water-discharge records good. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68 ft³/s May 26, 1983, gage height, 2.97 ft; minimum, 7.2 ft³/s Apr. 13, 14, 1983, gage height 1.66 ft.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 68 ft³/s May 26, gage height, 2.97 ft; minimum 7.2 ft³/s Apr. 13, 14, gage height, 1.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13					7.3	7.7	17	52	20	13	9.7
2	12					7.4	7.7	18	49	21	13	10
3	12					7.7	7.7	18	47	20	12	9.3
4	12					7.9	7.6	19	46	19	12	9.3
5	12					7.7	7.6	20	43	18	12	9.1
6	12					7.9	7.6	23	41	18	12	9.1
7	12					7.7	7.6	24	40	18	12	9.1
8	12					7.7	7.6	24	40	17	12	9.1
9	12					8.0	7.4	24	41	16	12	9.1
10	12					8.4	7.4	24	39	19	11	9.3
11	12					8.9	7.4	22	37	18	13	11
12	11					9.1	7.4	21	33	16	12	9.7
13	11					9.1	7.4	19	31	16	11	9.3
14	11					9.1	7.4	18	29	16	11	9.1
15	11					8.9	7.4	19	28	16	11	8.9
16	11					8.8	7.4	19	28	16	11	8.8
17	12					8.6	7.4	18	27	16	10	8.8
18	12					8.4	7.9	21	30	15	10	9.1
19	12					8.0	8.2	22	28	15	10	9.1
20	12					8.0	8.9	24	26	17	10	8.9
21	12					7.9	10	28	25	16	9.7	8.9
22	11					7.9	12	32	23	15	9.7	9.1
23	12					7.9	16	39	23	15	10	8.9
24	12					7.7	23	49	22	14	9.7	8.9
25	11					7.7	25	59	21	14	9.5	8.8
26	12					7.6	23	65	20	14	9.3	8.6
27	12					7.6	21	64	20	13	9.3	8.6
28	11					7.4	20	63	23	13	9.1	8.6
29	11					7.4	18	64	21	13	9.1	8.6
30	11					8.0	18	64	21	13	8.9	8.6
31	11					7.9	---	59	---	13	9.1	---
TOTAL	362					249.6	338.7	1000	954	500	333.4	273.4
MEAN	11.7					8.05	11.3	32.3	31.8	16.1	10.8	9.11
MAX	13					9.1	25	65	52	21	13	11
MIN	11					7.3	7.4	17	20	13	8.9	8.6
CFSM	.77					.53	.74	2.11	2.08	1.05	.71	.60
IN.	.88					.61	.82	2.43	2.32	1.22	.81	.66
AC-FT	718					495	672	1980	1890	992	661	542

PEND OREILLE RIVER BASIN
12387450 VALLEY CREEK NEAR ARLEE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)		
OCT 29...	1000	11	--	3	173	7.7	4.0	5.0	677	11.3	100		
APR 07...	1545	7.6	100	2	192	8.3	9.5	3.5	670	11.7	100		
MAY 17...	1545	18	50	1	127	8.0	15.5	6.0	674	11.0	100		
JUN 02...	1630	48	95	2	73	7.8	16.5	6.5	670	10.9	101		
JUN 30...	1230	21	75	1	130	8.1	15.5	8.0	670	10.5	101		
SEP 21...	1430	8.9	10	1	180	8.2	8.5	5.0	680	11.5	101		
DATE		HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
OCT 29...	91	0	26	6.3	1.9	.0	.9	100	5.0	.5	<.10	11	
APR 07...	100	1	29	7.2	2.1	.0	1.0	101	3.5	.6	<.10	11	
MAY 17...	66	0	19	4.6	1.9	.1	.9	67	2.7	.5	<.10	11	
JUN 02...	33	0	9.3	2.4	1.3	.1	.5	37	2.4	.5	<.10	8.6	
JUN 30...	66	0	19	4.6	1.6	.0	.7	70	2.6	.3	<.10	9.4	
SEP 21...	86	0	25	5.8	1.7	.0	.9	91	2.9	.4	<.10	10	
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)		
OCT 29...	112	.15	3.3	<.10	.14	.66	.80	.01	<10	23			
APR 07...	115	.16	2.4	<.10	.42	.08	.50	.01	<10	7			
MAY 17...	81	.11	3.9	<.10	.28	.52	.80	.02	<10	5			
JUN 02...	47	.06	6.1	<.10	.33	.27	.60	.04	<10	9			
JUN 30...	80	.11	4.5	<.10	.20	1.8	2.0	.02	<10	6			
SEP 21...	101	.14	2.4	<.10	.17	.33	.50	<.01	<10	32			
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)						
SEP 21...	1430	<30	<2	<2	<2	2	<40						

PEND OREILLE RIVER BASIN

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12387450 VALLEY CREEK NEAR ARLEE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 21...	<2	2	<20	<10	<2	26	8

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 29...	1000	5.0	11	3	.09	77
APR 07...	1545	3.5	7.6	3	.06	45
MAY 17...	1545	6.0	18	4	.19	66
JUN 02...	1630	6.5	48	4	.52	73
30...	1230	8.0	21	5	.28	65
SEP 21...	1430	5.0	8.9	2	.05	92

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 29...	1000	11	3	173	4.0	5.0
FEB 01...	1515	7.6	--	195	2.0	2.0
24...	1215	6.7	--	197	5.5	3.0
MAR 16...	1600	9.3	--	193	7.0	3.0
APR 07...	1545	7.6	2	192	9.5	3.5
MAY 25...	1815	62	--	75	25.0	7.5
JUN 02...	1630	48	2	73	16.5	6.5
30...	1230	21	1	130	15.5	8.0
AUG 10...	1230	11	--	162	26.5	12.0
SEP 21...	1430	8.9	1	180	8.5	5.0

PEND ORELLE RIVER BASIN

12388400 REVAIS CREEK BELOW WEST FORK, NEAR DIXON, MT

LOCATION.--Lat 47°16'00", long 114°24'21", in SE¼NE¼NW¼ sec.4, T.17 N., R.22 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank, 0.3 mi downstream of West Fork, and 7.3 mi southwest of Dixon, MT.

DRAINAGE AREA.--26.3 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 3,420 ft, from topographic map.

REMARKS.--Water-discharge records good. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 184 ft³/s May 26, 1983, gage height, 3.82 ft; maximum gage height, 4.31 ft Dec. 12, 1982 (backwater from ice); minimum daily discharge, 5.2 ft³/s Feb. 4-6, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 184 ft³/s May 26, gage height, 3.82 ft; maximum gage height, 4.31 ft Dec. 12 (backwater from ice); minimum daily discharge, 5.2 ft³/s Feb. 4-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	8.4	7.4	5.6	5.4	6.9	7.8	34	109	35	13	8.2
2	8.2	8.4	7.4	5.8	5.4	8.3	7.8	34	101	37	12	9.1
3	8.4	8.3	7.4	6.0	5.3	9.1	7.8	35	98	37	12	8.5
4	8.4	8.2	7.5	6.0	5.2	9.1	7.6	35	92	35	11	8.2
5	8.2	8.2	7.4	6.2	5.2	8.9	7.6	36	83	34	11	7.9
6	8.2	8.2	7.4	6.3	5.2	8.9	7.6	42	72	33	11	7.8
7	8.0	8.1	7.0	6.4	5.3	8.9	7.5	44	67	32	11	7.7
8	8.0	7.7	6.2	7.6	5.3	8.7	7.4	45	67	30	11	7.7
9	8.0	7.6	6.3	7.4	5.3	8.6	7.4	44	67	29	10	7.7
10	7.8	7.6	6.3	7.2	5.3	8.9	7.4	42	66	33	10	7.8
11	7.8	7.6	6.4	6.9	5.3	9.4	7.4	40	62	32	11	8.9
12	7.8	7.5	6.4	6.7	5.4	9.8	7.4	38	57	29	10	8.5
13	7.8	7.6	6.5	6.7	5.4	9.8	7.4	35	53	28	10	8.1
14	7.8	7.4	6.5	6.5	5.3	9.8	7.4	35	48	28	10	7.8
15	7.8	7.2	6.6	6.4	5.3	9.6	7.4	35	46	26	9.7	7.7
16	7.8	7.4	7.2	6.4	5.3	9.4	7.4	35	43	26	9.5	7.6
17	8.8	7.6	7.4	6.3	5.5	9.1	7.5	35	42	26	9.0	7.6
18	8.6	7.6	6.9	6.3	6.4	9.0	8.0	38	49	21	8.9	7.8
19	8.6	7.7	6.5	6.2	6.5	8.9	8.9	42	45	20	8.9	8.0
20	8.4	7.6	6.4	6.2	6.2	8.7	9.0	44	41	24	8.8	7.8
21	8.2	7.6	6.4	6.2	6.2	8.6	11	56	40	27	8.7	7.8
22	8.2	7.6	6.5	6.2	6.2	8.6	25	66	38	24	9.2	7.8
23	8.5	7.4	6.3	6.2	6.4	8.5	37	86	35	20	9.8	7.8
24	8.6	7.4	6.2	6.0	6.5	7.8	53	129	35	20	8.8	7.8
25	8.5	7.6	6.0	5.9	6.8	7.8	59	156	33	19	8.8	7.7
26	8.6	7.4	6.2	5.8	6.9	7.8	49	174	32	17	8.6	7.6
27	8.6	7.4	6.0	5.8	6.9	7.6	41	170	33	15	8.6	7.6
28	8.6	7.4	5.8	5.8	6.9	7.6	38	161	40	15	8.4	7.6
29	8.6	7.4	5.8	5.4	---	7.6	34	166	37	14	8.1	7.6
30	8.6	7.4	5.8	5.4	---	7.7	34	168	36	14	7.8	7.6
31	8.6	---	5.6	5.4	---	7.8	---	142	---	13	7.8	---
TOTAL	256.2	230.5	203.7	193.2	162.3	267.2	534.7	2242	1667	793	302.4	237.3
MEAN	8.26	7.68	6.57	6.23	5.80	8.62	17.8	72.3	55.6	25.6	9.75	7.91
MAX	8.8	8.4	7.5	7.6	6.9	9.8	59	174	109	37	13	9.1
MIN	7.8	7.2	5.6	5.4	5.2	6.9	7.4	34	32	13	7.8	7.6
CFSM	.31	.29	.25	.24	.22	.33	.68	2.75	2.11	.97	.37	.30
IN.	.36	.33	.29	.27	.23	.38	.76	3.17	2.36	1.12	.43	.34
AC-FT	508	457	404	383	322	530	1060	4450	3310	1570	600	471

WTR YR 1983 TOTAL 7089.5 MEAN 19.4 MAX 174 MIN 5.2 CFSM .74 IN 10.03 AC-FT 14060

PEND OREILLE RIVER BASIN

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12388400 REVAIS CREEK BELOW WEST FORK NEAR DIXON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT 26...	1500	8.9	--	3	18	--	7.0	5.5	670	10.9	98
APR 07...	1145	7.4	100	2	31	7.2	8.0	2.5	671	11.6	97
MAY 16...	1600	35	75	1	19	7.2	13.0	5.5	674	11.1	100
JUN 02...	0930	103	100	3	12	7.0	11.5	6.0	670	10.9	100
JUN 29...	0900	36	20	1	18	7.1	15.0	8.5	670	10.4	101
SEP 21...	1200	7.8	0	0	23	7.3	7.0	4.5	682	12.0	104
DATE	HARD- NESS (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)
OCT 26...	8	2.1	.7	2.3	.4	.6	15	5.0	.5	<.10	13
APR 07...	11	3.3	.7	2.7	.4	.7	18	2.7	.5	<.10	16
MAY 16...	6	1.9	.4	1.7	.3	.4	11	2.4	.4	<.10	11
JUN 02...	4	1.0	.3	1.1	.3	.3	8.0	1.7	.3	<.10	7.9
JUN 29...	6	1.6	.5	1.5	.3	.4	11	1.5	.7	<.10	9.5
SEP 21...	6	1.7	.5	2.0	.4	.4	13	2.1	.3	<.10	12
DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	
OCT 26...	33	.05	.80	<.10	.13	.37	.50	.02	<10	27	
APR 07...	37	.05	.75	<.10	.29	.41	.70	.02	<10	<3	
MAY 16...	25	.03	2.3	<.10	.32	.38	.70	.01	<10	24	
JUN 02...	17	.02	4.8	<.10	.33	.17	.50	.04	<10	19	
JUN 29...	22	.03	2.2	<.10	.32	.48	.80	.03	<10	20	
SEP 21...	27	.04	.56	<.10	.34	.36	.70	<.01	<10	10	
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)				
SEP 21...	1200	80	<2	<2	<2	46	<40				

PEND OREILLE RIVER BASIN

12388400 REVAIS CREEK BELOW WEST FORK NEAR DIXON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOVERABLE (UG/L AS LI (01132)	MANGA- NESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOVERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
SEP 21...	2	4	<20	<10	<2	15	<3

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 26...	1500	5.5	8.9	2	.05	78
APR 07...	1145	2.5	7.4	3	.06	73
MAY 16...	1600	5.5	35	2	.19	100
JUN 02...	0930	6.0	103	28	7.8	49
JUN 29...	0900	8.5	36	23	2.2	49
SEP 21...	1200	4.5	7.8	2	.04	81

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
OCT 26...	1500	8.9	3	18	7.0	5.5
DEC 08...	0900	6.2	--	37	-13.0	.0
JAN 11...	0830	7.2	--	30	-5.5	1.0
FEB 24...	0845	6.4	--	33	.5	1.5
APR 07...	1145	7.4	2	31	8.0	2.5
MAY 16...	1600	35	1	19	13.0	5.5
MAY 25...	1530	148	--	10	28.0	7.0
JUN 02...	0930	103	3	12	11.5	6.0
JUN 29...	0900	36	1	18	15.0	8.5
JUL 06...	1600	32	--	21	29.0	11.0
JUL 21...	1220	24	--	26	15.0	9.0
AUG 10...	1500	11	--	39	28.5	14.0
SEP 21...	1200	7.8	0	23	7.0	4.5

PEND OREILLE RIVER BASIN

12388650 CAMAS CREEK NEAR HOT SPRINGS, MT

LOCATION.--Lat 47°29'19", long 114°41'42", in NE¼SW¼SE¼ sec.18, T.20 N., R.24 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on left bank 200 ft upstream from bridge, 4.6 mi northwest of former community of Camas Prairie, 7.7 mi southwest of Hot Springs, and 10.0 mi northwest of Perma.

DRAINAGE AREA.--4.46 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 3,120 ft, from topographic map.

