# Quality of Surface Waters of the United States, 1966

## Parts 12–16. North Pacific Slope Basins, Alaska, and Hawaii and Other Pacific Areas

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*Prepared in cooperation with the States of Alaska, Idaho, Montana, Oregon, Washington, Wyoming, U.S. Bureau of Reclamation, and with other agencies*


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## PREFACE

This report was prepared by the U.S. Geological Survey in cooperation with the States of Alaska, Idaho, Montana, Oregon, Washington, Wyoming, U. S. Bureau of Reclamation, and with other agencies, by personnel of the Water Resources Division, E. L. Hendricks, chief hydrologist, G. W. Whetstone, assistant chief for Scientific Publications and Data Management, under the general direction of G. A. Billingsley, chief, Reports Section, and B. A. Anderson, chief, Data Reports Unit.

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# QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1966

PARTS 12-16

## INTRODUCTION

The quality-of-water investigations of the United States Geological Survey are concerned with chemical and physical characteristics of the surface and ground water supplies of the Nation. Most of the investigations carried on in cooperation with State and Federal agencies deal with the amounts of matter in solution and in suspension in streams.

The records of chemical analysis, suspended sediment, and temperature of surface waters given in this volume serve as a basis for determining the suitability of waters for various uses. The flow and water quality of a stream are related to variations in rainfall and other forms of precipitation. In general, lower concentrations of dissolved solids may be expected during periods of high flow than during periods of low flow. Conversely, the suspended solids in some streams may change materially with relatively small variations in flow, whereas for other streams the quality of the water may remain relatively uniform throughout large ranges in discharge.

The Geological Survey has published annual records of chemical quality, water temperature, and suspended sediment since 1941. The records prior to 1948 were published each year in a single volume for the entire country, and in two volumes in 1948 and in 1949. From 1950 to 1958, the records were published in 4 volumes; from 1959 to 1963 in 5 volumes; and since 1964 in 6 volumes. The drainage basins covered by the six volumes are shown in Figure 1. The shaded area in Figure 1 represents the section of the country covered in this volume for the water year 1966 (October 1, 1965 to September 30, 1966).

To meet interim requirements, water-quality records have been released by the Geological Survey in annual reports, beginning

with the 1964 water year, by State. These reports are entitled, "Water Resources Data for (State), Part 2. Water Quality Records." Distribution of these reports is limited and primarily for local needs. Any revisions or corrections found necessary to the records published in these annual State reports have been made and published in this volume without reference.

The records herein are listed by drainage basins in a downstream direction along the main stream. All stations on a tributary entering above a mainstream 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. In the list of water-quality stations in the front of this volume, the rank of the tributaries is indicated by an indention. Each indention represents one rank.

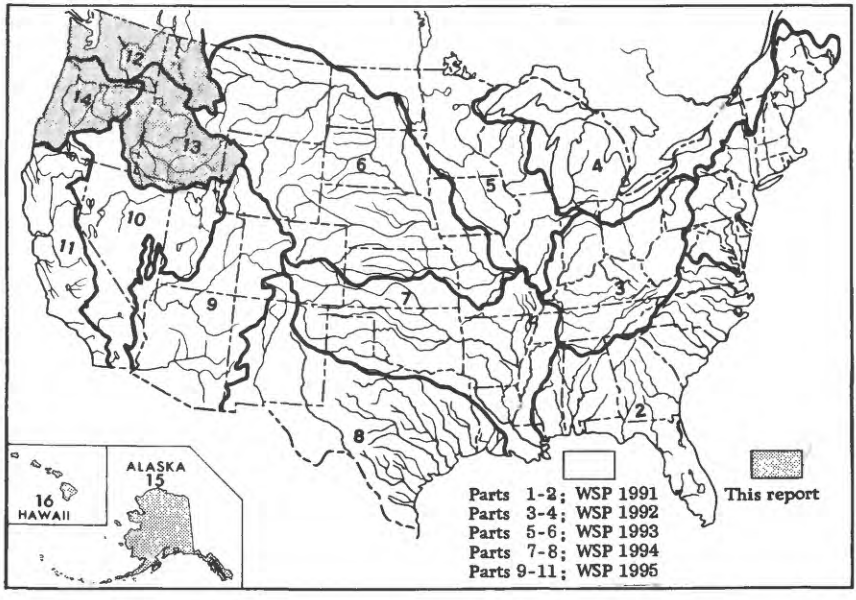


Figure 1.--Map of the United States showing basins covered by the six water-supply papers on quality of surface waters in 1966. The shaded part represents the section of the country covered by this volume; the unshaded part represents the section of the country covered by other water-supply papers.

A station number has been assigned as an added means of identification for each stream location where regular measurements of water quantity or quality have been made. The numbers have been assigned to conform with the standard downstream order of listing gaging stations. The numbering system consists of 2 digits followed by a hyphen and a 6-digit number. The notation to the left of the hyphen identifies the Part or hydrologic region used by the Geological Survey for reporting hydrologic data. The number to the right of the hyphen represents the location of the station in the standard downstream order within each of the 16 parts (Fig. 1). The assigned numbers are in numerical order but are not consecutive. They are so selected from the complete 6-digit-number scale that intervening numbers will be available for future assignments to new locations. The identification number for each station in this report is printed to the left of the station name and contains only the essential digits. For example, the number is printed as 4-0100 for a station whose complete indentification number is 04-0100.00.

Descriptive statements are given for each sampling station where chemical analyses, temperature measurements, or sediment determinations have been made. These statements include location of the station, drainage area, periods of records available, extremes of dissolved solids, hardness, specific conductance, temperature, sediment loads, and other pertinent data. Records of discharge of the streams at or near the sampling station are included in most tables of analyses.

During the water year ending September 30, 1966, the Geological Survey maintained 214 stations on 163 streams for the study of chemical and physical characteristics of surface water. Samples were collected daily and monthly at 78 of these locations for chemical-quality studies. Samples also were collected less frequently at many other points. Water temperatures were measured continuously at 133 and daily at 38 stations. All surface water samples collected and analyzed during the year have not been included. Single analyses made of daily samples before compositing have not been reported. Specific conductance is determined and reported for almost all daily samples.

At chemical-quality stations where data are continuously recorded at the stream site (monitors), the records consist of daily maximum, minimum, and mean values for each constituent measured. More detailed records (hourly values) may be obtained by writing the district office listed under Division of Work on page 30.

Quantities of suspended sediment are reported for 31 stations during the year ending September 30, 1966. Sediment samples were collected one or more times daily at most stations, depending on the rate of flow and changes in stage of the stream. Particle-size distributions of sediments were determined at 26 of the stations.

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

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

International Hydrological Decade (IHD) River Stations provide a general index of runoff and materials in the water balance (discharge of water, and dissolved and transported solids) of the world. In the United States, IHD Stations provide indices of runoff and the general distribution of water in the principal river basins of the conterminous United States and Alaska.

Irrigation network stations are water-quality stations located at or near certain streamflow gaging stations west of the main stem of the Mississippi River. Data collected at these stations are used to evaluate the chemical quality of surface waters used for irrigation and the changes resulting from the drainage of irrigated lands. Prior to water year 1966, these data were published in the annual water-supply paper series, "Quality of Surface Water for Irrigation, Western States."

Pesticide program is a network of regularly sampled water-quality stations where additional monthly samples are collected to determine the concentration and distribution of pesticides in streams whose waters are used for irrigation or in streams in areas where potential contamination could result from the application of the commonly used insecticides and herbicides.

Radiochemical program is a network of regularly sampled water-quality stations where additional samples are collected twice a year (at high and low flow) to be analyzed for radio-

isotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

## COLLECTION AND EXAMINATION OF DATA

Quality of water stations usually are located at or near points on streams where streamflow is measured by the U.S. Geological Survey. The concentration of solutes and sediments at different locations in the stream-cross section may vary widely with different rates of water discharge depending on the source of the material and the turbulence and mixing of the stream. In general, the distribution of sediment in a stream section is much more variable than the distribution of solutes. It is necessary to sample some streams at several verticals across the channel and especially for sediment, to uniformly traverse the depth of flow. These measurements require special sampling equipment to adequately integrate the vertical and lateral variability of the concentration in the section. These procedures yield a velocity-weighted mean concentration for the section.

The near uniformly dispersed ions of the solute load move with the velocity of the transporting water. Accordingly, the mean section concentration of solutes determined from samples is a precise measure of the total solute load. The mean section concentration obtained from suspended sediment samples is a less precise measure of the total sediment load, because the sediment samplers do not traverse the bottom 0.3 foot of the sampling vertical where the concentration of suspended sediment is greatest and because a significant part of the coarser particles in many streams move in essentially continuous contact with the bed and are not represented in the suspended sediment sample. Hence, the computed sediment loads presented in this report are usually less than the total sediment loads. For most streams the difference between the computed and total sediment loads will be small, in the order of a few percent.

### CHEMICAL QUALITY

The methods of collecting and compositing water samples for chemical analysis are described by Rainwater and Thatcher (1960, 301 p.). No single method of compositing samples is applicable to all problems related to the study of water quality.

Although the method of 10-day periods or the equivalent of three composite samples per month generally is practiced, modifications usually are made on the basis of dissolved-solids content as indicated by measurements of conductivity of daily samples, supplemented by other information such as chloride content, river stage, weather conditions and other background information of the stream.

## TEMPERATURE

Daily water temperatures were measured at most of the stations at the time samples were collected for chemical quality or sediment content. So far as practicable, the water temperatures were taken at about the same time each day. Large streams have a small diurnal temperature change while small, 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. The thermometers used for determining water temperature were accurate to plus or minus 0.5°F.

At stations where continously recording thermographs are present, the records consist of maximum and minimum temperatures for each day, and the monthly averages.

## SEDIMENT

In general, suspended-sediment samples were collected daily with depth-integrating cable-suspended samples (U.S. Inter-Agency, 1963, and 1952.) from a fixed sampling point at one vertical in the cross section. A hand sampler was used at many stations during periods of low flow. Depth-integrated samples were collected periodically at three or more verticals in the cross section to determine the cross-sectional distribution of the concentration of suspended sediment with respect to that at the daily sampling vertical. In streams where transverse distribution of sediment concentration ranges widely, samples were taken at two or more verticals to define more accurately the average concentration of the cross section. During periods of high or rapidly changing flow, samples generally were taken two or more times a day.

Sediment concentrations were determined by filtration-evaporation method. At many stations the daily mean concentration for some days was obtained by plotting the velocity-weighted instantaneous concentrations on the gage-height chart. The plotted concentrations, adjusted if necessary, for cross-sectional distribution were connected or averaged by continuous curves to obtain a concentration graph. This graph represented the estimated velocity-weighted concentration at any time, and for most periods daily mean concentrations were determined from the graph. The days were divided into shorter intervals when the concentration and water discharge were changing rapidly. During some periods of minor variation in concentration, the average concentration of the samples was used as the daily mean concentration. During extended periods of relatively uniform concentration and flow, samples for a number of days were composited to obtain average concentrations and average daily loads for each period.

For some 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 periods, and suspended-sediment loads for other periods of similar discharge. The estimates were further guided by weather conditions and sediment discharge for other stations.

In many instances where there were no observations for several days, the suspended-sediment loads for individual days are not estimated, because numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates for individual days. However, estimated loads of suspended sediment for missing days in an otherwise continuous period of sampling have been included in monthly and annual totals in order to provide a complete record. For some streams, samples were collected weekly, monthly, or less frequently, and only rates of sediment discharge at the time of sampling are shown.

In addition to the records of quantities of suspended sediment transported, records of the particle sizes of sediment are included. The particle sizes of the suspended sediment for many of the stations, and the particle sizes of the bed material for some of the stations were determined periodically.

The size of particles in stream sediments commonly range from colloidal clay (finer than 0.001 mm) to coarse sand or gravel (coarser than 1.0 mm). The common methods of particle-size analyses cannot accommodate such a wide range in particle size.

Hence, it was necessary to separate most samples into two parts, one coarser than 0.062 mm and one finer than 0.062 mm. The separations were made by sieve or by a tube containing a settling medium of water. The coarse fractions were classified by sieve separation or by the visual accumulation tube (U.S. Inter-Agency, 1957). The fine fractions were classified by the pipet method (Kilmer and Alexander, 1949) or the bottom withdrawal tube method (U.S. Inter-Agency, 1943).

## EXPRESSION OF RESULTS

The quantities of solute concentrations analyzed in the laboratory are measured by weight-volume units (milligrams per liter) and for reporting, are converted to weight-weight units (parts per million). For most waters, this conversion is made by assuming that the liter of water sample weighs 1 kilogram; and thus milligrams per liter are equivalent to parts per million (ppm).

Equivalents per million are not reported, but they can be calculated easily from the parts per million data. An equivalent per million (epm) is a unit chemical combining weight of a constituent in a million unit weights of water. Chemical equivalence in equivalents per million can be obtained by (a) dividing the concentration in parts per million by the combining weight of that ion, or (b) multiplying the concentration (in ppm) by the reciprocals of the combining weights. The table on page 9 lists the reciprocals of the combining weights of cations and anions generally reported in water analyses. The conversion factors are computed from atomic weights based on carbon-12 (International Union of Pure and Applied Chemistry, 1961).

Results given in parts per million can be converted to grains per United States gallon by dividing by 17.12.

