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Water Resources Data Montana Water Year 1982

Volume 2. Columbia River Basin

U.S. GEOLOGICAL SURVEY
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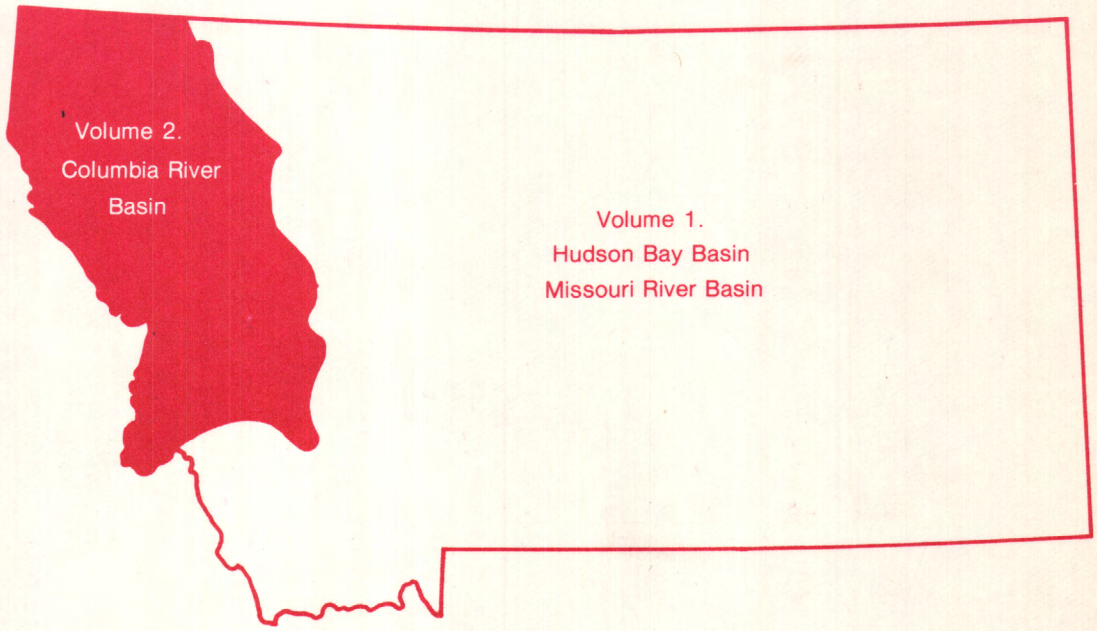

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-82-2
Prepared in cooperation with the State of Montana
and with other agencies

CALENDAR FOR WATER YEAR 1982

1981

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1982

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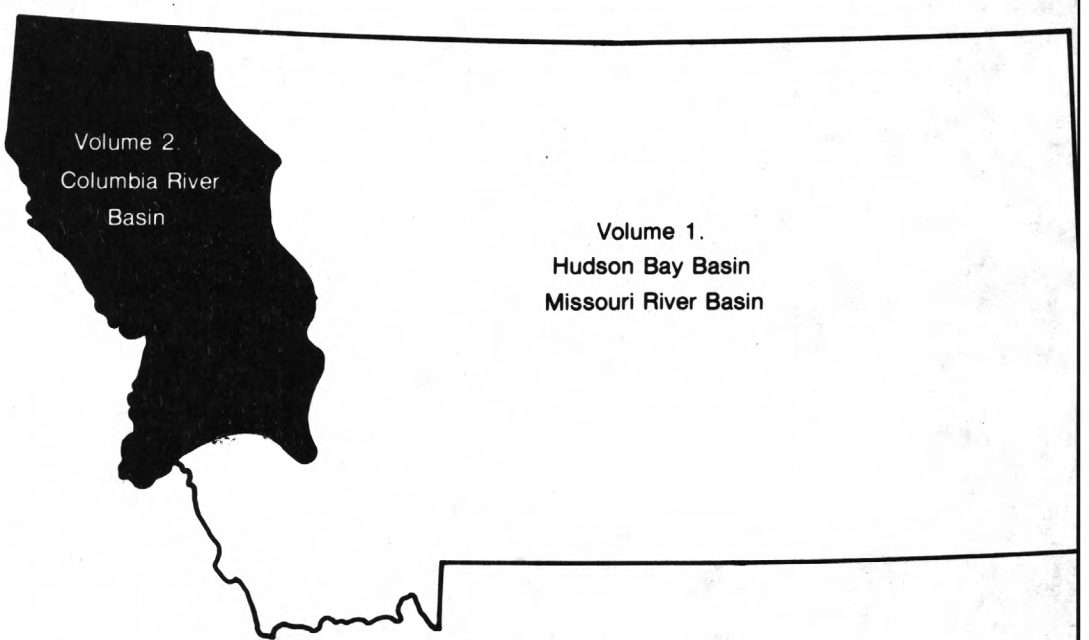
Water Resources Data Montana Water Year 1982

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-82-2
Prepared in cooperation with the State of Montana
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, 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

1983

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:

Edward J. Blank, Supervisory Hydrologic Technician
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Richard L. Clements, Hydrologic Technician
Jay H. Diamond, Supervisory Hydrologic Technician
James E. Elliott, Hydrologic Technician
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Robert J. Omang, Hydrologist
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Andrew A. Skerda, Hydrologic Technician
Sally A. Staley, Hydrologic Technician
Raymond J. Weinberg, Hydrologic Technician
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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Water resources data for the 1982 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 in wells. Volume 2 of this report contains discharge records for 46 gaging stations; stage/contents for 3 lakes and reservoirs; water quality for 19 stations, 3 lakes; water levels for 14 observation wells. Also included are 31 crest-stage partial-record stations and 20 smaller reservoirs. Additional water data were collected at various sites, not part of the systematic data collection programs, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.

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

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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)

GAGING STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

WATER RESOURCES DATA FOR MONTANA, 1982

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 1982 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 46 gaging stations; stage and contents at 3 lakes and reservoirs; water quality at 19 gaging stations, 3 water-quality stations; and 3 lake stations; and water levels at 14 observation wells. Also included are data for 31 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.

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 82-2." 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.

SUMMARY OF HYDROLOGIC CONDITIONS

The 1982 water year in the upper Columbia River basin in western Montana 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 42 stations in western Montana, indicate that precipitation for the year was slightly greater than normal. From October 1981 through March 1982 precipitation for the reporting stations in the western division averaged 12.45 inches, which was a departure of +1.92 inches from normal. From April 1982 through September 1982 the precipitation averaged 10.44 inches, a departure of +0.96 inch from normal. Thus, average precipitation for the 1982 water year was 22.89 inches, a departure of +2.88 inches from normal.

Streamflow

Except for the Clark Fork basin, the lack of snowpack during the 1981 water year resulted in less than normal streamflow throughout most of the upper Columbia River basin until February 1982. During February 13-16 a storm moved through northwestern Montana. As a result of this storm, which was accompanied by warming temperatures and rainfall, runoff increased and greater than normal monthly flows were recorded during February and March. Streamflow returned to normal during April through June. In July several summer storms moved through the basin, resulting in greater than normal monthly flows. August and September were about average for precipitation and streamflows returned to the normal range. Streamflow data for the 1982 water year compared to data for the 1951-80 water years at three long-term streamflow stations are shown in figure 3. Drainage areas of the three stations are 123, 1,128, and 10,709 square miles.

No extraordinary flood flows were recorded this 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 1982 water year

with peak discharge for period of record at long-term stations

Station number	Station name	Drainage area (square miles)	Peak discharge, 1982 water year: Date	Cubic feet per second	Recurrence interval (years)	Peak discharge, period of record: Date	Cubic feet per second
12301300	Tobacco River near Eureka	440	5-19	1,550	2	6-18-74	2,470
12304500	Yaak River near Troy	766	5-26	7,280	2	5-21-56	12,100
12332000	Middle Fork Rock Creek near Philipsburg	123	6-24	1,180	4	6-16-74	1,680
12335500	Nevada Creek above reservoir, near Finn	116	4-11	640	3	6-02-53	1,800
12340000	Blackfoot River near Bonner	2,290	6-17	10,200	3	6-10-64	19,200
12340500	Clark Fork above Missoula	5,999	6-17	18,500	4	6-21-75	32,300
12354500	Clark Fork at St. Regis	10,709	6-18	48,600	4	5-24-48	68,900
12355500	North Fork Flathead River near Columbia Falls	1,548	5-26	19,900	2	6-09-64	69,100
12358500	Middle Fork Flathead River near West Glacier	1,128	5-26	20,800	2	6-09-64	140,000
12370000	Swan River near Bigfork	671	6-19	5,710	3	6-20-74	8,890

Quality of streamflow

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

Dissolved-solids concentration = 24 + (0.448 x specific conductance)

Specific conductance was measured at the station twice a month during the 1982 water year. The mean value for the 24 measurements was 247 micromhos per centimeter at 25°C with values ranging from 208 to 289 micromhos. The mean concentration was similar to that of the 1981 water year (249 micromhos) as well as to previous years since impoundment of water behind the dam. The relatively small range in specific-conductance values results from storage and mixing of water in Lake Koocanusa.

The mean dissolved phosphorus concentration for the water year of 0.008 milligram per liter for 22 samples continued to remain low at Kootenai River below Libby Dam, near Libby. 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 phosphorus occurred during the end of the 1960's. Pollution-abatement practices then improved and concentrations gradually decreased through the early to mid-1970's. The mean concentration of dissolved phosphorus at the station for 1975-81 was about 0.010 milligram per liter. The 1982 water-year values compare favorably with the mean of the past 8 water years.

In the Upper Columbia River basin, water quality is monitored 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.

During the 1982 water year, each station was sampled six times at approximately equal intervals. Mean dissolved-solids concentrations at the NASQAN stations were not significantly different for the year than for their periods of record (fig. 1). In addition, the ranges of dissolved-solids concentrations at the stations for the year were within the long-term ranges. Because dissolved solids generally have good inverse relationships to streamflow, the about-normal flow conditions during the 1982 water year probably accounted for about-average ranges in concentration.

Concentrations of major ions, nutrients, and minor elements were about normal for the two NASQAN stations on the Flathead River. At Clark Fork below Missoula (station 12353000) the sample collected on February 18 showed anomalously large values for some constituents. Among the constituents with the largest concentrations ever measured were: Total ammonia-nitrogen, dissolved phosphorus, dissolved orthophosphorus, total phosphorus, chloride, dissolved potassium, dissolved arsenic, total-recoverable arsenic, and total-recoverable zinc. At the same time, fecal streptococci had its largest colony density. The February 18 sample was collected during a period of extremely warm temperatures when lowland runoff was contributing a large percentage of the streamflow.

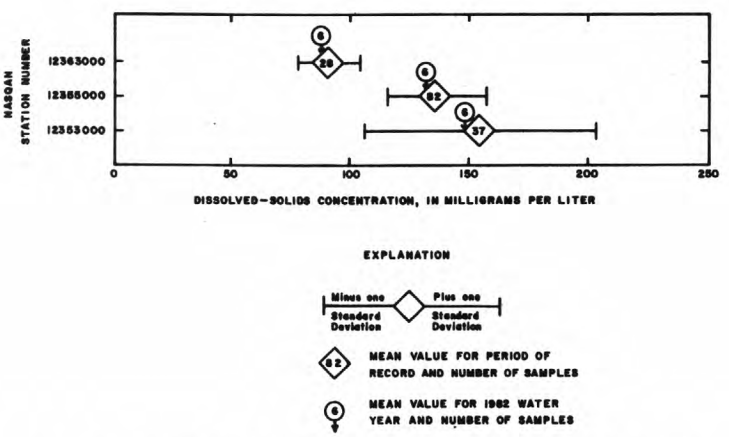

Figure 1. Mean dissolved solids concentrations of NASQAN stations

Ground-water levels

Ground-water levels in the intermontane basins west of the Continental Divide (Region 12) generally were about average, but higher than last year. One exception was the Bitterroot Valley, where levels were average the first part of the water year but below average from May through August. An index well at Hamilton, in the Bitterroot Valley, recorded new minimum monthly water levels in July and August. Water levels in most wells rose seasonally from September through November and peaked in April and June, then seasonally declined through September.

In the Kalispell area north of Flathead Lake and the Missoula area along the Clark Fork, water levels were average and about the same as last year. Thus, pumping of ground water for irrigation and industrial uses in these areas had little or no effect on the water levels.

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°C ± 0.2° 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°C ± 1.0°C on M-enterrococcus 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 increasing 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 faculative 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°C ± 1.0°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.

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

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass valued of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

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

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.

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 artifical 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 (FT^3/s, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 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:

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

where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. 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 ($CaCO_3$).

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.

Not detected (ND) is a remark code sometimes used in water-quality tables in place of a value to show that a constituent concentration was less than the analytical level of detection.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

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

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

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.
Silt	.004 - .062	Sedimentation.
Sand	.062 - 2.0	Sedimentation or sieve.
Gravel	2.0 - 64.0	Sieve.

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

Periphyton are microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, the periphyton also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable 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.

Chlorophyta (green algae) have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats of floating "moss" in lakes.

Chrysophyta (yellow-green algae, yellow-brown algae, and diatoms) have pigments in which yellow-green to golden-brown are predominate. The cell wall of these organisms, especially diatoms, often consists of two overlapping halves which are highly silicified.

Cryptophyta (cryptomonads) have pigments that are usually brown but also occur as red, blue or grass green. The cells are motile with two flagella and occur in freshwaters sometimes rich in organic and in nitrogenous materials.

Cyanophyta (blue-green algae) are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Euglenophyta (euglenoids) are motile cells usually with one flagella and have a dominant grass-green pigment. They often occur in small pools rich in organic matter and are frequently present in sufficient amounts to color the water or the damp mud along river banks.

Pyrrhophyta (fire algae) have greenish tan to golden brown pigments. The cells are motile usually with two flagella. The fresh water forms are most abundant in pools, ditches, and small lakes with considerable vegetation.

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

Polychlorinated biphenyls (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 (mg C/m^2.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).

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 planimetered. All areas shown are those for the stage when the planimetered map was made.

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

Suspended, 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 µm 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 µm 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.

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

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

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).

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, 1982, is called the "1982 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 indention in a list of stations in the front of the report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 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.

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 2 below.

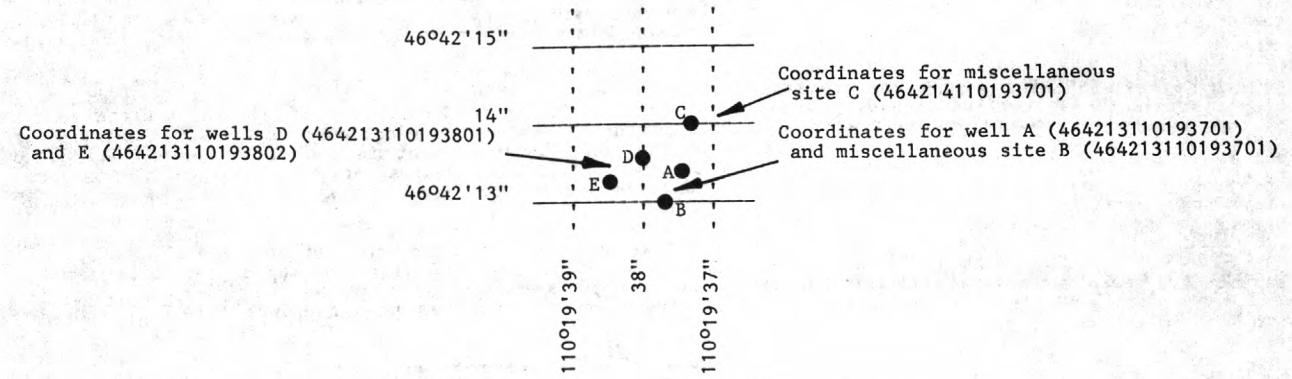

Figure 2. System for numbering wells and miscellaneous sites (latitude and longitude)

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

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

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

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 logarithmetic 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 depositon 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, given for only a few stations, 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.

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.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If no daily, monthly, or annual figures of discharge were revised, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see "Definition of Terms"), and a condensed history of the types, 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 ft^3/s; to tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures above 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff 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.

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 2.--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			

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 (°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 (°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.

Table 3.--Descriptor values for weather conditions.

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

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.

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.

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

Year	Parts 5-6	Part 12	Year	Parts 5-6	Part 12
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 2.

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

Year	WSP No.	Year	WSP No.	Year	WSP No.
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. Ehlke, 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. L. 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.

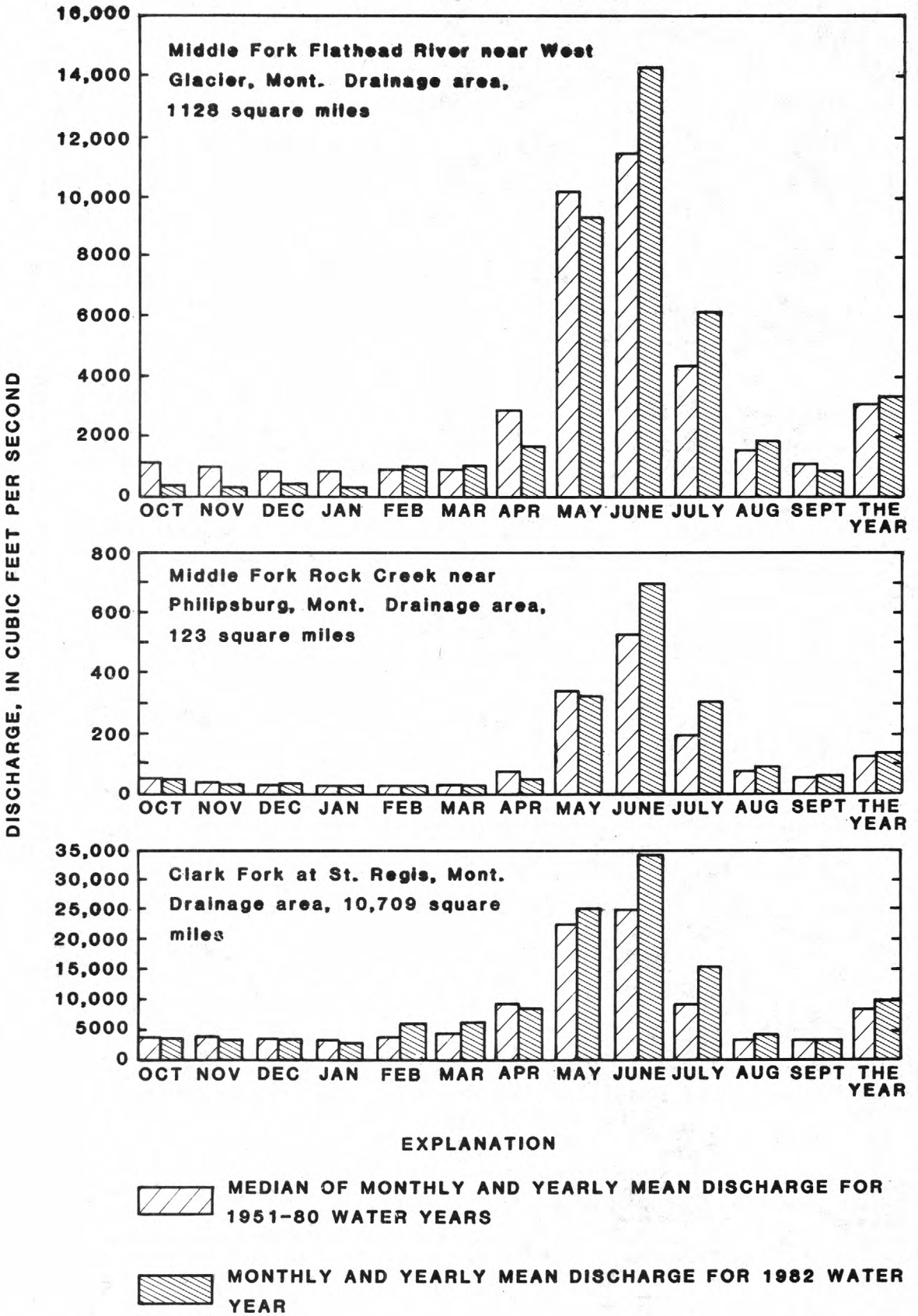

Figure 3.--Comparison of discharge at two long-term representative gaging stations during the 1982 water year with median monthly and yearly mean discharge for 1951-1980 water years

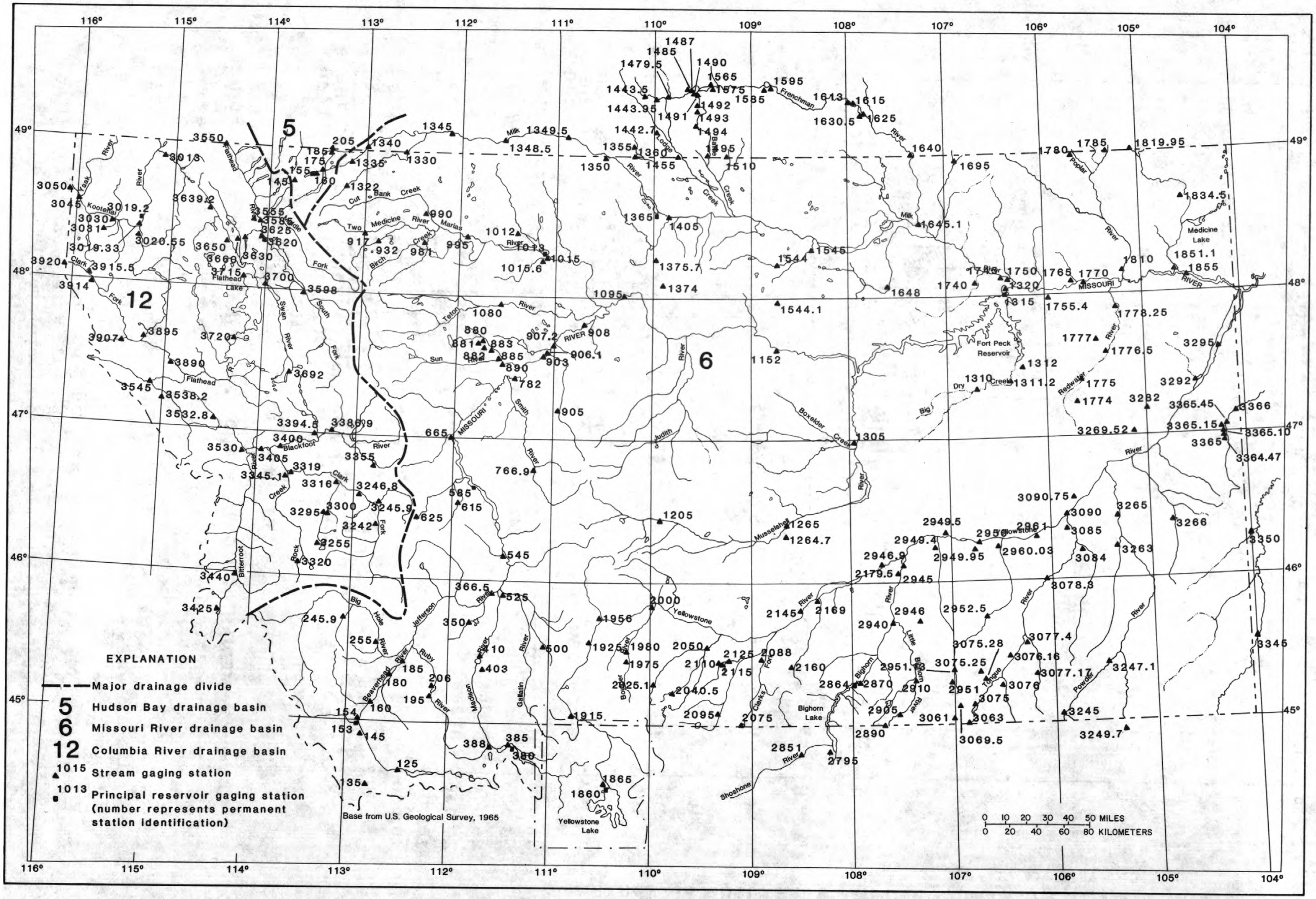

FIGURE 4.--LOCATION OF SURFACE-WATER GAGING STATIONS, 1982 WATER YEAR

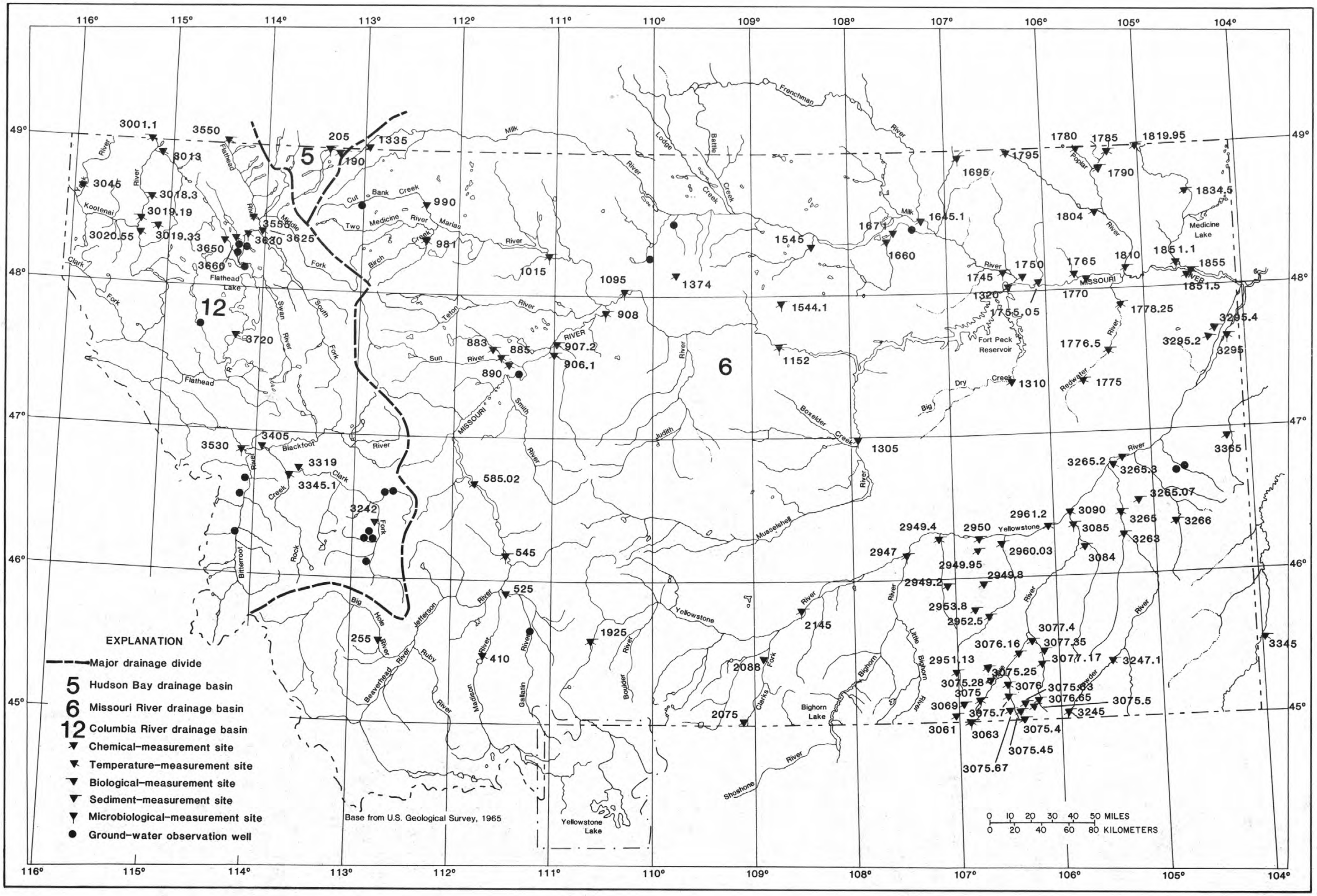

FIGURE 5.--LOCATION OF WATER-QUALITY STATIONS AND GROUND-WATER OBSERVATION WELLS, 1982 WATER YEAR

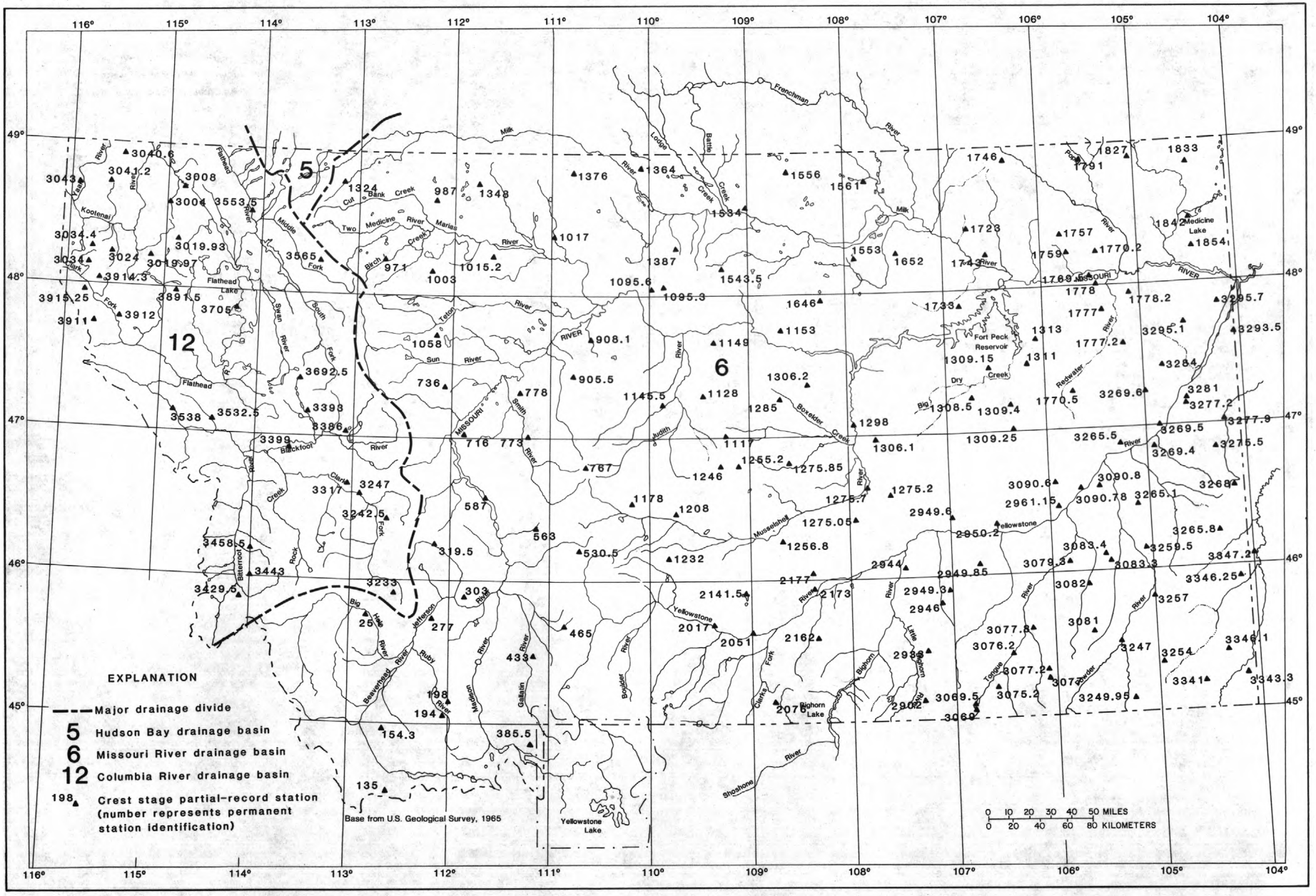

FIGURE 6.--LOCATION OF CREST-STAGE PARTIAL-RECORD STATIONS, 1982 WATER YEAR

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 (0.5 km) south of international boundary, in middle of old channel 1.9 mi (3.1 km) upstream from Young Creek, and 6.4 mi (10.3 km) 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 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	ELEVATION ABOVE NGVD (FEET) (72020)	WEATHER (WMO CODE NUMBER) (00041)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT											
07...	1200	1.5	2455.8	80	249	8.4	--	14.4	8.9	95	3.4
07...	1230	10	2455.8	80	249	8.4	--	14.4	8.9	95	3.4
07...	1400	134	2455.8	80	276	7.9	13.5	8.7	6.4	100	6.2
21...	1200	1.5	2451.6	0	251	8.4	1.0	12.5	9.0	96	<1.9
21...	1330	10	2451.6	0	251	8.4	--	12.5	9.0	95	<1.9
21...	1400	130	2451.6	0	281	8.3	--	10.8	8.9	94	<1.9
JUN											
29...	1230	10	2440.2	3	185	8.6	23.0	19.0	9.6	83	4.6
29...	1330	114	2440.2	3	196	8.1	--	8.6	8.6	87	5.0
JUL											
13...	1130	10	2454.4	0	172	8.6	24.0	19.2	9.9	80	4.0
13...	1230	130	2454.4	0	202	8.0	--	8.7	8.6	91	5.2
28...	1100	10	2458.8	0	182	8.6	22.0	19.0	9.5	83	3.6
28...	1200	135	2458.8	0	199	8.1	--	9.1	8.8	89	5.1
AUG											
11...	1130	10	2458.7	2	190	8.6	22.0	19.7	9.2	86	4.3
11...	1230	132	2458.7	2	198	8.4	--	9.4	8.0	89	5.8
25...	1100	10	2458.6	0	205	8.6	22.0	21.0	9.1	90	3.5
25...	1200	132	2458.6	0	199	8.2	--	11.4	8.2	85	4.4
SEP											
08...	1200	10	2458.8	2	207	8.3	21.0	19.2	8.8	89	3.5
08...	1300	133	2458.8	2	204	8.0	--	10.7	7.9	90	4.7
22...	1200	10	2457.1	1	205	8.6	12.0	16.3	9.2	91	3.8
22...	1300	131	2457.1	1	197	8.1	--	10.6	7.1	93	4.8

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT										
07...	<.10	<.10	.21	.24	.45	--	.005	.004	.004	1.8
07...	<.10	<.10	.24	.35	.59	--	.005	.004	.000	1.8
07...	.27	.19	.28	.32	.60	.87	.015	.013	.001	3.5
21...	<.10	--	.26	.08	.34	--	.011	.014	<.001	1.2
21...	<.10	--	.20	.18	.38	--	.002	.001	<.001	1.0
21...	<.10	--	.21	.06	.27	--	.011	.011	.006	1.1
JUN										
29...	<.10	<.10	.18	.42	.60	--	<.005	--	<.001	2.3
29...	.20	.18	.29	.41	.70	.90	.012	--	.002	3.3
JUL										
13...	<.10	--	.20	1.4	1.6	--	.007	.006	.001	2.4
13...	.22	--	.27	1.0	1.3	1.5	.018	.011	.009	2.2
28...	<.10	--	.16	1.9	2.1	--	.015	.012	.004	2.0
28...	.20	--	.54	.46	1.0	1.2	.025	--	.011	2.1
AUG										
11...	<.10	--	.29	.71	1.0	--	.044	<.005	--	2.3
11...	.20	--	.18	.72	.90	1.1	.015	.009	.008	2.4
25...	<.10	--	.44	.56	1.0	--	.005	<.005	<.003	1.1
25...	.14	--	.15	.45	.60	.74	<.005	<.005	.005	1.4
SEP										
08...	<.10	--	.17	.73	.90	--	<.005	<.005	<.003	1.6
08...	.20	--	.17	.33	.50	.70	<.005	<.005	<.003	2.3
22...	<.10	--	.23	.47	.70	--	<.001	<.001	<.001	1.2
22...	.20	--	.10	.40	.50	.70	.039	<.001	<.001	1.2

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)
OCT								
07...	1200	1.5	110	14	31	8.6	1.9	.0
07...	1230	10	120	19	33	8.6	2.0	.0
07...	1400	134	120	10	34	8.6	2.6	.1
JUN								
29...	1230	10	100	17	30	7.3	1.7	.0
29...	1330	114	110	17	31	7.1	1.5	.0

DATE	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)
OCT							
07...	.5	99	19	2.0	.1	126	.17
07...	.4	99	18	1.9	.1	127	.17
07...	.5	110	14	2.6	.2	136	.17
JUN							
29...	.6	88	12	1.3	.1	111	.15
29...	.5	90	12	1.2	.1	113	.15

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
OCT								
07...	1200	300	200	2	1	30	<10	2
07...	1230	500	500	2	0	40	<10	2
07...	1400	500	500	2	1	180	13	4
JUN								
29...	1230	<100	<100	2	1	90	16	<1
29...	1330	300	<100	2	1	390	23	5

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT							
07...	1	0	<1	2	<10	10	<3
07...	2	0	1	2	<10	0	18
07...	1	10	3	2	<10	10	10
JUN							
29...	1	<10	3	2	<1	10	7
29...	1	10	3	<1	1	20	15

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)
OCT				
07...	1200	1.5	1.44	<.041
07...	1230	10	1.20	.000
07...	1315	80	1.13	.000
21...	1200	1.5	1.15	<.040
21...	1330	10	1.28	<.046
21...	1342	60	1.57	<.040
JUN				
29...	1230	10	.516	<.025
29...	1252	30	.165	<.024
JUL				
13...	1130	10	.280	<.019
13...	1154	51	.065	<.019
28...	1100	10	.399	.027
28...	1130	50	.440	<.013
AUG				
11...	1130	10	.990	.059
11...	1152	60	.449	.022
25...	1100	10	.647	.027
25...	1122	50	.532	.023
SEP				
08...	1200	10	.732	.028
08...	1234	70	.480	.018
22...	1200	10	1.03	.014
22...	1240	85	.104	.044

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)	DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)
OCT		AUG	
7...	100	11...	270
21...	110	25...	220
JUN		SEP	
29...	160	8...	230
JUL		22...	200
13...	140		
28...	230		

(carbon-14, light and dark bottle method)

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
OCT							
07...	1115	.0	249	8.4	14.4	32	8.9
07...	1200	1.5	249	8.4	14.4	28	8.9
07...	1205	3.0	249	8.4	14.4	28	8.9
07...	1210	5.0	249	8.4	14.4	28	8.9
07...	1230	10	249	8.4	14.4	28	8.9
07...	1232	15	249	8.4	14.4	28	8.9
07...	1237	20	249	8.4	14.4	28	8.8
07...	1240	25	249	8.4	14.4	28	8.9
07...	1242	30	249	8.4	14.4	28	8.9
07...	1245	35	249	8.4	14.4	28	8.8
07...	1247	40	249	8.4	14.4	28	8.9
07...	1250	45	249	8.4	14.4	30	8.9
07...	1300	50	249	8.4	14.4	30	8.8
07...	1302	55	249	8.4	14.4	30	8.9
07...	1305	60	250	8.4	14.4	30	8.9
07...	1307	65	252	8.4	14.3	32	8.9
07...	1310	70	264	8.3	14.0	28	8.7
07...	1312	75	282	8.2	13.0	15	8.2
07...	1315	80	281	8.2	13.0	3.4	8.2
07...	1320	85	281	8.2	12.9	3.1	8.1
07...	1325	90	272	8.0	12.8	2.1	7.9
07...	1330	95	250	8.0	12.5	1.2	7.7
07...	1335	100	247	7.8	11.4	1.5	6.9
07...	1340	105	246	7.9	10.4	3.8	7.2
07...	1345	110	242	7.9	10.1	6.8	7.1
07...	1350	115	256	7.9	9.6	3.4	6.7
07...	1355	125	269	7.8	8.9	.33	6.5
07...	1400	134	276	7.9	8.7	.13	6.4
07...	1405	144	276	7.9	8.7	.07	6.3

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
OCT							
21...	1150	.0	251	8.4	12.6	41	9.0
21...	1200	1.5	251	8.4	12.5	39	9.0
21...	1215	3.0	251	8.4	12.5	37	9.0
21...	1230	5.0	251	8.4	12.5	32	9.0
21...	1330	10	251	8.4	12.5	32	9.0
21...	1332	15	251	8.4	12.5	32	9.1
21...	1333	20	251	8.4	12.5	32	9.1
21...	1334	25	251	8.4	12.5	32	9.1
21...	1336	30	251	8.4	12.5	32	9.0
21...	1337	35	251	8.4	12.5	32	9.0
21...	1338	40	251	8.4	12.5	32	9.0
21...	1339	45	251	8.4	12.5	32	9.0
21...	1340	50	251	8.4	12.5	32	9.1
21...	1341	55	251	8.4	12.5	32	9.0
21...	1342	60	251	8.4	12.5	32	9.0
21...	1343	65	251	8.4	12.5	32	9.0
21...	1344	70	252	8.4	12.5	32	9.0
21...	1345	75	254	8.4	12.4	30	9.1
21...	1346	80	256	8.4	12.4	28	9.1
21...	1347	85	258	8.4	12.2	27	9.1
21...	1348	90	259	8.4	12.1	30	9.1
21...	1350	95	261	8.4	12.1	32	9.1
21...	1352	100	265	8.3	12.1	28	9.1
21...	1354	105	262	8.4	11.5	24	9.0
21...	1356	110	273	8.3	11.0	11	8.9
21...	1358	120	280	8.3	10.9	5.3	8.9
21...	1400	130	281	8.3	10.8	3.4	8.9
21...	1415	140	282	8.3	10.8	1.5	8.9
JUN							
29...	1220	.0	192	8.6	19.7	7.9	9.0
29...	1224	2.0	192	8.6	19.6	7.9	9.2
29...	1228	5.0	192	8.6	19.1	12	9.4
29...	1230	10	185	8.6	19.0	17	9.6
29...	1234	13	183	8.5	18.9	20	9.4
29...	1236	15	179	8.5	18.4	11	9.5
29...	1238	16	173	8.4	16.5	5.8	9.4
29...	1242	18	178	8.4	14.8	3.1	9.2
29...	1244	20	170	8.2	14.0	.62	9.2
29...	1248	25	169	8.2	13.6	.02	9.3
29...	1252	30	167	8.2	13.3	<.01	9.3
29...	1256	35	168	8.2	12.5	<.01	9.3
29...	1258	40	168	8.1	12.4	<.01	9.3
29...	1300	45	164	8.2	12.0	<.01	9.4
29...	1302	50	164	8.2	12.0	<.01	9.4
29...	1304	55	163	8.2	11.9	<.01	9.4
29...	1306	60	163	8.1	11.8	<.01	9.4
29...	1308	65	163	8.2	11.7	<.01	9.4
29...	1310	70	163	8.1	11.7	<.01	9.4
29...	1312	75	162	8.2	11.5	<.01	9.4
29...	1314	80	163	8.1	11.4	<.01	9.4
29...	1316	85	164	8.1	11.3	<.01	9.4
29...	1318	90	173	8.1	11.1	<.01	9.4
29...	1320	95	183	8.1	10.3	<.01	9.3
29...	1325	100	179	8.1	9.8	<.01	9.2
29...	1330	114	196	8.1	8.6	<.01	8.6
29...	1332	124	200	8.1	8.6	<.01	8.6

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
JUL							
13...	1120	.0	182	8.7	19.4	23	9.6
13...	1124	1.0	181	8.7	19.4	23	9.8
13...	1126	3.0	181	8.9	19.3	21	9.9
13...	1128	5.0	179	8.8	19.3	21	9.9
13...	1130	10	172	8.6	19.2	21	9.9
13...	1132	15	180	8.5	15.9	16	9.8
13...	1134	20	178	8.3	15.0	18	9.4
13...	1136	25	177	8.3	14.4	14	9.2
13...	1140	30	176	8.2	14.3	11	9.3
13...	1144	35	171	8.2	13.6	7.3	9.4
13...	1148	40	172	8.2	13.4	3.8	9.4
13...	1150	45	171	8.3	13.1	2.8	9.5
13...	1152	50	171	8.3	13.0	2.1	9.5
13...	1156	55	172	8.2	12.6	1.3	9.5
13...	1158	60	176	8.2	12.3	.71	9.6
13...	1200	65	176	8.2	12.0	.53	9.6
13...	1202	70	174	8.2	11.7	.28	9.6
13...	1204	75	173	8.2	11.4	.05	9.6
13...	1206	80	174	8.2	11.4	.01	9.6
13...	1208	85	174	8.2	11.3	.01	9.7
13...	1210	90	175	8.1	11.2	.01	9.7
13...	1212	95	174	8.1	11.2	.01	9.7
13...	1215	100	186	8.0	10.2	.01	9.4
13...	1220	110	192	8.0	9.3	.05	9.5
13...	1225	120	197	8.0	9.0	.16	9.1
13...	1230	130	202	8.0	8.7	<.01	8.6
13...	1232	140	204	8.1	8.7	<.01	8.5
JUL							
28...	1050	.0	184	8.6	20.8	39	9.0
28...	1054	3.0	184	8.6	20.6	33	9.0
28...	1056	5.0	182	8.6	20.4	33	9.2
28...	1058	8.0	184	8.6	20.0	33	9.1
28...	1100	10	182	8.6	19.0	28	9.5
28...	1104	15	183	8.5	18.1	20	9.6
28...	1106	18	183	8.6	17.5	20	9.4
28...	1110	20	184	8.5	16.3	20	9.2
28...	1112	25	185	8.4	16.0	21	8.9
28...	1116	30	187	8.4	15.6	21	8.9
28...	1118	35	187	8.4	15.0	32	8.7
28...	1122	37	188	8.4	15.0	28	8.8
28...	1124	40	193	8.3	14.6	27	9.1
28...	1126	45	192	8.3	14.1	28	9.0
28...	1130	50	190	8.3	13.3	24	9.1
28...	1132	55	189	8.3	13.2	15	9.1
28...	1134	60	192	8.3	13.1	12	9.1
28...	1136	65	195	8.3	12.8	11	9.1
28...	1138	70	191	8.2	11.9	12	9.3
28...	1140	75	184	8.2	11.1	8.5	9.3
28...	1142	80	185	8.2	10.7	4.9	9.3
28...	1144	85	185	8.2	10.3	3.4	9.4
28...	1146	90	186	8.2	10.2	3.1	9.4
28...	1148	95	188	8.2	10.1	3.1	9.4
28...	1150	100	190	8.1	9.9	2.1	9.4
28...	1152	105	192	8.1	9.7	1.3	9.4
28...	1154	110	191	8.1	9.6	1.2	9.2
28...	1156	115	195	8.1	9.4	.92	9.0
28...	1158	125	197	8.1	9.3	.62	8.9
28...	1200	135	199	8.1	9.1	.16	8.8
28...	1202	145	198	8.1	9.1	.02	8.7

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
AUG							
11...	1122	.0	193	8.6	19.8	24	9.2
11...	1126	2.0	193	8.6	19.8	23	9.2
11...	1128	5.0	192	8.6	19.8	23	9.2
11...	1130	10	190	8.6	19.7	23	9.2
11...	1132	15	191	8.6	19.6	23	9.2
11...	1134	20	190	8.7	18.5	18	9.0
11...	1136	25	189	8.6	17.8	25	8.9
11...	1138	30	187	8.5	17.1	25	8.7
11...	1140	35	189	8.5	16.6	23	8.6
11...	1142	40	193	8.4	16.3	24	8.5
11...	1144	45	198	8.4	15.7	25	8.4
11...	1146	50	202	8.4	15.5	25	8.5
11...	1150	55	205	8.4	15.3	27	8.5
11...	1152	60	204	8.4	14.9	30	8.4
11...	1154	65	202	8.4	14.5	27	8.4
11...	1156	70	200	8.3	14.2	27	8.4
11...	1158	75	192	8.4	12.5	18	8.5
11...	1200	80	185	8.4	11.8	13	9.0
11...	1202	85	184	8.4	11.6	15	9.1
11...	1204	90	184	8.4	11.4	14	9.0
11...	1206	95	184	8.4	10.8	12	9.0
11...	1208	100	183	8.4	10.8	6.3	9.1
11...	1210	105	184	8.4	10.6	7.9	9.0
11...	1212	110	188	8.4	10.5	4.1	8.8
11...	1215	115	191	8.4	10.0	2.1	8.6
11...	1220	120	193	8.4	9.8	1.1	8.6
11...	1225	125	195	8.4	9.5	.71	8.2
11...	1230	132	198	8.4	9.4	.16	8.0
11...	1232	142	199	8.4	9.4	.16	8.0
AUG							
25...	1052	.0	206	8.6	21.2	28	9.0
25...	1056	2.0	207	8.6	21.1	28	9.0
25...	1058	5.0	207	8.6	21.1	27	9.0
25...	1100	10	205	8.6	21.0	27	9.1
25...	1102	15	205	8.6	20.6	28	9.2
25...	1104	20	199	8.6	20.0	28	9.4
25...	1108	25	203	8.4	19.4	28	9.1
25...	1110	30	205	8.4	18.7	28	8.8
25...	1114	35	211	8.3	18.1	32	8.3
25...	1116	40	223	8.3	17.6	32	8.1
25...	1120	45	234	8.3	16.9	32	7.9
25...	1122	50	234	8.3	16.6	27	8.0
25...	1124	55	234	8.3	16.1	25	7.9
25...	1128	60	223	8.2	15.5	25	7.8
25...	1130	65	217	8.2	15.1	28	7.6
25...	1132	70	210	8.2	14.5	28	7.8
25...	1136	75	208	8.2	14.3	32	7.9
25...	1138	80	201	8.2	13.6	33	8.2
25...	1140	85	197	8.2	13.2	32	8.4
25...	1142	90	195	8.2	12.8	32	8.7
25...	1144	95	193	8.2	12.5	28	8.7
25...	1146	100	195	8.2	12.1	24	8.7
25...	1150	110	196	8.2	11.7	18	8.5
25...	1155	120	198	8.2	11.6	20	8.4
25...	1200	132	199	8.2	11.4	16	8.2
25...	1202	142	199	8.2	11.4	15	8.2

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
SEP							
08...	1152	.0	207	8.3	19.2	27	8.8
08...	1156	2.0	207	8.3	19.2	25	8.9
08...	1158	5.0	207	8.3	19.2	27	8.9
08...	1200	10	207	8.3	19.2	27	8.8
08...	1202	15	206	8.3	19.1	28	8.9
08...	1206	20	206	8.3	19.1	28	9.0
08...	1208	25	206	8.3	19.1	28	9.1
08...	1212	30	208	8.3	19.1	27	9.0
08...	1216	35	219	8.3	19.0	33	8.7
08...	1218	40	221	8.3	18.9	37	8.7
08...	1222	45	221	8.3	18.8	37	8.7
08...	1224	50	228	8.2	18.4	35	8.5
08...	1226	55	236	8.2	17.4	33	8.6
08...	1230	60	238	8.2	17.3	27	8.6
08...	1232	65	235	8.3	16.9	25	8.5
08...	1234	70	236	8.2	16.7	23	8.5
08...	1238	75	227	8.2	16.4	23	8.4
08...	1240	80	219	8.1	14.7	20	8.1
08...	1242	85	206	8.0	13.6	17	8.2
08...	1244	90	202	8.0	12.9	27	8.2
08...	1246	95	195	8.0	12.3	18	8.2
08...	1248	105	200	8.0	11.5	19	8.0
08...	1250	115	202	8.0	10.9	20	8.0
08...	1255	125	203	8.0	10.8	17	7.9
08...	1300	133	204	8.0	10.7	14	7.9
08...	1302	143	205	8.0	10.6	13	7.8
SEP							
22...	1152	.0	--	8.6	16.4	35	9.2
22...	1156	2.0	--	8.6	16.4	35	9.2
22...	1158	5.0	--	8.6	16.4	33	9.2
22...	1200	10	205	8.6	16.3	33	9.2
22...	1202	15	205	8.6	16.3	33	9.2
22...	1204	20	205	8.6	16.3	32	9.2
22...	1206	25	205	8.6	16.3	32	9.1
22...	1210	30	205	8.6	16.3	30	9.1
22...	1214	35	205	8.6	16.3	28	9.1
22...	1216	40	208	8.6	16.3	25	9.1
22...	1220	45	212	8.5	16.2	23	8.7
22...	1222	50	215	8.5	15.9	37	8.5
22...	1226	55	220	8.5	15.6	37	8.4
22...	1228	60	221	8.4	15.1	35	8.3
22...	1230	65	211	8.4	14.8	32	8.2
22...	1234	70	219	8.3	14.3	39	8.2
22...	1236	75	223	8.3	14.3	27	8.2
22...	1238	80	212	8.3	14.1	21	8.2
22...	1240	85	216	8.2	13.7	30	7.9
22...	1242	90	201	8.2	13.4	30	7.7
22...	1244	100	195	8.2	12.7	27	7.5
22...	1246	110	193	8.2	12.0	16	7.6
22...	1248	115	193	8.2	11.7	4.9	7.7
22...	1250	120	194	8.2	10.9	.33	7.1
22...	1255	125	195	8.1	10.9	9.2	6.9
22...	1300	131	197	8.1	10.6	16	7.1
22...	1302	141	205	8.1	9.7	4.1	6.8

12301300 TOBACCO RIVER NEAR EUREKA, MT

LOCATION.--Lat 48°53'37", long 115°05'13", in NW¼SE¼SE¼ sec.9, T.36 N., R.27 W., Lincoln County, Hydrologic Unit 17010101, on right bank 0.2 mi (0.3 km) upstream from Indian Creek, 1.8 mi (2.9 km) northwest of Eureka, and 2.8 mi (4.5 km) upstream from Lake Koocanusa flow line.

DRAINAGE AREA.--440 mi^2 (1,140 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,518.85 ft (767.745 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 4,500 acres (18 km^2) above station.