REMARKS.--Water-discharge records good except those for period of no gage-height record, Dec. 9 to Jan. 13, which are poor. No known regulation or diversion upstream of station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4.9 ft³/s Apr. 25, 1983, gage height, 0.94 ft; maximum gage height, 1.04 ft Jan. 17, 1983 (backwater from ice); minimum discharge, 0.20 ft³/s Aug. 7, 1983, gage height, 0.44 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4.9 ft³/s Apr. 25, gage height, 0.94 ft; maximum gage height, 1.04 ft Jan. 17 (backwater from ice); minimum discharge, 0.20 ft³/s Aug. 7, gage height, 0.44 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.34	.31	.31	.55	.70	1.6	1.5	2.9	.85	.61	.28	.24
2	.31	.31	.26	.65	.70	1.7	1.4	2.9	1.1	.66	.28	.28
3	.36	.31	.31	.80	.68	1.8	1.4	2.9	.95	.61	.26	.28
4	.36	.31	.57	1.0	.65	1.9	1.4	3.1	.85	.57	.24	.28
5	.34	.31	.47	1.2	.60	2.0	1.4	3.1	.80	.47	.24	.28
6	.34	.36	.50	1.3	.58	2.0	1.4	3.6	.75	.43	.22	.26
7	.36	.34	.55	1.5	.54	2.0	1.4	3.6	.66	.39	.22	.26
8	.36	.31	.60	1.7	.50	2.0	1.4	3.6	.61	.39	.24	.31
9	.36	.28	.65	2.0	.47	2.0	1.4	3.4	.57	.39	.24	.34
10	.36	.28	.70	1.8	.43	2.0	1.4	3.4	.52	.43	.26	.31
11	.36	.28	.75	1.6	.47	2.0	1.4	2.9	.52	.43	.52	.47
12	.36	.27	.80	1.5	.61	2.1	1.4	2.8	.52	.39	.34	.43
13	.36	.27	.85	1.3	.80	2.2	1.4	2.5	.47	.39	.28	.36
14	.36	.26	.90	1.2	.75	2.8	1.3	2.1	.43	.66	.26	.34
15	.36	.25	.95	1.1	.75	2.6	1.1	2.1	.39	.47	.24	.34
16	.39	.34	1.0	1.1	.80	2.4	1.1	2.1	.43	.47	.24	.28
17	.75	.34	1.1	1.1	.80	2.2	1.1	1.9	.47	.47	.24	.28
18	.66	.36	1.0	1.2	1.3	2.2	1.1	1.9	.95	.47	.26	.36
19	.57	.47	1.0	1.0	1.8	2.1	1.2	2.0	.70	.39	.24	.57
20	.52	.39	1.0	.90	1.7	2.0	1.4	2.0	.66	.47	.24	.43
21	.52	.34	.95	.90	1.7	1.9	1.8	2.0	.61	.52	.24	.39
22	.47	.32	.95	.90	1.8	1.9	2.2	1.9	.57	.39	.24	.39
23	.47	.30	.90	.90	1.8	1.9	2.9	1.9	.47	.39	.26	.39
24	.47	.28	.85	.90	1.9	1.9	3.9	1.8	.66	.39	.28	.39
25	.43	.34	.85	.85	1.9	1.8	4.7	1.7	.61	.57	.31	.39
26	.43	.34	.85	.85	1.9	1.6	4.7	1.6	.57	.47	.28	.39
27	.43	.36	.80	.85	1.8	1.5	4.5	1.3	.57	.39	.26	.39
28	.36	.47	.75	.85	1.7	1.5	4.1	1.2	.80	.39	.26	.39
29	.36	.47	.70	.80	---	1.4	3.8	1.1	.66	.36	.24	.39
30	.36	.36	.65	.75	---	1.6	3.3	1.0	.61	.34	.24	.39
31	.34	---	.60	.73	---	1.5	---	.90	---	.28	.24	---
TOTAL	12.82	9.93	23.12	33.78	30.13	60.1	62.5	71.20	19.33	14.05	8.19	10.60
MEAN	.41	.33	.75	1.09	1.08	1.94	2.08	2.30	.64	.45	.26	.35
MAX	.75	.47	1.1	2.0	1.9	2.8	4.7	3.6	1.1	.66	.52	.57
MIN	.31	.25	.26	.55	.43	1.4	1.1	.90	.39	.28	.22	.24
CFSM	.09	.07	.17	.24	.24	.44	.47	.52	.14	.10	.06	.08
IN.	.11	.08	.19	.28	.25	.50	.52	.59	.16	.12	.07	.09
AC-FT	25	20	46	67	60	119	124	141	38	28	16	21

WTR YR 1983 TOTAL 355.75 MEAN .97 MAX 4.7 MIN .22 CFSM .22 IN 2.97 AC-FT 706

PEND OREILLE RIVER BASIN

12388650 CAMAS CREEK NEAR HOT SPRINGS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	CLOUD COVER (PER- CENT) (00032)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
NOV 02...	0900	.31	--	0	114	7.5	-.5	1.5	689	12.5	99
MAR 08...	1345	2.0	90	2	84	7.8	11.0	5.0	681	11.6	102
APR 19...	1215	1.2	0	0	95	7.9	20.5	9.5	673	10.0	99
26...	1000	4.7	10	1	53	7.4	4.0	4.5	677	11.3	98
AUG 02...	1045	.28	0	0	125	7.9	25.5	16.5	679	8.8	101
SEP 21...	1300	.39	5	1	125	7.9	15.0	7.5	686	10.7	99

DATE	HARD- NESS (MG/L AS CACO3) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CACO3) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
NOV 02...	45	0	11	4.3	6.1	.4	.9	57	8.0	1.4	<.10	20
MAR 08...	33	0	8.1	3.0	4.9	.4	.8	41	9.4	1.0	<.10	22
APR 19...	36	0	8.8	3.3	5.3	.4	.8	43	6.7	.8	<.10	13
26...	21	0	5.3	2.0	3.6	.3	.7	27	9.0	.8	<.10	20
AUG 02...	52	0	13	4.8	6.8	.4	.8	65	6.5	.9	.10	21
SEP 21...	49	0	12	4.7	6.6	.4	1.1	59	8.5	1.4	<.10	20

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 02...	86	.12	.07	<.10	.12	.58	.70	.02	<10	49
MAR 08...	74	.10	.40	<.10	.20	.50	.70	.04	<10	130
APR 19...	65	.09	.21	<.10	.18	.42	.60	.07	<10	93
26...	58	.08	.73	<.10	.50	.80	1.3	.04	<10	140
AUG 02...	93	.13	.07	<.10	.13	.47	.60	.06	<10	59
SEP 21...	90	.12	.09	<.10	.06	.34	.40	.02	<10	46

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)
SEP 21...	1300	130	<2	<2	<2	180	<40

PEND OREILLE RIVER BASIN

12388650 CAMAS CREEK NEAR HOT SPRINGS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
SEP 21...	<2	12	<20	<10	<2	94	<3

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 02...	0900	1.5	.31	7	.01	95
MAR 08...	1345	5.0	2.0	7	.04	88
APR 19...	1215	9.5	1.2	6	.02	81
26...	1000	4.5	4.7	12	.15	99
AUG 02...	1045	16.5	.28	4	<.01	93
SEP 21...	1300	7.5	.39	41	.04	95

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
NOV 02...	0900	.31	0	114	-.5	1.5
DEC 08...	1030	.60	--	132	-9.0	.0
JAN 14...	1115	1.2	--	95	.5	.5
FEB 23...	1210	1.6	--	88	9.0	3.0
MAR 08...	1345	2.0	2	84	11.0	5.0
APR 19...	1215	1.2	0	95	20.5	9.5
26...	1000	4.7	1	53	4.0	4.5
JUN 06...	0900	.73	--	78	11.5	10.0
AUG 02...	1045	.28	0	125	25.5	16.5
SEP 21...	1300	.39	1	125	15.0	7.5

PEND OREILLE RIVER BASIN

12389000 CLARK FORK NEAR PLAINS, MT

LOCATION.--Lat 47°25'47", long 114°51'18", in E¹/₂SW¹/₄ sec.1, T.19 N., R.26 W., Sanders County, Hydrologic Unit 17010213, on right bank 2.4 mi southeast of Plains, 6.0 mi downstream from Flathead River, and at mile 239.0.

DRAINAGE AREA.--19,958 mi².

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,449.11 ft National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Nov. 28, 1911, nonrecording gage at site 50 ft upstream at same datum.

REMARKS.--Records excellent. Flow partly regulated by Hungry Horse Reservoir (station number 12362000) and by Flathead Lake (station number 12371500). Diversions for irrigation of about 335,000 acres above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--73 years, 20,010 ft³/s, 14,500,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 134,000 ft³/s June 5, 1948, gage height, 19.17 ft; minimum, 3,200 ft³/s Feb. 8, 1936, Dec. 10, 1940; minimum gage height, 2.70 ft, from partly estimated gage-height record, Sept. 2, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 69,700 ft³/s May 31, gage height, 13.09 ft; minimum, 7,390 ft³/s Aug. 22, gage height, 3.88 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11000	11200	11800	10400	15500	13100	13300	23400	60500	39600	15300	9160
2	10200	10600	12000	14300	15200	12400	12900	23500	55700	40100	13200	9180
3	9720	11600	12000	13900	15000	12800	13400	22000	48000	33200	13200	10600
4	8900	9990	10800	14100	15000	13300	13700	22900	40100	36000	13200	11700
5	9640	9470	12500	14100	15500	13300	13800	23300	36800	35200	12100	9630
6	10200	10100	12200	15000	15200	13300	14100	23700	35300	34000	13600	9190
7	9390	10700	11100	14500	15500	13100	15000	23300	34700	32700	14900	10600
8	12000	11700	11800	15400	15200	13400	14500	21900	32800	41000	14700	9240
9	12400	11700	10400	16500	15200	12800	15000	22900	38800	34000	13000	9450
10	10500	12600	9940	16800	15200	13600	14900	23100	38300	29900	12300	9570
11	8830	10300	9460	15700	15100	13800	14700	22900	40000	24900	12500	9770
12	10600	11500	9000	15300	15000	14600	14800	22300	44900	26300	12200	10100
13	11600	10500	9810	16500	15300	15100	15300	21900	42600	25600	13300	11200
14	9990	10700	9460	16600	15700	15200	14000	23300	34700	31700	13500	12600
15	9980	9020	10400	16600	15900	15000	14100	22800	28700	32100	11400	16200
16	9910	9510	11200	16200	16100	15000	14400	21900	27500	34200	11400	15800
17	10600	9490	11200	16400	16300	14500	14300	22300	31200	37800	11200	15900
18	11200	10200	11600	15800	15700	14200	14400	22600	33000	34500	9880	15700
19	10700	10200	12400	15700	16000	13900	13900	22800	33200	29500	9470	16200
20	10100	9850	12000	15300	15900	13900	14300	24100	32900	24900	8190	16600
21	9920	10400	12700	14900	15600	13300	15100	25100	32400	22600	7830	16200
22	9630	11200	12200	15500	15700	12900	15600	26200	30900	21700	7770	16500
23	10300	10000	9650	16000	14600	12600	16500	29500	29600	23700	9270	15600
24	10600	10400	10900	16200	14900	13300	19500	29400	25800	25900	8460	15700
25	9730	11800	9230	15600	15300	12600	22100	31900	21800	22300	11700	16200
26	9670	11600	11200	15400	14700	13300	22400	36500	20200	20100	12500	16400
27	8700	10800	9550	15300	14700	12900	22600	42900	23100	20000	12800	15800
28	9470	10800	10900	14800	14800	12800	23500	50700	29100	19200	9390	16000
29	11400	12100	10500	15500	---	12700	23900	60600	34200	19900	9370	13000
30	11700	12200	11500	15800	---	10800	23400	65900	36800	19700	9070	14700
31	10800	---	10100	15600	---	12000	---	68200	---	17400	9190	---
TOTAL	319380	322230	339500	475700	429800	415500	489400	923800	1053600	889700	355890	394490
MEAN	10300	10740	10950	15350	15350	13400	16310	29800	35120	28700	11480	13150
MAX	12400	12600	12700	16800	16300	15200	23900	68200	60500	41000	15300	16600
MIN	8700	9020	9000	10400	14600	10800	12900	21900	20200	17400	7770	9160
AC-FT	633500	639100	673400	943600	852500	824100	970700	1832000	2090000	1765000	705900	782500
CAL YR 1982	TOTAL	8140810	MEAN	22300	MAX	89700	MIN	6840	AC-FT	16150000		
WTR YR 1983	TOTAL	6408990	MEAN	17560	MAX	68200	MIN	7770	AC-FT	12710000		

PEND OREILLE RIVER BASIN

12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT

LOCATION.--Lat 47°35'31", long 115°13'43", in NW¼NE¼SE¼ sec.7, T.21 N., R.28 W., Sanders County, Hydrologic Unit 17010213, Lolo National Forest, on right bank 1.3 mi upstream from mouth and 5.5 mi east of Thompson Falls.

DRAINAGE AREA.--642 mi².

PERIOD OF RECORD.--March to September 1911, October 1911 to September 1916 (occasional gage heights, discharges, and discharge measurements), April 1956 to current year. Records for January and February 1911, published in WSP 916, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1246: 1911. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 2,429.97 ft National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). October 1911 to September 1916, nonrecording gage at site 0.2 mi upstream at different datum.

REMARKS.--Records good. Minor diversions above station for irrigation, acreage unknown. Diversion from headwaters of Alder Creek in SW¼ sec.16, T.23 N., R.25 W., to supplement water supply for storage in Upper Dry Fork Reservoir in Little Bitterroot River basin. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--27 years, 476 ft³/s, 10.07 in/yr, 344,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,080 ft³/s June 9, 1964, gage height, 8.53 ft; minimum, 60 ft³/s Nov. 20, 1977, gage height, 1.96 ft, result of freezeup; minimum gage height, 1.01 ft Dec. 17, 1964, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a discharge of 6,190 ft³/s, by slope-area measurement of peak flow at site 0.2 mi downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,840 ft³/s May 27, gage height, 4.78 ft; minimum, 100 ft³/s Dec. 8, gage height, 2.17 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	226	197	185	110	201	344	392	621	1370	491	275	185		
2	221	193	181	130	197	344	392	628	1330	491	275	193		
3	226	189	189	150	197	370	387	642	1240	479	261	189		
4	221	189	230	170	170	392	381	656	1130	461	256	189		
5	217	193	234	201	148	426	370	677	1060	443	252	185		
6	217	205	217	247	159	426	365	750	982	432	247	181		
7	213	201	177	252	193	437	365	811	932	414	243	177		
8	217	193	115	365	193	449	365	835	907	409	239	181		
9	213	189	155	414	193	467	360	804	899	392	234	181		
10	209	189	145	403	185	510	360	781	867	381	234	185		
11	209	185	155	420	185	581	349	728	843	370	252	193		
12	209	177	141	376	185	594	339	684	773	360	247	193		
13	205	185	166	344	193	587	334	642	713	360	234	185		
14	205	177	170	304	189	574	323	628	663	420	230	177		
15	205	159	181	256	189	548	323	628	642	409	226	177		
16	201	185	205	243	193	510	323	656	642	409	217	174		
17	205	193	226	284	197	497	334	663	614	409	213	170		
18	209	226	209	247	239	467	365	728	628	392	209	174		
19	205	230	205	243	284	437	409	851	621	381	205	181		
20	201	217	197	247	275	420	485	851	594	376	205	177		
21	201	205	205	247	266	409	568	924	554	365	201	174		
22	201	197	209	239	270	398	677	1080	529	349	201	174		
23	209	189	197	234	275	392	819	1220	504	339	201	170		
24	209	181	148	230	284	381	1070	1450	497	334	205	170		
25	205	170	120	226	313	370	1130	1660	479	334	205	166		
26	205	170	135	221	344	360	982	1790	461	323	201	162		
27	201	174	130	221	349	349	843	1820	455	313	197	162		
28	197	185	125	226	349	349	750	1740	535	304	193	159		
29	197	189	120	209	---	344	677	1740	510	299	189	159		
30	193	189	115	217	---	376	642	1740	504	289	185	159		
31	189	---	115	209	---	403	---	1590	---	280	181	---		
TOTAL	6441	5721	5302	7885	6415	13511	15479	31018	22478	11808	6913	5302		
MEAN	208	191	171	254	229	436	516	1001	749	381	223	177		
MAX	226	230	234	420	349	594	1130	1820	1370	491	275	193		
MIN	189	159	115	110	148	344	323	621	455	280	181	159		
CFSM	.32	.30	.27	.40	.36	.68	.80	1.56	1.17	.59	.35	.28		
IN.	.37	.33	.31	.46	.37	.78	.90	1.80	1.30	.68	.40	.31		
AC-FT	12780	11350	10520	15640	12720	26800	30700	61520	44590	23420	13710	10520		
CAL YR 1982	TOTAL	203420	MEAN	557	MAX	2630	MIN	100	CFSM	.87	IN	11.79	AC-FT	403500
WTR YR 1983	TOTAL	138273	MEAN	379	MAX	1820	MIN	110	CFSM	.59	IN	8.01	AC-FT	274300

PEND OREILLE RIVER BASIN

12390700 PROSPECT CREEK AT THOMPSON FALLS, MT

LOCATION.--Lat 47°35'10", long 115°21'15", in lot 12, SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.7, T.21 N., R.29 W., Sanders County, Hydrologic Unit 17010213, on right bank 500 ft downstream from Dry Creek, 0.5 mi upstream from mouth, and 0.7 mi south of Thompson Falls.