The hardness of water is conventionally expressed in all water analyses in terms of an equivalent quantity of calcium carbonate. Such a procedure is required because hardness is caused by several different cations, present in variable proportions. It should be remembered that hardness is an expression in conventional terms of a property of water. The actual presence of calcium carbonate in the concentration given is not to be assumed. The hardness caused by calcium and magnesium (and other cations if significant) equivalent to the carbonate and bicarbonate is called carbonate hardness; the hardness in excess of this quan-

Conversion factors: Parts per million to equivalents per million

| Ion | Multiply by | Ion | Multiply by |
|---|---|---|---|
| Aluminum ($Al^{+3}$) | 0.11119 | Iodide ($I^{-1}$) | 0.00788 |
| Ammonia as $NH_4^{+1}$ | .05544 | Iron ($Fe^{+3}$) | .05372 |
| Barium ($Ba^{+2}$) | .01456 | Lead ($Pb^{+2}$) | .00965 |
| Bicarbonate ($HCO_3^{-1}$) | .01639 | Lithium ($Li^{+1}$) | .14411 |
| Bromide ($Br^{-1}$) | .01251 | Magnesium ($Mg^{+2}$) | .08226 |
| Calcium ($Ca^{+2}$) | .04990 | Manganese ($Mn^{+2}$) | .03640 |
| Carbonate ($CO_3^{-2}$) | .03333 | Nickel ($Ni^{+2}$) | .03406 |
| Chloride ($Cl^{-1}$) | .02821 | Nitrate ($NO_3^{-1}$) | .01613 |
| Chromium ($Cr^{+6}$) | .11539 | Nitrite ($NO_2^{-1}$) | .02174 |
| Cobalt ($Co^{+2}$) | .03394 | Phosphate ($PO_4^{-3}$) | .03159 |
| Copper ($Cu^{+2}$) | .03148 | Potassium ($K^{+1}$) | .02557 |
| Cyanide ($CN^{-1}$) | .03844 | Sodium ($Na^{+1}$) | .04350 |
| Fluoride ($F^{-1}$) | .05264 | Strontium ($Sr^{+2}$) | .02283 |
| Hydrogen ($H^{+1}$) | .99209 | Sulfate ($SO_4^{-2}$) | .02082 |
| Hydroxide ($OH^{-1}$) | .05880 | Zinc ($Zn^{+2}$) | .03060 |

tity is called noncarbonate hardness. Hardness or alkalinity values expressed in parts per million as calcium carbonate may be converted to equivalents per million by dividing by 50.

The value usually reported as dissolved solids is the residue on evaporation after drying at 180°C for 1 hour. For some waters, particularly those containing moderately large quantities of soluble salts, the value reported is calculated from the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. The calculated sum of the constituents may be given instead of or in addition to the residue. In the analyses of most waters used for irrigation, the quantity of dissolved solids is given in tons per acre-foot as well as in parts per million.

Specific conductance is given for most analyses and was determined by means of a conductance bridge and using a standard potassium chloride solution as reference. Specific conductance values are expressed in micromhos per centimeter at 25°C. Specific conductance in micromhos is 1 million times the reciprocal of specific resistance at 25°C. Specific resistance is the resistance in ohms of a column of water 1 centimeter long and 1 square centimeter in cross section.

The discharge of the streams is reported in cubic feet per second (see Streamflow, p. 27) and the temperature in degrees

Fahrenheit. Color is expressed in units of the platinum-cobalt scale proposed by Hazen (1892). A unit of color is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Hydrogen-ion concentration is expressed in terms of pH units. By definition the pH value of a solution is the negative logarithm of the concentration of gram ions of hydrogen.

An average of analyses for the water year is given for most daily sampling stations. Most of these averages are arithmetical, time-weighted, or discharge-weighted; when analyses during a year are all on 10-day composites of daily samples with no missing days, the arithmetical and time-weighted averages are equivalent. 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 river each day for the water year. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all of the water passing a given station during the year. A discharge-weighted average is computed by multiplying the discharge for the 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. For most streams, discharge-weighted averages are lower than arithmetical averages because at times of high discharge the rivers generally have low concentrations of dissolved solids.

A program for computing these averages by electronic digital computer was instituted in the 1962 water year. This program extended computations to include averages for pH values expressed in terms of hydrogen ion and averages for the concentration of individual constituents expressed in tons per day. Concentrations in tons per day are computed the same as daily sediment loads.

The concentration of sediment in parts per million is computed as 1,000,000 times the ratio of the weight of sediment to the weight of water-sediment mixture. Daily sediment loads are expressed in tons per day and except for subdivided days, are usually obtained by multiplying daily mean sediment concentrations in parts per million by the daily mean discharge in cubic feet per second, and the conversion factor, normally 0.0027.

Particle size analyses are expressed in percentages of material finer than classified sizes (in millimeters). The size classification used in this report agrees closely with recommendations made by the American Geophysical Union Subcommittee on sediment terminology (Lane and others, 1947). The particle

size distributions given in this report are not necessarily representative of the particle sizes of sediment in transport in the natural stream. Most of the organic matter is removed and the sample is subjected to mechanical and chemical dispersion before analysis of the silt and clay.

## COMPOSITION OF SURFACE WATERS

All natural waters contain dissolved mineral matter. The quantity of dissolved mineral matter in a natural water depends primarily on the type of rocks or soils with which the water has been in contact and the length of time of contact. Ground water is generally more highly mineralized than surface runoff because it remains in contact with the rocks and soils for much longer periods. Some streams are fed by both surface runoff and ground water from springs or seeps. Such streams reflect the chemical character of their concentrated underground sources during dry periods and are more dilute during periods of heavy rainfall. The dissolved-solids content in a river is frequently increased by drainage from mines or oil fields, by the addition of industrial or municipal wastes, or--in irrigated regions--by drainage from irrigated lands.

The mineral constituents and physical properties of natural waters reported in the tables of analyses include those that have a practical bearing on water use. The results of analyses generally include silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together calculated as sodium), lithium, carbonate, bicarbonate, sulfate, chloride, fluoride, nitrate, boron, pH, dissolved solids, and specific conductance. Aluminum, manganese, color, acidity, dissolved oxygen, and other dissolved constituents and physical properties are reported for certain streams. Phenolic material and minor elements including strontium, chromium, nickel, copper, lead, zinc, cobalt, and other trace elements are determined occasionally for a few streams in connection with specific problems and the results are reported. The source and significance of the different constituents and properties of natural waters are discussed in the following paragraphs. The constituents are arranged in the order that they appear in the tables.

## MINERAL CONSTITUENTS IN SOLUTION

### Silica ($SiO_2$)

Silica is dissolved from practically all rocks. Some natural surface waters contain less than 5 parts per million of silica and few contain more than 50 parts, but the more common range is from 10 to 30 parts per million. Silica affects the usefulness of a water because it contributes to the formation of boiler scale; it usually is removed from feed water for high-pressure boilers. Silica also forms troublesome deposits on the blades of steam turbines.

### Aluminum (Al)

Aluminum is usually present only in negligible quantities in natural waters except in areas where the waters have been in contact with the more soluble rocks of high aluminum content such as bauxite and certain shales. Acid waters often contain large amounts of aluminum. It may be troublesome in feed waters where it tends to be deposited as a scale on boiler tubes.

### Iron (Fe)

Iron is dissolved from many rocks and soils. On exposure to the air, normal basic waters that contain more than 1 part per million of iron soon become turbid with the insoluble reddish ferric oxide produced by oxidation. Surface waters, therefore, seldom contain as much as 1 part per million of dissolved iron, although some acid waters carry large quantities of iron in solution. Iron causes reddish-brown stains on porcelain or enameled ware and fixtures and on fabrics washed in the water.

### Manganese (Mn)

Manganese is dissolved in appreciable quantities from rocks in some sections of the country. It resembles iron in its chemical behavior and in its occurrence in natural waters. However, manganese in rocks is less abundant than iron. As a result the concentration of manganese is much less than that of iron and is not regularly determined in many areas. It is especially objectionable in water used in laundry work and in textile processing. Concentrations as low as 0.2 part per million may cause a dark-brown or

black stain on fabrics and porcelain fixtures. Appreciable quantities of manganese are often found in waters containing objectionable quantities of iron.

Calcium (Ca)

Calcium is dissolved from almost all rocks and soils, but the highest concentrations are usually found in waters that have been in contact with limestone, dolomite, and gypsum. Calcium and magnesium make water hard and are largely responsible for the formation of boiler scale. Most waters associated with granite or silicious sands contain less than 10 parts per million of calcium; waters in areas where rocks are composed of dolomite and limestone contain from 30 to 100 parts per million; and waters that have come in contact with deposits of gypsum may contain several hundred parts per million.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft waters may amount to only 1 or 2 parts per million, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain from 20 to 100 parts per million or more of magnesium.

Strontium (Sr)

Strontium is a typical alkaline-earth element and is similar chemically to calcium. Strontium may be present in natural water in amounts up to a few parts per million much more frequently than the available data indicate. In most surface water the amount of strontium is small in proportion to calcium. However, in sea water the ratio of strontium to calcium is 1:30.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized waters found in the western United States. Natural waters that contain only 3 or 4 parts per million of the two together are likely to carry almost as much potassium as sodium. As the total quantity of these constituents increases, the proportion of sodium becomes much greater. Moderate quantities of sodium and potassium have little effect on the usefulness of the water for most purposes, but waters that carry more than 50 to 100 parts per

million of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized waters that contain a large proportion of sodium salts may be unsatisfactory for irrigation.

In this report, sodium and potassium values that are calculated and reported as sodium are indicated by footnote.

Lithium (Li)

Data concerning the quantity of lithium in water are scarce. It is usually found in small amounts in thermal springs and saline waters. Lithium also occurs in streams where some industries dump their waste water. The scarcity of lithium in rocks is responsible more than other factors for relatively small amounts present in water.

Bicarbonate, carbonate and hydroxide ($HCO_3$,$CO_3$, OH)

Bicarbonate, carbonate, or hydroxide is sometimes reported as alkalinity. The alkalinity of a water is defined as its capacity to consume a strong acid to pH 4.5. Since the major causes of alkalinity in most natural waters are carbonate and bicarbonate ions dissolved from carbonate rocks, the results are usually reported in terms of these constituents. Although alkalinity may suggest the presence of definite amounts of carbonate, bicarbonate or hydroxide, it may not be true due to other ions that contribute to alkalinity such as silicates, phosphates, borates, possibly fluoride, and certain organic anions which may occur in colored waters. The significance of alkalinity to the domestic, agricultural, and industrial user is usually dependent upon the nature of the cations (Ca, Mg, Na, K) associated with it. However, alkalinity in moderate amounts does not adversely affect most users.

Hydroxide may occur in water that has been softened by the lime process. Its presence in streams usually can be taken as an indication of contamination and does not represent the natural chemical character of the water.

Sulfate ($SO_4$)

Sulfate is dissolved from many rocks and soils--in especially large quantities from gypsum and from beds of shale. It is formed also by the oxidation of sulfides of iron and is therefore present in considerable quantities in waters from mines. Sulfate in waters that contain much calcium and magnesium causes the formation of

hard scale in steam boilers and may increase the cost of softening the water.

Chloride (Cl)

Chloride is dissolved from rock materials in all parts of the country. Surface waters in the humid regions are usually low in chloride, whereas streams in arid or semiarid regions may contain several hundred parts per million of chloride leached from soils and rocks, especially where the streams receive return drainage from irrigated lands or are affected by ground-water-inflow carrying appreciable quantities of chloride. Large quantities of chloride in water that contains a high content of calcium and magnesium increases the water's corrosiveness.

Fluoride (F)

Fluoride has been reported as being present in some rocks to about the same extent as chloride. However, the quantity of fluoride in natural surface waters is ordinarily very small compared to that of chloride. Investigations have proved that fluoride concentrations of about 0.6 to 1.7 ppm reduced the incidence of dental caries and that concentrations greater than 1.7 ppm also protect the teeth from cavities but cause an undesirable black stain (Durfor and Becker, 1964, p. 20). Public Health Service, 1962 (p. 8), states, "When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper control limit (0.6 to 1.7 ppm). Presence of fluoride in average concentration greater than two times the optimum values shall constitute grounds for rejection of the supply." Concentration higher than the stated limits may cause mottled enamel in teeth, endemic cumulative fluorosis, and skeletal effects.

Nitrate ($NO_3$)

Nitrate in water is considered a final oxidation product of nitrogenous material and may indicate contamination by sewage or other organic matter. The quantities of nitrate present in surface waters are generally less than 5 parts per million (as $NO_3$) and have no effect on the value of the water for ordinary uses.

It has been reported that as much as 2 parts per million of nitrate in boiler water tends to decrease intercrystalline cracking of boiler steel. Studies made by Faucett and Miller (1946), Waring (1949) and by the National Research Council (Maxcy, 1950) concluded that drinking water containing nitrates in excess of

44 parts per million (as $NO_3$) should be regarded as unsafe for infant feeding. U.S. Public Health Service (1962) sets 45 ppm as the upper limit.

Phosphate ($PO_4$)

Phosphorus is an essential element in the growth of plants and animals. Some sources that contribute nitrate, such as organic wastes are also important sources of phosphate. The addition of phosphates in water treatment constitutes a possible source, although the dosage is usually small. In some areas, phosphate fertilizers may yield some phosphate to water. A more important source is the increasing use of phosphates in detergents. Domestic and industrial sewage effluents often contain considerable amounts of phosphate.

Boron (B)

Boron in small quantities has been found essential for plant growth, but irrigation water containing more than 1 part per million boron is detrimental to citrus and other boron-sensitive crops. Boron is reported in Survey analyses of surface waters in arid and semiarid regions of the Southwest and West where irrigation is practiced or contemplated, but few of the surface waters analyzed have harmful concentrations of boron.

Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Waters with less than 500 parts per million of dissolved solids are usually satisfactory for domestic and some industrial uses. Water containing several thousand parts per million of dissolved solids are sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands, but generally water containing more than about 2,000 ppm is considered to be unsuitable for long-term irrigation under average conditions.

Chromium (Cr)

Few if any waters contain chromium from natural sources. Natural waters can probably contain only traces of chromium as a cation unless the pH is very low. When chromium is present in

water, it is usually the result of pollution by industrial wastes. Fairly high concentrations of chromate anions are possible in waters having normal pH levels. Concentrations of more than 0.05 ppm of chromium in the hexavalent form constitute grounds for rejection of a water for domestic use on the basis of the standards of the U.S. Public Health Service (1962).

### Nickel and Cobalt (Ni, Co)

Nickel and cobalt are very similar in chemical behavior and also closely related to iron. Both are present in igneous rocks in small amounts and are more prevalent in silicic rocks. Any nickel in water is likely to be in small amounts and could be in a colloidal state. Cobalt may be taken into solution more readily than nickel. It may be taken into solution in small amounts through bacteriological activity similar to that causing solution of manganese. However, few data on the occurrence of either nickel or cobalt in natural water are available.

### Copper (Cu)

Copper is a fairly common trace constituent of natural water. Small amounts may be introduced into water by solution of copper and brass water pipes and other copper-bearing equipment in contact with the water, or from copper salts added to control algae in open reservoirs. Copper salts such as the sulfate and chloride are highly soluble in waters with a low pH but in water of normal alkalinity these salts hydrolyze and the copper may be precipitated. In the normal pH range of natural water containing carbon dioxide, the copper might be precipitated as carbonate. The oxidized portions of sulfide-copper ore bodies contain other copper compounds. The presence of copper in mine water is common.