AVERAGE DISCHARGE.--24 years, 273 ft^3/s (7.731 m^3/s), 8.42 in/yr (214 mm/yr), 197,800 acre-ft/yr (244 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,470 ft^3/s (70.0 m^3/s) June 18, 1974, gage height, 6.86 ft (2.091 m); maximum gage height, 7.12 ft (2.170 m) May 27, 1961; minimum daily discharge, 20 ft^3/s (0.57 m^3/s) Jan. 11, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 2,810 ft^3/s (79.6 m^3/s), from slope-area measurement of peak flow at site 1.5 mi (2.4 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,550 ft^3/s (43.9 m^3/s) May 19, gage height, 5.35 ft (1.631 m); minimum daily, 50 ft^3/s (1.42 m^3/s) Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	102	88	72	75	152	160	596	648	614	204	104
2	114	102	96	75	70	165	152	673	668	653	204	100
3	123	102	88	80	60	165	149	818	718	658	198	100
4	121	100	92	75	50	157	149	868	765	638	195	106
5	119	98	90	70	52	144	147	703	914	619	181	110
6	116	96	104	65	54	140	142	600	925	591	176	106
7	116	96	112	70	58	140	132	586	840	554	181	102
8	123	96	108	76	56	132	128	634	749	522	170	100
9	125	96	100	74	54	142	130	634	703	492	178	96
10	121	94	102	72	60	170	128	581	703	488	204	102
11	119	94	104	74	65	189	157	545	775	527	204	110
12	116	96	85	76	70	178	258	577	851	558	187	110
13	112	102	80	79	80	184	339	648	978	581	176	102
14	110	110	95	79	92	173	390	754	1050	514	165	98
15	110	116	90	79	125	178	364	914	1090	446	152	100
16	108	110	85	72	187	170	314	1160	1130	450	149	102
17	108	112	80	76	195	157	277	1340	1100	430	140	98
18	106	114	75	78	170	142	268	1460	978	410	135	96
19	104	112	75	76	195	152	252	1470	919	394	130	94
20	102	110	80	74	228	142	246	1160	908	364	125	92
21	100	106	75	72	240	137	249	1080	874	339	123	90
22	100	104	72	70	231	135	268	1130	818	328	119	92
23	100	106	65	75	216	135	335	1260	765	318	121	90
24	98	102	75	80	195	137	462	1330	703	304	125	90
25	98	98	80	88	173	132	563	1320	663	287	119	90
26	100	92	75	87	167	132	536	1450	643	271	112	116
27	104	74	75	81	162	144	522	1260	698	255	106	116
28	106	81	72	79	152	157	586	996	668	240	104	114
29	106	90	72	77	---	167	648	824	596	231	102	116
30	104	92	70	79	---	167	619	708	638	237	106	116
31	102	---	70	81	---	162	---	653	---	216	108	---
TOTAL	3405	3003	2630	2361	3532	4777	9070	28732	24478	13529	4699	3058
MEAN	110	100	84.8	76.2	126	154	302	927	816	436	152	102
MAX	125	116	112	88	240	189	648	1470	1130	658	204	116
MIN	98	74	65	65	50	132	128	545	596	216	102	90
CFSM	.25	.23	.19	.17	.29	.35	.69	2.11	1.86	.99	.35	.23
IN.	.29	.25	.22	.20	.30	.40	.77	2.43	2.07	1.14	.40	.26
AC-FT	6750	5960	5220	4680	7010	9480	17990	56990	48550	26830	9320	6070

CAL YR 1981	TOTAL	115013	MEAN 315	MAX 1450	MIN 50	CFSM .72	IN 9.72	AC-FT	228100	
WTR YR 1982	TOTAL	103274	MEAN 283	MAX 1470	MIN 50	CFSM .64	IN 8.73	AC-FT	204800	

KOOTENAI RIVER BASIN

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 December 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 July 31, Aug. 7, 10; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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)
JUN					
14...	1555	1070	181	25.0	11.0
JUL					
15...	1410	442	237	9.5	10.0
AUG					
16...	1800	150	273	29.0	18.5
SEP					
14...	1610	98	286	14.0	12.0

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 (32.3 km) 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 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	ELEVATION ABOVE NGVD (FEET) (72020)	WEATHER (WMO CODE NUMBER) (00041)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT											
06...	1230	1.5	2455.8	2	230	8.4	--	14.2	9.0	89	3.6
06...	1240	10	2455.8	2	230	8.4	--	14.2	9.0	90	3.6
06...	1400	257	2455.8	2	310	7.8	14.0	5.1	8.3	110	6.0
19...	1300	1.5	2452.4	2	229	8.4	9.0	12.6	9.3	88	3.7
19...	1305	10	2452.4	2	229	8.4	--	12.6	9.3	88	3.6
19...	1430	255	2452.4	2	310	7.8	--	5.1	8.1	110	5.9
MAY											
11...	1330	10	2342.9	--	288	8.4	14.0	7.5	11.9	120	3.8
11...	1430	140	2342.9	--	294	8.3	--	5.2	11.3	--	4.2
JUN											
16...	1330	10	2411.9	3	226	8.6	15.0	15.2	10.6	91	4.6
16...	1430	203	2411.9	3	266	8.2	--	5.6	10.0	120	4.6
28...	1330	10	2438.7	3	210	8.7	22.0	18.8	10.3	92	4.2
28...	1430	235	2438.7	3	278	8.2	--	5.5	9.2	120	4.9
JUL											
12...	1330	10	2453.9	1	200	8.7	28.0	15.9	10.2	86	4.1
12...	1430	244	2453.9	1	280	8.2	--	5.6	9.2	120	5.1
27...	1300	10	2458.9	0	186	8.7	30.0	17.4	9.4	83	3.9
27...	1400	250	2458.9	0	280	8.1	--	5.7	8.5	120	5.2
AUG											
10...	1300	10	2458.7	1	186	8.4	28.0	18.7	9.4	84	4.4
10...	1400	248	2458.7	1	278	8.1	--	5.8	8.5	120	5.9
24...	1300	10	2458.6	0	197	8.4	23.0	20.3	9.2	85	3.6
24...	1400	249	2458.6	0	294	8.1	--	5.8	8.1	120	5.4
SEP											
07...	1300	10	2458.9	1	202	8.4	20.0	18.7	8.8	85	3.8
07...	1400	248	2458.9	1	296	7.8	--	5.9	7.6	120	5.5
21...	1200	10	2457.7	80	203	8.5	16.0	15.7	9.2	89	5.6
21...	1300	249	2457.7	80	278	8.0	--	5.8	7.8	120	3.9

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT										
06...	.13	.12	.18	.11	.29	.42	.002	.005	.000	1.7
06...	.13	.14	.21	.19	.40	.53	.003	.002	.000	1.8
06...	.26	.25	.28	.21	.49	.75	.014	.010	.004	2.2
19...	<.09	--	.13	--	<.21	--	<.001	<.001	<.001	1.6
19...	<.09	--	.21	.08	.29	--	<.001	<.001	<.001	1.7
19...	.13	--	.12	--	<.21	--	<.001	<.001	<.001	2.1
MAY										
11...	<.10	--	.09	.47	.56	--	.007	<.005	.010	1.9
11...	<.10	--	.25	.43	.68	--	.005	<.005	.007	1.2
JUN										
16...	<.10	--	<.06	--	.70	--	.006	.005	.005	3.2
16...	<.10	--	.09	.51	.60	--	<.005	<.005	.006	1.5
28...	<.10	<.10	.11	1.1	1.2	--	<.005	--	.002	4.0
28...	<.10	<.10	.20	.50	.70	--	<.005	--	.001	2.2
JUL										
12...	<.10	--	<.06	--	1.1	--	.012	.009	.004	2.6
12...	.13	--	.06	1.0	1.1	1.2	.010	.012	.008	1.6
27...	<.10	--	.20	.40	.60	--	.018	.011	.005	2.6
27...	.13	--	.44	.56	1.0	1.1	.022	.019	.010	1.8
AUG										
10...	<.10	--	.13	.47	.60	--	<.005	.009	.003	2.3
10...	.14	--	.21	.39	.60	.74	.011	--	.009	1.8
24...	<.10	--	.14	.76	.90	--	<.005	<.005	.005	1.8
24...	.14	--	.12	.68	.80	.94	.012	.009	.007	1.4
SEP										
07...	.10	--	.22	.48	.70	.80	<.004	<.004	<.003	1.5
07...	.10	--	.13	.77	.90	1.0	.005	.005	.006	1.6
21...	.20	--	.27	.73	1.0	1.2	.000	.000	<.001	1.4
21...	<.10	--	.17	.53	.70	--	<.001	<.001	<.001	1.3

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)
OCT								
06...	1230	1.5	110	19	32	7.6	1.8	.0
06...	1240	10	100	11	29	7.5	1.7	.0
06...	1400	257	130	14	37	10	3.7	.1
JUN								
28...	1330	10	120	23	34	8.9	2.5	.1
28...	1430	235	160	35	43	12	3.6	.1

DATE	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)
OCT							
06...	.3	92	17	1.8	.1	120	.16
06...	.2	92	14	1.5	.1	114	.15
06...	.4	120	28	4.0	.1	163	.21
JUN							
28...	.6	99	20	2.1	.1	132	.17
28...	.7	120	27	3.4	.2	168	.23

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
OCT								
06...	1230	400	100	2	1	10	14	2
06...	1240	200	200	2	1	0	<10	2
06...	1400	300	200	2	1	50	11	2
JUN								
28...	1330	<100	<100	2	<1	90	7	3
28...	1430	<100	<100	2	1	110	6	4

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT							
06...	1	0	6	2	<10	20	10
06...	1	0	1	2	<10	10	<3
06...	2	10	2	2	<10	20	12
JUN							
28...	1	10	<1	1	<1	10	<3
28...	<1	30	3	3	<1	10	16

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954)
OCT				
06...	1225	.5	1.56	<.046
06...	1236	7.2	1.53	<.035
06...	1255	39	1.21	<.043
06...	1312	63	1.31	<.044
06...	1332	100	.408	.000
06...	1352	200	<.049	.000
06...	1400	257	<.032	.000
19...	1255	.5	1.42	<.041
19...	1307	15	1.33	<.040
19...	1322	40	1.23	<.047
19...	1337	70	1.10	<.045
19...	1350	100	.367	.000
19...	1415	200	.057	.000
19...	1430	255	<.049	.000
MAY				
11...	1323	.5	3.00	.000
11...	1330	10	3.67	.000
11...	1336	19	2.85	.000
11...	1342	26	3.15	.000
11...	1346	34	4.26	.000
11...	1402	68	2.53	.000
11...	1418	102	1.34	.000
JUN				
16...	1322	.5	2.32	.084
16...	1330	10	2.44	.071
16...	1336	23	.692	<.024
16...	1342	31	.541	<.020
16...	1346	43	.477	<.020
16...	1356	86	.080	<.017
16...	1406	129	.098	<.017
28...	1320	.5	.471	<.017
28...	1328	9.0	<.027	<.024
28...	1336	24	.462	<.029
28...	1344	38	.240	<.021
28...	1346	45	.086	<.019
28...	1356	89	.069	<.019
28...	1408	134	.346	<.017
JUL				
12...	1322	.5	.699	<.022
12...	1332	11	.388	<.037
12...	1336	17	.190	<.021
12...	1342	35	.296	<.023
12...	1346	47	.302	<.019
12...	1356	94	.028	<.012
12...	1408	141	.034	<.010
JUL				
27...	1252	.5	.271	.037
27...	1258	7.5	.679	.029
27...	1310	26	.639	.024
27...	1320	53	.480	<.016
27...	1326	71	.342	.025
27...	1342	142	.135	<.013
27...	1354	213	.047	<.012
AUG				
10...	1254	.5	.403	.033
10...	1301	14	.587	.042
10...	1308	32	.475	.024
10...	1320	62	.282	.023
10...	1326	82	.235	.026
10...	1344	164	.164	<.009
10...	1358	246	.044	.010
24...	1254	.5	.553	.034
24...	1302	19	.438	.027
24...	1309	41	.520	.063
24...	1318	74	.365	.024
24...	1326	96	.141	.018
24...	1346	192	.030	<.008
24...	1400	249	.085	.006
SEP				
07...	1254	.5	.641	.034
07...	1303	23	.480	.030
07...	1308	44	.430	.022
07...	1318	78	.163	.014
07...	1324	96	.156	.016
07...	1348	192	.024	.006
07...	1400	248	.023	.009
21...	1154	.5	.780	.023
21...	1203	27	1.08	.030
21...	1206	44	.786	.028
21...	1212	72	.676	.019
21...	1222	95	.442	.011
21...	1244	190	.029	<.011
21...	1300	249	.018	<.018

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)	DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)
OCT		JUL	
6...	130	12...	230
19...	92	27...	300
MAY		AUG	
11...	72	10...	310
JUN		24...	250
16...	130	SEP	
28...	200	7...	260
		21...	120

(carbon-14, light and dark bottle method)

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
OCT							
06...	1220	.0	229	8.4	14.3	52	9.0
06...	1230	1.5	230	8.4	14.2	52	9.0
06...	1234	5.0	230	8.4	14.2	52	9.0
06...	1240	10	230	8.4	14.2	50	9.0
06...	1242	15	230	8.4	14.2	50	9.0
06...	1244	20	230	8.4	14.2	50	8.9
06...	1248	25	230	8.5	14.2	50	8.9
06...	1250	30	230	8.4	14.2	48	8.9
06...	1252	35	230	8.4	14.2	48	9.0
06...	1300	40	230	8.4	14.2	48	8.9
06...	1302	45	230	8.4	14.2	48	8.9
06...	1305	50	230	8.4	14.2	50	9.0
06...	1307	55	229	8.4	14.2	50	9.0
06...	1310	60	228	8.4	14.2	50	9.0
06...	1315	65	228	8.4	14.1	50	8.9
06...	1317	70	231	8.1	13.9	50	8.7
06...	1320	75	229	8.1	12.6	48	8.2
06...	1322	80	228	8.1	12.5	45	8.2
06...	1325	85	224	8.1	12.2	43	8.4
06...	1327	90	222	8.1	12.0	41	8.4
06...	1330	95	222	8.1	11.9	43	8.5
06...	1332	100	224	8.1	11.6	43	8.7
06...	1334	105	225	8.1	11.2	45	8.9
06...	1336	110	227	8.1	10.6	41	8.8
06...	1338	115	238	8.1	9.9	28	9.0
06...	1340	125	247	8.1	9.5	20	9.1
06...	1342	135	254	8.1	8.8	23	9.0
06...	1344	145	263	8.1	8.5	17	9.1
06...	1346	155	273	8.0	7.9	20	9.0
06...	1348	165	279	8.0	7.6	25	8.9
06...	1350	175	288	8.0	6.8	16	8.9
06...	1351	185	298	7.9	6.4	25	9.0
06...	1352	200	303	7.9	5.7	32	8.8
06...	1354	215	306	7.9	5.2	28	8.6
06...	1356	230	308	7.9	5.1	23	8.5
06...	1358	245	308	7.9	5.1	20	8.4
06...	1400	257	310	7.8	5.1	20	8.3
06...	1405	267	311	7.8	5.1	18	8.2
OCT							
19...	1250	.0	228	8.4	12.6	55	9.3
19...	1300	1.5	229	8.4	12.6	55	9.3
19...	1302	3.0	229	8.4	12.6	55	9.3
19...	1304	5.0	229	8.4	12.6	55	9.3
19...	1305	10	229	8.4	12.6	55	9.3
19...	1307	15	229	8.4	12.6	55	9.3
19...	1310	20	229	8.4	12.6	55	9.3
19...	1315	25	229	8.4	12.6	55	9.3
19...	1317	30	229	8.4	12.6	55	9.3
19...	1320	35	229	8.4	12.6	55	9.3
19...	1322	40	229	8.4	12.6	55	9.3
19...	1325	45	229	8.4	12.6	55	9.3
19...	1327	50	229	8.4	12.6	55	9.3
19...	1330	55	229	8.4	12.6	55	9.3
19...	1332	60	228	8.4	12.6	55	9.3
19...	1335	65	228	8.3	12.6	55	9.3
19...	1337	70	228	8.3	12.6	55	9.3
19...	1340	75	230	8.1	12.6	55	9.2
19...	1342	80	231	8.1	11.9	50	8.8
19...	1345	85	234	8.1	10.9	43	8.5
19...	1346	90	234	8.1	10.7	30	8.7
19...	1348	95	237	8.1	10.5	30	8.7
19...	1350	100	240	8.0	10.3	28	8.8
19...	1352	105	237	8.1	9.9	27	8.9
19...	1354	110	251	8.0	9.2	24	8.9
19...	1356	120	259	8.0	8.8	9.2	8.8
19...	1358	130	262	8.0	8.5	11	8.8
19...	1402	140	267	8.0	8.3	8.5	8.7
19...	1404	150	269	8.0	8.1	8.5	8.6
19...	1406	160	276	7.9	7.8	7.9	8.5
19...	1408	170	278	7.9	7.5	6.8	8.5
19...	1410	180	291	7.9	6.7	6.8	8.6
19...	1412	195	303	7.8	5.7	11	8.6
19...	1418	210	308	7.8	5.3	11	8.4
19...	1420	225	309	7.8	5.1	11	8.3
19...	1427	240	309	7.8	5.1	6.3	8.2
19...	1430	255	310	7.8	5.1	6.3	8.1
19...	1435	265	311	7.8	5.1	4.5	7.9

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
MAY							
11...	1320	.0	288	8.4	7.9	1.1	11.9
11...	1325	2.0	288	8.4	7.7	1.1	11.9
11...	1328	5.0	288	8.4	7.7	.92	11.9
11...	1330	10	288	8.4	7.5	.81	11.9
11...	1334	15	288	8.4	7.5	.81	11.8
11...	1338	20	286	8.4	7.3	.81	11.8
11...	1340	25	286	8.4	7.2	.81	11.8
11...	1344	30	284	8.4	7.2	.81	11.8
11...	1348	35	283	8.4	7.1	1.1	11.9
11...	1350	40	279	8.4	7.1	1.1	11.9
11...	1352	45	271	8.4	6.9	.92	12.2
11...	1354	50	271	8.4	6.2	2.3	12.3
11...	1356	55	271	8.4	6.1	3.8	12.3
11...	1358	60	271	8.4	5.9	4.9	12.3
11...	1400	65	272	8.4	5.9	4.9	12.3
11...	1404	70	274	8.4	5.8	5.3	12.3
11...	1406	75	276	8.4	5.8	6.3	12.2
11...	1408	80	279	8.4	5.6	4.9	12.1
11...	1410	85	280	8.4	5.6	3.8	12.0
11...	1412	90	281	8.3	5.6	3.4	12.0
11...	1414	95	283	8.3	5.6	2.8	11.9
11...	1416	100	286	8.3	5.5	2.1	11.8
11...	1420	110	290	8.3	5.4	1.2	11.7
11...	1422	120	291	8.3	5.3	2.6	11.6
11...	1425	130	293	8.3	5.2	.62	11.4
11...	1430	140	294	8.3	5.2	.81	11.3
11...	1432	150	294	8.3	5.2	.62	11.2
JUN							
16...	1320	.0	239	8.6	16.6	16	10.2
16...	1324	1.0	235	8.6	16.5	16	10.4
16...	1326	3.0	234	8.6	16.3	15	10.5
16...	1328	5.0	230	8.6	15.8	15	10.6
16...	1330	10	226	8.6	15.2	12	10.6
16...	1332	15	201	8.5	13.9	11	10.5
16...	1334	20	201	8.3	12.2	7.3	10.3
16...	1338	25	196	8.4	11.7	5.3	10.3
16...	1340	30	197	8.4	11.5	3.4	10.2
16...	1344	40	197	8.4	11.1	3.4	10.2
16...	1348	50	195	8.4	10.4	3.8	10.2
16...	1350	60	193	8.4	9.9	1.3	10.2
16...	1352	70	194	8.4	9.5	1.3	10.3
16...	1354	80	196	8.4	9.3	.62	10.3
16...	1358	90	199	8.4	9.2	.46	10.3
16...	1400	100	206	8.4	8.8	.92	10.3
16...	1402	110	211	8.3	8.7	.53	10.3
16...	1404	120	234	8.3	8.1	.71	10.4
16...	1408	130	250	8.3	7.8	2.1	10.4
16...	1410	140	258	8.3	7.3	2.1	10.4
16...	1412	150	261	8.2	6.5	8.5	10.5
16...	1414	160	264	8.2	6.0	9.8	10.5
16...	1416	170	264	8.2	5.9	11	10.3
16...	1420	180	265	8.2	5.7	11	10.2
16...	1425	190	266	8.2	5.6	9.2	10.0
16...	1430	203	266	8.2	5.6	6.3	10.0
16...	1432	213	266	8.2	5.6	6.3	9.8

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
JUN							
28...	1318	.0	228	9.0	20.8	17	9.4
28...	1322	1.0	227	9.0	20.8	16	9.5
28...	1324	3.0	225	9.0	20.7	16	9.7
28...	1326	5.0	223	8.8	20.7	16	9.8
28...	1330	10	210	8.7	18.8	11	10.3
28...	1331	15	207	8.6	17.3	9.8	10.2
28...	1334	20	203	8.6	15.4	11	9.7
28...	1338	25	185	8.4	13.1	19	9.8
28...	1342	35	180	8.4	12.1	2.1	9.8
28...	1346	45	182	8.5	11.1	.04	9.9
28...	1348	55	185	8.5	10.9	.02	10.0
28...	1350	65	189	8.5	10.8	.03	10.0
28...	1352	75	191	8.5	10.6	.16	10.0
28...	1354	85	199	8.5	10.3	.46	10.0
28...	1358	95	204	8.5	9.8	4.9	10.0
28...	1400	105	208	8.4	9.6	7.9	10.0
28...	1402	115	213	8.4	9.1	11	10.0
28...	1404	125	218	8.4	8.9	11	10.0
28...	1410	135	225	8.4	8.5	14	10.0
28...	1412	145	234	8.4	8.2	14	10.0
28...	1414	155	253	8.3	7.8	18	10.1
28...	1416	165	268	8.3	7.2	23	10.0
28...	1418	175	272	8.3	6.4	20	10.1
28...	1420	185	274	8.3	6.2	25	10.0
28...	1422	195	275	8.3	5.9	23	9.9
28...	1424	205	276	8.2	5.7	23	9.7
28...	1426	215	276	8.2	5.5	21	9.5
28...	1428	225	277	8.2	5.5	19	9.3
28...	1430	235	278	8.2	5.5	14	9.2
28...	1432	245	279	8.2	5.4	14	9.0
JUL							
12...	1320	.0	200	8.8	17.4	16	10.1
12...	1324	2.0	200	8.8	17.2	14	10.1
12...	1326	5.0	200	8.7	17.0	14	10.1
12...	1330	10	200	8.7	15.9	12	10.2
12...	1334	15	199	8.5	15.6	12	10.1
12...	1338	25	186	8.5	14.2	11	9.6
12...	1342	35	179	8.4	13.0	5.3	9.6
12...	1344	45	178	8.4	12.1	6.8	9.7
12...	1348	55	178	8.4	11.6	2.3	9.8
12...	1350	65	181	8.4	11.3	1.5	9.9
12...	1352	75	184	8.4	11.1	3.1	10.0
12...	1354	85	189	8.4	10.8	4.1	10.1
12...	1358	95	197	8.3	10.7	5.3	10.1
12...	1400	105	199	8.4	10.2	13	10.1
12...	1402	115	205	8.4	9.8	19	10.1
12...	1404	125	209	8.4	9.4	21	10.1
12...	1406	135	213	8.4	9.1	25	10.1
12...	1410	145	218	8.4	8.8	28	10.2
12...	1412	155	230	8.3	8.5	32	10.2
12...	1414	165	233	8.3	8.2	33	10.2
12...	1416	175	247	8.3	8.0	30	10.2
12...	1418	185	257	8.3	7.6	33	10.2
12...	1420	195	269	8.2	6.9	18	9.9
12...	1422	205	272	8.2	6.4	11	9.9
12...	1424	215	275	8.2	6.2	19	9.9
12...	1426	225	277	8.2	5.8	33	9.6
12...	1428	235	279	8.1	5.6	24	9.3
12...	1430	244	280	8.2	5.6	18	9.2
12...	1432	254	281	8.2	5.5	18	9.0

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
JUL							
27...	1250	.0	186	8.7	18.3	37	9.4
27...	1254	2.0	187	8.7	17.7	30	9.3
27...	1256	5.0	186	8.7	17.5	30	9.4
27...	1300	10	186	8.7	17.4	30	9.4
27...	1302	15	185	8.7	17.2	30	9.4
27...	1306	20	185	8.7	17.0	28	9.4
27...	1308	25	185	8.7	16.6	28	9.4
27...	1312	30	183	8.6	16.5	28	9.4
27...	1316	40	183	8.5	15.9	32	9.4
27...	1318	50	183	8.4	14.3	32	9.3
27...	1322	60	177	8.4	13.2	33	9.2
27...	1324	70	177	8.4	12.6	28	9.3
27...	1328	80	175	8.4	12.2	20	9.4
27...	1330	90	178	8.4	11.6	15	9.5
27...	1332	100	181	8.3	11.2	15	9.6
27...	1334	110	193	8.3	11.0	17	9.6
27...	1336	120	202	8.3	10.5	24	9.5
27...	1338	130	214	8.3	10.0	41	9.5
27...	1340	140	220	8.3	9.3	45	9.5
27...	1344	150	221	8.3	8.9	43	9.6
27...	1346	160	226	8.3	8.5	45	9.7
27...	1348	175	244	8.2	8.0	37	9.6
27...	1350	190	259	8.2	7.3	43	9.4
27...	1352	205	271	8.1	6.6	30	9.3
27...	1356	220	276	8.1	6.0	35	8.9
27...	1358	235	278	8.1	5.7	23	8.6
27...	1400	250	280	8.1	5.7	20	8.5
27...	1402	260	281	8.1	5.7	20	8.4
AUG							
10...	1252	.0	186	8.4	19.3	41	9.3
10...	1256	2.0	186	8.4	19.3	41	9.4
10...	1258	5.0	188	8.4	19.2	39	9.4
10...	1300	10	186	8.4	18.7	35	9.4
10...	1302	15	187	8.4	18.6	35	9.5
10...	1303	20	186	8.4	18.5	39	9.6
10...	1304	25	188	8.3	18.0	37	9.7
10...	1306	30	184	8.3	17.6	37	9.6
10...	1310	35	187	8.4	17.2	37	9.4
10...	1312	40	184	8.3	16.7	39	9.2
10...	1316	50	185	8.2	15.6	37	9.2
10...	1318	60	182	8.2	14.6	37	9.2
10...	1322	70	179	8.2	13.0	37	9.1
10...	1324	80	177	8.2	12.7	35	9.2
10...	1328	90	176	8.2	12.1	35	9.5
10...	1330	100	178	8.2	11.5	32	9.6
10...	1332	110	183	8.2	11.1	32	9.8
10...	1334	120	194	8.2	10.9	33	9.8
10...	1336	130	198	8.2	10.3	39	9.8
10...	1338	140	205	8.2	9.9	39	9.8
10...	1340	145	206	8.2	9.5	37	9.8
10...	1342	155	216	8.2	9.1	32	9.9
10...	1346	165	219	8.2	8.7	41	9.9
10...	1348	175	231	8.1	8.3	39	9.8
10...	1350	190	254	8.1	7.4	28	9.5
10...	1352	205	269	8.1	6.7	20	9.1
10...	1354	220	275	8.1	5.9	19	8.7
10...	1356	235	277	8.1	5.8	18	8.6
10...	1400	248	278	8.1	5.8	16	8.5
10...	1402	258	281	8.1	5.8	15	8.4

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
AUG							
24...	1252	.0	197	8.4	20.9	52	9.1
24...	1256	2.0	196	8.4	20.8	52	9.2
24...	1258	5.0	197	8.4	20.8	52	9.2
24...	1300	10	197	8.4	20.3	50	9.2
24...	1301	15	197	8.4	20.2	48	9.2
24...	1303	20	197	8.4	19.9	48	9.2
24...	1304	25	197	8.4	19.8	45	9.2
24...	1305	30	196	8.4	19.4	45	9.2
24...	1307	35	197	8.4	19.2	45	9.3
24...	1308	40	192	8.4	18.8	45	9.2
24...	1310	45	197	8.3	17.7	48	8.7
24...	1311	50	194	8.3	17.0	48	8.6
24...	1312	55	196	8.2	15.9	50	8.7
24...	1314	60	194	8.2	15.3	50	8.6
24...	1316	65	185	8.2	13.9	52	8.7
24...	1320	75	183	8.2	12.8	52	9.0
24...	1322	85	184	8.2	12.1	48	9.3
24...	1324	95	196	8.2	11.5	41	9.5
24...	1328	105	202	8.2	10.9	39	9.6
24...	1330	115	208	8.2	10.3	35	9.6
24...	1332	125	218	8.2	9.8	33	9.6
24...	1334	135	221	8.2	9.3	35	9.6
24...	1336	145	226	8.2	9.1	32	9.6
24...	1338	155	232	8.2	8.6	32	9.5
24...	1340	165	241	8.2	8.4	32	8.5
24...	1342	175	245	8.2	8.1	27	9.4
24...	1344	185	257	8.2	7.7	27	9.3
24...	1348	195	269	8.2	7.3	27	9.1
24...	1350	205	279	8.2	6.8	19	8.9
24...	1352	210	281	8.2	6.6	19	8.8
24...	1354	215	280	8.2	6.4	20	8.6
24...	1356	220	290	8.1	6.0	21	8.4
24...	1358	235	293	8.1	5.9	19	8.2
24...	1400	249	294	8.1	5.8	13	8.1
24...	1402	259	296	8.1	5.8	13	8.0
SEP							
07...	1252	.0	201	8.4	18.9	41	8.8
07...	1256	2.0	202	8.4	18.9	39	8.8
07...	1258	5.0	202	8.4	18.8	39	8.7
07...	1300	10	202	8.4	18.7	37	8.8
07...	1301	15	203	8.4	18.7	37	8.8
07...	1302	20	204	8.4	18.6	37	8.7
07...	1304	25	204	8.4	18.2	37	8.5
07...	1305	30	201	8.3	17.3	37	8.2
07...	1307	40	212	8.3	16.4	39	8.0
07...	1310	50	203	8.3	15.7	41	7.9
07...	1314	60	200	8.3	14.8	43	8.0
07...	1316	70	190	8.3	13.8	43	8.3
07...	1320	80	186	8.3	13.0	45	8.6
07...	1322	90	183	8.3	12.3	45	8.8
07...	1326	100	186	8.2	11.9	43	9.0
07...	1328	110	193	8.1	11.2	39	9.2
07...	1330	120	201	8.1	10.8	35	9.3
07...	1332	130	209	8.1	10.1	32	9.3
07...	1334	140	219	8.1	9.8	28	9.4
07...	1336	150	226	8.1	9.2	30	9.4
07...	1338	160	233	8.1	8.8	32	9.4
07...	1340	170	236	8.1	8.4	30	9.2
07...	1342	180	247	8.1	8.2	24	9.1
07...	1344	185	256	8.1	7.9	23	9.0
07...	1346	190	250	8.1	7.7	21	8.8
07...	1350	195	272	8.0	7.1	16	8.6
07...	1352	205	280	7.9	6.8	17	8.4
07...	1354	215	287	7.8	6.3	15	8.3
07...	1356	225	290	7.8	6.1	21	8.1
07...	1358	235	293	7.8	5.9	19	7.8
07...	1400	248	296	7.8	5.9	14	7.6
07...	1402	258	298	7.3	5.9	12	7.5

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
SEP							
21...	1152	.0	--	8.5	15.7	45	9.2
21...	1156	2.0	--	8.5	15.7	45	9.2
21...	1158	5.0	--	8.5	15.7	45	9.2
21...	1200	10	203	8.5	15.7	45	9.2
21...	1201	15	203	8.5	15.7	45	9.2
21...	1202	25	202	8.5	15.7	45	9.2
21...	1204	35	202	8.5	15.6	45	9.2
21...	1207	45	201	8.5	15.6	45	9.2
21...	1208	55	200	8.5	15.6	45	9.2
21...	1210	65	200	8.5	15.6	45	9.2
21...	1214	75	198	8.4	15.5	45	9.2
21...	1216	80	193	8.4	15.5	48	9.2
21...	1218	85	186	8.4	14.9	48	8.9
21...	1220	90	187	8.4	14.2	48	8.8
21...	1222	95	175	8.3	12.6	50	8.7
21...	1224	100	180	8.4	11.9	52	9.1
21...	1226	105	181	8.3	11.3	52	9.5
21...	1228	115	187	8.3	10.7	52	9.7
21...	1230	125	194	8.2	10.2	48	9.7
21...	1232	135	199	8.1	9.7	30	9.5
21...	1234	145	206	8.1	9.3	25	9.2
21...	1236	155	208	8.1	9.1	16	9.3
21...	1238	165	216	8.1	8.7	15	9.3
21...	1240	175	221	8.1	8.4	16	9.5
21...	1242	185	233	8.0	7.9	21	9.4
21...	1246	195	248	8.0	7.3	20	9.0
21...	1248	200	253	8.0	7.1	17	9.0
21...	1250	205	261	8.0	6.9	17	8.8
21...	1252	210	261	8.0	6.5	21	8.6
21...	1254	215	270	8.0	6.2	24	8.3
21...	1256	225	274	8.0	5.9	28	8.1
21...	1258	235	276	8.0	5.8	33	7.9
21...	1300	249	278	8.0	5.8	23	7.8
21...	1302	259	278	8.0	5.8	23	7.8

KOOTENAI RIVER BASIN

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT

LOCATION.--Lat 48°24'43", long 115°18'33", in SW¼NW¼NE¼ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, in middle of old channel 0.2 mi (0.3 km) upstream from Libby Dam, and 11.6 mi (18.7 km) 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 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	ELEVATION ABOVE NGVD (FEET) (72020)	WEATHER (WMO CODE NUMBER) (00041)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	ALKALINITY FIELD (MG/L AS CACO3) (00410)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT											
08...	1200	1.5	2455.9	2	226	8.3	--	13.6	9.0	87	3.5
08...	1205	10	2455.9	2	226	8.3	--	13.6	9.0	85	3.5
08...	1300	306	2455.9	2	311	7.8	9.0	4.6	8.2	110	5.9
20...	1200	1.5	2452.0	2	226	8.2	8.0	12.5	9.2	89	3.8
20...	1300	10	2452.0	2	226	8.2	--	12.5	9.2	86	3.8
20...	1330	300	2452.0	2	315	7.7	--	4.6	7.8	110	6.0
MAY											
12...	1230	10	2342.8	2	261	8.5	--	7.3	12.3	110	3.9
12...	1330	200	2342.8	2	282	8.3	12.0	4.6	11.6	120	4.2
JUN											
17...	1200	10	2414.8	--	224	8.6	18.0	17.1	10.7	100	4.7
17...	1300	265	2414.8	--	257	8.0	--	4.7	9.9	130	4.6
30...	1230	10	2441.8	3	235	8.7	23.0	20.8	9.6	100	4.3
30...	1330	291	2441.8	2	276	8.1	--	4.9	9.7	120	4.8
JUL											
14...	1100	10	2455.1	3	204	8.7	20.0	18.9	10.2	89	4.2
14...	1200	304	2455.1	3	277	8.1	--	4.9	9.4	120	4.9
29...	1130	10	2458.7	1	187	8.8	25.0	19.0	10.0	83	3.9
29...	1230	319	2458.7	1	279	8.0	--	5.1	8.6	120	5.0
AUG											
12...	1030	10	2458.7	80	196	8.5	16.0	18.7	9.9	84	3.6
12...	1130	307	2458.7	80	290	8.0	--	5.1	9.2	120	5.0
26...	1100	10	2458.6	0	194	8.5	22.0	20.8	9.2	87	3.8
26...	1200	308	2458.6	0	293	8.2	--	5.2	8.5	120	5.2
SEP											
09...	1200	10	2458.7	1	197	8.4	20.0	18.2	9.1	84	3.8
09...	1300	308	2458.7	1	293	8.2	--	5.3	8.2	120	5.1
23...	1200	10	2456.8	0	197	8.6	16.0	16.2	9.2	87	3.8
23...	1300	305	2456.8	0	276	8.0	--	5.3	8.7	120	5.2

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT										
08...	<.10	.11	.18	.77	.95	--	.003	.006	.004	1.6
08...	<.10	<.10	.36	.31	.67	--	.007	.003	.003	1.5
08...	.22	.23	.28	.50	.78	1.0	.021	.016	.005	1.6
20...	<.09	--	.19	1.2	1.4	--	.005	.004	<.002	1.4
20...	<.09	--	.07	.78	.85	--	.003	.002	<.002	1.3
20...	.17	--	.09	1.1	1.2	1.4	.017	.015	--	1.3
MAY										
12...	<.10	--	.06	.49	.55	--	.006	.011	.010	1.9
12...	<.10	--	.06	.46	.52	--	.004	.007	.008	1.0
JUN										
17...	.11	--	.10	.50	.60	.71	.010	<.005	.004	1.8
17...	<.10	--	<.06	--	.70	--	.008	.012	<.001	3.1
30...	<.10	<.10	.28	1.0	1.3	--	.039	<.005	.005	2.9
30...	<.10	<.10	.68	1.1	1.8	--	.043	.015	.006	1.2
JUL										
14...	<.10	--	.20	.30	.50	--	.012	<.005	.003	2.6
14...	.12	--	.16	.44	.60	.72	.015	.005	.006	1.2
29...	<.10	--	.40	.50	.90	--	.030	.040	.003	1.9
29...	.14	--	.41	.49	.90	1.0	.023	.010	.012	1.3
AUG										
12...	<.10	--	.36	.44	.80	--	.013	.008	.003	2.7
12...	.15	--	.21	.49	.70	.85	.015	.015	.009	1.7
26...	<.10	--	.29	1.0	1.3	--	.011	.014	<.003	2.0
26...	.12	--	.08	.52	.60	.72	.011	.010	.007	1.3
SEP										
09...	<.10	--	.21	1.1	1.3	--	<.001	<.001	<.001	1.5
09...	.20	--	.20	.50	.70	.90	.000	.000	<.001	1.2
23...	<.10	--	.18	.22	.40	--	--	.000	<.001	1.9
23...	.20	--	.22	.58	.80	1.0	.000	.000	<.001	1.6

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)
OCT								
08...	1200	1.5	100	10	28	7.3	1.4	.0
08...	1205	10	100	10	28	7.3	1.5	.0
08...	1300	306	140	16	38	10	3.5	.1
JUN								
30...	1230	10	130	25	36	9.7	2.8	.1
30...	1330	291	150	33	42	12	3.4	.1

DATE	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)
OCT							
08...	.5	90	11	1.6	.1	108	.14
08...	.5	90	11	1.6	.1	108	.14
08...	.8	120	27	4.0	.1	163	.21
JUN							
30...	.7	105	23	2.3	.1	142	.19
30...	.8	121	27	3.2	.2	166	.22

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
OCT								
08...	1200	300	100	2	0	180	<10	4
08...	1205	300	200	2	1	20	<10	1
08...	1300	500	500	2	1	50	12	0
JUN								
30...	1230	100	<100	2	1	70	8	1
30...	1330	<100	<100	2	1	140	5	6

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT							
08...	1	0	2	2	<10	30	<3
08...	1	0	<1	2	<10	30	<3
08...	2	30	2	3	<10	10	<3
JUN							
30...	5	<10	1	<1	<1	10	3
30...	<1	30	4	<1	1	10	3

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)
OCT				
08...	1155	.5	2.23	.050
08...	1205	10	1.75	.058
08...	1210	33	1.69	<.046
08...	1213	55	1.63	<.040
08...	1226	100	.590	.000
08...	1244	200	.060	.000
08...	1258	300	<.047	.000
20...	1155	.5	1.55	.050
20...	1240	8.2	1.25	<.038
20...	1303	21	1.14	<.038
20...	1308	60	1.34	.000
20...	1312	100	.467	.000
20...	1321	200	.069	.000
20...	1330	300	.052	.000
MAY				
12...	1228	8.0	2.13	.000
12...	1238	22	2.33	.000
12...	1246	43	4.01	.000
12...	1250	59	2.78	.000
12...	1304	118	1.89	.000
JUN				
17...	1201	12	1.51	.051
17...	1206	25	1.60	.060
17...	1210	33	.951	<.022
17...	1214	45	.712	<.018
17...	1224	90	.350	<.015
17...	1234	135	<.019	<.020
30...	1231	13	1.02	.020
30...	1235	25	.294	<.018
30...	1238	34	.747	<.022
30...	1244	45	.440	<.021
30...	1254	90	.037	<.014
30...	1304	135	.042	<.008
JUL				
14...	1102	14	.228	<.022
14...	1108	21	.604	<.019
14...	1114	40	.631	<.018
14...	1116	50	.129	<.022
14...	1126	100	.097	<.014
14...	1136	150	.058	<.013
JUL				
29...	1131	15	.426	<.014
29...	1136	30	.592	<.018
29...	1144	50	.339	<.019
29...	1148	70	.216	<.011
29...	1202	140	.080	<.015
29...	1214	210	.037	.027
AUG				
12...	1032	17	1.07	.037
12...	1037	31	.694	.043
12...	1043	57	.506	.020
12...	1045	67	.337	.022
12...	1100	134	.073	<.007
12...	1114	201	.042	<.006
26...	1103	22	.511	.018
26...	1108	40	.509	.015
26...	1115	71	.375	.017
26...	1118	89	.219	.012
26...	1136	178	.043	.003
26...	1154	267	.036	.006
SEP				
09...	1203	21	1.40	.055
09...	1206	38	.636	.019
09...	1212	72	.227	.008
09...	1216	91	.153	.026
09...	1236	182	.046	.007
09...	1254	273	.059	<.011
23...	1203	30	.910	<.018
23...	1206	46	1.16	.025
23...	1210	69	.361	.013
23...	1218	90	.176	.007
23...	1238	180	.070	<.007
23...	1254	270	.023	<.008

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)
OCT	
8...	85
20...	93
MAY	
12...	54
JUN	
17...	180
30...	210
JUL	
14...	180
29...	150
AUG	
12...	270
26...	210
SEP	
9...	250
23...	210

(carbon-14, light and dark bottle method)

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
OCT							
08...	1150	.0	226	8.3	13.6	50	8.9
08...	1200	1.5	226	8.3	13.6	50	9.0
08...	1202	3.0	226	8.3	13.6	50	9.0
08...	1203	5.0	226	8.3	13.6	50	9.0
08...	1205	10	226	8.3	13.6	50	9.0
08...	1206	15	226	8.3	13.6	50	9.0
08...	1208	20	226	8.3	13.6	50	8.9
08...	1209	25	226	8.3	13.6	50	8.9
08...	1211	35	226	8.3	13.6	50	8.9
08...	1212	45	226	8.3	13.6	50	8.9
08...	1213	55	226	8.3	13.6	50	9.0
08...	1214	60	225	8.3	13.6	50	9.0
08...	1215	65	225	8.3	13.6	50	9.0
08...	1216	70	225	8.3	13.6	50	9.0
08...	1217	75	224	8.3	13.6	50	9.0
08...	1218	80	224	8.1	13.5	50	9.0
08...	1220	85	220	8.1	12.3	50	8.6
08...	1222	90	220	8.2	11.8	55	8.7
08...	1224	95	222	8.2	11.6	52	8.7
08...	1226	100	230	8.2	11.1	48	9.1
08...	1228	110	234	8.2	10.3	41	9.3
08...	1232	115	231	8.2	9.8	37	9.3
08...	1234	125	250	8.1	8.8	27	9.5
08...	1236	140	276	8.1	8.3	25	9.6
08...	1238	155	284	8.1	7.7	25	9.7
08...	1240	170	293	8.0	7.2	33	9.8
08...	1242	185	298	8.0	6.2	43	9.8
08...	1244	200	301	8.0	5.6	45	9.6
08...	1246	215	305	7.9	5.0	41	9.3
08...	1248	230	307	7.9	4.9	39	9.1
08...	1250	245	308	7.9	4.7	33	9.0
08...	1252	260	309	7.8	4.7	30	8.8
08...	1254	275	309	7.8	4.6	32	8.7
08...	1256	290	310	7.8	4.6	32	8.5
08...	1300	306	311	7.8	4.6	18	8.2
08...	1305	316	312	7.8	4.6	15	8.0
OCT							
20...	1150	.0	226	8.2	12.5	48	9.2
20...	1200	1.5	226	8.2	12.5	48	9.2
20...	1210	3.0	226	8.2	12.5	48	9.2
20...	1230	5.0	226	8.2	12.5	45	9.2
20...	1300	10	226	8.2	12.5	45	9.2
20...	1301	15	226	8.3	12.5	45	9.2
20...	1302	20	226	8.3	12.5	45	9.2
20...	1304	30	225	8.3	12.5	45	9.2
20...	1306	40	226	8.3	12.5	45	9.2
20...	1307	50	224	8.3	12.5	45	9.3
20...	1308	60	223	8.2	12.5	43	9.3
20...	1309	70	222	8.2	12.1	39	9.1
20...	1310	80	225	8.0	11.5	37	8.9
20...	1311	90	229	8.1	10.8	45	9.1
20...	1312	100	235	8.0	10.6	41	9.3
20...	1313	110	238	8.0	9.9	39	9.3
20...	1314	120	250	8.0	9.2	27	9.5
20...	1315	130	268	8.0	8.3	25	9.7
20...	1316	140	281	8.0	8.0	28	9.7
20...	1317	150	286	7.9	7.6	30	9.8
20...	1318	165	291	7.9	7.3	33	9.7
20...	1319	180	294	7.9	6.7	30	9.8
20...	1320	195	300	7.8	6.1	27	9.7
20...	1322	210	304	7.7	5.4	30	9.5
20...	1323	225	306	7.7	5.3	27	9.4
20...	1324	240	307	7.7	4.9	25	9.1
20...	1325	255	309	7.7	4.8	24	8.8
20...	1326	270	310	7.7	4.7	16	8.7
20...	1328	285	312	7.7	4.6	12	8.3
20...	1330	300	315	7.7	4.6	9.8	7.8
20...	1345	310	318	7.8	4.7	4.9	7.2

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
MAY							
12...	1220	.0	263	8.6	7.6	20	12.3
12...	1224	2.0	263	8.6	7.4	27	12.3
12...	1226	5.0	263	8.5	7.3	15	12.3
12...	1230	10	261	8.5	7.3	12	12.3
12...	1234	15	262	8.5	7.1	11	12.3
12...	1236	20	260	8.5	6.8	9.8	12.3
12...	1240	30	263	8.5	6.3	7.3	12.3
12...	1244	40	263	8.5	6.2	7.3	12.3
12...	1248	50	264	8.4	6.1	7.3	12.3
12...	1252	60	264	8.4	5.9	7.3	12.3
12...	1254	70	265	8.4	5.9	7.3	12.3
12...	1256	80	266	8.4	5.7	7.9	12.2
12...	1258	90	268	8.4	5.5	8.5	12.2
12...	1300	100	269	8.4	5.3	8.5	12.2
12...	1302	110	269	8.3	5.3	8.5	12.1
12...	1306	120	270	8.3	5.2	8.5	12.0
12...	1308	130	272	8.3	5.1	7.9	12.0
12...	1310	140	275	8.3	4.8	6.3	11.9
12...	1312	150	278	8.3	4.7	5.8	11.9
12...	1314	160	280	8.3	4.6	5.3	11.8
12...	1316	170	280	8.3	4.6	4.1	11.8
12...	1320	180	281	8.3	4.5	3.8	11.7
12...	1325	190	281	8.3	4.5	3.4	11.7
12...	1330	200	282	8.3	4.6	3.4	11.6
12...	1332	210	283	8.3	4.6	2.6	11.6
JUN							
17...	1152	.0	224	8.6	17.5	9.8	10.6
17...	1156	2.0	224	8.6	17.2	9.2	10.7
17...	1158	5.0	225	8.6	17.2	9.2	10.7
17...	1200	10	224	8.6	17.1	11	10.7
17...	1202	15	223	8.7	17.0	12	10.8
17...	1204	20	220	8.7	16.8	11	10.9
17...	1206	25	220	8.7	16.7	11	10.9
17...	1208	30	220	8.6	15.1	11	11.1
17...	1212	35	226	8.4	12.8	13	11.0
17...	1214	45	220	8.4	11.0	15	10.5
17...	1216	55	217	8.4	10.4	12	10.3
17...	1218	65	221	8.4	10.1	11	10.3
17...	1220	75	223	8.4	9.7	11	10.4
17...	1222	85	228	8.4	9.3	9.2	10.4
17...	1226	95	232	8.4	9.1	9.2	10.4
17...	1228	105	233	8.4	8.9	11	10.5
17...	1230	115	234	8.3	8.7	11	10.5
17...	1232	125	242	8.3	8.3	11	10.7
17...	1234	135	249	8.2	7.8	18	11.0
17...	1236	145	249	8.2	7.2	21	11.3
17...	1238	155	248	8.1	6.9	23	11.4
17...	1240	165	247	8.1	6.5	27	11.4
17...	1242	175	247	8.1	5.8	25	11.4
17...	1244	185	248	8.1	5.1	28	11.2
17...	1246	195	250	8.0	5.0	28	10.9
17...	1248	205	251	8.0	4.9	28	10.8
17...	1250	215	253	8.0	4.9	25	10.6
17...	1252	225	254	8.0	4.8	23	10.4
17...	1254	235	255	8.0	4.7	21	10.2
17...	1256	245	255	8.0	4.7	20	10.1
17...	1258	255	256	8.0	4.7	18	10.0
17...	1300	265	257	8.0	4.7	6.3	9.9
17...	1302	275	256	8.0	4.7	6.3	9.6

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
JUN							
30...	1220	.0	236	8.7	21.0	7.9	9.6
30...	1224	2.0	236	8.7	20.9	7.9	9.6
30...	1226	5.0	237	8.7	20.9	7.3	9.6
30...	1230	10	235	8.7	20.8	7.9	9.6
30...	1232	15	237	8.6	20.6	7.9	9.7
30...	1234	20	236	8.6	18.9	7.9	10.0
30...	1235	25	234	8.4	16.9	11	10.3
30...	1236	30	238	8.3	15.1	12	9.7
30...	1240	35	235	8.2	13.4	12	9.6
30...	1242	40	225	8.2	12.6	13	9.6
30...	1244	45	214	8.2	12.0	16	9.6
30...	1246	50	216	8.3	11.7	15	9.7
30...	1248	60	208	8.3	11.3	14	9.8
30...	1250	70	211	8.3	11.0	11	9.8
30...	1252	80	217	8.3	10.8	15	9.8
30...	1254	90	222	8.3	10.2	17	9.9
30...	1256	100	233	8.3	9.7	20	9.9
30...	1258	110	246	8.3	9.3	24	9.8
30...	1300	120	250	8.3	9.0	25	9.9
30...	1302	130	255	8.3	8.7	27	10.0
30...	1306	140	264	8.3	8.3	28	10.2
30...	1308	150	272	8.3	7.7	33	10.6
30...	1310	160	269	8.3	6.9	39	10.8
30...	1312	170	267	8.3	6.5	39	11.0
30...	1314	180	267	8.3	6.1	39	10.9
30...	1316	190	267	8.2	5.8	39	10.9
30...	1318	200	270	8.2	5.4	39	10.7
30...	1320	215	273	8.1	5.1	35	10.4
30...	1322	230	274	8.1	5.0	35	10.2
30...	1324	245	275	8.1	5.0	35	10.1
30...	1326	260	276	8.1	4.9	23	9.9
30...	1328	275	276	8.1	4.9	4.9	9.8
30...	1330	291	276	8.1	4.9	4.5	9.7
30...	1332	301	277	8.0	4.9	4.5	9.5
JUL							
14...	1050	.0	206	8.6	18.9	20	9.9
14...	1054	2.0	206	8.6	18.9	20	10.1
14...	1056	5.0	206	8.6	18.9	20	10.1
14...	1100	10	204	8.7	18.9	20	10.2
14...	1104	15	205	8.6	18.4	19	10.3
14...	1106	20	205	8.5	17.3	15	10.6
14...	1110	25	203	8.4	15.2	15	10.6
14...	1112	30	203	8.4	14.6	17	10.6
14...	1114	40	188	8.3	14.0	11	10.0
14...	1116	50	188	8.3	13.3	9.8	9.8
14...	1118	60	194	8.2	12.3	9.2	9.8
14...	1120	70	194	8.2	11.6	19	9.8
14...	1122	80	205	8.2	11.5	14	9.8
14...	1124	90	205	8.2	11.2	27	9.9
14...	1126	100	210	8.2	10.9	27	9.9
14...	1128	110	218	8.2	10.4	30	9.9
14...	1130	120	230	8.2	9.8	33	9.9
14...	1132	130	240	8.2	9.4	35	9.9
14...	1134	140	243	8.2	9.2	37	9.9
14...	1136	150	247	8.2	8.8	39	10.0
14...	1138	160	255	8.3	8.5	41	10.2
14...	1140	170	261	8.2	7.9	45	10.5
14...	1142	185	264	8.2	6.7	50	10.8
14...	1144	200	270	8.1	5.8	48	10.6
14...	1146	215	271	8.1	5.3	50	10.4
14...	1148	230	272	8.1	5.2	50	10.2
14...	1150	245	273	8.1	5.1	50	10.1
14...	1152	260	274	8.1	5.1	43	9.9
14...	1154	275	275	8.1	5.0	39	9.7
14...	1156	290	276	8.1	4.9	39	9.7
14...	1200	304	277	8.1	4.9	35	9.4
14...	1202	314	278	8.1	4.9	32	9.3

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
JUL							
29...	1122	.0	188	8.8	21.5	48	9.5
29...	1126	2.0	188	8.8	21.4	45	9.6
29...	1128	5.0	189	8.8	21.2	45	9.8
29...	1130	10	187	8.8	19.0	37	10.0
29...	1131	15	185	8.8	18.4	35	10.2
29...	1132	20	187	8.7	17.6	32	10.2
29...	1134	25	186	8.7	17.1	30	10.2
29...	1136	30	185	8.7	16.7	32	10.2
29...	1138	35	183	8.7	16.1	32	10.1
29...	1140	40	183	8.6	15.4	32	10.0
29...	1142	45	182	8.6	14.6	30	9.7
29...	1144	50	178	8.5	13.5	28	9.5
29...	1146	60	179	8.4	12.9	28	9.4
29...	1148	70	179	8.5	12.4	24	9.4
29...	1150	80	183	8.5	11.9	24	9.6
29...	1152	90	192	8.5	11.4	25	9.6
29...	1154	100	202	8.4	11.1	35	9.7
29...	1156	110	211	8.4	10.5	41	9.7
29...	1158	120	218	8.3	10.1	43	9.7
29...	1200	130	228	8.3	9.7	43	9.7
29...	1202	140	238	8.3	9.3	48	9.8
29...	1204	150	241	8.3	9.1	45	9.9
29...	1206	160	248	8.3	8.7	48	10.0
29...	1208	170	254	8.3	8.3	48	10.2
29...	1210	185	268	8.2	7.5	48	10.5
29...	1212	200	268	8.2	6.5	50	10.5
29...	1216	215	270	8.1	6.1	50	10.3
29...	1218	230	272	8.1	5.5	50	10.0
29...	1220	245	273	8.1	5.3	50	9.8
29...	1222	260	273	8.1	5.2	50	9.6
29...	1224	275	274	8.0	5.1	50	9.4
29...	1226	290	275	8.0	5.1	48	9.2
29...	1228	305	276	8.0	5.1	41	9.0
29...	1230	319	279	8.0	5.1	37	8.6
29...	1232	329	279	8.0	5.1	35	8.5
AUG							
12...	1022	.0	195	8.5	19.5	39	9.7
12...	1026	2.0	195	8.5	19.5	37	9.9
12...	1028	5.0	196	8.5	19.5	37	9.9
12...	1030	10	196	8.5	18.7	37	9.9
12...	1031	15	195	8.4	18.1	35	10.0
12...	1033	20	194	8.3	17.9	35	10.0
12...	1035	25	194	8.2	17.5	35	9.9
12...	1036	30	191	8.2	17.0	39	9.9
12...	1038	35	191	8.1	16.4	39	9.8
12...	1039	40	191	8.1	15.5	39	9.7
12...	1041	45	191	8.1	15.0	43	9.5
12...	1042	50	185	8.0	14.1	43	9.4
12...	1044	60	185	8.0	13.4	41	9.4
12...	1046	70	185	8.0	12.8	37	9.6
12...	1048	80	193	8.0	12.1	35	9.8
12...	1050	90	202	8.0	11.7	35	9.9
12...	1052	100	210	8.0	11.4	35	10.0
12...	1054	110	218	8.1	11.0	41	10.0
12...	1056	120	224	8.1	10.5	45	10.1
12...	1058	130	230	8.1	10.0	45	10.1
12...	1102	140	242	8.1	9.7	45	10.1
12...	1104	150	253	8.1	9.3	45	10.2
12...	1106	160	261	8.1	8.8	48	10.3
12...	1108	170	271	8.1	8.3	48	10.5
12...	1110	180	281	8.1	7.6	48	10.7
12...	1112	190	281	8.1	7.1	50	10.6
12...	1116	205	286	8.0	6.4	50	10.5
12...	1118	220	288	8.0	5.7	52	10.1
12...	1120	235	288	8.0	5.5	50	10.0
12...	1122	250	288	8.0	5.3	48	9.9
12...	1124	265	289	8.0	5.3	48	9.8
12...	1126	280	290	8.0	5.1	48	9.6
12...	1128	295	290	8.0	5.1	48	9.4
12...	1130	307	290	8.0	5.1	39	9.2
12...	1132	317	290	8.0	5.1	33	9.1

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
AUG							
26...	1054	.0	196	8.5	21.3	52	9.2
26...	1058	5.0	197	8.5	21.3	52	9.2
26...	1100	10	194	8.5	20.8	52	9.2
26...	1101	15	196	8.5	20.2	50	9.2
26...	1102	20	195	8.5	19.9	48	9.2
26...	1104	25	196	8.4	19.4	45	9.2
26...	1105	30	195	8.4	18.6	43	9.2
26...	1107	35	196	8.3	18.4	43	9.0
26...	1108	40	193	8.3	17.7	43	8.9
26...	1109	45	197	8.3	17.1	45	8.8
26...	1110	50	192	8.2	16.1	48	8.7
26...	1112	55	193	8.2	15.2	48	8.5
26...	1113	60	186	8.2	13.9	48	8.6
26...	1114	70	184	8.2	13.2	52	8.8
26...	1116	75	187	8.2	12.8	50	8.8
26...	1117	80	191	8.2	12.3	50	9.1
26...	1119	90	198	8.2	11.6	45	9.3
26...	1120	100	212	8.2	11.3	43	9.4
26...	1122	110	220	8.3	10.6	45	9.5
26...	1124	120	227	8.3	10.2	45	9.6
26...	1126	130	236	8.3	9.8	43	9.6
26...	1128	140	250	8.4	9.5	43	9.7
26...	1130	150	253	8.4	9.3	43	9.8
26...	1132	160	253	8.4	9.0	43	9.8
26...	1134	170	260	8.4	8.7	45	9.8
26...	1138	180	267	8.4	8.4	43	9.9
26...	1140	190	274	8.4	8.0	43	9.9
26...	1142	200	280	8.3	7.5	39	9.9
26...	1144	210	280	8.3	7.1	39	9.8
26...	1146	220	286	8.3	6.3	41	9.8
26...	1148	235	289	8.3	5.7	33	9.4
26...	1150	250	289	8.3	5.5	33	9.2
26...	1152	265	290	8.2	5.4	35	9.1
26...	1156	280	291	8.2	5.3	37	8.9
26...	1158	295	291	8.2	5.2	35	8.7
26...	1200	308	293	8.2	5.2	32	8.5
26...	1202	318	294	8.2	5.2	32	8.3
SEP							
09...	1152	.0	197	8.4	18.8	37	9.0
09...	1156	2.0	197	8.4	18.8	35	9.0
09...	1158	5.0	197	8.4	18.5	35	9.1
09...	1200	10	197	8.4	18.2	32	9.1
09...	1201	15	198	8.3	17.7	32	8.6
09...	1202	20	195	8.3	17.4	33	8.6
09...	1204	25	196	8.2	17.2	35	8.4
09...	1205	30	196	8.2	16.9	39	8.3
09...	1207	40	195	8.2	16.5	43	8.1
09...	1208	50	192	8.2	15.6	45	8.0
09...	1210	60	192	8.2	14.7	48	8.0
09...	1211	70	186	8.2	13.6	50	8.2
09...	1213	75	187	8.2	13.1	52	8.2
09...	1214	80	185	8.2	12.6	52	8.5
09...	1215	90	189	8.2	12.3	52	8.7
09...	1218	100	193	8.2	11.6	50	9.0
09...	1220	110	205	8.3	11.4	48	9.2
09...	1222	120	212	8.3	10.9	45	9.2
09...	1224	130	223	8.3	10.3	43	9.2
09...	1226	140	231	8.3	10.0	41	9.3
09...	1228	150	247	8.3	9.3	39	9.3
09...	1230	160	249	8.3	9.0	41	9.4
09...	1232	170	260	8.4	8.7	41	9.5
09...	1234	180	271	8.4	8.3	41	9.5
09...	1238	190	279	8.3	7.5	39	9.5
09...	1240	200	282	8.3	7.0	37	9.4
09...	1242	210	285	8.3	6.7	35	9.4
09...	1244	220	286	8.3	6.2	35	9.2
09...	1246	230	288	8.3	5.9	32	9.1
09...	1248	235	289	8.3	5.7	30	8.9
09...	1250	250	290	8.3	5.5	28	8.8
09...	1252	265	290	8.3	5.4	27	8.6
09...	1256	280	291	8.3	5.3	27	8.5
09...	1258	295	291	8.3	5.3	27	8.4
09...	1300	308	293	8.2	5.3	25	8.2
09...	1302	318	293	8.2	5.3	18	8.0

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	LIGHT TRANSMISSION 1 METER PATHLENGTH (%) (00074)	OXYGEN, DISSOLVED (MG/L) (00300)
SEP							
23...	1152	.0	197	8.6	16.2	45	9.2
23...	1156	2.0	197	8.6	16.2	45	9.2
23...	1158	5.0	197	8.6	16.2	45	9.2
23...	1200	10	197	8.6	16.2	45	9.2
23...	1201	15	197	8.6	16.1	45	9.2
23...	1202	20	197	8.6	16.1	45	9.2
23...	1203	30	196	8.6	15.8	48	9.2
23...	1205	40	196	8.5	15.6	48	9.2
23...	1207	50	196	8.5	15.6	48	9.2
23...	1209	60	194	8.5	15.5	50	9.2
23...	1211	70	194	8.4	15.3	50	9.1
23...	1212	75	190	8.4	15.2	50	9.0
23...	1214	80	189	8.3	14.6	50	8.8
23...	1216	85	184	8.2	13.4	50	8.6
23...	1218	90	178	8.1	12.3	50	8.4
23...	1220	95	180	8.1	11.8	50	8.6
23...	1222	100	189	8.1	11.2	50	8.8
23...	1224	110	200	8.1	10.3	50	9.2
23...	1226	120	209	8.1	9.9	50	9.2
23...	1228	130	212	8.1	9.5	50	9.2
23...	1230	140	216	8.2	9.3	48	9.2
23...	1232	150	219	8.2	9.1	48	9.2
23...	1234	160	224	8.2	8.9	48	9.1
23...	1236	170	228	8.2	8.7	45	9.1
23...	1238	180	233	8.2	8.3	45	9.1
23...	1240	190	238	8.2	7.9	45	9.1
23...	1242	200	252	8.1	7.6	45	9.0
23...	1244	210	258	8.1	7.1	41	9.0
23...	1246	220	268	8.1	6.7	39	9.0
23...	1248	230	270	8.1	6.2	41	9.0
23...	1250	245	274	8.1	5.7	41	9.0
23...	1252	260	274	8.1	5.5	39	8.8
23...	1256	275	274	8.1	5.4	41	8.8
23...	1258	290	274	8.0	5.4	43	8.7
23...	1300	305	276	8.0	5.3	48	8.7
23...	1302	315	279	8.0	5.3	48	8.4

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 (18 km) east of Libby and at mile 221.9 (357.0 km).

DRAINAGE AREA.--8,985 mi^2 (23,271 km^2), 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 (7.09 km^3) between elevation 2,201.5 ft (671.02 m), bottom of sluice gate, and 2,459 ft (749.5 m), controlled spillway elevation. Dead storage, 121,200 acre-ft (149 hm^3) below elevation 2,201.5 ft (671.02 m). Minimum operating level, 768,700 acre-ft (948 hm^3), elevation 2,287.0 ft (697.08 m) 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 (7.09 km^3) Aug. 6, 1976, elevation, 2,459.10 ft (749.534 m); minimum observed since normal low operating level reached in May 1972, 139,600 acre-ft (172 hm^3) Dec. 16-21, 1972, elevation, 2,226.5 ft (678.64 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 5,754,000 acre-ft (7.09 km^3) Aug. 16, elevation, 2,459.12 ft (749.540 m); minimum, 1,806,000 acre-ft (2.23 km^3) Apr. 23, elevation, 2,342.09 ft (713.869 m).