DRAINAGE AREA.--182 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 2,382.40 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known regulation or diversions above station. Several observations of water temperature and specific conductance were made during the year and are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--27 years, 257 ft³/s, 19.18 in/yr, 186,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,490 ft³/s Jan. 16, 1974, gage height, 9.86 ft; minimum, 26 ft³/s Nov. 30, 1979, gage height, 0.19 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,300 ft³/s May 30, gage height, 4.83 ft; minimum, 48 ft³/s Nov. 16, 27, gage height, 0.60 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	53	51	61	110	314	233	426	887	210	105	70
2	66	53	50	62	108	298	233	437	810	208	104	70
3	65	52	52	63	107	289	233	452	761	208	103	69
4	65	51	60	64	105	305	228	461	717	192	100	68
5	65	51	55	74	103	348	220	479	668	180	99	67
6	63	54	54	74	102	371	216	572	632	172	97	66
7	63	54	51	72	103	374	214	610	614	168	96	65
8	63	52	51	122	102	371	216	589	600	168	94	66
9	62	51	51	163	100	371	212	552	586	162	93	65
10	62	51	51	163	99	401	208	510	565	156	92	66
11	61	51	51	222	98	470	205	470	552	148	100	68
12	61	50	51	226	98	476	197	434	494	146	93	65
13	60	51	52	216	98	452	190	415	437	143	89	64
14	59	50	53	201	96	423	187	404	401	163	88	63
15	59	49	54	192	96	393	182	412	398	156	88	62
16	58	49	63	183	97	366	182	417	404	157	85	62
17	60	50	63	175	103	348	182	412	385	152	83	61
18	59	51	61	167	129	333	196	452	387	146	81	62
19	58	58	59	159	145	314	226	516	374	140	80	62
20	58	57	60	149	151	286	277	532	351	139	79	60
21	58	54	63	145	156	267	356	624	321	135	78	59
22	58	53	63	139	165	254	429	733	298	130	78	59
23	60	51	62	133	187	243	523	818	273	128	78	58
24	59	49	62	129	208	235	676	959	267	125	78	57
25	57	49	61	123	229	226	781	1120	254	123	77	57
26	57	49	63	122	277	216	698	1210	239	121	74	57
27	57	50	63	123	316	207	586	1200	241	118	74	56
28	56	51	63	121	326	203	497	1140	248	115	73	56
29	55	51	63	117	---	197	452	1200	226	112	72	55
30	55	51	63	114	---	216	434	1240	218	109	70	54
31	53	---	63	112	---	229	---	1110	---	108	69	---
TOTAL	1858	1546	1782	4186	4014	9796	9669	20906	13608	4638	2670	1869
MEAN	59.9	51.5	57.5	135	143	316	322	674	454	150	86.1	62.3
MAX	66	58	63	226	326	476	781	1240	887	210	105	70
MIN	53	49	50	61	96	197	182	404	218	108	69	54
CFSM	.33	.28	.32	.74	.79	1.74	1.77	3.70	2.50	.82	.47	.34
IN.	.38	.32	.36	.86	.82	2.00	1.98	4.27	2.78	.95	.55	.38
AC-FT	3690	3070	3530	8300	7960	19430	19180	41470	26990	9200	5300	3710

CAL YR 1982	TOTAL	110666	MEAN	303	MAX	1610	MIN	40	CFSM	1.67	IN	22.62	AC-FT	219500
WTR YR 1983	TOTAL	76542	MEAN	210	MAX	1240	MIN	49	CFSM	1.15	IN	15.64	AC-FT	151800

PEND OREILLE RIVER BASIN

12391400 CLARK FORK BELOW NOXON RAPIDS DAM, NEAR NOXON, MT

LOCATION.--Lat 47°57'40", Long 115°43'58", in SW¼ sec.33, T.26 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at Noxon Rapids Dam 1 mi upstream from Rock Creek, 3 mi southeast of Noxon, and at mile 169.7.

DRAINAGE AREA.--21,833 mi².

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

GAGE.--Plant generator rating for discharge through powerplant. Water-stage recorder on reservoir determines head on taintor gates. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by The Washington Water Power Co.).

REMARKS.--Records good. Flow regulated by Hungry Horse Reservoir (station 12362000) and Flathead Lake (station 12371500). Diversions for irrigation of about 350,000 acres above station. Some sub-surface flow is indicated by comparison with records for adjacent gaging stations. Figures of discharge given herein are combined flows through turbines and spillway.

COOPERATION.--Records collected by The Washington Water Power Co., under general supervision of the Geological Survey, in connection with a Federal Power Commission project.

AVERAGE DISCHARGE.--23 years, 21,350 ft³/s, 15,470,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 124,900 ft³/s June 12, 1964; minimum daily, 80 ft³/s Oct. 16, 1960, Aug. 26, 1962, Aug. 18, 25, 31, Sept. 1, 1963, Sept. 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 73,100 ft³/s May 31; minimum daily, 2,310 ft³/s Aug. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11900	13000	11800	14200	19200	20600	13600	27800	66500	38800	19300	5650
2	11400	9430	10700	8200	18800	18800	12600	24400	62400	41200	12700	8620
3	9140	9730	11200	12400	19300	19200	12000	28700	54900	37600	13500	11300
4	12500	12000	11300	13300	15600	12300	14800	22200	45100	33000	16000	11500
5	8790	14300	15000	15500	8830	6290	14100	23200	40500	37500	15200	10500
6	9000	10400	11600	17400	8560	16000	14600	22300	41100	39700	14400	13800
7	7410	10400	13100	16700	16400	18700	17800	26400	37200	38300	10500	4900
8	8590	11400	16100	16800	19100	12600	15600	25500	40200	38700	10600	9590
9	12200	10200	7590	16800	14500	13000	18600	26800	38500	36400	11800	9530
10	13500	8250	12400	14200	14600	15200	19500	26500	38700	27900	11800	9210
11	7280	11400	14300	21300	14300	12900	15400	27300	41700	24200	10500	10100
12	11600	10200	6660	21700	15100	11900	12100	27700	42400	22800	13900	8010
13	11600	11100	4750	18000	15500	17000	11800	26600	45300	27800	14600	10800
14	10200	9930	8960	17600	13700	14500	17200	19300	41400	27200	14500	15800
15	7910	13900	13000	15100	17700	19400	14300	22400	33300	34000	12400	15500
16	8350	9970	15200	9840	17200	19000	13800	24900	28600	37700	9340	18600
17	12400	9030	14300	19400	20300	16800	12400	20500	28400	38300	11400	16600
18	11600	7270	11200	14700	16800	18200	17200	25000	35300	38200	10700	15000
19	12200	8870	7800	17800	17300	19600	15000	23900	36500	33400	12400	14700
20	11100	11100	9390	16300	16000	9990	15400	25600	32900	25400	10900	15100
21	12000	8470	12300	14600	16100	12400	16300	29600	32200	19600	4830	14500
22	10300	10700	12700	19000	12200	13200	16000	28600	30700	23000	8200	18500
23	9910	12500	18700	12900	17900	10700	20800	37300	32400	22100	5460	14900
24	10500	10000	6930	15500	16800	17000	26400	37700	29800	21200	9000	13300
25	8600	8520	5830	16900	17000	17200	23400	41600	23800	24900	10400	14600
26	6860	13700	11600	19000	16500	16700	24500	45000	19300	24600	13100	15800
27	10400	14100	9430	18200	11900	11800	24600	44500	24500	20200	14400	16100
28	16000	11400	7430	15100	19600	13800	30000	47100	25000	22700	10100	19800
29	9320	13800	10200	14400	---	12600	26700	57800	33800	20600	15100	16300
30	5970	8000	11200	13800	---	8160	29700	69500	38300	17800	2310	15100
31	6420	---	11200	17200	---	13200	---	73100	---	9270	9430	---
TOTAL	314950	323070	343870	493840	446790	458740	536200	1008800	1120700	904070	358770	393710
MEAN	10160	10770	11090	15930	15960	14800	17870	32540	37360	29160	11570	13120
MAX	16000	14300	18700	21700	20300	20600	30000	73100	66500	41200	19300	19800
MIN	5970	7270	4750	8200	8560	6290	11800	19300	19300	9270	2310	4900
AC-FT	624700	640800	682100	979500	886200	909900	1064000	2001000	2223000	1793000	711600	780900
CAL YR 1982	TOTAL	8652550	MEAN	23710	MAX	97300	MIN	100	AC-FT	17160000		
WTR YR 1983	TOTAL	6703510	MEAN	18370	MAX	73100	MIN	2310	AC-FT	13300000		

PEND OREILLE RIVER BASIN

12392000 CLARK FORK AT WHITEHORSE RAPIDS, NEAR CABINET, ID

LOCATION.--Lat 48°05'18", long 116°04'16", in SW¼NW¼ sec.27, T.55 N., R.3 E., Bonner County, Hydrologic Unit 17010213, on right bank, 0.8 mi downstream from Cabinet Gorge Dam at cableway, 2.1 mi downstream from Blue Creek, 6.1 mi southeast of Clark Fork, and at mile 149.1. Discharge computed at Whitehorse Rapids, 2.3 mi downstream.

DRAINAGE AREA.--22,073 mi², based on revised area of 22,067 mi² for site 0.4 mi upstream.

PERIOD OF RECORD.--September 1928 to current year. Prior to October 1952, published as "near Heron, MT."

REVISED RECORDS.--WSP 1182: 1936. WSP 1736: 1931, 1936(m), 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,060.00 ft National Geodetic Vertical Datum of 1929, levels by Washington Water Power Co. See WSP 1934 for history of changes made prior to Sept. 30, 1952. Water-stage recorder at site 0.4 mi upstream at datum 60.00 ft lower Oct. 1, 1952, to Sept. 30, 1964, and at present datum Oct. 1, 1964, to May 21, 1973.

REMARKS.--Records fair. Flow regulated by Hungry Horse Reservoir and Flathead Lake. Extreme diurnal fluctuation caused by powerplant at Cabinet Gorge Dam. Diversions above station for irrigation of about 354,000 acres. Discharge measurements indicate about 800 ft³/s ground-water inflow between Cabinet Gorge Dam and Whitehorse Rapids. Records given herein represent flow at Whitehorse Rapids, computed by adding 600 ft³/s to observed flows at the measuring cableway, and are considered comparable to records at former site near Heron, except for minor surface inflow from additional drainage area. To determine flow at Cabinet Gorge Dam, 800 ft³/s should be deducted from discharges published herein.

AVERAGE DISCHARGE.--55 years, 22,440 ft³/s, 16,260,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153,000 ft³/s May 29 to June 1, 1948; maximum gage height, 50.97 ft May 31, 1948, site and datum then in use; minimum discharge observed, 270 ft³/s Aug. 12, 1952 (discharge measurement), at sites in use since October 1952, during filling of Cabinet Gorge reservoir; minimum daily since reservoir filled, 762 ft³/s Sept. 2, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 195,000 ft³/s from floodmark, elevation, 2,137.1 ft, at site about 4 mi upstream and 0.1 mi below "near Heron" site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86,800 ft³/s May 31, gage height, 22.75 ft; minimum recorded, 3,540 ft³/s Sept. 26, gage height, 6.22 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12700	14200	12800	14000	20800	23600	16100	32200	73100	43200	22800	6160
2	14000	11700	12500	10400	20800	22900	14600	28300	68800	45300	14300	10800
3	10200	10700	11600	13300	22000	22000	14800	32200	60400	42600	16600	12200
4	15000	13800	13000	14600	17400	15300	15700	26400	50700	36200	16500	12700
5	9130	15800	17100	16600	10200	9210	17800	25600	45800	41500	17100	13600
6	10100	11900	13000	19100	8630	18200	15400	25800	47000	45100	16100	15000
7	9130	12400	15000	18900	19800	21700	20600	29900	43500	42100	11900	5860
8	10500	11800	17200	18800	21200	16300	18200	29800	45900	42500	12900	9460
9	12600	11500	8770	19100	16700	15200	20700	29300	44700	40700	15900	10200
10	14700	9400	13300	16100	15900	19300	20900	29500	45100	32600	10600	11700
11	8600	12200	16100	23900	16700	16000	21000	31500	45800	28800	12000	10800
12	12700	13500	8850	24800	18000	16100	15000	30200	46400	24600	15500	9750
13	12600	10500	6250	19800	16900	17900	13800	30300	50400	31200	15900	11200
14	12200	12100	8980	22100	15300	19100	16400	22400	46500	31900	16400	17700
15	9060	14500	14700	15200	18200	22700	16600	25300	39400	37500	15400	18100
16	9370	11100	16700	12200	18500	21100	16000	29600	32600	43500	11900	19800
17	14200	10000	16000	20600	22600	21500	13900	22600	33000	42100	13900	18200
18	12700	8370	12800	16700	18000	19700	19000	27500	39100	43700	9160	16900
19	15200	10100	10900	19500	19800	21700	17100	28200	41200	39600	14000	16600
20	12600	12500	9690	18100	20000	17000	19200	30500	38300	29300	12500	16800
21	12900	10100	13600	16400	16800	11300	18300	33900	34800	24800	5750	16500
22	11400	10900	14200	21000	15200	17600	18900	35200	36000	26500	8530	19100
23	9780	14000	20900	14000	19800	13600	23300	39000	35400	25600	6520	17600
24	11700	11300	8530	18000	19300	17400	30300	43400	33700	23300	11600	14400
25	9940	9590	6990	18800	19200	19300	27200	47700	29400	28500	11800	16500
26	7750	14600	13000	21200	19500	20000	30500	50100	22000	28400	14000	17300
27	11500	15700	11300	19400	15300	14300	27600	51400	28000	23100	15600	17700
28	16600	13100	7210	17200	19800	17000	32900	54400	29200	24900	12000	21800
29	12100	15000	11800	16100	---	14400	32200	62600	36500	24100	15700	17900
30	5910	9230	12400	15000	---	9700	32300	76700	42600	20400	4170	18100
31	7440	---	13200	18900	---	15900	---	80000	---	11000	10200	---
TOTAL	354310	361590	388370	549800	502330	547010	616300	1141500	1265300	1024600	407230	440430
MEAN	11430	12050	12530	17740	17940	17650	20540	36820	42180	33050	13140	14680
MAX	16600	15800	20900	24800	22600	23600	32900	80000	73100	45300	22800	21800
MIN	5910	8370	6250	10400	8630	9210	13800	22400	22000	11000	4170	5860
AC-FT	702800	717200	770300	1091000	996400	1085000	1222000	2264000	2510000	2032000	807700	873600
CAL YR 1982	TOTAL	9625370	MEAN	26370	MAX	101000	MIN	4120	AC-FT	19090000		
WTR YR 1983	TOTAL	7598770	MEAN	20820	MAX	80000	MIN	4170	AC-FT	15070000		

PEND OREILLE RIVER BASIN

Smaller reservoirs in Pend Oreille River basin in Montana

12325000 GEORGETOWN LAKE.--Lat 46°12'55", long 113°16'40", in SW¼ sec.6, T.5 N., R.13 W., Granite County, Hydrologic Unit 17010202, at dam on Flint Creek, 2 mi west of Southern Cross, 8 mi south of Philipsburg, and at mile 38.8. DRAINAGE AREA, 50.1 mi². PERIOD OF RECORD, October 1939 to current year. May to July 1948 daily elevations and contents, published in WSP 1080. Records of daily elevations since October 1940 are in files of Helena district office. Nonrecording gage read daily. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by The Montana Power Co.).

Reservoir is formed by masonry and concrete dam. Storage began about 1905 to store water for pumpage into Warm Springs Creek for use of reduction works of Anaconda Copper Mining Co. at Anaconda, or for release through Flint Creek for irrigation, power development, and recreation. Usable capacity, 31,040 acre-ft between elevation 6,398.00 ft, bottom of outlet pipes, and 6,429.50 ft, maximum design level. Figures given herein represent usable contents. Records furnished by The Montana Power Co. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 31,700 acre-ft July 8, 9, 1980, elevation, 6,429.72 ft; minimum observed, 15,990 acre-ft Apr. 28, 29, 1957, elevation, 6,424.15 ft.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 31,160 acre-ft July 12-16, elevation, 6,429.54 ft; minimum observed, 24,910 acre-ft Apr. 20-23, elevation, 6,427.40 ft.

12332500 EAST FORK ROCK CREEK RESERVOIR.--Lat 46°07'54", long 113°22'48", in NE¼ sec.6, T.4 N., R.14 W., Granite County, Hydrologic Unit 17010202, at dam on East Fork Rock Creek, 14 mi southwest of Philipsburg, and at mile 9.7. DRAINAGE AREA, 30.3 mi². PERIOD OF RECORD, October 1939 to current year (seasonal records only for most years 1946-60, 1964, 1968). Records for October 1955 to April 1956, published in WSP 1446, have been found to be in error and should not be used. May to August 1948 scattered daily contents, published in WSP 1080. Elevations determined by hand levels from reference points at indefinite intervals. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Montana Department of Natural Resources and Conservation).

Reservoir is formed by earthfill dam with concrete spillway completed in 1937; storage began in 1936. Usable capacity, 16,040 acre-ft between elevation 5,990.0 ft, bottom of outlet, and 6,055.5 ft, spillway crest. Dead storage unknown. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, in excess of 16,000 acre-ft when reservoir was full and spilling at times in several years; no storage at times in 1955, 1961, 1966, 1973, 1977, and 1978.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 13,730 acre-ft July 15, elevation, 6,049.5 ft; minimum observed, 8,880 acre-ft Sept. 30 (interpolated).