Copper imparts a disagreeable metallic taste to water. As little as 1.5 ppm can usually be detected, and 5 ppm can render the water unpalatable. Copper is not considered to be a cumulative systemic poison like lead and mercury; most copper ingested is excreted by the body and very little is retained. The pathological effects of copper are controversial, but it is generally believed very unlikely that humans could unknowingly ingest toxic quantities from palatable drinking water. The U.S. Public Health Service (1962) recommends that copper should not exceed 1.0 ppm in drinking and culinary water.

Lead (Pb)

Lead is only a minor element in most natural waters, but industrial or mine and smelter effluents may contain relatively large amounts of lead. Many of the commonly used lead salts are water soluble.

Traces of lead in water usually are the result of solution of lead pipe through which the water has passed. Amounts of lead of the order of 0.05 ppm are significant, as this concentration is the upper limit for drinking water in the standards adopted by the U.S. Public Health Service (1962). Higher concentrations may be added to water through industrial and mine-waste disposal. Lead in the form of sulfate is reported to be soluble in water to the extent of 31 ppm (Seidell, 1940) at 25°C. In natural water this concentration would not be approached, however, since a pH of less than 4.5 would probably be required to prevent formation of lead hydroxide and carbonate. It is reported (Pleissner, 1907) that at 18°C water free of carbon dioxide will dissolve the equivalent of 1.4 ppm of lead and the solubility is increased nearly four fold by the presence of 2.8 ppm of carbon dioxide in the solution. Presence of other ions may increase the solubility of lead.

Zinc (Zn)

Zinc is abundant in rocks and ores but is only a minor constituent in natural water because the free metal and its oxides are only sparingly soluble. In most alkaline surface waters it is present only in trace quantities, but more may be present in acid water. Chlorides and sulfates of zinc are highly soluble. Zinc is used in many commercial products, and industrial wastes may contain large amounts.

Zinc in water does not cause serious effects on health, but produces undesirable esthetic effects. The U.S. Public Health Service (1962, p. 55) recommends that the zinc content not exceed 5 ppm in drinking and culinary water.

Barium (Ba)

Barium may replace potassium in some of the igneous rock minerals, especially feldspar and barium sulfate (barite) is a common barium mineral of secondary origin. Only traces of barium are present in surface water and sea water. Because natural water contains sulfate, barium will dissolve only in trace amounts. Barium sometimes occurs in brines from oil-well wastes.

The U.S. Public Health Service (1962) states that water containing concentrations of barium in excess of 1 ppm is not suitable for drinking and culinary use because of the serious toxic effects of barium on heart, blood vessels, and nerves.

### Bromide (Br)

Bromine is a very minor element in the earth's crust and is normally present in surface waters in only minute quantities. Measurable amounts may be found in some streams that receive industrial wastes, and some natural brines may contain rather high concentrations. It resembles chloride in that it tends to be concentrated in sea water.

### Iodide (I)

Iodide is considerably less abundant both in rocks and water than bromine. Measurable amounts may be found in some streams that receive industrial wastes, and some natural brines may contain rather high concentrations. It occurs in sea water to the extent of less than 1 ppm. Rankama and Sahama (1950) report iodide present in rainwater to the extent of 0.001 to 0.003 ppm and in river water in about the same amount. Few waters will contain over 2.0 ppm.

## PROPERTIES AND CHARACTERISTICS OF WATER

### Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is commonly recognized by the increased quantity of soap required to produce lather. The use of hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and pipes, with the resultant decrease in rate of heat transfer, possibility of boiler failure, and loss of flow.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents--such as iron, manganese, aluminum, barium, strontium, and free acid--also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect.

Generally, bicarbonate and carbonate determine the proportions of "carbonate" hardness of water. Carbonate hardness is

the amount of hardness chemically equivalent to the amount of bicarbonate and carbonate in solution. Carbonate hardness is approximately equal to the amount of hardness that is removed from water by boiling.

Noncarbonate hardness is the difference between the hardness calculated from the total amount of calcium and magnesium in solution and the carbonate hardness. If the carbonate hardness (expressed as calcium carbonate) equals the amount of calcium and magnesium hardness (also expressed as calcium carbonate) there is no noncarbonate hardness. Noncarbonate hardness is about equal to the amount of hardness remaining after water is boiled. The scale formed at high temperatures by the evaporation of water containing noncarbonate hardness commonly is tough, heat resistant, and difficult to remove.

Although many people talk about soft water and hard water, there has been no firm line of demarcation. Water that seems hard to an easterner may seem soft to a westerner. In this report hardness of water is classified as follows:

| Hardness range (calcium carbonate in ppm) | Hardness description |
|---|---|
| 0-60 | Soft |
| 61-120 | Moderately hard |
| 121-180 | Hard |
| more than 180 | Very hard |

Durfor and Becker, 1964, p. 23-27.

Acidity ($H^{+1}$)

The use of the terms acidity and alkalinity is widespread in the literature of water analysis and is a cause of confusion to those who are more accustomed to seeing a pH of 7.0 used as a neutral point. Acidity of a natural water represents the content of free carbon dioxide and other uncombined gases, organic acids and salts of strong acids and weak bases that hydrolyze to give hydrogen ions. Sulfates of iron and aluminum in mine and industrial wastes are common sources of acidity. The presence of acidity is reported in those waters which have a pH below 4.5.

Sodium adsorption ratio (SAR)

The term "sodium adsorption ratio (SAR)" was introduced by the U.S. Salinity Laboratory Staff (1954). It is a ratio expressing the relative activity of sodium ions in exchange reaction with soil and is an index of the sodium or alkali hazard to the soil. Sodium adsorption ratio is expressed by the equation:

$$SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++} + Mg^{++}}{2}}}$$

where the concentrations of the ions are expressed in milliequivalents per liter (or equivalents per million for most irrigation waters).

Waters are divided into four classes with respect to sodium or alkali hazard: low, medium, high, and very high, depending upon the SAR and the specific conductance. At a conductance of 100 micromhos per centimeter the dividing points are at SAR values of 10, 18, and 26, but at 5,000 micromhos the corresponding dividing points are SAR values of approximately 2.5, 6.5, and 11. 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.

Specific conductance (micromhos per centimeter at 25°C)

Specific conductance is a convenient, rapid determination used to estimate the amount of dissolved solids in water. It is a measure of the ability of water to transmit a small electrical current (see p. 9). The more dissolved solids in water that can transmit electricity the greater the specific conductance of the water. Commonly, the amount of dissolved solids (in parts per million) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream or from well to well and it may even vary in the same source with changes in the composition of the water (Durfor and Becker, 1964 p. 27-29).

Specific conductance of most waters in the eastern United States is less than 1,000 micromhos, but in the arid western parts of the country, a specific conductance of more than 1,000 micromhos is common.

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration is expressed in terms of pH units (see p.10). The values of pH often are used as a measure of the

solvent power of water or as an indicator of the chemical behavior certain solutions may have toward rock minerals.

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH, is related to the corrosive properties of water and is useful in determining the proper treatment for coagulation that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most natural surface waters ranges between 6 and 8. Some alkaline surface waters have pH values greater than 8.0 and waters containing free mineral acid or organic matter usually have pH values less than 4.5.

The investigator who utilizes pH data in his interpretations of water analyses should be careful to place pH values in their proper perspective.

Color

In water analysis the term "color" refers to the appearance of water that is free from suspended solids. Many turbid waters that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. In some areas objectionable color in water results from industrial wastes and sewage. Clear deep water may appear blue as the result of a scattering of sunlight by the water molecules. Water for domestic use and some industrial uses should be free from any perceptible color. A color less than 15 units generally passes unnoticed (U.S. Public Health Service, 1962). Some swamp waters have natural color in excess of 300 units.

The extent to which a water is colored by material in solution is commonly reported as a part of a water analysis because a significant color in water may indicate the presence of organic material that may have some bearing on the dissolved solids content. Color in water is expressed in terms of units between 0 and 500 or more based on the above standard (see p.10).

Oxygen consumed

Oxygen consumed is a measure of the amount of oxygen required to oxidize unstable materials in water and may be correlated with natural-water color or with some carbonaceous organic pollution from sewage or industrial wastes.

Tolerances for oxygen consumed in feed water for low- and high-pressure boilers are 15 and 3 ppm, respectively (Northeast Water Works Association, 1940). Wash water containing more than 8 ppm has been reported to import a bad odor to textiles; concentrations for water used in beverages and brewing range from 0.5 to 5.0 ppm (California State Water Pollution Control Board, 1952, 1954).

Dissolved oxygen (DO)

Adequate dissolved oxygen is necessary for the life of fish and other aquatic organisms and is an indicator for corrosivity of water, photosynthetic activity, and septicity. It is one of the most important indicators of the condition of a water supply for biological, chemical and sanitary investigations (Rose, 1965).

Biochemical oxygen demand (BOD)

Biochemical oxygen demand is a measure of the oxygen required to oxidize the carbonaceous organic material usable as a source of food by aerobic organisms.

Chemical oxygen demand (COD)

Chemical oxygen demand indicates the quantity of oxidizable compounds present in a water and will vary with water compositions, concentration of reagent, temperature, period of contact, and other factors.

Organics

Phenols.--Phenolic material in water resources is invariably the result of pollution. Phenols are widely used as disinfectants and in the synthesis of many organic compounds. Waste products from oil refineries, coke areas, and chemical plants may contain high concentrations. Fortunately, phenols decompose in the presence of oxygen and organic material, and their persistence downstream from point of entry is relatively short lived. The rate of decomposition is dependent on the environment.

Very low concentrations impart such a disagreeable taste to water that it is highly improbable that harmful amounts could be consumed unknowingly. Reported thresholds of detection of taste and odor range from 0.001 to 0.01 ppm.

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters of water is determined by the immediate or delayed incubation membrane filter method. Most probable number (MPN) is also a method of determining a direct count of coliform colonies per 100 milliliters of water.

Detergents (MBAS).--Anionic surfactants (methylene blue active substance, MBAS) in detergents resist chemical oxidation and biological breakdown. Their persistence in water over long periods of time contributes to pollution of both ground water and surface water. Some of the effects produced from detergent pollution are unpleasant taste, odor, and foaming (Wayman, and others, 1962). Although the physiological implications of MBAS to human beings is unknown, prolonged ingestion of this material by rats is believed to be nontoxic (Paynter, 1960). The U.S. Public Health Service (1962) recommends that MBAS should not exceed 0.5 ppm in drinking and culinary waters.

Temperature

Temperature is an important factor in property determining the quality of water. This is very evident for such a direct use as an industrial coolant. Temperature is also important, but perhaps not so evident, for its indirect influence upon aquatic biota, concentrations of dissolved gases, and distribution of chemical solutes in lakes and reservoirs as a consequence of thermal stratification and variation.

Surface water temperatures tend to change seasonally and daily with air temperatures, except for the outflow of large springs. Superimposed upon the annual temperature cycle is a daily fluctuation of temperature which is greater in warm seasons than in cold and greater in sunny periods than with a cloud cover. Natural warming is due mainly to absorption of a solar radiation by the water and secondarily to transfer of heat from the air. Condensation of water vapor at the water surface is reported to furnish measurable quantities of heat. Heat loss takes place largely through radiation, with further losses through evaporation and conduction to the air and to the stream-bed. Thus the temperature of a small stream generally reaches a maximum in mid- to late

afternoon due to solar heating and reaches a minimum from early to mid-morning after nocturnal radiation.

Temperature variations which commonly occur during summer in lakes and reservoirs of temperate regions result in a separation of the water volume into a circulating upper portion and a non-circulating lower portion. Separating the two is a stratum of water of variable vertical thickness in which the temperature decreases rapidly with increasing depth. This physical division of the water mass into a circulating and a stagnant portion is the result of density differences in the water column associated with the temperature distribution. Knowledge of the stratification in a body of water may result in increased utility by locating strata of more suitable characteristics. For example, the elevation of an intake pipe may be changed to obtain water of lower temperature, higher pH, less dissolved iron, or other desirable properties.

Temperature is a major factor in determining the effect of pollution on aquatic organisms. The resistance of fish to certain toxin substances has been shown to vary widely with temperature. The quantity of dissolved oxygen which the water can contain is also temperature dependent. Oxygen is more soluble in cold water than in warm water, hence the reduction of oxygen concentrations by pollution is especially serious during periods of high temperature when oxygen levels are already low. Increased temperatures also accelerate biological activity including that of the oxygen-utilizing bacteria which decompose organic wastes. These pollutional effects may be especially serious when low flow conditions coincide with high temperatures. Summary temperature data of water are essential for planning multiple uses of water.

## Turbidity

Turbidity is the optical property of a suspension with reference to the extent to which the penetration of light is inhibited by the presence of insoluble material. Turbidity is a function on both the concentration and particle size of the suspended material. Although it is reported in terms of parts per million of silica, it is only partly synonymous with the weight of sediment per unit volume of water.

Turbid water is abrasive in pipes, pumps, and turbine blades. In process water, turbidities much more than 1 ppm are not tolerated by several industries, but others permit up to 50 ppm or higher (Rainwater, Thatcher, 1960, p. 289). Although turbidity does not directly measure the safety of drinking water, it is re-

lated to the consumer's acceptance of the water. A level of 5 units of turbidity becomes objectionable to a considerable number of people (U.S. Public Health, 1962).

## Sediment

Fluvial sediment is generally regarded as that sediment which is transported by, suspended in, or deposited by water. Suspended sediment is that part which remains in suspension in water owing to the upward components of turbulent currents or by colloidal suspension. Much fluvial sediment results from the natural process of erosion, which in turn is part of the geologic cycle of rock transformation. This natural process may be accelerated by agricultural practices. Sediment is also contributed by a number of industrial and construction activities. In certain sections, waste materials from mining, logging, oil-field, and other industrial operations introduce large quantities of suspended as well as dissolved material.