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 1981 TO SEPTEMBER 1982
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2455.67	2445.88	2432.16	2407.43	2376.96	2358.13	2347.16	2342.56	2377.58	2443.22	2458.98	2458.76
2	2455.71	2445.29	2431.38	2406.40	2375.89	2357.42	2347.00	2342.83	2379.19	2444.69	2458.86	2458.71
3	2455.85	2444.59	2430.58	2405.43	2374.80	2356.69	2346.71	2343.21	2381.16	2446.09	2458.81	2458.65
4	2455.99	2443.95	2429.78	2404.55	2373.70	2355.90	2346.36	2343.29	2383.34	2447.40	2458.74	2458.66
5	2455.80	2443.30	2428.97	2403.53	2372.57	2355.03	2345.97	2343.33	2385.84	2448.68	2458.64	2458.81
6	2455.77	2442.63	2428.18	2402.45	2371.48	2354.27	2345.55	2343.21	2388.32	2449.71	2458.51	2458.90
7	2455.84	2442.63	2427.42	2401.43	2370.36	2353.50	2344.90	2343.14	2390.64	2450.54	2458.63	2458.92
8	2455.94	2442.65	2426.61	2400.40	2369.24	2352.69	2344.09	2343.15	2392.62	2451.27	2458.66	2458.80
9	2456.05	2442.15	2425.68	2399.47	2368.06	2351.96	2343.52	2343.14	2394.29	2451.97	2458.65	2458.67
10	2456.14	2441.46	2424.90	2398.46	2366.96	2351.32	2343.49	2342.99	2395.89	2452.60	2458.65	2458.60
11	2456.22	2441.01	2424.02	2397.49	2365.82	2350.89	2343.42	2342.85	2397.70	2453.29	2458.68	2458.76
12	2455.88	2440.54	2423.21	2396.45	2364.70	2350.61	2342.92	2342.80	2399.86	2453.91	2458.67	2458.95
13	2455.51	2439.95	2422.29	2395.41	2363.63	2350.52	2342.34	2342.96	2402.45	2454.41	2458.71	2458.88
14	2454.93	2439.91	2421.39	2394.40	2362.64	2350.39	2342.27	2343.29	2405.37	2455.14	2459.01	2458.76
15	2454.33	2439.91	2420.50	2393.49	2361.64	2350.10	2342.15	2343.97	2408.70	2455.65	2458.93	2458.70
16	2453.75	2439.46	2419.61	2392.42	2360.67	2349.94	2342.11	2345.09	2411.85	2456.15	2459.12	2458.62
17	2453.17	2438.74	2418.68	2391.37	2360.04	2349.75	2342.27	2346.58	2414.77	2456.50	2459.01	2458.55
18	2452.80	2438.03	2417.73	2390.39	2359.88	2349.53	2342.24	2348.38	2417.40	2457.06	2458.85	2458.62
19	2452.39	2437.67	2416.80	2389.32	2359.99	2349.33	2342.32	2350.39	2419.98	2457.58	2458.68	2458.66
20	2452.02	2437.70	2415.92	2388.78	2360.15	2349.10	2342.34	2352.30	2422.51	2457.98	2458.52	2458.26
21	2451.63	2437.68	2414.97	2387.20	2360.40	2348.92	2342.37	2354.14	2424.91	2458.25	2458.50	2457.67
22	2451.01	2437.70	2414.07	2386.09	2360.62	2348.68	2342.20	2356.14	2427.22	2458.27	2458.67	2457.11
23	2450.45	2437.19	2413.08	2384.94	2360.52	2348.50	2342.09	2358.45	2429.35	2458.29	2458.59	2456.79
24	2449.82	2436.45	2412.19	2383.93	2360.37	2348.27	2342.11	2360.76	2431.33	2458.41	2458.57	2456.81
25	2449.45	2435.73	2412.10	2382.87	2360.12	2347.85	2342.13	2363.24	2433.10	2458.62	2458.57	2456.98
26	2448.98	2435.26	2412.05	2381.73	2359.91	2347.46	2342.15	2366.34	2434.93	2458.90	2458.57	2457.17
27	2448.35	2434.70	2412.01	2380.77	2359.18	2347.43	2342.23	2369.18	2436.87	2458.86	2458.54	2457.30
28	2447.72	2434.12	2411.35	2379.65	2358.61	2347.41	2342.15	2371.36	2438.70	2458.78	2458.66	2457.57
29	2447.09	2433.56	2410.38	2378.64	---	2347.35	2342.32	2373.29	2440.16	2458.74	2458.81	2457.71
30	2446.43	2432.98	2409.32	2378.63	---	2347.41	2342.37	2374.83	2441.81	2458.74	2458.81	2457.88
31	2445.80	---	2408.42	2378.03	---	2347.37	---	2376.19	---	2458.84	2458.77	---
MAX	2456.22	2445.88	2432.16	2407.43	2376.96	2358.13	2347.16	2376.19	2441.81	2458.90	2459.12	2458.95
MIN	2445.80	2432.98	2408.42	2378.03	2358.61	2347.35	2342.09	2342.56	2377.58	2443.22	2458.50	2456.79
†	5,151	4,604	3,655	2,710	2,198	1,927	1,812	2,659	4,977	5,741	5,738	5,696
††	-449,000	-547,000	-949,000	-945,000	-512,000	-271,000	-115,000	+847,000	+2,318,000	+764,000	-3,000	-42,000

CAL YR 1981..... †† -43,000
WTR YR 1982..... †† +96,000

† 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 (1.1 km) downstream from Libby Dam, 2.8 mi (4.5 km) upstream from Fisher River, 11 mi (18 km) east of Libby, and at mile 221.0 (335.6 km).

DRAINAGE AREA.--8,985 mi^2 (23,271 km^2), approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,100.00 ft (640.080 m) 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 (0.6 km) upstream at same datum.

REMARKS.--Water-discharge records excellent except those below 5,000 ft^3/s (142 m^3/s), which are good. Flow completely regulated by Lake Koocanusa since Mar. 21, 1972 (see preceding page). Diversions for irrigation of about 14,000 acres (57 km^2), from tributaries above station in Canada and the United States.

AVERAGE DISCHARGE.--11 years, 11,490 ft^3/s (325.4 m^3/s) 17.36 in/yr (441 mm/yr), 8,325,000 acre-ft/yr (10.3 km^3/yr), adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,200 ft^3/s (1,340 m^3/s) Aug. 5, 1974, gage height, 27.50 ft (8.382 m); minimum daily, 1,900 ft^3/s (53.8 m^3/s) Jan. 29, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,700 ft^3/s (1,070 m^3/s) Sept.22, gage height, 25.92 ft (7.900 m); minimum daily, 3,650 ft^3/s (103 m^3/s) Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8030	4180	20800	20600	19100	10800	5940	8340	6140	7890	8650	7810
2	4100	17900	20900	20500	18900	13400	6040	8320	6090	6220	15900	7850
3	4080	19700	20900	20600	18300	13500	7730	9340	6170	3910	14200	7850
4	4100	19700	20900	20700	18300	14400	6800	12600	5180	3880	14200	7610
5	9740	19700	21000	20400	18300	14600	7950	12900	3930	3880	14000	3810
6	6010	19100	21100	20200	18200	13800	9410	13000	3860	5970	13800	6950
7	4060	4200	20500	20400	18100	13400	10600	12800	4010	7760	7730	8380
8	4040	4090	21300	20000	18100	13400	13000	12800	4030	7720	7730	10800
9	4060	15600	21500	20000	17900	13300	9820	12900	4020	7790	11700	10200
10	4070	19600	21600	20000	17900	13300	4360	12900	3970	7790	9920	10200
11	4070	14600	21500	20100	18100	10400	4370	12900	3940	7710	11500	4750
12	13700	14600	20900	19900	17700	6850	10900	12900	3850	7680	10400	4690
13	14300	19200	21200	19900	17700	5970	12800	13000	3880	7660	11200	10500
14	19200	4200	21000	19700	17500	6010	7240	12900	3850	7770	4700	10100
15	19200	4140	21000	19800	17600	7860	6660	12900	3820	7750	12900	10200
16	19200	15300	20900	20000	17500	6160	6210	12900	3870	9590	12800	7960
17	18700	20200	21100	20000	14100	6180	3930	12900	6120	9750	14400	9350
18	13900	20200	21300	19500	7800	6230	3920	13100	7700	3790	14400	6120
19	15200	12500	21200	19200	4240	6270	3910	13000	4150	3800	14200	5870
20	13900	4100	21300	19300	3940	5780	3930	12800	3900	6570	14200	15700
21	14500	4110	21400	19300	3940	5860	3930	13300	6740	11500	8040	21800
22	19200	4120	21300	19300	3940	6210	6500	13300	7890	17900	4830	21500
23	18300	15600	20900	19200	7270	6190	7030	13500	7840	16200	10800	14800
24	18800	20400	20600	19300	7240	6020	7820	13400	7950	12900	8140	5490
25	13700	20100	4430	19200	7980	7710	8040	13600	7980	8490	8150	4180
26	14900	14800	4210	19000	9120	7890	8070	13600	4230	6800	8270	4160
27	19400	14900	4200	19000	11600	4120	8080	13800	3910	14600	7900	4160
28	19400	14800	16100	18900	11800	4100	9620	10700	6550	14600	3960	4140
29	19400	14800	20800	17900	---	4100	10300	6250	7870	14700	3650	4100
30	19500	15400	20800	4070	---	4170	9800	6230	7960	12400	7630	4080
31	18800	---	20600	12000	---	4270	---	6230	---	9570	7920	---
TOTAL	399560	411840	597240	587970	382170	262250	224710	369110	161400	274540	317820	255110
MEAN	12890	13730	19270	18970	13650	8460	7490	11910	5380	8856	10250	8504
MAX	19500	20400	21600	20700	19100	14600	13000	13800	7980	17900	15900	21800
MIN	4040	4090	4200	4070	3940	4100	3910	6230	3820	3790	3650	3810
AC-FT	792500	816900	1185000	1166000	758000	520200	445700	732100	320100	544500	630400	506000
MEAN †	5586	4536	3838	3594	4429	4053	5558	25680	44330	21280	10200	7798
CFSM †	0.62	0.50	0.43	0.40	0.49	0.45	0.62	2.86	4.93	2.37	1.14	0.87
IN †	0.72	0.56	0.49	0.46	0.51	0.52	0.69	3.30	5.51	2.73	1.31	0.97
AC-FT †	343500	269900	236000	221000	246000	249200	330700	1579100	2638100	1308500	627400	464000

OBSERVED

CAL YR 1981	TOTAL	4863440	MEAN	13320	MAX	41200	MIN	2770	AC-FT	9647000
WTR YR 1982	TOTAL	4243720	MEAN	11630	MAX	21800	MIN	3650	AC-FT	8417000

ADJUSTED

CAL YR 1981	TOTAL	4841948	MEAN	13270	CFSM	1.48	IN	20.04	AC-FT	9604000
WTR YR 1982	TOTAL	4292111	MEAN	11760	CFSM	1.31	IN	17.77	AC-FT	8513000

(†) Adjusted for change in contents in Lake Koocanusa

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 (5.1 km) downstream."

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	ALKA-LINITY FIELD (MG/L AS CACO3) (00410)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
08...	0830	4060	2	217	8.0	7.0	12.0	9.2	93	93	4.0
23...	1000	19200	0	223	8.2	6.0	10.4	9.8	94	91	5.0
NOV											
10...	1045	19900	2	234	8.2	2.0	9.4	9.4	88	94	5.0
24...	1300	20400	2	245	7.9	5.5	8.4	9.0	84	98	4.9
DEC											
09...	0845	21500	2	232	7.8	1.0	7.8	9.4	85	97	--
21...	1000	21500	--	237	7.9	1.5	6.8	9.5	84	100	4.3
JAN											
06...	1200	20200	0	248	8.0	-12.0	5.4	10.4	88	100	4.9
28...	0845	18900	74	253	8.0	-.5	4.0	10.6	88	100	4.6
FEB											
12...	1300	17900	2	267	8.0	6.0	2.6	11.6	92	100	4.0
24...	1300	14200	1	256	8.1	1.0	3.0	12.0	96	100	3.9
MAR											
09...	1045	15600	53	266	8.0	5.5	2.8	12.5	100	100	4.0
26...	0945	17300	0	270	7.9	6.0	3.0	11.5	93	110	4.7
APR											
07...	1115	13000	1	262	8.0	6.0	3.2	11.5	93	110	4.1
21...	1100	3930	0	279	8.0	14.0	3.8	12.5	101	110	4.3
MAY											
04...	1115	12800	1	289	7.8	10.0	4.0	11.9	111	110	4.2
18...	1100	13100	51	280	8.0	15.0	5.8	11.8	103	110	4.0
JUN											
10...	0930	3950	0	264	8.1	18.0	9.2	10.7	100	110	5.4
23...	1330	7860	1	257	8.2	25.0	10.6	10.7	104	100	5.3
JUL											
14...	1445	7750	2	219	8.2	20.0	12.0	10.0	101	94	4.6
AUG											
04...	1100	19300	0	216	8.2	21.0	12.0	9.6	97	89	4.8
25...	1700	9460	0	208	8.0	28.0	11.0	9.1	91	85	5.0
SEP											
08...	1100	14200	0	226	7.9	15.5	10.2	9.6	93	91	4.5
21...	1545	32700	2	263	8.6	20.0	8.0	10.8	99	110	4.8
29...	1300	4100	3	222	8.2	11.0	9.5	10.0	107	92	5.5

KOOTENAI RIVER BASIN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	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)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	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)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954)
OCT											
08...	.12	.14	.17	.35	.52	.64	.007	.005	.002	1.16	<.034
23...	<.09	--	.10	.04	.14	--	.011	.010	.003	.647	.000
NOV											
10...	.17	--	.19	.15	.34	.51	.007	.005	<.002	.779	.000
24...	.23	--	.22	.60	.82	1.1	.017	.008	<.002	.444	.000
DEC											
09...	--	--	--	--	--	--	--	--	--	--	--
21...	<.09	--	.08	.17	.25	--	.020	.019	.005	.509	.000
JAN											
06...	<.09	<.09	.11	.35	.46	--	.014	.014	.010	.340	.000
28...	.12	--	.61	.04	.65	.77	.003	.002	.005	.087	.000
FEB											
12...	.11	--	.15	.49	.64	.75	--	--	.003	--	--
24...	<.10	--	.29	.63	.92	--	.013	.014	.004	.664	.000
MAR											
09...	<.10	--	.06	.26	.32	--	.006	.003	.005	1.97	.000
26...	<.10	--	.10	.34	.44	--	.005	.009	<.001	2.75	.000
APR											
07...	<.10	<.10	.19	.26	.45	--	<.001	<.001	.004	1.46	.000
21...	<.10	--	.20	.31	.51	--	.004	<.001	<.001	2.43	<.034
MAY											
04...	<.10	--	.20	.30	.50	--	.005	<.005	<.001	2.54	<.037
18...	<.10	--	.20	.90	1.1	--	.013	<.005	.008	2.40	<.025
JUN											
10...	<.10	--	.23	.57	.80	--	.019	<.005	.001	.037	<.018
23...	<.10	--	.15	.35	.50	--	<.010	--	.008	.610	<.018
JUL											
14...	.10	.11	.12	.38	.50	.60	.020	.020	.003	--	--
AUG											
04...	.10	--	.20	.50	.70	.80	<.005	.006	.003	--	--
25...	.11	--	.09	.41	.50	.61	.010	.011	.003	.108	.013
SEP											
08...	.10	--	.27	.83	1.1	1.2	<.005	<.005	<.003	.357	.018
21...	.10	--	.09	1.0	1.1	1.2	.006	<.004	<.001	.365	.016
29...	.20	--	.13	.47	.60	.80	<.004	<.004	<.006	.100	.012

DATE	TIME	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)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT								
08...	0830	100	11	29	7.7	1.8	.0	.4
JAN								
06...	1200	120	12	34	8.9	2.6	.1	.6
APR								
07...	1115	130	16	35	9.4	2.8	.1	.6
JUL								
14...	1445	110	13	30	7.8	2.0	.0	.6

DATE	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)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT							
08...	93	13	1.9	.1	115	.15	1260
JAN							
06...	110	20	2.7	.1	140	.18	7640
APR							
07...	110	21	2.9	.6	143	.19	5020
JUL							
14...	94	20	1.7	.1	124	.17	2600

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
OCT 08...	0830	500	500	1	1	--	<10	2
JAN 06...	1200	500	100	1	1	60	<10	4
APR 07...	1115	300	300	1	1	30	<9	6
JUL 14...	1445	100	<100	1	1	30	6	<1

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT 08...	1	--	<1	2	<10	--	<3
JAN 06...	<1	10	1	2	<10	20	<3
APR 07...	1	10	<3	1	1	30	<12
JUL 14...	2	<10	<1	2	2	10	4

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 (1.3 km) upstream from mouth and 11.4 mi (18.3 km) east of Libby.

DRAINAGE AREA.--838 mi^2 (2,170 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,134.10 ft (650.474 m) National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions of about 700 acres (2.8 km^2) above station.

AVERAGE DISCHARGE.--15 years, 508 ft^3/s (14.39 m^3/s), 8.23 in/yr (209 mm/yr), 368,000 acre-ft/yr (454 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,720 ft^3/s (247 m^3/s) Jan. 16, 1974, gage height, 9.29 ft (2.832 m); minimum, 29 ft^3/s (0.82 m^3/s) Jan. 2, 1977, gage height, 2.37 ft (0.722 m), result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 6,560 ft^3/s (186 m^3/s), by slope-area measurement at site 0.5 mi (0.8 km) upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,450 ft^3/s (97.7 m^3/s) Feb. 21, gage height, 6.77 ft (2.063 m); maximum gage height, 7.42 ft (2.262 m) Feb. 16 (backwater from ice); minimum daily discharge, 65 ft^3/s (1.84 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	109	120	105	115	707	809	1860	1250	816	243	150
2	113	109	124	110	105	688	767	1980	1310	958	229	145
3	124	109	131	115	90	669	753	2300	1370	866	226	142
4	120	107	122	110	75	663	727	2350	1470	788	226	145
5	118	107	124	105	65	638	701	2070	1420	727	217	140
6	118	105	187	95	70	601	694	1810	1320	688	210	138
7	116	107	217	105	75	577	663	1700	1210	644	201	135
8	118	107	187	110	74	547	626	1760	1120	595	198	133
9	122	107	167	100	72	589	601	1760	1070	571	210	131
10	126	105	176	100	70	1140	595	1630	1090	547	210	131
11	124	104	187	105	100	1320	681	1500	1170	519	207	135
12	122	105	160	110	130	1490	1180	1460	1270	486	195	138
13	118	116	142	115	200	1360	1520	1530	1390	465	192	140
14	116	122	162	120	300	1240	1970	1730	1460	491	190	135
15	116	128	152	115	450	1220	2010	2070	1560	481	187	133
16	113	131	157	110	700	1160	1800	2440	1510	449	181	131
17	113	145	145	120	1060	1040	1630	2660	1560	410	176	135
18	111	147	140	125	966	950	1530	2780	1400	382	170	131
19	111	150	140	120	919	889	1400	2710	1280	373	167	126
20	111	140	150	115	1250	809	1280	2230	1220	364	162	124
21	109	135	140	110	3120	740	1200	2060	1180	351	160	122
22	107	145	111	105	2310	701	1170	2100	1120	329	154	124
23	107	154	90	110	1610	688	1270	2300	1060	309	152	124
24	107	142	100	115	1290	701	1640	2300	1030	293	150	122
25	107	135	115	120	1100	688	1900	2270	935	282	147	124
26	107	128	110	125	974	681	1880	2500	927	271	145	140
27	107	120	110	120	889	707	1830	2270	942	260	142	145
28	109	98	105	115	781	774	1920	1970	859	253	140	150
29	111	124	105	120	---	845	2070	1660	733	250	138	152
30	111	122	100	125	---	845	1940	1450	845	257	157	145
31	111	---	100	130	---	830	---	1300	---	250	157	---
TOTAL	3536	3663	4276	3505	18960	26497	38757	62510	36081	14725	5639	4066
MEAN	114	122	138	113	677	855	1292	2016	1203	475	182	136
MAX	126	154	217	130	3120	1490	2070	2780	1560	958	243	152
MIN	107	98	90	95	65	547	595	1300	733	250	138	122
CFSM	.14	.15	.17	.14	.81	1.02	1.54	2.41	1.44	.57	.22	.16
IN.	.16	.16	.19	.16	.84	1.18	1.72	2.77	1.60	.65	.25	.18
AC-FT	7010	7270	8480	6950	37610	52560	76870	124000	71570	29210	11180	8060

CAL YR 1981	TOTAL	159005	MEAN 436	MAX 2220	MIN 90	CFSM .52	IN 7.06	AC-FT	315400	
WTR YR 1982	TOTAL	222215	MEAN 609	MAX 3120	MIN 65	CFSM .73	IN 9.86	AC-FT	440800	

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.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 26.0°C July 23, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 22.5°C Aug. 9; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.0	7.5	10.0	7.0	5.0	6.0	.5	.0	.0	.0	.0	.0
2	12.5	10.0	11.0	6.5	5.0	6.0	1.5	.5	1.0	.0	.0	.0
3	10.0	7.5	8.5	6.5	4.5	5.5	.5	.0	.0	.0	.0	.0
4	10.0	7.5	8.5	6.5	4.5	5.5	1.0	.0	.5	.0	.0	.0
5	8.5	5.5	7.0	4.5	2.5	3.5	1.5	.0	.5	.0	.0	.0
6	9.0	6.5	8.0	2.5	.5	2.0	2.5	1.5	2.0	.0	.0	.0
7	9.0	8.0	8.5	2.0	.5	1.5	3.0	2.0	2.5	.0	.0	.0
8	8.5	7.5	8.0	4.0	1.0	2.5	2.0	1.5	2.0	.0	.0	.0
9	9.5	7.0	8.0	3.5	1.0	2.5	2.5	2.0	2.0	.0	.0	.0
10	8.0	5.5	7.0	4.0	3.0	3.5	3.5	2.5	3.0	.0	.0	.0
11	7.5	7.0	7.0	4.5	3.0	4.0	2.5	1.5	2.0	.0	.0	.0
12	7.5	5.5	6.5	4.5	3.5	4.0	1.0	.0	.0	.0	.0	.0
13	8.0	4.5	6.5	4.5	3.0	3.5	.0	.0	.0	.0	.0	.0
14	8.5	6.0	7.0	4.0	2.5	3.5	.0	.0	.0	.0	.0	.0
15	8.0	4.5	6.5	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
16	8.0	5.0	6.5	4.5	3.5	4.0	.0	.0	.0	.0	.0	.0
17	8.0	5.0	6.5	4.5	1.5	2.5	.0	.0	.0	.0	.0	.0
18	8.0	4.0	6.0	4.0	2.5	3.0	.0	.0	.0	.0	.0	.0
19	6.5	4.5	5.5	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
20	7.0	5.0	6.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
21	5.5	2.5	4.0	4.5	4.0	4.0	.0	.0	.0	.0	.0	.0
22	5.0	1.5	3.5	4.0	3.5	4.0	.0	.0	.0	.0	.0	.0
23	4.0	2.0	3.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
24	6.5	2.5	4.5	3.5	3.0	3.5	.0	.0	.0	.0	.0	.0
25	7.5	4.0	6.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
26	7.5	6.5	7.0	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
27	9.0	7.0	8.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	7.5	6.5	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	7.0	5.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	6.5	5.5	6.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	12.5	1.5	7.0	7.0	.0	3.0	3.5	.0	.5	.0	.0	.0

KOOTENAI RIVER BASIN

12302055 FISHER RIVER NEAR LIBBY, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

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 (550 m) downstream from highway bridge at Libby, 0.8 mi (1.3 km) downstream from Libby Creek, and at mile 204.3 (328.7 km).
DRAINAGE AREA.--10,240 mi^2 (26,520 km^2), 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 (622.261 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 28, 1931, nonrecording gages at site 1,800 ft (550 m) upstream at different datum.
REMARKS.--Records excellent except those below 10,000 ft^3/s (283 m^3/s), which are good. Flow regulated by Lake Koocanusa (station number 12301920) since Mar. 21, 1972. Diversions for irrigation of about 14,500 acres (58.7 km^2) 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.--72 years, 12,160 ft^3/s (344.4 m^2/s), 16.12 in/yr (409 mm/yr), 8,810,000 acre-ft/yr (10.9 km^3/yr), adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft^3/s (3,340 m^3/s) June 21, 1916, gage height, 20.7 ft (6.31 m), present datum, derived from gage-relation study; minimum observed, 895 ft^3/s (25.3 m^3/s) Jan. 11, 1930 (result of discharge measurement).
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,800 ft^3/s (957 m^3/s) Sept. 22, gage height, 9.65 ft (2.941 m); minimum daily, 4,020 ft^3/s (114 m^3/s) Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10200	6030	21400	20900	19400	13200	7370	10900	8060	9490	8510	7920
2	4540	15900	21600	20800	19200	13300	7240	11100	8260	8860	16100	7950
3	4450	20000	21600	20800	18500	14600	7840	12700	8540	5860	14300	7920
4	4430	19900	21600	21000	18400	14700	7950	15200	8340	5600	14200	7890
5	10800	19900	21800	20800	18400	15600	9730	15800	6740	5430	14100	4780
6	6970	20000	22000	20400	18400	15600	9490	15500	6380	6510	13900	6280
7	4410	6110	21500	20600	18400	14300	10400	15200	6210	8660	8110	8370
8	4430	4470	22200	20300	18400	14400	13500	15200	6060	8570	7840	10600
9	4540	13400	22400	20200	18100	13500	12300	15400	6030	8630	11400	10200
10	4620	20100	22500	20300	18100	16100	5230	15100	6210	8570	10400	10200
11	4710	14800	22500	20400	18400	13400	5460	15000	6480	8510	10500	5790
12	11900	15300	21900	20200	18100	9790	11000	14900	6740	8460	11100	4950
13	13900	20200	22100	20100	18100	8170	15600	15100	7180	8430	11200	9760
14	19200	6110	21800	20000	18000	7970	11800	15600	7290	8570	5740	10200
15	19200	4580	21900	20000	19100	10200	9730	16400	7530	8480	11500	10200
16	19300	13400	21700	20300	19900	8090	8890	17100	7430	9490	12700	8030
17	19300	20500	21900	20300	19000	7860	6380	17400	8830	11400	14200	9310
18	14000	20500	22000	19900	10200	7750	6230	18100	10700	4690	14200	7180
19	14600	15100	22100	19500	6380	7670	6010	17600	7670	4600	14100	5510
20	14000	4560	22100	19600	6890	6610	5810	16400	6710	6530	14100	13900
21	14500	4540	22300	19600	11500	6870	5720	16700	8600	10800	9040	21100
22	19300	4580	22100	19500	8800	7700	8230	17000	10400	17200	5550	21400
23	18500	13600	21700	19500	10400	7340	8890	17600	10100	17000	9980	16400
24	19500	20700	21700	19600	9640	7180	9370	17600	10000	13500	8430	6060
25	13500	20800	7000	19600	9950	8770	10900	18000	9790	9700	8140	4390
26	14800	15100	4580	19400	10800	8920	11600	18800	7050	6760	8200	4410
27	19500	15100	4560	19400	11600	5370	10800	17800	6210	14300	7860	4410
28	19600	15100	13900	19400	13000	5430	11500	15200	7620	14700	5140	4410
29	19600	15100	21000	19300	---	5510	13100	8800	9340	14700	4020	4390
30	19700	14100	21000	5890	---	5530	12500	8370	9460	12500	6890	4370
31	19700	---	20800	9890	---	5600	---	8140	---	9790	8060	---
TOTAL	407700	419580	619240	597480	425060	307030	280570	469710	235960	296290	319510	258280
MEAN	13150	13990	19980	19270	15180	9904	9352	15150	7865	9558	10310	8609
MAX	19700	20800	22500	21000	19900	16100	15600	18800	10700	17200	16100	21400
MIN	4410	4470	4560	5890	6380	5370	5230	8140	6030	4600	4020	4370
AC-FT	808700	832200	1228000	1185000	843100	609000	556500	931700	468000	587700	633700	512300
MEAN †	5850	4793	4537	3903	5962	5497	7420	28930	46820	21980	10260	7904
CFSM †	0.57	0.47	0.44	0.38	0.58	0.54	0.72	2.83	4.57	2.15	1.00	0.77
IN †	0.66	0.52	0.51	0.44	0.61	0.62	0.81	3.26	5.10	2.47	1.15	0.86
AC-FT †	359700	285200	279000	240000	331100	338000	441500	1778700	2786000	1351700	630700	470300

OBSERVED

CAL YR 1981	TOTAL	5187770	MEAN	14210	MAX	42000	MIN	3640	AC-FT	10290000
WTR YR 1982	TOTAL	4636410	MEAN	12700	MAX	22500	MIN	4020	AC-FT	9196000

ADJUSTED

CAL YR 1981	TOTAL	5166019	MEAN	14150	CFSM	1.38	IN	18.76	AC-FT	10250000
WTR YR 1982	TOTAL	4684596	MEAN	12830	CFSM	1.25	IN	17.01	AC-FT	9292000

(†) Adjusted for change in contents in Lake Koocanusa

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 (9 m) downstream from road bridge, 0.3 mi (0.5 km) upstream from South Fork, 1.0 mi (1.6 km) upstream from reservoir, 4.0 mi (6.4 km) southwest of Libby, and at mile 4.5 mi (7.2 km).

DRAINAGE AREA.--11.1 mi^2 (28.7 km^2).

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 (874 m), 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.--22 years, 27.1 ft^3/s (0.767 m^3/s), 33.14 in/yr (842 mm/yr), 19,630 acre-ft/yr (24.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 709 ft^3/s (20.1 m^3/s) Jan. 16, 1974, gage height, 5.53 ft (1.686 m); maximum gage height, 6.10 ft (1.859 m) Jan. 15, 1974 (backwater from ice); minimum discharge, 3.1 ft^3/s (0.088 m^3/s) Nov. 20, 1979; minimum gage height, 1.35 ft (0.411 m) Jan. 11, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft^3/s (5.66 m^3/s) and maximums (*):

Date	Time	Discharge (ft3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 14	2100	238	6.74	3.56	1.085	June 16	0100	257	7.28	3.59	1.094
May 26	0030	*263	7.45	*3.60	1.097						

Minimum daily discharge, 4.0 ft^3/s (0.11 m^3/s) Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	6.6	6.0	5.2	6.0	16	11	39	66	111	21	9.7
2	7.5	6.4	6.4	5.1	5.9	15	10	53	83	109	20	9.4
3	6.8	6.2	6.6	5.0	5.5	14	10	63	105	105	19	9.2
4	6.6	6.2	6.2	4.9	5.0	13	10	51	123	95	18	9.7
5	6.4	6.0	6.4	4.8	4.5	13	9.7	42	118	84	18	9.7
6	6.8	5.7	8.7	4.7	4.6	12	9.4	38	96	75	17	9.4
7	7.1	5.9	8.2	4.5	4.7	12	9.2	39	78	68	16	9.2
8	8.2	5.7	7.5	4.5	4.8	12	8.9	40	70	62	16	8.9
9	8.0	5.7	7.1	4.5	4.4	13	8.7	36	77	60	17	8.9
10	7.5	5.5	12	4.5	4.0	21	8.7	32	99	58	17	11
11	7.3	5.5	9.4	4.6	4.2	24	12	31	125	55	16	11
12	7.1	7.3	8.7	4.6	4.4	24	22	35	148	53	16	10
13	6.6	7.3	8.0	4.7	4.6	21	24	46	168	51	15	9.7
14	6.6	8.4	7.5	4.7	81	18	28	66	172	56	16	9.2
15	6.4	8.2	7.0	4.7	176	17	25	99	215	50	14	8.9
16	6.4	8.4	6.8	4.8	102	16	21	115	196	44	14	8.7
17	6.4	8.4	7.1	5.9	29	15	18	117	160	38	14	8.4
18	6.2	8.7	6.8	6.0	23	13	17	150	154	36	13	8.4
19	6.2	8.2	7.5	6.0	22	13	16	115	156	35	13	8.2
20	6.0	7.5	8.0	5.9	56	12	15	96	152	36	12	8.2
21	5.9	8.2	7.3	5.7	93	11	14	106	152	34	12	8.4
22	5.9	8.9	6.6	5.3	55	11	16	123	144	33	12	8.2
23	5.9	8.7	6.2	5.5	37	10	26	152	130	31	11	8.0
24	5.9	8.2	6.0	8.7	29	10	40	148	127	29	11	8.0
25	5.9	7.5	5.9	7.5	25	10	36	178	115	27	11	7
26	5.9	7.1	5.8	7.1	21	10	34	189	117	27	11	10
27	6.4	6.2	5.7	6.8	18	11	36	118	148	26	10	9.4
28	6.4	6.0	5.6	6.6	16	12	43	89	111	24	10	9.7
29	6.6	5.8	5.5	6.4	---	12	42	72	100	23	9.7	10
30	6.6	5.6	5.4	6.0	---	11	36	61	98	22	10	9.2
31	6.4	---	5.3	6.2	---	11	---	59	---	22	10	---
TOTAL	204.3	210.0	217.2	171.4	845.6	433	616.6	2598	3803	1579	439.7	274.4
MEAN	6.59	7.00	7.01	5.53	30.2	14.0	20.6	83.8	127	50.9	14.2	9.15
MAX	8.2	8.9	12	8.7	176	24	43	189	215	111	21	11
MIN	5.9	5.5	5.3	4.5	4.0	10	8.7	31	66	22	9.7	7.7
CFSM	.59	.63	.63	.50	2.72	1.26	1.86	7.55	11.4	4.59	1.28	.82
IN.	.68	.70	.73	.57	2.83	1.45	2.07	8.71	12.74	5.29	1.47	.92
AC-FT	405	417	431	340	1680	859	1220	5150	7540	3130	872	544

CAL YR 1981	TOTAL	9029.9	MEAN 24.7	MAX 192	MIN 5.3	CFSM 2.23	IN 30.26	AC-FT	17910	
WTR YR 1982	TOTAL	11392.2	MEAN 31.2	MAX 215	MIN 4.0	CFSM 2.81	IN 38.18	AC-FT	22600	

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 (150 m) upstream from bridge on U.S. Highway 2, 0.2 mi (0.3 km) upstream from mouth, and 7.7 mi (12.4 km) northwest of Troy.

DRAINAGE AREA.--766 mi^2 (1,984 km^2).

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 (560.59 m) National Geodetic Vertical Datum of 1929. Oct. 15, 1910, to Sept. 30, 1916, nonrecording gage at several sites within 11 mi (18 km) 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 (0.12 km^2) above station.

AVERAGE DISCHARGE.--26 years, 900 ft^3/s (25.49 m^3/s), 15.96 in/yr (405 mm/yr), 652,100 acre-ft/yr (804 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft^3/s (343 m^3/s) May 21, 1956, gage height, 9.70 ft (2.957 m), in gage well, 10.8 ft (3.29 m), from outside gage; minimum daily, 50 ft^3/s (1.42 m^3/s) Dec. 9, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a stage of 11.0 ft (3.35 m) from floodmarks; discharge, 12,500 ft^3/s (354 m^3/s). Flood in May 1954 reached a stage of 11.4 ft (3.47 m) from floodmarks; discharge, 13,400 ft^3/s (379 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft^3/s (142 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 15	1600	ice jam		*8.79	2.679	May 26	0015	*7,280	206	8.10	2.469
May 18	1200	6,970	197	8.00	2.438						

Minimum daily discharge, 95 ft^3/s (2.69 m^3/s) Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	213	196	196	150	140	725	711	2690	3160	1680	321	186
2	216	196	209	155	120	732	670	3180	3410	2020	325	183
3	279	193	186	165	105	732	670	3730	3810	1800	321	177
4	275	189	193	155	95	704	643	3370	3790	1620	312	174
5	231	183	193	140	105	670	611	2800	3830	1510	299	196
6	216	174	256	120	115	630	586	2590	3450	1420	287	203
7	220	165	264	145	120	611	561	2630	2970	1270	275	189
8	256	159	249	170	115	605	537	2790	2690	1180	264	171
9	271	171	231	155	105	750	537	2630	2690	1100	271	162
10	260	171	312	140	115	900	537	2390	2800	1010	279	196
11	249	165	343	150	140	1100	747	2470	3040	926	279	196
12	231	180	271	155	200	1050	1530	2920	3180	865	264	206
13	220	245	170	160	300	1000	1980	3280	3430	812	264	196
14	209	267	180	170	500	950	2290	3830	3520	775	267	180
15	206	287	195	155	800	900	1900	4480	3850	783	256	171
16	220	267	210	140	1300	880	1550	5130	3890	835	249	165
17	209	271	200	155	1600	820	1330	5520	3580	768	234	168
18	203	271	190	165	1410	754	1230	6670	3040	704	223	165
19	199	264	190	155	1210	718	1110	6400	2630	650	213	153
20	196	249	200	150	1490	677	1040	5470	2380	605	206	148
21	193	245	160	140	3040	630	1030	5240	2180	567	209	148
22	186	287	145	135	2360	598	1140	5550	2160	519	203	165
23	177	283	130	150	1700	586	1640	5930	2020	484	196	165
24	177	256	145	180	1270	592	2610	5650	1780	463	186	165
25	177	231	160	210	1050	579	2640	6090	1710	436	180	156
26	174	209	155	190	934	592	2470	6430	1780	416	174	227
27	177	171	150	170	865	677	2560	5340	1980	396	171	271
28	196	162	150	160	768	768	2920	4260	2000	376	165	256
29	203	183	145	145	---	790	3090	3540	1710	357	159	220
30	209	183	140	155	---	775	2670	3090	1750	343	171	206
31	199	---	135	170	---	747	---	3000	---	334	193	---
TOTAL	6647	6473	6053	4855	22072	23242	43540	129090	84210	27024	7416	5564
MEAN	214	216	195	157	788	750	1451	4164	2807	872	239	185
MAX	279	287	343	210	3040	1100	3090	6670	3890	2020	325	271
MIN	174	159	130	120	95	579	537	2390	1710	334	159	148
CFSM	.28	.28	.26	.21	1.03	.98	1.89	5.44	3.66	1.14	.31	.24
IN.	.32	.31	.29	.24	1.07	1.13	2.11	6.27	4.09	1.31	.36	.27
AC-FT	13180	12840	12010	9630	43780	46100	86360	256000	167000	53600	14710	11040

CAL YR 1981 TOTAL 369835 MEAN 1013 MAX 5180 MIN 130 CFSM 1.32 IN 17.96 AC-FT 733600
WTR YR 1982 TOTAL 366186 MEAN 1003 MAX 6670 MIN 95 CFSM 1.31 IN 17.78 AC-FT 726300

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 March 25, 1975.

REMARKS.--Prior to March 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 recorded, 21.5°C July 31; minimum, 0.0°C on many days during December to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

12304500 YAAK RIVER NEAR TROY, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

12304500 YAAK RIVER NEAR TROY, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	TEMPER-ATURE (DEG C) (00010)
AUG 05...	1320	303	117	16.0

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 (137 m) east of Montana-Idaho State line, 0.5 mi (0.8 km) upstream from Boulder Creek, and at mile 171.6 (276.1 km).

DRAINAGE AREA.--11,740 mi^2 (30,407 km^2), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,790.25 ft (545.668 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1970, at datum 90 ft (27 m) lower. Prior to Nov. 13, 1928, nonrecording gage on bridge 250 ft (76.2 m) upstream at datum 90.41 ft (27.557 m) lower.

REMARKS.--Records good. Diversions above station for irrigation of about 14,600 acres (5,900 hm^2). Flow regulated by Lake Koocanusa since Mar. 21, 1972. U.S. Army Corps of Engineers radio telemeter at station.

AVERAGE DISCHARGE.--54 years, 13,990 ft^3/s (396.2 m^3/s), 16.18 in/yr (411 mm/yr), 10,140,000 acre-ft/yr (12.5 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft^3/s (3,480 m^3/s) May 28, 1948, gage height, 33.40 ft (10.180 m); minimum, 996 ft^3/s (28.2 m^3/s) Dec. 9, 1936; minimum gage height, 7.56 ft (2.304 m) Dec. 10, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of June 1894 and 1916 reached stages of 34.6 ft (10.546 m) and 31.6 ft (9.63 m), respectively, present datum, from information by Great Northern Railway.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 35,000 ft^3/s (991 m^3/s) May 26; minimum, 4,550 ft^3/s (129 m^3/s) Aug. 30, gage height, 10.56 ft (3.219 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13100	10900	18000	21600	19800	15800	9270	18000	15000	14000	10400	8980
2	6660	12500	22000	21500	19600	14200	9200	17900	15700	14600	15100	8790
3	5110	20300	22100	21500	19000	16700	9320	19800	16900	10900	15500	8850
4	5050	20300	22000	21600	18600	16700	10100	21400	17600	10100	15300	9330
5	8720	20400	22200	21600	18500	17600	11100	22100	17300	9640	15200	6690
6	9940	20400	22900	21000	18500	17400	10700	21500	15700	9590	15000	5380
7	5400	11000	22400	21100	18500	16000	12000	21000	14200	12300	11600	9240
8	5090	5000	22900	21100	18500	16100	14900	21200	12900	12100	9220	10300
9	5120	14000	23100	20900	18500	15800	14800	21300	12600	12000	11100	10900
10	5090	20200	23700	20900	18500	19500	7570	20700	12700	11800	11600	11000
11	5080	16000	23700	21000	18500	17700	7530	20500	13600	11500	11500	8920
12	8900	16000	22800	21000	18400	14300	12600	21000	14700	11300	12600	5660
13	14400	20000	22800	20800	18300	12100	19400	22100	15900	11200	11900	8010
14	19500	11000	22500	20700	19100	11500	17600	23600	16600	11200	9080	10900
15	19500	6000	22600	20600	23200	13500	14300	25900	17900	11200	10000	10900
16	19600	10000	22400	20600	25400	11200	12900	28000	16900	11300	13600	9920
17	19700	20000	22500	20600	25600	10700	10200	29700	16900	14200	15000	10300
18	14700	20000	22600	20500	16300	10300	9650	31900	18600	8270	15000	9510
19	15200	20000	22900	20500	11300	10100	9110	33100	15700	6560	14900	5350
20	16700	9000	22900	20500	12000	8800	8700	30500	13500	7410	14800	11500
21	14700	5000	23000	20500	21300	9220	8510	29500	14100	11200	11600	20800
22	18200	5000	22800	20200	17000	10100	8570	30200	16900	17500	7350	22100
23	19000	12000	22300	19900	15700	9340	11000	31900	16100	19400	8350	19100
24	19600	20000	22300	20200	14500	9200	13600	31900	15500	15600	10400	8280
25	14200	21000	11800	20300	13700	10300	15900	32300	15000	12700	9150	5160
26	15400	17000	5690	20000	13900	10700	16000	35000	13100	8060	9160	5100
27	19900	15500	5590	19900	13200	7950	16100	29700	11900	13400	8810	5030
28	20000	15500	10900	19900	15600	7720	16700	26600	12100	16000	7540	5000
29	20000	15500	21500	19800	---	7840	19400	16900	14100	15900	4610	5070
30	20100	15000	21600	10600	---	7780	19200	15300	14200	14500	6000	4910
31	20100	---	21400	6950	---	7770	---	14800	---	12400	9090	---
TOTAL	423760	444500	637880	617850	501000	383920	375930	765300	453900	377830	350460	280980
MEAN	13670	14820	20580	19930	17890	12380	12530	24690	15130	12190	11310	9366
MAX	20100	21000	23700	21600	25600	19500	19400	35000	18600	19400	15500	22100
MIN	5050	5000	5590	6950	11300	7720	7530	14800	11900	6560	4610	4910
AC-FT	840500	881700	1265000	1226000	993700	761500	745700	1518000	900300	749400	695100	557300

CAL YR 1981 TOTAL 5884990 MEAN 16120 MAX 44000 MIN 4900 AC-FT 11670000
WTR YR 1982 TOTAL 5613310 MEAN 15380 MAX 35000 MIN 4610 AC-FT 11130000

12324200 CLARK FORK AT DEER LODGE, MT

LOCATION.--Lat 46°23'52", long 112°44'31", in SW¼SW¼SW¼ sec.33, T.8 N., R.9 W., Powell County, Hydrologic Unit 17010201, on left bank 35 ft (11 m) upstream from Milwaukee Avenue Bridge in Deer Lodge, 0.05 mi (0.08 km) upstream from Taylor Creek, 0.24 mi (0.39 km) downstream from Tin Cup Joe Creek, and at mile 461.2 (742.1 km).

DRAINAGE AREA.--1,005 mi^2 (2,603 km^2).

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 (1,372.228 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for no gage-height record Apr. 24 to May 25, which are fair, and those for January and February, which are poor. Diversions above station for irrigation of about 31,000 acres (77.9 km^2). Some regulation by settling ponds on Silver Bow Creek near Anaconda.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,500 ft^3/s (70.8 m^3/s) May 23, 1981, gage height, 5.35 ft (1.631 m); minimum daily, 68 ft^3/s (1.93 m^3/s) Aug. 8, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,450 ft^3/s (41.1 m^3/s) June 25, gage height recorded, 4.39 ft (1.338 m), 4.50 ft (1.372 m), from crest-stage gage; minimum, 98 ft^3/s (2.78 m^3/s) Aug. 11, gage height, 2.41 ft (0.734 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	251	342	277	292	278	400	352	530	860	1290	210	160
2	237	336	287	282	275	400	341	540	838	1190	198	156
3	218	339	314	292	215	400	338	600	833	1060	185	151
4	223	329	303	282	190	382	338	640	838	929	178	155
5	232	312	309	265	150	363	331	600	858	856	160	170
6	246	314	348	250	170	348	321	540	858	791	139	179
7	232	328	353	235	190	338	312	530	812	710	113	178
8	246	348	342	240	180	327	307	520	910	734	111	173
9	242	353	342	242	180	340	340	510	895	695	112	170
10	256	353	348	220	185	379	342	495	788	698	112	169
11	287	353	342	240	190	416	377	480	727	646	100	181
12	303	359	309	256	220	431	534	475	726	650	109	204
13	314	358	309	298	280	418	563	470	836	642	113	225
14	325	359	320	314	500	384	637	480	1090	725	116	228
15	331	359	314	282	890	383	587	500	1300	673	114	244
16	325	355	320	240	920	390	495	540	1330	614	118	252
17	325	330	292	270	960	365	366	600	1330	565	115	255
18	320	329	287	287	720	353	385	680	1390	515	110	254
19	325	330	320	287	700	334	374	760	1340	472	109	260
20	314	332	353	287	950	340	358	820	1260	431	105	258
21	314	320	320	250	1200	330	360	760	1260	435	114	261
22	320	337	309	230	900	326	357	740	1160	396	116	257
23	331	333	287	240	700	331	391	800	1240	360	119	262
24	331	327	277	251	560	340	480	800	1390	338	122	254
25	337	331	292	250	500	330	500	830	1420	342	125	263
26	342	309	282	265	450	341	490	850	1400	324	129	310
27	342	309	277	290	420	367	490	1150	1370	298	129	447
28	331	298	277	279	400	371	510	1330	1350	263	128	546
29	348	292	277	277	---	384	540	1190	1400	252	124	505
30	349	277	271	280	---	377	530	1040	1380	245	138	475
31	346	---	287	286	---	353	---	926	---	229	156	---
TOTAL	9243	9951	9545	8259	13473	11341	12646	21726	33189	18368	4027	7602
MEAN	298	332	308	266	481	366	422	701	1106	593	130	253
MAX	349	359	353	314	1200	431	637	1330	1420	1290	210	546
MIN	218	277	271	220	150	326	307	470	726	229	100	151
AC-FT	18330	19740	18930	16380	26720	22490	25080	43090	65830	36430	7990	15080

CAL YR 1981 TOTAL 141174 MEAN 387 MAX 2390 MIN 92 AC-FT 280000
WTR YR 1982 TOTAL 159370 MEAN 437 MAX 1420 MIN 100 AC-FT 316100

12324200 CLARK FORK AT DEER LODGE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-71, 1979 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1978 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 23.0°C July 18, 21, 1979, July 23, 1980; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.5°C on several days during July and August; minimum, 0.0°C on many days during November to April.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12324200 CLARK FORK AT DEER LODGE, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	9.5	11.0	17.0	15.0	16.0	20.0	16.5	18.5	17.5	12.0	15.0
2	11.5	9.5	10.5	16.0	13.0	14.5	19.5	14.0	17.0	18.0	12.5	15.5
3	14.0	11.0	12.5	15.0	13.0	14.0	19.0	13.5	16.0	19.0	13.5	16.0
4	12.0	10.5	11.0	13.5	11.5	12.5	19.0	13.5	16.5	19.0	15.5	17.0
5	12.5	9.5	11.0	12.5	10.5	11.5	20.5	14.0	17.5	17.5	12.5	15.0
6	11.0	9.5	10.0	15.0	9.5	12.0	21.5	15.5	18.5	17.0	12.0	14.5
7	10.5	9.0	9.5	14.5	12.0	13.5	21.5	15.5	18.5	17.0	12.0	14.5
8	10.5	8.0	9.5	15.5	11.5	13.5	19.0	16.0	17.5	17.0	12.0	14.5
9	13.0	10.0	11.5	15.5	13.0	14.5	20.5	15.5	18.0	17.5	12.5	15.0
10	15.5	11.5	13.5	17.5	13.0	15.0	21.5	16.0	18.5	15.5	11.0	12.5
11	16.0	12.5	14.5	17.5	14.0	16.0	20.0	15.5	17.5	12.0	8.5	10.5
12	16.5	13.0	14.5	17.5	14.0	15.5	19.0	13.5	16.5	11.5	9.0	10.0
13	15.0	13.5	14.0	17.0	14.5	16.0	19.0	13.5	16.5	9.5	6.0	7.5
14	13.5	12.0	13.0	18.0	14.5	16.0	20.0	14.5	17.0	6.5	5.0	6.0
15	16.5	11.0	14.0	17.0	13.0	15.0	19.5	13.5	16.5	10.5	5.0	7.5
16	17.0	13.5	15.0	15.5	12.5	14.0	19.5	14.5	17.0	10.5	7.5	9.0
17	17.0	13.0	15.0	16.0	11.5	14.0	18.5	14.5	16.5	12.5	7.5	10.0
18	17.0	12.0	14.5	17.0	13.0	15.0	20.5	14.5	17.5	13.5	9.0	11.0
19	17.0	12.5	15.0	19.0	13.5	16.5	21.5	16.5	19.0	12.5	9.5	11.5
20	15.5	13.5	14.5	19.5	15.5	17.5	20.5	15.5	18.5	14.5	10.0	12.0
21	16.5	11.5	14.0	20.0	15.0	17.5	21.0	15.5	18.5	14.5	11.0	12.5
22	15.5	13.5	14.5	20.0	16.0	18.0	21.0	16.5	18.5	13.0	10.0	11.5
23	14.0	13.0	13.5	19.5	15.5	17.5	19.0	14.5	17.0	13.5	9.5	11.5
24	18.0	12.0	15.0	19.0	14.5	17.0	19.5	13.5	16.5	12.5	9.5	11.5
25	16.0	13.5	15.0	20.5	15.5	18.0	18.0	13.5	16.0	13.5	11.0	12.5
26	18.5	13.0	15.5	21.0	16.0	18.5	19.0	13.5	16.5	13.0	11.5	12.5
27	16.5	14.0	15.0	21.5	16.5	19.0	18.5	13.5	16.0	11.5	9.0	10.0
28	16.5	13.0	14.5	20.0	17.0	19.0	17.5	14.0	16.0	9.5	8.5	9.0
29	18.5	14.0	16.0	21.0	15.5	18.5	16.5	13.0	15.0	9.0	7.0	7.5
30	18.5	14.0	16.0	21.5	16.0	19.0	17.0	13.0	15.5	7.5	6.0	7.0
31	---	---	---	21.5	16.5	19.5	17.0	12.5	15.0	---	---	---
MONTH	18.5	8.0	13.5	21.5	9.5	16.0	21.5	12.5	17.0	19.0	5.0	11.5
YEAR	21.5	.0	7.5									

12324200 CLARK FORK AT DEER LODGE, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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)
JUN 22...	1350	1170	293	21.0	15.0
JUL 08...	1350	738	384	21.0	14.5
AUG 18...	0840	111	660	22.0	14.5

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 (61 m) downstream from bridge on county road, 4 mi (6 km) east of Garrison, and at mile 4.0 (6.4 km).

DRAINAGE AREA.--398 mi^2 (1,031 km^2).

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

GAGE.--Water-stage recorder. Altitude of gage is 4,430 ft (1,350 m), from topographic map.

REMARKS.--Records good except those for winter period, which are poor. A few minor irrigation holding reservoirs in upper reaches of drainage. Diversions for irrigation of about 10,500 acres (42.5 km^2). 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, 193 ft^3/s (5.466 m^3/s), 139,800 acre-ft/yr (172 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,650 ft^3/s (245 m^3/s) May 21, 1981, gage height, 8.79 ft (2.679 m), from floodmark; minimum, 6.0 ft^3/s (0.17 m^3/s) Aug. 24, 1977, gage height, 2.94 ft (0.896 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 900 ft^3/s (25.5 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharges (ft^3/s)	Discharges (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 21	0600	*1,440	40.8	*5.66	1.725	June 8	1000	952	27.0	5.02	1.530
May 26	2215	1,240	35.1	5.43	1.655	June 14	0530	1,050	29.7	5.16	1.573

Minimum discharge, 34 ft^3/s (0.96 m^3/s) Aug. 20, gage height, 2.52 ft (0.768 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	101	78	56	60	127	139	442	744	461	125	51
2	76	97	77	55	52	161	127	500	722	417	121	64
3	75	95	75	56	45	164	124	564	744	367	112	60
4	73	93	77	58	41	132	122	563	780	337	114	56
5	72	91	75	54	40	112	118	502	835	315	111	52
6	72	88	85	47	43	108	114	466	796	305	104	53
7	74	86	90	52	50	107	109	479	762	282	98	52
8	90	85	88	54	46	102	102	480	874	308	88	47
9	89	84	85	54	42	174	112	441	806	289	89	48
10	91	82	86	52	49	316	114	421	728	283	87	51
11	96	82	83	54	62	255	340	385	695	254	88	51
12	97	84	66	56	80	194	552	371	715	242	91	56
13	97	86	72	60	105	168	454	368	791	241	87	61
14	96	89	76	66	150	177	379	379	972	283	83	65
15	101	90	75	56	250	178	266	397	914	255	84	67
16	101	91	77	48	400	139	219	462	887	227	76	68
17	98	91	68	60	650	125	209	592	972	219	71	72
18	95	89	64	66	500	114	223	686	850	208	69	74
19	94	88	82	66	400	110	185	768	717	209	54	76
20	94	86	97	62	615	115	172	750	652	191	36	76
21	93	87	84	54	1280	108	186	676	637	177	39	76
22	92	92	72	45	491	111	255	687	575	162	42	75
23	96	89	68	50	285	113	364	781	605	156	45	76
24	98	88	70	66	194	126	448	809	580	162	47	75
25	98	87	72	64	165	108	454	841	546	164	46	75
26	98	82	70	70	150	117	413	1000	535	159	46	80
27	97	70	68	66	142	146	416	1180	468	155	48	103
28	98	66	68	62	124	166	461	1030	464	144	48	123
29	106	64	68	64	---	152	462	940	509	142	47	118
30	103	70	62	66	---	135	423	841	425	134	51	120
31	106	---	58	68	---	126	---	765	---	130	50	---
TOTAL	2841	2573	2336	1807	6511	4486	8062	19566	21300	7378	2297	2121
MEAN	91.6	85.8	75.4	58.3	233	145	269	631	710	238	74.1	70.7
MAX	106	101	97	70	1280	316	552	1180	972	461	125	123
MIN	72	64	58	45	40	102	102	368	425	130	36	47
AC-FT	5640	5100	4630	3580	12910	8900	15990	38810	42250	14630	4560	4210

CAL YR 1981 TOTAL 101570 MEAN 278 MAX 6280 MIN 40 AC-FT 201500
WTR YR 1982 TOTAL 81278 MEAN 223 MAX 1280 MIN 36 AC-FT 161200

12324680 CLARK FORK AT GOLD CREEK, MT

LOCATION.--Lat 46°35'26", long 112°55'40", in SE¼NW¼SW¼ sec.25, T.10 N., R.11 W., Powell County, Hydrologic Unit 17010203, on right bank at county road bridge, 0.4 mi (0.6 km) north of the town of Gold Creek, 1.1 mi (1.8 km) downstream from Gold Creek, and at mile 436.9 (703.0 km).

DRAINAGE AREA.--1,704 mi^2 (4,413 km^2).

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

GAGE.--Nonrecording gage. Datum of gage is 4,172.80 ft (1,271.869 m) National Geodetic Vertical Datum of 1929. Prior to June 13, 1982, water-stage recorder at site 350 ft (107 m) upstream at same datum.

REMARKS.--Records good except those for December through February, which are poor. Some regulation by settling ponds on Silver Bow Creek near Anaconda. Diversions for irrigation of about 40,100 acres (162 km^2) 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.--5 years, 738 ft^3/s (20.90 m^3/s), 534,700 acre-ft/yr (659 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft^3/s (340 m^3/s) May 22, 1981, gage height, 11.17 ft (3.405 m), from floodmarks, from rating curve extended above 6,500 ft^3/s (184 m^3/s) on basis of contracted-opening measurement of peak flow; minimum, 108 ft^3/s (3.06 m^3/s) Aug. 10, 11, 1979, gage height, 3.64 ft (1.109 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,370 ft^3/s (95.4 m^3/s) May 28, gage height, 7.09 ft (2.161 m); minimum daily, 200 ft^3/s (5.66 m^3/s) Feb. 5, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	458	558	420	340	380	656	656	1160	2130	2830	549	294
2	447	535	447	336	350	722	632	1240	2050	2800	416	315
3	427	530	450	315	270	740	617	1380	2040	2180	392	315
4	427	520	451	310	240	681	609	1410	2050	1960	358	330
5	441	509	460	303	200	637	601	1320	2130	1840	325	299
6	453	511	516	290	210	643	586	1230	2130	1550	325	280
7	457	514	548	300	260	638	571	1200	2000	1450	294	330
8	486	515	514	330	240	629	542	1200	2140	1400	265	299
9	485	515	504	300	240	775	594	1150	2020	1280	265	289
10	497	503	513	280	250	955	609	1130	1900	1400	256	289
11	547	495	504	310	270	905	857	1070	1650	1230	238	325
12	566	497	439	330	290	811	1290	1040	1640	1230	247	358
13	574	492	450	350	450	766	1230	1020	1990	1160	230	358
14	577	505	456	380	609	757	1220	1030	2080	1400	238	416
15	589	518	487	300	1580	748	1060	1050	2080	1400	265	416
16	563	515	464	290	2110	722	925	1180	2950	1200	256	416
17	549	509	416	350	2040	681	811	1400	2970	1070	285	428
18	538	505	370	360	1310	656	811	1560	2760	986	294	422
19	535	500	450	360	1460	624	748	1770	2650	848	256	447
20	516	504	549	370	1840	632	722	1860	2800	886	252	422
21	511	499	499	300	2620	624	731	1670	2580	793	243	486
22	517	522	470	250	1670	617	784	1640	2440	757	299	460
23	522	510	420	300	1140	624	945	1740	2800	706	270	447
24	532	498	370	400	848	624	1110	1810	2720	672	280	460
25	537	503	400	410	740	586	1150	1870	2870	706	252	473
26	551	464	415	425	664	609	1130	2220	2800	594	243	549
27	539	430	400	400	664	648	1140	3010	2720	624	265	722
28	532	400	394	380	648	681	1190	3010	2830	521	247	740
29	562	350	398	380	---	672	1230	2800	2800	480	247	722
30	564	400	360	400	---	664	1160	2440	2870	549	265	722
31	558	---	325	400	---	648	---	2180	---	564	285	---
TOTAL	16057	14826	13859	10549	23593	21375	26261	49790	71590	37066	8902	12829
MEAN	518	494	447	340	843	690	875	1606	2386	1196	287	428
MAX	589	558	549	425	2620	955	1290	3010	2970	2830	549	740
MIN	427	350	325	250	200	586	542	1020	1640	480	230	280
AC-FT	31850	29410	27490	20920	46800	42400	52090	98760	142000	73520	17660	25450

CAL YR 1981 TOTAL 300342 MEAN 823 MAX 9100 MIN 180 AC-FT 595700
WTR YR 1982 TOTAL 306697 MEAN 840 MAX 3010 MIN 200 AC-FT 608300

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 (0.8 km) downstream from power plant, 2.0 mi (3.2 km) downstream from Georgetown Dam, 3.5 mi (5.6 km) northwest of Southern Cross, 6.8 mi (10.9 km) south of Philipsburg, and at mile 36.8 (59.2 km).

DRAINAGE AREA.--52.6 mi^2 (136.2 km^2).