12336500 NEVADA LAKE.--Lat 46°48'06", long 112°48'42", in NE¼ sec.14, T.12 N., R.10 W., Powell County, Hydrologic Unit 17010203, at dam on Nevada Creek, 7 mi west of Finn. DRAINAGE AREA, 145 mi². PERIOD OF RECORD, October 1939 to current year (incomplete 1948, 1950-58, 1961-62, 1965-66, 1969-70). Nonrecording gage usually read at or near end of month. Prior to October 1976, published as Nevada Creek Reservoir near Finn. Prior to 1961, elevations determined by hand level from spillway. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Montana Department of Natural Resources and Conservation).

Reservoir is formed by earthfill dam with concrete spillway completed in 1938. Usable capacity, 12,640 acre-ft between elevation, 4,551.5 ft, bottom of outlet, and 4,616.0 ft, spillway crest. Dead storage, 12 acre-ft below elevation, 4,551.5 ft. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,520 acre-ft June 3, 1953, elevation, 4,618.3 ft; no storage Aug. 14 to Oct. 31, 1973, Sept. 18, 1977.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 12,870 acre-ft June 1, elevation, 4,617.26 ft; minimum contents, 3,770 acre-ft Oct. 15, elevation, 4,586.46 ft.

12342000 PAINTED ROCKS LAKE.--Lat 45°43'06", long 114°16'45", in NE¼SE¼ sec.26, T.1 S., R.22 W., Ravalli County, Hydrologic Unit 17010205, at dam on West Fork Bitterroot River, 7 mi upstream from Nez Perce Creek, 16.5 mi southwest of Conner, 23 mi south of Darby, and at mile 19.8. DRAINAGE AREA, 317 mi². PERIOD OF RECORD, June 1940 to current year (incomplete 1956-58, 1960-61). Prior to December 1958, figures of contents may be total or usable. Records for August 1954, published only in WSP 1736. May to September 1948 scattered daily contents, published in WSP 1080. Prior to October 1959, published as West Fork Bitterroot River Reservoir near Conner. Elevations determined at or near end of month by hand levels from spillway or from staff gage on right wingwall above spillway. Prior to 1959, elevations determined by measuring from floor of control tower. Datum of gage is at National Geodetic Vertical Datum of 1929.

Reservoir is formed by earthfill dam with concrete spillway completed in 1940. Usable capacity, 31,700 acre-ft between elevation 4,625.5 ft, bottom of outlet, and 4,725.5 ft, spillway crest. Dead storage, 656 acre-ft below elevation 4,625.5 ft. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation prior to December 1958; most monthly readings made by Geological Survey personnel thereafter. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES OF PERIOD OF RECORD: Maximum contents observed, 33,930 acre-ft June 18, 1974, elevation, 4,728.7 ft; no storage October 1940 to January 1941, March 1942, March, April 1954, Apr. 25, 1973, winter of 1973-74, 1974-75, November, December 1976, January through March 1982.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 32,120 acre-ft June 2, elevation, 4,726.1 ft; minimum observed, 12,100 acre-ft Mar. 1, elevation, 4,685.5 ft.

12344500 LAKE COMO.--Lat 46°03'40", long 114°14'00", in NE¼NW¼ sec.32, T.4 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, at dam on Rock Creek, 4 mi northwest of Darby, and at mile 3.6. DRAINAGE AREA, 54.6 mi². PERIOD OF RECORD, October 1939 to current year. April to August 1948 scattered daily gage height and contents, published in WSP 1080. Prior to October 1967, published as Como Lake. Nonrecording gage read at or near end of month in winter and more often during irrigation season but only monthend figures supplied. Datum of gage is at National Geodetic Vertical Datum of 1929.

Reservoir is formed by earthfill dam with concrete spillway completed in 1909. Usable capacity, 34,920 acre-ft between elevation 4,188.0 ft, bottom of outlet, and 4,242.5 ft, spillway crest. Dead storage unknown below elevation, 4,188.0 ft, elevation of natural lake outlet. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bitterroot Irrigation District. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 36,920 acre-ft June 30, 1957, June 30, 1960, July 1, 1963, June 1, 1964, elevation, 4,244 ft; no storage at times in several years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 35,120 acre-ft June 30, elevation, 4,242.7 ft; minimum observed, 4,580 acre-ft; Oct. 6, elevation, 4,203.8 ft.

PEND OREILLE RIVER BASIN

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

CAMAS RESERVOIRS.--A group of four reservoirs in the Little Bitterroot River basin operated for irrigation and recreation. Nonrecording gages are set to approximate National Geodetic Vertical Datum of 1929 and are read on the last day of the month. Figures given herein represent usable contents. Records furnished by Bureau of Indian Affairs. May to July 1948 scattered daily contents for individual reservoirs, published in WSP 1080.

12372500 **LITTLE BITTERROOT LAKE.**--Lat 48°05'34", long 114°14'51", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.16, T.27 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 2 mi southwest of Marion and at mile 70.3. DRAINAGE AREA, 31.8 mi². PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year.

Reservoir is formed by earthfill dam; storage began in 1918. Usable capacity, 26,400 acre-ft between elevation 3,897.98 ft and 3,906.48 ft. No dead storage. Prior to 1960, usable capacity, 24,000 acre-ft.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 26,800 acre-ft May 31, 1959, elevation, 3,906.60 ft; no storage at times in 1939-46.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 21,800 acre-ft July 31, elevation, 3,905.3 ft; minimum observed, 17,100 acre-ft Nov. 30, elevation, 3,904.0 ft.

12372500 **HUBBART RESERVOIR.**--Lat 47°55'43", long 114°43'53", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.18, T.25 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 9 mi northwest of Niarada and at mile 55.8. DRAINAGE AREA, 114 mi². PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year.

Reservoir is formed by concrete variable-radius dam; storage began in 1924. Usable capacity, 12,120 acre-ft between elevation 3,140.0 ft and 3,210.0 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,050 acre-ft May 31, 1959, elevation, 3,220.92 ft; no storage September to December 1959, Sept. 30, Oct. 1, 1973.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 11,990 acre-ft June 30, elevation, 3,218.7 ft; minimum observed, 7,260 acre-ft Sept. 30, elevation, 3,206.6 ft.

12375000 **UPPER DRY FORK RESERVOIR.**--Lat 47°44'55", long 114°40'53", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T.23 N., R.24 W., Sanders County, Hydrologic Unit 17010212, at dam on Dry Fork Creek, 4 mi northwest of Lonepine. DRAINAGE AREA, 8.53 mi². PERIOD OF RECORD, April 1940, September 1940 to current year.

Reservoir is formed by earthfill dam; storage began in 1940. Usable capacity, 2,810 acre-ft between elevation 2,900.0 ft and 2,928.5 ft. No dead storage. Prior to 1960, usable capacity, 2,700 acre-ft. Natural flow of Alder Creek in Thompson River basin is diverted in SW $\frac{1}{4}$ sec 16, T.23 N., R.25 W., and carried by inter-basin canal to upper Dry Fork Creek for storage in this reservoir.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 3,140 acre-ft May 31, 1980, elevation, 2929.5 ft; no storage at times in 1940, 1942, 1943.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 2,940 acre-ft May 31, elevation, 2,928.9 ft; minimum observed, 690 acre-ft Sept. 30, elevation, 2,918.0 ft.

12375500 **DRY FORK RESERVOIR.**--Lat 47°42'00", long 114°40'02", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.3, T.22 N., R.24 W., Sanders County, Hydrologic Unit 17010202, at dam on Dry Fork Creek, 1 mi west of Lonepine. DRAINAGE AREA, 17.8 mi². PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year. Records published in WSP 1316 were listed in error and should not be used.

Reservoir is formed by earthfill dam; storage began in 1921. Usable capacity, 3,860 acre-ft between elevation 2,830.5 ft and 2,856.3 ft. No dead storage. Prior to 1960, usable capacity, 4,000 acre-ft.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 4,270 acre-ft May 31, 1980, elevation, 2,857.4 ft; no storage Aug. 31, 1944, Aug. 31, Sept. 30, 1946, Oct. 31, 1951.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 3,930 acre-ft Apr. 30, elevation, 2,834.5 ft; minimum observed, 90 acre-ft Sept. 30, elevation, 2,834.5 ft.

MISSION VALLEY RESERVOIRS.--A group of eight reservoirs, in an area east of and tributary to Flathead River and between Flathead Lake and Jocko River, Lake County, Hydrologic Unit 17010212, is operated for irrigation. PERIOD OF RECORD, December 1939, September 1940 to current year. Nonrecording gages are set to approximate National Geodetic Vertical Datum of 1929, and are read on the last day of the month. Figures given herein represent usable contents. Records furnished by Bureau of Indian Affairs. April to July 1948 monthend contents and daily maximum for individual reservoirs, published in WSP 1080.

12371000 **TURTLE LAKE.**--Lat 47°40'19", long 114°04'32", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.18, T.22 N., R.19 W., at outlet works 4 mi southeast of Polson, fed entirely by various canals; storage began in 1932. Prior to October 1968, published as "Twin Reservoir." Usable capacity, 899 acre-ft between elevation 3,061.0 ft and 3,090.5 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 899 acre-ft June 30, 1956, June 30, 1964, elevation, 3,090.5 ft; no storage at times in July 1941, August, September 1944, October 1957, July, August, September 1977.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 785 acre-ft June 30, elevation, 3,088.7 ft; minimum observed, 361 acre-ft Mar. 31, elevation, 3,080.6 ft.

12376700 **LOWER CROW RESERVOIR.**--Lat 47°30'09", long 114°13'35", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.11, T.20 N., R.21 W., at outlet works on Crow Creek, 5.2 mi northwest of Charlo, at mile 3.44; storage began in 1933. Usable capacity, 10,350 acre-ft between elevation 2,800 ft and 2,877.0 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,770 acre-ft May 21, 22, 1948, elevation, 2,878.2 ft; no storage Sept. 30, 1963, Oct. 31, Nov. 30, 1981.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 6,830 acre-ft Aug. 31, elevation, 2,865.2 ft; minimum observed, 4,020 acre-ft Dec. 31, elevation 2,851.2 ft.

12377200 **MISSION RESERVOIR.**--Lat 47°18'54", long 114°01'15", in NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.15, T.18 N., R.19 W., at outlet works on Mission Creek, 4 mi east of St. Ignatius and at mile 16.7; storage began in 1935. Usable capacity, 7,250 acre-ft between elevation 3,340.7 ft and 3,406.0 ft.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,370 acre-ft June 30, 1970, June 30, 1976, elevation, 3,409.8 ft; no storage at times during September 1949, February, March, 1964.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 8,490 acre-ft June 30, elevation, 3,410.2 ft; minimum observed, 2,140 acre-ft Mar. 31, elevation, 3,385.6 ft.

PEND OREILLE RIVER BASIN

Smaller reservoirs in Pend Oreille River Basin in Montana--Continued

MISSION VALLEY RESERVOIRS--Continued

12377300 ST. MARYS LAKE.--Lat 47°15'58", long 113°56'08", in SW¼NE¼ sec.6, T.17 N., R.18 W., at outlet works on Dry Creek, 8 mi southwest of St. Ignatius, fed by water diverted from Jocko River; storage began in 1919. Prior to October 1968, published as "Tabor Reservoir." Usable capacity, 23,300 acre-ft between elevation 3,911.5 ft and 4,025.0 ft, not including contents of natural lake. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 23,510 acre-ft June 30, 1976, June 30, 1978, elevation, 4,025.7 ft; no storage Sept. 30, 1969.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 23,510 acre-ft June 30, elevation, 4,025.7 ft; minimum observed, 2,050 acre-ft Feb. 28, elevation, 3,924.7 ft.

12377900 PABLO RESERVOIR.--Lat 47°38'25", long 114°08'33", in SW¼SW¼NE¼ sec.27, T.22 N., R.20 W., at outlet works 3 mi south of Polson, 3 mi northwest of Pablo, fed entirely by various canals, some water supplied by Flathead pumping plant; storage began in 1914. Usable capacity, 27,100 acre-ft between elevation 3,179 ft, gate sill, and 3,210.2 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 28,120 acre-ft June 30, 1968, elevation, 3,210.77 ft; no storage at times in several years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 27,100 acre-ft July 31, elevation, 3,210.3 ft; minimum observed, 8,340 acre-ft Oct. 31, elevation, 3,197.7 ft.

12378200 McDONALD RESERVOIR.--Lat 47°25'31", long 113°59'27", in SE¼NE¼NE¼ sec.10, T.19 N., R.19 W., at outlet works 2 mi northeast of Charlo, 9 mi east of Charlo, and at mile 12.4; storage began in 1919. Usable capacity, 8,220 acre-ft between elevation 3,545.0 ft and 3,598.0 ft, not including contents of natural lake. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,330 acre-ft June 30, 1983, elevation, 3,598.5 ft; no storage Aug. 31, 1961, Aug. 30, 1966, Oct. 31, 1971, Apr. 30, 1972.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 8,330 acre-ft June 30, elevation, 3,598.5 ft; minimum observed, 1,110 acre-ft Apr. 30, elevation, 3,555.3 ft.

12379700 KICKING HORSE RESERVOIR.--Lat 47°27'25", long 114°04'35", in SE¼NE¼NE¼ sec.36, T.20 N., R.20 W., at outlet works 4 mi northeast of Charlo, fed entirely by various canals; storage began in 1930. Usable capacity, 8,350 acre-ft between elevation 3,042.0 ft and 3,061.94 ft. Dead storage, 70 acre-ft below elevation 3,042.0 ft.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,320 acre-ft June 30, 1976, May 31, 1980, elevation, 3,064.4 ft; no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 9,600 acre-ft May 31, June 30, elevation, 3,063.5 ft; minimum observed, 2,280 acre-ft Nov. 30, elevation, 3,052.0 ft.

12380000 NINEPIPE RESERVOIR.--Lat 47°27'20", long 114°08'08", in NE¼NW¼NW¼ sec.34, T.20 N., R.20 W., at outlet works 2 mi northeast of Charlo, fed entirely by various canals; storage began in 1911. Usable capacity 14,870 acre-ft between elevation 2,895.4 ft and 3,010.0 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 16,950 acre-ft June 30, 1974, elevation, 3,012.3 ft; no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 15,500 acre-ft July 31, elevation, 3,010.4 ft; minimum observed, 5,420 acre-ft Oct. 31, elevation, 3,002.7 ft.

12380500 LOWER JOCKO LAKE.--Lat 47°12'10", long 113°45'35", in NW¼SW¼NW¼ sec.27, T.17 N., R.17 W., Missoula County, Hydrologic Unit 17010212, at dam on Jocko River, 15 mi east of Arlee, and at mile 39.3. DRAINAGE AREA, 7.39 mi². PERIOD OF RECORD, December 1939, April 1940, September, 1940, to current year (no winter records most years since 1947). Records for November 1957, published only in WSP 1736. May to July 1948 scattered daily contents, published in WSP 1080. Nonrecording gage read at end of month. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Bureau of Indian Affairs).

Reservoir is formed by earthfill dam; storage began in 1937. Usable capacity, 5,380 acre-ft between elevation 4,267.0 ft and 4,340.0 ft. Prior to 1960, usable capacity, 7,600 acre-ft at elevation 4,350 ft. Dead storage unknown below elevation 4,267 ft, elevation of natural lake outlet. Transmountain diversion takes water from Placid Creek in Clearwater River basin in SW¼ sec.29, T.17 N., R.16 W., to Upper Jocko Lake, thence to Lower Jocko Lake. Some water may then be diverted to St. Mary's Lake for use in the Mission Valley. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Indian Affairs.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 6,700 acre-ft June 9, 1948, elevation, 4,342.7 ft; no storage at times.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 4,220 acre-ft June 30, elevation, 4,320.0 ft; no storage most of year.

12390000 THOMPSON FALLS RESERVOIR.--Lat 47°35'42", long 115°21'36", in NE¼ sec.7, T.21 N., R.29 W., Sanders County, Hydrologic Unit 17010213, at dam on Clark Fork at Thompson Falls, at mile 208.0. DRAINAGE AREA, 20,968 mi². PERIOD OF RECORD, October 1939 to current year. Nonrecording gage is read several times daily but only monthend figures supplied. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by The Montana Power Company).

Reservoir is formed by two concrete dams, first generator installed July 1915. Usable capacity, 14,970 acre-ft between elevation 2,380.0 ft, spillway crest, and 2,396.0 ft, top of flashboards. Dead storage unknown. Figures given herein represent usable contents. Water is used for power development and recreation. Records furnished by The Montana Power Company.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 16,060 acre-ft Nov. 30, 1949, elevation, 2,396.7 ft; no storage July 31, 1958.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 15,590 acre-ft Aug. 31, elevation, 2,396.4 ft; minimum observed, 7,460 acre-ft Oct. 31, elevation, 2,390.0 ft.