The quantity of sediment, transported or available for transportation, is affected by climatic conditions, form or nature of precipitation, character of the solid mantle, plant cover, topography, and land use. The mode and rate of sediment erosion, transport, and deposition is determined largely by the size distribution of the particles or more precisely by the fall velocities of the particles in water. Sediment particles in the sandsize (larger than 0.062 mm) range do not appear to be affected by flocculation or dispersion resulting from the mineral constituents in solution. In contrast, the sedimentation diameter of clay and silt particles in suspension may vary considerably from point to point in a stream or reservoir, depending on the mineral matter in solution and in suspension and the degree of turbulence present. The size of sediment particles in transport at any point depends on the type of erodible and soluble material in the drainage area, the degree of flocculation present, time in transport, and characteristics of the transporting flow. The flow characteristics include velocity of water, turbulence, and the depth, width, and roughness of the channel. As a result of these variable characteristics, the size of particles transported, as well as the total sediment load, is in constant adjustment with the characteristics and physical features of the stream and drainage area.

## STREAMFLOW

Most of the records of stream discharge, used in conjunction with the chemical analyses and in the computation of sediment loads in this volume, are published in the Geological Survey water-supply paper series, "Surface Water Supply of the United States, 1966-70." The discharge reported for a composite sample is usually the average of daily mean discharges for the composite period. The discharges reported in the tables of single analyses are either daily mean discharges or discharges obtained at the time samples were collected and computed from a stage-discharge relation or from a discharge measurement.

## PUBLICATIONS

Reports giving records of chemical quality and temperatures of surface waters and suspended-sediment loads of streams in the area covered by this volume for the water years 1941-66, are listed below:

Numbers of water-supply papers containing records for Parts 11-16, 1941-66

| Year | WSP | Year | WSP | Year | WSP | Year | WSP |
|---|---|---|---|---|---|---|---|
| 1941 | 942 | 1948 | 1132 | 1955 | 1403 | 1962 | 1945 |
| 1942 | 950 | 1949 | 1163 | 1956 | 1453 | 1963 | 1953 |
| 1943 | 970 | 1950 | 1189 | 1957 | 1523 | 1964 | 1959 |
| 1944 | 1022 | 1951 | 1200 | 1958 | 1574 | 1965 | 1966 |
| 1945 | 1030 | 1952 | 1203 | 1959 | 1645 | 1966 | 1996 |
| 1946 | 1050 | 1953 | 1293 | 1960 | 1745 | ---- | ---- |
| 1947 | 1102 | 1954 | 1353 | 1961 | 1885 | ---- | ---- |

Geological Survey reports containing chemical quality, temperature, and sediment data obtained before 1941 are listed on pages 28 and 29. Publications dealing largely with the quality of ground-water supplies and only incidentally covering the chemical composition of surface waters are not included. Publications that are out of print are preceded by an asterisk.

PROFESSIONAL PAPER

*135. Composition of river and lake waters of the United States, 1924.

BULLETINS

*479. The geochemical interpretation of water analyses, 1911.
770. The data of geochemistry, 1924.

WATER-SUPPLY PAPERS

*108. Quality of water in the Susquehanna River drainage basin, with an introductory chapter on physiographic features. 1904.
*161. Quality of water in the upper Ohio River basin and at Erie, Pa., 1906.
*193. The quality of surface waters in Minnesota, 1907.
*236. The quality of surface waters in the United States, Part 1, Analyses of waters east of the one hundredth meridian, 1909.
*237. The quality of the surface waters of California, 1910.
*239. The quality of surface waters of Illinois, 1910.
*273. Quality of the water supplies of Kansas, with a preliminary report on stream pollution by mine waters in southeastern Kansas, 1911.
*274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, 1911.
*339. Quality of the surface waters of Washington, 1914.
*363. Quality of the surface waters of Oregon, 1914.
*418. Mineral springs of Alaska, with a chapter on the chemical character of some surface waters of Alaska, 1917.
*596-B. Quality of water of Colorado River in 1925-26, 1928.
*596-D. Quality of water of Pecos River in Texas, 1928.
*596-E. Quality of the surface waters of New Jersey, 1928.
*636-A. Quality of water of the Colorado River in 1926-28, 1930.
*636-B. Suspended matter in the Colorado River in 1925-28, 1930.
*638-D. Quality of water of the Colorado River in 1928-30, 1932.
*839. Quality of water of the Rio Grande basin above Fort Quitman, Tex., 1938.
*889-E. Chemical character of surface water of Georgia, 1944.
*998. Suspended sediment in the Colorado River, 1925-41, 1947.

1048. Discharge and sediment loads in the Boise River drainage basin, Idaho, 1939-40, 1948.
1110-C. Quality of water of Conchas Reservoir, New Mexico, 1939-49, 1952.

Many of the reports listed are available for consultation in the larger public and institutional libraries. Copies of Geological Survey publications still in print may be purchased at a nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, who will, upon request, furnish lists giving prices.

## COOPERATION

Many Municipal, State and Federal agencies assisted in collecting records for these quality-of-water investigations. Many of the investigations were supported by funds appropriated directly to the U.S. Geological Survey. The State, local and Federal agencies that cooperated in these quality-of-water investigations are as follows:

Alaska--Alaska Department of Health and Welfare. Greater Anchorage Area Borough. Greater Juneau Borough Assembly. City of Anchorage. Corps of Engineers, U.S. Army. Bureau of Reclamation, U.S. Department of the Interior. Forest Service, U.S. Department of Agriculture. Fish and Wildlife Service, U.S. Department of the Interior.

Hawaii--Corps of Engineers, U.S. Army.

Idaho--Idaho Department of Reclamation, C. E. Tappan, succeeded by R. K. Higginson, State reclamation engineer. Corps of Engineers, U.S. Army. Forest Service, U.S. Department of Agriculture. U.S. State Department. Bureau of Commercial Fisheries, U.S. Department of the Interior.

Montana--Montana Fish and Game Commission, A. N. Whitney, chief of Fisheries Division.

Oregon--Oregon Board of Higher Education. Cities of Coos Bay and North Bend, Water Boards. U.S. Atomic Energy Commission. Corps of Engineers, U. S. Army. Bureau of Reclamation, U.S. Department of the Interior.

Washington--Washington Department of Conservation, H. M. Ahlquist, director. Washington Pollution Control Commission, R. M. Harris, director. Washington Department of Fisheries, T. C. Tollefson, director. Washington Department of Game, J. A. Biggs, director. City of Tacoma, Department of Public Utilities, C. A. Erdahl, director. Corps of Engineers, U.S. Army. National Park Service, U.S. Department of the Interior.

Wyoming--Wyoming Department of Agriculture, O. H. Engendorff, commissioner. Wyoming State Engineer, F. A. Bishop. Wyoming Natural Resources Board, E. J. Van Camp, director of water resources, succeeded by M. W. Goodson, chief of water development. Bureau of Land Management and Bureau of Reclamation, U.S. Department of the Interior.

## DIVISION OF WORK

The quality-of-water work was performed by the Water Resources Division of the Geological Survey, E. L. Hendricks, chief hydrologist, and under the direction of the district chiefs listed in the preface.

Correspondence regarding the records in this report or any additional information should be directed to the district chief of the appropriate Geological Survey-Water Resources Division indicated in the following table.

| State | District Office | Address |
|---|---|---|
| Alaska | Anchorage 99501 | 218 E St.<br>Skyline Bldg. |
| Hawaii | Honolulu 96814 | Room 330, First Insurance Bldg.<br>1100 Ward Ave. |
| Idaho | Boise 83702 | Room 365, Federal Bldg.<br>550 West Fort St. |
| Montana | Helena 59601 | P. O. Box 1696<br>421 Federal Bldg. |

| State | District Office | Address |
|---|---|---|
| Oregon | Portland 97208 | P. O. Box 3202<br>830 N.E. Holladay |
| Washington | Tacoma 98402 | Room 300,<br>1305 Tacoma Ave.,<br>South |
| Wyoming | Cheyenne 82001 | P. O. Box 2087<br>2nd Floor,<br>Blue Cross Bldg.<br>215 East Eighth St. |

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WATER-QUALITY STATIONS IN DOWNSTREAM ORDER

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

BEAR RIVER BASIN

12-0095. BEAR RIVER NEAR NASELLE, WASH.

LOCATION.--Lat 46°19'50", long 123°54'36", at gaging station 3 miles upstream from U.S. Highway 101 crossing, and 5 miles southwest of Naselle, Pacific County.
DRAINAGE AREA.--11.7 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966 (discontinued).
Water temperatures: July 1963 to September 1966 (discontinued).
EXTREMES, 1965-66.--Water temperatures: Maximum, 62°F on several days during June to August; minimum, 38°F Dec. 23, 24, 27, Mar. 1, 2.
EXTREMES, 1963-66.--Water temperatures: Maximum, 63°F Aug. 17, 1965; minimum, 35°F Dec. 20, 1964.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 13, 1965 | 16 | 8.7 | | | | 4.4 | 1.6 | 6.9 | 0.6 | | 20 | 0 | 6.4 | 8.2 | 0.1 | 0.4 | | A 47 | 18 | 1 | | 74 | 7.0 | 10 | 9.6 | 4600 |
| Nov. 1..... | 27 | 8.4 | | | | 4.0 | 1.6 | 6.4 | .6 | | 17 | 0 | 5.8 | 7.5 | .0 | .5 | | 48 | 16 | 2 | | 68 | 6.7 | 15 | 8.8 | 230 |
| Dec. 6..... | 131 | 8.1 | | | | 2.8 | 1.1 | 5.3 | .5 | | 12 | 0 | 4.0 | 7.2 | .1 | .6 | | 38 | 12 | 2 | | 54 | 6.9 | 15 | 10.7 | 91 |
| Jan. 4, 1966. | 155 | 8.2 | | | | 2.8 | 1.0 | 5.2 | .5 | | 11 | 0 | 4.0 | 7.5 | .1 | .6 | | 34 | 11 | 2 | | 52 | 6.8 | 5 | 11.7 | 36 |
| Feb. 8..... | 141 | 7.9 | | | | 2.4 | 1.0 | 5.4 | .4 | | 10 | 0 | 3.8 | 7.8 | .0 | .5 | | 36 | 10 | 2 | | 52 | 6.8 | 5 | 11.2 | 91 |
| Mar. 8..... | 306 | 5.7 | | | | 1.6 | 1.1 | 4.3 | .5 | | 9 | 0 | 3.6 | 5.5 | .1 | .6 | | 36 | 8 | 1 | | 46 | 6.3 | 15 | 10.7 | 36 |
| Apr. 19..... | 49 | 8.3 | | | | 2.4 | 1.5 | 5.4 | .5 | | 13 | 0 | 4.4 | 7.8 | .1 | .3 | | 39 | 12 | 3 | | 58 | 6.9 | 10 | 11.5 | 36 |
| May 3..... | 22 | 8.6 | | | | 4.0 | .9 | 6.0 | .5 | | 16 | 0 | 4.8 | 8.0 | .1 | .1 | | 42 | 14 | 0 | | 62 | 7.0 | 10 | 10.7 | 0 |
| June 7..... | 14 | 8.5 | | | | 3.8 | 1.4 | 6.4 | .5 | | 18 | 0 | 5.2 | 8.0 | .1 | .2 | | 47 | 16 | 0 | | 66 | 6.8 | 10 | 9.9 | 36 |
| July 5..... | 15 | 8.5 | | | | 4.1 | 1.4 | 6.4 | .5 | | 19 | 0 | 5.0 | 7.5 | .1 | .4 | | 43 | 16 | 0 | | 67 | 6.8 | 10 | 10.2 | 36 |
| Aug. 9..... | 6.6 | 9.3 | | | | 4.7 | 1.6 | 6.9 | .5 | | 22 | 0 | 5.4 | 8.0 | .2 | .5 | | 50 | 18 | 0 | | 73 | 7.2 | 10 | 9.4 | 73 |
| Sept. 28..... | 17 | 9.0 | | | | 4.0 | 1.7 | 6.6 | 1.0 | | 20 | 0 | 5.0 | 8.8 | .1 | .4 | | 52 | 17 | 0 | | 75 | 7.2 | 20 | 9.7 | 91 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 1730 | 0.00 | 0.01 | 0.04 | 0.05 | 0.00 | 0.01 |
| Aug. 9..... | 1120 | .00 | .01 | .00 | .01 | .00 | .02 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 55 | 56 | 55 | 55 | 53 | 53 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 |
| Minimum .... | 53 | 53 | 54 | 54 | 54 | 54 | 55 | 55 | 53 | 52 | 52 | 53 | 53 | 52 | 51 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 52 | 51 | 52 | 51 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | --- | 49 |
| Minimum .... | 51 | 52 | 52 | 52 | 52 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 49 | 49 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | --- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 41 | 40 | 39 | 39 | 39 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 41 | 41 | 41 | 41 | 41 | 43 |
| Minimum .... | 46 | 47 | 47 | 48 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 43 | 41 | 40 | 39 | 39 | 39 | 39 | 39 | 41 | 40 | 38 | 38 | 39 | 39 | 38 | 41 | 41 | 41 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 43 | 42 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 43 | 43 | 42 | 43 | 44 | 44 | 44 | 45 | 44 | 44 | 43 | 43 | 42 | --- | --- | --- | 43 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 42 | 41 | --- | --- | --- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 39 | 39 | 39 | 40 | 41 | 42 | 43 | 43 | 43 | 42 | 43 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 49 | 43 |
| Minimum .... | 38 | 38 | 39 | 39 | 39 | 40 | 41 | 42 | 42 | 42 | 41 | 42 | 43 | 43 | 42 | 41 | 41 | 42 | 42 | 40 | 40 | 41 | 41 | 41 | 42 | 43 | 44 | 45 | 44 | 46 | 46 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 47 | 47 | 47 | 49 | 48 | 48 | 47 | 47 | 46 | 48 | 47 | 48 | 48 | 49 | 47 | 47 | 48 | 48 | 48 | --- | 48 |
| Minimum .... | 46 | 46 | 45 | 46 | 48 | 49 | 48 | 49 | 49 | 49 | 47 | 45 | 46 | 46 | 46 | 45 | 45 | 44 | 44 | 46 | 46 | 47 | 47 | 47 | 47 | 46 | 47 | 46 | 46 | 46 | --- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 53 | 53 | 53 | 52 | 53 | 53 | 53 | 51 | 53 | 52 | 51 | 50 | 49 | 49 | 51 | 53 | 53 | 52 | 51 | 50 | 52 | 52 | 55 | 54 | 53 | 53 | 54 | 52 | 52 | 52 |
| Minimum .... | 46 | 47 | 49 | 49 | 51 | 51 | 49 | 50 | 51 | 50 | 50 | 51 | 49 | 48 | 48 | 47 | 47 | 48 | 50 | 50 | 50 | 48 | 46 | 48 | 50 | 51 | 49 | 49 | 49 | 50 | 49 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 50 | 50 | 55 | 53 | 53 | 56 | 56 | 56 | 56 | 56 | 56 | 60 | 62 | 62 | 58 | 57 | 58 | 57 | 57 | 56 | 56 | 55 | 56 | 56 | 55 | 57 | 56 | 55 | --- | 56 |
| Minimum .... | 49 | 50 | 49 | 49 | 49 | 52 | 53 | 52 | 54 | 55 | 54 | 54 | 54 | 55 | 57 | 58 | 56 | 56 | 56 | 55 | 56 | 55 | 55 | 54 | 53 | 55 | 55 | 54 | 53 | 53 | --- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 55 | 54 | 56 | 56 | 55 | 56 | 58 | 59 | 59 | 59 | 59 | 59 | 58 | 60 | 60 | 60 | 60 | 60 | 60 | 61 | 61 | 61 | 60 | 60 | 61 | 62 | 62 | 62 | 62 | 61 | 59 |
| Minimum .... | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 57 | 58 | 58 | 58 | 58 | 58 | 57 | 59 | 58 | 60 | 59 | 58 | 59 | 60 | 60 | 60 | 60 | 59 | 61 | 61 | 61 | 61 | 60 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 62 | 62 | 61 | 62 | 62 | 61 | 61 | 61 | 61 | 60 | 59 | 59 | 59 | 60 | 60 | 60 | 61 | 61 | 62 | 61 | 60 | 60 | 59 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 60 |
| Minimum .... | 59 | 61 | 61 | 61 | 60 | 60 | 60 | 61 | 60 | 59 | 58 | 58 | 59 | 58 | 59 | 59 | 58 | 59 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 59 | 58 | 57 | 57 | 57 | 57 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 59 | 59 | 60 | 59 | 60 | 60 | 60 | 60 | 60 | 59 | 58 | 57 | 56 | 57 | 57 | 57 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | 57 | 57 | 57 | --- | 58 |
| Minimum .... | 57 | 58 | 58 | 58 | 59 | 59 | 58 | 60 | 60 | 60 | 59 | 58 | 57 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | --- | 57 |