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 (1,720 m), 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 (0.061 m) 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 augumented 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.--42 years, 29.6 ft^3/s (0.838 m^3/s), 21,450 acre-ft/yr (26.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 174 ft^3/s (4.93 m^3/s) June 13, 1942, gage height, 1.86 ft (0.567 m); maximum gage height observed, 2.60 ft (0.792 m) 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 observed, 121 ft^3/s (3.43 m^3/s) July 14, gage height, 2.14 ft (0.652 m); minimum daily, 29 ft^3/s (0.82 m^3/s) on many days during October and November.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	29	30	31	30	30	52	91	83	117	34	40
2	30	29	30	31	30	30	52	91	82	116	34	40
3	30	29	30	31	30	30	52	94	71	116	34	40
4	30	29	30	31	30	30	52	94	59	117	35	40
5	30	29	30	30	30	30	52	92	59	117	34	40
6	30	29	30	30	30	30	58	91	58	117	35	39
7	30	29	30	30	30	30	65	91	58	117	35	36
8	30	29	30	30	30	30	65	89	57	117	35	55
9	46	29	30	30	30	30	65	91	56	117	34	59
10	48	29	30	30	30	39	65	77	58	117	35	63
11	48	29	30	30	30	49	65	58	60	117	35	62
12	48	29	30	30	30	52	65	48	60	118	51	63
13	62	29	30	30	30	52	65	45	61	118	71	63
14	62	29	30	30	30	52	65	46	61	119	71	63
15	62	29	30	30	30	53	65	45	61	118	71	63
16	62	29	30	30	30	52	58	45	60	118	72	63
17	62	29	30	30	30	52	72	45	60	118	72	63
18	62	29	30	30	30	52	72	54	60	118	72	62
19	62	29	30	30	30	52	72	64	59	118	72	62
20	62	29	30	30	30	52	72	70	59	118	71	63
21	62	29	30	30	30	52	72	70	60	97	71	62
22	62	29	30	30	30	52	72	70	60	72	71	62
23	62	30	30	30	30	52	88	70	60	58	71	62
24	62	30	30	30	30	52	88	74	59	46	72	62
25	62	30	30	30	37	52	89	79	60	46	72	62
26	46	30	31	30	37	52	91	82	60	46	72	62
27	30	30	31	30	30	52	91	82	59	44	64	63
28	29	30	31	30	30	52	91	82	60	35	41	63
29	29	30	31	30	---	52	91	82	88	35	40	63
30	29	30	31	30	---	52	91	82	117	35	40	63
31	29	---	31	30	---	52	---	82	---	34	40	---
TOTAL	1432	878	936	934	854	1399	2113	2276	1925	2896	1657	1703
MEAN	46.2	29.3	30.2	30.1	30.5	45.1	70.4	73.4	64.2	93.4	53.5	56.8
MAX	62	30	31	31	37	53	91	94	117	119	72	63
MIN	29	29	30	30	30	30	52	45	56	34	34	36
AC-FT	2840	1740	1860	1850	1690	2770	4190	4510	3820	5740	3290	3380

CAL YR 1981 TOTAL 16243 MEAN 44.5 MAX 131 MIN 15 AC-FT 32220
WTR YR 1982 TOTAL 19003 MEAN 52.1 MAX 119 MIN 29 AC-FT 37690

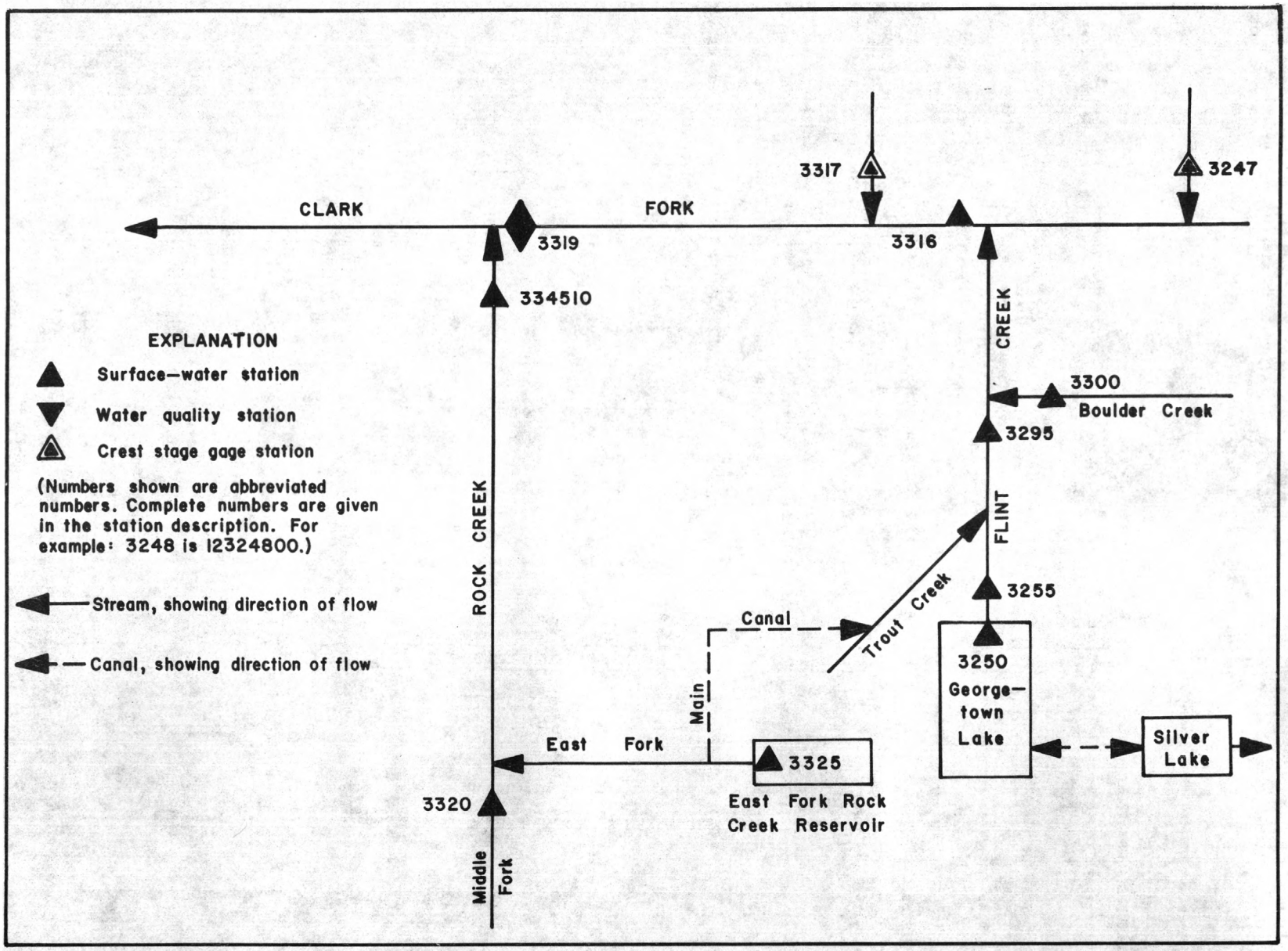

Figure 7. Schematic diagram showing diversion from Rock Creek basin to Flint Creek basin.

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 (0.6 km) west of Maxville and 1.0 mi (1.6 km) upstream from Boulder Creek.

DRAINAGE AREA.--208 mi^2 (539 km^2).

PERIOD OF RECORD.--August 1941 to current year. April 1939 to September 1941 at site 0.5 mi (0.8 km) 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 (1,471.690 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Mar. 3 to Apr. 13, which are fair, and 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. Some regulation by Georgetown Lake (station number 12325000). Diversions for irrigation of about 8,200 acres (33.2 km^2) 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 (152 m) below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek.

AVERAGE DISCHARGE.--41 years, 102 ft^3/s (2.889 m^3/s), 73,900 acre-ft/yr (91.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft^3/s (47.6 m^3/s) Mar. 28, 1943, gage height, 6.79 ft (2.070 m), from rating curve extended above 600 ft^3/s (17.0 m^3/s); maximum gage height, 8.08 ft (2.463 m) Feb. 4, 1963 (backwater from ice); minimum daily discharge, 15 ft^3/s (0.42 m^3/s) Feb. 25, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 548 ft^3/s (15.5 m^3/s) June 30, gage height, 4.88 ft (1.487 m); minimum daily, 40 ft^3/s (1.13 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	96	84	60	73	115	127	266	218	428	156	104
2	121	96	89	62	74	130	117	296	219	395	149	98
3	115	96	82	62	60	125	123	334	201	362	148	100
4	112	94	86	66	47	101	122	305	188	313	155	108
5	110	92	85	66	40	97	118	270	193	312	162	111
6	107	91	99	55	43	92	119	247	167	339	160	108
7	110	92	100	48	52	92	121	242	149	311	175	108
8	117	91	90	52	49	89	120	238	163	316	168	106
9	115	89	87	70	46	109	127	233	147	288	180	108
10	118	88	87	70	50	136	135	225	150	279	165	107
11	140	88	85	66	60	138	203	201	152	259	156	109
12	129	92	84	66	74	114	291	180	175	257	166	127
13	135	94	78	70	90	112	229	175	244	264	168	136
14	135	97	84	72	105	117	227	179	300	350	167	153
15	132	94	81	62	115	119	172	190	309	315	158	166
16	129	92	82	47	115	112	156	209	316	303	150	168
17	131	91	70	52	110	110	163	230	337	319	148	156
18	128	91	60	58	100	108	161	241	340	300	149	151
19	129	87	70	66	115	107	150	271	301	290	141	147
20	128	88	88	66	130	107	146	250	281	263	145	144
21	127	87	83	62	130	107	148	232	271	250	151	153
22	127	93	75	48	110	107	160	240	278	224	132	158
23	127	89	64	45	96	109	200	251	309	215	129	163
24	127	88	67	54	86	113	242	229	340	190	131	167
25	125	87	70	70	80	108	261	226	341	198	131	163
26	124	82	68	79	96	114	242	252	376	184	130	178
27	111	76	66	80	110	125	251	304	355	161	128	220
28	104	64	64	77	100	128	290	285	378	146	105	202
29	104	68	62	76	---	122	295	268	462	135	102	195
30	101	76	60	73	---	116	264	237	500	149	105	183
31	97	---	60	74	---	117	---	217	---	163	104	---
TOTAL	3745	2649	2410	1974	2356	3496	5480	7523	8160	8278	4514	4297
MEAN	121	88.3	77.7	63.7	84.1	113	183	243	272	267	146	143
MAX	140	97	100	80	130	138	295	334	500	428	180	220
MIN	97	64	60	45	40	89	117	175	147	135	102	98
AC-FT	7430	5250	4780	3920	4670	6930	10870	14920	16190	16420	8950	8520

CAL YR 1981 TOTAL 44783 MEAN 123 MAX 616 MIN 45 AC-FT 88830
WTR YR 1982 TOTAL 54882 MEAN 150 MAX 500 MIN 40 AC-FT 108900

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 (0.3 km) upstream from mouth and 0.7 mi (1.1 km) north of Maxville.

DRAINAGE AREA.--71.3 mi^2 (184.7 km^2).

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 (1,448 m), from topographic map. Apr. 15, 1939, to July 7, 1941, nonrecording gage at site 75 ft (23 m) upstream at different datum. July 8-20, 1941, nonrecording gage at site 175 ft (53 m) upstream at datum 1.03 ft (0.314 m) higher.

REMARKS.--Records good except those for Oct. 17-27 and 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 (960,000 m^2), all of which lies below station.

AVERAGE DISCHARGE.--43 years, 48.2 ft^3/s (1.365 m^3/s), 34,920 acre-ft/yr (43.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,460 ft^3/s (41.3 m^3/s) June 19, 1975, gage height, 4.55 ft (1.387 m) in gage well, 4.80 ft (1.463 m), from floodmarks; minimum, 3.0 ft^3/s (0.085 m^3/s) about Mar. 24, 1964, gage height, 0.73 ft (0.223 m), result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 220 ft^3/s (6.23 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge ($m^3/3$)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
May 26	2100	397	11.2	3.36	1.024	June 29	0200	539	15.3	3.71	1.131
June 14	0400	*566	16.0	*3.77	1.149						

Minimum daily discharge, 12 ft^3/s (0.34 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	28	29	19	20	24	25	45	123	268	42	17
2	23	28	30	19	19	24	24	53	120	228	40	16
3	23	27	29	19	18	24	24	65	127	197	39	16
4	22	26	29	20	15	24	24	63	143	179	38	15
5	22	26	30	19	12	23	24	59	138	166	37	15
6	22	25	33	17	14	23	24	56	129	160	36	15
7	23	26	32	18	16	23	24	56	123	149	32	15
8	29	27	31	19	15	24	23	54	126	151	30	14
9	26	28	31	21	15	25	24	52	127	138	43	14
10	25	27	31	19	17	26	24	49	131	133	35	15
11	29	27	31	19	19	26	28	49	166	120	32	16
12	27	27	28	18	20	25	32	50	231	114	39	17
13	26	30	24	19	22	25	31	51	402	114	34	21
14	26	42	23	21	23	25	32	58	481	167	31	22
15	26	47	24	17	24	26	30	69	402	131	29	21
16	26	48	21	18	25	25	29	93	424	122	27	23
17	25	50	18	19	23	25	28	108	484	112	26	22
18	25	54	20	19	22	25	26	124	430	102	25	23
19	25	51	22	18	23	25	25	121	405	95	23	25
20	25	52	21	17	25	25	24	105	418	86	21	26
21	24	54	21	16	26	24	25	111	393	79	26	26
22	24	57	21	15	26	24	27	137	415	74	23	23
23	24	54	21	19	24	24	32	166	412	71	21	20
24	25	53	21	21	22	25	36	178	376	65	20	24
25	26	53	21	22	20	26	39	210	360	63	20	34
26	27	42	21	23	21	25	39	314	338	60	19	34
27	29	32	20	22	23	25	40	313	323	57	19	44
28	30	25	20	21	24	25	44	210	346	55	18	42
29	34	26	19	21	---	25	45	163	432	53	18	42
30	32	28	19	21	---	25	43	138	327	47	19	38
31	28	---	19	21	---	25	---	125	---	42	19	---
TOTAL	802	1120	760	597	573	765	895	3445	8852	3598	881	695
MEAN	25.9	37.3	24.5	19.3	20.5	24.7	29.8	111	295	116	28.4	23.2
MAX	34	57	33	23	26	26	45	314	484	268	43	44
MIN	22	25	18	15	12	23	23	45	120	42	18	14
AC-FT	1590	2220	1510	1180	1140	1520	1780	6830	17560	7140	1750	1380

CAL YR 1981 TOTAL 22038 MEAN 60.4 MAX 1110 MIN 14 AC-FT 43710
WTR YR 1982 TOTAL 22983 MEAN 63.0 MAX 484 MIN 12 AC-FT 45590

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 (0.6 km) southwest of Drummond, 0.9 mi (1.4 km) downstream from Flint Creek, and at mile 417.0 (671.0 km).

DRAINAGE AREA.--2,378 mi^2 (6,159 km^2).

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 current year.

GAGE.--Nonrecording gage read once or twice daily and crest-stage gage since Aug. 12, 1977. Datum of gage is 3,937.95 ft (1,200.287 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for the winter period, which are poor. 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 (350 km^2) 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, 891 ft^3/s (25.23 m^3/s), 645,500 acre-ft/yr (796 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft^3/s (447 m^3/s) May 23, 1981, gage height, 12.44 ft (3.792 m), from floodmarks; minimum daily, 58 ft^3/s (1.64 m^3/s) Aug. 15, 20, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1908 reached a stage of about 15.5 ft (4.72 m) present datum (discharge not determined), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 3,710 ft^3/s (105 m^3/s) June 18, gage height, 7.55 ft (2.301 m); minimum daily, 250 ft^3/s (7.08 m^3/s) Feb. 5, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	650	815	620	540	480	829	888	1650	2560	3100	600	310
2	640	800	660	540	440	950	881	1720	2330	3000	558	351
3	620	800	680	520	400	991	858	1940	2330	2670	529	351
4	620	800	700	480	300	911	866	2070	2330	2380	489	356
5	630	737	730	470	250	829	844	2020	2440	2210	484	385
6	640	758	815	450	280	793	815	1820	2410	2150	446	395
7	650	758	800	470	330	779	815	1720	2320	1880	430	405
8	660	779	786	520	320	786	786	1720	2320	1820	400	385
9	660	779	793	470	320	983	786	1680	2410	1760	395	351
10	680	758	772	440	320	1100	851	1670	2120	1690	410	370
11	700	744	683	490	350	1060	927	1570	2020	1620	410	375
12	760	765	660	520	500	1020	1850	1470	2040	1600	420	446
13	800	772	680	560	600	974	1850	1410	2240	1590	410	546
14	810	793	717	580	750	942	1700	1350	2940	1960	380	588
15	820	793	690	450	1780	966	1470	1420	3200	1870	375	644
16	830	800	703	430	2860	934	1280	1490	3270	1690	380	663
17	830	793	600	500	3130	873	1200	1670	3630	1640	365	644
18	822	793	520	520	2280	836	1100	1900	3670	1450	356	663
19	822	772	620	520	1640	807	1040	2160	3470	1380	324	650
20	793	751	717	500	2840	800	1010	2290	3240	1330	319	663
21	793	765	730	450	3370	793	1000	2150	3030	1250	319	690
22	800	779	680	390	2030	793	1040	2040	2870	1080	319	696
23	807	800	640	440	1480	807	1300	2120	2930	974	319	703
24	829	779	580	480	1150	836	1550	2210	3090	896	319	710
25	836	786	620	500	1000	779	1590	2250	3070	911	319	730
26	836	760	657	520	911	822	1580	2320	3310	911	319	737
27	815	640	644	520	858	858	1580	3260	3100	858	315	950
28	815	560	640	500	844	934	1620	3630	3160	744	310	1180
29	822	520	620	500	---	911	1760	3630	3440	696	315	1120
30	829	580	560	500	---	904	1760	3080	3410	657	319	1070
31	829	---	520	500	---	866	---	2730	---	631	315	---
TOTAL	23448	22529	20837	15270	31813	27466	36597	64160	84700	48398	11968	18127
MEAN	756	751	672	493	1136	886	1220	2070	2823	1561	386	604
MAX	836	815	815	580	3370	1100	1850	3630	3670	3100	600	1180
MIN	620	520	520	390	250	779	786	1350	2020	631	310	310
AC-FT	46510	44690	41330	30290	63100	54480	72590	127300	168000	96000	23740	35950

CAL YR 1981 TOTAL 377843 MEAN 1035 MAX 12500 MIN 196 AC-FT 749500
WTR YR 1982 TOTAL 405313 MEAN 1110 MAX 3670 MIN 250 AC-FT 803900

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 (7.2 km) above Rock Creek, 6.5 mi (10.5 km) southeast of Clinton, and at mile 386.6 (622.0 km).

DRAINAGE AREA.--2,629 mi^2 (6,809 km^2).

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 (1,090 m), 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 (358 km^2) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft^3/s (453 m^3/s) May 24, 1981, gage height, 10.90 ft (3.322 m), from floodmarks; minimum daily, 200 ft^3/s (5.66 m^3/s) Aug. 10, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed 3,910 ft^3/s (111 m^3/s) June 18, gage height, 7.48 ft (2.280 m); minimum daily, 350 ft^3/s (9.91 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	696	822	714	590	662	1000	1040	1840	2550	3500	783	423
2	732	822	786	600	630	1090	1010	1840	2450	3380	741	447
3	673	798	770	580	540	1100	983	2100	2500	3000	694	457
4	680	810	750	540	420	1090	990	2220	2590	2740	668	452
5	696	798	702	520	350	1010	992	2120	2650	2470	649	452
6	679	792	780	510	410	992	967	1940	2550	2390	600	477
7	714	798	829	520	450	1000	967	1860	2500	2200	576	462
8	744	780	798	560	440	926	903	1850	2550	2140	547	477
9	714	780	786	510	430	967	950	1800	2600	2070	564	447
10	730	780	786	500	450	1470	967	1770	2330	2000	514	440
11	768	786	768	550	500	1390	983	1660	2140	1840	536	480
12	829	780	762	600	620	1280	1780	1600	2190	1740	542	530
13	847	786	740	635	720	1110	1780	1510	2420	1760	536	570
14	847	798	726	690	800	1140	1800	1500	3010	2120	525	630
15	867	804	720	673	2010	1140	1520	1540	3400	2030	509	720
16	854	798	750	490	2600	1100	1390	1660	3440	1860	498	714
17	830	798	684	570	3030	1040	1300	1920	3800	1810	493	727
18	816	786	640	640	2280	967	1250	2100	3880	1710	452	741
19	816	786	720	640	2100	975	1190	2310	3730	1620	457	762
20	822	750	786	625	2880	950	1140	2450	3400	1540	423	762
21	820	768	750	580	3710	975	1130	2360	3380	1440	418	804
22	810	780	726	520	3120	942	1130	2260	3200	1340	433	797
23	822	804	680	570	1820	934	1430	2300	3240	1220	423	800
24	829	780	650	610	1400	934	1640	2360	3440	1140	414	804
25	835	798	720	640	1270	934	1740	2440	3420	1130	404	804
26	840	786	708	662	1140	950	1710	2740	3540	1130	391	812
27	841	690	690	690	1120	967	1710	3420	3500	1060	395	1050
28	829	640	680	651	1100	1090	1780	3770	3540	967	400	1200
29	810	600	660	673	---	1130	1960	3750	3860	910	391	1240
30	829	660	630	662	---	1100	1820	3360	3750	841	400	1200
31	830	---	570	657	---	1070	---	2900	---	804	409	---
TOTAL	24449	23158	22461	18458	37002	32763	39952	69250	91550	55902	15785	20681
MEAN	789	772	725	595	1322	1057	1332	2234	3052	1803	509	689
MAX	867	822	829	690	3710	1470	1960	3770	3880	3500	783	1240
MIN	673	600	570	490	350	926	903	1500	2140	804	391	423
AC-FT	48490	45930	44550	36610	73390	64990	79240	137400	181600	110900	31310	41020

CAL YR 1981 TOTAL 415949 MEAN 1140 MAX 12400 MIN 300 AC-FT 825000
WTR YR 1982 TOTAL 451411 MEAN 1237 MAX 3880 MIN 350 AC-FT 895400

PEND OREILLE RIVER BASIN

12331900 CLARK FORK NEAR CLINTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1979 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 23.0°C July 23, 1980, Aug. 7, 19, 1982; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 23.0°C Aug. 7, 19; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

12331900 CLARK FORK NEAR CLINTON, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	10.5	11.5	19.0	17.0	18.0	21.5	18.5	20.0	17.0	14.5	16.0
2	13.5	10.5	12.0	17.0	15.5	16.5	19.5	16.5	18.0	19.0	14.5	17.0
3	13.5	12.0	12.5	17.0	15.0	16.0	19.0	16.0	17.5	20.0	16.0	18.0
4	12.5	11.0	12.0	16.0	14.5	15.0	20.0	15.5	17.5	19.0	17.0	18.0
5	12.5	10.0	11.0	15.0	12.5	13.5	21.0	17.0	19.0	18.5	15.0	16.5
6	12.0	10.5	11.5	15.0	11.5	13.5	22.0	17.5	20.0	18.0	14.5	16.5
7	12.0	10.5	11.0	15.5	14.0	14.5	23.0	18.0	20.5	18.0	14.5	16.5
8	12.5	10.0	11.5	17.0	14.0	15.5	21.0	18.5	19.5	17.5	14.5	16.0
9	13.5	10.5	12.0	17.5	15.5	16.5	21.5	17.5	19.5	18.5	14.5	16.5
10	15.5	12.0	13.5	18.0	15.5	17.0	22.0	18.5	20.0	16.5	13.5	15.0
11	17.0	13.5	15.0	18.5	16.0	17.5	20.0	18.0	19.0	13.5	11.5	12.5
12	16.5	14.5	15.5	18.5	16.0	17.5	19.5	16.5	18.0	12.5	11.5	12.0
13	16.0	14.0	15.0	18.5	16.5	17.5	20.0	15.5	18.0	11.5	9.5	10.5
14	15.0	13.0	14.0	18.0	16.0	17.0	20.0	16.5	18.5	9.5	8.5	9.0
15	15.5	12.5	14.0	17.5	15.0	16.5	20.5	16.0	18.5	12.0	8.5	10.0
16	17.0	14.5	16.0	16.5	15.0	16.0	20.5	17.0	19.0	12.0	9.5	11.0
17	16.5	14.5	15.5	16.5	14.0	15.5	21.0	17.0	19.0	13.5	10.0	11.5
18	16.0	13.5	15.0	17.5	14.5	16.0	22.0	18.0	20.0	14.0	11.0	12.5
19	16.5	14.0	15.5	19.0	15.5	17.5	23.0	18.5	21.0	14.5	12.0	13.0
20	17.0	15.0	16.0	20.5	17.0	18.5	21.5	18.0	20.0	15.0	12.0	13.5
21	17.0	14.5	16.0	21.0	18.0	19.5	22.0	18.0	20.0	14.5	13.5	14.0
22	17.0	15.5	16.5	20.5	18.0	19.0	21.5	18.5	20.0	14.5	12.0	13.0
23	16.0	14.5	15.0	19.5	17.0	18.5	20.5	17.5	19.0	14.5	11.5	13.0
24	16.5	13.5	15.0	20.0	17.0	18.5	20.5	16.0	18.5	13.5	12.0	12.5
25	16.5	15.5	16.0	21.0	18.0	19.5	19.5	16.0	18.0	14.5	12.0	13.0
26	17.5	14.5	16.0	21.5	18.0	20.0	20.0	15.5	18.0	15.0	13.5	14.0
27	17.5	15.5	16.0	22.0	18.5	20.0	20.0	16.0	18.0	13.5	11.5	12.5
28	15.5	14.5	15.0	22.0	19.0	20.5	19.5	16.0	17.5	11.0	10.0	10.5
29	17.5	15.0	16.0	22.0	18.0	20.0	18.0	15.5	16.5	10.5	9.0	9.5
30	18.5	16.0	17.5	22.0	18.5	20.5	18.0	15.0	16.5	9.5	8.5	9.0
31	---	---	---	22.5	19.0	21.0	17.5	14.5	16.0	---	---	---
MONTH	18.5	10.0	14.5	22.5	11.5	17.5	23.0	14.5	18.5	20.0	8.5	13.5
YEAR	23.0	.0	8.5									

PEND OREILLE RIVER BASIN

12331900 CLARK FORK NEAR CLINTON, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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)
JUN					
14...	1200	3020	329	20.0	13.5
18...	1530	3810	294	23.0	16.0
JUL					
15...	1400	2000	365	19.0	16.5
29...	0945	922	464	21.0	18.5
AUG					
27...	0930	387	562	15.5	16.0
SEP					
15...	1000	742	556	5.0	8.5

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 (0.5 km) upstream from East Fork, 2.3 mi (3.7 km) upstream from West Fork, and 13.7 mi (22.0 km) southwest of Philipsburg.

DRAINAGE AREA.--123 mi^2 (319 km^2).

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 (1,641.604 m) National Geodetic Vertical Datum of 1929. Sept. 21, 1937, to May 10, 1942, nonrecording gage at site 600 ft (183 m) upstream at different datum. May 11, 1942, to May 11, 1954, nonrecording gages at site 400 ft (122 m) downstream at different datum. May 12, 1954, to Sept. 30, 1955, nonrecording gage at site 300 ft (91 m) upstream at datum 5.74 ft (1.750 m) higher.

REMARKS.--Records good except those for winter periods and period of no gage-height record, Dec. 21 to Feb. 17, 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.--45 years, 124 ft^3/s (3.512 m^3/s), 13.69 in/yr (348 mm/yr), 89,840 acre-ft/yr (111 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft^3/s (47.6 m^3/s) June 16, 1974, gage height, 5.58 ft (1.701 m); minimum daily, 5.3 ft^3/s (0.15 m^3/s) Feb. 9, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft^3/s (12.7 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
May 27	0200	959	27.2	4.55	1.387	June 24	0800	*1,180	33.4	*4.89	1.490

Minimum discharge, 9.2 ft^3/s (0.26 m^3/s) Nov. 28, gage height, 1.63 ft (0.497 m), but may have been less during winter period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	46	35	33	38	42	33	114	388	739	132	58
2	57	46	35	35	37	44	33	148	371	655	124	56
3	56	44	35	35	37	37	32	197	381	556	118	53
4	53	43	35	35	30	37	32	190	405	500	111	52
5	52	43	40	34	15	37	30	171	412	447	107	51
6	51	42	45	31	17	38	32	165	392	409	103	51
7	52	42	52	29	19	39	34	169	377	377	100	50
8	53	41	45	31	21	43	31	162	357	365	98	49
9	52	40	44	38	24	48	33	156	338	351	111	48
10	52	40	44	36	27	48	31	145	352	340	100	48
11	58	39	44	37	32	42	40	137	404	317	95	51
12	55	40	43	37	37	35	55	146	505	307	101	53
13	52	44	40	39	39	39	51	145	709	298	94	58
14	52	47	38	40	40	42	50	167	869	346	87	58
15	52	46	41	41	42	41	46	197	834	312	82	58
16	50	44	42	29	43	40	40	248	862	280	77	59
17	48	46	38	33	41	39	40	285	985	257	76	59
18	48	47	32	35	35	42	41	351	973	238	73	54
19	49	42	37	35	42	39	37	368	927	225	70	52
20	48	42	50	32	44	37	34	338	926	217	70	50
21	46	41	44	27	40	36	39	346	911	210	75	59
22	44	43	40	22	36	34	44	388	919	201	73	54
23	45	41	39	34	36	37	55	439	954	192	70	50
24	45	43	39	38	32	37	69	478	1060	184	67	48
25	44	45	42	42	34	38	79	542	938	178	65	47
26	45	42	40	42	36	40	81	743	897	170	59	52
27	46	36	39	40	40	40	85	872	833	164	59	80
28	47	26	37	38	42	39	101	726	882	155	56	76
29	47	28	34	38	---	34	108	581	907	150	58	69
30	47	32	34	41	---	32	106	477	817	140	61	62
31	47	---	32	39	---	33	---	418	---	139	62	---
TOTAL	1553	1241	1235	1096	956	1209	1522	10009	20885	9419	2634	1665
MEAN	50.1	41.4	39.8	35.4	34.1	39.0	50.7	323	696	304	85.0	55.5
MAX	60	47	52	42	44	48	108	872	1060	739	132	80
MIN	44	26	32	22	15	32	30	114	338	139	56	47
CFSM	.41	.34	.32	.29	.28	.32	.41	2.63	5.66	2.47	.69	.45
IN.	.47	.38	.37	.33	.29	.37	.46	3.03	6.32	2.85	.80	.50
AC-FT	3080	2460	2450	2170	1900	2400	3020	19850	41430	18680	5220	3300

CAL YR 1981	TOTAL 47669	MEAN 131	MAX 1000	MIN 12	CFSM 1.07	IN 14.42	AC-FT 94550			
WTR YR 1982	TOTAL 53424	MEAN 146	MAX 1060	MIN 15	CFSM 1.19	IN 16.16	AC-FT 106000			

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 (30 m) downstream from private road bridge, 0.2 mi (0.3 km) upstream from mouth, and 3.7 mi (6.0 km) southeast of Clinton.

DRAINAGE AREA.--885 mi^2 (2,292 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 3,519.46 ft (1,072.731 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for February, 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 (152 m) below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Diversions for irrigation of about 16,100 acres (65.2 km^2).

AVERAGE DISCHARGE.--10 years, 616 ft^3/s (17.45 m^3/s), 9.45 in/yr (240 mm/yr), 446,300 acre-ft/yr (550 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,520 ft^3/s (156 m^3/s) June 20, 1975, gage height, 7.49 ft (2.283 m), rating then in use; maximum gage height, 7.53 ft (2.295 m) May 22, 1981, and June 17, 1982; minimum discharge, 45 ft^3/s (1.27 m^3/s) Jan. 3, 1974, gage height, 1.65 ft (0.503 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 8.52 ft (2.597 m), from floodmark, discharge, 6,500 ft^3/s (184 m^3/s); local residents report flood of 1927 reached a stage of about 9.5 ft (2.90 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,610 ft^3/s (45.6 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
May 3	1430	1,720	48.7	5.60	1.707	June 17	1930	*4,870	138	*7.53	2.295
May 27	1130	4,600	130	7.45	2.271						

Minimum daily discharge, 100 ft^3/s (2.83 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	292	251	202	150	195	320	259	999	2110	2550	597	281
2	281	248	232	140	180	330	247	1200	2030	2320	562	277
3	274	245	216	150	150	310	244	1610	2070	2050	534	277
4	273	244	215	160	110	292	244	1630	2210	1830	516	273
5	269	244	213	150	100	282	232	1410	2240	1730	497	273
6	261	241	282	130	120	264	229	1250	2220	1640	475	277
7	262	237	306	120	140	268	235	1230	2150	1480	464	285
8	274	236	273	172	150	257	215	1250	2070	1430	456	283
9	284	231	252	208	140	274	221	1200	1960	1360	479	280
10	285	225	250	184	130	333	229	1110	1920	1340	468	272
11	341	223	248	193	140	348	270	1000	2070	1260	463	277
12	351	233	200	206	160	324	516	990	2380	1210	479	299
13	323	240	170	208	170	300	600	1030	2780	1180	469	322
14	300	252	229	217	200	300	643	1130	3640	1340	439	348
15	295	264	227	220	230	306	573	1360	4200	1320	421	344
16	294	256	228	170	260	291	484	1670	4460	1180	405	343
17	287	255	175	181	290	276	449	1940	4490	1110	382	345
18	277	263	130	196	300	265	435	2230	4340	1040	354	337
19	270	256	200	195	350	259	401	2340	3810	963	335	327
20	268	236	286	187	400	251	366	2130	3590	910	319	320
21	268	241	239	150	470	242	362	2070	3570	873	330	340
22	263	254	227	130	540	236	392	2260	3380	838	330	336
23	252	250	203	150	500	234	518	2560	3540	792	321	321
24	256	238	196	247	420	247	762	2840	3940	748	316	311
25	260	241	201	236	370	230	907	3070	3440	753	309	307
26	257	214	194	214	360	230	886	3630	3260	749	303	331
27	262	160	185	215	330	251	907	4200	2990	716	301	401
28	265	155	180	206	320	264	1030	3800	2960	678	299	448
29	264	150	170	200	---	277	1080	2850	2970	655	277	425
30	267	180	160	203	---	260	997	2490	2770	624	283	396
31	258	---	150	199	---	246	---	2240	---	594	282	---
TOTAL	8633	6963	6639	5687	7225	8567	14933	60719	89560	37263	12465	9656
MEAN	278	232	214	183	258	276	498	1959	2985	1202	402	322
MAX	351	264	306	247	540	348	1080	4200	4490	2550	597	448
MIN	252	150	130	120	100	230	215	990	1920	594	277	272
CFSM	.31	.26	.24	.21	.29	.31	.56	2.21	3.37	1.36	.45	.36
IN.	.36	.29	.28	.24	.30	.36	.63	2.55	3.76	1.57	.52	.41
AC-FT	17120	13810	13170	11280	14330	16990	29620	120400	177600	73910	24720	19150

CAL YR 1981 TOTAL 228555 MEAN 626 MAX 4700 MIN 90 CFSM .71 IN 9.61 AC-FT 453300
WTR YR 1982 TOTAL 268310 MEAN 735 MAX 4490 MIN 100 CFSM .83 IN 11.28 AC-FT 532200

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: September 1979 to current year.

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

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, 20.0°C July 31, Aug. 10, 19, 21; minimum, 0.0°C on many days during November to April.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	6.0	7.5	14.5	12.0	13.0	18.0	14.5	16.5	15.5	11.0	13.0
2	11.0	7.0	8.5	13.5	11.0	12.0	17.5	13.0	15.0	17.0	12.0	14.5
3	10.5	8.0	9.5	13.5	11.0	12.0	16.5	12.5	14.5	17.5	12.5	15.0
4	9.0	7.5	8.0	13.0	11.0	12.0	17.5	12.5	15.0	17.0	14.0	15.0
5	8.0	6.5	7.5	11.5	9.5	10.5	19.0	13.5	16.0	16.5	11.5	13.5
6	8.5	7.0	7.5	12.5	8.5	10.5	19.0	14.0	16.5	16.0	11.0	13.5
7	8.0	6.5	7.5	11.5	10.0	11.0	19.5	14.0	17.0	16.5	11.5	13.5
8	9.5	6.5	8.0	14.0	10.0	12.0	17.0	15.0	16.0	15.5	11.5	13.5
9	10.0	7.5	8.5	14.0	11.0	12.5	18.5	14.5	16.0	16.5	11.5	14.0
10	11.5	7.5	9.5	15.0	11.0	13.0	20.0	14.5	17.0	14.0	11.0	12.5
11	12.0	8.5	10.0	15.0	11.5	13.5	17.0	14.5	15.5	11.5	9.0	10.0
12	11.5	8.5	10.0	15.0	12.0	13.5	17.0	13.0	14.5	11.5	9.5	10.0
13	11.0	9.0	9.5	16.5	12.5	14.0	18.0	12.0	15.0	9.5	8.0	9.0
14	10.0	8.5	9.0	14.5	12.5	13.5	17.0	13.5	15.0	8.0	7.0	7.5
15	10.5	7.5	9.5	15.5	12.0	13.5	18.0	12.5	15.0	11.0	6.5	8.5
16	11.0	9.0	10.5	14.0	11.5	13.0	17.5	13.5	15.5	11.0	7.5	9.0
17	11.5	9.5	10.5	15.0	10.0	12.5	18.5	13.5	16.0	12.5	7.5	9.5
18	11.0	9.0	10.0	15.5	11.5	13.5	19.0	14.0	16.5	13.5	8.5	11.0
19	12.0	9.0	10.5	17.0	12.0	14.5	20.0	15.5	17.5	12.5	9.5	11.0
20	12.0	9.5	11.0	18.0	13.5	15.5	18.5	14.0	16.0	14.0	9.5	11.5
21	12.0	8.5	10.5	18.5	14.0	16.0	20.0	14.5	17.0	14.0	11.0	12.0
22	12.0	10.5	11.5	18.0	14.0	15.5	19.0	15.0	16.5	13.0	9.5	11.0
23	11.0	9.5	10.0	17.5	13.0	15.0	17.5	13.5	15.5	13.5	9.0	11.0
24	12.5	9.5	11.0	18.0	13.0	15.0	18.5	13.0	15.5	11.5	9.0	10.5
25	12.0	10.5	11.0	18.0	13.5	15.5	17.5	12.5	15.0	13.0	10.0	11.5
26	13.0	9.5	11.0	18.5	13.5	16.0	17.5	12.0	15.0	13.0	11.0	11.5
27	12.5	10.5	11.0	19.0	14.0	16.5	17.5	12.5	15.0	11.5	9.5	10.5
28	12.0	10.0	11.0	18.5	14.5	16.5	17.5	12.5	15.0	10.0	8.5	9.5
29	13.5	11.0	12.0	19.0	14.0	16.0	15.5	12.0	14.0	9.0	8.0	8.5
30	14.0	11.5	13.0	19.0	14.0	16.5	16.0	12.5	14.0	9.5	7.0	8.0
31	---	---	---	20.0	15.0	17.5	15.5	12.0	13.5	---	---	---
MONTH	14.0	6.0	10.0	20.0	8.5	14.0	20.0	12.0	15.5	17.5	6.5	11.5
YEAR	20.0	.0	6.5									

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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)
JUN					
10...	1100	1950	82	17.0	8.5
14...	1500	3910	78	17.5	10.0
18...	1220	3920	74	25.5	10.0
23...	1200	3650	73	23.5	10.0
JUL					
15...	1000	1310	100	16.0	12.0
21...	0805	894	120	12.0	13.5
AUG					
26...	1245	304	139	26.0	14.5

PEND OREILLE RIVER BASIN

12335500 NEVADA CREEK ABOVE RESERVOIR, NEAR FINN, MT

LOCATION.--Lat 46°46'42", long 112°46'00", SW¼NW¼SW¼ sec.20, T.12 N., R.9 W., Powell County, Hydrologic Unit 17010203, on right bank 0.7 mi (1.1 km) upstream from Nevada Lake, 1.1 mi (1.8 km) downstream from Gallagher Creek, and 4.0 mi (6.4 km) west of Finn.

DRAINAGE AREA.--116 mi^2 (300 km^2).

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

GAGE.--Water-stage recorder. Altitude of gage is 4,640 ft (1,410 m), from topographic map. Prior to Apr. 30, 1942, nonrecording gage at site 1.0 mi (1.6 km) downstream at different datum. Apr. 30, 1942, to July 26, 1953, water-stage recorder at site 0.2 mi (0.3 km) downstream at different datum. July 26, 1953, to Nov. 6, 1978, water-stage recorder at site 0.8 mi (1.3 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 2,900 acres (11.7 km^2) 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.--43 years, 38.8 ft^3/s (1.099 m^3/s), 28,110 acre-ft/yr (34.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft^3/s (51.0 m^3/s) June 2, 1953, gage height, 6.00 ft (1.829 m), site and datum then in use, from rating curve extended above 400 ft^3/s (11.3 m^3/s) on basis of inflow-outflow study of Nevada Lake; maximum gage height, 7.40 ft (2.256 m) May 29, 1953, site and datum then in use (backwater from diversion dam); minimum discharge, probably less than 2.0 ft^3/s (0.057 m^3/s) at times in 1944, 1957, 1972, and 1973.

EXTREMES FOR CURENT YEAR.--Peak discharges above base of 290 ft^3/s (8.21 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 21	0800	Unknown		*3.97	1.210	May 26	1900	340	9.63	3.06	0.933
Apr. 11	1830	*640	18.1	3.85	1.173						

Minimum discharge, 5.3 ft^3/s (0.15 m^3/s) Sept. 1, 2, gage height, 1.30 ft (0.396 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.9	19	15	12	12	18	41	86	119	96	29	5.7
2	10	18	16	11	12	17	30	94	116	95	27	6.0
3	10	17	16	11	10	18	28	107	123	70	26	8.7
4	10	17	15	12	7.0	17	27	99	136	62	25	8.3
5	9.6	16	13	12	6.0	15	24	86	133	58	25	8.3
6	11	16	14	11	7.0	14	21	77	129	61	24	8.4
7	12	16	15	11	8.0	13	19	75	132	55	20	8.5
8	15	16	14	12	10	13	17	70	134	55	20	7.9
9	14	16	14	13	9.0	20	19	68	120	50	22	8.0
10	14	16	15	12	8.0	50	30	63	115	51	23	7.3
11	20	16	16	12	9.0	166	234	56	112	42	22	7.4
12	16	16	15	12	10	97	288	53	126	42	24	8.5
13	15	18	14	13	11	71	193	51	162	43	22	9.7
14	19	19	14	14	13	69	123	51	201	62	21	11
15	20	18	13	14	20	60	66	66	192	46	20	11
16	20	18	13	13	30	39	48	95	174	44	20	10
17	19	18	13	12	50	28	48	121	181	40	20	10
18	18	17	11	12	45	24	55	147	154	42	20	10
19	18	16	12	13	40	23	37	173	135	50	18	11
20	18	16	14	13	100	23	32	152	121	48	13	11
21	18	17	14	12	300	19	50	132	114	45	13	11
22	18	20	13	10	210	18	109	148	112	42	13	11
23	18	17	13	10	137	21	151	189	115	40	12	10
24	19	16	13	12	80	26	152	197	114	39	11	12
25	19	16	14	13	50	20	126	190	115	37	11	12
26	19	14	13	13	35	23	103	256	98	39	11	12
27	20	12	13	12	25	50	97	290	85	35	11	20
28	19	12	13	12	20	65	103	240	92	34	9.3	21
29	24	13	12	12	---	43	96	204	102	33	6.8	16
30	21	14	12	12	---	31	86	164	75	31	6.4	13
31	20	---	12	13	---	32	---	135	---	30	6.0	---
TOTAL	513.5	490	424	376	1274.0	1143	2453	3935	3837	1517	551.5	314.7
MEAN	16.6	16.3	13.7	12.1	45.5	36.9	81.8	127	128	48.9	17.8	10.5
MAX	24	20	16	14	300	166	288	290	201	96	29	21
MIN	9.6	12	11	10	6.0	13	17	51	75	30	6.0	5.7
AC-FT	1020	972	841	746	2530	2270	4870	7810	7610	3010	1090	624

CAL YR 1981	TOTAL	15948.0	MEAN 43.7	MAX 1240	MIN 5.0	AC-FT	31630	
WTR YR 1982	TOTAL	16828.7	MEAN 46.1	MAX 300	MIN 5.7	AC-FT	33380	

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 (137 m) upstream from bridge on State Highway 200, 0.15 mi (0.24 km) downstream from Dick Creek, 3.2 mi (5.1 km) northwest of Ovando, and at mile 3.7 (6.0 km).

DRAINAGE AREA.--140 mi^2 (363 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 3,987.13 ft (1,215.277 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Nov. 27 to Feb. 28, which are poor. Diversions for irrigation of about 1,700 acres (6.88 km^2) 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.--9 years, 197 ft^3/s (5.579 m^3/s) 142,700 acre-ft/yr (176 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 ft^3/s (60.0 m^3/s) June 16, 1974, gage height, 4.18 ft (1.274 m); minimum daily, 20 ft^3/s (0.57 m^3/s) Jan. 5, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,020 ft^3/s (57.2 m^3/s) June 13, gage height, 4.11 ft (1.253 m); minimum daily, 25 ft^3/s (0.71 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	46	40	38	48	41	65	344	630	1310	140	68
2	45	46	40	36	44	45	63	410	614	1210	138	68
3	44	45	40	37	39	43	65	571	627	1020	133	66
4	44	44	39	38	30	43	65	558	719	854	131	66
5	44	44	38	38	25	42	63	477	782	731	124	65
6	44	44	42	36	26	42	63	428	781	637	119	64
7	46	44	45	35	28	43	62	429	745	573	115	63
8	48	44	45	37	30	43	61	443	712	527	104	63
9	47	44	42	40	29	45	61	428	701	491	103	62
10	47	44	42	39	28	52	63	397	722	463	101	63
11	52	43	40	38	29	56	76	368	848	426	103	63
12	48	43	40	40	30	56	97	378	1050	397	103	64
13	48	44	39	42	32	55	118	398	1770	378	98	65
14	47	45	40	43	36	56	137	468	1820	389	95	63
15	47	45	38	40	41	62	143	621	1830	350	91	63
16	46	44	38	38	46	58	137	819	1870	331	89	61
17	46	45	37	37	48	57	132	1010	1880	310	87	60
18	46	44	36	38	47	56	133	1200	1720	288	85	60
19	46	44	36	39	45	56	123	1180	1550	269	83	59
20	46	44	37	38	41	55	115	1030	1550	252	81	57
21	45	44	37	35	41	55	121	1000	1580	238	80	60
22	44	46	36	30	43	55	150	1130	1550	225	81	57
23	44	46	35	32	40	56	202	1310	1540	214	81	56
24	44	44	35	48	39	57	271	1370	1470	204	79	55
25	46	43	36	58	39	57	297	1410	1260	195	77	55
26	47	42	36	56	39	57	306	1700	1330	188	74	56
27	47	40	36	53	39	59	327	1610	1230	176	72	61
28	47	39	37	50	39	61	360	1260	1130	166	71	65
29	47	39	37	48	---	65	354	997	1170	159	69	62
30	46	40	38	49	---	64	338	805	1460	152	70	58
31	46	---	38	50	---	63	---	677	---	145	69	---
TOTAL	1430	1309	1195	1276	1041	1655	4568	25226	36641	13268	2946	1848
MEAN	46.1	43.6	38.5	41.2	37.2	53.4	152	814	1221	428	95.0	61.6
MAX	52	46	45	58	48	65	360	1700	1880	1310	140	68
MIN	44	39	35	30	25	41	61	344	614	145	69	55
AC-FT	2840	2600	2370	2530	2060	3280	9060	50040	72680	26320	5840	3670

CAL YR 1981 TOTAL 68146 MEAN 187 MAX 1470 MIN 35 AC-FT 135200
WTR YR 1982 TOTAL 92403 MEAN 253 MAX 1880 MIN 25 AC-FT 183300

12339450 CLEARWATER RIVER NEAR CLEARWATER, MT

LOCATION.--Lat 47°01'09", long 113°23'12", in NW¼NW¼NW¼ sec.33, T.15 N., R.14 W., Missoula County, Hydrologic Unit 17010203, Clearwater State Forest, on left bank 700 ft (213 m) upstream from Blanchard Lake, 1.3 mi (2.1 km) northwest of Clearwater, and at mile 4.9 (7.9 km).

DRAINAGE AREA.--345 mi^2 (894 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 3,814.23 ft (1,162.577 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Dec. 31 to Feb. 15, which are fair. A few minor diversions for irrigation above station. During summer months Elbow Lake, 1.5 mi (2.4 km) 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.--8 years, 314 ft^3/s (8.892 m^3/s), 12.36 in/yr (314 mm/yr), 227,500 acre-ft/yr (273 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,900 ft^3/s (82.1 m^3/s) May 17, 1975, gage height, 7.85 ft (2.393 m); minimum, 27 ft^3/s (0.76 m^3/s) Aug. 25, 26, 1977, gage height, 3.69 ft (1.125 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,030 ft^3/s (57.5 m^3/s) May 19, gage height, 7.26 ft (2.213 m); minimum, 42 ft^3/s (1.19 m^3/s) part of each day Sept. 11, 12, gage height, 3.87 ft (1.180 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	64	82	69	84	157	172	1300	1260	1050	181	60
2	56	63	84	66	82	154	175	1330	1140	1010	173	58
3	57	63	83	67	78	150	179	1480	1070	950	165	57
4	57	63	81	68	70	147	183	1680	1040	862	157	55
5	57	61	79	65	56	145	186	1740	1070	769	151	53
6	56	60	87	63	57	142	186	1640	1090	684	145	52
7	56	59	90	60	60	137	184	1520	1080	622	141	51
8	58	58	90	62	62	132	176	1480	1050	580	131	49
9	58	57	88	64	60	128	176	1480	997	550	131	46
10	59	57	87	63	58	137	173	1430	963	520	133	45
11	63	57	85	63	61	143	183	1330	954	479	129	43
12	63	57	82	65	63	149	204	1220	991	440	124	43
13	63	58	77	67	66	153	258	1180	1120	417	120	43
14	61	60	76	69	69	153	349	1190	1320	402	112	43
15	60	60	76	68	73	164	447	1290	1400	388	103	44
16	59	61	78	67	76	171	510	1460	1450	382	108	44
17	58	63	76	66	81	168	534	1670	1480	413	107	45
18	57	65	73	68	86	166	539	1860	1490	411	110	45
19	57	66	71	68	96	166	532	2000	1440	386	116	46
20	57	68	73	67	107	164	511	1920	1380	327	110	47
21	56	70	71	65	126	160	490	1850	1340	286	102	49
22	55	72	69	58	142	155	482	1790	1330	261	89	52
23	54	85	69	60	150	152	504	1790	1320	236	76	53
24	55	103	69	85	162	158	589	1820	1270	215	76	54
25	55	110	71	92	165	154	746	1820	1190	202	74	55
26	56	110	72	95	168	152	912	1870	1120	177	71	58
27	58	106	73	97	168	152	1060	1980	1060	186	68	70
28	60	98	74	95	162	155	1190	1930	1020	180	65	79
29	63	91	73	92	---	159	1290	1760	1010	171	63	84
30	64	87	72	89	---	164	1320	1600	1050	166	62	86
31	64	---	71	86	---	167	---	1420	---	179	61	---
TOTAL	1807	2152	2402	2229	2688	4754	14440	49830	35495	13901	3454	1609
MEAN	58.3	71.7	77.5	71.9	96.0	153	481	1607	1183	448	111	53.6
MAX	64	110	90	97	168	171	1320	2000	1490	1050	181	86
MIN	54	57	69	58	56	128	172	1180	954	166	61	43
CFSM	.17	.21	.23	.21	.28	.44	1.39	4.66	3.43	1.30	.32	.16
IN.	.19	.23	.26	.24	.29	.51	1.56	5.37	3.83	1.50	.37	.17
AC-FT	3580	4270	4760	4420	5330	9430	28640	98840	70400	27570	6850	3190

CAL YR 1981 TOTAL 111548 MEAN 306 MAX 1700 MIN 38 CFSM .89 IN 12.03 AC-FT 221300
WTR YR 1982 TOTAL 134761 MEAN 369 MAX 2000 MIN 43 CFSM 1.07 IN 14.53 AC-FT 267300

12340000 BLACKFOOT RIVER NEAR BONNER, MT

LOCATION.--Lat 46°53'59", long 113°45'20", in SE¼SE¼NW¼ sec.9, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, Lolo National Forest, on right bank 5.0 mi (8.0 km) downstream from Union Creek, 5.6 mi (9.0 km) northeast of Bonner, and at mile 7.3 (11.7 km).

DRAINAGE AREA.--2,290 mi^2 (5,931 km^2).

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 (1,019.483 m) 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 (11 km) downstream at different datum. Oct. 4, 1939, to Sept. 30, 1955, nonrecording gage at site 1.3 mi (2.1 km) downstream at datum 21.82 ft (6.651 m) lower.

REMARKS.--Records good except those for Dec. 15 to Feb. 17, which are poor. Diversions for irrigation of about 20,000 acres (80.9 km^2) 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.--46 years (water years 1900-01, 1904, 1940-82), 1,658 ft^3/s (46.95 m^3/s), 9.83 in/yr (250 mm/yr) 1,201,000 acre-ft/yr (1.48 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft^3/s (544 m^3/s) June 10, 1964, gage height, 10.89 ft (3.319 m); minimum daily, 200 ft^3/s (5.66 m^3/s) Jan. 4, 5, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,200 ft^3/s (289 m^3/s) June 17, gage height, 8.34 ft (2.542 m); minimum daily, 350 ft^3/s (9.91 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	655	623	600	470	510	808	986	3620	5520	7160	1440	800
2	653	616	621	460	480	801	959	3830	5230	6890	1430	783
3	649	615	609	450	430	815	964	4440	5130	6410	1390	764
4	633	615	590	460	380	809	965	4850	5410	5680	1370	738
5	628	608	652	470	350	777	945	4780	5840	5100	1320	730
6	621	604	625	430	370	754	931	4490	6030	4660	1270	727
7	622	602	651	440	400	739	911	4310	5940	4270	1220	726
8	646	602	633	460	420	726	872	4300	5760	4060	1190	716
9	647	596	615	490	430	775	880	4260	5550	3850	1180	709
10	641	592	592	530	420	1070	879	4110	5460	3650	1150	704
11	673	589	582	560	440	1330	1040	3870	5740	3420	1150	709
12	674	591	519	580	470	1320	1550	3700	6380	3220	1130	719
13	660	604	555	580	500	1210	2000	3640	7990	3080	1120	753
14	643	612	604	570	550	1110	2230	3810	8990	3160	1100	761
15	647	614	590	500	600	1120	2220	4320	9250	3110	1060	784
16	641	615	600	430	700	1100	2040	5120	9610	2890	1040	785
17	635	617	550	410	800	1010	1940	6010	9950	2820	1010	779
18	627	619	510	450	930	954	1930	7010	9590	2690	988	775
19	610	611	540	510	1050	902	1850	7590	8990	2550	984	764
20	612	606	600	550	1220	894	1740	7340	8690	2390	952	751
21	607	604	560	530	1370	873	1690	7070	8540	2240	934	762
22	594	618	590	470	1390	845	1790	7270	8370	2110	919	750
23	594	625	600	400	1260	841	2140	7930	8200	2020	894	743
24	600	635	620	440	1100	903	2700	8280	7940	1920	874	731
25	600	646	610	510	993	858	3050	8530	7310	1850	855	720
26	602	637	590	540	927	847	3150	9430	7320	1780	839	718
27	602	587	540	580	887	872	3260	9570	7050	1710	817	785
28	602	566	520	600	821	933	3500	8750	6750	1660	801	865
29	604	550	500	590	---	1020	3640	7680	6910	1600	788	899
30	620	540	490	570	---	1020	3620	6780	7370	1530	789	863
31	629	---	490	540	---	993	---	6030	---	1500	801	---
TOTAL	19471	18159	17948	15570	20198	29029	56372	182720	216810	100980	32805	22813
MEAN	628	605	579	502	721	936	1879	5894	7227	3257	1058	760
MAX	674	646	652	600	1390	1330	3640	9570	9950	7160	1440	899
MIN	594	540	490	400	350	726	872	3620	5130	1500	788	704
CFSM	.27	.26	.25	.22	.32	.41	.82	2.57	3.16	1.42	.46	.33
IN.	.32	.29	.29	.25	.33	.47	.92	2.97	3.52	1.64	.53	.37
AC-FT	38620	36020	35600	30880	40060	57580	111800	362400	430000	200300	65070	45250

CAL YR 1981 TOTAL 584058 MEAN 1600 MAX 12000 MIN 353 CFSM .70 IN 9.49 AC-FT 1158000
WTR YR 1982 TOTAL 732875 MEAN 2008 MAX 9950 MIN 350 CFSM .88 IN 11.91 AC-FT 1454000

12340500 CLARK FORK ABOVE MISSOULA, MT

LOCATION.--Lat 46°52'38", long 113°55'53", in NW¼NW¼NW¼ sec.19, T.13 N., R.18 W., Missoula County, Hydrologic Unit 17010204, on right bank 0.2 mi (0.3 km) downstream from county road bridge, 2.8 mi (4.5 km) east of Missoula, 2.8 mi (4.5 km) downstream from Milltown Dam, 3.0 mi (4.8 km) downstream from Blackfoot River, and at mile 361.6 (581.8 km).

DRAINAGE AREA.--5,999 mi^2 (15,537 km^2).

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 (974.842 m) 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 excellent except those for January and February, which are fair. Diurnal fluctuation caused by powerplant at Milltown. Diversions for irrigation of about 120,000 acres (490 km^2) above station.

AVERAGE DISCHARGE.--53 years, 3,055 ft^3/s (86.52 m^3/s), 2,213,000 acre-ft/yr (2.73 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft^3/s (915 m^3/s) June 21, 1975, gage height, 13.75 ft (4.191 m); minimum, 115 ft^3/s (3.26 m^3/s) Oct. 25, 1943, gage height, 0.64 ft (0.195 m), powerplant shutdown; minimum daily, 340 ft^3/s (9.63 m^3/s) Sept. 27, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a discharge of 48,000 ft^3/s (1,400 m^3/s), furnished by The Montana Power Company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,500 ft^3/s (524 m^3/s) June 17, gage height, 10.31 ft (3.142 m); minimum daily discharge, 900 ft^3/s (25.5 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1690	1760	1600	1240	1530	2220	2350	6690	10900	13800	2820	1540
2	1640	1750	1650	1210	1490	2250	2320	7090	10200	13200	2770	1540
3	1680	1740	1610	1200	1280	2400	2280	8330	10000	12100	2660	1520
4	1630	1730	1570	1250	1000	2350	2280	9060	10400	10800	2650	1500
5	1620	1720	1540	1300	900	2230	2230	8820	11000	9750	2490	1480
6	1610	1710	1700	1200	950	2130	2190	8090	11200	9030	2390	1480
7	1630	1700	1870	1250	1050	2080	2180	7750	10900	8230	2250	1500
8	1690	1700	1820	1400	1150	2040	2090	7700	10600	7780	2220	1510
9	1730	1630	1730	1500	1200	2040	2080	7600	10400	7400	2210	1480
10	1730	1680	1680	1500	1200	2690	2130	7350	10000	7080	2210	1470
11	1810	1650	1690	1550	1250	3260	2290	6930	10100	6670	2140	1450
12	1910	1650	1540	1610	1350	3110	3540	6570	11000	6280	2280	1490
13	1910	1700	1400	1630	1450	2880	4530	6420	13200	6070	2170	1610
14	1870	1700	1500	1630	1590	2700	4800	6580	15700	6310	2070	1720
15	1880	1720	1560	1520	2440	2700	4740	7270	16800	6580	2080	1870
16	1880	1750	1600	1140	3390	2710	4200	8530	17300	6010	1940	1870
17	1840	1720	1510	1090	4560	2500	3960	10000	18100	5790	1900	1900
18	1810	1720	1320	1300	4220	2390	3810	11800	18000	5460	1860	1900
19	1780	1710	1420	1500	3550	2280	3640	12900	17100	5140	1750	1880
20	1760	1690	1710	1550	4230	2230	3430	12700	16300	4850	1750	1880
21	1770	1680	1620	1400	5260	2180	3340	12100	16000	4570	1720	1920
22	1750	1710	1540	1150	5630	2120	3430	12200	15500	4340	1720	1930
23	1740	1750	1560	1100	4140	2090	4050	13300	15300	4100	1690	1890
24	1740	1730	1480	1200	3300	2200	5070	14100	15400	3870	1650	1870
25	1750	1740	1460	1660	2740	2150	5770	14400	14700	3760	1630	1870
26	1740	1720	1470	1720	2560	2080	5960	15800	14600	3670	1570	1900
27	1770	1520	1440	1810	2450	2140	6060	17400	14100	3520	1560	2120
28	1760	1390	1360	1810	2310	2280	6470	17200	13700	3380	1540	2490
29	1750	1390	1310	1750	---	2460	6870	15300	13900	3010	1510	2630
30	1770	1400	1300	1690	---	2460	6810	13600	14400	2680	1500	2540
31	1780	---	1330	1600	---	2410	---	12000	---	2900	1520	---
TOTAL	54420	50160	47890	44460	68170	73760	114900	325580	406800	198130	62220	53750
MEAN	1755	1672	1545	1434	2435	2379	3830	10500	13560	6391	2007	1792
MAX	1910	1760	1870	1810	5630	3260	6870	17400	18100	13800	2820	2630
MIN	1610	1390	1300	1090	900	2040	2080	6420	10000	2680	1500	1450
AC-FT	107900	99490	94990	88190	135200	146300	227900	645800	806900	393000	123400	106600

CAL YR 1981 TOTAL 1251018 MEAN 3427 MAX 28900 MIN 689 AC-FT 2481000
WTR YR 1982 TOTAL 1500240 MEAN 4110 MAX 18100 MIN 900 AC-FT 2976000

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-71, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: June 1977 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 22.0°C July 23, 24, 1977, minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.0°C July 27; minimum, 0.0°C on many days during November to February.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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)
JUL					
13...	1215	6080	236	26.0	15.5
AUG					
26...	0815	1470	307	15.0	17.0

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 (1.0 km) downstream from Painted Rocks Lake, 6.4 mi (10.3 km) upstream from Nez Perce Creek, 16.1 mi (25.9 km) southwest of Conner, and at mile 19.2 (30.9 km).