PEND OREILLE RIVER BASIN

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

12391300 NOXON RAPIDS RESERVOIR.--Lat 47°57'38", long 115°44'00", in NE¼SW¼SW¼ sec.33, T.26 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at dam on Clark Fork, 3 mi southeast of Noxon, 7.2 mi upstream from Bull River, and at mile 169.7. DRAINAGE AREA, 21,833 mi². PERIOD OF RECORD, April 1959 to current year. Prior to October 1962, published as "Noxon Reservoir." Record of daily elevation on file in Helena district office. Water-stage recorder, midnight readings. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by the Washington Water Power Company).

Reservoir is formed by concrete and earthfill dam, construction began in 1955, completed in 1959. Storage began Apr. 3, 1959. Usable capacity, 334,600 acre-ft between elevation 2,270.00 ft, minimum operating level, and 2,331.00 ft. Figures given herein represent usable contents. Water is used for power and production, flood control, and recreation. Records furnished by The Washington Water Power Company.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 335,400 acre-ft Apr. 7, 1960, elevation, 2,331.10 ft; minimum since first filling, 26,380 acre-ft May 10, 1967, elevation, 2,277.15 ft.

EXTREMES FOR CURRENT YEAR: Maximum contents, 332,300 acre-ft June 12, elevation, 2,330.71 ft; minimum, 288,400 acre-ft Mar. 3, elevation, 2,324.94 ft.

Monthend contents, in acre-ft, water year October 1982 to September 1983

Date	Georgetown Lake	East Fork Rock Creek Reservoir	Nevada Lake	Painted Rocks Lake	Lake Como	Camas Reservoir	Mission Valley Reservoirs
Sept. 30	28,420	Data	b 4,820	a30,230	a 6,780	28,320	29,270
Oct. 31	28,070		a 4,020	a30,000	a 7,320	28,055	32,635
Nov. 30	27,710	not	a 4,490	a27,340	a 9,310	28,218	37,104
Dec. 31	28,250		a 4,930	a21,710	a11,050	28,960	40,294
Jan. 31	28,070	available	a 5,210	b15,900	a13,060	29,920	43,236
Feb. 28	26,640		b 6,900	b12,100	a14,530	31,158	43,702
Mar. 31	25,130	bc12,150	b 8,940	a16,050	a17,370	34,384	46,731
Apr. 30	25,190	b13,550	b 9,860	a20,010	a22,520	36,410	54,168
May 31	26,760	b13,200	b12,870	a31,640	a32,520	38,376	85,032
June 30	30,860	a12,150	a 9,820	a31,100	35,120	38,501	98,275
July 31	30,570	a13,200	a11,780	a29,850	31,110	37,735	99,110
Aug. 31	31,010	b10,250	b11,760	a28,260	15,110	31,161	66,861
Sept. 30	30,890	b 8,810	b 9,340	a21,410	8,900	28,037	49,186

Date	Lower Jocko Lake	Thompson Falls Reservoir	Noxon Rapids Reservoir
Sept. 30	0	7,790	325,800
Oct. 31	0	7,460	330,500
Nov. 30	0	11,520	325,000
Dec. 31	0	9,560	327,000
Jan. 31	0	11,260	321,100
Feb. 28	0	12,430	315,400
Mar. 31	0	14,680	320,300
Apr. 30	0	14,820	312,800
May 31	2,880	14,390	328,300
June 30	4,220	13,110	327,100
July 31	3,930	14,820	323,200
Aug. 31	2,300	15,590	322,400
Sept. 30	942	15,440	308,600

a Interpolated.

b Figure of contents for first day of following month.

c Estimate.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a second table.

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain, but it is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Annual maximum Discharge (ft ³ /s)
KOOTENAI RIVER BASIN							
12300800	Deep Creek near Fortine	Lat 48°45'41", long 114°52'32", in SW $\frac{1}{4}$ sec.30, T.35 N., R.25 W., Lincoln County, Hydrologic Unit 17010101, at culvert in county road 1.2 mi east of Fortine.	18.9	1959-83	1981 5-30-83	a0.50 .65	a120 140
12301993	Wolf Creek tributary near Libby	Lat 48°23'52", long 114°55'05", in NW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.4, T.30 N., R.26 W., Lincoln County, Hydrologic Unit 17010102, on right bank 9 ft from Burlington Northern railroad culvert, 0.3 mi upstream from mouth, and 28.8 mi east of Libby.	2.76	1974-83	4-25-83	.79	21
12301997	Richards Creek near Libby	Lat 48°15'31", long 115°11'57", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.20, T.29 N., R.28 W., Lincoln County, Hydrologic Unit 17010102, at bridge on county road, 0.1 mi upstream from mouth, and 18.5 mi south-east of Libby.	9.50	1973-83	4-25-83	1.11	56
12302400	Shaughnessy Creek near Libby	Lat 48°18'11", long 115°35'37", in W $\frac{1}{2}$ sec.5, T.29 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, at culvert in county road 6.5 mi southwest of Libby.	1.16	1959-83	4-24-83	1.93	6
12303400	Ross Creek near Troy	Lat 48°12'26", long 115°52'08", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.8, T.28 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on forest service road, 11.3 mi north of Heron, 17.5 mi south of Troy, at site of former water-quality station.	23.8	1972-83	5-26-83	4.21	600
12303440	Camp Creek near Troy	Lat 48°18'46", long 115°50'35", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.32, T.30 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on Forest Service road, 0.8 mi east of Highway 202, and 12.6 mi south of Troy.	11.3	1972-83	5-26-83	1.88	290
12304300	Cyclone Creek near Yaak	Lat 48°45'01", long 115°54'06", in SE $\frac{1}{4}$ sec.32, T.35 N., R.33 W., Lincoln County, Hydrologic Unit 17010103 at bridge, 0.2 mi upstream from mouth, and 10.5 mi southwest of Yaak.	5.71	1960-83	5-25-83	.94	110

See footnotes at end of table, p. 171

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage	Period	Date	Annual	maximum
			area (mi ²)	of record		Gage height (ft)	Dis- charge (ft ³ /s)
PEND OREILLE RIVER BASIN							
12323300	Smith Gulch near Silver Bow	Lat 45°57'26", long 112°39'45", in N½ sec.1, T.2 N., R.9 W., Silver Bow County, Hydrologic Unit 17010201, at culvert in Interstate Highway 15 and U.S. Highway 91 4 mi south of Silver Bow.	4.36	1959-83	3-02-83	3.48	23
12324250	Cottonwood Creek at Deer Lodge	Lat 46°23'59", long 112°43'02", in NE¼SW¼ sec.33, T.8 N., R.9 W., Powell County, Hydrologic Unit 17010201, at culverts in county road and U.S. Highway 10 in Deer Lodge.	45.4	1975-83	7-10-83	2.61	257
12324700	Clark Fork tributary near Drummond	Lat 46°36'58", long 113°02'08", in SW¼ sec.18, T.10 N., R.11 W., Powell County, Hydrologic Unit 17010201, 0.5 mi upstream from Interstate Highway 90 and U.S. Highway 10, and 6.5 mi east of Drummond.	4.61	1958-83	3-12-83	.56	14
12331700	Edwards Gulch at Drummond	Lat 46°40'16", long 113°08'39", in NE¼NE¼ sec.31, T.11 N., R.12 W., Granite County, Hydrologic Unit 17010201, at culvert on downstream side of Interstate Highway 90 and U.S. Highway 10 at Drummond.	4.69	1960-62 1974-83	7-10-83	2.00	6
12338600	Monture Creek at Forest Service boundary, near Ovando	Lat 47°05'37", long 113°09'10", in SW¼SW¼ sec.32, T.16 N., R.12 W., Powell County, Hydrologic Unit 17010203, 800 ft upstream from U.S. Forest Service boundary, and 5.2 mi north of Ovando.	105	1964 1974-83	5-30-83	--	b1,310
12339300	Deer Creek near Seeley Lake	Lat 47°12'37", long 113°32'27", in SE¼SW¼ sec.20, T.17 N., R.15 W., Missoula County, Hydro- logic Unit 17010203, at bridge on county road 3.5 mi northwest of Seeley Lake.	19.8	1974-83	4-25-83	1.91	170
12339900	West Twin Creek near Bonner	Lat 46°54'44", long 113°42'50", in SW¼ sec.2, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, at bridge on State Highway 200 8 mi east of Bonner.	7.33	1959-83	6-01-83	.74	58
12342950	Trapper Creek near Conner	Lat 45°53'43", long 114°10'51", in SE¼SE¼ sec.27, T.2 N., R.21 W., Ravalli County, Hydro- logic Unit 17010205, at bridge on State Highway 473, 0.6 mi southwest of Trapper Creek Job Corps Center, 3.0 mi southwest of junction of State Highway 473 and turnoff to Conner, and 4.5 mi southwest of Conner.	28.5	1974-83	5-30-83	1.98	510
12345850	Sleeping Child Creek near Hamilton	Lat 46°07'58", long 114°03'26", in SE¼SW¼NW¼ sec.2, T.4 N., R.20 W., Ravalli County, Hydro- logic Unit 17010205, Bitterroot National Forest, on right bank 5.8 mi upstream from mouth, and 10.8 mi southeast of Hamilton.	a65.2	1958-59 †1973-77 1978-83	5-30-83	4.07	470
12355350	Big Creek at Big Creek ranger station, near Columbia Falls	Lat 48°36'07", long 114°09'55", in SW¼SW¼ sec.22, T.33 N., R.20 W., Flathead County, Hydrologic Unit 17010206, Flathead National For- est, on right bank at Big Creek ranger station, 300 ft upstream from North Fork road bridge, 0.4 mi upstream from mouth, and 16.0 mi north of Columbia Falls.	82.1	1964 1973-83	5-27-83	4.77	1,240

See footnotes at end of table, p. 171

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual Gage height (ft)	maximum Dis- charge (ft ³ /s)
PEND OREILLE RIVER BASIN--Continued							
12356500	Bear Creek near Essex	Lat 48°16'56", long 113°25'23", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.16, T.29 N., R.14 W., Flathead County, Hydro- logic Unit 17010207, on left bank, 1.1 mi upstream from U.S. Highway 2 bridge crossing Bear Creek, and 8.5 mi northeast of Essex.	20.4	†1946-52 1964 1975-83	5-27-83	3.77	275
12369250	Holland Creek near Condon	Lat 47°26'20", long 113°40'11", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.5, T.19 N., R.16 W., Missoula County, Hydro- logic Unit 17010211, at bridge on State Highway 209, at junction with road to Holland Lake, and 6.8 mi south of Condon.	22.3	1974-83	5-27-83	2.18	260
12370500	Dayton Creek near Proctor	Lat 47°54'59", long 114°20'14", in NW $\frac{1}{4}$ sec.20, T.25 N., R.21 W., Lake County, Hydrologic Unit 17010208, at culvert in county road 2.5 mi northwest of Proctor.	18.5	1959-83	5-27-83	.72	19
12391100	White Pine Creek near Trout Creek	Lat 47°44'19", long 115°40'27", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.23, T.23 N., R.32 W., Sanders County, Hydro- logic Unit 17010213, Kaniksu National Forest, on right down- stream wingwall on bridge 7.5 mi southwest of Trout Creek.	8.75	1974-83	5-26-83	3.87	180
12391200	Canyon Creek near Trout Creek	Lat 47°51'16", long 115°29'57", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.7, T.24 N., R.30 W., Sanders County, Hydrologic Unit 17010213, at bridge on on U.S. Forest Service road, 2.9 mi up- stream from junction of road at mouth of Vermillion River, and 4.6 mi northeast of Trout Creek.	8.64	1972 1974-83	4-25-83	2.16	120

† Operated as a continuous-record station.

a Revised.

b Combination of flow in Monture and Dunham Creeks.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table.

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
Kootenai River Basin						
Young Creek 4858051151724	Kootenai River	Lat 48°58'05", long 115°17'24", in SE¼NW¼SE¼, sec.18, T.37 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at U.S. Forest Service bridge, 1.9 mi downstream from South Fork Young Creek, and 7.4 mi northwest of Rexford.	19.1	1982	10-15-82 11-16-82 12-15-82 1-19-83	7.58 6.50 5.37 4.90
Young Creek 12300200	Kootenai River	Lat 49°57'44", long 113°11'26", in NE¼NW¼NW¼, sec.24, T.37 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, on left bank 600 ft upstream from Lake Koocanusa flow line, 0.3 mi downstream from culvert in county road, and 4.2 mi northwest of present site of Rexford, at site of former gaging station.	36.0	†1973-75 1982	10-15-82 11-16-82 12-15-82 1-19-83 2-16-83	6.34 6.11 7.73 6.23 5.74
Cayuse Creek 12300400	Swamp Creek	Lat 48°36'33", long 115°01'42", in SW¼SW¼NE¼, sec.24, T.33 N, R.27 W., Lincoln County, Hydrologic Unit 17010101, at culvert in U.S. Forest Service road, 9.8 mi southwest of Trego, at site of crest-stage station.	5.29	1972-82	10-12-82 11-16-82 2-16-83	.58 .58 .92
Fortine Creek 12300500	Tobacco River	Lat 48°38'41", long 114°54'36", in NE¼, sec.11, T.33 N., R.26 W., Lincoln County, Hydrologic Unit 17010101, 5.5 mi southwest of Trego, at site of crest-stage station.	112	†1947-53 1954 1958-73 1982	10-12-82 11-16-82 12-16-82 1-19-83 2-16-83	9.85 10.2 12.2 23.8 21.6
Deep Creek 12300800	Fortine Creek	Lat 48°45'41", long 114°52'32", in SW¼, sec.30, T.35 N., R.25 W., Lincoln County, Hydrologic Unit 17010101, at culvert in county road, 1.2 mi east of Fortine, at site of crest-stage station.	18.9	1959-82	10-12-82 11-16-82 12-16-82 1-19-83 2-16-83	6.06 3.08 3.46 2.39 2.19
Sullivan Creek 4852151151525	Kootenai River	Lat 48°52'15", long 115°15'25", in SE¼SE¼NW¼, sec.20, T.36 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at culvert in county road near Lake Koocanusa flow line and 5 mi west of Rexford.	14.1	1982	10-15-82 11-15-82 12-15-82 1-18-83 2-15-83	4.09 3.64 2.17 3.45 3.80
Boulder Creek 4849181151730	Kootenai River	Lat 48°49'18", long 115°17'30", in NW¼SW¼SE¼, sec.1, T.35 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at culvert in county road near mouth 8 mi southeast of Rexford.	18.1	1982	10-15-82 11-15-82 12-15-82 1-18-83 2-15-83	6.49 3.58 5.02 6.90 5.11
Big Creek 12301810	Kootenai River	Lat 48°44'53", long 115°21'09", in SE¼SW¼SE¼, sec.33, T.35 N., R.29 W., Lincoln County, Hydrologic Unit 7010101, Kootenai National Forest, on left bank 500 ft downstream from highway bridge, 0.3 mi upstream from Lake Koocanusa flow line, and 13.6 mi southwest of present site of Rexford, at site of former gaging station.	137	†1972-82	10-15-82 11-15-82 12-15-82 1-18-83 2-15-83	18.7 7.14 a 10 35.0 38.4