## NASELLE RIVER BASIN

### 12-0100. NASELLE RIVER NEAR NASELLE, WASH.

LOCATION.--Lat 46°22'25", long 123°44'30", at gaging station 2.5 miles upstream from Salmon Creek, and 3.5 miles east of Naselle, Pacific County.
DRAINAGE AREA.--54.8 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.
Water temperatures: August 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F Aug. 2; minimum, 37°F Dec. 23.
EXTREMES, 1963-66.--Water temperatures: Maximum, 73°F July 30, 1965; minimum, 37°F Dec. 23, 1965.
REMARKS.--Clock stopped Apr. 8-13, temperature range 43°F to 51°F.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 13, 1965 | 64 | 11 | | | | 4.8 | 1.6 | 5.0 | 0.4 | | 24 | 0 | 4.2 | 4.2 | 0.1 | 0.5 | | A 44 | 18 | 0 | | 63 | 7.5 | 5 | 10.7 | 930 |
| Nov. 1..... | 85 | 11 | | | | 4.8 | 1.6 | 4.9 | .4 | | 23 | 0 | 4.6 | 4.5 | .1 | .6 | | 45 | 18 | 0 | | 63 | 6.9 | 5 | 10.2 | 230 |
| Dec. 6..... | 914 | 9.9 | | | | 4.0 | 1.0 | 4.0 | .4 | | 16 | 0 | 3.2 | 4.0 | .1 | 1.7 | | 37 | 14 | 1 | | 52 | 7.0 | 5 | 11.2 | 91 |
| Jan. 4, 1966. | 606 | 11 | | | | 4.4 | .7 | 3.9 | .4 | | 16 | 0 | 4.0 | 4.0 | .0 | 1.6 | | 39 | 14 | 1 | | 51 | 7.0 | 5 | 12.2 | 390 |
| Feb. 8..... | 860 | 11 | | | | 3.6 | .9 | 3.9 | .4 | | 16 | 0 | 3.2 | 3.8 | .2 | 1.4 | | 37 | 13 | 0 | | 49 | 7.0 | 5 | 11.4 | 0 |
| Mar. 8..... | 1640 | 8.0 | | | | 2.8 | .9 | 3.6 | .3 | | 12 | 0 | 2.8 | 4.2 | .1 | 1.0 | | 41 | 11 | 1 | | 41 | 6.7 | 10 | 11.8 | 430 |
| Apr. 19..... | 210 | 11 | | | | 4.0 | 1.1 | 4.0 | .3 | | 19 | 0 | 3.4 | 4.0 | .1 | .7 | | 37 | 14 | 0 | | 54 | 7.1 | 5 | 11.9 | 36 |
| May 3..... | 117 | 11 | | | | 4.8 | .8 | 4.1 | .4 | | 20 | 0 | 3.6 | 4.0 | .1 | .3 | | 38 | 16 | 0 | | 57 | 6.9 | 5 | 10.9 | 36 |
| June 7..... | 65 | 11 | | | | 4.7 | 1.3 | 4.8 | .3 | | 23 | 0 | 3.8 | 4.2 | .1 | .3 | | 43 | 17 | 0 | | 59 | 6.9 | 5 | 9.9 | 36 |
| July 5..... | 84 | 11 | | | | 4.6 | 1.3 | 4.8 | .3 | | 23 | 0 | 3.4 | 4.0 | .1 | .3 | | 41 | 17 | 0 | | 59 | 7.1 | 5 | 10.5 | 140 |
| Aug. 9..... | 33 | 12 | | | | 5.0 | 1.7 | 5.2 | .4 | | 26 | 0 | 4.0 | 5.0 | .0 | .3 | | 47 | 20 | 0 | | 63 | 6.7 | 5 | 9.1 | 23 |
| Sept. 28..... | 48 | 12 | | | | 5.5 | 1.3 | 5.0 | .4 | | 27 | 0 | 4.0 | 4.2 | .2 | .4 | | 48 | 19 | 0 | | 65 | 7.5 | 10 | 10.4 | 430 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 1840 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 |
| July 5..... | 1755 | .01 | .01 | .00 | .00 | .00 | |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 56 | 56 | 56 | 55 | 57 | 56 | 57 | 56 | 53 | 55 | 55 | 55 | 55 | 53 | 50 | 52 | 51 | 51 | 53 | 52 | 51 | 51 | 52 | 53 | 52 | 52 | 53 | 53 | 52 | 52 | 54 |
| Minimum .... | 53 | 53 | 55 | 55 | 54 | 55 | 54 | 55 | 53 | 50 | 52 | 54 | 54 | 53 | 50 | 48 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 52 | 51 | 52 | 50 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 52 | 52 | 51 | 51 | 50 | 50 | 49 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 46 | 46 | 45 | 45 | 45 | 46 | 45 | 47 | -- | 49 |
| Minimum .... | 51 | 52 | 52 | 52 | 51 | 49 | 50 | 50 | 49 | 48 | 47 | 48 | 49 | 49 | 48 | 49 | 48 | 48 | 49 | 48 | 48 | 46 | 45 | 45 | 44 | 45 | 45 | 45 | 44 | 45 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 47 | 46 | 44 | 43 | 42 | 42 | 43 | 44 | 44 | 44 | 43 | 41 | 40 | 41 | 41 | 43 | 44 | 43 | 43 | 43 | 45 |
| Minimum .... | 47 | 47 | 47 | 48 | 48 | 49 | 48 | 47 | 48 | 47 | 46 | 46 | 44 | 43 | 41 | 41 | 40 | 42 | 43 | 43 | 43 | 41 | 37 | 38 | 40 | 40 | 39 | 43 | 42 | 42 | 41 | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 43 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 45 | 44 | 44 | 43 | 42 | 42 | 43 | 44 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 44 |
| Minimum .... | 40 | 41 | 42 | 42 | 42 | 43 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 46 | 45 | 44 | 43 | 43 | 41 | 41 | 42 | 42 | 43 | 42 | 43 | 43 | 44 | 44 | 45 | 45 | 44 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 44 | 45 | 45 | 45 | 44 | 45 | 44 | 45 | 45 | 44 | 45 | 44 | 45 | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | -- | -- | -- | 45 |
| Minimum .... | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 43 | 44 | 44 | 42 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 46 | 43 | 45 | 45 | 44 | 43 | -- | -- | -- | 44 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 43 | 43 | 45 | 45 | 45 | 46 | 47 | 46 | 46 | 46 | 48 | 47 | 46 | 45 | 45 | 45 | 44 | 43 | 45 | 45 | 46 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 51 | 46 |
| Minimum .... | 40 | 40 | 42 | 42 | 43 | 44 | 44 | 45 | 46 | 45 | 43 | 45 | 46 | 46 | 45 | 44 | 43 | 44 | 43 | 42 | 41 | 42 | 43 | 43 | 44 | 45 | 46 | 46 | 45 | 49 | 48 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 49 | 50 | 51 | 52 | 52 | 52 | -- | -- | -- | -- | -- | -- | 47 | 52 | 50 | 50 | 50 | 50 | 48 | 50 | 50 | 50 | 50 | 52 | 48 | 48 | 51 | 52 | 52 | -- | 50 |
| Minimum .... | 48 | 45 | 45 | 46 | 48 | 49 | 49 | -- | -- | -- | -- | -- | -- | 46 | 46 | 45 | 46 | 45 | 45 | 48 | 47 | 48 | 48 | 47 | 48 | 47 | 47 | 47 | 48 | 48 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 57 | 58 | 60 | 61 | 57 | 59 | 59 | 59 | 56 | 57 | 54 | 53 | 50 | 50 | 50 | 54 | 58 | 58 | 55 | 55 | 54 | 56 | 59 | 62 | 58 | 56 | 58 | 58 | 56 | 55 | 56 |
| Minimum .... | 46 | 48 | 50 | 52 | 54 | 53 | 51 | 53 | 54 | 52 | 50 | 52 | 50 | 48 | 48 | 46 | 46 | 49 | 51 | 53 | 52 | 49 | 48 | 50 | 54 | 53 | 49 | 49 | 50 | 52 | 51 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 54 | 51 | 52 | 58 | 58 | 58 | 62 | 63 | 61 | 58 | 58 | 56 | 64 | 68 | 67 | 62 | 60 | 61 | 60 | 58 | 58 | 58 | 59 | 60 | 60 | 60 | 61 | 60 | 59 | -- | 59 |
| Minimum .... | 50 | 50 | 50 | 50 | 48 | 53 | 55 | 54 | 56 | 58 | 55 | 54 | 54 | 55 | 58 | 62 | 59 | 57 | 57 | 56 | 56 | 54 | 56 | 55 | 53 | 57 | 59 | 57 | 55 | 54 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 56 | 55 | 58 | 58 | 57 | 61 | 64 | 66 | 64 | 64 | 64 | 63 | 61 | 64 | 63 | 66 | 65 | 66 | 67 | 68 | 69 | 66 | 64 | 63 | 66 | 68 | 69 | 69 | 68 | 68 | 64 |
| Minimum .... | 56 | 55 | 55 | 55 | 56 | 55 | 55 | 57 | 59 | 61 | 59 | 59 | 61 | 59 | 58 | 62 | 60 | 62 | 61 | 60 | 60 | 62 | 63 | 61 | 59 | 58 | 61 | 63 | 64 | 64 | 62 | 59 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 70 | 68 | 66 | 68 | 68 | 67 | 68 | 68 | 66 | 66 | 66 | 67 | 67 | 68 | 66 | 66 | 67 | 67 | 68 | 68 | 66 | 66 | 64 | 64 | 63 | 62 | 64 | 62 | 63 | 62 | 66 |
| Minimum .... | 62 | 63 | 65 | 64 | 62 | 62 | 62 | 65 | 64 | 63 | 60 | 59 | 64 | 61 | 63 | 61 | 60 | 61 | 61 | 61 | 62 | 62 | 60 | 62 | 62 | 61 | 60 | 58 | 59 | 58 | 57 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 64 | 66 | 66 | 67 | 65 | 63 | 63 | 62 | 62 | 61 | 60 | 60 | 60 | 58 | 60 | 59 | 60 | 60 | 60 | 62 | 61 | 61 | 60 | 61 | 60 | 60 | 60 | 62 | 62 | -- | 62 |
| Minimum .... | 58 | 61 | 60 | 60 | 62 | 62 | 59 | 60 | 60 | 60 | 58 | 58 | 56 | 58 | 56 | 58 | 58 | 58 | 56 | 56 | 57 | 59 | 59 | 59 | 59 | 60 | 57 | 58 | 59 | 58 | -- | 59 |