DRAINAGE AREA.--317 mi^2 (821 km^2).

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 (1,396.41 m) National Geodetic Vertical Datum of 1929 (U.S. Forest Service bench mark).

REMARKS.--Records excellent except those for Jan. 4 to Feb. 17, which are poor. Flow regulated by Painted Rocks Lake (station 12342000). Diversions for irrigation of about 200 acres (0.81 km^2) above station. Several observations of water temperature and specific conductance were made during the year and are available in files of Helena district office. Specific conductance data collected at this station are published as miscellaneous water-quality data in the back of this report.

AVERAGE DISCHARGE.--41 years, 291 ft^3/s (8.241 m^3/s), 210,800 acre-ft/yr (260 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,060 ft^3/s (115 m^3/s) May 9, 1947, gage height, 6.18 ft (1.884 m); minimum, 0.2 ft^3/s (0.006 m^3/s) Nov. 25, 1952; minimum daily, 0.6 ft^3/s (0.017 m^3/s) May 3-7, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,080 ft^3/s (87.2 m^3/s) May 27, gage height, 5.21 ft (1.588 m); minimum daily, 40 ft^3/s (1.13 m^3/s) Feb. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	123	118	294	65	112	134	490	1210	1230	224	289
2	100	123	118	285	63	113	116	499	1140	1110	212	289
3	123	123	118	273	58	110	124	521	1190	974	206	289
4	123	123	118	290	40	106	116	286	1280	872	201	289
5	123	123	118	320	40	103	103	148	1330	807	197	289
6	123	123	118	100	42	98	107	153	1300	737	197	286
7	123	123	118	65	44	97	105	155	1250	671	197	285
8	123	123	118	65	47	90	89	159	1170	638	197	285
9	123	123	111	65	46	101	104	163	1080	634	197	285
10	123	123	206	63	45	107	96	165	1070	581	197	285
11	123	123	297	65	48	125	124	167	1150	537	197	285
12	123	123	293	65	52	132	209	169	1420	513	197	285
13	123	123	289	65	56	135	240	171	1840	483	197	284
14	123	123	286	65	60	131	276	172	2270	486	197	281
15	123	123	285	65	65	131	269	175	2370	449	197	281
16	123	123	282	62	72	123	237	179	2440	411	197	281
17	123	123	319	65	78	119	228	183	2580	387	197	281
18	123	123	363	65	84	116	218	188	2550	365	197	279
19	123	121	356	65	84	113	197	554	2390	345	197	277
20	123	120	352	63	90	108	174	1390	2300	326	197	277
21	123	121	348	60	108	104	191	1320	2190	312	197	277
22	123	120	355	60	153	97	229	1410	2090	296	197	198
23	123	120	358	64	156	102	305	1640	2060	281	197	111
24	123	120	355	70	122	103	339	1800	1970	276	196	111
25	123	120	346	68	110	98	376	1920	1820	273	193	111
26	123	120	342	66	125	113	409	2430	1690	269	227	111
27	123	120	333	65	127	121	433	3000	1590	262	283	111
28	123	120	324	65	109	131	454	2650	1510	250	293	111
29	123	120	315	65	---	138	472	2030	1460	247	293	111
30	123	118	311	65	---	129	483	1640	1320	238	292	111
31	123	---	302	65	---	129	---	1370	---	232	289	---
TOTAL	3746	3654	8072	3178	2189	3535	6957	27297	51030	15492	6652	7045
MEAN	121	122	260	103	78.2	114	232	881	1701	500	215	235
MAX	123	123	363	320	156	138	483	3000	2580	1230	293	289
MIN	79	118	111	60	40	90	89	148	1070	232	193	111
AC-FT	7430	7250	16010	6300	4340	7010	13800	54140	101200	30730	13190	13970

CAL YR 1981 TOTAL 111739 MEAN 306 MAX 1720 MIN 79 AC-FT 221600
WTR YR 1982 TOTAL 138847 MEAN 380 MAX 3000 MIN 40 AC-FT 275400

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 (14 m) downstream from bridge on U.S. Highway 93, 0.3 mi (0.5 km) downstream from Chaffin Creek, 4.1 mi (6.6 km) southeast of Darby, and at mile 77.2 (124.2 km).

DRAINAGE AREA.--1,049 mi^2 (2,717 km^2).

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 (1,201.869 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1939, nonrecording gage at highway bridge 45 ft (14 m) upstream at same datum.

REMARKS.--Records good. Some regulation by Painted Rocks Lake (station number 12342000). Diversions for irrigation of about 5,000 acres (20 km^2) above station. Ditch bypassing station irrigates about 500 acres (2.0 km^2) 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.--45 years, 936 ft^3/s (26.51 m^3/s), 678,100 acre-ft/yr (836 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft^3/s (326 m^3/s) May 9, 1947, gage height, 8.18 ft (2.493 m); maximum gage height, 8.42 ft (2.566 m) June 17, 1974 (backwater from log jam); minimum discharge observed, about 71 ft^3/s (2.01 m^3/s) Feb. 9, 1939; minimum gage height, 0.04 ft (0.012 m) Nov. 21, 1979, result of freezeup and regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,000 ft^3/s (255 m^3/s) May 27, gage height, 7.10 ft (2.164 m); minimum, 122 ft^3/s (3.46 m^3/s) Feb. 4, gage height, 0.15 ft (0.046 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	282	270	443	222	453	482	2090	3620	4430	734	458
2	247	283	298	411	220	470	435	2390	3510	3980	676	448
3	280	279	284	416	193	457	444	3110	3710	3480	623	445
4	283	279	277	432	145	437	424	2810	3900	3110	579	436
5	280	276	281	480	147	416	393	2190	3920	2830	557	429
6	275	273	314	326	170	390	391	1940	3790	2550	537	423
7	281	272	321	208	199	389	385	1900	3630	2330	512	416
8	307	270	304	229	201	365	341	1910	3440	2240	509	411
9	301	261	292	228	193	400	378	1850	3290	2260	530	404
10	314	255	314	216	194	452	358	1710	3360	2150	507	406
11	360	263	463	227	218	526	456	1590	3820	2050	501	414
12	342	271	417	223	216	536	791	1650	4640	2000	542	423
13	319	281	444	222	223	512	914	1710	6100	1970	503	445
14	306	298	474	225	281	515	1050	2020	7420	2240	483	456
15	301	298	463	223	323	523	1010	2480	7330	1910	489	452
16	300	293	453	203	355	488	886	3200	7480	1690	509	447
17	295	295	403	226	389	462	829	3680	7830	1500	495	441
18	292	300	489	221	384	444	801	3990	7430	1390	467	433
19	290	279	574	218	448	430	731	3740	6820	1340	461	428
20	290	280	620	207	527	407	659	4050	6720	1340	454	428
21	288	282	587	176	758	388	681	3980	6430	1290	458	436
22	277	310	548	183	913	369	784	4420	6430	1210	442	420
23	276	294	510	210	794	365	1150	5180	6270	1120	427	291
24	285	297	511	258	621	378	1630	5390	5810	1020	419	277
25	282	285	540	233	535	362	1920	5790	5480	971	406	275
26	283	245	515	247	539	400	1970	7650	5310	935	394	289
27	303	226	510	241	519	436	1970	8540	5150	882	437	396
28	297	215	491	229	453	479	2160	7170	5060	836	456	409
29	291	218	476	229	---	506	2140	5570	5220	805	455	392
30	291	254	471	228	---	482	2060	4570	4660	753	472	356
31	283	---	441	226	---	468	---	3930	---	770	474	---
TOTAL	9074	8214	13355	8044	10380	13705	28623	112200	157580	57382	15508	12184
MEAN	293	274	431	259	371	442	954	3619	5253	1851	500	406
MAX	360	310	620	480	913	536	2160	8540	7830	4430	734	458
MIN	247	215	270	176	145	362	341	1590	3290	753	394	275
AC-FT	18000	16290	26490	15960	20590	27180	56770	222500	312600	113800	30760	24170

CAL YR 1981 TOTAL 332184 MEAN 910 MAX 4930 MIN 213 AC-FT 658900
WTR YR 1982 TOTAL 446249 MEAN 1223 MAX 8540 MIN 145 AC-FT 885100

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 (1.6 km) downstream from Bitterroot River, 4.5 mi (7.2 km) west of Missoula, and at mile 349.5 (562.3 km).

DRAINAGE AREA.--9,003 mi^2 (23,318 km^2).

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 (939.967 m) 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 Bonner 14.9 mi (24.0 km) upstream. Diversions for irrigation of about 235,000 acres (951 km^2) above station.

AVERAGE DISCHARGE.--53 years, 5,549 ft^3/s (157.1 m^3/s), 4,020,000 acre-ft/yr (4.96 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,800 ft^3/s (1,500 m^3/s) May 23, 1948, gage height, 12.08 ft (3.682 m); minimum, 388 ft^3/s (11.0 m^3/s) Jan. 18, 1933; minimum gage height, 0.30 ft (0.091 m) about Jan. 16, 1954, Mar. 24, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41,000 ft^3/s (1,160 m^3/s) June 18, gage height, 10.37 ft (3.161 m); minimum, 1,050 ft^3/s (29.7 m^3/s) Feb. 6, gage height, 0.70 ft (0.213 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2710	2780	2430	2170	2350	4080	3760	11100	20000	30500	4520	2320
2	2660	2750	2540	2000	2320	4030	3710	11700	18600	29400	4480	2320
3	2710	2740	2640	1960	2000	4130	3640	14000	18500	26700	4320	2290
4	2680	2710	2570	2080	1640	4090	3620	15900	19900	23200	4200	2250
5	2680	2680	2500	2150	1170	3920	3550	15000	20800	20500	4020	2220
6	2700	2660	2670	1880	1140	3740	3470	13200	20600	18700	3780	2200
7	2690	2640	3110	1690	1390	3620	3440	12300	19800	16600	3560	2200
8	2730	2620	3070	1820	1600	3550	3330	12100	19000	15400	3440	2200
9	2790	2540	2900	2080	1620	3490	3280	11900	18300	14600	3430	2150
10	2820	2560	2770	2020	1620	4070	3330	11500	18000	14100	3470	2130
11	2910	2530	2760	2060	1580	4840	3450	10700	19000	13300	3360	2140
12	3100	2530	2680	2130	1700	4850	4710	10100	21500	12600	3480	2230
13	3100	2600	2420	2200	1920	4610	6290	10000	25900	12200	3450	2400
14	3020	2630	2560	2280	2240	4400	6960	10300	32500	13000	3290	2570
15	2960	2660	2720	2260	3540	4400	7370	11900	36800	13700	3260	2770
16	2940	2710	2730	1790	5010	4420	6810	15000	38800	12000	3100	2830
17	2910	2710	2620	1560	6230	4140	6380	18600	40000	11100	2990	2850
18	2880	2720	2110	1970	6240	3950	6090	22000	40800	10200	2920	2870
19	2840	2720	2240	2170	5500	3820	5830	23800	39100	9520	2770	2840
20	2800	2670	2900	2230	6160	3720	5520	22200	36700	8980	2700	2820
21	2780	2630	3040	1900	7410	3620	5280	21200	36000	8440	2650	2880
22	2760	2660	2860	1520	8970	3500	5310	21800	35600	7920	2640	2930
23	2750	2760	2620	1300	7460	3440	6010	24400	35100	7380	2610	2880
24	2750	2760	2550	1680	6160	3520	7530	26700	35100	6870	2530	2810
25	2770	2740	2610	2360	5250	3500	9100	27500	33700	6450	2480	2750
26	2740	2700	2640	2480	4780	3390	9870	30400	32100	6150	2420	2770
27	2800	2520	2600	2530	4550	3430	10200	34300	31000	5830	2360	3060
28	2840	2190	2480	2520	4300	3590	10800	36000	30100	5510	2310	3780
29	2840	2150	2350	2420	---	3830	11500	32000	30900	5100	2270	4060
30	2820	2170	2330	2380	---	3890	11300	26500	32500	4640	2280	3900
31	2820	---	2260	2380	---	3830	---	22600	---	4650	2320	---
TOTAL	87300	78440	81280	63970	105850	121410	181440	586700	856700	395240	97410	80420
MEAN	2816	2615	2622	2064	3780	3916	6048	18930	28560	12750	3142	2681
MAX	3100	2780	3110	2530	8970	4850	11500	36000	40800	30500	4520	4060
MIN	2660	2150	2110	1300	1140	3390	3280	10000	18000	4640	2270	2130
AC-FT	173200	155600	161200	126900	210000	240800	359900	1164000	1699000	784000	193200	159500

CAL YR 1981 TOTAL 2183040 MEAN 5981 MAX 42400 MIN 1120 AC-FT 4330000
WTR YR 1982 TOTAL 2736160 MEAN 7496 MAX 40800 MIN 1140 AC-FT 5427000

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

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 21, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 23.0°C July 19-21, 1979; minimum, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.5°C July 31, Aug. 19; minimum, 0.0°C on many days during January and February.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (FTU) (00076)	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)
OCT 28...	1100	2950	2	293	8.3	8.0	8.0	16	11.2	108	17	26
DEC 30...	1000	2340	2	288	8.0	-5.0	.5	.80	12.5	98	<12	K38
FEB 18...	1130	6510	40	233	7.9	.0	.5	22	11.9	92	37	--
APR 21...	1000	5450	0	219	8.1	2.0	5.0	2.9	11.5	100	18	45
MAY 28...	1300	35800	61	105	7.6	5.0	6.5	30	10.3	94	18	840
AUG 26...	1530	2380	0	261	8.6	28.5	17.0	1.0	9.6	113	--	31

DATE	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) (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)	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...	K6	150	36	42	10	7.9	.3	2.1	110	47	2.9	.3
DEC 30...	K20	130	19	37	8.9	7.0	.3	1.8	110	38	2.0	.2
FEB 18...	3100	110	24	31	7.0	5.9	.3	6.6	82	27	16	.2
APR 21...	K1	110	17	30	8.0	6.9	.3	1.7	91	25	2.3	.2
MAY 28...	960	43	2.0	12	3.2	2.5	.2	1.2	41	7.0	1.0	.1
AUG 26...	740	120	16	34	9.1	6.6	.3	1.9	110	22	2.3	.2

DATE	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)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (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)
OCT 28...	14	189	192	.26	1510	6	<.09	.11	.43	.03	.03	<.01
DEC 30...	14	170	175	.23	1070	11	.25	.11	.31	.03	.03	.03
FEB 18...	12	156	155	.21	2740	80	.22	.43	2.5	.77	.29	.14
APR 21...	14	148	143	.20	2180	2	<.10	.13	.73	.02	.03	<.02
MAY 28...	11	71	63	.10	6860	121	<.10	.01	.90	.12	.07	.01
AUG 26...	13	149	153	.20	957	10	<.10	.13	.40	.07	<.01	.02

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	DATE	TIME	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
OCT			MAY		
21...	1500	15	23...	1230	236
DEC			JUL		
17...	1500	14	23...	1500	14
MAR			SEP		
23...	1400	0	23...	1500	0

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT										
28...	1100	5	3	200	100	1	<1	<10	0	<1
FEB										
18...	1130	20	12	100	63	<1	<1	10	<10	3
MAY										
28...	1300	7	2	<100	41	1	<3	<10	<10	3
AUG										
26...	1530	3	3	<100	120	<1	<1	<10	<10	<1

DATE	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
OCT										
28...	<3	8	3	170	<10	12	<1	20	5	.1
FEB										
18...	<3	110	26	2900	88	12	<1	340	34	.2
MAY										
28...	<1	44	5	2800	55	10	<1	150	14	.1
AUG										
26...	1	6	2	110	7	<1	<1	10	4	<.1

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT									
28...	.0	3	<1	0	0	<1	<1	30	6
FEB									
18...	<.1	4	<1	<1	<1	<1	<1	300	40
MAY									
28...	<.1	5	<1	<1	<1	<1	<1	80	<12
AUG									
26...	<.1	5	1	<1	<1	<1	<1	10	<3

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN JUNE	MEAN	MAX	MIN JULY	MEAN	MAX	MIN AUGUST	MEAN	MAX	MIN SEPTEMBER	MEAN
1	---	---	---	---	---	---	21.0	17.5	19.0	18.0	13.5	15.5
2	---	---	---	---	---	---	19.5	17.0	18.0	18.0	13.5	16.0
3	---	---	---	---	---	---	18.0	16.0	17.0	19.0	14.5	16.5
4	---	---	---	---	---	---	18.5	15.5	16.5	18.0	15.5	17.0
5	---	---	---	---	---	---	19.5	16.0	17.5	18.5	14.5	16.0
6	---	---	---	---	---	---	21.0	17.0	18.5	18.0	14.0	16.0
7	---	---	---	---	---	---	21.0	17.5	19.0	18.0	13.5	15.5
8	---	---	---	---	---	---	19.5	17.5	18.5	17.5	13.5	15.5
9	---	---	---	---	---	---	20.5	17.0	18.5	17.5	13.5	15.5
10	---	---	---	---	---	---	21.0	17.5	19.0	15.5	14.0	14.5
11	---	---	---	---	---	---	20.0	17.0	18.5	13.5	12.0	13.0
12	---	---	---	---	---	---	18.0	16.0	17.0	13.0	11.5	12.0
13	---	---	---	---	---	---	18.5	15.0	16.5	11.5	10.5	11.0
14	---	---	---	---	---	---	18.5	16.0	17.0	10.5	9.5	10.0
15	---	---	---	---	---	---	19.5	15.5	17.5	12.0	8.5	10.0
16	---	---	---	---	---	---	20.0	16.0	18.0	12.5	9.5	11.0
17	---	---	---	---	---	---	20.5	17.0	18.5	13.5	9.5	11.5
18	---	---	---	---	---	---	21.0	17.0	19.0	14.5	10.5	12.0
19	---	---	---	---	---	---	21.5	17.5	19.5	14.5	11.5	13.0
20	---	---	---	---	---	---	21.0	17.5	19.0	14.5	12.0	13.0
21	---	---	---	19.5	16.5	---	21.0	17.0	19.0	14.5	12.5	13.5
22	---	---	---	19.5	17.5	18.5	21.0	17.0	19.0	15.0	12.0	13.5
23	---	---	---	18.5	16.5	17.5	20.0	16.5	18.0	15.0	12.0	13.0
24	---	---	---	18.5	16.0	17.5	20.0	16.0	18.0	13.5	11.5	12.5
25	---	---	---	19.0	17.0	18.0	19.5	15.5	17.5	14.5	11.0	13.0
26	---	---	---	19.5	17.0	18.5	19.5	15.0	17.0	14.0	12.5	13.0
27	---	---	---	20.0	18.0	19.0	19.0	15.0	17.0	13.0	12.0	12.5
28	---	---	---	20.0	18.5	19.5	19.0	14.5	17.0	12.0	10.5	11.5
29	---	---	---	20.5	18.0	19.5	16.5	14.5	15.5	11.0	9.5	10.5
30	---	---	---	21.0	18.5	19.5	16.5	14.0	15.0	11.0	9.0	10.0
31	---	---	---	21.5	18.5	20.0	17.5	13.5	15.0	---	---	---
MONTH	---	---	---	21.5	16.0	19.0	21.5	13.5	17.5	19.0	8.5	13.5
YEAR	21.5	.0	7.0									

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 28...	1100	8.0	2950	4	32	62
DEC 30...	1000	.5	2340	3	19	81
FEB 18...	1130	.5	6510	134	2360	69
APR 21...	1000	5.0	5450	10	147	82
MAY 28...	1300	6.5	35800	206	19900	40
AUG 26...	1530	17.0	2380	9	58	47

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT--Continued

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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...	1100	2950	2	293	8.0	8.0
DEC						
30...	1000	2340	2	288	-5.0	.5
FEB						
18...	1130	6510	40	233	.0	.5
APR						
21...	1000	5450	0	219	2.0	5.0
MAY						
28...	1300	35800	61	105	5.0	6.5
JUL						
21...	1000	8540	--	253	20.0	--
AUG						
26...	1530	2380	0	261	28.5	17.0

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 (1.1 km) southwest of Ninemile Ranger Station, 2.8 mi (4.5 km) upstream from mouth, and 4.8 mi (7.7 km) northwest of Huson.

DRAINAGE AREA.--170 mi^2 (440 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 3,027.66 ft (922.831 m) National Geodetic Vertical Datum of 1929 (Missoula County bench mark).

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 2,100 acres (8.50 km^2) 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.--9 years, 136 ft^3/s (3.852 m^3/s), 10.86 in/yr (276 mm/yr), 98,530 acre-ft/yr (121 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 1,700 ft^3/s (48.1 m^3/s) Jan. 16, 1974; maximum gage height, 6.7 ft (2.04 m) Jan. 15, 1974 (ice jam); minimum discharge, 9.4 ft^3/s (0.27 m^3/s) Dec. 23, 1974, gage height, 3.14 ft (0.957 m), result of freezeup; minimum gage height, 2.78 ft (0.847 m) Aug. 18, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May-June 1948 reached a discharge of 1,870 ft^3/s (53.0 m^3/s), by slope-area measurement of peak flow at site of 4 mi (6 km) upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 650 ft^3/s (18.4 m^3/s) and maximums (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
May 3	1230	741	21.0	5.38	1.640	May 26	1930	*1,110	31.4	*5.97	1.820
May 18	1930	895	25.3	5.64	1.719	June 15	0800	736	20.8	5.37	1.637

Minimum discharge, 17 ft^3/s (0.48 m^3/s) Dec. 5, gage height, 3.13 ft (0.954 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	28	28	25	28	94	145	429	464	291	72	35
2	34	28	30	24	26	94	135	533	477	270	75	34
3	34	28	30	25	24	96	132	708	519	257	75	33
4	33	28	28	27	22	96	132	618	577	234	73	31
5	33	27	28	26	20	92	121	486	572	234	70	30
6	33	27	49	22	22	92	116	420	519	224	65	35
7	31	27	54	24	27	94	116	399	477	212	63	34
8	31	27	43	26	30	101	105	407	433	203	60	34
9	33	27	38	25	28	121	114	399	399	194	58	33
10	37	27	48	24	25	234	114	367	399	188	55	37
11	40	27	45	24	30	288	197	328	429	174	49	39
12	35	28	33	24	40	263	412	335	538	163	49	40
13	34	31	31	24	50	230	477	355	665	160	48	42
14	33	33	34	25	70	218	567	424	714	188	48	43
15	31	31	34	25	80	221	482	582	714	160	46	40
16	30	33	35	24	78	206	391	758	686	158	43	39
17	30	43	33	25	76	188	332	781	697	147	40	38
18	30	46	32	26	75	177	291	858	618	142	37	37
19	30	37	37	25	77	163	257	781	538	135	37	35
20	30	33	37	24	112	147	227	623	500	128	37	37
21	30	33	35	23	332	137	215	592	464	121	37	38
22	30	38	33	22	313	132	230	686	420	109	35	37
23	30	37	30	22	218	132	313	776	395	105	35	35
24	30	34	28	24	163	142	464	787	367	101	35	34
25	30	31	30	27	145	130	491	828	332	101	35	34
26	30	30	30	28	121	132	473	1030	324	101	35	37
27	31	25	29	29	109	145	477	1020	295	90	35	39
28	30	25	28	28	98	155	528	828	288	86	34	55
29	30	25	27	28	---	160	486	659	302	83	35	51
30	30	27	27	28	---	153	429	543	291	81	37	42
31	28	---	26	29	---	150	---	482	---	75	37	---
TOTAL	986	921	1050	782	2439	4783	8969	18822	14413	4915	1490	1128
MEAN	31.8	30.7	33.9	25.2	87.1	154	299	607	480	159	48.1	37.6
MAX	40	46	54	29	332	288	567	1030	714	291	75	55
MIN	28	25	26	22	20	92	105	328	288	75	34	30
CFSM	.19	.18	.20	.15	.51	.91	1.76	3.57	2.82	.94	.28	.22
IN.	.22	.20	.23	.17	.53	1.05	1.96	4.12	3.15	1.08	.33	.25
AC-FT	1960	1830	2080	1550	4840	9490	17790	37330	28590	9750	2960	2240

CAL YR 1981	TOTAL	46356	MEAN 127	MAX 1250	MIN 25	CFSM .75	IN 10.14	AC-FT 91950				
WTR YR 1982	TOTAL	60698	MEAN 166	MAX 1030	MIN 20	CFSM .98	IN 13.28	AC-FT 120400				

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 (213 m) downstream from Murphy Creek, 0.5 mi (0.8 km) upstream from mouth, and 4.3 mi (6.9 km) northwest of Superior.

DRAINAGE AREA.--46.3 mi^2 (119.9 km^2).

PERIOD OF RECORD.--May to September 1982.

GAGE.--Water-stage recorder. Altitude of gage is 2,700 ft (823 m), from topographic map. Upstream diversion may seriously affect low flow periods.

REMARKS.--Records fair. Several observations of water temperature were made during the year and are available in files of Helena district office.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 404 ft^3/s (11.4 m^3/s) May 26, 1982, gage height, 3.98 ft (1.213 m); no flow Aug. 6 to Sept. 30, 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 404 ft^3/s (11.4 m^3/s) May 26, gage height, 3.98 ft (1.213 m); no flow Aug. 6 to Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								126	159	127	5.2	.00
2								165	166	118	3.2	.00
3								233	199	103	3.9	.00
4								198	213	90	1.6	.00
5								147	200	83	.10	.00
6								123	178	75	.00	.00
7								115	164	69	.00	.00
8								118	152	63	.00	.00
9								115	152	60	.00	.00
10								104	165	52	.00	.00
11								91	192	43	.00	.00
12								93	232	37	.00	.00
13								95	277	36	.00	.00
14								119	299	52	.00	.00
15								175	326	36	.00	.00
16								235	319	35	.00	.00
17								259	325	30	.00	.00
18								289	303	27	.00	.00
19								247	276	24	.00	.00
20								225	271	22	.00	.00
21								231	259	19	.00	.00
22								260	247	15	.00	.00
23								299	228	14	.00	.00
24								305	197	13	.00	.00
25								333	184	13	.00	.00
26								381	176	13	.00	.00
27								319	158	9.8	.00	.00
28								263	149	8.8	.00	.00
29								214	137	8.2	.00	.00
30								181	128	8.4	.00	.00
31								162	---	6.6	.00	---
TOTAL								6220	6431	1310.8	14.00	.00
MEAN								201	214	42.3	.45	.000
MAX								381	326	127	5.2	.00
MIN								91	128	6.6	.00	.00
CFSM								4.34	4.62	.91	.01	.000
IN.								5.00	5.17	1.05	.01	.00
AC-FT								12340	12760	2600	28	.00

12354500 CLARK FORK AT ST. REGIS, MT

LOCATION (REVISED).--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 (0.6 km) downstream from St. Regis River, and at mile 270.3 (434.9 km).

DRAINAGE AREA.--10,709 mi^2 (27,736 km^2).

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 (792.593 m) 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 excellent except those for period of no gage-height record, July 7 to Aug. 26, which are good. Diversions for irrigation of about 244,000 acres (987 km^2) 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.--72 years, 7,598 ft^3/s (215.2 m^3/s), 5,505,000 acre-ft/yr (6.79 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,900 ft^3/s (1,950 m^3/s) May 24, 1948, gage height, 19.96 ft (6.084 m), from graph based on gage readings; minimum, 870 ft^3/s (24.6 m^3/s) Jan. 10, 1980, gage height, 3.48 ft (1.061 m); minimum gage height, 3.36 ft (1.024 m) Dec. 17, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 48,600 ft^3/s (1,380 m^3/s) June 18, gage height, 17.09 ft (5.209 m); minimum, 1,390 ft^3/s (39.4 m^3/s) Feb. 6, gage height, 4.08 ft (1.244 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3450	3480	2930	3010	3220	6330	5680	15800	28800	36800	6400	3310
2	3430	3440	3180	2920	3190	6200	5560	16300	23500	34600	6300	3300
3	3400	3420	3280	2860	3080	6100	5510	18900	22000	33100	6100	3280
4	3420	3400	3330	2850	2540	6120	5410	21600	23000	29300	6000	3240
5	3390	3370	3290	2790	2030	5950	5320	21500	24000	25900	5700	3210
6	3410	3340	3470	2500	1600	5740	5210	19600	25000	23400	5400	3180
7	3410	3320	3830	2200	1840	5550	5140	18100	24000	21200	5100	3160
8	3410	3290	4020	2500	2110	5430	5020	17600	23000	18500	5000	3160
9	3460	3280	3900	2730	2370	5490	4930	17400	22000	17500	4900	3130
10	3540	3210	3830	2900	2320	6450	4850	16800	21000	16500	4900	3160
11	3590	3220	3720	2880	2450	7470	5120	15900	23000	15500	4800	3160
12	3660	3210	3630	2880	2460	7970	6480	15200	26000	15000	4800	3180
13	3780	3260	3450	2940	2640	7680	8420	14900	31900	14500	4900	3280
14	3770	3320	3300	3010	3020	7290	10400	15500	37700	15000	4800	3410
15	3710	3330	3440	3070	3890	7020	11100	17500	43100	16000	4700	3550
16	3660	3370	3540	2910	5700	6910	10800	21100	46100	15000	4500	3720
17	3620	3550	3530	2520	7940	6730	9900	25600	47700	14000	4300	3770
18	3590	3600	3340	2490	8580	6370	9350	30100	48300	13400	4100	3820
19	3550	3520	2970	2750	8060	6130	8890	32600	47300	12900	3900	3820
20	3510	3470	3210	2950	8600	5890	8430	31600	45000	12500	3800	3790
21	3480	3410	3730	2700	14100	5680	8050	29800	43400	11900	3750	3800
22	3450	3450	3790	2500	14300	5500	7920	30100	42700	10900	3700	3840
23	3430	3460	3630	2010	12800	5360	8320	32600	41600	10800	3650	3850
24	3430	3520	3420	2070	10300	5360	9920	35400	41000	9700	3600	3800
25	3430	3500	3380	2670	8750	5370	12000	37100	40000	9100	3550	3740
26	3430	3470	3430	3390	7690	5320	13500	39900	38200	8500	3450	3720
27	3450	3400	3440	3470	7090	5300	14200	42200	36900	8000	3390	3790
28	3470	3200	3380	3550	6670	5410	14900	43700	35800	7800	3350	4040
29	3520	2950	3240	3490	---	5610	15900	41800	35300	7600	3300	4800
30	3510	2910	3140	3300	---	5770	16100	36200	36800	7300	3280	4910
31	3490	---	3080	3260	---	5760	---	31400	---	6700	3300	---
TOTAL	108850	100670	106850	88070	159340	189260	262330	803800	1024100	498900	138720	107920
MEAN	3511	3356	3447	2841	5691	6105	8744	25930	34140	16090	4475	3597
MAX	3780	3600	4020	3550	14300	7970	16100	43700	48300	36800	6400	4910
MIN	3390	2910	2930	2010	1600	5300	4850	14900	21000	6700	3280	3130
CFSM	.33	.31	.32	.27	.53	.57	.82	2.42	3.19	1.50	.42	.34
IN.	.38	.35	.37	.31	.55	.66	.91	2.79	3.56	1.73	.48	.37
AC-FT	215900	199700	211900	174700	316100	375400	520300	1594000	2031000	989600	275200	214100

CAL YR 1981	TOTAL	2795200	MEAN	7658	MAX	47400	MIN	1800	CFSM .72	IN 9.71	AC-FT	5544000
WTR YR 1982	TOTAL	3588810	MEAN	9832	MAX	48300	MIN	1600	CFSM .92	IN 12.47	AC-FT	7118000

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 (14 m) north of international boundary at Flathead, British Columbia, 1.6 mi (2.6 km) upstream from Sage Creek, 6.5 mi (10.5 km) northwest of Trail Creek, MT, and at mile 216.6 (348.5 km).

DRAINAGE AREA.--427 mi^2 (1,106 km^2).

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 (1,209.495 m) 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 (370 m) upstream at datum 7.80 ft (2.377 m) higher. Oct. 5, 1964, to Aug. 1, 1973, water-stage recorder at site on left bank 155 ft (47 m) upstream at datum 1.42 ft (0.433 m) 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.--31 years (1951-82), 950 ft^3/s (26.90 m^3/s), 30.21 in/yr (767 mm/yr), 688,300 acre-ft/yr (849 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft^3/s (462 m^3/s) June 8, 1964, gage height, 8.00 ft (2.438 m), in gage well, 8.6 ft (2.62 m), from outside floodmarks, site and datum then in use, from rating curve extended above 8,000 ft^3/s (230 m^3/s) on basis of slope-area measurement of peak flow; minimum daily, 62 ft^3/s (1.76 m^3/s) Jan. 2, 1977, but may have been less during periods of no winter record.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,590 ft^3/s (215 m^3/s) May 26, gage height, 5.64 ft (1.719 m); minimum daily, 95 ft^3/s (2.70 m^3/s) Apr. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	237	186	197	142	144	189	108	901	2880	2500	540	311
2	250	184	190	141	131	186	107	1120	3400	2400	537	304
3	303	183	180	136	117	182	104	1390	3780	2210	547	292
4	293	180	170	130	108	166	102	1340	4270	2030	554	309
5	262	175	178	124	102	161	102	1180	5010	1880	537	332
6	248	169	182	118	105	157	98	1160	4730	1750	505	310
7	241	165	178	112	108	155	95	1220	3920	1600	477	293
8	238	164	164	115	105	161	95	1320	3370	1500	463	286
9	243	163	157	126	103	166	102	1220	3380	1410	473	282
10	238	162	167	120	103	162	135	1110	3810	1330	491	304
11	232	162	170	134	105	155	150	1150	4340	1270	473	347
12	225	161	151	155	111	139	172	1380	4800	1200	470	337
13	225	161	121	155	138	134	190	1670	5370	1150	509	321
14	216	170	120	155	170	128	191	2210	5610	1230	480	313
15	217	185	118	150	212	120	183	3010	5440	1220	448	305
16	212	185	115	147	245	114	178	4030	5160	1170	434	293
17	211	197	120	141	252	106	166	4630	4800	1100	417	293
18	208	207	132	143	240	108	166	5090	4340	1030	396	292
19	203	214	148	143	258	112	164	4560	4100	971	388	275
20	199	210	150	139	290	112	161	3990	4130	932	378	264
21	197	205	158	136	328	111	164	4380	3990	925	367	260
22	192	206	157	136	339	108	188	4910	3780	869	360	262
23	189	207	154	144	314	102	250	5160	3470	788	353	267
24	189	205	152	150	279	101	367	5010	3200	735	346	260
25	187	195	150	155	217	98	406	5790	2930	682	350	255
26	190	187	149	162	200	98	456	6890	2950	650	337	289
27	193	180	149	155	196	102	572	5010	2960	604	336	300
28	192	187	148	156	191	106	742	3640	2870	565	323	327
29	193	190	147	161	---	108	788	2890	2520	558	310	320
30	187	197	146	164	---	109	777	2420	2740	551	309	309
31	185	---	145	157	---	109	---	2500	---	547	317	---
TOTAL	6795	5542	4763	4402	5211	4065	7479	92281	118050	37357	13225	8912
MEAN	219	185	154	142	186	131	249	2977	3935	1205	427	297
MAX	303	214	197	164	339	189	788	6890	5610	2500	554	347
MIN	185	161	115	112	102	98	95	901	2520	547	309	255
CFSM	.51	.43	.36	.33	.44	.31	.58	6.97	9.22	2.82	1.00	.70
IN.	.59	.48	.41	.38	.45	.35	.65	8.04	10.28	3.25	1.15	.78
AC-FT	13480	10990	9450	8730	10340	8060	14830	183000	234200	74100	26230	17680

CAL YR 1981 TOTAL 345824 MEAN 947 MAX 6390 MIN 115 CFSM 2.22 IN 30.13 AC-FT 685900
WTR YR 1982 TOTAL 308082 MEAN 844 MAX 6890 MIN 95 CFSM 1.98 IN 26.84 AC-FT 611100

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 October 1, 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum (water years 1975-80, 1982), 19.5°C Aug. 2, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 17.0°C Aug. 7; minimum, 0.0°C on many days during November to April.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	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)
OCT 30...	1200	190	2	264	8.5	5.0	4.5	.70	11.8	105	33	<1
JAN 11...	1400	155	2	271	8.4	-5.0	.0	.50	12.2	--	15	<1
MAR 25...	1100	98	0	282	8.2	6.5	1.0	.20	12.8	104	<9	<1
MAY 17...	1100	4640	1	174	8.1	20.0	3.0	50	11.4	98	24	K17
JUN 08...	1030	3360	1	172	8.1	10.0	4.0	5.0	11.2	99	10	42
AUG 05...	1100	530	0	247	8.2	23.0	9.5	.90	10.1	102	<10	K3

DATE	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) (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)	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 30...	K2	148	18	44	9.2	1.0	.0	.3	130	5.0	.3	1.5
JAN 11...	K4	145	.00	43	9.1	.9	.0	.3	150	5.0	.3	.1
MAR 25...	K1	158	18	48	9.3	.9	.0	.4	140	7.0	.3	.1
MAY 17...	K4	95	3.0	28	6.1	.9	.0	.5	92	5.0	.5	<.1
JUN 08...	K20	97	4.0	29	5.9	.8	.0	.9	93	5.0	.3	.2
AUG 05...	140	132	6.0	39	8.4	.8	.0	.5	126	5.0	.3	.1

DATE	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)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (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)
OCT 30...	4.6	152	144	.20	78.0	0	--	.07	.39	.009	.005	.000
JAN 11...	4.6	145	153	.19	60.7	1	<.09	.15	.77	.015	.016	<.020
MAR 25...	4.3	148	155	.20	39.2	0	<.10	.15	.24	.010	.011	.010
MAY 17...	4.3	105	105	.14	1320	126	<.10	.13	1.5	.120	<.010	.010
JUN 08...	4.4	104	103	.14	943	34	<.10	.10	.40	.022	<.005	.010
AUG 05...	--	--	--	--	--	5	<.10	.15	.90	.027	<.005	--

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	DATE	TIME	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
OCT 30...	1200	6	MAY 28...	1300	56
NOV 25...	1200	4	JUN 25...	1100	15
DEC 30...	1100	19	JUL 31...	1100	9
JAN 27...	1200	6	AUG 25...	1200	68
FEB 24...	1200	1	SEP 22...	1230	5
MAR 26...	1200	0			

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT 30...	1200	1	0	200	58	<1	<1	<10	0	<1
MAR 25...	1100	<1	<1	100	54	3	<1	<10	<10	<1
JUN 08...	1030	1	<1	<100	41	<1	<1	<10	<10	<1
AUG 05...	1100	<1	1	100	84	<1	<1	10	<10	1

DATE	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
OCT 30...	<3	5	1	170	<10	1	<1	10	<1	.1
MAR 25...	<1	7	1	10	<3	3	<1	10	2	<.1
JUN 08...	2	9	3	770	<3	1	1	0	<1	<.1
AUG 05...	<1	7	2	140	<3	3	<1	20	<1	.1

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 30...	.0	0	<1	<1	<1	<1	<1	40	4
MAR 25...	<.1	8	1	<1	<1	<1	<1	30	15
JUN 08...	<.1	2	<1	<1	<1	<1	<1	20	<3
AUG 05...	<.1	7	<1	<1	<1	<1	<1	20	5

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 30...	1200	4.5	190	4	2.1	76
JAN 11...	1400	.0	155	3	1.3	90
MAR 25...	1100	1.0	98	2	.53	53
MAY 17...	1100	3.0	4640	126	1580	63
JUN 08...	1030	4.0	3360	22	200	69
AUG 05...	1100	9.5	530	3	4.3	65

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 (2.4 km) downstream from Canyon Creek, 3.8 mi (6.1 km) upstream from Middle Fork, 8.8 mi (14.2 km) northeast of Columbia Falls, and at mile 162.1 (260.8 km).

DRAINAGE AREA.--1,548 mi^2 (4,009 km^2).

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 (958.776 m) 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 (4.3 km) downstream at different datums.

REMARKS.--Water-discharge records good except those for winter period, which are fair. A few small diversions from tributaries for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--51 years (1910-12, 1913-15, 1935-82), 2,993 ft^3/s (84.76 m^3/s), 26.26 in/yr (667 mm/yr), 2,168,000 acre-ft/yr (2.67 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,100 ft^3/s (1,960 m^3/s) June 9, 1964, gage height, 18.60 ft (5.669 m), from floodmark, from rating curve extended above 37,000 ft^3/s (1,050 m^3/s) on basis of slope-area measurement of peak flow; minimum, 198 ft^3/s (5.61 m^3/s) Jan. 8, 1953, gage height, 0.86 ft (0.262 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,900 ft^3/s (564 m^3/s) May 26, gage height, 9.55 ft (2.911 m); minimum daily, 375 ft^3/s (10.6 m^3/s) Jan. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	898	722	675	490	540	1090	846	4530	8060	10800	2710	1300
2	889	722	675	480	520	1090	837	5400	8650	10600	2700	1240
3	924	722	615	460	510	1090	803	6880	9640	9850	2680	1210
4	933	714	608	440	500	1060	787	6880	10900	8990	2590	1220
5	933	698	645	410	490	933	778	5940	12800	8030	2440	1280
6	907	691	746	390	470	924	778	5490	14000	7330	2300	1280
7	880	683	762	375	450	924	722	5360	13000	6690	2190	1240
8	863	675	722	380	470	863	706	5640	11300	6190	2130	1210
9	863	668	683	420	500	880	722	5380	10300	5780	2150	1180
10	863	660	675	400	500	979	722	4910	10400	5560	2200	1170
11	863	660	706	430	480	1010	854	4710	11600	5380	2160	1220
12	846	660	675	480	500	1040	1260	5170	13100	5190	2110	1240
13	837	668	550	500	540	1040	1520	5780	15100	5000	2080	1210
14	820	698	540	520	660	998	1720	6910	17100	5320	2040	1180
15	812	722	520	500	900	988	1690	8630	17500	5600	1950	1130
16	803	722	500	475	1300	942	1550	10900	17500	5340	1870	1100
17	795	746	520	500	1400	880	1430	12500	17500	4910	1820	1060
18	778	770	540	510	1350	803	1380	13900	15800	4510	1740	1040
19	778	770	560	500	1450	820	1300	13800	15000	4260	1680	1020
20	762	746	580	490	1700	837	1210	12600	14900	4100	1630	988
21	754	738	570	450	2000	820	1210	12500	14900	4080	1610	979
22	746	754	560	475	2080	795	1320	13500	14400	3950	1590	988
23	738	762	540	500	1690	778	1810	14800	13600	3790	1550	970
24	730	738	550	540	1470	770	2790	14900	12500	3770	1520	961
25	722	683	540	550	1250	722	3300	15500	11500	3300	1480	952
26	714	638	530	560	1170	722	3310	18600	11200	3160	1440	970
27	714	594	520	580	1170	738	3640	17000	11100	3050	1400	1040
28	714	652	510	580	1120	762	4290	13000	11400	2950	1350	1110
29	722	668	520	570	---	820	4530	10600	10500	2870	1320	1140
30	722	683	510	560	---	829	4290	8850	11200	2810	1320	1090
31	722	---	500	550	---	829	---	8000	---	2760	1310	---
TOTAL	25045	21027	18347	15065	27180	27776	52105	298560	386450	165920	59060	33718
MEAN	808	701	592	486	971	896	1737	9631	12880	5352	1905	1124
MAX	933	770	762	580	2080	1090	4530	18600	17500	10800	2710	1300
MIN	714	594	500	375	450	722	706	4530	8060	2760	1310	952
CFSM	.52	.45	.38	.31	.63	.58	1.12	6.22	8.32	3.46	1.23	.73
IN.	.60	.51	.44	.36	.65	.67	1.25	7.17	9.29	3.99	1.42	.81
AC-FT	49680	41710	36390	29880	53910	55090	103400	592200	766500	329100	117100	66880

CAL YR 1981	TOTAL	1184053	MEAN	3244	MAX	17600	MIN	500	CFSM	2.10	IN	28.45	AC-FT	2349000
WTR YR 1982	TOTAL	1130253	MEAN	3097	MAX	18600	MIN	375	CFSM	2.00	IN	27.16	AC-FT	2242000

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, 17.0°C July 28-31; minimum, 0.0°C on many days during November to April.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

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

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 (1.3 km) downstream from McDonald Creek, 1.3 mi (2.1 km) west of West Glacier, and at mile 3.8 (6.1 km).

DRAINAGE AREA.--1,128 mi^2 (2,922 km^2).

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 (953.634 m) 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.--43 years, 2,946 ft^3/s (83.43 m^3/s), 35.47 in/yr (901 mm/yr), 2,134,000 acre-ft/yr (2.63 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 140,000 ft^3/s (3,960 m^3/s) June 9, 1964, gage height, 36.46 ft (11.113 m), from floodmarks, from rating curve extended above 31,000 ft^3/s (878 m^3/s), on basis of contracted opening measurement at gage height, 19.42 ft (5.919 m) and flood volume-hydrographic comparison; minimum, less than 173 ft^3/s (4.90 m^3/s) Nov. 27, 1952 (stage below intake pipe).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,800 ft^3/s (589 m^3/s) May 26, gage height, 8.74 ft (2.664 m); minimum, 268 ft^3/s (7.59 m^3/s) Jan. 16, 22, gage height, 1.17 ft (0.357 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	559	389	389	364	383	1290	819	4060	7610	13300	2900	965
2	551	389	422	364	383	1220	798	4910	7830	12700	2800	930
3	542	389	402	377	358	1150	777	6920	8600	11900	2630	907
4	526	389	402	383	358	1090	766	6920	9960	10300	2440	942
5	518	383	402	340	340	1010	756	5740	11800	8830	2220	1000
6	509	383	551	300	334	965	736	5020	12100	7990	2140	942
7	493	377	612	328	328	930	716	4780	11400	7510	2100	896
8	486	370	559	364	340	896	696	4910	10200	7140	2070	862
9	493	370	526	389	352	919	687	4700	9790	6860	2120	851
10	493	370	559	364	352	1140	687	4390	10800	6640	2140	942
11	478	370	585	370	346	1140	798	4010	13000	6460	2120	965
12	470	377	559	383	352	1170	1110	4010	15100	6210	1990	896
13	463	389	478	389	377	1110	1390	4360	18200	5890	1850	862
14	456	402	509	402	463	1070	1670	5710	19300	6580	1730	819
15	449	415	518	370	696	1050	1700	7860	19400	6800	1700	798
16	442	415	518	323	885	1010	1570	10400	20100	5770	1620	787
17	435	449	501	377	977	977	1480	11900	19800	5130	1540	777
18	429	470	463	358	965	930	1420	13400	18100	4730	1490	766
19	422	463	456	352	1030	907	1340	12800	16900	4590	1460	746
20	415	449	526	346	1190	873	1260	11400	17000	4830	1420	736
21	415	442	501	317	2280	851	1250	11500	17600	4650	1390	726
22	409	501	478	328	2970	819	1290	13100	17500	4440	1370	736
23	402	509	456	346	2420	808	1600	16100	16600	4130	1340	726
24	396	493	456	383	2030	798	2710	16800	15000	3820	1300	716
25	389	463	463	389	1730	766	3350	16600	13800	3600	1250	706
26	389	442	463	389	1550	756	3390	19800	14200	3510	1210	716
27	402	415	449	415	1450	766	3560	16200	13800	3370	1150	756
28	402	370	377	415	1330	808	4080	12400	13600	3250	1090	830
29	402	383	352	402	---	830	4280	10200	13000	3170	1060	830
30	402	389	334	409	---	830	4040	8630	14400	3080	1030	798
31	396	---	346	396	---	830	---	7830	---	3010	1010	---
TOTAL	14033	12415	14612	11432	26569	29709	50726	287360	426490	190190	53680	24929
MEAN	453	414	471	369	949	958	1691	9270	14220	6135	1732	831
MAX	559	509	612	415	2970	1290	4280	19800	20100	13300	2900	1000
MIN	389	370	334	300	328	756	687	4010	7610	3010	1010	706
CFSM	.40	.37	.42	.33	.84	.85	1.50	8.22	12.6	5.44	1.54	.74
IN.	.46	.41	.48	.38	.88	.98	1.67	9.48	14.07	6.27	1.77	.82
AC-FT	27830	24630	28980	22680	52700	58930	100600	570000	845900	377200	106500	49450

CAL YR 1981 TOTAL 1045035 MEAN 2863 MAX 18800 MIN 334 CFSM 2.54 IN 34.46 AC-FT 2073000
WTR YR 1982 TOTAL 1142145 MEAN 3129 MAX 20100 MIN 300 CFSM 2.77 IN 37.67 AC-FT 2265000

12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT

LOCATION.--Lat 47°58'45", long 113°33'36", in NE¼NW¼NE¼ sec.36, T.26 N., R.16 W., Flathead County, Hydrologic Unit 17010209, Flathead National Forest, on left bank 0.1 mi (0.2 km) downstream from Tin Creek, 0.4 mi (0.6 km) upstream from Twin Creek, 36.3 mi (58.4 km) southeast of Hungry Horse, and at mile 46.7 (75.1 km).

DRAINAGE AREA.--1,160 mi^2 (3,004 km^2).

PERIOD OF RECORD.--October 1964 to September 30, 1982 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 3,575 ft (1,090 m), from river-profile map.

REMARKS.--Records good. No known regulation or diversions upstream of station.

AVERAGE DISCHARGE.--18 years, 2,310 ft^3/s (65.42 m^3/s), 27.05 in/yr (688 mm/yr), 1,674,000 acre-ft/yr (2.06 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft^3/s (855 m^3/s) June 16, 1974, gage height, 15.20 ft (4.633 m); minimum, 127 ft^3/s (3.60 m^3/s) Nov. 30, 1979, gage height, 4.13 ft (1.259 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1964, reached a stage of 20.87 ft (6.361 m), from highwater profile; discharge, 50,900 ft^3/s (1,440 m^3/s), by slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,800 ft^3/s (589 m^3/s) June 16, gage height, 13.15 ft (4.008 m); minimum daily, 190 ft^3/s (5.38 m^3/s) Feb. 6, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	414	326	297	260	250	830	548	3190	5960	12500	1580	583
2	404	322	309	260	240	830	525	4050	6010	11100	1570	559
3	399	322	297	260	230	808	525	5470	6380	9420	1510	542
4	390	322	289	250	220	765	525	5090	7700	7730	1420	542
5	380	313	289	240	200	703	519	4260	8920	6660	1330	525
6	371	309	404	230	190	677	497	3690	8770	5800	1230	514
7	366	301	414	230	200	645	486	3750	8180	5270	1180	497
8	366	301	371	250	210	613	465	4010	7510	5050	1150	486
9	371	297	348	270	210	620	475	3780	7510	4940	1140	475
10	366	293	371	260	220	703	475	3460	8500	4660	1120	486
11	371	289	375	270	240	697	553	3170	10400	4520	1090	491
12	366	289	305	280	270	684	897	3240	12600	4320	1080	486
13	357	301	229	280	300	658	1170	3430	17200	4120	1050	486
14	348	313	326	280	366	638	1330	4420	17500	4560	1030	470
15	344	318	300	270	508	638	1270	6250	18100	4460	992	465
16	339	313	300	250	595	613	1170	8420	20300	3840	944	460
17	335	326	270	250	638	589	1090	10200	19600	3310	897	455
18	330	362	240	250	607	565	1050	11700	17000	2940	867	450
19	326	352	270	245	589	553	992	11100	15700	2760	837	445
20	330	339	290	240	664	542	921	9510	15800	2770	808	440
21	335	330	290	230	1080	519	905	9580	16700	2700	779	440
22	326	352	280	220	1650	508	984	11200	17000	2590	772	440
23	318	348	280	230	1420	497	1380	13600	16500	2410	758	435
24	313	339	290	240	1260	491	2200	13600	14800	2240	730	435
25	313	322	290	250	1110	465	2480	14300	13000	2080	703	435
26	318	313	290	270	1040	470	2520	17600	12100	2030	677	445
27	322	261	290	270	1000	497	2680	14500	12200	1930	658	460
28	326	254	285	270	890	519	3060	10900	12100	1840	638	500
29	335	254	270	270	---	548	3060	8770	11800	1760	613	520
30	335	289	260	270	---	548	2960	7150	14000	1680	601	500
31	330	---	260	260	---	542	---	6210	---	1620	595	---
TOTAL	10844	9370	9379	7905	16397	18975	37712	239600	379840	133610	30349	14467
MEAN	350	312	303	255	586	612	1257	7729	12660	4310	979	482
MAX	414	362	414	280	1650	830	3060	17600	20300	12500	1580	583
MIN	313	254	229	220	190	465	465	3170	5960	1620	595	435
CFSM	.30	.27	.26	.22	.51	.53	1.08	6.66	10.9	3.72	.84	.42
IN.	.35	.30	.30	.25	.53	.61	1.21	7.68	12.18	4.28	.97	.46
AC-FT	21510	18590	18600	15680	32520	37640	74800	475200	753400	265000	60200	28700

CAL YR 1981 TOTAL 793807 MEAN 2175 MAX 20500 MIN 229 CFSM 1.88 IN 25.46 AC-FT 1575000
WTR YR 1982 TOTAL 908448 MEAN 2489 MAX 20300 MIN 190 CFSM 2.15 IN 29.13 AC-FT 1802000

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 (6.1 km) southeast of Hungry Horse, and at mile 5.2 (8.4 km).

DRAINAGE AREA.--1,654 mi^2 (4,284 km^2).

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 (4.26 km^3), top of 1.0 ft (0.30 m) flashboards; 3,428,000 acre-ft (4.23 km^3) between elevations 3,196 ft (974.1 m), lowest outlet, and 3,560 ft (1,085.1 m), controlled spillway elevation. Dead storage, 40,140 acre-ft (49.5 hm^3) below elevation 3,196 ft (974.1 m). Minimum operating level, 445,900 acre-ft (550 hm^3), elevation, 3,336 ft (1,016.8 m) 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 (0.3 m) 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 (4.27 km^3) July 3, 4, 1955, Aug. 6, 1956; maximum elevation observed, 3,561.40 ft (1,085.515 m) July 3, 4, 1955; minimum contents observed since normal low operating level reached in May 1952, 607,700 acre-ft (749 hm^3) Jan. 13, 1953 (elevation, 3,362.50 ft or 1,024.890 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 3,451,000 acre-ft (4.26 km^3) Aug. 8 (elevation, 3,560.95 ft or 1,085.378 m); minimum observed, 1,874,000 acre-ft (2.31 km^3) May 7, (elevation, 3,481.00 ft or 1,061.009 m).

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 1981 TO SEPTEMBER 1982
INSTANTANEOUS OBSERVATIONS AT 2359

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3553.15	3536.33	3529.14	3522.00	3510.50	3508.00	3497.74	3481.23	3516.54	3559.17	3560.75	3560.69
2	3552.41	3535.97	3529.15	3521.80	3510.31	3508.17	3496.99	3481.11	3517.46	3559.58	3560.81	3560.72
3	3552.05	3535.42	3529.01	3521.61	3510.09	3508.32	3496.33	3481.38	3518.46	3559.66	3560.87	3560.68
4	3552.05	3535.20	3528.84	3521.42	3509.70	3508.43	3495.64	3481.64	3519.70	3559.58	3560.90	3560.73
5	3551.57	3534.96	3528.75	3521.23	3508.67	3508.56	3494.96	3481.47	3521.10	3559.58	3560.84	3560.76
6	3551.31	3534.51	3528.63	3520.58	3507.94	3508.65	3494.16	3481.20	3522.44	3559.60	3560.77	3560.80
7	3551.16	3534.30	3528.52	3519.70	3507.74	3508.74	3493.53	3481.00	3523.70	3559.62	3560.89	3560.75
8	3551.02	3534.10	3528.35	3518.78	3507.52	3508.63	3492.74	3481.84	3524.83	3559.60	3560.95	3560.69
9	3550.94	3533.85	3528.20	3517.85	3507.28	3508.44	3492.39	3482.65	3525.94	3559.55	3560.89	3560.65
10	3550.79	3533.64	3528.07	3517.63	3507.08	3508.18	3492.40	3482.78	3527.19	3559.56	3560.89	3560.69
11	3550.64	3533.42	3527.94	3516.96	3506.86	3508.00	3492.60	3483.12	3528.74	3559.56	3560.88	3560.76
12	3550.12	3533.21	3527.75	3516.25	3506.65	3507.78	3492.14	3483.48	3530.53	3559.73	3560.81	3560.80
13	3549.77	3533.02	3527.54	3515.62	3506.60	3507.54	3491.38	3483.91	3532.81	3559.97	3560.76	3560.74
14	3549.03	3532.85	3527.38	3515.10	3506.52	3507.25	3490.70	3484.58	3535.15	3560.37	3560.88	3560.65
15	3548.26	3532.63	3527.12	3514.32	3506.42	3506.91	3489.93	3485.95	3537.51	3560.68	3560.94	3560.62
16	3547.51	3532.26	3526.62	3514.25	3506.40	3506.54	3489.08	3487.76	3540.02	3560.86	3560.92	3560.59
17	3546.78	3532.10	3526.10	3514.04	3506.53	3506.24	3488.20	3489.41	3542.28	3560.88	3560.87	3560.55
18	3546.01	3531.82	3525.54	3513.82	3506.69	3505.85	3488.43	3491.48	3544.37	3560.92	3560.82	3560.58
19	3545.21	3531.54	3525.42	3513.63	3506.78	3505.62	3487.55	3493.36	3546.30	3560.80	3560.78	3560.62
20	3544.46	3531.34	3525.05	3513.30	3506.85	3505.20	3486.45	3494.88	3548.22	3560.72	3560.72	3560.59
21	3543.67	3531.20	3524.75	3513.08	3507.36	3504.77	3485.46	3496.50	3550.07	3560.63	3560.79	3560.57
22	3542.90	3531.04	3524.52	3512.56	3507.45	3504.21	3484.50	3498.58	3551.57	3560.60	3560.84	3560.53
23	3542.10	3530.86	3524.00	3512.41	3507.47	3503.55	3483.62	3501.03	3553.03	3560.57	3560.81	3560.50
24	3541.34	3530.65	3523.45	3512.28	3507.43	3502.94	3483.66	3503.40	3554.27	3560.81	3560.86	3560.45
25	3540.51	3530.46	3523.29	3512.06	3507.45	3502.30	3483.87	3505.82	3555.30	3560.91	3560.84	3560.49
26	3539.74	3530.25	3523.10	3511.77	3507.51	3501.62	3483.56	3508.72	3556.14	3560.81	3560.79	3560.54
27	3538.93	3530.02	3522.92	3511.52	3507.67	3500.95	3483.00	3510.87	3556.83	3560.68	3560.75	3560.54
28	3538.51	3529.75	3522.72	3511.28	3507.81	3500.30	3482.58	3512.47	3557.37	3560.54	3560.80	3560.54
29	3538.12	3529.50	3522.53	3511.07	---	3499.70	3482.09	3513.75	3557.92	3560.48	3560.82	3560.53
30	3537.68	3529.30	3522.35	3510.89	---	3499.08	3481.60	3514.76	3558.61	3560.46	3560.80	3560.49
31	3536.86	---	3522.17	3510.70	---	3498.40	---	3515.66	---	3560.60	3560.74	---
MAX	3553.15	3536.33	3529.15	3522.00	3510.50	3508.74	3497.74	3515.66	3558.61	3560.92	3560.95	3560.80
MIN	3536.86	3529.30	3522.17	3510.70	3506.40	3498.40	3481.60	3481.00	3516.54	3559.17	3560.72	3560.45
†	2,907	2,747	2,603	2,381	2,327	2,158	1,884	2,476	3,396	3,442	3,446	3,440
††	-370,000	-160,000	-144,000	-222,000	-54,000	-169,000	-274,000	+592,000	+920,000	+46,000	+4,000	-6,000

CAL YR 1981 . . . . . †† -230,000
WTR YR 1982 . . . . . †† +163,000

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

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 (2.7 km) downstream from Hungry Horse Dam, 3.5 mi (5.6 km) upstream from mouth, and 6.8 mi (10.9 km) east of Columbia Falls and at mile 152.2 (244.9 km).
DRAINAGE AREA.--1,663 mi^2 (4,307 km^2).