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Kootenai River Basin--continued						
Parmenter Creek 482327115333401	Kootenai River	Lat 48°23'27", long 115°33'34", in SE¼SE¼SW¼, sec.33, T.31 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at bridge on U.S. Highway 2, 0.8 mi upstream from Kootenai River in Libby.	17.7	1972	10-13-82	0.31
				1974	11-17-82	1.39
				1978	12-13-82	0
				1982	1-20-83	1.93
					2-17-83	1.67
Cedar Creek 4825501153741	Kootenai River	Lat 48°25'50", long 115°37'41", in NW¼SE¼SE¼, sec.24, T.31 N., R.32 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at bridge on U.S. Highway 2, 0.1 mi upstream from Kootenai River, and 5 mi northwest of Libby.	12.9	1911	10-13-82	7.78
				1931	11-17-82	8.51
				1972	12-13-82	7.09
				1974	1-20-83	8.93
				1978	2-17-83	6.55
Quartz Creek 4826211153808	Kootenai River	Lat 48°26'21", long 115°38'08", in SW¼NE¼NW¼, sec.24, T.31 N., R.32 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at county road bridge, 0.1 mi upstream from mouth, and 5 mi northwest of Libby.	35.4	1971	10-13-82	21.2
				1974	11-15-82	18.7
				1978	12-13-82	31.9
				1982	1-19-83	44.4
					2-15-83	38.1
Camp Creek 12303440	Ross Creek	Lat 48°18'46", long 115°50'35", in SW¼SE¼, sec.32, T.30 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on U.S. Forest Service road, 0.8 mi east of State Highway 202, and 12.6 mi south of Troy, at site of crest-stage station.	11.3	1972-82	10-13-82	4.78
					11-17-82	4.53
					12-15-82	4.63
					1-19-83	6.20
					2-17-83	5.27
Ruby Creek 4831071155700	Kootenai River	Lat 48°31'07", long 115°57'00", in NW¼SE¼SE¼, sec.21, T.32 N., R.34 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at bridge on county road, 0.33 mi upstream from Kootenai River, and 5 mi northwest of Troy.	15.8	1982	10-13-82	4.26
					11-17-82	5.02
					12-15-82	6.68
					1-19-83	23.6
					2-17-83	23.6
Pete Creek 4851191154620	Yaak River	Lat 48°51'19", long 115°46'20", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at U.S. Forest Service road culvert 100 ft downstream from Hensley Creek, 1.7 mi upstream from Yaak River, 1.9 mi north of junction with FAS 508, and 3.5 mi west of Yaak.	29.8	1982	10-14-82	2.97
					11-16-82	5.10
					12-14-82	11.8
					1-18-83	29.7
					2-16-83	23.0
Pete Creek 4849531154555	Yaak River	Lat 48°49'53", long 115°45'55", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at county bridge on FAS 508, 0.1 mi upstream from Yaak River, and 2 mi west of Yaak.	33.8	1972 1982	10-14-82	3.16
					11-16-82	6.90
					12-14-82	13.5
					1-18-83	34.0
					2-16-83	30.0
Whitetail Creek 12304250	Yaak River	Lat 48°49'42", long 115°48'45", in NE¼, sec.1, T.35 N., R.33 W., Lincoln County, Hydrologic Unit 17010103, 500 ft upstream from mouth, and 5 mi west of Yaak, at site of former crest-stage station.	2.48	1960-74 1982	10-14-82	0
					11-16-82	0
					12-13-82	0
					1-18-83	1.63
					2-16-83	1.45
Spread Creek 4849231155101	Yaak River	Lat 48°49'23", long 115°51'01", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at bridge on FAS 508 0.3 mi upstream from Yaak River, and 6.5 mi west of Yaak.	37.3	1972 1982	10-14-82	16.4
					11-16-82	17.2
					12-14-82	31.5
					1-18-83	31.0
					2-16-83	28.3

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
Kootenai River Basin--continued						
Hellroaring Creek 4850071155805	Yaak River	Lat 48°50'07", long 115°58'05", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at U.S. Forest Service bridge 4.0 mi upstream from Yaak River, and 11.5 mi west of Yaak.	9.65	1982	10-14-82	4.17
					11-16-82	5.77
Hellroaring Creek 4847161155508	Yaak River	Lat 48°47'16", long 115°55'08", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at bridge on FAS 508 0.1 mi upstream from Yaak River, and 10 mi southwest of Yaak.	16.9	1982	10-14-82	3.96
					11-16-82	6.64
					12-14-82	11.8
					1-18-83	14.7
					2-16-83	9.31
North Fork Meadow Creek 4847561155657	Yaak River	Lat 48°47'56", long 115°56'57", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, near switchback in U.S. Forest Service road 1.2 mi upstream from Meadow Creek, 1.6 mi west of FAS 508, and 11.5 mi southwest of Yaak.	6.33	1982	10-14-82	1.47
					11-16-82	3.49
North Fork Meadow Creek 4847141155616	Yaak River	Lat 48°47'14", long 115°56'16", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at U.S. Forest Service bridge 0.2 mi upstream from Meadow Creek, 0.8 mi west of FAS 508, and 11 mi southwest of Yaak.	7.04	1982	10-14-82	2.96
					11-16-82	4.28
Meadow Creek 4847011155520	Yaak River	Lat 48°47'01", long 115°55'20", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at bridge on FAS 508 0.1 mi upstream from Yaak River, and 10.5 mi southwest of Yaak.	20.4	1982	10-04-82	6.27
					11-16-82	10.7
					12-15-82	19.4
					1-18-83	20.8
					2-16-83	18.1
Cyclone Creek 12304300	Yaak River	Lat 48°45'01", long 115°54'06", in SE¼, sec.32, T.35 N., R.33 W., Lincoln County, Hydrologic Unit 17010103, at bridge 0.2 mi upstream from mouth, and 10.5 mi southwest of Yaak, at site of crest-stage station.	5.71	1960-82	10-14-82	3.04
					11-16-82	3.25
					12-15-82	5.24
					1-18-83	6.71
					2-16-83	6.85
Fourth of July Creek 12304400	Yaak River	Lat 48°42'04", long 115°52'04", in NW¼, sec.22, T.34 N., R.33 W., Lincoln County, Hydrologic Unit 17010103, at bridge 500 ft upstream from mouth, and 12 mi southwest of Yaak, at site of crest-stage station.	7.84	1960-74 1982	10-14-82	2.55
					11-16-82	2.92
					12-15-82	3.61
					1-18-83	8.16
					2-16-83	9.53
Pend Oreille River Basin						
Deer Creek 12339300	Seeley Lake on Clearwater River	Lat 47°12'37", long 113°32'27", in SE¼SW¼, sec.20, T.17 N., R.15 W., Missoula County, Hydrologic Unit 17010203, at bridge on county road, 2.3 mi northwest of bridge over Clearwater River, and 3.5 mi northwest of town of Seeley Lake.	19.8	1974-82	10-18-82	4.53
					11-15-82	3.25
					12-13-82	3.01
					1-17-83	3.72
					2-15-83	3.65
West Twin Creek 12339900	Blackfoot River	Lat 46°54'44", long 113°42'50", in SW¼, sec.2, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, at bridge on State Highway 200, and 8 mi east of Bonner.	7.33	1959-82	10-21-82	3.42
					11-18-82	2.31
					12-17-82	2.38
					1-20-83	4.42
					2-17-83	3.03

See footnotes at end of table, p. 177

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Pend Oreille River Basin--continued						
Marshall Creek 12340200	Clark Fork River	Lat 46°53'15", long 113°55'27", in NW¼, sec.18, T.13 N., R.18 W., Missoula County, Hydrologic Unit 17010204, at culvert in Interstate Highway 90 and U.S. Highway 10 and 12, and 3 mi east of Missoula.	5.63	1959-73 1982	10-21-82 11-18-82 12-16-82 1-20-83 2-17-83	2.09 1.39 1.57 1.42 1.88
Butler Creek 4707331142609	Clark Fork	Lat 47°07'33", long 114°26'09", in SE¼SW¼SW¼, sec.19, T.16 N., R.22 W., Missoula County, Hydrologic Unit 17010204, Lolo National Forest, at U.S. Forest Service bridge 2.6 mi upstream from Ninemile Creek, 4.5 mi northwest of Ninemile Ranger Station, and 8.7 mi north of Alberton.	10.7	1982	10-21-82 11-18-82 12-16-82 1-19-83 2-16-83	2.63 2.74 2.76 2.30 2.67
Dry Creek 12353820	Clark Fork	Lat 47°13'17", long 114°58'19", in NW¼SE¼NE¼, sec.24, T.17 N., R.27 W., Mineral County, Hydrologic Unit 17010204, at bridge on county road 700 ft downstream from Murphy Creek, 0.5 mi upstream from Clark Fork, and 4.3 mi northwest of Superior.	46.3	1982	10-20-82	0
Twelvemile Creek 4722021151549	St. Regis River	Lat 47°22'02", long 115°15'49", in SE¼NE¼NE¼, sec.34, T.19 N., R.29 W., Mineral County, Hydrologic Unit 17010204, Lolo National Forest, at bridge on old Camel's Hump Road, 200 ft upstream from East Fork Twelvemile Creek, 1.6 mi northeast of U.S. Interstate 90, 1.8 mi upstream from St. Regis River, and 3.9 mi east of DeBorgia.	40.7	1982	10-20-82 11-17-82 12-16-82 1-19-83 2-16-83	13.2 14.7 9.18 14.5 12.9
Ward Creek 4718421151359	St. Regis River	Lat 47°18'42", long 115°13'59", in NE¼NE¼NW¼, sec.24, T.18 N., R.29 W., Mineral County, Hydrologic Unit 17010204, Lolo National Forest, at U.S. Forest Service bridge just upstream from mouth, and 6.4 mi west of St. Regis.	22.8	1972 1982	10-20-82 11-17-82 12-16-82 1-19-83 2-16-83 3-16-83	10.5 9.74 13.5 13.2 12.9 51.6
Twomile Creek 4717421151020	St. Regis River	Lat 47°17'42", long 115°10'20", in NE¼SW¼NE¼, sec.28, T.18 N., R.28 W., Mineral County, Hydrologic Unit 17010204, Lolo National Forest, at U.S. Forest Service bridge 0.2 mi upstream from St. Regis River, and 3.5 mi west of St. Regis.	17.1	1972 1982	10-20-82 11-17-82 12-16-82 1-19-83 2-16-83	6.29 6.42 6.70 8.68 7.32
St. Regis River 12354000	Clark Fork	Lat 47°17'49", long 115°07'18", near center of NW¼NE¼, sec.26, T.18 N., R.28 W., Mineral County, Hydrologic Unit 17010204, on left bank 70 ft downstream from road bridge, 500 ft upstream from Little Joe Creek, 1.2 mi west of St. Regis, and 1.7 mi upstream from mouth, at site of former gaging station.	303	†1910-17 1918-19 1948 †1958-75 1982	10-20-82 11-17-82 12-16-82 1-19-83 2-16-83 3-16-83	123 127 149 258 188 1050
Bear Creek 12356500	Middle Fork Flathead River	Lat 48°16'50", long 113°25'30", in SE¼NW¼, sec.18, T.29 N., R.14 W., Flathead County, Hydrologic Unit 17010204, on right bank 1 mi downstream from Autumn Creek, and 8.5 mi east of Essex, at site of former gaging station.	20.4	†1946-52 1964 1975-82	10-18-82 11-18-82 12-16-82 1-13-83 2-14-83	11.0 11.0 10.1 8.04 8.17
Piper Creek 4739411134944	Swan River	Lat 47°39'41", long 113°49'44", in NE¼SE¼SW¼, sec.18, T.22 N., R.17 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at Forest Service bridge, 1.2 mi upstream from Swan River, 1.5 mi west of U.S. Highway 83, and 8.0 mi northwest of Condon.	11.8	1982	10-18-82 11-15-82 12-13-82 1-17-83 2-14-83	21.3 9.15 10.7 5.57 3.48

See footnotes at end of table, p.177

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Pend Oreille River Basin--continued						
Goat Creek 4746261134228	Swan River	Lat 47°46'26", long 113°42'28", in NW¼NW¼SW¼, sec.7, T.23 N., R.16 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, 0.5 mi upstream from Scout Creek, 0.6 mi downstream from Bethal Creek, 5.5 mi east of U.S. Highway 83, and 12 mi southeast of Swan Lake.	8.27	1982	10-19-82 11-16-82 12-14-82	0.96 .07 .35
Goat Creek 4745571134548	Swan River	Lat 47°45'57", long 113°45'48", in NE¼NE¼SW¼, sec.10, T.23 N., R.17 W., Lake County, Hydrologic Unit 17010211, Swan River State Forest, at steel post on right bank 3 mi east of U.S. Highway 83, and 12 mi southeast of Swan Lake.	14.9	1982	10-19-82 11-16-82 12-14-82 1-17-83 2-14-83	10.8 11.3 8.32 7.13 6.56
Goat Creek 4745191134723	Swan River	Lat 47°45'19", long 113°47'23", in NW¼NW¼SW¼, sec.16, T.23 N., R.17 W., Lake County, Hydrologic Unit 17010211, Swan River State Forest, at U.S. Forest Service bridge on Old Squeezer Creek Road 1.5 mi east of U.S. Highway 83, and 12 mi southeast of Swan Lake.	19.7	1982	10-19-82 11-16-82 12-14-82 1-17-83 2-16-83	10.6 9.59 9.64 6.32 5.76
South Woodward Creek 4743311135525	Swan Lake	Lat 47°43'31", long 113°55'25", in SE¼SE¼NW¼, sec.28, T.23 N., R.18 W., Lake County, Hydrologic Unit 17010211, Swan River State Forest, at culvert on State Forest Service road, 3 mi west of Fatty Creek Road, and 13.5 mi northwest of Condon.	2.88	1982	10-18-82 11-15-82	7.59 5.84
South Woodward Creek 4743191135120	Swan River	Lat 47°43'19", long 113°51'20", in NE¼NW¼SW¼, sec.25, T.23 N., R.18 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at bridge on U.S. Forest Service road 1.5 mi west of U.S. Highway 83, and 11 mi northwest of Condon.	10.5	1982	10-18-82 11-15-82 12-14-82 1-17-83 2-14-83	35.1 32 23 21 20
Soup Creek 4748531134408	Swan River	Lat 47°48'53", long 113°44'08", in SW¼NE¼NE¼, sec.26, T.24 N., R.17 W., Lake County, Hydrologic Unit 17010211, Swan River State Forest, at U.S. Forest Service bridge 1.7 mi east of Soup Creek Campground, 4.3 mi east of U.S. Highway 83, and 9 mi southeast of Swan Lake.	4.5	1982	10-19-82 11-16-82 12-14-82 1-17-83 2-14-83	3.65 4.09 2.63 2.37 2.43
Soup Creek 4748371134611	Swan River	Lat 47°48'37", long 113°46'11", in NE¼NW¼SW¼, sec.27, T.24 N., R.17 E., Lake County, Hydrologic Unit 17010211, Swan River State Forest, at State Forest Service bridge 2.6 mi east of U.S. Highway 83 and 9 mi southeast of Swan Lake.	5.87	1982	10-19-82 11-16-82 12-14-82 1-17-83 2-14-83	4.08 3.29 3.55 2.61 2.35
Soup Creek 4750551134943	Swan River	Lat 47°50'55", long 113°49'43", in NW¼SE¼SW¼, sec.18, T.24 N., R.17 W., Lake County, Hydrologic Unit 17010211, Swan River State Forest, at bridge on U.S. Highway 83 0.7 mi upstream from Swan River, and 6 mi south of Swan Lake.	14.5	1982	10-19-82 11-16-82 12-14-82 1-17-83 2-14-83	6.27 5.77 3.64 5.60 3.70
South Fork Lost Creek 4752041134736	Swan River	Lat 47°52'04", long 113°47'36", in NW¼NW¼SW¼, sec.4, T.24 N., R.17 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at U.S. Forest Service bridge 1.5 mi upstream from Lost Creek, and 4.7 mi southeast of Swan Lake.	14.8	1982	10-19-82	13.1

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1983

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
Pend Oreille River Basin--continued						
North Fork Lost Creek 4753061134753	Swan River	Lat 47°53'06", long 113°47'53", in NE¼NW¼SE¼, sec.31, T.25 N., R.17 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at U.S. Forest Service bridge on North Fork Lost Creek Road 1.5 mi upstream from Lost Creek, and 4 mi southeast of Swan Lake.	13.0	1982	10-19-82 11-16-82 12-14-82 1-18-83 2-15-83	8.03 7.61 7.29 8.74 6.16
Lost Creek 4752261135000	Swan River	Lat 47°52'26", long 113°50'00", in NE¼NW¼NW¼, sec.6, T.24 N., R.17 E., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at bridge on U.S. Highway 83 0.7 mi upstream from Swan River, and 3.5 mi south of Swan Lake.	31.7	1982	10-19-82 11-16-82 12-15-82 1-18-83 2-15-83	13.1 12.1 11.8 13.5 7.95
Porcupine Creek 4751411135246	Swan River	Lat 47°51'41", long 113°52'46", in SW¼SE¼SE¼, sec.3, T.24 N., R.18 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at culvert in U.S. Forest Service road 2 mi upstream from Swan River, and 5 mi southwest of Swan Lake.	10.0	1982	10-18-82 11-16-82 12-13-82 1-18-83 2-15-83	2.49 2.86 3.4 2.29 1.12
Bond Creek 4755211135025	Swan River	Lat 47°55'21", long 113°50'25", in SE¼SW¼SE¼, sec.14, T.25 N., R.18 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, at bridge on U.S. Highway 83 in town of Swan Lake, and 0.2 mi upstream from Swan Lake.	7.58	1982	10-19-82 11-16-82 12-15-82 1-18-83 2-14-83	1.37 1.40 2.05 2.01 1.57
Teepee Creek 12370900	Flathead Lake	Lat 47°49'16", long 114°01'24", in SW¼, sec.23, T.24 N., R.19 W., Lake County, Hydrologic Unit 17010208, at culvert in State Highway 35 11 mi northeast of Polson, at site of former crest- stage station.	2.18	1959-74 1980 1982	10-19-82 11-16-82 12-15-82 1-18-83 2-15-83	a .49 a .46 a .46 a .39 a .32
Siegel Creek 4718541144826	Clark Fork	Lat 47°18'54", long 114°48'26", in NW¼SW¼SE¼, sec.17, T.18 N., R.25 W., Sanders County, Hydrologic Unit 17010213, at culvert in FAS 461 1.5 mi southwest of Quinns Hot Springs, and 5 mi south of Paradise.	14.2	1982	10-20-82 11-17-82 12-15-82 1-19-83 2-16-83 3-16-83	4.58 3.75 3.62 4.70 3.62 12.8
Graves Creek 4741091152413	Clark Fork	Lat 47°41'09", long 115°24'13", in NW¼NW¼NE¼, sec.11, T.22 N., R.30 W., Sanders County, Hydrologic Unit 17010213, at culvert in county road 0.3 mi upstream from Clark Fork, and 7 mi northwest of Thompson Falls.	28.3	1982	10-20-82 11-17-82 12-15-82 1-19-83 2-15-83	7.74 5.10 3.18 4.36 1.79
Deep Creek 4744461152627	Clark Fork	Lat 47°44'46", long 115°26'27", in SE¼SE¼SE¼, sec.16, T.23 N., R.30 W., Sanders County, Hydrologic Unit 17010213, Kootenai National Forest, at culvert in county road 0.8 mi upstream from Clark Fork, 2 mi northeast of White Pine, and 12 mi northeast of Thompson Falls.	12.6	1982	10-20-82 11-17-82 12-15-82 1-19-83 2-15-82	3.00 2.91 3.73 6.94 4.07

† -- Operated as a continuous-record gaging station.

a -- Daily mean discharge.