## WILLAPA RIVER BASIN

### 12-0115. WILLAPA RIVER AT LEBAM, WASH.

LOCATION.--Lat 46°33'50", long 123°33'50", temperature recorder at gaging station, 0.5 mile west of Lebam, Pacific County, and 1 mile upstream from Walker Creek.
DRAINAGE AREA.--41.4 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to July 1960.
Water temperatures: March 1952 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 65°F July 28; minimum, 38°F Dec. 16, 17.
EXTREMES, 1952-66.--Water temperatures: Maximum, 72°F July 19, 20, 1956; minimum, freezing point Jan. 28-30, 1957, Jan. 21-23, 1962.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 55 | 55 | 56 | 56 | 56 | 55 | 53 | 53 | 54 | 54 | 54 | 53 | 50 | 50 | 50 | 51 | 54 | 54 | 52 | 52 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | 53 |
| Minimum .... | 53 | 53 | 55 | 55 | 53 | 54 | 54 | 55 | 53 | 51 | 52 | 53 | 54 | 53 | 50 | 47 | 48 | 50 | 50 | 51 | 50 | 50 | 49 | 50 | 50 | 51 | 51 | 51 | 50 | 51 | 50 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 52 | 52 | 51 | 51 | 50 | 51 | 51 | 50 | 48 | 48 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | -- | 49 |
| Minimum .... | 50 | 51 | 51 | 51 | 51 | 49 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 49 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 45 | 45 | 43 | 44 | 46 | 46 | 45 | 45 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 46 | 46 | 46 | 44 | 42 | 40 | 39 | 42 | 43 | 44 | 44 | 43 | 41 | 40 | 40 | 41 | 44 | 45 | 45 | 45 | 45 | 45 |
| Minimum .... | 47 | 48 | 47 | 49 | 48 | 49 | 48 | 47 | 47 | 46 | 46 | 46 | 44 | 42 | 40 | 38 | 38 | 39 | 42 | 43 | 43 | 41 | 39 | 39 | 40 | 40 | 41 | 44 | 45 | 45 | 43 | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 44 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 45 | 45 | 45 | 45 | 45 | 44 |
| Minimum .... | 43 | 43 | 44 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 44 | 43 | 41 | 40 | 42 | 42 | 42 | 41 | 42 | 42 | 43 | 45 | 45 | 44 | 43 | 44 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 44 | 45 | 46 | 46 | 44 | -- | -- | -- | 44 |
| Minimum .... | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 41 | 42 | 42 | 41 | 41 | 44 | 42 | 44 | 44 | 42 | 44 | 45 | 44 | 43 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 43 | 43 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 46 | 47 | 47 | 47 | 48 | 49 | 49 | 52 | 46 |
| Minimum .... | 41 | 40 | 41 | 41 | 42 | 44 | 43 | 44 | 45 | 45 | 44 | 45 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 43 | 43 | 42 | 43 | 42 | 44 | 44 | 45 | 44 | 45 | 48 | 48 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 49 | 50 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 50 | 46 | 49 | 50 | 52 | 51 | 51 | 50 | 50 | 49 | 49 | 50 | 50 | 51 | 51 | 49 | 48 | 49 | 50 | 50 | -- | 50 |
| Minimum .... | 47 | 44 | 44 | 45 | 46 | 49 | 49 | 49 | 48 | 49 | 46 | 44 | 44 | 47 | 48 | 45 | 46 | 44 | 44 | 47 | 47 | 48 | 48 | 48 | 49 | 46 | 47 | 45 | 46 | 47 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 55 | 56 | 58 | 58 | 58 | 56 | 56 | 56 | 55 | 54 | 54 | 50 | 49 | 48 | 49 | 52 | 55 | 56 | 56 | 55 | 52 | 53 | 56 | 58 | 58 | 52 | 52 | 53 | 53 | 52 | 54 |
| Minimum .... | 47 | 49 | 50 | 52 | 54 | 53 | 51 | 52 | 53 | 51 | 49 | 50 | 48 | 47 | 48 | 46 | 46 | 49 | 52 | 54 | 52 | 50 | 49 | 52 | 55 | 52 | 49 | 50 | 51 | 52 | 51 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 51 | 50 | 50 | 55 | 57 | 57 | 57 | 59 | 59 | 57 | 55 | 55 | 60 | 63 | 64 | 63 | 60 | 60 | 58 | 56 | 56 | 56 | 57 | 58 | 59 | 60 | 60 | 60 | 58 | -- | 57 |
| Minimum .... | 50 | 50 | 49 | 50 | 49 | 55 | 56 | 55 | 57 | 57 | 55 | 54 | 55 | 55 | 59 | 63 | 60 | 58 | 58 | 55 | 55 | 54 | 56 | 56 | 55 | 58 | 59 | 60 | 57 | 56 | -- | 56 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 56 | 57 | 57 | 57 | 59 | 60 | 62 | 62 | 61 | 62 | 62 | 61 | 62 | 63 | 63 | 63 | 63 | 62 | 63 | 64 | 64 | 63 | 61 | 62 | 63 | 65 | 64 | 64 | 63 | 61 |
| Minimum .... | 57 | 55 | 55 | 56 | 57 | 57 | 57 | 59 | 60 | 61 | 59 | 60 | 61 | 60 | 60 | 62 | 61 | 62 | 62 | 60 | 60 | 61 | 63 | 61 | 59 | 59 | 61 | 63 | 63 | 63 | 62 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 64 | 64 | 64 | 64 | 64 | 63 | 64 | 64 | 64 | 62 | 61 | 63 | 63 | 63 | 63 | 61 | 60 | 60 | 61 | 61 | 61 | 61 | 59 | 60 | 60 | 60 | 60 | 59 | 58 | 58 | 62 |
| Minimum .... | 62 | 62 | 64 | 64 | 63 | 62 | 62 | 63 | 64 | 62 | 59 | 59 | 61 | 62 | 62 | 61 | 58 | 58 | 59 | 59 | 59 | 60 | 58 | 59 | 59 | 60 | 59 | 58 | 57 | 57 | 57 | 60 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 61 | 62 | 61 | 62 | 61 | 60 | 59 | 59 | 59 | 59 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 59 | 60 | 60 | 59 | 58 | 59 | 59 | 59 | 60 | 60 | -- | 59 |
| Minimum .... | 56 | 58 | 60 | 60 | 61 | 60 | 58 | 57 | 58 | 59 | 57 | 56 | 55 | 56 | 55 | 55 | 57 | 57 | 56 | 55 | 56 | 59 | 59 | 58 | 58 | 58 | 57 | 57 | 59 | 59 | -- | 58 |

WILLAPA RIVER BASIN--Continued

12-0135. WILLAPA RIVER NEAR WILLAPA, WASH.

LOCATION.--Lat 46°39'00", long 123°38'50", at county road bridge, 200 feet downstream from gage and 2.5 miles southeast of Willapa, Pacific County.
DRAINAGE AREA.--130 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 13, 1965 | 54 | 12 | | | | 5.6 | 1.8 | 6.0 | 0.9 | | 29 | 0 | 4.6 | 4.8 | 0.1 | 0.6 | | 50 | 21 | 0 | | 74 | 7.2 | 10 | 9.0 | 430 |
| Nov. 1..... | 67 | 12 | | | | 5.6 | 1.9 | 6.0 | .6 | | 28 | 0 | 4.6 | 5.2 | .1 | .5 | | 52 | 22 | 0 | | 74 | 6.9 | 10 | 10.2 | 4600 |
| Dec. 6..... | 1360 | 12 | | | | 3.6 | 1.2 | 4.8 | .7 | | 16 | 0 | 4.2 | 4.5 | .1 | 2.5 | | 48 | 14 | 1 | | 57 | 6.8 | 15 | 10.9 | 36 |
| Jan. 4, 1966. | 1490 | 12 | | | | 4.0 | 1.5 | 3.2 | .6 | | 14 | 0 | 4.8 | 4.5 | .0 | 3.2 | | 42 | 16 | 4 | | 55 | 6.8 | 15 | 11.8 | 1500 |
| Feb. 8..... | 1420 | 12 | | | | 3.6 | .8 | 4.6 | .5 | | 14 | 0 | 4.0 | 4.8 | .1 | 2.1 | | 41 | 12 | 1 | | 52 | 6.8 | 10 | 11.7 | 36 |
| Mar. 9..... | 5490 | 8.8 | | | | 3.2 | .4 | 3.6 | .5 | | 10 | 0 | 3.4 | 4.0 | .1 | 2.3 | | 35 | 10 | 2 | | 41 | 6.4 | 10 | 11.2 | 430 |
| Apr. 19..... | 370 | 13 | | | | 3.6 | 1.4 | 4.8 | .5 | | 20 | 0 | 4.0 | 4.0 | .0 | 1.0 | | 45 | 14 | 0 | | 59 | 7.1 | 5 | 12.0 | 230 |
| May 3..... | 183 | 13 | | | | 4.0 | 1.6 | 5.6 | .6 | | 24 | 0 | 4.4 | 4.8 | .1 | .7 | | 46 | 16 | 0 | | 63 | 7.0 | 5 | 10.3 | 91 |
| June 7..... | 82 | 11 | | | | 4.7 | 1.6 | 5.8 | 1.6 | | 26 | 0 | 4.0 | 4.5 | .1 | .5 | | 50 | 18 | 0 | | 67 | 7.0 | 5 | 9.0 | 430 |
| July 6..... | 85 | 12 | | | | 4.8 | 1.6 | 5.7 | .5 | | 27 | 0 | 3.8 | 4.5 | .0 | .5 | | 48 | 18 | 0 | | 56 | 6.8 | 15 | 9.3 | 2400 |
| Aug. 9..... | 26 | 11 | | | | 5.7 | 2.1 | 6.7 | .7 | | 32 | 0 | 4.2 | 5.0 | .1 | .8 | | 53 | 22 | 0 | | 76 | 6.8 | 5 | 8.2 | 930 |
| Sept. 28..... | 48 | 14 | | | | 6.0 | 1.5 | 5.7 | 1.0 | | 30 | 0 | 3.8 | 5.0 | .1 | .3 | | 57 | 21 | 0 | | 72 | 7.1 | 10 | 9.7 | 750 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 1555 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 |
| Aug. 9..... | 1310 | .01 | .02 | .00 | .00 | .01 | .00 |

## NORTH RIVER BASIN

### 12-0170. NORTH RIVER NEAR RAYMOND, WASH.

LOCATION.--Lat 46°48'30", long 123°51'00", temperature recorder at gaging station, 1.2 miles upstream from Salmon Creek, and 10 miles northwest of Raymond, Pacific County.
DRAINAGE AREA.--219 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F Aug. 20; minimum, 38°F Dec. 17, 18.
EXTREMES, 1963-66.--Water temperatures; maximum, 73°F July 30, 1965; minimum, 36°F Dec. 18, 19, 1964.
REMARKS.--Recorder pen failed to ink Apr. 8-12. Clock stopped May 10-16; temperature range, 49°F to 56°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 53 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 53 |
| Minimum .... | 55 | 55 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 53 | 54 | 54 | 53 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | -- | 49 |
| Minimum .... | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 42 | 40 | 39 | 39 | 39 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 43 |
| Minimum .... | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 42 | 40 | 39 | 38 | 38 | 39 | 39 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 44 | 44 | 44 | 43 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 41 | 43 | 44 | 44 | 43 | 43 | 44 | 44 | 45 | 45 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 44 | 44 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | 43 |
| Minimum .... | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 41 | 41 | 42 | 43 | 43 | 44 | 45 | 45 | 47 | 48 | 49 | 44 |
| Minimum .... | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 44 | 45 | 45 | 47 | 47 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 48 | 48 | 49 | 49 | 50 | -- | -- | -- | -- | -- | 47 | 47 | 48 | 49 | 50 | 50 | 50 | 49 | 48 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | -- | 49 |
| Minimum .... | 49 | 48 | 47 | 47 | 48 | 49 | -- | -- | -- | -- | -- | -- | 47 | 47 | 47 | 48 | 49 | 50 | 49 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 49 | 49 | 49 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 55 | 56 | 57 | 57 | 56 | 57 | 57 | -- | -- | -- | -- | -- | -- | -- | 51 | 52 | 54 | 54 | 54 | 54 | 54 | 56 | 57 | 57 | 56 | 56 | 57 | 56 | 56 | -- |
| Minimum .... | 50 | 51 | 53 | 53 | 55 | 56 | 55 | 56 | 56 | -- | -- | -- | -- | -- | -- | -- | 49 | 50 | 52 | 54 | 54 | 53 | 53 | 54 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 54 | 54 | 55 | 57 | 57 | 59 | 61 | 60 | 60 | 59 | 59 | 60 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 60 | 60 | 60 | 60 | 60 | 59 | 60 | 60 | 60 | -- | 60 |
| Minimum .... | 56 | 54 | 54 | 53 | 53 | 55 | 56 | 56 | 58 | 59 | 59 | 59 | 58 | 58 | 60 | 63 | 62 | 62 | 61 | 60 | 60 | 59 | 59 | 59 | 58 | 58 | 59 | 58 | 59 | 58 | -- | 58 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 58 | 58 | 57 | 57 | 59 | 60 | 63 | 62 | 63 | 64 | 64 | 63 | 64 | 64 | 64 | 64 | 65 | 66 | 67 | 67 | 67 | 65 | 65 | 67 | 66 | 67 | 68 | 67 | 67 | 63 |
| Minimum .... | 59 | 58 | 58 | 57 | 56 | 57 | 57 | 58 | 59 | 61 | 61 | 61 | 63 | 62 | 61 | 63 | 63 | 63 | 63 | 63 | 64 | 65 | 65 | 65 | 64 | 64 | 65 | 65 | 65 | 65 | 65 | 62 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 68 | 67 | 66 | 66 | 67 | 67 | 67 | 67 | 66 | 67 | 67 | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 69 | 68 | 67 | 67 | 66 | 65 | 63 | 62 | 64 | 63 | 62 | 63 | 66 |
| Minimum .... | 64 | 65 | 66 | 64 | 64 | 64 | 65 | 66 | 65 | 65 | 63 | 63 | 65 | 64 | 66 | 65 | 64 | 65 | 65 | 65 | 65 | 65 | 64 | 65 | 63 | 62 | 61 | 62 | 62 | 61 | 61 | 64 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 63 | 65 | 66 | 66 | 65 | 64 | 64 | 63 | 63 | 63 | 63 | 63 | 62 | 61 | 60 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 60 | 61 | 62 | 61 | 62 | 62 | -- | 62 |
| Minimum .... | 61 | 62 | 62 | 63 | 64 | 64 | 63 | 63 | 63 | 62 | 62 | 62 | 61 | 61 | 60 | 60 | 60 | 59 | 59 | 59 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 61 | 61 | 61 | -- | 61 |