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 (926.6 m) 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 (5 km) downstream at different datum. Oct. 1, 1928, to Sept. 30, 1952, water-stage recorder at site 1.5 mi (2.4 km) downstream at different datum.
REMARKS.--Water-discharge records excellent. Flow regulated by Hungry Horse Reservoir since Sept. 21, 1951 (see preceding page).
AVERAGE DISCHARGE.--54 years (water years, 1929-82), 3,574 ft^3/s (101.2 m^3/s), 29.19 in/yr (741 mm/yr), 2,589,000 acre-ft/yr (3.19 km^3/yr), adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,200 ft^3/s (1,310 m^3/s) June 19, 1916, gage height, 16.6 ft (5.06 m), site and datum then in use, from rating curve extended above 20,000 ft^3/s (566 m^3/s); minimum observed, 7.3 ft^3/s (0.21 m^3/s) Sept. 24, 1951, gage height, 0.52 ft (0.158 m), dam closure, site and datum then in use; minimum daily, 7.3 ft^3/s (0.21 m^3/s) Sept. 24, 1951.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,600 ft^3/s (413 m^3/s) July 2, gage height, 12.18 ft (3.712 m); minimum daily, 141 ft^3/s (3.99 m^3/s) July 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5180	6800	2260	2400	2510	384	7090	9200	408	10200	157	1530
2	9090	4120	1190	2400	2510	376	7690	9130	329	11800	1340	169
3	5110	6780	1520	2400	2510	405	7140	9060	336	13000	1450	1520
4	536	2580	2400	2400	3980	419	7300	8030	344	12700	1460	174
5	6080	3020	2410	2400	9850	419	7210	9040	259	10000	2800	167
6	3410	5540	2410	7010	7020	470	7690	9080	288	8670	2640	172
7	2350	2680	2400	9580	2520	473	6670	8870	279	8140	142	1530
8	2400	2770	2400	9600	2520	2160	7800	415	216	8090	787	1530
9	1340	2870	2400	9640	2520	4010	4280	412	211	7720	2920	1110
10	2300	2890	2240	2950	2510	4400	833	4990	222	7160	2200	296
11	2300	2890	2100	7310	2520	4160	735	2960	238	6470	1340	164
12	6410	2840	2400	7530	2510	4170	7190	3170	789	4200	2470	166
13	4250	2700	2400	7420	2510	4030	9720	3190	1150	2670	2060	1540
14	9160	2700	2530	5170	2520	4030	9360	3190	291	2720	148	1390
15	9210	2700	3540	7520	2510	4860	9710	867	259	2540	364	1070
16	9200	4460	5840	2700	2240	4750	9730	439	277	4040	1950	1070
17	9190	2690	6110	2470	634	4140	9680	3790	277	4580	1910	1060
18	9190	4340	6110	2460	450	4790	715	2210	268	4240	1890	172
19	9210	3440	2160	2500	1970	3700	9180	2430	262	6110	1900	164
20	9220	2710	4490	3460	3240	5060	10700	2370	261	5330	1900	1080
21	9220	2700	3800	2540	421	5060	10000	1710	1630	4970	150	1060
22	9200	2690	2910	5650	3610	6250	10000	223	4870	4370	299	1070
23	9230	2660	5550	2500	2990	6840	10100	247	4870	3770	1530	1070
24	9340	2660	6790	2500	3150	6920	4740	249	4890	141	181	1090
25	9330	2660	2400	2720	2000	6760	3760	443	5820	1790	1350	174
26	9320	2790	2410	3050	1510	7020	8150	463	7050	4380	1530	184
27	9310	2900	2400	3020	395	7180	10000	443	9110	4590	1530	1080
28	5120	2980	2410	3010	396	7020	9980	427	10200	4640	160	1090
29	5150	3000	2410	2850	---	6970	9860	420	10200	2960	159	1110
30	5130	2930	2400	2510	---	7030	10000	413	10200	2880	1530	1090
31	9400	---	2410	2510	---	7310	---	410	---	495	1540	---
TOTAL	204886	99490	95200	132180	74026	131566	227013	98291	75804	175366	41787	25092
MEAN	6609	3316	3071	4264	2644	4244	7567	3171	2527	5657	1348	836
MAX	9400	6800	6790	9640	9850	7310	10700	9200	10200	13000	2920	1540
MIN	536	2580	1190	2400	395	376	715	223	211	141	142	164
CFSM	3.97	1.99	1.85	2.56	1.59	2.55	4.55	1.91	1.52	3.40	.81	.50
IN.	4.58	2.23	2.13	2.96	1.66	2.94	5.08	2.20	1.70	3.92	.93	.56
AC-FT	406400	197300	188800	262200	146800	261000	450300	195000	150400	347800	82880	49770
MEAN †	592	627	729	654	1671	1496	2963	12800	17990	6404	1413	736
CFSM †	0.36	0.38	0.44	0.39	1.00	.90	1.78	7.70	10.82	3.85	0.85	0.44
IN †	0.41	0.42	0.51	0.45	1.05	1.04	1.99	8.87	12.07	4.44	0.98	0.49
AC-FT †	36400	37300	44800	40200	92800	92000	176300	787000	1070400	393800	86880	43770

OBSERVED

CAL YR 1981	TOTAL	1450575	MEAN	3974	MAX	15700	MIN	138	AC-FT	2877000
WTR YR 1982	TOTAL	1380701	MEAN	3783	MAX	13000	MIN	141	AC-FT	2739000

ADJUSTED

CAL YR 1981	TOTAL	1334550	MEAN	3656	CFSM	2.20	IN	29.84	AC-FT	2647000
WTR YR 1982	TOTAL	1462892	MEAN	4008	CFSM	2.41	IN	32.71	AC-FT	2902000

† Adjusted for change in contents in Hungry Horse Reservoir.

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 March 30, 1979.

REMARKS.--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. Missing record Feb. 9 to Apr. 22 and July 5 to Aug. 6 due to sensing and/or recording unit failure.

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), 2.0°C on many days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 7.5°C June 19, 20, Aug. 7.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	3.0	3.5	---	---	---	---	---	---	4.0	3.5	3.5
2	3.5	3.5	3.5	---	---	---	---	---	---	4.0	3.5	4.0
3	3.5	3.0	3.5	---	---	---	---	---	---	4.0	4.0	4.0
4	3.5	3.0	3.5	---	---	---	---	---	---	4.0	4.0	4.0
5	3.5	3.0	3.0	---	---	---	---	---	---	4.0	4.0	4.0
6	3.0	3.0	3.0	---	---	---	---	---	---	4.0	3.5	4.0
7	3.0	3.0	3.0	---	---	---	---	---	---	4.0	4.0	4.0
8	3.5	3.0	3.0	---	---	---	---	---	---	4.5	4.0	4.5
9	---	---	---	---	---	---	---	---	---	4.5	4.5	4.5
10	---	---	---	---	---	---	---	---	---	4.5	4.0	4.0
11	---	---	---	---	---	---	---	---	---	5.0	4.0	4.5
12	---	---	---	---	---	---	---	---	---	4.5	4.0	4.5
13	---	---	---	---	---	---	---	---	---	4.5	4.0	4.5
14	---	---	---	---	---	---	---	---	---	4.5	4.0	4.5
15	---	---	---	---	---	---	---	---	---	5.5	4.0	4.5
16	---	---	---	---	---	---	---	---	---	4.5	4.0	4.5
17	---	---	---	---	---	---	---	---	---	4.5	4.0	4.0
18	---	---	---	---	---	---	---	---	---	4.0	3.5	4.0
19	---	---	---	---	---	---	---	---	---	4.5	4.0	4.0
20	---	---	---	---	---	---	---	---	---	4.5	3.5	4.0
21	---	---	---	---	---	---	---	---	---	5.5	3.5	4.5
22	---	---	---	---	---	---	3.5	---	---	6.0	4.5	5.0
23	---	---	---	---	---	---	3.5	3.5	3.5	6.0	4.5	5.0
24	---	---	---	---	---	---	3.5	3.5	3.5	6.0	4.0	5.0
25	---	---	---	---	---	---	3.5	3.5	3.5	5.0	4.0	4.5
26	---	---	---	---	---	---	3.5	3.5	3.5	4.0	3.5	4.0
27	---	---	---	---	---	---	3.5	3.5	3.5	4.5	3.5	4.0
28	---	---	---	---	---	---	3.5	3.5	3.5	4.0	4.0	4.0
29	---	---	---	---	---	---	3.5	3.5	3.5	4.5	3.5	4.0
30	---	---	---	---	---	---	3.5	3.5	3.5	5.0	4.0	4.5
31	---	---	---	---	---	---	---	---	---	5.0	4.0	4.5
MONTH	3.5	3.0	3.5	---	---	---	3.5	3.5	3.5	6.0	3.5	4.5
		JUNE			JULY			AUGUST			SEPTEMBER	
1	5.0	4.0	4.5	4.5	4.0	4.0	---	---	---	5.5	4.5	5.0
2	6.0	4.0	5.0	4.5	4.0	4.0	---	---	---	7.0	5.0	6.0
3	5.5	4.5	5.0	4.5	4.0	4.5	---	---	---	6.0	5.0	5.5
4	5.5	4.5	5.0	4.5	4.0	4.5	---	---	---	6.5	5.0	6.0
5	5.0	4.5	5.0	---	---	---	---	---	---	6.5	5.5	6.0
6	5.0	4.5	4.5	---	---	---	5.0	---	---	6.5	5.5	6.0
7	5.0	4.5	4.5	---	---	---	7.5	5.0	6.5	6.0	4.5	5.0
8	6.5	4.5	5.0	---	---	---	7.0	4.5	6.0	5.5	4.5	5.0
9	6.0	5.0	5.5	---	---	---	4.5	4.5	4.5	6.5	4.5	5.5
10	7.0	4.5	5.5	---	---	---	5.5	4.5	4.5	6.0	5.0	5.5
11	6.5	4.5	5.5	---	---	---	6.0	4.5	5.0	5.5	5.0	5.5
12	7.0	4.0	5.0	---	---	---	6.0	4.5	5.0	6.0	5.5	5.5
13	6.5	4.0	5.0	---	---	---	5.0	4.5	4.5	5.5	4.0	5.0
14	6.5	4.0	5.5	---	---	---	7.0	4.5	6.0	5.0	4.5	4.5
15	7.0	4.5	5.5	---	---	---	6.5	5.0	5.5	5.0	4.5	4.5
16	6.5	5.0	5.5	---	---	---	5.5	4.5	5.0	5.0	4.5	5.0
17	7.0	5.0	5.5	---	---	---	5.5	4.5	5.0	5.5	5.0	5.0
18	7.0	5.0	6.0	---	---	---	5.5	4.5	5.0	6.5	5.0	5.5
19	7.5	5.0	6.0	---	---	---	5.5	4.5	5.0	6.5	5.5	5.5
20	7.5	5.0	6.0	---	---	---	6.0	4.5	5.0	5.5	4.5	5.0
21	6.0	4.0	4.5	---	---	---	7.0	5.0	6.0	5.5	4.5	5.0
22	4.0	4.0	4.0	---	---	---	7.0	4.5	6.0	5.5	4.5	5.0
23	4.0	4.0	4.0	---	---	---	6.5	4.5	5.0	5.5	4.5	5.0
24	4.5	4.0	4.0	---	---	---	7.0	5.0	6.0	5.5	4.5	5.0
25	4.0	4.0	4.0	---	---	---	6.0	4.5	5.5	6.0	5.5	5.5
26	4.0	4.0	4.0	---	---	---	5.5	4.5	5.0	6.0	5.5	5.5
27	4.0	4.0	4.0	---	---	---	5.5	4.5	5.0	5.5	4.5	5.0
28	4.0	4.0	4.0	---	---	---	7.0	5.0	6.0	5.5	5.0	5.0
29	4.0	4.0	4.0	---	---	---	6.0	5.5	6.0	5.5	4.5	5.0
30	4.5	4.0	4.0	---	---	---	6.0	4.5	5.0	5.0	4.5	5.0
31	---	---	---	---	---	---	5.5	4.5	5.0	---	---	---
MONTH	7.5	4.0	5.0	4.5	4.0	4.5	7.5	4.5	5.5	7.0	4.0	5.5
YEAR	7.5	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 1981 TO SEPTEMBER 1982

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)
SEP 10...	0945	151	155	9.5	5.5

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 (61 m) downstream from county road bridge at Columbia Falls, 5.7 mi (9.2 km) downstream from South Fork, and at mile 143.0 (230.1 km).
DRAINAGE AREA.--4,464 mi^2 (11,562 km^2).

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 (907.594 m) 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 (61 m) upstream at datum 0.19 ft (0.058 m) 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 (17.5 km) upstream since Sept. 21, 1951 (see station number 12362000).
AVERAGE DISCHARGE.--54 years, 9,758 ft^3/s (276.3 m^3/s), 29.68 in/yr (754 mm/yr), 7,070,000 acre-ft/yr (8.72 km^3/yr), adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 176,000 ft^3/s (4,980 m^3/s) June 9, 1964, gage height, 25.58 ft (7.797 m), from floodmarks, from rating curve extended above 95,000 ft^3/s (2,690 m^3/s) on basis of slope-area measurement of peak flow; minimum, 798 ft^3/s (22.6 m^3/s) Dec. 8, 1929, gage height, -0.08 ft (-0.024 m).
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 22.7 ft (6.92 m), from floodmarks, discharge 142,000 ft^3/s (4,020 m^3/s), from rating curve extended above 95,000 ft^3/s (2,690 m^3/s) on basis of slope-area measurment of peak flow in 1964.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41,000 ft^3/s (1,161 m^3/s) May 26, gage height, 12.41 ft (3.783 m); minimum daily, 1,970 ft^3/s (55.8 m^3/s) Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6800	8840	3740	3410	3710	3090	8830	18100	16500	35000	5900	3970
2	10700	5050	2600	3460	3690	3040	9810	19400	17200	35300	6920	2660
3	7510	8580	2580	3500	3510	2960	9100	22800	18800	35500	6960	3710
4	2560	3950	3620	3420	4200	2880	8780	22500	21400	32800	6850	2580
5	6900	4050	3690	3310	10600	2700	9150	21200	24800	27800	7820	2670
6	5570	7120	3920	7400	8560	2670	9370	20000	27000	24700	7410	2600
7	4010	4020	4020	10400	3520	2640	8740	19500	25500	22700	4810	3640
8	4030	4060	3920	10600	3520	3850	9370	12400	22800	21800	5050	3760
9	2910	4160	3830	10700	3430	6150	6980	11200	20900	20700	7640	2740
10	3920	4160	3780	4810	3450	6850	2590	14300	21900	19700	6990	3110
11	3900	4160	3560	7740	3490	6720	2780	12600	25100	18600	5990	2580
12	7720	4150	3880	8720	3520	6790	8730	12700	29200	16200	6890	2550
13	5370	4030	3570	8770	3590	6570	13100	13600	34000	13900	6360	3670
14	10600	4070	3680	6370	3750	6490	13400	15800	37600	14800	4320	3380
15	10700	4120	4450	8670	4110	7280	13400	17400	37800	15400	4350	3100
16	10700	5810	7060	4320	4430	7050	13300	21900	38400	15400	5750	3050
17	10700	4180	7360	3360	2930	6240	13100	28000	38100	15100	5600	2900
18	10700	5810	7360	3490	2880	6880	5290	30400	35000	13800	5470	2120
19	10700	4900	3990	3540	3880	5780	11000	30200	32700	14800	5390	2060
20	10700	4140	5400	4500	6720	7110	13600	27400	32600	14500	5150	2760
21	10600	4110	5140	3440	5020	7060	12900	26400	34200	14700	3640	2790
22	10600	4180	4430	6030	8690	7960	13000	27400	37200	12700	3570	2850
23	10600	4190	6040	3960	7950	8730	13700	31500	35600	12400	4710	2740
24	10700	4130	8600	3510	7110	8580	11000	33200	33100	8010	3330	2720
25	10700	4060	3710	3780	5460	8670	10900	33200	31500	9060	4300	1970
26	10700	4080	3700	4200	4650	8640	14400	38800	32700	11300	4530	1990
27	10700	4090	3630	4240	3420	9300	17400	35200	34200	10800	4390	2960
28	6530	4080	3500	4230	3220	8930	18400	27100	35700	11000	2930	3050
29	6520	4150	3410	4140	---	8970	19000	22400	34000	9990	2790	3210
30	6490	4210	3410	3750	---	8970	18600	18900	36200	9070	4040	3040
31	10700	---	3420	3760	---	9480	---	17000	---	6320	3980	---
TOTAL	251540	140640	135000	165530	133010	199030	339720	702500	901700	543850	163830	86930
MEAN	8114	4688	4355	5340	4750	6420	11320	22660	30060	17540	5285	2898
MAX	10700	8840	8600	10700	10600	9480	19000	38800	38400	35500	7820	3970
MIN	2560	3950	2580	3310	2880	2640	2590	11200	16500	6320	2790	1970
CFSM	1.82	1.05	.98	1.20	1.06	1.44	2.54	5.08	6.73	3.93	1.18	.65
IN.	2.10	1.17	1.12	1.38	1.11	1.66	2.83	5.85	7.51	4.53	1.37	.72
AC-FT	498900	279000	267800	328300	263800	394800	673800	1393000	1789000	1079000	325000	172400
MEAN †	2096	2000	2013	1729	3778	3672	6719	32280	45530	18300	5351	2796
CFSM †	0.47	0.45	0.45	0.39	0.85	0.82	1.51	7.23	10.2	4.10	1.20	0.63
IN †	0.54	0.50	0.52	0.45	0.88	0.95	1.68	8.34	11.38	4.73	1.38	0.70
AC-FT †	128900	119000	123800	106300	209800	225800	399800	1985000	2709000	1125000	329000	166400

OBSERVED

CAL YR 1981	TOTAL	3783170	MEAN	10360	MAX	38000	MIN	1710	AC-FT	7504000
WTR YR 1982	TOTAL	3763280	MEAN	10310	MAX	38800	MIN	1970	AC-FT	7465000

ADJUSTED

CAL YR 1981	TOTAL	3667506	MEAN	10050	CFSM	2.25	IN	30.55	AC-FT	7274000
WTR YR 1982	TOTAL	3845626	MEAN	10540	CFSM	2.36	IN	32.04	AC-FT	7628000

† 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 March 27, 1979.

REMARKS.--Water years 1968-69 temperature records published as Flathead River near Kalispell (station 12363500) 15 mi (24 km) 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, 17.0°C July 31, Aug. 7, 8; minimum, 0.0°C Feb. 22, 25.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (FTU) (00076)	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)
NOV 03...	1030	10600	1	158	7.8	10.0	5.5	.60	10.4	92	<11	<1
JAN 12...	1330	10900	76	161	8.0	-2.0	4.0	.50	11.3	97	--	<1
MAR 26...	0900	2370	0	178	8.1	3.0	3.0	.40	12.0	101	--	K2
MAY 17...	1130	34700	0	150	7.9	22.0	5.5	55	11.3	101	--	K8
JUN 09...	1230	20900	3	143	7.9	16.0	8.0	7.2	10.8	102	--	K3
AUG 03...	1000	5670	60	162	7.5	18.0	12.0	.60	9.5	99	--	K5

DATE	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) (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)	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 03...	<1	81	2.0	23	5.7	.8	.0	.6	79	<5.0	.5	.0
JAN 12...	53	78	.00	22	5.5	.8	.0	.4	81	<5.0	.3	.1
MAR 26...	K1	96	.00	27	6.8	1.1	.1	.5	97	<5.0	.4	.1
MAY 17...	29	75	.00	21	5.5	1.0	.1	.5	75	5.0	.3	<.1
JUN 09...	K3	73	1.0	21	5.0	.9	.0	.9	72	<5.0	.5	.1
AUG 03...	140	83	--	24	5.5	1.0	.1	.3	75	5.0	.3	<.1

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT.--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	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)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (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)
NOV 03...	4.2	84	--	.11	2400	1	<.09	.16	.40	.011	.011
JAN 12...	4.0	80	--	.11	2350	--	<.09	.36	.44	.013	.014
MAR 26...	4.6	99	--	.13	634	--	<.10	.12	.28	<.005	<.005
MAY 17...	4.7	80	83	.11	7500	--	.10	.11	2.2	.064	<.005
JUN 09...	4.7	88	--	.12	4970	--	.51	.17	.60	.009	<.005
AUG 03...	4.2	89	86	.12	1360	--	<.10	.18	.70	<.005	<.001

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	DATE	TIME	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
OCT 29...	1100	8	MAY 29...	0900	86
DEC 31...	1100	16	JUL 30...	0830	0
MAR 27...	1030	2	SEP 25...	1000	0

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
NOV 03...	1030	2	1	200	100	<1	<1	<10	<10	2
MAR 26...	0900	1	2	100	110	2	<1	<10	<10	3
JUN 09...	1230	1	<1	100	70	<1	<1	<10	<10	<1
AUG 03...	1000	1	1	<100	87	<1	<1	<10	<10	<1

DATE	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
NOV 03...	<3	6	3	270	33	2	1	10	2	.1
MAR 26...	<1	5	1	10	4	2	<1	<10	2	<.1
JUN 09...	1	2	1	400	6	<1	<1	0	<1	<.1
AUG 03...	<1	3	1	40	5	3	<1	10	4	.1

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 03...	.0	0	<1	<1	<1	<1	<1	10	<3
MAR 26...	<.1	7	<1	<1	<1	<1	<1	20	4
JUN 09...	<.1	1	<1	<1	<1	1	<1	10	<3
AUG 03...	<.1	1	<1	<1	<1	<1	<1	30	40

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV						
03...	1030	5.5	10600	2	57	54
JAN						
12...	1330	4.0	10900	4	118	35
MAR						
26...	0900	3.0	2370	2	13	46
MAY						
17...	1130	5.5	34700	442	41400	30
JUN						
09...	1230	8.0	20900	25	1410	74
AUG						
03...	1000	12.0	5670	4	61	53

ADDITIONAL WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	WEATHER (WMO CODE NUMBER) (00041)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)
NOV						
03...	1030	10600	1	158	10.0	5.5
JAN						
12...	1330	10900	76	161	-2.0	4.0
MAR						
26...	0900	2370	0	178	3.0	3.0
MAY						
17...	1130	34700	0	150	22.0	5.5
JUN						
09...	1230	20900	3	143	16.0	8.0
AUG						
03...	1000	5670	60	162	18.0	12.0
19...	1000	3600	--	170	22.0	14.5
SEP						
10...	1240	2460	--	189	15.0	12.0

PEND OREILLE RIVER BASIN

12363920 STILLWATER RIVER AT OLNEY, MT

LOCATION.--Lat 48°32'35", long 114°34'30", in NE¼NW¼NE¼ sec.18, T.32 N., R.23 W., Flathead County, Hydrologic Unit 17010210, Stillwater State Forest, on left bank, 50 ft (15 m) downstream from bridge, 0.8 mi (1.3 km) upstream from Lower Stillwater Lake, 0.4 mi (0.6 km) south of Olney, and at mile 38.2 (61.5 km).

DRAINAGE AREA.--146 mi^2 (378 km^2).

PERIOD OF RECORD.--October 1972 to September 1982 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 3,072.46 ft (936.486 m) National Geodetic Vertical Datum of 1929. October 2, 1972, to May 31, 1977, nonrecording gage and crest-stage gage on bridge 0.5 mi (0.8 km) downstream at datum 21.56 ft (6.571 m) lower. June 1, 1977, to Sept. 30, 1978, nonrecording gage on bridge 50 ft (15 m) upstream at same datum.

REMARKS.--Records good. No 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.--10 years, 148 ft^3/s (4.191 m^3/s), 13.77 in/yr (350 mm/yr) 107,200 acre-ft/yr (132 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,740 ft^3/s (49.3 m^3/s) June 18, 1974, gage height, 4.42 ft (1.347 m); maximum gage height observed, 5.72 ft (1.743 m) Jan. 9, 1973 (backwater from ice), site and datum then in use; minimum discharge, 24 ft^3/s (0.68 m^3/s) Feb. 20, 1980, gage height, 0.78 ft (0.238 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 644 ft^3/s (18.2 m^3/s) May 27, gage height, 3.14 ft (0.957 m); minimum daily, 25 ft^3/s (0.71 m^3/s) Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	53	43	35	34	59	90	283	428	406	166	88
2	66	53	48	36	34	62	90	289	413	413	163	85
3	65	51	46	37	29	60	92	311	413	417	161	83
4	63	51	47	35	25	60	93	327	421	413	157	87
5	62	50	47	32	26	59	92	330	447	410	154	87
6	62	49	50	30	27	58	90	317	490	395	150	85
7	62	48	50	31	29	58	85	311	531	385	145	83
8	60	48	52	33	28	57	81	305	531	371	141	81
9	62	48	52	32	26	59	80	301	502	360	139	78
10	62	48	52	31	28	66	80	292	474	343	145	77
11	60	48	50	32	30	71	93	283	459	327	139	75
12	60	48	47	33	32	74	115	277	466	311	135	77
13	59	48	41	34	34	75	137	277	482	295	131	77
14	58	51	42	35	37	75	166	286	531	286	127	75
15	58	53	43	34	39	77	185	301	573	286	123	74
16	57	53	42	33	41	75	182	337	604	286	119	72
17	57	58	42	32	42	74	173	381	622	280	119	72
18	55	59	40	31	42	71	168	428	626	271	117	71
19	55	58	40	32	49	69	161	478	604	265	113	69
20	54	57	40	34	57	68	157	498	582	254	109	68
21	54	55	39	33	65	66	154	490	565	242	107	68
22	53	57	39	32	69	66	159	486	552	231	104	66
23	53	55	39	33	71	66	182	506	531	223	102	65
24	53	54	39	35	71	66	212	531	506	215	99	65
25	53	53	39	37	65	68	242	552	478	207	97	65
26	53	50	38	38	62	68	256	586	447	202	95	71
27	53	46	37	36	60	72	268	635	432	194	93	71
28	53	44	36	34	59	75	277	617	421	190	90	80
29	53	43	36	33	---	81	283	560	410	182	88	80
30	53	42	35	33	---	87	286	502	403	177	88	78
31	53	---	34	34	---	88	---	462	---	173	87	---
TOTAL	1786	1531	1325	1040	1211	2130	4729	12539	14944	9010	3803	2273
MEAN	57.6	51.0	42.7	33.5	43.3	68.7	158	404	498	291	123	75.8
MAX	66	59	52	38	71	88	286	635	626	417	166	88
MIN	53	42	34	30	25	57	80	277	403	173	87	65
CFSM	.40	.35	.29	.23	.30	.47	1.08	2.77	3.41	1.99	.84	.52
IN.	.46	.39	.34	.26	.31	.54	1.20	3.19	3.81	2.30	.97	.58
AC-FT	3540	3040	2630	2060	2400	4220	9380	24870	29640	17870	7540	4510

CAL YR 1981 TOTAL 61268 MEAN 168 MAX 663 MIN 34 CFSM 1.15 IN 15.61 AC-FT 121500
WTR YR 1982 TOTAL 56321 MEAN 154 MAX 635 MIN 25 CFSM 1.06 IN 14.35 AC-FT 111700

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 (180 m) downstream from road bridge, 6.2 mi (10.0 km) southwest of Whitefish, 10.6 mi (17.1 km) upstream from Whitefish River, and at mile 13.6 (21.9 km).

DRAINAGE AREA.--524 mi^2 (1,357 km^2).

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 (900.154 m) 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 (809,000 m^2) above station.

AVERAGE DISCHARGE.--30 years (water years 1931-50, 1973-1982), 339 ft^3/s (9.600 m^3/s), 8.79 in/yr (223 mm/yr), 245,600 acre-ft/yr (303 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,330 ft^3/s (123 m^3/s) May 26, 1948, gage height, 20.90 ft (6.370 m), from floodmark; minimum daily, 40 ft^3/s (1.13 m^3/s) Dec. 24, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,940 ft^3/s (54.9 m^3/s) May 29, gage height, 13.70 ft (4.176 m); minimum daily, 52 ft^3/s (1.47 m^3/s) Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	124	105	106	88	95	155	215	1060	1640	873	315	178
2	123	104	105	90	85	150	216	1080	1480	886	308	175
3	124	103	102	94	75	160	215	1110	1330	938	302	171
4	126	103	105	92	65	155	219	1180	1240	960	300	170
5	126	101	109	85	52	150	220	1240	1190	966	293	175
6	124	100	114	70	56	150	215	1270	1180	942	285	174
7	122	96	120	75	58	145	208	1280	1190	909	278	171
8	122	95	124	80	60	145	200	1260	1210	868	272	167
9	122	95	124	85	56	150	194	1230	1220	825	269	163
10	122	94	123	82	62	160	196	1200	1190	780	269	159
11	122	94	125	80	70	170	217	1150	1140	741	276	153
12	121	93	115	85	78	180	293	1100	1090	696	270	151
13	120	95	60	90	85	190	348	1070	1050	654	259	152
14	119	99	65	95	90	195	416	1070	1030	624	252	151
15	116	103	75	100	95	200	499	1100	1040	611	250	148
16	114	106	80	90	100	200	545	1170	1080	594	246	145
17	114	111	85	92	110	195	551	1280	1150	587	242	142
18	113	118	90	95	120	190	542	1400	1200	574	237	141
19	112	122	95	90	130	180	528	1540	1200	556	229	139
20	110	121	100	85	145	170	501	1680	1170	535	224	135
21	109	119	105	80	160	165	475	1780	1110	512	216	134
22	107	117	100	85	170	160	473	1820	1050	487	212	133
23	105	117	100	92	175	161	501	1820	1000	461	210	133
24	105	117	100	96	180	162	579	1820	965	439	206	131
25	105	113	100	100	175	161	699	1840	919	419	200	129
26	105	106	99	105	170	162	802	1850	870	401	197	131
27	105	96	98	105	165	172	876	1880	851	383	189	135
28	106	101	96	100	160	187	932	1920	854	368	182	148
29	107	120	94	105	---	206	990	1930	841	356	175	163
30	106	120	92	110	---	212	1040	1880	855	347	174	174
31	105	---	90	105	---	213	---	1780	---	329	178	---
TOTAL	3561	3184	3096	2826	3042	5351	13905	44790	33335	19621	7515	4571
MEAN	115	106	99.9	91.2	109	173	464	1445	1111	633	242	152
MAX	126	122	125	110	180	213	1040	1930	1640	966	315	178
MIN	105	93	60	70	52	145	194	1060	841	329	174	129
CFSM	.22	.20	.19	.17	.21	.33	.89	2.76	2.12	1.21	.46	.29
IN.	.25	.23	.22	.20	.22	.38	.99	3.18	2.37	1.39	.53	.32
AC-FT	7060	6320	6140	5610	6030	10610	27580	88840	66120	38920	14910	9070

CAL YR 1981 TOTAL 143509 MEAN 393 MAX 1660 MIN 60 CFSM .75 IN 10.19 AC-FT 284700
WTR YR 1982 TOTAL 144797 MEAN 397 MAX 1930 MIN 52 CFSM .76 IN 10.28 AC-FT 287200

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1977 to current year.

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, 20.5°C Aug. 10; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	.0	.0	.0	4.0	4.0	4.0	7.5	6.0	7.0
2	.0	.0	.0	.0	.0	.0	4.0	3.5	3.5	8.5	6.5	7.5
3	.0	.0	.0	.0	.0	.0	3.5	3.0	3.5	9.0	7.5	8.0
4	.0	.0	.0	.0	.0	.0	4.0	3.5	3.5	8.5	7.5	8.0
5	.0	.0	.0	.0	.0	.0	3.5	3.0	3.0	8.0	6.5	7.5
6	.0	.0	.0	.0	.0	.0	4.0	3.0	3.5	7.5	6.5	7.0
7	.0	.0	.0	.0	.0	.0	4.0	3.0	3.5	7.5	6.5	7.0
8	.0	.0	.0	.0	.0	.0	4.0	3.5	3.5	7.5	7.0	7.0
9	.0	.0	.0	.0	.0	.0	4.5	3.5	4.0	7.5	6.5	7.0
10	.0	.0	.0	.0	.0	.0	5.5	3.5	4.5	7.5	6.0	6.5
11	.0	.0	.0	.0	.0	.0	6.0	5.5	5.5	8.5	6.0	7.0
12	.0	.0	.0	.0	.0	.0	6.5	6.0	6.0	9.0	7.0	8.0
13	.0	.0	.0	.0	.0	.0	6.0	5.5	5.5	9.5	7.5	8.5
14	.0	.0	.0	.0	.0	.0	6.0	5.0	5.0	10.0	8.0	9.0
15	.0	.0	.0	.0	.0	.0	5.5	4.5	5.0	11.0	8.5	9.5
16	.0	.0	.0	.0	.0	.0	5.5	4.0	4.5	10.5	9.5	10.0
17	.0	.0	.0	.0	.0	.0	5.5	4.0	4.5	10.5	9.0	9.5
18	.0	.0	.0	.0	.0	.0	5.0	4.0	4.5	10.5	10.0	10.0
19	.0	.0	.0	.0	.0	.0	5.0	4.0	4.5	10.5	9.5	9.5
20	.0	.0	.0	1.0	.0	.5	5.5	4.0	4.5	10.0	9.0	9.5
21	.0	.0	.0	2.5	1.0	2.0	6.5	4.5	5.5	11.0	9.5	10.0
22	.0	.0	.0	3.5	2.5	3.0	8.0	6.0	6.5	11.5	10.5	11.0
23	.0	.0	.0	4.0	3.0	3.5	9.0	6.5	7.5	11.5	10.5	11.0
24	.0	.0	.0	4.5	3.0	3.5	9.0	7.0	8.0	11.0	9.5	10.0
25	.0	.0	.0	4.0	2.5	3.5	8.5	6.5	7.5	11.5	9.5	10.5
26	.0	.0	.0	4.5	3.0	3.5	8.0	6.0	6.5	12.0	11.5	12.0
27	.0	.0	.0	5.0	3.5	4.5	8.5	6.0	7.0	12.0	10.5	11.0
28	.0	.0	.0	5.5	4.0	5.0	8.0	6.5	7.5	10.5	9.5	10.0
29	---	---	---	5.0	4.5	5.0	7.5	6.5	7.0	9.5	9.0	9.5
30	---	---	---	4.5	4.0	4.5	7.5	6.0	6.5	9.5	8.5	9.0
31	---	---	---	4.5	4.0	4.0	---	---	---	11.0	9.5	10.0
MONTH	.0	.0	.0	5.5	.0	1.5	9.0	3.0	5.0	12.0	6.0	9.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	10.5	11.0	18.5	17.0	18.0	20.0	19.5	20.0	15.5	14.0	15.0
2	12.5	11.0	12.0	18.5	17.5	18.0	20.0	19.0	19.5	16.5	14.5	15.5
3	12.5	11.5	12.0	18.0	17.0	17.0	18.5	17.0	17.5	17.0	15.0	16.0
4	12.5	11.5	12.0	17.0	16.0	16.5	17.0	16.0	16.5	18.0	16.5	17.0
5	12.0	12.0	12.0	16.0	15.0	15.5	17.5	16.5	17.0	17.5	16.0	17.0
6	11.5	11.0	11.5	15.5	14.0	15.0	18.0	17.0	17.5	17.0	15.5	16.5
7	11.5	11.0	11.0	15.5	14.5	15.0	19.0	18.0	18.5	17.0	15.0	16.0
8	11.5	10.5	11.0	15.5	14.0	15.0	19.5	18.5	19.0	17.0	15.0	16.0
9	12.0	11.0	11.5	17.0	15.0	16.0	19.5	19.0	19.5	16.5	15.0	16.0
10	13.0	11.0	12.0	18.0	15.0	16.5	20.5	18.5	19.0	16.5	15.5	16.0
11	13.5	12.0	12.5	19.0	15.5	17.0	20.0	18.5	19.0	15.5	13.5	14.0
12	14.5	12.5	13.5	18.5	16.0	17.5	18.5	17.5	18.0	13.5	13.0	13.0
13	15.5	13.5	14.5	19.0	17.0	18.0	18.0	16.5	17.0	13.0	12.0	12.5
14	15.5	14.0	15.0	18.5	17.5	18.0	17.5	16.5	17.0	12.0	11.0	11.5
15	15.5	14.5	15.0	18.0	15.5	16.5	17.5	16.5	17.0	11.5	10.0	11.0
16	15.5	14.5	15.0	15.5	14.0	14.5	18.0	16.5	17.0	12.5	11.0	11.5
17	16.0	15.0	15.5	15.0	13.5	14.5	19.0	17.0	18.0	12.5	10.5	11.5
18	17.0	15.0	15.5	16.5	14.0	15.0	19.5	17.0	18.5	13.0	11.0	12.0
19	17.5	15.5	16.5	17.0	15.0	16.0	19.5	17.5	18.5	13.5	12.0	13.0
20	18.0	16.0	17.0	18.5	16.0	17.0	19.5	17.5	18.5	13.5	12.0	13.0
21	18.0	16.5	17.5	18.5	16.5	17.5	19.5	18.0	18.5	13.5	13.0	13.5
22	17.5	16.5	17.0	18.5	16.5	17.5	19.0	17.5	18.5	13.5	12.0	13.0
23	17.0	16.5	16.5	18.5	16.5	17.5	19.5	18.0	18.5	13.5	12.0	13.0
24	17.0	16.0	16.5	18.0	16.5	17.0	19.0	17.5	18.0	13.0	12.0	12.5
25	16.5	15.5	16.0	18.5	17.0	17.5	19.0	17.0	18.0	13.0	12.0	12.5
26	17.0	15.5	16.0	18.5	17.5	18.0	18.5	17.0	18.0	13.0	13.0	13.0
27	17.5	16.0	16.5	19.0	18.0	18.5	18.5	16.5	17.5	13.0	12.0	12.5
28	17.0	16.0	16.5	19.5	18.5	19.0	18.0	16.0	17.0	12.0	11.0	11.5
29	18.0	16.0	16.5	20.0	19.0	19.5	17.5	15.5	16.0	11.0	10.0	10.5
30	18.5	16.5	17.5	20.0	19.0	20.0	16.0	14.5	15.5	10.0	9.0	10.0
31	---	---	---	20.0	19.5	20.0	16.0	14.5	15.0	---	---	---
MONTH	18.5	10.5	14.5	20.0	13.5	17.0	20.5	14.5	18.0	18.0	9.0	13.5
YEAR	20.5	.0	7.5									

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 (49 m) upstream from road bridge, 8.0 mi (12.9 km) north of Kalispell, and at mile 8.3 (13.4 km).

DRAINAGE AREA.--170 mi^2 (440 km^2).

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 (905.204 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 16, 1930, nonrecording gage at site 200 ft (61 m) downstream at datum 10.00 ft (3.048 m) 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 (2.6 km^2) above station.

AVERAGE DISCHARGE.--31 years (1929-50, 1972-82), 193 ft^3/s (5.466 m^3/s), 139,800 acre-ft/yr (172 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,580 ft^3/s (44.7 m^3/s) June 24, 1974, gage height, 4.91 ft (1.497 m); minimum, 4.5 ft^3/s (0.13 m^3/s) Oct. 18, 1934, gage height, 0.83 ft (0.253 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 877 ft^3/s (24.8 m^3/s) June 22, gage height, 3.58 ft (1.091 m); minimum daily, 32 ft^3/s (0.91 m^3/s) Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	59	54	44	46	78	113	230	704	744	195	100
2	69	59	58	45	45	80	111	245	686	730	189	97
3	69	59	59	46	38	78	106	274	682	708	181	97
4	67	59	58	45	32	78	106	290	695	677	175	97
5	67	58	58	43	34	76	111	283	708	651	172	100
6	65	58	59	40	36	80	111	283	744	639	167	97
7	65	56	61	41	38	85	106	287	757	617	161	95
8	65	56	61	42	36	90	104	293	766	596	159	93
9	65	56	61	43	34	97	101	297	748	568	159	90
10	65	56	61	44	37	104	101	297	735	547	159	88
11	67	56	61	45	40	111	113	300	721	519	156	88
12	65	56	59	46	45	108	161	310	726	488	151	88
13	63	56	50	48	48	108	159	317	735	464	145	86
14	63	57	51	50	52	106	167	340	762	457	143	84
15	63	58	52	48	56	113	169	372	784	442	143	82
16	63	59	52	46	62	113	164	408	812	430	140	80
17	61	63	52	45	55	108	161	445	840	416	138	78
18	61	69	49	44	55	101	159	488	863	394	133	78
19	59	65	49	46	60	101	156	527	863	376	130	75
20	59	65	49	48	70	100	153	547	868	354	125	73
21	58	63	47	50	80	97	151	559	873	340	120	73
22	58	63	47	52	85	100	151	580	873	320	120	75
23	58	65	47	54	90	101	156	617	863	303	115	73
24	58	65	47	56	90	106	169	647	844	290	113	73
25	58	63	47	58	85	108	183	673	816	274	111	71
26	59	63	46	58	80	108	189	712	803	255	108	75
27	59	61	45	54	78	118	200	762	784	239	106	75
28	59	60	44	50	76	123	215	771	784	227	104	80
29	59	58	43	46	---	123	221	766	762	221	106	82
30	59	56	42	46	---	118	221	748	775	212	106	80
31	59	---	43	46	---	113	---	726	---	209	101	---
TOTAL	1934	1797	1612	1469	1583	3130	4488	14394	23376	13707	4331	2523
MEAN	62.4	59.9	52.0	47.4	56.5	101	150	464	779	442	140	84.1
MAX	69	69	61	58	90	123	221	771	873	744	195	100
MIN	58	56	42	40	32	76	101	230	682	209	101	71
AC-FT	3840	3560	3200	2910	3140	6210	8900	28550	46370	27190	8590	5000

CAL YR 1981 TOTAL 88367 MEAN 242 MAX 859 MIN 42 AC-FT 175300
WTR YR 1982 TOTAL 74344 MEAN 204 MAX 873 MIN 32 AC-FT 147500

12366000 WHITEFISH RIVER NEAR KALISPELL, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1977 to current year.

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, 22.0°C July 29-31; minimum, 0.0°C on many days during November to March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	10.5	11.5	6.5	6.0	6.0	2.0	1.5	1.5	.0	.0	.0
2	12.5	12.0	12.0	6.5	5.5	6.0	2.0	1.5	1.5	.0	.0	.0
3	12.0	11.0	11.5	6.0	5.0	5.5	1.5	.5	1.0	.0	.0	.0
4	11.5	10.0	10.5	6.0	5.5	6.0	1.0	.5	1.0	.0	.0	.0
5	10.5	8.5	9.0	6.0	4.5	5.0	1.5	.5	1.0	.0	.0	.0
6	10.5	9.0	9.5	5.0	3.5	4.0	2.5	1.5	2.0	.0	.0	.0
7	11.0	10.0	10.5	3.5	3.0	3.5	3.0	2.5	2.5	.0	.0	.0
8	11.0	10.5	10.5	4.5	3.5	4.0	3.0	2.5	2.5	.0	.0	.0
9	10.5	9.5	10.0	4.5	4.0	4.5	2.5	2.5	2.5	.0	.0	.0
10	9.5	8.5	9.0	4.5	3.5	4.0	2.5	2.5	2.5	.0	.0	.0
11	9.5	8.5	9.0	4.5	4.0	4.0	2.5	2.0	2.0	.0	.0	.0
12	8.5	8.0	8.0	5.0	4.5	4.5	2.0	.5	1.0	.0	.0	.0
13	8.0	7.0	7.5	5.0	4.5	4.5	.5	.0	.0	.0	.0	.0
14	8.0	7.0	7.5	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
15	8.0	7.0	7.5	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
16	8.0	7.0	7.5	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
17	8.0	7.0	7.5	5.0	4.5	5.0	.0	.0	.0	.0	.0	.0
18	8.0	7.0	7.5	5.0	4.5	5.0	.0	.0	.0	.0	.0	.0
19	8.0	7.0	7.5	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
20	8.0	6.5	7.0	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
21	7.0	5.5	6.0	5.0	4.5	5.0	.0	.0	.0	.0	.0	.0
22	5.5	4.5	5.0	5.0	5.0	5.0	.0	.0	.0	.0	.0	.0
23	5.0	4.0	4.5	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
24	6.0	5.0	5.0	4.0	3.5	3.5	.0	.0	.0	.0	.0	.0
25	7.5	6.0	6.5	3.0	2.5	3.0	.0	.0	.0	.0	.0	.0
26	8.0	7.0	7.5	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
27	8.5	8.0	8.5	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
28	8.5	7.5	8.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
29	8.0	7.5	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	7.5	7.0	7.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0
31	7.0	6.5	7.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	12.5	4.0	8.0	6.5	.0	4.0	3.0	.0	.5	.0	.0	.0

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	.0	.0	.0	4.0	3.0	3.5	7.5	6.5	7.0
2	.0	.0	.0	.0	.0	.0	4.5	2.5	3.5	9.0	7.0	8.0
3	.0	.0	.0	.0	.0	.0	3.5	2.0	3.0	8.5	7.0	8.0
4	.0	.0	.0	.0	.0	.0	3.0	1.5	2.0	7.5	6.0	6.5
5	.0	.0	.0	.0	.0	.0	4.0	2.0	3.0	7.0	6.0	6.5
6	.0	.0	.0	.0	.0	.0	4.5	3.0	3.5	7.0	6.0	6.5
7	.0	.0	.0	.0	.0	.0	4.0	2.0	3.0	7.0	6.5	7.0
8	.0	.0	.0	1.0	.0	.5	4.5	2.0	3.0	7.0	6.5	6.5
9	.0	.0	.0	2.0	1.0	1.5	5.5	2.5	4.0	7.0	6.5	6.5
10	.0	.0	.0	2.5	1.5	2.0	7.0	3.5	5.5	7.5	6.5	7.0
11	.0	.0	.0	2.5	1.5	2.0	7.5	5.5	6.5	8.0	6.0	7.0
12	.0	.0	.0	1.5	1.0	1.5	6.0	5.5	5.5	8.5	6.5	7.5
13	.0	.0	.0	2.0	1.0	1.5	5.5	4.5	5.5	9.5	7.0	8.0
14	.0	.0	.0	3.5	1.5	2.5	6.0	4.5	5.0	10.0	8.0	9.0
15	.0	.0	.0	3.5	2.5	3.0	5.0	4.0	4.5	11.0	9.0	10.0
16	.0	.0	.0	3.0	2.0	2.5	5.0	4.0	4.5	11.0	9.5	10.0
17	.0	.0	.0	3.0	2.0	2.5	5.0	3.5	4.5	11.0	9.5	10.0
18	.0	.0	.0	1.5	.5	1.0	4.5	3.5	4.0	11.0	8.0	9.0
19	.0	.0	.0	2.0	.0	1.0	4.0	3.0	3.5	9.0	8.0	8.5
20	.0	.0	.0	3.5	1.5	2.5	5.5	3.0	4.5	10.5	8.0	9.0
21	.0	.0	.0	4.0	2.5	3.0	7.5	4.5	6.0	11.0	8.0	9.5
22	.0	.0	.0	4.5	2.5	3.5	8.5	5.5	7.0	11.0	9.5	10.5
23	.0	.0	.0	4.5	3.0	4.0	9.0	6.5	8.0	12.0	10.0	11.0
24	.0	.0	.0	4.5	2.5	3.5	9.0	7.0	8.0	12.5	10.5	11.5
25	.0	.0	.0	4.0	2.0	3.0	7.5	5.5	7.0	12.5	10.0	11.5
26	.0	.0	.0	5.0	2.0	3.5	7.0	5.5	6.0	12.5	10.0	10.5
27	.0	.0	.0	6.5	3.5	5.0	8.0	6.5	7.5	10.0	9.0	9.5
28	.0	.0	.0	5.5	4.5	5.0	8.0	5.5	7.0	9.5	9.0	9.0
29	---	---	---	5.0	4.0	4.5	6.0	5.0	5.5	9.0	8.5	9.0
30	---	---	---	5.0	3.5	4.0	6.5	5.5	6.0	11.0	8.5	9.5
31	---	---	---	5.0	3.5	4.0	---	---	---	11.5	9.0	10.0
MONTH	.0	.0	.0	6.5	.0	2.0	9.0	1.5	5.0	12.5	6.0	8.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.5	9.5	10.5	19.0	18.0	18.5	21.0	20.0	20.5	17.5	15.0	16.0
2	12.5	10.0	11.0	19.0	17.5	18.0	20.5	19.0	20.0	18.5	15.5	17.0
3	12.5	10.5	11.5	18.0	17.5	17.5	19.0	17.5	18.0	19.5	16.5	18.0
4	12.5	10.5	11.5	18.0	16.5	17.0	19.0	17.0	18.0	20.0	18.0	18.5
5	12.0	10.5	11.0	17.0	16.0	16.0	20.0	18.0	19.0	19.0	17.0	18.0
6	11.0	9.5	10.5	16.5	15.0	16.0	21.0	19.0	20.0	18.0	16.0	17.0
7	11.0	9.0	10.0	16.5	15.0	15.5	21.5	19.5	20.5	18.5	16.0	17.0
8	12.0	9.5	11.0	16.5	15.0	16.0	21.5	19.5	20.5	18.5	16.0	17.0
9	12.5	11.0	11.5	18.0	15.5	16.5	20.5	19.5	20.0	18.5	16.5	17.5
10	14.0	11.0	12.5	18.0	15.5	17.0	21.0	19.0	20.0	18.0	16.5	17.0
11	15.0	12.0	13.0	18.5	16.0	17.0	20.5	19.5	20.0	16.0	13.5	14.5
12	16.0	13.5	14.5	18.5	17.0	18.0	19.0	18.0	18.5	14.0	13.0	13.5
13	16.0	13.0	14.0	19.5	17.5	18.5	19.5	17.0	18.0	14.0	13.0	13.5
14	15.0	13.0	14.0	19.5	17.5	18.5	19.5	18.0	18.5	13.0	12.0	12.5
15	15.5	13.5	14.5	17.0	14.0	15.0	19.0	17.5	18.0	13.0	10.5	11.5
16	15.5	14.5	15.5	14.5	14.0	14.5	19.5	17.5	18.5	14.0	11.5	12.5
17	16.5	15.0	15.5	16.5	14.0	15.0	21.0	18.0	19.5	15.0	12.5	13.5
18	16.5	15.0	16.0	16.5	15.0	16.0	21.0	18.5	20.0	15.0	12.5	13.5
19	17.5	15.0	16.0	18.0	16.0	17.0	21.5	18.5	20.0	15.5	13.5	14.5
20	17.5	15.0	16.5	19.0	18.0	18.0	21.5	19.0	20.0	15.5	13.5	14.5
21	18.0	16.0	17.0	19.5	18.0	19.0	21.5	19.0	20.0	15.0	14.0	14.5
22	18.0	16.5	17.0	19.5	19.0	19.5	21.0	19.0	20.0	14.5	13.0	14.0
23	17.5	16.0	17.0	19.0	18.0	18.5	20.5	18.5	19.5	14.5	12.5	13.5
24	18.0	15.5	17.0	19.0	18.0	18.5	20.5	18.0	19.5	14.5	12.5	13.5
25	18.0	16.5	17.0	19.5	18.5	19.0	20.5	18.0	19.5	15.0	13.0	14.0
26	18.5	16.5	17.5	20.0	19.0	19.5	20.0	18.0	19.0	14.5	14.0	14.5
27	18.5	16.5	17.5	20.5	19.5	20.0	20.0	17.5	19.0	14.5	12.5	13.5
28	18.0	17.5	18.0	21.5	20.0	21.0	19.5	17.0	18.5	12.5	11.0	11.5
29	19.0	17.5	18.0	22.0	21.0	21.0	18.0	16.5	17.0	11.0	10.0	10.5
30	19.0	17.0	18.0	22.0	21.0	21.5	16.5	15.5	16.0	11.0	9.5	10.0
31	---	---	---	22.0	21.0	21.5	16.5	15.5	16.0	---	---	---
MONTH	19.0	9.0	14.5	22.0	14.0	18.0	21.5	15.5	19.0	20.0	9.5	14.5
YEAR	22.0	.0	8.0									

12369200 SWAN RIVER NEAR CONDON, MT

LOCATION.--Lat 47°25'21", long 113°40'12", near center of NW¼ sec.8, T.19 N., R.16 W., Missoula County, Hydrologic Unit 17010211, Flathead National Forest, on right bank 25 ft (7.6 m) downstream from road bridge, 0.5 mi (0.8 km) downstream from Beaver Creek, 4.0 mi (6.4 km) downstream from Lindberg Lake, 8.1 mi (13.0 km) southeast of Condon, and at mile 66.5 (107.0 km).

DRAINAGE AREA.--69.1 mi^2 (179.0 km^2).

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 (1,224 m), by barometer.

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.--10 years, 168 ft^3/s (4.758 m^3/s), 33.02 in/yr (839 mm/yr), 121,700 acre-ft/yr (150 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft^3/s (43.6 m^3/s) June 18, 1974, gage height, 4.88 ft (1.487 m); minimum daily, 22 ft^3/s (0.62 m^3/s) Dec. 8, 1972; minimum gage height, 1.37 ft (0.418 m) Apr. 11, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,060 ft^3/s (30.0 m^3/s) June 17, gage height, 4.25 ft (1.295 m); minimum, 35 ft^3/s (0.99 m^3/s) Oct. 25, Nov. 11, 12, gage height, 1.50 ft (0.457 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	40	43	46	54	117	73	339	400	981	194	65
2	49	40	44	46	52	110	74	381	381	943	192	.62
3	49	40	45	46	50	104	73	471	392	956	192	61
4	46	40	44	45	45	98	73	479	467	811	189	59
5	45	40	44	45	40	94	73	419	505	665	179	56
6	43	38	62	42	42	88	71	363	509	563	168	55
7	44	37	65	44	42	85	71	360	484	479	154	52
8	44	38	58	46	42	83	70	366	434	430	148	52
9	44	37	54	48	41	85	70	346	422	400	146	50
10	44	36	56	50	45	100	70	319	426	381	143	51
11	45	35	54	49	48	102	106	297	484	370	141	50
12	44	35	51	50	50	102	189	291	572	370	138	50
13	43	38	50	50	52	96	233	319	686	377	136	51
14	42	41	49	52	58	92	276	370	744	407	133	50
15	42	41	49	52	65	94	264	467	852	442	126	49
16	42	41	47	50	74	90	241	591	943	426	122	49
17	41	44	46	48	90	87	220	680	1030	381	115	49
18	39	49	45	48	100	83	200	783	1010	332	110	47
19	38	50	44	50	120	83	179	783	937	297	106	47
20	38	49	51	51	130	78	156	650	912	278	102	47
21	38	50	50	50	125	76	146	615	918	272	98	50
22	37	55	49	48	125	73	151	650	949	272	94	49
23	37	54	49	48	120	71	179	733	962	272	92	47
24	36	53	47	50	115	76	236	766	937	261	88	46
25	35	50	52	55	110	76	267	794	864	249	85	46
26	37	47	52	56	110	71	284	918	800	238	81	47
27	38	45	52	56	110	73	300	918	800	233	78	56
28	39	42	50	55	115	74	326	772	828	228	74	67
29	40	42	49	54	---	76	342	635	834	217	71	70
30	42	43	48	54	---	74	332	518	956	208	70	68
31	40	---	48	54	---	73	---	434	---	200	68	---
TOTAL	1290	1290	1547	1538	2170	2684	5345	16827	21438	12939	3833	1598
MEAN	41.6	43.0	49.9	49.6	77.5	86.6	178	543	715	417	124	53.3
MAX	49	55	65	56	130	117	342	918	1030	981	194	70
MIN	35	35	43	42	40	71	70	291	381	200	68	46
CFSM	.57	.59	.68	.68	1.06	1.18	2.43	7.41	9.75	5.69	1.69	.73
IN.	.65	.65	.79	.78	1.10	1.36	2.71	8.54	10.88	6.57	1.95	.81
AC-FT	2560	2560	3070	3050	4300	5320	10600	33380	42520	25660	7600	3170

CAL YR 1981	TOTAL 64895	MEAN 178	MAX 862	MIN 32	CFSM 2.43	IN 32.93	AC-FT 128700			
WTR YR 1982	TOTAL 72499	MEAN 199	MAX 1030	MIN 35	CFSM 2.72	IN 36.79	AC-FT 143800			

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 (0.3 km) downstream from Johnson Creek, 0.4 mi (0.6 km) downstream from Swan Lake, 5.1 mi (8.2 km) southeast of Bigfork, and at mile 14.0 (22.5 km).

DRAINAGE AREA.--671 mi^2 (1,738 km^2).

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 (933.48 m) National Geodetic Vertical Datum of 1929 (from river-profile survey). Oct. 10, 1910, to May 22, 1911, nonrecording gage at site 10 mi (16 km) upstream at different datum. Apr. 28, 1922, to Oct. 14, 1930, nonrecording gage at site 800 ft (240 m) upstream at datum 1.9 ft (0.58 m) higher.

REMARKS.--Records good. Diversions for irrigation of about 360 acres (1.46 km^2) 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.--60 years, 1,171 ft^3/s (33.16 m^3/s), 23.70 in/yr (602 mm/yr), 848,400 acre-ft/yr (1.05 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,890 ft^3/s (252 m^3/s) June 20, 1974, gage height, 7.34 ft (2.237 m); minimum observed, 193 ft^3/s (5.47 m^3/s) Jan. 26-29, 1930, gage height, 0.04 ft (0.012 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,710 ft^3/s (162 m^3/s) June 19, gage height, 5.83 ft (1.777 m); minimum, 330 ft^3/s (9.35 m^3/s) Feb. 11, gage height, 2.18 ft (0.665 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	554	469	462	435	435	1030	935	1830	3070	4960	1250	655
2	547	469	476	435	435	984	926	1850	2760	5050	1230	639
3	540	462	490	429	429	954	916	1970	2600	4920	1220	639
4	540	455	490	429	403	916	907	2190	2610	4650	1210	623
5	540	455	497	429	372	888	907	2280	2790	4260	1170	623
6	540	455	511	422	354	861	879	2240	2980	3880	1140	615
7	525	449	547	416	354	824	842	2150	3020	3520	1080	600
8	518	449	569	409	366	798	824	2130	2950	3190	1040	584
9	518	449	562	409	360	771	807	2110	2800	2920	1030	569
10	518	442	569	409	360	842	789	2050	2710	2760	1010	569
11	511	442	569	422	360	964	833	1950	2710	2580	993	577
12	511	449	554	429	360	1060	1040	1830	2920	2460	964	577
13	511	469	525	429	384	1110	1550	1790	3290	2350	964	592
14	511	476	511	429	429	1090	1980	1810	3860	2340	954	562
15	504	469	504	435	449	1070	2260	1940	4340	2440	945	547
16	497	476	504	435	490	1050	2260	2150	4860	2530	935	547
17	490	490	511	403	540	1020	2110	2580	5310	2460	907	540
18	497	518	483	416	592	974	1910	3030	5600	2340	879	525
19	490	532	469	416	647	916	1730	3520	5600	2160	870	532
20	490	525	476	416	771	879	1590	3730	5400	2040	851	497
21	483	525	476	409	926	842	1430	3650	5270	1930	815	511
22	476	525	469	403	1200	798	1350	3520	5270	1830	798	511
23	476	540	476	397	1400	771	1310	3600	5310	1770	780	511
24	469	532	476	390	1430	771	1350	3910	5270	1690	771	511
25	469	525	476	403	1380	763	1470	4200	5250	1630	754	511
26	469	518	483	422	1260	746	1620	4440	5070	1550	720	511
27	469	511	469	429	1180	771	1690	4900	4840	1510	712	525
28	469	497	462	435	1090	807	1740	5110	4690	1450	687	554
29	469	476	455	435	---	851	1790	4750	4690	1400	671	577
30	469	455	442	435	---	907	1830	4130	4730	1370	655	584
31	469	---	442	435	---	945	---	3540	---	1290	655	---
TOTAL	15539	14504	15405	13045	18756	27973	41575	90880	122570	81230	28660	16918
MEAN	501	483	497	421	670	902	1386	2932	4086	2620	925	564
MAX	554	540	569	435	1430	1110	2260	5110	5600	5050	1250	655
MIN	469	442	442	390	354	746	789	1790	2600	1290	655	497
CFSM	.75	.72	.74	.63	1.00	1.34	2.07	4.37	6.09	3.91	1.38	.84
IN.	.86	.80	.85	.72	1.04	1.55	2.30	5.04	6.80	4.50	1.59	.94
AC-FT	30820	28770	30560	25870	37200	55480	82460	180300	243100	161100	56850	33560

CAL YR 1981 TOTAL 493706 MEAN 1353 MAX 5480 MIN 414 CFSM 2.02 IN 27.37 AC-FT 979300
WTR YR 1982 TOTAL 487055 MEAN 1334 MAX 5600 MIN 354 CFSM 1.99 IN 27.00 AC-FT 966100

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 mi^2 (18,353 km^2).