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
KOOTENAI RIVER BASIN											
485805115172401 YOUNG CREEK BELOW SOUTH FORK, NEAR REXFORD, MT (LAT 48 58 05 LONG 115 17 24)											
OCT , 1982						DEC , 1982					
15...	1155	7.6	243	13.0	5.5	15...	1430	5.4	241	7.0	1.0
NOV						JAN , 1983					
16...	0845	6.5	246	2.0	1.0	19...	0855	4.9	239	2.0	1.0
12300200 YOUNG CREEK NEAR REXFORD, MT (LAT 48 57 44 LONG 115 11 26)											
OCT , 1982						JAN , 1983					
15...	1300	6.3	268	12.0	6.0	19...	1045	6.2	278	1.5	1.5
NOV						FEB					
16...	1010	6.1	270	2.0	.0	16...	0900	5.7	292	-1.0	1.5
DEC											
15...	1540	7.7	259	5.5	.0						
12300400 CAYUSE CREEK NEAR TREGO, MT (LAT 48 36 33 LONG 115 01 42)											
OCT , 1982						FEB , 1983					
12...	0815	.58	358	.5	3.0	16...	1250	.92	296	6.0	1.0
NOV											
16...	1330	.58	355	3.5	.0						
12300500 FORTINE CREEK NEAR TREGO, MT (LAT 48 39 00 LONG 114 55 00)											
OCT , 1982						JAN , 1983					
12...	0950	9.9	420	2.0	4.5	19...	1400	24	263	2.0	.5
NOV						FEB					
16...	1450	10	430	3.0	8.0	16...	1415	22	285	7.0	.5
DEC											
16...	0945	12	363	4.0	.0						
12300800 DEEP CREEK NEAR FORTINE, MT (LAT 48 46 00 LONG 114 53 00)											
OCT , 1982						JAN , 1983					
12...	1130	6.1	241	6.0	5.5	19...	1240	2.4	257	2.0	.0
NOV						FEB					
16...	1210	3.1	252	3.0	2.0	16...	1110	2.2	251	1.0	3.0
DEC											
16...	1130	3.5	229	5.0	.0						
485215115152501 SULLIVAN CREEK NEAR REXFORD, MT (LAT 48 52 15 LONG 115 15 25)											
OCT , 1982						JAN , 1983					
15...	1105	4.1	223	10.0	5.5	18...	1545	3.5	177	.5	.0
NOV						FEB					
15...	1335	3.6	222	4.0	.5	15...	1515	3.8	165	5.0	1.5
DEC											
15...	1620	2.2	200	4.0	.5						
484918115173001 BOULDER CREEK NEAR REXFORD, MT (LAT 48 49 18 LONG 115 17 30)											
OCT , 1982						JAN , 1983					
15...	0950	6.5	191	6.5	5.5	18...	1440	6.9	153	.0	.0
NOV						FEB					
15...	1250	3.6	194	.5	.5	15...	1400	5.1	147	4.0	1.5
DEC											
15...	1315	5.0	188	4.5	.5						
12301810 BIG CREEK NEAR REXFORD, MT (LAT 48 44 53 LONG 115 21 09)											
OCT , 1982						JAN , 1983					
15...	0830	19	37	6.0	5.0	18...	1300	35	33	-.5	.0
NOV						FEB					
15...	1045	7.1	57	-3.0	.5	15...	1230	38	32	8.0	1.0
DEC											
15...	1245	10	41	4.0	.0						

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
KOOTENAI RIVER BASIN--Continued											
12303000 KOOTENAI RIVER AT LIBBY, MT (LAT 48 24 03 LONG 115 33 08)											
OCT , 1982						APR , 1983					
06...	1250	4430	224	9.0	9.0	05...	1150	4900	250	11.0	5.5
DEC						AUG					
13...	1640	19800	224	-2.0	7.0	11...	1035	14700	207	18.0	14.0
12303100 FLOWER CREEK NEAR LIBBY, MT (LAT 48 20 41 LONG 115 36 20)											
OCT , 1982						MAY , 1983					
06...	1600	10	72	10.0	5.0	17...	1910	49	38	12.0	5.5
NOV						27...	0645	180	28	6.0	4.5
23...	0900	7.8	70	.5	.0	JUN					
JAN , 1983						02...	0740	139	22	11.0	5.0
06...	0910	7.7	73	.0	.0	22...	1850	38	24	19.0	5.5
FEB						AUG					
10...	0900	7.6	78	1.0	2.5	11...	0825	18	62	18.5	13.5
APR											
05...	1040	13	70	7.5	1.5						
29...	0900	36	50	.5	2.0						
12303500 LAKE CREEK AT TROY, MT (LAT 48 26 40 LONG 115 52 30)											
NOV , 1982						MAY , 1983					
22...	1520	190	84	2.0	3.5	27...	1210	1740	43	26.5	9.5
JAN , 1983						JUN					
05...	1235	263	88	2.0	--	02...	1050	1840	43	12.5	10.0
FEB						23...	0820	721	61	--	5.0
09...	1335	237	89	8.5	3.5	AUG					
APR						10...	1405	279	80	24.0	14.0
06...	1015	393	82	4.0	6.5						
482327115333401 PARMENTER CREEK AT LIBBY, MT (LAT 48 23 27 LONG 115 33 34)											
OCT , 1982						JAN , 1983					
13...	1435	.31	94	8.0	7.0	20...	0945	1.9	90	-4.0	.0
NOV						FEB					
17...	1145	1.4	93	1.0	.0	17...	1155	1.7	100	1.0	1.0
482550115374101 CEDAR CREEK NEAR LIBBY, MT (LAT 48 25 50 LONG 115 37 41)											
OCT , 1982						JAN , 1983					
13...	1400	7.8	78	8.5	7.0	20...	0845	8.9	67	-5.0	.0
NOV						FEB					
17...	1045	8.5	77	1.0	1.0	17...	1120	6.6	75	1.0	1.0
DEC											
13...	1220	7.1	73	-2.0	.0						
482721115380801 QUARTZ CREEK NEAR LIBBY, MT (LAT 48 27 21 LONG 115 38 08)											
OCT , 1982						JAN , 1983					
13...	1550	21	88	9.0	8.0	19...	1610	44	75	3.0	1.5
NOV						FEB					
15...	1700	19	94	-2.0	2.0	15...	1710	38	78	2.0	2.5
DEC											
13...	1320	32	78	-2.0	.0						
483107115570001 RUBY CREEK NEAR TROY, MT (LAT 48 31 07 LONG 115 57 00)											
OCT , 1982						JAN , 1983					
13...	1025	4.3	62	6.0	4.5	19...	1045	24	53	-3.0	.0
NOV						FEB					
17...	0935	5.0	60	.5	.5	17...	1010	24	53	3.0	1.0
DEC											
15...	1215	6.7	54	1.0	.0						
485119115462001 PETE CREEK AT FOREST SERVICE ROAD, NEAR YAAK, MT (LAT 48 51 19 LONG 115 46 20)											
OCT , 1982						JAN , 1983					
14...	1010	3.0	53	5.5	3.5	18...	0915	30	36	-4.0	.0
NOV						FEB					
16...	0850	5.1	53	-3.0	.0	16...	0900	23	34	-2.0	.0
DEC											
14...	1015	12	38	-5.0	.0						

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
KOOTENAI RIVER BASIN--Continued											
484953115455601 PETE CREEK AT MOUTH, NEAR YAAK, MT (LAT 48 49 53 LONG 115 45 56)											
OCT , 1982						JAN , 1983					
14...	0910	3.2	53	3.5	4.0	18...	1020	34	40	-3.0	.0
NOV						FEB					
16...	0930	6.9	48	-3.0	.0	16...	1000	30	39	1.0	1.0
DEC											
14...	1105	14	39	-5.0	.0						
12304250 WHITETAIL CREEK NEAR YAAK, MT (LAT 48 50 00 LONG 115 49 00)											
JAN , 1983						FEB , 1983					
18...	1045	1.6	31	-2.0	.0	16...	1030	1.5	29	1.0	1.0
484923115510101 SPREAD CREEK NEAR YAAK, MT (LAT 48 49 23 LONG 115 51 01)											
OCT , 1982						JAN , 1983					
14...	1100	16	24	13.5	5.0	18...	1200	31	25	.0	.0
NOV						FEB					
16...	1040	17	26	-2.0	.0	16...	1100	28	25	1.0	1.0
DEC											
14...	1250	32	21	-5.0	.0						
485007115580501 HELLROARING CREEK AT FOREST SERVICE ROAD, NEAR YAAK, MT (LAT 48 50 07 LONG 115 58 05)											
OCT , 1982						NOV , 1982					
14...	1330	4.2	21	12.5	5.0	16...	1210	5.8	20	-3.0	.0
484716115550801 HELLROARING CREEK AT MOUTH, NEAR YAAK, MT (LAT 48 47 16 LONG 115 55 08)											
OCT , 1982						JAN , 1983					
14...	1210	4.0	24	14.0	5.0	18...	1340	15	20	2.0	.0
NOV						FEB					
16...	1500	6.6	23	-2.0	.0	16...	1250	9.3	22	4.0	1.0
DEC											
14...	1530	12	17	-5.0	.0						
484756115565701 NORTH FORK MEADOW CREEK AT UPPER SITE, NEAR YAAK, MT (LAT 48 47 56 LONG 115 56 57)											
OCT , 1982						NOV , 1982					
14...	1445	1.5	31	12.5	5.0	16...	1315	3.5	23	-2.0	.0
484714115561601 NORTH FORK MEADOW CREEK AT MOUTH, NEAR YAAK, MT (LAT 48 47 14 LONG 115 56 16)											
OCT , 1982						NOV , 1982					
14...	1525	3.0	24	11.5	5.5	16...	1415	4.3	23	-2.0	.0
484701115552001 MEADOW CREEK AT MOUTH, NEAR YAAK, MT (LAT 48 47 01 LONG 115 55 20)											
OCT , 1982						JAN , 1983					
14...	1615	6.3	30	16.0	5.5	18...	1420	21	24	1.0	.0
NOV						FEB					
16...	1540	11	32	-2.0	.0	16...	1330	18	24	4.0	1.0
DEC											
14...	1715	19	27	-5.0	.0						
12304400 FOURTH OF JULY CREEK NEAR YAAK, MT (LAT 48 42 00 LONG 115 52 00)											
OCT , 1982						JAN , 1983					
14...	1750	2.6	53	8.5	6.0	18...	1630	8.2	32	2.0	.0
NOV						FEB					
16...	1730	2.9	49	.0	.0	16...	1515	9.5	31	5.0	2.0
DEC											
15...	1010	3.6	39	-2.0	.0						

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
PEND OREILLE RIVER BASIN											
12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT (LAT 46 32 12 LONG 112 43 33)											
OCT , 1982						MAY , 1983					
06...	1130	115	280	6.5	6.0	17...	0830	544	225	7.0	6.0
NOV						25...	1240	805	190	25.0	10.5
15...	0930	66	304	-15.0	.0	JUL					
JAN , 1983						12...	1225	350	244	26.5	14.5
06...	0915	103	266	-2.0	.0	AUG					
FEB						24...	0835	93	288	10.0	12.0
22...	1145	156	232	5.5	2.5						
APR											
05...	0810	103	273	1.0	.5						
12324680 CLARK FORK AT GOLD CREEK, MT (LAT 46 35 26 LONG 112 55 40)											
OCT , 1982						MAY , 1983					
06...	0800	756	493	.0	5.0	17...	1315	965	354	21.0	11.0
NOV						31...	1230	1990	231	17.5	11.5
17...	1130	581	530	8.0	.5	JUL					
JAN , 1983						14...	1025	1090	364	12.5	16.0
03...	1230	460	540	-5.0	.0	AUG					
FEB						22...	1115	403	485	19.0	16.5
22...	1330	611	449	5.0	3.5						
APR											
05...	1330	442	507	-10.0	4.5						
12325500 FLINT CREEK NEAR SOUTHERN CROSS, MT (LAT 46 13 59 LONG 113 17 56)											
OCT , 1982						MAY , 1983					
04...	1415	59	174	8.0	9.0	18...	1420	26	259	6.0	11.0
FEB , 1983						JUL					
23...	1000	61	243	1.0	4.0	13...	1630	68	195	27.0	15.0
APR						AUG					
06...	0750	25	271	-4.0	3.0	23...	1200	29	168	14.0	10.5
12329500 FLINT CREEK AT MAXVILLE, MT (LAT 46 27 50 LONG 113 14 20)											
OCT , 1982						MAY , 1983					
05...	0830	183	283	.5	6.0	18...	0930	106	262	9.0	8.0
NOV						JUL					
16...	1130	90	282	4.0	1.0	13...	1120	230	238	17.5	14.0
FEB , 1983						AUG					
23...	1545	140	262	7.5	4.0	23...	1540	169	267	21.0	16.5
APR											
06...	1300	69	305	9.0	5.0						
12330000 BOULDER CREEK AT MAXVILLE, MT (LAT 46 28 30 LONG 113 14 00)											
OCT , 1982						MAY					
05...	1015	38	171	5.0	4.0	18...	0745	41	182	7.0	5.0
NOV						JUN					
16...	1510	31	186	0.0	1.0	01...	1540	267	89	16.5	6.0
JAN , 1983						JUL					
04...	1030	30	197	0.0	0.0	13...	0940	128	103	19.0	9.0
FEB						AUG					
23...	1730	23	200	5.0	4.0	23...	1730	45	142	18.5	13.5
APR											
06...	1445	27	205	11.0	5.0						
12331600 CLARK FORK AT DRUMMOND, MT (LAT 46 39 45 LONG 113 08 57)											
OCT , 1982						MAY , 1983					
05...	1245	1100	456	9.0	7.5	17...	1640	1040	369	20.5	12.0
NOV						31...	1530	2150	240	23.5	13.0
17...	0730	785	487	-6.0	.0	JUL					
FEB , 1983						12...	1750	2000	364	27.0	18.0
24...	1250	1020	402	6.0	5.0	AUG					
APR						22...	1530	558	473	19.5	20.0
07...	0815	617	480	6.0	4.0						