## CHEHALIS RIVER BASIN

### 12-0275. CHEHALIS RIVER NEAR GRAND MOUND, WASH.

**LOCATION.**--Lat 46°46'35", long 123°02'05", temperature recorder at gaging station at highway bridge at Meadows, 1.5 miles southwest of Grand Mound, Thurston County, and 6 miles downstream from Skookumchuck River.
**DRAINAGE AREA.**--895 square miles.
**RECORDS AVAILABLE.**--Water temperatures: March 1952 to September 1966.
**EXTREMES, 1965-66.**--Water temperatures: Maximum, 73°F July 29, Aug. 1-3; minimum, 39°F on several days during December and March.
**EXTREMES, 1952-66.**--Water temperatures: Maximum, 80°F July 22, 23, 1959; minimum, freezing point Jan. 29 to Feb. 4, 1957.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 61 | 60 | 59 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 59 | 59 | 58 | 56 | 54 | 54 | 52 | 53 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 57 |
| Minimum .... | 60 | 61 | 60 | 59 | 59 | 59 | 59 | 59 | 59 | 57 | 58 | 58 | 58 | 58 | 56 | 54 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 53 | 53 | 54 | 53 | 56 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 51 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | -- | 50 |
| Minimum .... | 54 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 46 | 46 | 47 | 48 | 48 | 46 | 46 | 46 | 45 | 44 | 44 | 42 | 41 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 41 | 42 | 42 | 40 | 43 |
| Minimum .... | 44 | 45 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 46 | 45 | 44 | 44 | 42 | 41 | 40 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 40 | 41 | 40 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 42 | 44 | 44 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | -- | -- | -- | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | -- | -- | -- | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 40 | 41 | 40 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 40 | 40 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 41 | 43 | 44 | 46 | 47 | 48 | 48 | 48 | 49 | 50 | 51 | 44 |
| Minimum .... | 39 | 39 | 39 | 39 | 40 | 40 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 46 | 45 | 44 | 43 | 44 | 44 | 41 | 40 | 41 | 43 | 44 | 46 | 47 | 48 | 48 | 48 | 49 | 50 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 50 | 51 | 52 | 54 | 54 | 54 | 52 | 52 | 51 | 50 | 48 | 50 | 52 | 52 | 52 | 52 | 52 | 51 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | -- | 52 |
| Minimum .... | 50 | 49 | 48 | 49 | 49 | 51 | 53 | 52 | 51 | 51 | 50 | 47 | 47 | 48 | 50 | 50 | 50 | 50 | 49 | 50 | 49 | 50 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | -- | 50 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 55 | 57 | 59 | 60 | 60 | 60 | 59 | 60 | 60 | 60 | 60 | 58 | 56 | 56 | 54 | 55 | 57 | 59 | 59 | 59 | 60 | 60 | 60 | 62 | 62 | 62 | 64 | 64 | 63 | 61 | 59 |
| Minimum .... | 51 | 52 | 53 | 56 | 58 | 59 | 58 | 57 | 58 | 58 | 57 | 58 | 56 | 55 | 54 | 53 | 53 | 53 | 55 | 58 | 59 | 58 | 58 | 58 | 60 | 60 | 59 | 62 | 62 | 61 | 60 | 57 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 60 | 57 | 57 | 58 | 60 | 60 | 61 | 64 | 63 | 63 | 62 | 62 | 63 | 65 | 67 | 66 | 66 | 66 | 65 | 64 | 66 | 65 | 63 | 64 | 64 | 65 | 65 | 63 | 64 | -- | 63 |
| Minimum .... | 60 | 57 | 56 | 56 | 56 | 58 | 59 | 58 | 60 | 63 | 62 | 61 | 62 | 61 | 62 | 64 | 65 | 63 | 65 | 64 | 63 | 63 | 63 | 62 | 61 | 63 | 63 | 63 | 62 | 62 | -- | 61 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 62 | 61 | 61 | 58 | 59 | 62 | 63 | 64 | 65 | 66 | 68 | 68 | 68 | 68 | 68 | 70 | 69 | 69 | 69 | 70 | 72 | 71 | 69 | 68 | 69 | 71 | 72 | 73 | 72 | 72 | 67 |
| Minimum .... | 62 | 61 | 60 | 58 | 57 | 57 | 59 | 61 | 62 | 64 | 64 | 65 | 66 | 66 | 65 | 66 | 66 | 67 | 66 | 66 | 66 | 67 | 68 | 67 | 65 | 66 | 66 | 68 | 69 | 68 | 68 | 64 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 73 | 73 | 71 | 72 | 72 | 72 | 71 | 71 | 70 | 69 | 70 | 69 | 70 | 69 | 69 | 69 | 70 | 70 | 71 | 71 | 69 | 69 | 68 | 68 | 66 | 66 | 66 | 66 | 66 | 66 | 70 |
| Minimum .... | 69 | 69 | 70 | 69 | 69 | 68 | 68 | 68 | 68 | 68 | 66 | 66 | 68 | 67 | 68 | 67 | 66 | 67 | 67 | 67 | 68 | 68 | 67 | 67 | 66 | 64 | 64 | 64 | 64 | 64 | 64 | 67 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 66 | 66 | 67 | 68 | 66 | 66 | 66 | 66 | 66 | 64 | 64 | 64 | 64 | 62 | 63 | 63 | 63 | 62 | 62 | 63 | 64 | 64 | 63 | 62 | 63 | 63 | 64 | 65 | 64 | -- | 64 |
| Minimum .... | 64 | 65 | 64 | 64 | 65 | 65 | 64 | 64 | 64 | 64 | 63 | 62 | 62 | 62 | 61 | 62 | 62 | 61 | 61 | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 61 | 62 | 63 | 63 | -- | 63 |

## 12-0310. CHEHALIS RIVER AT PORTER, WASH.
(International Hydrological Decade River Station)

LOCATION.--Lat 46°56'20", long 123°18'45", at gaging station at County Highway bridge at mouth of Porter Creek, 700 feet west of Porter, Grays Harbor County.
DRAINAGE AREA.--1,294 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: July 1959 to September 1960, October 1961 to September 1966.
Sediment records: October 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 73°F Aug. 7, 21; minimum, 38°F Dec. 17, Jan. 3, 4, Mar. 5.
Sediment concentrations: Maximum daily, 155 ppm Dec. 28; minimum daily, 2 ppm on many days during June to September.
Sediment loads: Maximum daily, 4,880 tons Mar. 10; minimum daily, 1 ton on many days during August and September.
EXTREMES, 1959-60, 1961-66.--Water temperatures: Maximum, 78°F July 27, 1962, July 25, 1965; minimum, 33°F Dec. 16, 1964.
Sediment concentrations (1961-66).--Maximum daily, 222 ppm Nov. 25, 1964; minimum daily, 0 ppm on many days of most years.
Sediment loads (1961-66).--Maximum daily, 10,400 tons Jan. 26, 1964; minimum daily, less than 0.50 ton on many days of most years.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 6, 1965 | 489 | 17 | | | | 7.6 | 3.0 | 6.3 | 0.6 | | 40 | 0 | 3.2 | 6.5 | 0.1 | 0.8 | | 66 | 31 | 0 | | 95 | 7.0 | 10 | 9.2 | 230 |
| Nov. 1..... | 455 | 16 | | | | 8.0 | 2.7 | 5.6 | .8 | | 39 | 0 | 3.8 | 6.0 | .1 | .9 | | 62 | 31 | 0 | | 94 | 7.0 | 10 | 9.3 | 36 |
| Dec. 6..... | 5530 | 14 | | | | 4.8 | 1.5 | 4.0 | .6 | | 21 | 0 | 3.6 | 4.0 | .0 | 1.3 | | 49 | 18 | 1 | | 59 | 6.9 | 20 | 10.8 | -- |
| Jan. 4, 1966 | 12000 | 13 | | | | 3.6 | 1.5 | 3.4 | .8 | | 17 | 0 | 3.6 | 4.0 | .1 | 2.0 | | 45 | 15 | 1 | | 52 | 6.8 | 15 | 12.1 | 2400 |
| Feb. 8..... | 6000 | 14 | | | | 4.8 | 1.3 | 4.0 | .6 | | 24 | 0 | 3.2 | 3.2 | .1 | .9 | | 49 | 18 | 0 | | 57 | 7.0 | 10 | 11.3 | 11000 |
| Mar. 9..... | 14000 | 12 | | | | 3.6 | 1.2 | 3.6 | .4 | | 18 | 0 | 3.0 | 3.5 | .1 | 1.3 | | A 38 | 14 | 0 | | 48 | 6.8 | 10 | 10.9 | 1500 |
| Apr. 19..... | 3000 | 15 | | | | 5.6 | 1.8 | 4.4 | .6 | | 29 | 0 | 3.2 | 3.2 | .0 | .7 | | A 48 | 21 | 0 | | 66 | 7.0 | 10 | 10.6 | 230 |
| May 4..... | 1470 | 16 | | | | 6.4 | 2.2 | 5.1 | .7 | | 34 | 0 | 3.6 | 4.5 | .1 | .5 | | 56 | 25 | 0 | | 77 | 7.1 | 10 | 10.0 | 36 |
| June 7..... | 772 | 15 | | | | 7.3 | 2.5 | 5.5 | .3 | | 39 | 0 | 3.2 | 5.0 | .1 | .4 | | 63 | 28 | 0 | | 85 | 7.3 | 5 | 9.3 | 0 |
| July 6..... | 1130 | 15 | | | | 6.9 | 2.2 | 5.3 | .7 | | 34 | 0 | 2.6 | 4.5 | .1 | .7 | | 60 | 26 | 0 | | 78 | 6.9 | 10 | 8.1 | 390 |
| Aug. 2..... | 326 | 15 | | | | 7.5 | 2.9 | 7.2 | .7 | | 42 | 0 | 2.8 | 7.0 | .1 | .3 | | A 64 | 30 | 0 | | 98 | 6.9 | 5 | 9.7 | 23 |
| Sept. 29.... | 351 | 19 | | | | 8.5 | 2.9 | 6.5 | 1.6 | | 44 | 0 | 3.6 | 7.8 | .1 | .7 | | A 73 | 33 | 0 | | 106 | 7.3 | 5 | 9.4 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966..... | 1300 | 0.00 | 0.00 | 0.06 | 0.05 | 0.00 | 0.02 |
| Aug. 2..... | 1615 | .00 | .00 | .03 | .00 | .00 | .00 |

CHEHALIS RIVER BASIN--Continued

12-0310. CHEHALIS RIVER AT PORTER, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Aver-age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 60 | 58 | 60 | 58 | 58 | 59 | 58 | 59 | 58 | 54 | 56 | 57 | 57 | 57 | 55 | 51 | 54 | 53 | 51 | 55 | 53 | 52 | 52 | 53 | 54 | 51 | 49 | 53 | 52 | 55 | 52 | 55 |
| November | 54 | 53 | 54 | 53 | 52 | 52 | 51 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 51 | 50 | 50 | 51 | 50 | 50 | 49 | 44 | 46 | 44 | 44 | 45 | 45 | 45 | 46 | -- | 49 |
| December | 46 | 46 | 46 | 48 | 48 | 49 | 49 | 44 | 46 | 44 | 44 | 45 | 41 | 41 | 39 | 39 | 38 | 39 | 41 | 41 | 40 | 39 | 39 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 42 |
| January | 39 | 39 | 38 | 38 | 40 | 43 | 41 | 39 | 43 | 42 | 43 | 39 | 40 | 40 | 41 | 45 | 44 | 42 | 40 | 40 | 40 | 41 | 41 | 39 | 42 | 41 | 43 | 44 | 41 | 40 | 40 | 41 |
| February | 41 | 43 | 40 | 41 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 48 | 43 | 43 | 40 | 43 | 48 | 44 | 43 | 41 | 45 | 46 | 46 | 44 | 45 | 45 | 44 | 43 | -- | -- | -- | 44 |
| March | 40 | 40 | 40 | 39 | 38 | 42 | 44 | 45 | 46 | 43 | 40 | 41 | 46 | 42 | 41 | 44 | 45 | 44 | 43 | 42 | 42 | 44 | 47 | 49 | 46 | 41 | 50 | 42 | 48 | 51 | 49 | 44 |
| April | 52 | 51 | 52 | 52 | 52 | 52 | 53 | 52 | 54 | 52 | 49 | 48 | 49 | 49 | 52 | 51 | 52 | 53 | 52 | 52 | 52 | 52 | 51 | 55 | 52 | 51 | 51 | 52 | 55 | 52 | -- | 52 |
| May | 52 | 52 | 53 | 54 | 61 | 58 | 61 | 61 | 61 | 57 | 58 | 58 | 55 | 59 | 53 | 55 | 50 | 58 | 60 | 58 | 55 | 52 | 58 | 60 | 62 | 61 | 51 | 55 | 61 | 60 | 62 | 57 |
| June | 60 | 56 | 52 | 56 | 59 | 62 | 60 | 59 | 59 | 61 | 62 | 64 | 62 | 65 | 67 | 66 | 62 | 67 | 64 | 64 | 62 | 66 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 65 | -- | 62 |
| July | 63 | 60 | 58 | 60 | 59 | 59 | 62 | 64 | 62 | 65 | 63 | 69 | 65 | 67 | 65 | 67 | 69 | 64 | 67 | 69 | 68 | 70 | 67 | 67 | 67 | 70 | 65 | 71 | 71 | 72 | 68 | 66 |
| August | 70 | 69 | 71 | 69 | 72 | 69 | 73 | 68 | 71 | 68 | 72 | 61 | 70 | 68 | 70 | 65 | 69 | 66 | 72 | 66 | 73 | 67 | 69 | 66 | 64 | 62 | 66 | 60 | 64 | 64 | 65 | 68 |
| September | 62 | 68 | 64 | 70 | 65 | 68 | 64 | 66 | 65 | 64 | 61 | 61 | 60 | 61 | 60 | 64 | 61 | 64 | 61 | 65 | 63 | 66 | 64 | 69 | 62 | 64 | 61 | 66 | 65 | 63 | -- | 64 |