PERIOD OF RECORD.--April to August 1900, daily lake elevations only, at site near Holt, 6 mi (10 km) 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 (0.305 m) to convert Somers datum to National Geodetic Vertical Datum of 1929, supplementary adjustment of 1947. July 1 to Dec. 12, 1923, nonrecording gage at same site and datum.

REMARKS.--Natural storage in Flathead Lake increased by construction of Kerr Dam 4 mi (6 km) downstream from natural lake outlet; storage began Apr. 11, 1938. Usable capacity, 1,791,000 acre-ft (2.21 km^3) at controlled spillway elevation 2,893.00 ft (881.786 m). Dead storage unknown below 2,878 ft (877.2 m), elevation of natural outlet. Minimum operating level, 572,300 acre-ft (706 hm^3), elevation, 2,883.00 ft (878.738 m) 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 (2.72 km^3) June 19, 1933, elevation, 2,896.26 ft (882.780 m); minimum, 347,000 acre-ft (428 hm^3) Dec. 5, 1936, elevation, 2.881.07 ft (878.150 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Lake reached an elevation of 2,900 ft (883.9 m) during flood in June 1894.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,799,000 acre-ft (2.22 km^3) July 22, elevation, 2,893.06 ft (881.805 m); minimum, 694,300 acre-ft (856 hm^3) Mar. 8, elevation, 2,884.03 ft (879.052 m).

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 1981 TO SEPTEMBER 1982
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2892.43	2891.31	2889.32	2887.98	2885.54	2884.35	2884.49	2886.29	2889.20	2892.58	2892.98	2892.85
2	2892.43	2891.22	2889.24	2887.94	2885.39	2884.30	2884.48	2886.45	2889.32	2892.62	2892.97	2892.81
3	2892.38	2891.18	2889.14	2887.85	2885.27	2884.26	2884.55	2886.68	2889.50	2892.68	2892.93	2892.84
4	2892.30	2891.07	2889.07	2887.77	2885.15	2884.23	2884.61	2886.88	2889.74	2892.67	2892.93	2892.85
5	2892.25	2890.95	2889.07	2887.66	2885.11	2884.18	2884.60	2887.03	2890.05	2892.60	2892.95	2892.82
6	2892.23	2890.88	2888.94	2887.60	2885.10	2884.13	2884.58	2887.15	2890.47	2892.47	2892.96	2892.80
7	2892.18	2890.77	2888.87	2887.61	2885.02	2884.06	2884.63	2887.25	2890.82	2892.43	2892.90	2892.82
8	2892.10	2890.65	2888.86	2887.59	2884.89	2884.03	2884.64	2887.22	2890.97	2892.48	2892.88	2892.80
9	2892.00	2890.52	2888.82	2887.56	2884.83	2884.05	2884.67	2887.14	2890.89	2892.55	2892.93	2892.80
10	2891.86	2890.42	2888.80	2887.49	2884.74	2884.06	2884.58	2887.11	2890.85	2892.62	2892.96	2892.78
11	2891.75	2890.38	2888.72	2887.43	2884.65	2884.13	2884.58	2887.09	2890.88	2892.74	2892.95	2892.73
12	2891.69	2890.37	2888.64	2887.42	2884.58	2884.20	2884.55	2887.03	2890.98	2892.80	2892.92	2892.64
13	2891.62	2890.28	2888.59	2887.40	2884.57	2884.19	2884.65	2886.98	2891.11	2892.80	2892.90	2892.60
14	2891.62	2890.30	2888.54	2887.34	2884.50	2884.21	2884.75	2886.98	2891.22	2892.89	2892.93	2892.57
15	2891.62	2890.24	2888.50	2887.27	2884.43	2884.24	2884.85	2887.00	2891.33	2892.95	2892.92	2892.52
16	2891.62	2890.20	2888.47	2887.25	2884.38	2884.24	2884.95	2887.10	2891.42	2892.92	2892.89	2892.50
17	2891.61	2890.20	2888.45	2887.14	2884.32	2884.23	2885.10	2887.28	2891.51	2892.89	2892.89	2892.43
18	2891.61	2890.15	2888.48	2886.97	2884.27	2884.26	2885.09	2887.58	2891.61	2892.89	2892.89	2892.36
19	2891.59	2890.10	2888.48	2886.84	2884.26	2884.28	2885.10	2887.79	2891.71	2892.94	2892.88	2892.32
20	2891.57	2890.02	2888.41	2886.67	2884.28	2884.29	2885.18	2887.96	2891.78	2892.97	2892.88	2892.29
21	2891.56	2889.98	2888.40	2886.55	2884.30	2884.22	2885.25	2888.10	2891.76	2893.04	2892.88	2892.28
22	2891.55	2889.92	2888.36	2886.48	2884.37	2884.24	2885.34	2888.22	2891.86	2893.04	2892.85	2892.20
23	2891.55	2889.85	2888.32	2886.49	2884.42	2884.23	2885.41	2888.40	2891.95	2893.00	2892.83	2892.13
24	2891.58	2889.77	2888.40	2886.37	2884.46	2884.28	2885.45	2888.63	2892.01	2892.92	2892.83	2892.11
25	2891.59	2889.71	2888.37	2886.25	2884.46	2884.29	2885.46	2888.83	2892.08	2892.85	2892.81	2892.03
26	2891.58	2889.61	2888.31	2886.17	2884.45	2884.31	2885.53	2889.09	2892.14	2892.87	2892.82	2891.97
27	2891.55	2889.55	2888.25	2886.03	2884.44	2884.35	2885.66	2889.28	2892.25	2892.90	2892.83	2891.97
28	2891.48	2889.47	2888.18	2885.94	2884.40	2884.40	2885.87	2889.43	2892.31	2892.93	2892.84	2891.93
29	2891.42	2889.42	2888.13	2885.82	---	2884.43	2885.95	2889.42	2892.40	2892.95	2892.79	2891.93
30	2891.34	2889.37	2888.10	2885.74	---	2884.44	2886.11	2889.34	2892.46	2892.97	2892.82	2891.92
31	2891.33	---	2887.99	2885.64	---	2884.50	---	2889.22	---	2892.95	2892.84	---
MAX	2892.43	2891.31	2889.32	2887.98	2885.54	2884.50	2886.11	2889.43	2892.46	2893.04	2892.98	2892.85
MIN	2891.33	2889.37	2887.99	2885.64	2884.26	2884.03	2884.48	2886.29	2889.20	2892.43	2892.79	2891.92
(†)	1,582	1,340	1,171	887.0	738.5	750.4	943.6	1,321	1,723	1,785	1,771	1,655
(††)	-142,000	-242,000	-169,000	-284,000	-148,500	+11,900	+193,200	+377,400	+402,000	+62,000	-14,000	-116,000

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

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 (0.8 km) downstream from Kerr Dam, 4.0 mi (6.4 km) west of Polson, 5.0 mi (8.0 km) downstream from Flathead Lake, and at mile 71.5 (115.0 km).
DRAINAGE AREA.--7,096 mi^2 (18,379 km^2).

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 (820.735 m) 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 (10 km) downstream from present site, all at datum 2,629.20 ft (801.380 m) 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 (40 km^2). Flathead project pumps can divert up to 12,000 acre-ft (15 hm^3) per month when required for irrigation of lands downstream from station.
AVERAGE DISCHARGE.--75 years, 11,740 ft^3/s (332.5 m^3/s), 22.47 in/yr (571 mm/yr), 8,506,000 acre-ft/yr (10.5 km^3/yr), adjusted for change in contents in Hungry Horse Reservoir and Flathead Lake.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft^3/s (2,340 m^3/s) May 29, 1928, gage height, 17.2 ft (5.24 m), site and datum then in use; minimum probably less than 5.0 ft^3/s (0.14 m^3/s) Apr. 13, 1938; minimum daily, 32 ft^3/s (0.91 m^3/s) Apr. 12, 1938.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of about 21 ft (6.4 m), present datum; discharge, about 110,000 ft^3/s (3,120 m^3/s), from lake elevation-discharge study.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 52,800 ft^3/s (1,500 m^3/s) June 20, gage height, 16.05 ft (4.892 m); minimum daily, 2,710 ft^3/s (76.7 m^3/s) Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9780	11400	8230	6530	9340	7390	9120	10900	22500	40100	9460	2710
2	9550	11000	8210	7230	10500	7510	9540	12100	15700	39200	7560	5070
3	10300	11200	8040	7600	11400	7530	9410	12000	12800	39400	8110	3170
4	7250	11200	8020	7630	11900	6480	9910	14100	11800	40000	8320	3130
5	9220	11400	8320	9240	11400	7780	8930	15800	8410	41200	8060	3560
6	8140	11200	10400	10200	10300	7660	10200	16200	4240	37700	8120	4300
7	8900	11700	8100	11100	10300	7600	9670	17600	7630	29700	7600	4310
8	9260	12000	4840	11000	9720	7210	9610	19500	20100	24000	7050	5140
9	9280	11800	6780	11800	9080	6780	8420	19100	31000	23400	7420	5180
10	11500	11600	7100	11800	9440	7580	9640	19500	28300	19400	7650	5290
11	8890	7260	8160	11600	9510	7260	9260	19400	25900	13900	8850	4330
12	10700	7490	7910	11500	8040	6820	9210	19100	26000	15900	7690	4750
13	11000	7590	7450	11500	8280	7430	9040	18700	30600	18500	5520	4530
14	10700	7460	7690	9990	8350	7850	9200	18300	36200	14100	5620	3950
15	10400	7560	7790	10100	8740	7900	10300	18500	37700	14100	6560	6310
16	10700	8290	9290	11000	9020	8070	8810	18500	39700	18800	6830	6090
17	11100	7750	8690	12000	7760	7310	8700	19000	40800	21000	7060	5770
18	11400	8880	6450	12300	7720	6290	8940	20200	38300	17000	6500	6810
19	11000	9300	7140	11300	7210	8110	10500	22100	33500	14600	5570	6190
20	11400	8420	7980	12000	7650	7100	10000	23000	35300	13800	6450	6540
21	11600	8520	7360	11300	7600	7510	10100	24200	41900	14000	6290	6190
22	11100	8490	6870	10500	7010	7530	10200	25000	37900	14600	5800	7320
23	10900	8750	7550	12000	6830	7440	11100	25900	37500	15400	5410	6930
24	10300	8430	6140	11000	7010	8360	10600	26400	37700	15700	5370	6580
25	10100	9200	6370	10300	6580	8630	12100	27600	35100	14500	5940	6630
26	11400	8450	7430	11800	6340	8700	11600	29100	35200	11300	3710	6930
27	11500	9250	8600	11200	7360	8260	11700	31200	34400	10500	4540	6220
28	12000	8610	8580	11700	7350	8170	11600	32200	37000	10800	3750	6300
29	11500	9090	7480	11300	---	8600	12000	31600	39800	10400	3730	5410
30	11200	8580	6690	9640	---	8860	11900	31900	39400	10200	3530	5520
31	10300	---	8100	11100	---	8030	---	31500	---	9700	3180	---
TOTAL	322370	281870	237760	329260	241740	237750	301310	670200	882380	632900	197250	161160
MEAN	10400	9396	7670	10620	8634	7669	10040	21620	29410	20420	6363	5372
MAX	12000	12000	10400	12300	11900	8860	12100	32200	41900	41200	9460	7320
MIN	7250	7260	4840	6530	6340	6290	8420	10900	4240	9700	3180	2710
CFSM	1.47	1.32	1.08	1.50	1.22	1.08	1.42	3.05	4.15	2.88	.90	.76
IN.	1.69	1.48	1.25	1.73	1.27	1.25	1.58	3.51	4.63	3.32	1.03	.84
AC-FT	639400	559100	471600	653100	479500	471600	597600	1329000	1750000	1255000	391200	319700
†	-512000	-402000	-313000	-506000	-202500	-157100	-80800	+969400	+1322000	-108000	-10000	-122000
MEAN ††	2072	2640	2579	2392	4988	5115	8685	37380	51630	22170	6200	3322
CFSM ††	0.29	0.37	0.36	0.34	0.70	0.72	1.22	5.27	7.28	3.12	0.87	0.47
IN ††	0.34	0.42	0.42	0.39	0.73	0.83	1.37	6.07	8.12	3.60	1.01	0.52
AC-FT††	127400	157100	158600	147100	277000	314500	516800	2298000	3072000	1363000	381200	197700

OBSERVED

CAL YR 1981	TOTAL 4653760	MEAN 12750	MAX 46400	MIN 2900	AC-FT 9231000	(†) -467000
WTR YR 1982	TOTAL 4495950	MEAN 12320	MAX 41900	MIN 2710	AC-FT 8917000	(†) + 94000

ADJUSTED

CAL YR 1981	TOTAL 4418299	MEAN 12100	CFSM 1.71	IN 23.16	AC-FT 8764000
WTR YR 1982	TOTAL 4542879	MEAN 12450	CFSM 1.75	IN 23.81	AC-FT 9011000

† 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 current year.

INSTRUMENTATION.--Temperature recorder since June 27, 1977.

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.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 22.0°C Aug. 1, 2; minimum, 0.0°C on several days during January.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.0	13.5	14.0	9.0	9.0	9.0	4.0	3.5	4.0	1.0	.5	.5
2	13.5	13.5	13.5	9.0	9.0	9.0	3.5	3.5	3.5	.5	.5	.5
3	13.5	13.0	13.0	9.0	9.0	9.0	3.5	3.5	3.5	.5	.0	.5
4	13.0	13.0	13.0	9.0	9.0	9.0	4.0	3.5	3.5	.0	.0	.0
5	13.0	12.5	12.5	9.0	9.0	9.0	4.0	4.0	4.0	.0	.0	.0
6	12.5	12.5	12.5	9.0	8.5	8.5	4.0	4.0	4.0	.0	.0	.0
7	12.5	12.5	12.5	8.5	8.0	8.5	4.5	4.0	4.5	.5	.0	.5
8	12.5	12.5	12.5	8.0	8.0	8.0	4.5	4.5	4.5	1.0	.5	1.0
9	12.5	12.0	12.0	8.5	8.0	8.0	4.5	4.0	4.5	1.0	1.0	1.0
10	12.0	11.5	11.5	8.0	8.0	8.0	4.0	4.0	4.0	1.0	1.0	1.0
11	11.5	11.5	11.5	8.0	8.0	8.0	4.0	4.0	4.0	1.0	1.0	1.0
12	11.5	10.5	11.0	8.0	8.0	8.0	4.0	3.5	4.0	2.0	1.5	1.5
13	10.5	10.0	10.5	8.0	7.5	8.0	3.5	3.0	3.5	2.0	1.5	1.5
14	10.5	10.0	10.5	7.5	7.5	7.5	3.0	2.5	2.5	1.5	1.5	1.5
15	10.5	10.0	10.5	7.5	7.5	7.5	2.5	2.5	2.5	1.5	1.5	1.5
16	10.0	10.0	10.0	7.5	7.0	7.0	2.5	2.5	2.5	1.5	1.0	1.0
17	10.5	10.0	10.0	7.0	7.0	7.0	2.5	2.0	2.5	1.0	1.0	1.0
18	10.5	10.0	10.5	7.0	7.0	7.0	2.5	2.5	2.5	1.0	1.0	1.0
19	10.5	10.5	10.5	7.0	6.5	7.0	2.5	2.0	2.5	1.0	.5	1.0
20	10.5	10.5	10.5	6.5	6.5	6.5	2.0	1.5	2.0	1.0	.5	.5
21	10.5	10.0	10.5	6.5	6.5	6.5	1.5	1.5	1.5	1.0	.5	.5
22	10.0	9.5	10.0	6.5	6.5	6.5	1.5	1.5	1.5	1.0	.5	.5
23	10.0	9.5	9.5	6.5	6.0	6.5	1.5	1.0	1.0	.5	.0	.5
24	9.5	9.5	9.5	6.0	6.0	6.0	1.0	1.0	1.0	.5	.0	.0
25	9.5	9.5	9.5	6.0	5.5	5.5	1.5	1.0	1.5	.5	.5	.5
26	10.0	9.5	9.5	6.0	5.5	5.5	1.5	1.5	1.5	.5	.5	.5
27	9.5	9.5	9.5	6.0	5.0	5.5	1.5	1.5	1.5	.5	.5	.5
28	10.0	9.5	9.5	5.0	4.5	5.0	1.5	1.5	1.5	1.0	.5	1.0
29	10.0	9.5	10.0	4.5	4.0	4.5	1.5	1.0	1.0	1.0	1.0	1.0
30	9.5	9.5	9.5	4.0	4.0	4.0	1.5	1.0	1.0	1.0	1.0	1.0
31	9.5	9.0	9.0	---	---	---	1.0	1.0	1.0	1.5	1.0	1.0
MONTH	14.0	9.0	11.0	9.0	4.0	7.0	4.5	1.0	2.5	2.0	.0	1.0

PEND OREILLE RIVER BASIN

12372000 FLATHEAD RIVER NEAR POLSON, MT--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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

12389000 CLARK FORK NEAR PLAINS, MT

LOCATION.--Lat 47°25'47", long 114°51'18", in E½SW¼ sec.1, T.19 N., R.26 W., Sanders County, Hydrologic Unit 17010213, on right bank 2.4 mi (3.9 km) southeast of Plains, 6.0 mi (9.7 km) downstream from Flathead River, and at mile 239.0 (384.6 km).

DRAINAGE AREA.--19,958 mi^2 (51,691 km^2).

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 (746.489 m) 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 (15 m) 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 (1,360 km^2) 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.--72 years, 20,050 ft^3/s (567.8 m^3/s) 14,530,000 acre-ft/yr (17.9 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 134,000 ft^3/s (3,790 m^3/s) June 5, 1948, gage height, 19.17 ft (5.843 m); minimum, 3,200 ft^3/s (90.6 m^3/s) Feb. 8, 1936, Dec. 10, 1940; minimum gage height, 2.70 ft (0.823 m), from partly estimated gage-height record, Sept. 2, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 90,500 ft^3/s (2,560 m^3/s) June 18, gage height, 15.09 ft (4.599 m); minimum, 6,370 ft^3/s (180 m^3/s) Sept. 2, gage height, 3.58 ft (1.091 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14100	14200	12000	11400	14000	14400	14500	28700	60300	77800	16400	7180
2	13500	15500	11800	10400	13400	14300	15200	28200	46000	76300	15800	6840
3	13600	14800	12100	10800	14500	14100	15900	31500	42200	74000	14000	8410
4	13700	15000	11600	10900	14500	14000	15300	33900	39900	70500	14300	7250
5	11200	15000	11600	10700	14300	13200	15800	37700	41000	68100	14300	7010
6	13400	15300	12800	11900	13400	13900	14800	36900	36300	66200	13900	7320
7	11800	15200	13900	13100	11500	13700	15900	35600	32400	58900	13700	7780
8	12600	15400	12300	14600	12600	13600	15700	37100	35300	48200	13000	8110
9	13600	15800	9600	15000	11900	13100	14600	38000	49700	44000	12300	8560
10	13400	15600	11000	16700	11800	13500	14100	37000	55000	41300	12500	8670
11	14600	14200	11100	16100	12800	15100	14700	36600	52200	36300	12700	8940
12	13500	11100	12200	16100	12600	15800	16200	35700	53300	31600	13800	8260
13	15000	11200	11900	15600	11900	15300	17800	35100	57500	33800	12700	8590
14	15800	11400	11100	14800	13500	15600	20500	35000	70000	34000	10800	8410
15	14800	11300	11500	13600	15200	15500	21800	36200	79700	30900	10900	7970
16	14500	11400	12000	13400	15700	16000	22300	39800	85000	32900	11300	10200
17	14900	12200	13100	14000	18800	15200	19700	44000	88500	35200	11600	10200
18	15300	11900	12500	15000	18100	14200	19200	48900	89700	34400	11500	10200
19	15200	12900	10100	15100	17200	13200	19400	53600	87000	29900	10900	10800
20	15000	13100	10400	14600	16500	14500	20400	54900	81700	27100	9840	10500
21	15400	12400	11800	15000	21600	13500	19200	53700	81000	25700	10700	10700
22	15600	12200	11600	14300	23400	13700	18800	54800	83900	24900	10500	10400
23	14500	12400	10800	12200	21700	13300	19300	57700	80000	25400	9840	11400
24	15000	12600	11200	13700	18900	13600	21300	61500	78700	25100	9440	11100
25	14000	12500	10500	14900	17000	14400	23700	64200	78600	24800	9320	10600
26	14500	13100	9880	14200	15400	14500	26400	68400	73800	23400	9720	10900
27	15300	12400	11100	16000	14500	14600	26700	73400	72600	19100	7860	11000
28	15600	13200	12300	15300	14700	14000	27400	76700	71700	18800	8370	11100
29	16100	12100	12100	15700	---	14300	28400	76100	73900	18400	7680	11600
30	15200	12600	10900	14800	---	15100	29200	69800	77000	17700	7530	11100
31	15300	---	10300	13400	---	15100	---	64500	---	16900	7500	---
TOTAL	446000	398000	357080	433300	431400	444300	584200	1485200	1953900	1191600	354700	281100
MEAN	14390	13270	11520	13980	15410	14330	19470	47910	65130	38440	11440	9370
MAX	16100	15800	13900	16700	23400	16000	29200	76700	89700	77800	16400	11600
MIN	11200	11100	9600	10400	11500	13100	14100	28200	32400	16900	7500	6840
AC-FT	884600	789400	708300	859500	855700	881300	1159000	2946000	3876000	2364000	703500	557600

CAL YR 1981 TOTAL 8009430 MEAN 21940 MAX 93500 MIN 6250 AC-FT 15890000
WTR YR 1982 TOTAL 8360780 MEAN 22910 MAX 89700 MIN 6840 AC-FT 16580000

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 (2.1 km) upstream from mouth and 5.5 mi (8.8 km) east of Thompson Falls.

DRAINAGE AREA.--642 mi^2 (1,663 km^2).

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 (740.655 m) National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). October 1911 to September 1916, nonrecording gage at site 0.2 mi (0.3 km) 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.--26 years, 479 ft^3/s (13.57 m^3/s), 10.13 in/yr (257 mm/yr), 347,000 acre-ft/yr (428 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,080 ft^3/s (172 m^3/s) June 9, 1964, gage height, 8.53 ft (2.600 m); minimum, 60 ft^3/s (1.70 m^3/s) Nov. 20, 1977, gage height, 1.96 ft (0.597 m), result of freezeup; minimum gage height, 1.01 ft (0.308 m) Dec. 17, 1964, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a discharge of 6,190 ft^3/s (175 m^3/s), by slope-area measurement of peak flow at site 0.2 mi (0.3 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,760 ft^3/s (78.2 m^3/s) May 26, gage height, 5.74 ft (1.750 m); minimum, 92 ft^3/s (2.61 m^3/s) Feb. 4, gage height, 2.15 ft (0.655 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189	166	159	138	159	432	497	1150	1350	1090	376	252
2	193	166	174	134	159	437	479	1270	1340	1080	370	247
3	189	166	162	145	131	437	473	1510	1410	991	376	243
4	189	162	162	141	100	432	461	1500	1540	924	370	243
5	185	162	174	138	128	414	443	1330	1560	883	360	243
6	185	159	221	112	131	398	437	1200	1510	851	349	239
7	185	159	226	121	162	387	420	1150	1410	804	339	234
8	185	162	197	155	170	381	403	1170	1310	781	328	234
9	189	162	181	141	141	420	403	1150	1230	743	328	234
10	193	162	197	138	159	642	398	1090	1220	706	334	239
11	197	162	193	138	166	750	467	1040	1290	677	334	243
12	189	166	166	138	166	765	788	1030	1490	649	328	243
13	185	170	138	138	159	706	974	1070	1710	621	328	239
14	181	174	155	141	209	635	1160	1200	1810	628	318	234
15	181	170	152	141	266	628	1100	1480	1870	608	313	230
16	181	174	159	125	344	608	982	1780	1920	601	308	230
17	177	193	159	131	449	568	891	1960	1910	574	299	226
18	177	205	159	145	432	535	835	2190	1780	548	294	221
19	177	185	166	138	455	510	758	2190	1650	529	289	217
20	174	177	174	134	699	485	706	1920	1580	516	284	213
21	174	174	162	125	1680	467	684	1810	1530	497	275	213
22	174	177	148	121	1350	455	706	1900	1480	479	275	213
23	174	174	128	121	957	449	827	2080	1410	461	275	213
24	177	166	152	155	735	473	1090	2150	1320	455	275	209
25	174	166	162	159	601	455	1160	2250	1210	443	270	209
26	174	162	155	159	542	455	1140	2630	1210	432	266	221
27	174	155	155	162	497	479	1140	2560	1200	414	266	221
28	174	128	138	155	449	510	1220	2220	1190	403	261	247
29	174	141	138	155	---	542	1240	1870	1120	398	256	247
30	170	155	134	155	---	529	1180	1620	1100	387	261	230
31	166	---	141	166	---	516	---	1450	---	387	261	---
TOTAL	5606	5000	5087	4365	11596	15900	23462	50920	43660	19560	9566	6927
MEAN	181	167	164	141	414	513	782	1643	1455	631	309	231
MAX	197	205	226	166	1680	765	1240	2630	1920	1090	376	252
MIN	166	128	128	112	100	381	398	1030	1100	387	256	209
CFSM	.28	.26	.26	.22	.65	.80	1.22	2.56	2.27	.98	.48	.36
IN.	.32	.29	.29	.25	.67	.92	1.36	2.95	2.53	1.13	.55	.40
AC-FT	11120	9920	10090	8660	23000	31540	46540	101000	86600	38800	18970	13740

CAL YR 1981 TOTAL 147503 MEAN 404 MAX 1820 MIN 127 CFSM .63 IN 8.55 AC-FT 292600
WTR YR 1982 TOTAL 201649 MEAN 552 MAX 2630 MIN 100 CFSM .86 IN 11.68 AC-FT 400000

12390700 PROSPECT CREEK AT THOMPSON FALLS, MT

LOCATION.--Lat 47°35'10", long 115°21'15", in lot 12, SE¼SE¼SE¼ sec.7, T.21 N., R.29 W., Sanders County, Hydrologic Unit 17010213, on right bank 500 ft (150 m) downstream from Dry Creek, 0.5 mi (0.8 km) upstream from mouth, and 0.7 mi (1.1 km) south of Thompson Falls.

DRAINAGE AREA.--182 mi^2 (471 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 2,382.40 ft (726.156 m) 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.--26 years, 259 ft^3/s (7.335 m^3/s), 19.33 in/yr (491 mm/yr), 187,600 acre-ft/yr (231 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,490 ft^3/s (155 m^3/s) Jan. 16, 1974, gage height, 9.86 ft (3.005 m); minimum, 26 ft^3/s (0.74 m^3/s) Nov. 30, 1979, gage height, 0.19 ft (0.058 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,670 ft^3/s (47.3 m^3/s) May 26, gage height, 5.48 ft (1.670 m); minimum, 37 ft^3/s (1.05 m^3/s) Feb. 5, gage height, 0.68 ft (0.207 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	49	44	53	51	328	300	706	757	504	143	83
2	58	49	49	53	51	346	289	777	823	476	136	82
3	58	48	46	53	49	343	282	955	896	437	136	81
4	58	48	44	54	47	338	275	918	945	412	135	82
5	58	47	48	54	40	323	264	793	923	404	130	79
6	57	47	56	54	44	309	258	706	852	385	128	79
7	57	47	51	54	48	300	246	687	789	361	123	78
8	57	47	47	53	44	284	235	702	721	353	123	77
9	58	47	47	51	47	341	231	691	691	336	122	76
10	57	46	53	51	54	614	226	653	714	319	121	78
11	57	46	51	52	58	773	246	610	793	295	119	77
12	56	47	49	51	62	765	464	617	932	280	117	77
13	55	47	49	51	70	672	650	653	1070	269	115	75
14	54	47	50	52	80	579	839	761	1100	267	112	74
15	54	46	51	51	90	529	827	1020	1130	258	109	73
16	54	47	51	51	100	476	702	1190	1150	258	108	72
17	53	56	51	51	150	434	610	1310	1120	237	105	71
18	53	51	51	51	250	395	549	1500	1020	226	103	71
19	53	46	54	50	400	369	488	1410	927	216	102	70
20	53	45	53	49	600	341	446	1160	870	205	99	70
21	52	45	53	48	1000	316	420	1120	839	194	98	70
22	52	46	52	49	850	298	423	1270	810	185	97	69
23	51	44	52	50	750	291	485	1350	745	180	94	68
24	51	44	53	55	650	291	653	1340	691	175	94	67
25	50	44	54	50	523	284	729	1410	650	170	92	67
26	51	44	54	51	432	284	714	1610	614	167	89	69
27	51	43	54	51	379	295	698	1370	614	159	85	69
28	51	43	54	50	336	319	773	1090	572	154	85	72
29	51	43	54	49	---	336	793	905	542	151	85	67
30	50	43	54	50	---	326	749	806	516	146	85	66
31	49	---	53	52	---	314	---	741	---	145	84	---
TOTAL	1677	1392	1582	1594	7255	12213	14864	30831	24816	8324	3374	2209
MEAN	54.1	46.4	51.0	51.4	259	394	495	995	827	269	109	73.6
MAX	58	56	56	55	1000	773	839	1610	1150	504	143	83
MIN	49	43	44	48	40	284	226	610	516	145	84	66
CFSM	.30	.26	.28	.28	1.42	2.17	2.72	5.47	4.54	1.48	.60	.40
IN.	.34	.28	.32	.33	1.48	2.50	3.04	6.30	5.07	1.70	.69	.45
AC-FT	3330	2760	3140	3160	14390	24220	29480	61150	49220	16510	6690	4380

CAL YR 1981	TOTAL	81133	MEAN 222	MAX 1330	MIN 43	CFSM 1.22	IN 16.58	AC-FT	160900	
WTR YR 1982	TOTAL	110131	MEAN 302	MAX 1610	MIN 40	CFSM 1.66	IN 22.51	AC-FT	218400	

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 (2 km) upstream from Rock Creek, 3 mi (5 km) southeast of Noxon, and at mile 169.7 (273.0 km).

DRAINAGE AREA.--21,833 mi^2 (56,547 km^2).

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 (1,420 km^2) 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.--22 years, 21,480 ft^3/s (608.3 m^3/s), 15,560,000 acre-ft/yr (19.2 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 124,900 ft^3/s (3,540 m^3/s) June 12, 1964; minimum daily, 80 ft^3/s (2.27 m^3/s) Oct. 16, 1960, Aug. 26, 1962, Aug. 18, 25, 31, Sept. 1, 1963, Sept. 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 97,300 ft^3/s (2,760 m^3/s) June 18; minimum daily, 100 ft^3/s (2.83 m^3/s) Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13800	13600	10200	13000	19300	16400	14200	30900	66400	83100	17200	13500
2	12100	12400	11400	13300	11400	12800	15600	29900	53900	82700	14700	9370
3	14000	14800	15100	5680	18300	15500	14000	31500	47100	79100	13800	4420
4	14200	14700	11600	10000	18700	22600	15100	37900	45800	77000	17600	5380
5	16600	14800	9890	9570	11200	14100	19900	38100	44500	71600	12400	100
6	12800	15000	7850	16400	13000	10300	17300	41100	43600	70500	14900	5630
7	14600	18700	13900	11100	5410	13000	16900	39000	36100	64700	12900	5220
8	15300	13900	12100	2670	11200	13800	15100	39600	36700	55300	11800	9170
9	11400	14900	11600	15200	8320	11900	16200	41200	49000	44600	15200	11800
10	11800	13000	12300	17200	10600	15900	16200	40200	59500	43400	11800	10300
11	9490	15100	13500	13700	11000	20000	17900	39900	57200	40300	17100	5540
12	14600	13700	13300	15300	12200	19800	16000	38000	57600	32100	10500	5100
13	13000	10800	8540	12600	11200	15800	19300	37900	61400	34300	13100	8340
14	13900	10300	14200	17200	9760	19900	22900	38600	71100	36600	10200	9100
15	13900	12400	10400	14300	18600	19300	23800	41100	85900	33300	10100	7760
16	15200	9940	11100	16800	13000	17800	22700	44400	90800	32100	15200	10600
17	14200	12000	10500	11300	22800	17800	25000	50800	94100	36300	14200	5530
18	13800	12200	11200	14700	24300	19700	27300	56200	97300	36700	12300	14000
19	17400	16100	15400	15800	29200	13200	26700	62800	95500	31700	8890	8930
20	17000	10300	9210	16200	26000	11400	25400	64000	89400	26800	11300	8240
21	17800	9460	13900	14800	28800	14400	23500	60800	87600	26300	5660	10900
22	16000	12800	10300	18900	31500	14000	20400	60800	89000	25400	8070	11500
23	15200	11000	10400	10000	27300	13200	21200	63000	86300	25200	12800	8780
24	7760	14500	11400	9490	22200	16700	13900	67300	84000	25600	10200	11200
25	10300	16200	14000	12500	24000	14900	21000	69000	85800	25200	12000	11000
26	14800	12800	6780	14200	18600	17200	28000	73500	81300	24100	8730	14400
27	14700	12500	5980	15700	13800	15500	29200	79000	79500	23300	9840	11900
28	17300	15000	12500	18200	8280	16700	31900	81000	76500	19900	5700	9750
29	17100	9260	11500	15500	---	17500	31700	81700	77000	19500	8570	8670
30	17700	13300	12700	15200	---	16200	30700	76400	82200	18500	5190	10400
31	12200	---	10700	15600	---	19100	---	70000	---	17300	14500	---
TOTAL	439950	395460	353450	422110	479970	496400	639000	1625600	2112100	1262500	366450	266530
MEAN	14190	13180	11400	13620	17140	16010	21300	52440	70400	40730	11820	8884
MAX	17800	18700	15400	18900	31500	22600	31900	81700	97300	83100	17600	14400
MIN	7760	9260	5980	2670	5410	10300	13900	29900	36100	17300	5190	100
AC-FT	872600	784400	701100	837300	952000	984600	1267000	3224000	4189000	2504000	726900	528700

CAL YR 1981 TOTAL 7991290 MEAN 21890 MAX 92600 MIN 140 AC-FT 15850000
WTR YR 1982 TOTAL 8859520 MEAN 24270 MAX 97300 MIN 100 AC-FT 17570000

12391550 BULL RIVER NEAR NOXON, MT

LOCATION.--Lat 48°02'50", long 115°50'01", in NW¼NW¼NE¼ sec. 3, T.26 N., R.33 W., Sanders County, Hydrologic Unit 17010213, Kaniksu National Forest, on left bank 1.2 mi (1.9 km) upstream from Cabinet Gorge Reservoir flow line, 1.6 mi (2.6 km) upstream from bridge on State Highway 200, and 4.4 mi (7.1 km) northwest of Noxon.

DRAINAGE AREA.--139 mi^2 (360 km^2).

PERIOD OF RECORD.--Occasional discharge measurements, water years 1942-44, 1971, and annual maximum, water year 1948, all at site 1.6 mi (2.6 km) upstream. October 1972 to September 1982 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 2,202.40 ft (671.292 m) National Geodetic Vertical Datum of 1929.

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.--10 years, 389 ft^3/s (11.02 m^2/s), 38.01 in/yr (965 mm/yr), 281,800 acre-ft/yr (347 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,890 ft^3/s (110 m^3/s) Jan. 16, 1974, gage height, 9.73 ft (2.966 m), from floodmark; minimum, 29 ft^3/s (0.82 m^3/s) Dec. 4, 1972, gage height, 3.92 ft (1.195 m), result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,210 ft^3/s (62.6 m^3/s) Feb. 22, gage height, 8.27 ft (2.521 m); minimum, 89 ft^3/s (2.52 m^3/s) Nov. 11, 12, gage height, 4.43 ft (1.350 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	92	136	158	145	602	388	736	1070	1120	286	128
2	100	94	140	153	145	578	377	809	1200	1170	267	126
3	107	94	147	151	142	560	370	948	1290	1090	255	124
4	104	95	140	149	126	546	362	954	1330	999	243	126
5	104	95	142	147	120	523	355	850	1330	910	223	124
6	102	95	220	145	130	501	348	758	1270	844	217	122
7	104	95	249	142	136	488	333	730	1140	786	209	118
8	107	95	246	140	134	467	326	758	1030	688	209	116
9	111	92	240	136	126	510	319	730	1010	662	209	115
10	115	90	258	130	128	720	313	688	1090	647	207	115
11	113	90	273	134	130	803	344	662	1250	617	204	115
12	111	94	267	134	130	873	510	693	1430	602	194	115
13	107	105	252	126	132	855	622	758	1670	593	184	113
14	105	120	243	124	225	763	720	929	1860	607	179	111
15	104	136	237	124	886	698	725	1180	1930	578	172	109
16	100	132	226	120	1180	642	677	1320	2020	519	169	107
17	98	136	215	120	1320	602	627	1440	2050	471	162	105
18	97	155	209	120	1300	564	578	1610	2000	431	158	104
19	97	158	204	118	1190	528	541	1640	1840	419	155	102
20	95	151	209	116	1280	497	506	1490	1730	431	153	98
21	94	145	207	115	1990	463	480	1410	1670	423	151	98
22	94	158	194	115	2110	443	467	1500	1580	407	149	100
23	92	169	186	107	1630	431	488	1610	1500	385	145	98
24	92	165	181	132	1220	419	617	1670	1410	355	140	97
25	90	158	181	136	960	411	667	1780	1350	344	138	97
26	90	155	179	130	814	400	672	2000	1310	337	132	105
27	90	149	174	136	714	388	683	2020	1310	323	128	107
28	90	145	172	136	637	388	741	1730	1260	316	124	111
29	90	140	165	134	---	392	791	1380	1160	309	122	113
30	92	138	165	134	---	392	769	1140	1150	306	122	113
31	92	---	162	142	---	392	---	1030	---	289	128	---
TOTAL	3085	3736	6219	4104	19180	16839	15716	36953	43240	17978	5534	3332
MEAN	99.5	125	201	132	685	543	524	1192	1441	580	179	111
MAX	115	169	273	158	2110	873	791	2020	2050	1170	286	128
MIN	90	90	136	107	120	388	313	662	1010	289	122	97
CFSM	.72	.90	1.45	.95	4.93	3.91	3.77	8.58	10.4	4.17	1.29	.80
IN.	.83	1.00	1.66	1.10	5.13	4.51	4.21	9.89	11.57	4.81	1.48	.89
AC-FT	6120	7410	12340	8140	38040	33400	31170	73300	85770	35660	10980	6610

CAL YR 1981 TOTAL 153082 MEAN 419 MAX 2130 MIN 90 CFSM 3.01 IN 40.97 AC-FT 303600
WTR YR 1982 TOTAL 175916 MEAN 482 MAX 2110 MIN 90 CFSM 3.47 IN 47.08 AC-FT 348900

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 (1.3 km) downstream from Cabinet Gorge Dam at cableway, 2.1 mi (3.4 km) downstream from Blue Creek, 6.1 mi (9.8 km) southeast of Clark Fork, and at mile 149.1 (239.9 km). Discharge computed at Whitehorse Rapids, 2.3 mi (3.7 km) downstream.
DRAINAGE AREA.--22,073 mi^2 (57,169 km^2), based on revised area of 22,067 mi^2 (57,154 km^2) for site 0.4 mi (0.6 km) 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 (627.888 m) 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 (0.6 km) upstream at datum 60.00 ft (18.288 m) 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 (143,000 hm^2). Discharge measurements indicate about 800 ft^3/s (22.7 m^3/s) ground-water inflow between Cabinet Gorge Dam and Whitehorse Rapids. Records given herein represent flow at Whitehorse Rapids, computed by adding 600 ft^3/s (17.0 m^3/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 ft^3/s (22.7 m^3/s) should be deducted from discharges published herein.
AVERAGE DISCHARGE.--54 years, 22,470 ft^3/s (636.4 m^3/s), 16,280,000 acre-ft/yr (20.1 hm^3/yr).
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153,000 ft^3/s (4,330 m^3/s) May 29 to June 1, 1948; maximum gage height, 50.97 ft (15.536 m) May 31, 1948, site and datum then in use; minimum discharge observed, 270 ft^3/s (7.65 m^3/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 ft^3/s (21.6 m^3/s) Sept. 2, 1962.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 195,000 ft^3/s (5,520 m^3/s) from floodmark, elevation, 2,137.1 ft (651.39 m), at site about 4 mi (6 km) upstream and 0.1 mi (0.2 km) below "near Heron" site.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 104,000 ft^3/s (2,950 m^3/s) June 18, gage height, 25.26 ft (7.699 m); minimum, 3,770 ft^3/s (107 m^3/s) Dec. 23, gage height, 6.35 ft (1.935 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10800	14200	10900	12900	21000	17300	20500	35800	71400	85000	19500	15100
2	13600	16000	12900	14400	13900	17800	17300	35800	60500	85900	18800	12300
3	14700	15400	16000	7780	19900	16000	17300	35700	53000	81500	16500	4120
4	15600	15600	12100	8950	21000	24200	18000	41300	51200	79500	20000	6200
5	18000	16500	11500	12200	13800	19600	18500	44100	50900	74800	14000	4120
6	14100	16500	7980	15300	13600	14600	23100	44800	50200	74700	17400	5200
7	17700	20500	15500	12800	8760	14500	19000	43300	40600	68200	14600	7770
8	16200	15700	13000	4890	12300	14600	18300	45000	42800	57900	13800	9300
9	14000	16900	11400	15400	7630	18000	17600	45800	53000	47600	17100	13400
10	14900	14200	12700	19800	11900	18200	19000	45000	64100	49100	14100	11400
11	8440	16700	15400	13900	11900	23300	20200	44600	62400	43500	18900	7660
12	14000	16000	15300	16300	12800	25200	20300	43300	63300	37600	12700	5800
13	15500	11600	10700	12400	12700	20300	22300	43600	67900	37200	17000	12200
14	15000	12000	13800	16400	11700	21800	27100	43200	78100	40700	10900	8710
15	14700	13000	11500	15600	20300	22600	27000	47000	89900	37300	11900	9550
16	16700	10500	10500	18700	16200	20600	28700	52000	95400	35700	16600	11400
17	15100	12700	12000	11400	26800	20300	30700	55600	98900	39600	16800	7290
18	13900	13500	12300	16100	28400	24800	31700	62600	101000	39900	14000	15500
19	19300	18200	17300	17600	33100	16100	32700	68500	98400	35600	11600	10200
20	19500	12300	10400	18500	34700	13600	26200	71300	92000	31000	12700	10000
21	20800	9220	13800	16000	33800	14900	28300	67000	92100	30200	8380	14400
22	17100	14900	11400	18800	35600	16300	24100	66800	95000	29500	7520	16200
23	16300	12700	12700	12200	34100	17600	23500	69900	89900	28900	14700	5790
24	11000	16800	10700	10300	27100	18900	17600	75300	89000	26200	13700	13400
25	11500	17000	16300	13900	29100	16900	23500	76900	87700	29400	12300	12900
26	16100	14200	8100	15600	22000	18800	33600	83200	85400	26900	9280	14800
27	15300	13400	6870	18800	15200	19900	35600	87100	82700	27300	11800	15100
28	19200	14100	13400	18300	13600	18700	35500	88300	79500	23600	8500	11500
29	19800	12000	12400	17300	---	20300	35000	88400	82000	23000	9120	9540
30	19400	13300	12900	16700	---	19100	35800	82300	84300	19100	8040	11600
31	14500	---	13600	17400	---	21300	---	75700	---	19800	14800	---
TOTAL	482740	435620	385350	456620	562890	586100	748000	1809200	2252600	1366200	427040	312450
MEAN	15570	14520	12430	14730	20100	18910	24930	58360	75090	44070	13780	10420
MAX	20800	20500	17300	19800	35600	25200	35800	88400	101000	85900	20000	16200
MIN	8440	9220	6870	4890	7630	13600	17300	35700	40600	19100	7520	4120
AC-FT	957500	864100	764300	905700	1116000	1163000	1484000	3589000	4468000	2710000	847000	619700

CAL YR 1981 TOTAL 8915670 MEAN 24430 MAX 100000 MIN 3930 AC-FT 17680000
WTR YR 1982 TOTAL 9824810 MEAN 26920 MAX 101000 MIN 4120 AC-FT 19490000

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 (3 km) west of Southern Cross, 8 mi (13 km) south of Philipsburg, and at mile 38.8 (62.4 km). DRAINAGE AREA, 50.1 mi^2 (129.8 km^2). 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 (38.3 hm^3) between elevation 6,398.00 ft (1,950.110 m), bottom of outlet pipes, and 6,429.50 ft (1,959.712 m), 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 (39.1 hm^3) July 8, 9, 1980, elevation, 6,429.72 ft (1,959.779 m); minimum observed, 15,990 acre-ft (19.7 hm^3) Apr. 28, 29, 1957, elevation, 6,424.15 ft (1,958.081 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 31,340 acre-ft (38.6 hm^3) Aug. 12, elevation, 6,429.60 ft (1,959.742 m); minimum observed, 24,970 acre-ft (30.8 hm^3) May 17, elevation, 6,427.42 ft (1,959.078 m).

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 (23 km) southwest of Philipsburg, and at mile 9.7 (15.6 km). DRAINAGE AREA, 30.3 mi^2 (78.5 km^2). 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 (19.8 hm^3) between elevation 5,990.0 ft (1,825.75 m), bottom of outlet, and 6,055.5 ft (1,845.72 m), 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 (19.7 hm^3) 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, 16,040 acre-ft (19.8 hm^3) July 1, 15, elevation, 6,055.5 ft (1,845.72 m); minimum observed, 3,020 acre-ft (3.72 hm^3) Oct. 1 (estimated).

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 (11 km) west of Finn. DRAINAGE AREA, 145 mi^2 (376 km^2). 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 (15.6 hm^3) between elevation, 4,551.5 ft (1,387.30 m), bottom of outlet, and 4,616.0 ft (1,406.96 m), spillway crest. Dead storage, 12 acre-ft (14,800 m^3) below elevation, 4,551.5 ft (1,387.30 m). 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 (16.7 hm^3) June 3, 1953, elevation, 4,618.3 ft (1,407.66 m); no storage Aug. 14 to Oct. 31, 1973, Sept. 18, 1977.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 12,790 acre-ft (15.8 hm^3) June 1, 15, elevation, 4,617.08 ft (1,407.286 m); minimum contents, 3,800 acre-ft (4.69 hm^3) Dec. 1, elevation, 4,586.2 ft (1,397.87 m).

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 (11 km) upstream from Nez Perce Creek, 16.5 mi (26.5 km) southwest of Conner, 23 mi (37 km) south of Darby, and at mile 19.8 (31.0 km). DRAINAGE AREA, 317 mi^2 (821 km^2). 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 (39.1 hm^3) between elevation 4,625.5 ft (1,409.85 m), bottom of outlet, and 4,725.5 ft (1,440.33 m) spillway crest. Dead storage, 656 acre-ft (809,000 m^3) below elevation 4,625.5 ft (1,409.85 m). 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 (41.8 hm^3) June 18, 1974, elevation, 4,728.7 ft (1,441.31 m); 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, 33,510 acre-ft (41.3 hm^3) May 26, elevation, 4,728.1 ft (1,441.12 m); no usable contents observed January through March.

PEND OREILLE RIVER BASIN

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

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 (6 km) northwest of Darby, and at mile 3.6 (5.8 km). DRAINAGE AREA, 54.6 mi^2 (141.4 km^2). 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 (43.1 hm^3) between elevation 4,188.0 ft (1,276.50 m), bottom of outlet, and 4,242.5 ft (1,293.11 m), spillway crest. Dead storage unknown below elevation, 4,188.0 ft (1,276.50 m), 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 (45.5 hm^3) June 30, 1957, June 30, 1960, July 1, 1963, June 1, 1964, elevation, 4,244 ft (1,293.72 m); no storage at times in several years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 34,630 acre-ft (42.7 hm^3) June 30, elevation, 4,242.2 ft (1,293.02 m); minimum observed, 39 acre-ft (48,100 m^3) Oct. 1 (interpolated).

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 SE¼SE¼SW¼ sec.16, T.27 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 2 mi (3 km) southwest of Marion and at mile 70.3 (113.1 km). DRAINAGE AREA, 31.8 mi^2 (82.4 km^2). 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 (32.6 hm^3) between elevation 3,897.98 ft (1,188.104 m) and 3,906.48 ft (1,190.695 m). No dead storage. Prior to 1960, usable capacity, 24,000 acre-ft (29.6 hm^3).

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 26,800 acre-ft (33.1 hm^3) May 31, 1959, elevation, 3.906.60 ft (1,190.732 m); no storage at times in 1939-46.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 20,700 acre-ft (25.5 hm^3) June 30, elevation, 3,904.98 ft (1,190.238 m); minimum observed, 12,600 acre-ft (15.5 hm^3) Oct. 31, Nov. 30, elevation, 3,902.68 ft (1,189.537 m).

12372500 HUBBART RESERVOIR.--Lat 47°55'43", long 114°43'53", in SE¼NE¼ sec.18, T.25 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 9 mi (15 km) northwest of Niarada and at mile 55.8 (89.8 km). DRAINAGE AREA, 114 mi^2 (295 km^2). PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year.

Reservoir is formed by concrete variable-radium dam; storage began in 1924. Usable capacity, 12,120 acre-ft (14.9 hm^3) between elevation 3,140.0 ft (957.07 m) and 3,210.0 ft (981.51 m). No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,050 acre-ft (16.1 hm^3) May 31, 1959, elevation, 3,220.92 ft (987.736 m); no storage September to December 1959, Sept. 30, Oct. 1, 1973.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 12,130 acre-ft (15.0 hm^3) May 31, June 30, elevation, 3,219.0 ft (981.15 m); minimum observed, 5,280 acre-ft (6.51 hm^3) Oct. 31, elevation, 3,200.6 ft (975.54 m).

12375000 UPPER DRY FORK RESERVOIR.--Lat 47°44'55", long 114°40'53", in SE¼SE¼SW¼ sec. 16, T.23 N., R.24 W., Sanders County, Hydrologic Unit 17010212, at dam on Dry Fork Creek, 4 mi (6 km) northwest of Lonepine. DRAINAGE AREA, 8.53 mi^2 (22.09 km^2). 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 (3.46 hm^3) between elevation 2,900.0 ft (883.92 m) and 2,928.5 ft (892.61 m). No dead storage. Prior to 1960, usable capacity, 2,700 acre-ft (3.33 hm^3). Natural flow of Alder Creek in Thompson River basin is diverted in SW¼ 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 (3.87 hm^3) May 31, 1980, elevation, 2,929.5 ft (892.91 m); no storage at times in 1940, 1942, 1943.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 2,880 acre-ft (3.55 hm^3) May 31, June 30, elevation 2,928.7 ft (892.67 m); minimum observed, 429 acre-ft (529,000 m^3) Oct. 31, elevation, 2,915.2 ft (888.55 m).

12375500 DRY FORK RESERVOIR.--Lat 47°42'00", long 114°40'02", in SW¼NW¼NW¼ sec.3, T.22 N., R.24 W., Sanders County, Hydrologic Unit 17010202, at dam on Dry Fork Creek, 1 mi (2 km) west of Lonepine. DRAINAGE AREA, 17.8 mi^2 (46.1 km^2). 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 (4.76 hm^3) between elevation 2,830.5 ft (862.74 m) and 2,856.3 ft (870.60 m). No dead storage. Prior to 1960, usable capacity, 4,000 acre-ft (4.93 hm^3).

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 4,270 acre-ft (5.26 hm^3) May 31, 1980, elevation, 2,857.4 ft (870.94 m); no storage Aug. 31, 1944, Aug. 31, Sept. 30, 1946, Oct. 31, 1951.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 4,000 acre-ft (4.93 hm^3) Apr. 30, June 30, elevation, 2,856.7 ft (870.72 m); minimum observed, 671 acre-ft (827,000 m^3) Oct. 31, elevation, 2,842.6 ft (866.42 m).

Smaller reservoirs in Pend Oreille River Basin in Montana--Continued

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 SW¼NW¼NE¼ sec.18, T.22 N., R.19 W., at outlet works 4 mi (6 km) 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 (1.11 hm^3) between elevation 3,061.0 ft (932.99 m) and 3,090.5 ft (941.98 m). No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 899 acre-ft (1.11 hm^3) June 30, 1956, June 30, 1964, elevation, 3,090.5 ft (941.98 m); no storage at times in July 1941, August, September 1944, October 1957, July, August, September 1977.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 762 acre-ft (940,000 m^3) June 30, elevation, 3,088.3 ft (941.31 m); minimum observed, 317 acre-ft (391,000 m^3) Mar. 31, elevation, 3,078.0 ft (938.17 m).

12376700 LOWER CROW RESERVOIR.--Lat 47°30'09", long 114°13'35", in SW¼SE¼SE¼ sec.11, T.20 N., R.21 W., at outlet works on Crow Creek, 5.2 mi (8.4 km) northwest of Charlo, at at mile 3.44 (5.53 km); storage began in 1933. Usable capacity, 10,350 acre-ft (12.8 hm^3) between elevation 2,800 ft (853.4 m) and 2,877.0 ft (876.91 m). No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,770 acre-ft (13.3 hm^3) May 21, 22, 1948, elevation, 2,878.2 ft (877.28 m); no storage Sept. 30, 1963, Oct. 31, Nov. 30, 1981.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 6,960 acre-ft (8.58 hm^3) Aug. 31, elevation, 2,865.5 ft (873.40 m); minimum observed, 4,040 acre-ft (4.98 hm^3) Nov. 30, elevation 2,852.0 ft (869.29 m).

12377200 MISSION RESERVOIR.--Lat 47°18'54", long 114°01'15", in NW¼SW¼SE¼ sec.15, T.18 N., R.19 W., at outlet works on Mission Creek, 4 mi (6 km) east of St. Ignatius and at mile 16.7 (26.9 km); storage began in 1935. Usable capacity, 7,250 acre-ft (8.94 hm^3) between elevation 3,340.7 ft (1,018.25 m) and 3,406.0 ft (1,038.15 m).

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,370 acre-ft (10.3 hm^3) June 30, 1970, June 30, 1976, elevation, 3,409.8 ft (1,039.31 m); no storage at times during September 1949, February, March, 1964.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 7,990 acre-ft (9.85 hm^3) June 30, elevation, 3,408.5 ft (1,038.91 m); minimum observed, 1,010 acre-ft (1.25 hm^3) Apr. 30, elevation, 3,379.0 ft (1,029.92 m).

12377300 ST. MARYS LAKE.--Lat 47°15'58", long 113°56'08", in SW¼NE¼NE¼ sec.6, T.17 N., R.18 W., at outlet works on Dry Creek, 8 mi (13 km) 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 (28.7 hm^3) between elevation 3,911.5 ft (1,192.23 m) and 4,025.0 ft (1,226.82 m), not including contents of natural lake. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 23,510 acre-ft (29.0 hm^3) June 30, 1976, June 30, 1978, elevation, 4,025.7 ft (1,227.03 m); no storage Sept. 30, 1969.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 23,030 acre-ft (28.4 hm^3) June 30, elevation, 4,024.0 ft (1,226.52 m); minimum observed, 870 acre-ft (1.07 hm^3) Mar. 31, elevation, 3,917.2 ft (1,193.96 m).

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 (5 km) south of Polson, 3 mi (5 km) 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 (33.4 hm^3) between elevation 3,179 ft (969.0 m), gate sill, and 3,210.2 ft (978.47 m). No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 28,120 acre-ft (34.7 hm^3) June 30, 1968, elevation, 3,210.77 ft (978.643 m); no storage at times in several years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 26,510 acre-ft (32.7 hm^3) June 30, elevation, 3,210.0 ft (978.41 m); minimum observed, 2,460 acre-ft (3.03 hm^3) Jan. 31, elevation, 3,190.2 ft (972.37 m).

12378200 McDONALD RESERVOIR.--Lat 47°25'31", long 113°59'27", in SE¼NE¼NE¼ sec.10, T.19 N., R.19 W., at outlet works on Post Creek, 9 mi (15 km) east of Charlo, and at mile 12.4 (20.0 km); storage began in 1919. Usable capacity, 8,220 acre-ft (10.1 hm^3) between elevation 3,545.0 ft (1,080.52 m), and 3,598.0 ft (1,096.67 m), not including contents of natural lake. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,270 acre-ft (10.2 hm^3) June 30, 1977, elevation, 3,598.2 ft (1,096.73 m); no storage Aug. 31, 1961, Aug. 30, 1966, Oct. 31, 1971, Apr. 30, 1972.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 7,510 acre-ft (9.26 hm^3) July 31, elevation, 3,594.4 ft (1,095.57 m); minimum observed, 410 acre-ft (505,600 m^3) Oct. 31, elevation, 3,549.2 ft (1,081.80 m).

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 (6 km) northeast of Charlo, fed entirely by various canals; storage began in 1930. Usable capacity, 8,350 acre-ft (10.3 hm^3) between elevation 3,042.0 ft (927.20 m) and 3,061.94 ft (933.279 m). Dead storage, 70 acre-ft (86,300 m^3) below elevation 3,042.0 ft (927.20 m).

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,320 acre-ft (12.7 hm^3) June 30, 1976, May 31, 1980, elevation, 3,064.4 ft (934.03 m); no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 9,200 acre-ft (11.3 hm^3) June 30, elevation, 3,063.0 ft (933.60 m); minimum observed, 2,460 acre-ft (3.03 hm^3) Oct. 31, elevation, 3,052.5 ft (930.40 m).

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

MISSION VALLEY RESERVOIRS--Continued

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 (3 km) northeast of Charlo, fed entirely by various canals; storage began in 1911. Usable capacity 14,870 acre-ft (18.3 hm^3) between elevation 2,895.4 ft (882.52 m) and 3,010.0 ft (917.45 m). No dead storage

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 16,950 acre-ft (20.9 hm^3) June 30, 1974, elevation, 3,012.3 ft (918.15 m); no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 15,030 acre-ft (18.5 hm^3) June 30, elevation, 3,010.1 ft (917.48 m); minimum observed, 1,280 acre-ft (1.58 hm^3) Oct. 31, elevation, 2,996.6 ft (913.36 m).

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 (24 km) east of Arlee, and at mile 39.3 (63.1 km). DRAINAGE AREA, 7.39 mi^2 (19.14 km^2). 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 (7.87 hm^3) between elevation 4,267.0 ft (1,300.58 m) and 4,340.0 ft (1,322.83 m). Prior to 1960, usable capacity, 7,600 acre-ft (9.37 hm^3) at elevation 4,350 ft (1,325.9 m). Dead storage unknown below elevation 4,267 ft (1,300.6 m), elevation of natural lake outlet. Transmountain diversion takes water from Placid Creek in Clearwater River basin in SW1/4 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 (8.26 hm^3) June 9, 1948, elevation, 4,342.7 ft (1,323.65 m); no storage at times.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 5,610 acre-ft (6.92 hm^3) June 30, elevation, 4,335.0 ft (1,321.31 m); 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 (334.7 km). DRAINAGE AREA, 20,968 mi^2 (54,307 km^2). 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 (18.5 hm^3) between elevation 2,380.0 ft (725.42 m), spillway crest, and 2,396.0 ft (730.30 m), 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 (19.8 hm^3) Nov. 30, 1949, elevation, 2,396.7 ft (730.51 m); no storage July 31, 1958.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 14,680 acre-ft (18.1 hm^3) Oct. 1 (interpolated); minimum observed, 801 acre-ft (988,000 m^3) July 31, elevation, 2,381.5 ft (725.88 m).

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 (5 km) southeast of Noxon, 7.2 mi (11.6 km) upstream from Bull River, and at mile 169.7 (273.0 km). DRAINAGE AREA, 21,833 mi^2 (56,547 km^2). 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 (413 hm^3) between elevation 2,270.00 ft (691.896 m), minimum operating level, and 2,331.00 ft (710.489 m). 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 (414 hm^3) Apr. 7, 1960, elevation, 2,331.10 ft (710.519 m); minimum since first filling, 26,380 acre-ft (32.5 hm^3) May 10, 1967, elevation, 2,277.15 ft (694.075 m).

EXTREMES FOR CURRENT YEAR: Maximum contents, 333,900 acre-ft (412 hm^3) May 13, 14, elevation, 2,330.91 ft (710.461 m); minimum, 290,400 acre-ft (358 hm^3) Feb. 26, elevation, 2,325.22 ft (708.727 m).