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
PEND OREILLE RIVER BASIN--Continued											
12335500 NEVADA CREEK ABOVE RESERVOIR, NEAR FINN, MT (LAT 46 46 25 LONG 112 45 25)											
OCT , 1982						MAY , 1983					
05...	0910	15	327	5.0	5.5	03...	0820	27	298	6.0	4.5
NOV						25...	1015	218	190	17.5	7.5
15...	1030	15	286	-6.0	.5	JUN					
DEC						09...	0815	55	250	13.0	10.0
27...	1015	15	255	-13.0	.5	20...	1220	35	287	13.5	9.0
FEB , 1983						AUG					
07...	1015	10	252	-2.0	.0	01...	1145	35	255	19.0	15.5
MAR						SEP					
21...	0900	13	292	-.5	.0	12...	1220	19	316	20.0	11.5
24...	1245	26	286	14.5	4.0						
12338690 MONTURE CREEK NEAR OVANDO, MT (LAT 47 02 44 LONG 113 11 23)											
OCT , 1982						MAY , 1983					
05...	1000	54	181	5.0	6.0	03...	1600	232	119	13.0	6.5
NOV						JUN					
15...	1150	55	192	-3.0	.0	02...	1445	804	72	15.0	7.0
DEC						20...	1555	358	109	13.5	8.5
27...	1240	48	220	-8.0	1.0	AUG					
FEB , 1983						01...	1355	122	133	20.5	14.0
07...	1215	40	203	3.0	.5	SEP					
MAR						12...	1540	72	177	23.5	13.0
21...	1200	70	175	9.0	4.5						
12339450 CLEARWATER RIVER NEAR CLEARWATER, MT (LAT 47 01 11 LONG 113 23 16)											
OCT , 1982						JUN , 1983					
05...	1145	82	144	10.0	11.0	02...	1335	1090	111	17.0	14.5
NOV						22...	0830	429	113	9.0	13.0
15...	1320	81	152	2.0	3.0	AUG					
FEB , 1983						01...	1630	167	124	27.5	24.0
07...	1315	61	170	3.0	1.5	SEP					
MAR						14...	1035	56	147	18.5	14.5
21...	1345	191	161	11.0	6.0						
MAY											
05...	1135	614	134	15.0	10.5						
12340000 BLACKFOOT RIVER NEAR BONNER, MT (LAT 46 53 59 LONG 113 45 20)											
OCT , 1982						MAY , 1983					
05...	1315	821	262	15.0	11.0	05...	--	--	178	--	--
NOV						JUN					
15...	1535	--	262	-2.0	1.5	01...	1745	6490	166	17.0	10.0
DEC						22...	1146	2440	211	21.0	12.5
29...	1145	420	282	-5.0	.5	AUG					
FEB , 1983						08...	1450	--	230	30.5	21.0
02...	1100	541	254	.5	1.0	SEP					
MAR						14...	1235	735	259	20.5	14.0
23...	1210	871	231	9.0	5.5						
12342500 WEST FORK BITTERROOT RIVER NEAR CONNER, MT (LAT 45 43 30 LONG 114 16 50)											
OCT , 1982						MAY , 1983					
07...	0920	111	68	5.0	10.5	04...	1310	62	74	14.0	7.0
NOV						31...	1710	1680	47	17.0	9.0
16...	1240	--	68	3.0	5.0	JUN					
DEC						21...	1240	432	63	11.0	9.0
28...	--	--	85	--	--	AUG					
FEB , 1983						02...	0950	--	52	19.5	11.0
08...	1155	105	91	-2.5	2.0	SEP					
MAR						13...	1040	136	61	11.0	10.0
22...	--	--	78	--	--						

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

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DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
PEND OREILLE RIVER BASIN--Continued											
12344000 BITTERROOT RIVER NEAR DARBY, MT (LAT 45 58 20 LONG 114 08 26)											
OCT , 1982						MAY , 1983					
06...	1240	351	85	12.0	7.0	04...	1640	1020	71	20.5	8.5
NOV						JUN					
16...	1020	296	101	3.5	2.5	01...	0920	4790	41	17.5	7.0
DEC						21...	1550	1460	57	21.0	10.0
28...	1140	185	94	-8.0	.5	AUG					
FEB , 1983						02...	1240	555	85	28.5	16.0
08...	0825	215	92	2.5	.5	SEP					
MAR						13...	1500	366	88	18.5	13.0
22...	1020	367	104	11.5	3.0						
12353280 NINEMILE CREEK NEAR HUSON, MT (LAT 47 03 47 LONG 114 24 46)											
APR , 1983						MAY , 1983					
25...	1545	462	58	15.0	7.0	26...	0830	687	70	12.0	6.5
12353820 DRY CREEK NEAR SUPERIOR, MT (LAT 47 13 17 LONG 114 58 19)											
MAY , 1983						JUL					
13...	--	28	190	--	--	25...	--	9.0	175	--	--
JUN											
15...	1715	93	144	--	4.0						
12354500 CLARK FORK AT ST. REGIS, MT (LAT 47 18 05 LONG 115 05 10)											
OCT , 1982						MAY , 1983					
06...	1430	4680	140	11.0	9.0	04...	1345	8330	197	16.0	10.0
NOV						25...	1545	20600	142	28.0	12.0
23...	1345	3610	310	-2.0	1.0	JUN					
JAN , 1983						03...	1100	26000	123	18.0	12.0
24...	1130	3370	294	-2.0	.5	21...	1230	12200	163	17.0	12.0
MAR						AUG					
17...	1215	6240	237	5.0	5.0	02...	1245	5430	215	30.0	19.0
12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT (LAT 48 29 43 LONG 114 00 33)											
OCT , 1982						APR , 1983					
04...	1435	824	200	8.0	7.0	26...	1245	6120	162	5.0	3.5
NOV						MAY					
19...	1350	714	163	2.0	2.0	31...	1330	14800	138	17.0	6.5
JAN , 1983						JUL					
05...	1515	563	153	3.0	3.0	19...	1345	3980	148	25.0	11.0
MAR											
21...	1400	1120	273	4.0	3.0						
12369200 SWAN RIVER NEAR CONDON, MT (LAT 47 25 21 LONG 113 40 12)											
OCT , 1982						FEB , 1983					
05...	1140	83	45	5.0	9.0	14...	--	30	62	--	--
NOV						MAR					
15...	--	55	50	2.0	1.0	21...	1550	82	75	15.0	5.0
DEC						JUN					
13...	--	57	53	--	.0	16...	1030	386	38	--	12.0
JAN , 1983											
17...	1000	50	58	--	.0						
12370000 SWAN RIVER NEAR BIGFORK, MT (LAT 48 01 28 LONG 113 58 44)											
OCT , 1982						MAY , 1983					
01...	1040	576	174	5.0	11.0	02...	1135	1490	178	14.0	9.5
DEC						JUN					
07...	1150	570	178	.0	2.5	01...	1000	4680	147	16.0	13.0
JAN , 1983											
13...	1330	713	169	9.0	3.5						

ADDITIONAL TEMPERATURE MEASUREMENT AND FIELD DETERMINATIONS
WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	TEMPER- ATURE, AIR (DEG C) (00020)	TEMPER- ATURE (DEG C) (00010)
PEND OREILLE RIVER BASIN--Continued											
12389000 CLARK FORK NEAR PLAINS, MT (LAT 47 25 47 LONG 114 51 18)											
OCT , 1982						MAY , 1983					
06...	1630	11100	213	11.0	10.0	27...	1045	44000	145	18.0	13.0
JAN , 1983						AUG					
24...	1545	16400	198	.0	1.0	02...	1645	13700	180	35.0	21.0
MAY											
04...	1645	23800	177	19.0	10.0						
12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT (LAT 47 35 31 LONG 115 13 43)											
OCT , 1982						MAY , 1983					
08...	0820	217	180	2.0	6.0	05...	0930	694	122	8.0	6.0
NOV						26...	0930	1820	62	14.0	8.0
24...	0930	176	175	-6.0	1.0	JUN					
JAN , 1983						21...	1645	547	117	17.0	11.0
25...	1030	228	182	1.0	2.0	AUG					
MAR						03...	1100	255	138	20.0	14.0
18...	0930	468	162	.0	3.0						
12390700 PROSPECT CREEK AT THOMPSON FALLS, MT (LAT 47 35 10 LONG 115 21 15)											
OCT , 1982						MAY , 1983					
07...	1700	63	86	11.0	8.0	05...	1145	467	47	12.0	7.0
NOV						26...	1315	1210	35	26.0	8.0
24...	0900	50	82	-5.0	2.0	JUN					
JAN , 1983						22...	1215	282	53	18.0	9.0
25...	0925	.12	56	-2.0	2.0	AUG					
MAR						03...	0900	107	71	17.0	11.0
18...	0820	327	51	.0	3.0						

GROUND-WATER LEVELS

DEER LODGE COUNTY

460632112493502. Local number, 04N10W10DC02.
 LOCATION.--Lat 46°06'32", long 112°49'35", Hydrologic Unit 17010201. Owner: Village of Opportunity.
 AQUIFER.--Alluvium of Quaternary Age.
 WELL CHARACTERISTICS.--Driven fire protection water-table well, diameter 4 in, depth 20.0 ft, steel casing.
 DATUM.--Land-surface datum is 4,979 ft National Geodetic Vertical Datum of 1929. Measuring point: Bottom of 6 in outlet pipe, 1.3 ft above land-surface datum.
 PERIOD OF RECORD.--July 1960 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.05 ft below land-surface datum June 4, 1980; lowest, 5.22 ft below land-surface datum Mar. 13, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	4.99

DEER LODGE COUNTY

461420112504501. Local number, 06N10W27CCCC01.
 LOCATION.--Lat 46°14'20", long 112°50'45", Hydrologic Unit 17010201. Owner: Mount Haggin Land and Livestock Company.
 AQUIFER.--Deposits of Tertiary Age.
 WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in, depth 88.8 ft, steel casing.
 DATUM.--Land-surface datum is 5,006 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.50 ft above land-surface datum.
 PERIOD OF RECORD.--June 1960 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 30.00 ft below land-surface datum Sept. 18, 1980; lowest, 66.17 ft below land-surface datum June 9, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL
Aug. 4	50.60	Nov. 17	35.89

DEER LODGE COUNTY

461515112441201. Local number, 06N09W21CD01.
 LOCATION.--Lat 46°15'15", long 112°44'12", Hydrologic Unit 17010201. Owner: W. Beck.
 AQUIFER.--Deposits of Tertiary Age.
 WELL CHARACTERISTICS.--Drilled domestic and stock artesian well, diameter 6 in, depth 150 ft, steel casing.
 DATUM.--Land-surface datum is 4,786 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 0.50 ft above land-surface datum.
 PERIOD OF RECORD.--September 1960 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 88.97 ft below land-surface datum Aug. 20, 1968; lowest, 100.30 ft below land-surface datum Nov. 17, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	100.30

FLATHEAD COUNTY

480544114104501. Local number, 27N20W17CC01.
 LOCATION.--Lat 48°05'44", long 114°10'45", Hydrologic Unit 17010208. Owner: U.S. Geological Survey.
 AQUIFER.--Alluvium of Quaternary Age.
 WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1 1/2 in, depth 9.6 ft, cased with steel pipe.
 DATUM.--Land-surface datum is 2,896 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of pipe, 1.5 ft above land-surface datum.
 PERIOD OF RECORD.--October 1963 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.79 ft below land-surface datum Apr. 2, 1979; lowest, 5.32 ft below land-surface datum Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

WELL DESTROYED

GROUND-WATER LEVELS

FLATHEAD COUNTY

481458114111701. Local number, 29N20W29BD01.

LOCATION.--Lat 48°14'58", long 114°11'17", Hydrologic Unit 17010208. Owner: John Byrne.

AQUIFER.--Glacial deposits of Quaternary Age.

WELL CHARACTERISTIC.--Drilled unused artesian well, diameter 5 in, depth 151 ft, steel casing.

DATUM.--Land-surface datum is 2,980.5 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft above land-surface datum.

PERIOD OF RECORD.--September 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.88 ft below land-surface datum Aug. 18, 1969; lowest, 39.24 ft below land-surface datum June 11, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	20.83

FLATHEAD COUNTY

481519114182501. Local number, 29N21W20CCCC01.

LOCATION.--Lat 48°15'19", long 114°18'25", Hydrologic Unit 17010210. Owner: Lutheran Cemetery Association.

AQUIFER.--Glacial deposits of Quaternary Age.

WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 6 in, depth 278 ft, steel casing.

DATUM.--Land-surface datum is 3,027 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 5.0 ft below land-surface datum.

REMARKS.--Used in irrigation season only.

PERIOD OF RECORD.--October 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 100.00 ft below land-surface datum July 1, 1964; lowest, 108.13 ft below land-surface datum Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	105.62

FLATHEAD COUNTY

481653114114901. Local number, 29N20W18AAD01.

LOCATION.--Lat 48°16'53", long 114°11'49", Hydrologic Unit 17010208. Owner: William Anderson.

AQUIFER.--Eolian deposits of Quaternary Age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 56 in, depth 20.0 ft, concrete casing.

DATUM.--Land-surface datum is 3,050 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 3/4-in pipe, 0.7 ft below land-surface datum.

PERIOD OF RECORD.--October 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.73 ft below land-surface datum June 11, 1970; lowest, 19.36 ft below land-surface datum Feb. 15, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	17.06

MISSOULA COUNTY

465312114052001. Local number, 13N20W14ACCA01.

LOCATION.--Lat 46°53'20", long 114°05'20", Hydrologic Unit 17010204. Owner: Bonneville Power Administration.

AQUIFER.--Terrace deposits of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in, depth 35.5 ft, cased with pipe.

DATUM.--Land-surface datum is 3,145 ft National Geodetic Vertical Datum of 1929. Measuring point: top of casing 1.30 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level 8.08 ft below land-surface datum June 1974; lowest, 21.14 ft below land-surface datum May 1961.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	17.66

GROUND-WATER LEVELS

POWELL COUNTY

463540112320301. Local number, 10N07W30BBC01.
 LOCATION.--Lat 46°35'40", long 112°32'03", Hydrologic Unit 17010201. Owner: Powell County School District.
 AQUIFER.--Sands and gravels of Tertiary Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in, depth 69.6 ft steel casing.
 DATUM.--Land-surface datum is 4,825 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft above land-surface datum.
 PERIOD OF RECORD.--June 1961 to March 1963, September 1967 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 28.77 ft below land-surface datum May 21, 1979; lowest, 34.37 ft below land-surface datum Aug. 20, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	32.52

RAVALLI COUNTY

461518114090802. Local number, 06N20W19CCCC02.
 LOCATION.--Lat 46°15'18", long 114°09'08", Hydrologic Unit 17010205. Owner: Bonneville Power Administration.
 AQUIFER.--Flood plain Alluvium of Quaternary Age.
 WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in, depth 40 ft, cased with pipe.
 DATUM.--Land-surface datum is 3,557 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf 3.0 ft above land-surface datum.
 REMARKS.--Water-stage recorder installed September 1970.
 PERIOD OF RECORD.--September 1970 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.06 ft below land-surface datum June 25, 1971; lowest, 18.36 ft below land-surface datum Apr. 7, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 7	7.60	Apr. 20	17.44
Dec. 28	13.86	May 26	14.63
Jan. 26	15.00	July 22	6.24
Feb. 8	15.48	Aug. 23	6.61
Mar. 24	16.60	Sept. 21	7.62

RAVALLI COUNTY

463750114033001. Local number, 10N20W13BBA.
 LOCATION.--Lat 46°37'50", long 114°03'30", Hydrologic Unit 17010205. Owner: Bonneville Power Administration.
 AQUIFER.--Alluvium of Quaternary Age.
 WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in, depth 50.5 ft, cased with pipe.
 DATUM.--Land-surface datum is 3,200 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft above land-surface datum.
 PERIOD OF RECORD.--May 1959 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.48 ft below land-surface datum June 15, 1959; lowest, 7.55 ft below land-surface datum Apr. 15, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	6.30

RAVALLI COUNTY

463130114064402. Local number, 09N20W21ADB02.
 LOCATION.--Lat 46°31'30", long 114°06'44", Hydrologic Unit 17010205. Owner: D. Shea.
 AQUIFER.--Alluvium underlying river terraces.
 WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 4 in, depth 40 ft, cased with pipe.
 This well replaces 463140114064001 (09N20W21AD1).
 DATUM.--Land-surface datum is 3,308 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft above land-surface datum.
 PERIOD OF RECORD.--September 1976 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 16.87 ft below land-surface datum June 26, 1978; lowest, 34.01 ft below land-surface datum Mar. 28, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL
Nov. 17	26.85

GROUND-WATER LEVELS

SANDERS COUNTY

474251114385201. Local number, 23N24W34ADA01.

LOCATION.--Lat 47°42'51", long 114°38'52", Hydrologic Unit 17010212. Owner: U.S Bureau of Indian Affairs.

AQUIFER.--Glacial lake deposits of Quaternary age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 18 in, depth 377 ft, perforated with 480 perforations.

DATUM.--Land-surface datum is 2,878.6 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of casings, 1.0 ft above land-surface datum.

REMARKS.--Water-stage recorder installed January 1971. Submersible pump installed for stock purposes.

PERIOD OF RECORD.--March 1943 to June 1943, October 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 102.72 ft below land-surface datum Apr. 10, 1981; lowest, 116.40 ft below land-surface datum Aug. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL
Nov. 17	106.63	Mar. 18	105.83
Jan. 17	106.03	May 4	105.75

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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