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

Monthend contents, in acre-ft, water year October 1981 to September 1982

Date	Georgetown Lake	East Fork Rock Creek Reservoir	Nevada Lake	Painted Rocks Lake	Lake Como	Camas Reservoir	Mission Valley Reservoirs
Sept. 30	30,570	c 3,020	b 4,310	a19,640	0	19,160	13,740
Oct. 31	29,670	--	b 4,820	a17,600	a 1,200	18,980	15,440
Nov. 30	29,790	--	b 3,800	14,530	b 2,390	19,620	18,100
Dec. 31	29,850	--	b 4,480	a 3,090	a 5,910	20,040	19,660
Jan. 31	29,850	--	b 4,590	0	b 7,830	20,040	22,360
Feb. 28	29,550	--	b 7,930	0	b11,080	22,580	24,780
Mar. 31	28,480	--	b 8,890	0	a16,810	26,950	24,330
Apr. 30	26,130	b10,480	b 9,890	a 8,620	a22,540	32,010	31,920
May 31	26,410	b11,140	b12,790	a33,390	28,470	38,060	53,510
June 30	30,450	b16,040	b12,450	a32,640	34,630	39,700	95,480
July 31	30,630	b15,460	a11,270	a31,550	a33,270	37,380	88,650
Aug. 31	29,850	--	b 7,560	a30,440	a18,120	31,280	52,660
Sept. 30	28,420	--	b 4,820	a30,230	a 6,780	28,320	29,270

Date	Lower Jocko Lake	Thompson Falls Reservoir	Noxon Rapids Reservoir
Sept. 30	0	14,680	323,500
Oct. 31	0	14,540	320,300
Nov. 30	0	13,520	316,600
Dec. 31	0	10,760	322,800
Jan. 31	0	11,780	320,100
Feb. 28	0	14,100	310,900
Mar. 31	0	13,110	312,100
Apr. 30	0	2,490	321,900
May 31	3,770	4,640	324,000
June 30	5,610	5,990	326,700
July 31	4,560	801	325,100
Aug. 31	2,400	5,080	312,800
Sept. 30	0	7,790	325,800

a Interpolated.
b Figure of contents for first day of following month.
c Estimate.

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 continous-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					
12300400	Cayuse Creek near Trego	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 Forest Service road, 9.8 mi (15.8 km) southwest of Trego (discontinued).	5.29	1972-82	--	0.96	45
12300800	Deep Creek near Fortine	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 (1.9 km) east of Fortine.	18.9	1959-82	1981 6-15-82	a.50 .60	a120 135
12301993	Wolf Creek tributary near Libby	Lat 48°23'52", long 114°55'05", in NW¼NE¼NE¼ sec.4, T.30 N., R.26 W., Lincoln County, Hydrologic Unit 17010102, on right bank 9 ft (3 m) from Burlington Northern railroad culvert, 0.3 mi (0.5 km) upstream from mouth, 28.8 mi (46.3 km) east of Libby.	2.76	1974-82	5-18-82	.88	33
12301997	Richards Creek near Libby	Lat 48°15'31", long 115°11'57", in SE¼NW¼SE¼ sec.20, T.29 N., R.28 W., Lincoln County, Hydrologic Unit 17010102, at bridge on county road, 0.1 mi (0.2 km) upstream from mouth, 18.5 mi (29.8 km) southeast of Libby.	9.50	1973-82	5-18-82	1.57	64
12302400	Shaughnessy Creek near Libby	Lat 48°18'11", long 115°35'37", in W½ sec.5, T.29 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, at culvert in county road, 6.5 mi (10.5 km) southwest of Libby.	1.16	1959-82	5-05-82	1.91	5
12303400	Ross Creek near Troy	Lat 48°12'26", long 115°52'08", in SE¼NE¼ sec.8, T.28 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on forest service road, 11.3 mi (18.2 km) north of Heron, 17.5 mi (28.2 km) south of Troy at site of former water-quality station.	23.8	1972-82	5-26-82	4.48	740

See footnotes at end of table, p. 154

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Annual maximum Gage height Date	Gage height (ft)	Discharge (ft^3/s)
		KOOTENAI RIVER BASIN--Continued					
12303440	Camp Creek near Troy	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 Forest Service road, 0.8 mi (1.3 km) east of Highway 202, 12.6 mi (20.3 km) south of Troy.	11.3	1972-82	5-26-82	1.85	220
12304060	Blacktail Creek near Yaak	Lat 48°57'03", long 115°32'27", in SW¼SW¼ sec.20, T.37 N., R.30 W., Lincoln County, Hydrologic Unit 17010103, at bridge on Forest Service road, 200 ft (61 m) upstream from mouth, 10.3 mi (16.6 km) northeast of Yaak (discontinued).	8.66	1964 1972-82	5-25-82	1.22	90
12304120	Zulu Creek near Yaak	Lat 48°43'49", long 115°38'30", in NW¼NW¼ sec.8, T.34 N., R.31 W., Lincoln County, Hydrologic Unit 17010103, at culvert in South Fork Yaak River road, 8.5 mi (13.7 km) south of Yaak (discontinued).	5.27	1972-82	5-25-82	1.30	50
12304300	Cyclone Creek near Yaak	Lat 48°45'01", long 115°54'06", SE¼ sec.32, T.35 N., R.33 W., Lincoln County, Hydrologic Unit 17010103 at bridge, 0.2 mi (0.3 km) upstream from mouth, 10.5 mi (16.9 km) southwest of Yaak.	5.71	1960-82	5-25-82	1.19	160
		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 (6 km) south of Silver Bow.	4.36	1959-82	4-14-82	3.12	12
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	1975-82	6-25-82	3.01	465
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 (0.8 km) upstream from Interstate Highway 90 and U.S. Highway 10, 6.5 mi (10.5 km) east of Drummond.	4.61	1958-82	3-10-82	1.03	39
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 1974-82	2-20-82	2.35	20
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 (240 m) upstream from Forest Service boundary, 5.2 mi (8.4 km) north of Ovando.	105	1964 1974-82	6-13-82	--	b2,000

See footnotes at end of table, p. 154

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Date	Annual maximum Gage height (ft)	Annual maximum Discharge (ft^3/s)
		PEND OREILLE RIVER BASIN--Continued					
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, Hydrologic Unit 17010203, at bridge on county road, 3.5 mi (5.6 km) northwest of Seeley Lake.	19.8	1974-82	5-16-82	2.52	305
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 (13 km) east of Bonner.	7.33	1959-82	5-18-82	1.54	370
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, Hydrologic Unit 17010205, at bridge on State Highway 473, 0.6 mi (1.0 km) southwest of Trapper Creek Job Corps Center, 3.0 mi (4.8 km) southwest of junction of State Highway 473 and turnoff to Conner, and 4.5 mi (7.2 km) southwest of Conner.	28.5	1974-82	5-26-82	2.17	500
12344300	Burke Gulch near Darby	Lat 46°01'28", long 114°08'45", in S½ sec.12, T.3 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, 1 mi (2 km) upstream from mouth, 1.5 mi (2.4 km) east of Darby (discontinued).	6.50	1958-82	5-26-82	.96	10
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, Hydrologic Unit 17010205, Bitterroot National Forest, on right bank 5.8 mi (9.3 km) upstream from mouth, and 10.8 mi (17.4 km) southeast of Hamilton.	62.6	†1958-59 †1973-77 1978-82	5-26-82	4.67	700
12353250	Ninemile Creek near Alberton	Lat 47°11'09", long 114°35'13", in SE¼SE¼ sec.36,T.17 N., R.24 W., Missoula County, Hydrologic Unit 17010204, on left bank about 400 ft (122 m) above a large right bank diversion ditch, 0.3 mi (0.5 km) west of road, corner of fence line and tree with T.17 N., R.23 W., sign on it, 0.5 mi (0.8 km) south of Little Blue Creek, 14.2 mi (22.8 km) northwest of Alberton (discontinued).	50.2	1972 1974-82	5-26-82	1.96	420
12353800	Thompson Creek near Superior	Lat 47°11'55", long 114°55'00", in SW¼ sec. 28, T.17 N., R.26 W., Mineral County, Hydrologic Unit 17010204, 1.2 mi (1.9 km) west of Superior.	11.8	1961-1979 1982	5-26-82	--	c100
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 Forest, on right bank at Big Creek ranger station, 300 ft (91 m) upstream from North Fork road bridge, 0.4 mi (0.6 km) upstream from mouth, 16.0 mi (25.7 km) north of Columbia Falls.	82.1	1964 1973-82	5-26-82	4.92	1,300

See footnotes at end of table, p. 154

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Annual maximum Gage height Date	Gage height (ft)	Discharge (ft^3/s)
		PEND OREILLE RIVER BASIN--Continued					
12356500	Bear Creek near Essex	Lat 48°16'56", long 113°25'23", in SE¼NW¼NE¼ sec.16, T.29 N., R.14 W., Flathead County, Hydrologic Unit 17010207, on left bank, 1.1 mi (1.8 km) upstream from U.S. Highway 2 bridge crossing Bear Creek, 8.5 mi (13.7 km) northeast of Essex at site of former gaging station.	20.4	1946-52† 1964 1975-82	5-26-82	4.72	540
12369250	Holland Creek near Condon	Lat 47°26'20", long 113°40'11", in NE¼NW¼ sec.5, T.19 N., R.16 W., Missoula County, Hydrologic Unit 17010211, at bridge on State Highway 209, at junction with road to Holland Lake, 6.8 mi (10.9 km) south of Condon.	22.3	1974-82	6-17-82	2.48	250
12370500	Dayton Creek near Proctor	Lat 47°54'59", long 114°20'14", in NW¼ sec.20, T.25 N., R.21 W., Lake County, Hydrologic Unit 17010208, at culvert in county road, 2.5 mi (4.0 km) northwest of Proctor.	18.5	1959-82	5-18-82	.93	22
12389150	McGregor Creek tributary near Marion	Lat 48°01'44", long 114°55'54", in NW¼NE¼ sec.10, T.26 N., R.26 W., Flathead County, Hydrologic Unit 17010213, on right bank 250 ft (76 m) upstream from U.S. Forest Service road, 0.4 mi (0.6 km) upstream from mouth, 13.4 mi (21.7 km) southwest of Marion (discontinued).	2.55	1972-82	5-18-82	.98	18
12391100	White Pine Creek near Trout Creek	Lat 47°44'19", long 115°40'27", in SW¼SW¼NW¼ sec.23, T.23 N., R.32 W., Sanders County, Hydrologic Unit 17010213, Kaniksu National Forest, on right downstream wingwall on bridge, 7.5 mi (12.1 km) southwest of Trout Creek.	8.75	1974-82	5-18-82	4.32	215
12391200	Canyon Creek near Trout Creek	Lat 47°51'16", long 115°29'57", in SW¼NW¼ 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 (4.7 km) upstream from junction of road at mouth of Vermillion River, 4.6 mi (7.4 km) northeast of Trout Creek.	8.64	1972 1974-82	6-17-82	2.58	210
12391430	Skeleton Creek near Noxon	Lat 47°57'47", long 115°53'18", in SW¼SW¼ sec.32, T.26 N., R.33 W., Sanders County, Hydrologic Unit 17010213, at culvert in U.S. Forest service road, 0.4 mi (0.6 km) upstream from West Fork Pilgrim Creek, 5.7 mi (9.2 km) southwest of Noxon (discontinued).	2.10	1973-82	5-19-82	1.55	27
12391525	Snake Creek near Noxon	Lat 48°07'24", long 115°45'10", in SW¼SW¼ sec.5, T.27 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at culvert in U.S. Forest Service road, 9.0 mi (14.5 km) north of Noxon (discontinued).	3.11	1972-82	5-19-82	3.14	80

† Operated as a continuous-record station.
a Revised.
b Combination of flow in Monture and Dunham Creeks.
c Estimate.

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 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					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 (3.1 km) downstream of South Fork Young Creek, and 7.4 mi (11.9 km) northwest of Rexford, MT.	19.1		4-15-82	7.78
					5-14-82	53.8
					6-15-82	67.2
					7-15-82	23.6
					8-16-82	15.4
					9-14-82	9.01
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 (180 m) upstream from Lake Koocanusa flow line, 0.3 mi (0.5 km) downstream from culvert in county road and 4.2 mi (6.8 km) northwest of present site of Rexford, MT, at site of former gaging station.	36.0	†1973-1975	3-16-82	6.7
					4-15-82	10.1
					5-14-82	44.9
					6-15-82	78.2
					7-15-82	23.5
					8-16-82	11.3
					9-14-82	6.36
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 on U.S. Forest Service road, 9.8 mi (15.8 km) southwest of Trego, MT, at site of crest-stage station.	5.29	1972-1981	3-15-82	1.85
					4-14-82	10.5
					5-13-82	36
					6-14-82	4.75
					7-16-82	3.66
					8-17-82	1.09
					9-15-82	.89
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 (8.8 km) southwest of Trego, MT, at site of crest-stage station.	112	†1947-1953 1954 1958-1973	3-15-82	68.3
					4-14-82	182
					5-13-82	376
					6-14-82	108
					7-16-82	58.7
					8-17-82	13
					9-15-82	9.48
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 on county road, 1.2 mi (1.9 km) east of Fortine, at site of crest-stage station.	18.9	1959-1981	3-15-82	2.31
					4-14-82	1.89
					5-13-82	8.16
					6-14-82	101
					6-15-82	99.7
					7-16-82	39.4
					8-17-82	10.8
					9-15-82	5.63
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 on county road near Lake Koocanusa flow line 5 mi (8 km) west of Rexford, MT.	14.1		3-16-82	7.18
					4-15-82	14.6
					5-14-82	36.8
					6-15-82	24.1
					7-15-82	24.3
					8-16-82	8.38
					9-14-82	5.56
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 near mouth on county road 8 mi (13 km) southeast of Rexford, MT.	18.1		3-16-82	9.46
					4-15-82	20.7
					5-14-82	77.7
					6-14-82	89.0
					7-14-82	31.1
					8-16-82	10.1
					9-14-82	5.69

See footnotes at end of table, p. 162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Kootenai River Basin--continued				
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 17010101, Kootenai National Forest, on left bank 500 ft (150 m) downstream from highway bridge, 0.3 mi (0.5 km) upstream from Lake Koocanusa flow line, and 13.6 mi (21.9 km) southwest of present site of Rexford, MT, at site of former gaging station.	137	†1972-1981	3-16-82 4-15-82 5-13-82 6-14-82 7-14-82 8-16-82 9-14-82	67.2 162 405 390 154 30.4 21.2
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 (1.3 km) upstream from Kootenai River in Libby, MT.	17.7	1972 1974 1978	3-16-82 4-15-82 5-20-82 6-15-82 7-14-82 8-19-82 9-14-82	25.2 43.3 107 187 46.8 1.82 1.22
Cedar Creek 4825501153741	Kootenai River	Lat 48°25'50", long 115°37'41", in NW¼SE¼SE¼, sec.24, T.31N., R.32 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, at bridge on U.S. Highway 2, 0.1 mi (0.2 km) upstream from Kootenai River, 5 mi (8 km) northwest of Libby, MT.	12.9	1911 1931 1972 1974 1978	3-16-82 4-15-82 5-20-82 6-15-82 7-14-82 8-19-82 9-13-82	34.4 41.4 105 137 27 11.8 7.83
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 (0.2 km) upstream from mouth, and 5 mi (8 km) northwest of Libby, MT.	35.4	1971 1974 1978	3-16-82 4-14-82 5-20-82 6-15-82 7-14-82 8-19-82 9-13-82	90.7 156 330 278 61 31.1 32.8
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 (1.3 km) east of Highway 202, 12.6 mi (20.3 km) south of Troy, MT, at site of crest-stage station.	11.3	1972-1981	3-15-82 4-14-82 5-19-82 6-14-82 7-12-82 8-17-82 9-13-82	15.1 20 82 143 47.2 6.41 4.16
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 (0.53 km) upstream from Kootenai River, and 5 mi (8 km) northwest of Troy, MT.	15.8		3-15-82 4-14-82 5-19-82 6-14-82 7-13-82 8-18-82 9-13-82	62.5 94.8 135 71 14.8 6.65 4.63
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 (30 m) downstream of Hensley Creek, 1.7 mi (2.7 km) upstream of Yaak River, 1.9 mi (3.1 km) north of junction with FAS 508, and 3.5 mi (5.6 km) west of Yaak, MT.	29.8		3-15-82 4-13-82 5-20-82 6-14-82 7-13-82 8-18-82 9-14-82	52.3 126 219 83.1 27.2 4.84 4.13
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 (0.2 km) upstream from Yaak River, and 2 mi (3 km) west of Yaak, MT.	33.8	1972	3-15-82 4-13-82 5-20-82 6-14-82 7-13-82 8-18-82 9-14-82	64.1 178 222 83.6 26 6.29 3.94

See footnotes at end of table, p. 162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Kootenai River Basin--continued				
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 (152 m) upstream from mouth, 5 mi (8 km) west of Yaak, MT, at site of former crest-stage station.	2.48	1960-1974	3-15-82	3.92
					4-13-82	10.9
					5-20-82	9.59
					6-14-82	2.43
					7-13-82	.61
					8-18-82	0
					9-14-82	0
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 (0.5 km) upstream from Yaak River, and 6.5 mi (10.5 km) west of Yaak, MT.	37.3	1972	3-15-82	40.8
					4-13-82	99.1
					5-19-82	398
					6-14-82	592
					7-13-82	81.5
					8-18-82	19.6
					9-14-82	17
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 (6.4 km) upstream from Yaak River and 11.5 mi (18.5 km) west of Yaak, MT.	9.65		5-19-82	189
					6-15-82	172
					7-13-82	15.3
					8-18-82	4.78
					9-14-82	4.38
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 (0.2 km) upstream from Yaak River, and 10 mi (16 km) southwest of Yaak, MT.	16.9		3-15-82	21.8
					4-13-82	51.1
					5-19-82	185
					6-15-82	179
					7-13-82	20.3
					8-18-82	2.91
					9-14-82	3.79
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 (1.9 km) upstream from Meadow Creek, 1.6 mi (2.6 km) west of FAS 508, and 11.5 mi (18.5 km) southwest of Yaak, MT.	6.33		5-19-82	86.7
					6-15-82	90.3
					7-13-82	12.4
					8-18-82	2.62
					9-14-82	2.03
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 (0.3 km) upstream from Meadow Creek, 0.8 mi (1.3 km) west of FAS 508, and 11 mi (18 km) southwest of Yaak, MT.	7.04		5-19-82	91.8
					6-15-82	71
					7-13-82	10.1
					8-18-82	2.53
					9-14-82	3.22
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 (0.2 km) upstream from Yaak River and 10.5 mi (16.9 km) southwest of Yaak, MT.	20.4		3-15-82	40.2
					4-13-82	74.1
					5-18-82	355
					6-15-82	186
					7-13-82	42.4
					8-18-82	7.78
					9-14-82	6.46
Red Top Creek 4845421155558	Yaak River	Lat 48°45'42", long 115°55'58", land-line description unsurveyed, Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, at Red Top Creek Campground 0.2 mi (0.3 km) upstream from Yaak River and 10.7 mi (17.2 km) west of Yaak, MT.			9-14-82	3.59

See footnotes at end of table, p. 162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Kootenai River Basin--continued				
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 (0.3 km) upstream from mouth, 10.5 mi (16.9 km) southwest of Yaak, MT, at site of crest-stage station.	5.71	1960-1981	3-16-82 4-14-82 5-18-82 6-15-82 7-13-82 8-18-82 9-14-82	11.9 25.9 92.9 48 8.94 4.05 1.33
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 (152 m) upstream from mouth, 12 mi (19 km) southwest of Yaak, MT, at site of crest-stage station.	7.84	1960-1974	3-16-82 4-14-82 5-18-82 6-15-82 7-13-82 8-18-82 9-14-82	13.1 41.8 148 39.6 10.5 2.89 2.4
		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 (3.7 km) northwest of bridge over Clearwater River, and 3.5 mi (5.6 km) northwest of town of Seeley Lake.	19.8	1974-1981	3-15-82 4-19-82 5-20-82 6-14-82 7-13-82 8-17-82 9-16-82	11.5 36.8 139 a 110 27 a 5.0 3.49
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 (12.9 km) east of Bonner.	7.33	1959-1981	3-17-82 4-14-82 5-20-82 6-17-82 7-15-82 8-19-82 9-18-82	9.47 34.6 59.3 a 68 14.9 a 4.3 3.52
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 on Interstate Highway 90 and U.S. Highway 10 and 12, and 3 mi (4.8 km) east of Missoula.	5.63	1959-1973	3-17-82 4-14-82 5-20-82 6-17-82 7-15-82 8-19-82 9-18-82	3.29 6.87 13.8 a 3.0 2.52 a 1.0 1.08
Bitterroot River 4633211140553	Clark Fork	Lat 46°33'21", long 114°05'53", in SE¼NE¼NW¼, sec.10, T.9 N., R.20 W., Ravalli County, Hydrologic Unit 17010205, 0.94 mi (1.51 km) downstream of North Burnt Fork Creek, 3.1 mi (5.0 km) north of Stevensville, MT.			6-16-82	18,000
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 (4.2 km) upstream of Ninemile Creek, 4.5 mi (7.2 km) northwest of Ninemile Ranger Station, and 8.7 mi (14.0 km) north of Alberton, MT.	10.7		3-17-82 4-14-82 5-20-82 6-17-82 7-15-82 8-19-82 9-18-82	3.26 20.7 32.7 127 24.8 6.95 4.1
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 (213 m) downstream of Murphy Creek, 0.5 mi (0.8 km) upstream from Clark Fork, and 4.3 mi (6.9 km) northwest of Superior, MT.	46.3		5-12-82 5-20-82 6-16-82 7-14-82 7-29-82 8-18-82 9-18-82	82.7 221 321 54.8 9.16 0 0

See footnotes at end of table, p.162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Pend Oreille River Basin--continued				
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 (61 m) upstream of East Fork Twelvemile Creek, 1.6 mi (2.6 km) northeast of U.S. Interstate 90, 1.8 mi (2.9 km) upstream of St. Regis River, and 3.9 mi (6.3 km) east of DeBorgia, MT.	40.7		3-16-82 4-15-82 5-19-82 6-16-82 7-14-82 8-18-82 9-17-82	57.1 136 316 149 43 18.8 10.6
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 of mouth, 6.4 mi (10.3 km) west of St. Regis, MT.	22.8	1972	4-15-82 5-19-82 6-16-82 7-14-82 8-18-82 9-17-82	93.6 214 232 48.1 15 10.5
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 (0.3 km) above St. Regis River and 3.5 mi (5.6 km) west of St. Regis, MT.	17.1	1972	3-16-82 4-15-82 5-19-82 6-16-82 7-14-82 8-18-82 9-17-82	35.3 59.8 133 102 23.9 9.85 7.23
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 (21 m) downstream from road bridge, 500 ft (152 m) upstream from Little Joe Creek, 1.2 mi (1.9 km) west of St. Regis, 1.7 mi (2.7 km) upstream from mouth, and at site of former gaging station.	303	†1910-1917 1918-1919 1948 †1958-1975	3-16-82 4-15-82 5-19-82 6-16-82 7-14-82 8-18-82 9-17-82	960 1580 2550 2370 660 185 130
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 (2 km) downstream from Autumn Creek 8.5 mi (13.6 km) east of Essex, MT, and at site of former gaging station.	20.4	†1946-1952 1964 1975-1981	3-17-82 4-13-82 5-17-82 5-25-82 6-16-82 7-19-82 8-19-82 9-16-82	7.6 16.6 212 283 320 36.8 16.6 13.6
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 (1.9 km) upstream of Swan River, 1.5 mi (2.4 km) west of Highway 83, and 8.0 mi (12.9 km) northwest of Condon, MT.	11.8		3-15-82 4-19-82 5-17-82 6-14-82 7-13-82 8-17-82 9-16-82	7.92 14.4 83.6 128 50.3 15.7 8.05
Goat Creek 4746261134228	Swan River	Lat 47°46'26", long 113°42'28", in NW¼NW¼NW¼, sec.7, T.23 N., R.16 W., Lake County, Hydrologic Unit 17010211, Flathead National Forest, 0.5 mi (0.8 km) upstream from Scout Creek, 0.6 mi (1.0 km) downstream from Bethal Creek, 5.5 mi (8.8 km) east of Highway 83, and 12 mi (19 km) southeast of Swan Lake.	8.27		5-17-82 6-14-82 7-13-82 8-17-82 9-16-82	69.7 137 29.3 3.55 .16

See footnotes at end of table, p. 162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Pend Oreille River Basin--continued				
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 (5 km) east of Highway 83, and 12 mi (19 km) southeast of Swan Lake.	14.9		3-15-82	9.65
					4-19-82	9.18
					5-17-82	93.2
					6-14-82	159
					7-13-82	53.6
					8-17-82	17.1
					9-16-82	10.1
Goat Creek 4745191134723	Swan River	Lat 47°45'19", long 113°47'23", in NW¼NW¼NW¼, 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 (2.4 km) east of Highway 83, 12 mi (19 km) southeast of Swan Lake.	19.7		2-22-82	9.37
					3-15-82	9.37
					4-19-82	15.6
					5-17-82	89
					6-14-82	153
					7-13-82	49.5
					8-17-82	17.8
					9-16-82	11.7
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 (5 km) west of the Fatty Creek Road and 13.5 mi (21.7 km) northwest of Condon, MT.	2.88		5-17-82	7.93
					6-14-82	14.5
					7-13-82	12.1
					8-17-82	11
					9-16-82	7.57
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 (2.4 km) west of Highway 83 and 11 mi (18 km) northwest of Condon, MT.	10.5		3-15-82	21.9
					4-19-82	21.1
					5-17-82	46.4
					6-14-82	40.3
					7-13-82	42.4
					8-17-82	41.7
					9-16-82	42
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 (2.7 km) east of Soup Creek Campground, 4.3 mi (6.9 km) east of Highway 83, and 9 mi (14 km) southeast of Swan Lake.	4.5		5-17-82	42.2
					6-14-82	101
					7-13-82	18.6
					8-17-82	8.8
					9-16-82	5.39
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 (4.2 km) east of Highway 83 and 9 mi (14 km) southeast of Swan Lake.	5.87		3-12-82	2.94
					4-20-82	4.24
					5-17-82	43.8
					6-14-82	86.5
					7-13-82	16.9
					8-17-82	7.44
					9-16-82	4.54
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 Highway 83, 0.7 mi (1.1 km) upstream of Swan River, and 6 mi (10 km) south of Swan Lake.	14.5		3-12-82	10.6
					4-20-82	14.2
					5-17-82	52.1
					6-14-82	87
					7-13-82	21.2
					8-17-82	9.34
					9-16-82	5.89

See footnotes at end of table, p. 162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Pend Oreille River Basin--continued				
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 (2.4 km) upstream from Lost Creek and 4.7 mi (7.6 km) southeast of Swan Lake.	14.8		9-17-82	10.2
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 (2.4 km) upstream of Lost Creek and 4 mi (6 km) southeast of Swan Lake.	13.0		3-12-82 4-20-82 5-18-82 6-15-82 7-14-82 8-18-82 9-17-82	13 28.9 190 203 60.4 16.3 7.29
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 Highway 83, 0.7 mi (1.1 km) upstream of Swan River and 3.5 mi (5.6 km) south of Swan Lake.	31.7		3-12-82 4-20-82 5-18-82 6-15-82 7-13-82 8-18-82 9-17-82	26.3 46.1 400 475 93.2 22.4 11.5
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 on U.S. Forest Service road 2 mi (3 km) upstream from Swan River and 5 mi (8 km) southwest of Swan Lake.	10		3-15-82 4-19-82 5-18-82 6-15-82 7-14-82 8-18-82 9-17-82	3.53 4.13 15.3 4.79 3.79 3.42 3.4
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 Highway 83 in town of Swan Lake, 0.2 mi (0.3 km) upstream of Swan Lake.	7.58		3-19-82 4-20-82 5-18-82 6-15-82 7-14-82 8-18-82 9-17-82	6.19 8.22 76.5 112 19.9 3.01 1.98
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 culver on State Highway 35, 11 mi (18 km) northeast of Polson, MT, at site of former crest-stage station.	2.18	1959-1974 1980	3-16-82 5-18-82 6-15-82 7-14-82 8-18-82 9-17-82	.42 a 5.5 a 4 a 1.2 a .5 a .5
Hell Roaring Creek 12371100	Flathead Lake	Lat 47°42'10", long 114°02'37", in SW¼, sec.4, T.22 N., R.19 W., Lake County, Hydrologic Unit 17010208, at power house, 5.5 mi (8.8 km) east of Polson, MT, at site of former crest-stage station.	6.22	†1917-1932 1948 1959-1967 1980	3-16-82	2.75
Post Creek 4726131140154	Flathead River	Lat 47°26'13", long 114°01'54", in SW¼SW¼NW¼, sec.4, T.19 N., R.19 W., Lake County, Hydrologic Unit 17010212, at culvert on county road 2.1 mi (3.4 km) downstream of McDonald Reservoir, 3 mi (5 km) east of Highway 93, 7 mi (11 km) southeast of Ronan, MT.			3-16-82	9.62

See footnotes at end of table, p.162

Discharge measurements made at miscellaneous sites during water year 1982

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharg (ft^3/s)
		Pend Oreille River Basin--continued				
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 on FAS 461, 1.5 mi (2.4 km) southwest of Quinns Hot Springs, and 5 mi (8 km) south of Paradise, MT.	14.2		4-14-82	28
					5-19-82	55
					6-16-82	44.1
					7-14-82	11.5
					8-18-82	5.97
					9-17-82	4.47
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 on county road 0.3 mi (0.5 km) upstream of Clark Fork and 7 mi (11 km) northwest of Thompson Falls, MT.	28.3		3-16-82	5.31
					4-15-82	15.3
					5-18-82	265
					6-15-82	280
					7-12-82	85.5
					8-17-82	25.6
					9-13-82	13.8
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 on county road 0.8 mi (1.3 km) upstream of Clark Fork, 2 mi (3 km) northeast of White Pine, MT, and 12 mi (19 km) northeast of Thompson Falls, MT.	12.6		3-16-82	15.5
					4-15-82	39.4
					5-18-82	93.5
					6-15-82	83
					7-12-82	24.2
					8-17-82	8.3
					9-13-82	4.79

† Operated as a continuous-record gaging station.
a Estimated.

ADDITIONAL TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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											
12303000 KOOTENAI RIVER AT LIBBY, MT											
JUN 23...	1040	10200	234	19.0	11.5	AUG 04...	1320	19100	193	21.5	13.0
12303100 FLOWER CREEK NEAR LIBBY, MT											
JUN 15...	0940	202	20	12.5	5.0	AUG 06...	0905	17	68	14.0	9.5
PEND OREILLE RIVER BASIN											
12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT											
JUN 22...	0830	569	240	12.0	12.0	AUG 16...	0900	76	298	12.0	14.0
JUL 09...	0950	266	253	14.0	13.0						
12324680 CLARK FORK AT GOLD CREEK, MT											
JUN 22...	1050	2380	281	20.0	14.5	AUG 16...	1045	251	507	26.0	17.0
JUL 08...	1100	1440	348	22.0	13.5						
12325500 FLINT CREEK NEAR SOUTHERN CROSS, MT											
JUL 07...	1000	113	208	14.0	14.0	AUG 17...	1255	71	190	26.0	18.0
12329500 FLINT CREEK AT MAXVILLE, MT											
JUL 07...	1400	290	234	18.0	12.0	AUG 16...	1500	148	273	27.0	16.0
12330000 BOULDER CREEK AT MAXVILLE, MT											
JUL 08...	0830	154	104	8.0	7.0	AUG 17...	0850	25	188	20.0	9.0
12331600 CLARK FORK AT DRUMMOND, MT											
JUN 18...	1645	3590	273	27.0	15.0	AUG 16...	1310	366	488	32.0	18.5
JUL 07...	1810	1850	329	17.0	14.0						
12332000 MIDDLE FORK ROCK CREEK NEAR PHILIPSBURG, MT											
JUL 07...	1100	381	91	13.0	7.0	AUG 17...	1100	75	134	18.0	10.5

ADDITIONAL TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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											
JUN 03...	1430	130	207	16.0	10.5	AUG 23...	1000	13	288	16.0	13.5
JUL 12...	0930	41	267	16.5	12.5						
12338690 MONTURE CREEK NEAR OVANDO, MT											
JUN 22...	1400	1520	86	24.5	9.5	AUG 23...	1330	84	171	26.0	14.0
JUL 12...	1200	397	86	20.0	8.5						
12339450 CLEARWATER RIVER NEAR CLEARWATER, MT											
JUL 12...	1545	422	109	25.0	19.5	AUG 23...	1600	80	142	24.0	21.5
12340000 BLACKFOOT RIVER NEAR BONNER, MT											
JUN 23...	0845	8430	152	16.0	12.0	AUG 25...	1500	824	252	27.5	18.5
JUL 13...	0850	3090	195	18.0	15.5						
12342500 WEST FORK BITTERROOT RIVER NEAR CONNER, MT											
JUN 15...	1145	2340	48	19.5	9.0	AUG 24...	1445	193	40	28.0	10.5
JUL 14...	1420	498	45	21.5	12.0						
12344000 BITTERROOT RIVER NEAR DARBY, MT											
JUL 14...	0945	2390	55	18.5	11.0	AUG 25...	0830	396	71	13.0	12.5
20...	1315	1340	57	27.0	14.0						
12353280 NINEMILE CREEK NEAR HUSON, MT											
MAY 27...	1710	993	60	11.0	7.0	AUG 27...	0915	37	84	24.0	13.0
JUL 20...	1620	124	72	28.0	18.0						
12354500 CLARK FORK AT ST. REGIS, MT											
JUN 21...	1550	42900	69	29.5	9.0	AUG 27...	1315	3400	163	27.5	15.5

ADDITIONAL TEMPERATURE MEASUREMENTS AND FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

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					
12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT					
JUL 19...	1520	4510	148	27.0	12.0
12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT					
SEP 15...	1410	462	221	13.0	10.0
12366000 WHITEFISH RIVER NEAR KALISPELL, MT					
JUL 20...	1350	365	159	24.5	18.0
12363920 STILLWATER RIVER AT OLNEY, MT					
JUN 14...	1030	566	170	20.0	14.0
AUG 17...	1300	118	195	23.0	18.0
SEP 15...	1230	72	208	7.0	11.0
12369200 SWAN RIVER NEAR CONDON, MT					
MAY 27...	1310	866	38	7.0	7.0
JUL 20...	1110	276	36	22.0	15.0
12370000 SWAN RIVER NEAR BIGFORK, MT					
SEP 07...	1145	595	159	21.5	18.5
12390700 PROSPECT CREEK AT THOMPSON FALLS, MT					
JUN 22..	1130	787	46	19.5	9.5
AUG 30..	1630	85	83	17.0	10.5
12389000 CLARK FORK NEAR PLAINS, MT					
JUN 21...	1410	86300	162	31.0	15.0
AUG 30...	1020	7440	214	17.5	17.0
12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT					
JUN 22...	0835	1450	95	18.0	9.5
12391550 BULL RIVER NEAR NOXON, MT					
JUN 14...	1030	1870	45	--	6.5
AUG 05...	1020	228	95	20.5	10.0

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
KOOTENAI RIVER BASIN				
4858051151724 YOUNG CREEK BELOW SOUTH FORK, NEAR REXFORD, MT				
APR 15...	7.8	225	8.1	---
MAY 14...	54	127	7.6	73
JUN 15...	67	103	7.8	51
JUL 15...	24	200	8.1	102
AUG 16...	15	261	8.2	123
SEP 14...	9.0	248	8.4	119
12300200 YOUNG CREEK AT MOUTH, NEAR REXFORD, MT (Lat 48°57'44" Long 113°11'26")				
MAR 16...	6.7	286	---	---
APR 15...	10	260	8.3	---
MAY 14...	45	---	7.7	78
JUN 15...	78	111	7.5	56
JUL 15...	24	209	8.1	106
AUG 16...	11	274	8.3	130
SEP 14...	6.4	266	8.5	134
12300400 CAYUSE CREEK NEAR TREGO, MT (Lat 48°36'33" Long 115°01'42")				
MAR 15...	1.9	257	---	---
APR 14...	11	200	7.8	---
MAY 13...	36	120	7.7	---
JUN 14...	4.8	224	8.1	115
JUL 16...	3.7	253	8.3	130
AUG 17...	1.1	322	8.3	172
SEP 15...	.89	338	8.5	178
12300500 FORTINE CREEK NEAR TREGO, MT (Lat 48°38'41" Long 114°54'36")				
MAR 15...	68	240	---	---
APR 14...	182	205	8.0	---
MAY 13...	376	126	7.6	67
JUN 14...	108	172	7.8	85
JUL 16...	59	272	8.1	137
AUG 17...	13	382	8.2	203
SEP 15...	9.5	410	8.4	215
12300800 DEEP CREEK NEAR FORTINE, MT (Lat 48°45'04" Long 114°52'32")				
MAR 15...	2.3	232	---	---
APR 14...	1.9	237	8.2	---
MAY 13...	8.2	203	7.9	120
JUN 14...	101	152	7.7	76
JUL 16...	39	184	7.9	92
AUG 17...	11	228	8.1	112
SEP 15...	5.6	232	8.2	120
4852151151525 SULLIVAN CREEK NEAR REXFORD, MT				
MAR 16...	7.2	113	---	---
APR 15...	15	75	7.7	---
MAY 14...	37	52	6.9	25
JUN 15...	24	161	7.8	81
JUL 15...	24	186	8.0	90
AUG 16...	8.4	229	8.3	110
SEP 14...	5.6	218	8.5	104

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

KOOTENAI RIVER BASIN--Continued

4849181151730 BOULDER CREEK NEAR REXFORD, MT

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
MAR 16...	8.5	96	---	---
APR 15...	21	73	7.7	---
MAY 14...	78	63	7.0	31
JUN 14...	89	68	7.2	34
JUL 14...	31	132	7.8	63
AUG 16...	10	174	8.2	90
SEP 14...	5.7	185	8.4	95

12301810 BIG CREEK NEAR REXFORD, MT (Lat 48°44'53" Long 115°21'09")

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
MAR 16...	67	31	---	---
APR 15...	162	29	6.9	---
MAY 13...	405	26	6.8	9
JUN 14...	390	16	6.8	7
JUL 14...	154	22	7.7	9
AUG 16...	30	32	6.7	13
SEP 14...	21	37	7.2	15

4823271153334 PARMENTER CREEK AT LIBBY, MT

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
MAR 16...	25	63	--	--
APR 15...	43	61	7.6	--
MAY 20...	107	30	7.2	18
JUN 15...	187	29	7.0	14
JUL 14...	47	45	7.7	21
AUG 19...	1.8	82	7.7	37
SEP 14...	1.2	96	7.8	41

4825501153741 CEDAR CREEK NEAR LIBBY, MT

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
MAR 16...	34	59	--	--
APR 15...	41	51	7.8	--
MAY 20...	105	27	7.1	20
JUN 15...	137	34	7.1	18
JUL 14...	27	54	8.1	27
AUG 19...	12	71	7.6	32
SEP 13...	7.8	78	7.7	34

4827211153808 QUARTZ CREEK NEAR LIBBY, MT

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
MAR 16...	91	86	--	--
APR 14...	156	59	7.7	--
MAY 20...	330	32	7.3	23
JUN 15...	278	43	7.8	22
JUL 14...	61	67	7.7	31
AUG 19...	31	82	7.8	38
SEP 13...	33	88	7.8	39

12303440 CAMP CREEK NEAR TROY, MT (Lat 48°18'46" Long 115°50'35")

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
MAR 15...	15	74	--	--
APR 14...	20	58	7.4	--
MAY 19...	82	19	7.1	19
JUN 14...	143	16	6.8	7
JUL 12...	47	26	7.4	11
AUG 17...	6.4	49	7.4	21
SEP 13...	4.2	57	7.6	24

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
KOOTENAI RIVER BASIN--Continued				
4831071155700 RUBY CREEK NEAR TROY, MT				
MAR 15...	63	68	--	--
APR 14...	95	37	7.3	--
MAY 19...	135	18	6.9	9.4
JUN 14...	71	20	7.5	9.0
JUL 13...	15	43	7.8	20
AUG 18...	6.7	55	7.5	24
SEP 14...	4.6	61	7.6	25
4851191154620 PETE CREEK AT FOREST SERVICE ROAD, NEAR YAAK, MT				
MAR 15...	52	27	--	--
APR 13...	126	29	6.8	--
MAY 20...	219	18	7.0	78
JUN 14...	83	19	6.7	7
JUL 13...	27	34	7.7	16
AUG 18...	4.8	45	7.5	21
SEP 14...	4.1	52	7.6	23
4849531154556 PETE CREEK AT MOUTH, NEAR YAAK, MT				
MAR 15...	64	33	--	--
APR 13...	178	32	6.8	--
MAY 20...	222	18	7.0	78
JUN 14...	84	21	6.8	7
JUL 13...	26	36	7.8	16
AUG 18...	6.3	45	7.5	20
SEP 14...	3.9	51	7.6	23
12304250 WHITETAIL CREEK NEAR YAAK, MT (Lat 48°49'42" Long 115°48'45")				
MAR 15...	3.9	27	--	--
APR 13...	11	25	6.7	--
MAY 20...	9.6	24	8.6	139
JUN 14...	2.4	25	6.7	9
JUL 13...	.61	32	7.6	14
4849231155101 SPREAD CREEK NEAR YAAK, MT				
MAR 15...	41	22	--	--
APR 13...	99	22	6.8	--
MAY 19...	398	21	8.6	119
JUN 14...	592	10	6.6	4
JUL 13...	82	16	7.2	8
AUG 18...	20	23	7.2	10
SEP 14...	17	38	8.8	16
4850071155805 HELLROARING CREEK AT FOREST SERVICE ROAD, NEAR YAAK, MT				
MAY 19...	189	10	6.6	37
JUN 15...	172	8	6.5	3
JUL 13...	15	12	6.9	6
AUG 18...	4.8	20	7.2	11
SEP 14...	4.4	22	7.2	8

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
KOOTENAI RIVER BASIN--Continued									
4847161155508 HELLROARING CREEK AT MOUTH, NEAR YAAK, MT									
MAR					JUL				
15...	22	19	--	--	13...	20	22	8.4	12
APR					AUG				
13...	51	20	6.7	--	18...	2.9	22	7.2	9
MAY					SEP				
19...	185	11	6.6	41	14...	3.8	24	7.3	11
JUN									
15...	179	8	6.5	3					
4847561155657 NORTH FORK MEADOW CREEK, NEAR YAAK, MT									
MAY					AUG				
19...	87	13	7.2	57	18...	2.6	22	7.1	10
JUN					SEP				
15...	90	9	6.4	4	14...	2.0	24	6.9	11
JUL									
13...	12	17	7.0	11					
4847141155616 NORTH FORK MEADOW CREEK AT MOUTH, NEAR YAAK, MT									
MAY					AUG				
19...	92	11	6.9	45	18...	2.5	22	7.2	10
JUN					SEP				
15...	71	10	6.4	3	14...	3.2	23	7.2	11
JUL									
13...	10	17	7.1	8					
4847011155520 MEADOW CREEK NEAR YAAK, MT									
MAR					JUL				
15...	40	21	--	--	13...	42	19	7.1	9
APR					AUG				
13...	74	21	6.8	--	18...	7.8	27	7.2	11
MAY					SEP				
18...	355	26	8.9	148	14...	6.5	30	7.3	13
JUN									
15...	186	15	6.8	6					
12304300 CYCLONE CREEK NEAR YAAK, MT (Lat 48°45'01" Long 115°54'06")									
MAR					JUL				
16...	12	23	--	--	13...	8.9	24	7.3	11
APR					AUG				
14...	26	22	7.8	--	18...	4.1	33	7.3	15
MAY					SEP				
18...	93	13	7.1	45	14...	1.3	37	7.4	16
JUN									
15...	48	13	6.7	5					
12304400 FOURTH OF JULY CREEK NEAR YAAK, MT (Lat 48°42'04" Long 115°52'04")									
MAR					JUL				
16...	13	26	--	--	13...	11	38	8.5	21
APR					AUG				
14...	42	22	7.2	--	18...	2.9	45	7.5	18
MAY					SEP				
18...	148	18	7.2	78	14...	2.4	51	7.5	25
JUN									
15...	40	21	6.8	6					

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
PEND OREILLE RIVER BASIN				
12339300 DEER CREEK NEAR SEELEY LAKE, MT (Lat 47°12'37" Long 113°32'27")				
MAR 15...	12	81	--	--
APR 19...	37	55	7.3	45
MAY 20...	139	45	7.5	21
JUN 14...	110	10	7.4	22
JUL 13...	27	90	7.8	43
AUG 17...	5.0	126	7.8	59
SEP 16...	3.5	126	7.8	61
12339900 WEST TWIN CREEK NEAR BONNER, MT (Lat 46°54'44" Long 113°42'50")				
MAR 17...	9.5	28	--	--
APR 14...	35	23	6.9	7
MAY 20...	59	22	6.9	7
JUN 17...	68	10	6.9	5
JUL 15...	15	15	7.3	7
AUG 19...	4.3	15	7.1	7
SEP 18...	3.5	16	6.9	7
12340200 MARSHALL CREEK NEAR MISSOULA, MT (Lat 46°53'15" Long 113°55'27")				
MAR 17...	3.3	102	--	--
APR 14...	6.9	89	7.5	38
MAY 20...	14	57	7.3	25
JUN 14...	3.0	86	7.8	39
JUL 15...	2.5	96	8.0	43
AUG 19...	1.0	127	7.5	57
SEP 18...	1.1	109	8.0	52
4707331142609 BUTLER CREEK NEAR ALBERTON, MT				
MAR 17...	3.3	76	--	--
APR 14...	21	72	7.3	26
MAY 20...	33	25	6.9	8
JUN 17...	127	12	6.7	5
JUL 15...	25	20	7.1	11
AUG 19...	7.0	28	7.3	12
SEP 18...	4.1	34	7.4	15
4722021151549 TWELVEMILE CREEK NEAR ST. REGIS, MT				
MAR 16...	57	85	--	--
APR 15...	136	80	7.6	34
MAY 19...	316	67	7.5	23
JUN 16...	149	72	8.0	36
JUL 14...	43	99	8.1	48
AUG 18...	19	124	8.2	58
SEP 17...	11	130	8.1	62
4718421151359 WARD CREEK NEAR ST. REGIS, MT				
APR 15...	94	141	7.8	70
MAY 19...	214	73	7.6	36
JUN 16...	232	38	7.6	18
JUL 14...	48	71	7.9	34
AUG 18...	15	135	8.1	63
SEP 17...	11	152	8.0	71

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
PEND OREILLE RIVER BASIN--Continued									
4717421151020 TWOMILE CREEK NEAR ST. REGIS, MT									
MAR 16...	35	165	--	--	JUL 14...	24	142	8.2	70
APR 15...	60	137	7.9	80	AUG 18...	10	188	8.3	89
MAY 19...	133	107	7.9	59	SEP 17...	7.2	196	8.2	94
JUN 16...	102	79	7.9	39					
12354000 ST. REGIS RIVER NEAR ST. REGIS, MT (Lat 47°17'49" Long 115°07'18")									
MAR 16...	960	87	--	--	JUL 14...	660	76	7.9	38
MAY 19...	2550	57	7.3	28	AUG 18...	185	101	8.1	47
JUN 16...	2370	53	8.1	26	SEP 17...	130	103	7.9	48
4739411134944 PIPER CREEK NEAR SWAN LAKE, MT									
MAR 15...	7.9	132	--	--	JUL 13...	50	85	7.8	41
APR 19...	14	147	8.0	78	AUG 17...	16	122	8.0	57
MAY 17...	84	91	7.8	51	SEP 16...	8.1	136	8.0	66
JUN 14...	128	55	7.6	26					
12356500 BEAR CREEK NEAR ESSEX, MT (Lat 48°16'56" Long 113°25'23")									
MAR 17...	7.6	258	---	---	JUL 19...	37	185	8.2	78
APR 13...	17	190	7.9	---	AUG 19...	17	298	8.3	98
MAY 17...	212	86	7.2	40	SEP 16...	14	316	8.5	102
JUN 16...	320	89	7.3	40					
4746261134228 GOAT CREEK AT UPPER SITE, NEAR SWAN LAKE, MT									
MAY 17...	70	254	8.1	140	AUG 17...	3.6	236	8.1	110
JUN 14...	137	206	8.2	110	SEP 16...	.16	264	8.2	130
JUL 13...	29	209	8.2	100					
4745571134548 GOAT CREEK AT MIDDLE SITE, NEAR SWAN LAKE, MT									
MAR 15...	9.7	278	--	--	JUL 13...	54	229	8.3	110
APR 19...	9.2	295	8.3	160	AUG 17...	17	266	8.3	130
MAY 17...	93	248	8.2	140	SEP 16...	10	274	8.3	130
JUN 14...	159	221	8.3	110					

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
PEND OREILLE RIVER BASIN--Continued									
4745191134723 GOAT CREEK AT OLD SQUEEZER CREEK ROAD, NEAR SWAN LAKE, MT									
MAR 15...	9.4	296	--	--	JUL 13...	50	236	8.3	120
APR 19...	16	303	8.2	170	AUG 17...	18	273	8.3	130
MAY 17...	89	282	8.0	150	SEP 16...	12	282	8.2	140
JUN 14...	153	229	8.3	110					
4743311135525 SOUTH WOODWARD CREEK AT UPPER SITE, NEAR SWAN LAKE, MT									
MAY 17...	7.9	87	7.9	46	AUG 17...	11	137	8.1	64
JUN 14...	15	99	8.1	48	SEP 16...	7.6	135	8.0	62
JUL 13...	12	134	8.1	66					
4743191135120 SOUTH WOODWARD CREEK AT LOWER SITE, NEAR SWAN LAKE, MT									
MAR 15...	22	177	--	--	JUL 13...	42	171	8.1	85
APR 19...	21	182	8.3	97	AUG 17...	42	176	8.1	84
MAY 17...	46	152	8.1	79	SEP 16...	42	174	8.1	92
JUN 14...	40	160	8.2	110					
4748531134408 SOUP CREEK AT UPPER SITE, NEAR SWAN LAKE, MT									
MAY 17...	42	237	8.2	130	AUG 17...	8.8	252	8.3	120
JUN 14...	101	197	8.2	110	SEP 16...	5.4	263	8.3	130
JUL 13...	19	230	8.3	120					
4748371134611 SOUP CREEK AT SOUP CREEK CAMPGROUND, NEAR SWAN LAKE, MT									
MAR 12...	2.9	303	--	--	JUL 13...	17	240	8.4	120
APR 20...	4.2	306	8.3	170	AUG 17...	7.4	271	8.4	130
MAY 17...	44	235	8.4	140	SEP 16...	4.5	280	8.3	140
JUN 14...	87	207	8.3	110					
4750551134943 SOUP CREEK AT HIGHWAY 83, NEAR SWAN LAKE, MT									
MAR 12...	11	309	--	--	JUL 13...	21	278	8.3	120
APR 20...	14	304	8.2	170	AUG 17...	9.3	313	8.4	130
MAY 17...	52	274	8.4	140	SEP 16...	5.9	326	8.3	140
JUN 14...	87	235	8.2	110					

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
PEND ORIELLE RIVER BASIN--Continued									
4753061134753 NORTH FORK LOST CREEK NEAR SWAN LAKE, MT									
MAR 12...	13	242	--	--	JUL 14...	60	189	8.2	93
APR 20...	29	257	8.2	140	AUG 18...	16	246	8.3	120
MAY 18...	190	207	8.2	120	SEP 17...	7.3	257	8.3	120
JUN 15...	203	182	8.2	100					
4752261135000 LOST CREEK AT HIGHWAY 83, NEAR SWAN LAKE, MT									
MAR 12...	26	266	--	--	JUL 13...	93	210	8.3	110
APR 20...	46	282	8.2	160	AUG 18...	22	260	8.3	130
MAY 18...	400	213	8.0	110	SEP 17...	12	274	8.2	130
JUN 15...	475	184	7.8	100					
4751441135246 PORCUPINE CREEK NEAR SWAN LAKE, MT									
MAR 15...	3.5	231	--	--	JUL 14...	3.8	225	8.2	110
APR 19...	4.1	222	8.1	120	AUG 18...	3.4	236	8.1	110
MAY 18...	15	147	8.1	80	SEP 17...	3.4	235	8.1	110
JUN 15...	4.8	215	8.2	110					
4755211135025 BOND CREEK AT SWAN LAKE, MT									
MAR 15...	6.2	276	--	--	JUL 14...	20	214	8.2	110
APR 20...	8.2	274	8.2	150	AUG 18...	3.0	264	8.3	130
MAY 18...	77	205	8.2	110	SEP 17...	2.0	273	8.3	130
JUN 15...	112	185	8.2	110					
12370900 TEEPEE CREEK NEAR POLSON, MT (Lat 47°49'16" Long 114°01'24")									
MAR 16...	0.42	122	--	--	JUL 14...	1.2	75	7.9	35
MAY 18...	5.5	60	7.7	28	AUG 18...	.5	87	7.9	39
JUN 15...	4.0	56	8.0	27	SEP 17...	.5	87	7.8	39

ADDITIONAL FIELD DETERMINATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	DATE	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (UNITS) (00400)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)
PEND OREILLE RIVER BASIN--Continued									
4718541144826 SIEGEL CREEK NEAR PARADISE, MT									
APR 14...	28	51	7.3	17	JUL 14...	12	56	7.6	21
MAY 19...	55	44	7.2	15	AUG 18...	6.0	53	7.2	20
JUN 16...	44	33	7.2	13	SEP 17...	4.5	54	7.2	18
4741091152413 GRAVES CREEK NEAR THOMPSON FALLS, MT									
MAR 16...	5.3	90	--	--	JUL 12...	86	63	7.9	30
APR 15...	15	88	7.6	41	AUG 17...	26	80	7.9	37
MAY 18...	265	63	8.2	29	SEP 13...	14	87	7.9	41
JUN 15...	280	45	8.3	22					
4744461152627 DEEP CREEK NEAR THOMPSON FALLS, MT									
MAR 16...	16	44	--	--	JUL 12...	24	45	7.6	21
APR 15...	39	39	7.2	16	AUG 17...	8.3	55	7.6	25
MAY 18...	94	29	7.2	11	SEP 13...	4.8	57	7.7	25
JUN 15...	83	25	7.3	11					

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 (0.1 m), depth 20.0 ft (6.10 m), steel casing.
DATUM.--Land-surface datum is 4,979 ft (1,518 m) National Geodetic Vertical Datum of 1929. Measuring point: Bottom of 6 in (0.15 m) outlet pipe, 1.3 ft (0.40 m) above land-surface datum.
PERIOD OF RECORD.--July 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.05 ft (0.930 m) below land-surface datum June 4, 1980; lowest, 5.22 ft (1.591 m) below land-surface datum Mar. 13, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 30	4.62	Aug. 10	4.29

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 (0.15 m), depth 88.8 ft (27.07 m), steel casing.
DATUM.--Land-surface datum is 5,006 ft (1,526 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.50 ft (0.152 m) above land-surface datum.
PERIOD OF RECORD.--June 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 30.00 ft (9.144 m) below land-surface datum Sept. 18, 1980; lowest, 66.17 ft (20.169 m) below land-surface datum June 9, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 30	40.33	Aug. 10	34.25

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 (0.15 m), depth 150 ft (45.7 m), steel casing.
DATUM.--Land-surface datum is 4,786 ft (1,459 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 0.50 ft (0.152 m) above land-surface datum.
PERIOD OF RECORD.--September 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 88.97 ft (27.118 m) below land-surface datum Aug. 20, 1968; lowest, 93.24 ft (28.420 m) below land-surface datum Mar. 29, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 3	90.93	Aug. 10	91.17

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 (3.8 cm), depth 9.6 ft (2.93 m), cased with steel pipe.
DATUM.--Land-surface datum is 2,896 ft (883 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of pipe, 1.5 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--October 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.79 ft (0.546 m) below land-surface datum Apr. 2, 1979; lowest, 5.32 ft (1.622 m) below land-surface datum Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Nov. 18	4.54	Aug. 25	4.86
May 19	3.48		

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 (0.13 m), depth 151 ft (46.0 m), steel casing.
DATUM.--Land-surface datum is 2,980.5 ft (903.46 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--September 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.88 ft (6.059 m) below land-surface datum Aug. 18, 1969; lowest, 39.24 ft (11.960 m) below land-surface datum June 11, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL
Nov. 18	20.40

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 (0.16 m), depth 278 ft (84.7 m), steel casing.
DATUM.--Land-surface datum is 3,027 ft (923 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 5.0 ft (1.52 m) 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 (30.448 m) below land-surface datum July 1, 1964; lowest, 108.13 ft (32.958 m) below land-surface datum Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Nov. 18	105.81	Aug. 25	106.87
May 19	105.00		

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 (1.4 m), depth 20.0 ft (6.10 m), concrete casing.
DATUM.--Land-surface datum is 3,050 ft (930 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of 3/4 in (1.9 cm) pipe, 0.7 ft (0.21 m) below land-surface datum.
PERIOD OF RECORD.--October 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.73 ft (4.490 m) below land-surface datum June 11, 1970; lowest, 19.36 ft (5.901 m) below land-surface datum Feb. 15, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Nov. 18	16.99	Aug. 25	16.70
May 19	16.74		

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 (1.8 m), depth 35.5 ft (10.82 m), cased with pipe.
DATUM.--Land-surface datum is 3,145 ft (958.6 m) National Geodetic Vertical Datum of 1929. Measuring point: top of casing 1.30 ft (0.396 m) above land-surface datum.
PERIOD OF RECORD.--April 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 8.08 ft (2.463 m) below land-surface datum June 1974; lowest, 21.14 ft (6.443 m) below land-surface datum May 1961.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Jan. 7	18.66	Aug. 25	14.06
May 18	16.67		

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 (0.15 m), depth 69.6 ft (21.21 m), steel casing.
DATUM.--Land-surface datum is 4,825 ft (1,471 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) 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 (8.769 m) below land-surface datum May 21, 1979; lowest, 34.37 ft (10.476 m) below land-surface datum Aug. 20, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 30	32.16	Aug. 10	30.34

POWELL COUNTY

463530112360003. Local number, 10N08W28AAA03.
LOCATION.--Lat 46°35'30", long 112°36'00", Hydrologic Unit 17010201. Owner: H.C. Young.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in (0.15 m), depth 23.4 ft (7.13 m), steel casing.
DATUM.--Land-surface datum is 4,709 ft (1,435 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.7 ft (0.2 m) above land-surface datum.
PERIOD OF RECORD.--April 1962 to December 1963, March 1967 to July 1981.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.06 ft (0.933 m) below land-surface datum June 9, 1969; lowest, 10.26 ft (3.127 m) below land-surface datum Mar. 9, 1967.

DISCONTINUED

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 (0.15 m), depth 40 ft (12.2 m), cased with pipe.
DATUM.--Land-surface datum is 3,557 ft (1,084 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf 3.0 ft (0.91 m) 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 (0.933 m) below land-surface datum June 25, 1971; lowest, 18.36 ft (5.596 m) below land-surface datum Apr. 7, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 26	9.93	Apr. 22	16.78
Nov. 20	12.00	May 20	13.23
Dec. 22	13.63	July 13	7.99
Jan. 27	14.74	Aug. 23	6.94
Feb. 26	15.00	Sept. 20	6.66
Mar. 30	16.19		

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 (0.15 m), depth 50.5 ft (15.39 m), cased with pipe.
DATUM.--Land-surface datum is 3,200 ft (975 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--May 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.48 ft (0.756 m) below land-surface datum June 15, 1959; lowest, 7.55 ft (2.301 m) below land-surface datum Apr. 15, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
May 18	5.68	Aug. 24	6.50

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 (0.1 m), depth 40 ft (12.2 m), cased with pipe. This well replaces 463140114064001 (09N20W21AD1).
DATUM.--Land-surface datum is 3,308 ft (1,008 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 16.87 ft (5.142 m) below land-surface datum June 26, 1978; lowest, 34.01 ft (10.366 m) below land-surface datum Mar. 28, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Jan. 5	28.55	Aug. 24	21.30
May 18	25.93		

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 (0.46 m), depth 377 ft (114.9 m), perforated with 480 perforations.
DATUM.--Land-surface datum is 2,878.6 ft (877.40 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casings, 1.0 ft (0.30 m) 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 (31.309 m) below land-surface datum Apr. 10, 1981; lowest, 116.40 ft (35.479 m) below land-surface datum Aug. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 29	105.42	Mar. 17	104.54
Dec. 7	105.04	May 25	104.78
Feb. 2	105.00	Aug. 27	108.16

October 1, 1978

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
	Length	
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)
	Area	
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)
	Volume	
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)
	Flow	
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)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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