CHEHALIS RIVER BASIN--Continued

12-0310. CHEHALIS RIVER AT PORTER, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 254 | C 3 | 2 | 455 | C 4 | 5 | 2700 | 8 | 58 |
| 2.. | 251 | C 3 | 2 | 462 | C 4 | 5 | 2860 | 10 | 77 |
| 3.. | 246 | C 3 | 2 | 576 | C 4 | 6 | 3420 | 10 | 92 |
| 4.. | 255 | C 3 | 2 | 1100 | 16 | 48 | 4910 | 28 | 371 |
| 5.. | 381 | C 3 | 3 | 2660 | 42 | 302 | 6310 | 34 | 579 |
| 6.. | 489 | C 3 | 4 | 2800 | 34 | 257 | 5530 | 20 | 299 |
| 7.. | 753 | 11 | 22 | 2260 | 16 | 98 | 5070 | 12 | 164 |
| 8.. | 926 | 12 | 30 | 1860 | 9 | 45 | 5440 | 18 | 264 |
| 9.. | 656 | 5 | 9 | 1730 | 8 | 37 | 5290 | 17 | 243 |
| 10.. | 514 | C 3 | 4 | 1730 | 6 | 28 | 4590 | 10 | 124 |
| 11.. | 454 | C 3 | 4 | 2320 | 13 | 81 | 3960 | 10 | 107 |
| 12.. | 413 | C 3 | 3 | 2360 | C 8 | 51 | 3360 | C 6 | 54 |
| 13.. | 407 | C 3 | 3 | 2040 | C 8 | 44 | 2940 | C 6 | 48 |
| 14.. | 465 | C 3 | 4 | 2080 | C 8 | 45 | 2650 | C 6 | 43 |
| 15.. | 565 | C 3 | 5 | 2100 | C 8 | 45 | 2410 | C 6 | 39 |
| 16.. | 1140 | 16 | 49 | 1900 | C 8 | 41 | 2180 | C 6 | 35 |
| 17.. | 1070 | 9 | 26 | 1650 | C 8 | 36 | 1990 | C 6 | 32 |
| 18.. | 860 | 6 | 14 | 1460 | C 8 | 32 | 1850 | C 6 | 30 |
| 19.. | 1040 | 16 | 45 | 1740 | 14 | 66 | 1740 | C 6 | 28 |
| 20.. | 1020 | 13 | 36 | 3340 | 30 | 271 | 1650 | C 6 | 27 |
| 21.. | 1040 | 9 | 25 | 3870 | 22 | 230 | 1690 | C 6 | 27 |
| 22.. | 851 | C 4 | 9 | 4510 | 24 | 292 | 1850 | C 6 | 30 |
| 23.. | 723 | C 4 | 8 | 6090 | 51 | 839 | 1740 | C 6 | 28 |
| 24.. | 635 | C 4 | 7 | 5320 | 22 | 316 | 1910 | 7 | 36 |
| 25.. | 575 | C 4 | 6 | 4180 | 10 | 113 | 2900 | 12 | 94 |
| 26.. | 528 | C 4 | 6 | 3010 | 8 | 65 | 2790 | 9 | 68 |
| 27.. | 499 | C 4 | 5 | 3020 | 6 | 49 | 3480 | 57 | S 496 |
| 28.. | 497 | C 4 | 5 | 4090 | 12 | 133 | 9670 | 155 | 4050 |
| 29.. | 491 | C 4 | 5 | 3550 | 8 | 77 | 14500 | 103 | 4030 |
| 30.. | 503 | C 4 | 5 | 2990 | 10 | 81 | 14700 | 47 | 1870 |
| 31.. | 472 | C 4 | 5 | --- | --- | --- | 12300 | 31 | 1030 |
| Total | 18973 | --- | 355 | 77253 | --- | 3738 | 138380 | --- | 14473 |
| | JANUARY | | | FEBRUARY | | | MARCH | | |
| 1.. | 9500 | 28 | 718 | 5840 | 22 | 347 | 7980 | 41 | 883 |
| 2.. | 9800 | 33 | 873 | 5210 | 14 | 197 | 7250 | 21 | 411 |
| 3.. | 12900 | 40 | 1390 | 4620 | 9 | 112 | 6330 | 12 | 205 |
| 4.. | 12000 | 22 | 713 | 4220 | 7 | 80 | 5820 | 12 | 189 |
| 5.. | 10900 | 28 | 824 | 4150 | 6 | 67 | 5620 | 12 | 182 |
| 6.. | 15100 | 75 | S 3220 | 4670 | 10 | 126 | 5930 | 13 | 208 |
| 7.. | 21400 | 74 | 4280 | 5450 | 13 | 191 | 6180 | 16 | 267 |
| 8.. | 25400 | 41 | 2810 | 6000 | 17 | 275 | 7140 | 27 | S 567 |
| 9.. | 24600 | 29 | 1930 | 5890 | 13 | 207 | 14000 | 114 | 4310 |
| 10.. | 21400 | 28 | 1620 | 6440 | 22 | 383 | 17900 | 101 | 4880 |
| 11.. | 16300 | 26 | 1140 | 6690 | 28 | 506 | 20600 | 58 | 3230 |
| 12.. | 13900 | 30 | 1130 | 7370 | 33 | 657 | 16500 | 37 | 1650 |
| 13.. | 14700 | 34 | 1350 | 7610 | 26 | 534 | 12200 | 28 | 922 |
| 14.. | 16300 | 41 | 1800 | 6620 | 15 | 268 | 10400 | 29 | 814 |
| 15.. | 17300 | 46 | 2150 | 5800 | 12 | 188 | 11500 | 43 | 1340 |
| 16.. | 16400 | 28 | 1240 | 5020 | 12 | 163 | 14600 | 59 | 2330 |
| 17.. | 13200 | 22 | 784 | 4510 | 10 | 122 | 15300 | 46 | 1900 |
| 18.. | 10100 | 24 | 654 | 4110 | 10 | 111 | 13100 | 27 | 955 |
| 19.. | 7920 | 24 | 513 | 3750 | C 7 | 71 | 11100 | 26 | 779 |
| 20.. | 6620 | 22 | 393 | 3560 | C 7 | 67 | 11200 | 27 | 816 |
| 21.. | 5720 | 20 | 309 | 3700 | C 7 | 70 | 12200 | 26 | 856 |
| 22.. | 5110 | 18 | 248 | 3620 | C 7 | 68 | 12200 | 25 | 824 |
| 23.. | 4660 | 15 | 189 | 3460 | C 7 | 65 | 11100 | 17 | 509 |
| 24.. | 4440 | 14 | 168 | 3460 | C 7 | 65 | 9710 | 21 | 551 |
| 25.. | 4160 | 11 | 124 | 3280 | C 7 | 62 | 8840 | 22 | 525 |
| 26.. | 3870 | 12 | 125 | 3200 | C 7 | 60 | 8100 | 20 | 437 |
| 27.. | 3710 | 11 | 110 | 3520 | 12 | 114 | 7430 | 19 | 381 |
| 28.. | 3810 | 13 | 134 | 6010 | 36 | 584 | 6740 | 17 | 309 |
| 29.. | 3930 | 11 | 117 | --- | --- | --- | 6000 | 15 | 243 |
| 30.. | 5050 | 19 | 259 | --- | --- | --- | 5530 | 14 | 209 |
| 31.. | 5960 | 27 | 434 | --- | --- | --- | 5360 | 14 | 203 |
| Total | 346160 | --- | 31749 | 137780 | --- | 5760 | 313860 | --- | 31885 |

S Computed by subdividing day.
C Composite period.

CHEHALIS RIVER BASIN--Continued

12-0310. CHEHALIS RIVER AT PORTER, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 4990 | C 10 | 135 | 1640 | C 6 | 27 | 764 | C 2 | 4 |
| 2 | 4540 | C 10 | 123 | 1570 | C 6 | 25 | 799 | C 2 | 4 |
| 3 | 4140 | C 10 | 112 | 1520 | C 6 | 25 | 860 | C 2 | 5 |
| 4 | 3750 | C 10 | 101 | 1470 | C 6 | 24 | 915 | C 2 | 5 |
| 5 | 3450 | C 10 | 93 | 1440 | C 6 | 23 | 870 | C 2 | 5 |
| 6 | 3230 | C 10 | 87 | 1490 | C 6 | 24 | 816 | C 2 | 4 |
| 7 | 3080 | C 10 | 83 | 1770 | C 6 | 29 | 772 | C 2 | 4 |
| 8 | 2940 | C 10 | 79 | 1740 | C 6 | 28 | 744 | C 2 | 4 |
| 9 | 2850 | C 10 | 77 | 1490 | C 6 | 24 | 731 | C 2 | 4 |
| 10 | 2850 | C 10 | 77 | 1370 | C 6 | 22 | 722 | C 2 | 4 |
| 11 | 3130 | 10 | 85 | 1280 | C 6 | 21 | 749 | C 2 | 4 |
| 12 | 4910 | 23 | 305 | 1220 | C 6 | 20 | 845 | C 2 | 5 |
| 13 | 5490 | 23 | 341 | 1160 | C 6 | 19 | 880 | C 2 | 5 |
| 14 | 4850 | 14 | 183 | 1130 | C 6 | 18 | 830 | C 2 | 5 |
| 15 | 4580 | 11 | 136 | 1140 | C 6 | 18 | 762 | C 2 | 4 |
| 16 | 4110 | 10 | 111 | 1310 | C 6 | 21 | 718 | C 2 | 4 |
| 17 | 3670 | 9 | 89 | 1450 | C 6 | 23 | 686 | C 2 | 4 |
| 18 | 3310 | C 6 | 54 | 1370 | C 6 | 22 | 659 | C 2 | 4 |
| 19 | 3000 | C 6 | 49 | 1210 | C 6 | 20 | 646 | C 2 | 3 |
| 20 | 2800 | C 6 | 45 | 1110 | C 6 | 18 | 634 | C 2 | 3 |
| 21 | 2810 | C 6 | 46 | 1070 | C 6 | 17 | 634 | C 2 | 3 |
| 22 | 2640 | C 6 | 43 | 1050 | C 6 | 17 | 650 | C 2 | 4 |
| 23 | 2440 | C 6 | 40 | 1080 | C 6 | 18 | 622 | C 2 | 3 |
| 24 | 2280 | C 6 | 37 | 1030 | C 6 | 17 | 598 | C 2 | 3 |
| 25 | 2150 | C 6 | 35 | 964 | C 6 | 16 | 582 | C 2 | 3 |
| 26 | 2060 | C 6 | 33 | 915 | C 6 | 15 | 562 | C 2 | 3 |
| 27 | 1980 | C 6 | 32 | 882 | C 6 | 14 | 542 | C 2 | 3 |
| 28 | 1890 | C 6 | 31 | 862 | C 6 | 14 | 562 | C 2 | 3 |
| 29 | 1800 | C 6 | 29 | 824 | C 6 | 13 | 664 | C 2 | 4 |
| 30 | 1720 | C 6 | 28 | 792 | C 6 | 13 | 762 | C 2 | 4 |
| 31 | -- | -- | -- | 770 | C 6 | 12 | -- | -- | -- |
| Total | 97440 | -- | 2719 | 38119 | -- | 617 | 21580 | -- | 117 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 634 | C 2 | 3 | 332 | C 2 | 2 | 258 | C 2 | 1 |
| 2 | 654 | C 2 | 4 | 326 | C 2 | 2 | 247 | C 2 | 1 |
| 3 | 855 | C 2 | 5 | 320 | C 2 | 2 | 237 | C 2 | 1 |
| 4 | 1450 | C 2 | 8 | 311 | C 2 | 2 | 223 | C 2 | 1 |
| 5 | 1450 | C 2 | 8 | 302 | C 2 | 2 | 218 | C 2 | 1 |
| 6 | 1130 | C 2 | 6 | 296 | C 2 | 2 | 214 | C 2 | 1 |
| 7 | 935 | C 2 | 5 | 293 | C 2 | 2 | 211 | C 2 | 1 |
| 8 | 812 | C 2 | 4 | 290 | C 2 | 2 | 205 | C 2 | 1 |
| 9 | 726 | C 2 | 4 | 290 | C 2 | 2 | 202 | C 2 | 1 |
| 10 | 650 | C 2 | 4 | 281 | C 2 | 2 | 208 | C 2 | 1 |
| 11 | 606 | C 2 | 3 | 281 | C 2 | 2 | 261 | C 2 | 1 |
| 12 | 570 | C 2 | 3 | 275 | C 2 | 2 | 259 | C 2 | 1 |
| 13 | 534 | C 2 | 3 | 275 | C 2 | 2 | 304 | C 2 | 2 |
| 14 | 506 | C 2 | 3 | 275 | C 2 | 2 | 339 | C 2 | 2 |
| 15 | 490 | C 2 | 3 | 269 | C 2 | 2 | 315 | C 2 | 2 |
| 16 | 494 | C 2 | 3 | 269 | C 2 | 2 | 296 | C 2 | 2 |
| 17 | 494 | C 2 | 3 | 266 | C 2 | 2 | 294 | C 2 | 2 |
| 18 | 480 | C 2 | 3 | 253 | C 2 | 1 | 346 | C 2 | 2 |
| 19 | 462 | C 2 | 2 | 244 | C 2 | 1 | 333 | C 2 | 2 |
| 20 | 438 | C 2 | 2 | 232 | C 2 | 1 | 387 | C 2 | 2 |
| 21 | 434 | C 2 | 2 | 222 | C 2 | 1 | 347 | C 2 | 2 |
| 22 | 413 | C 2 | 2 | 217 | C 2 | 1 | 308 | C 2 | 2 |
| 23 | 392 | C 2 | 2 | 214 | C 2 | 1 | 297 | C 2 | 2 |
| 24 | 388 | C 2 | 2 | 210 | C 2 | 1 | 284 | C 2 | 2 |
| 25 | 388 | C 2 | 2 | 209 | C 2 | 1 | 290 | C 2 | 2 |
| 26 | 402 | C 2 | 2 | 214 | C 2 | 1 | 314 | C 2 | 2 |
| 27 | 413 | C 2 | 2 | 241 | C 2 | 1 | 330 | C 2 | 2 |
| 28 | 392 | C 2 | 2 | 244 | C 2 | 1 | 354 | C 2 | 2 |
| 29 | 371 | C 2 | 2 | 256 | C 2 | 1 | 351 | C 2 | 2 |
| 30 | 354 | C 2 | 2 | 297 | C 2 | 2 | 320 | C 2 | 2 |
| 31 | 341 | C 2 | 2 | 277 | C 2 | 1 | -- | C -- | -- |
| Total | 18658 | -- | 101 | 8281 | -- | 49 | 8552 | C -- | 48 |

Total discharge for year (cfs-days)..... 1225000
Total load for year (tons)..... 91611

C Composite period.

CHEHALIS RIVER BASIN--Continued

12-0354. WYNOOCHEE RIVER NEAR GRISDALE, WASH.

LOCATION.--Lat 47°23'05", long 123°36'20", at gaging station cableway, 500 feet downstream from logging bridge, and 2 miles north of Camp Grisdale, Grays Harbor County.
DRAINAGE AREA.--41.1 square miles.
RECORDS AVAILABLE.--Sediment records: February to September 1966.
EXTREMES, February to September 1966.--Sediment concentrations: Maximum daily, 94 ppm Mar. 14; minimum daily, 2 ppm during month of June.
Sediment loads: Maximum daily, 506 tons Mar. 14; minimum daily, 1 ton on many days.

Suspended sediment, February to September 1966

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | | | | 545 | 20 | 29 | 380 | C 7 | 7 |
| 2 | | | | 461 | 17 | 21 | 336 | C 7 | 6 |
| 3 | | | | 430 | 15 | 17 | 303 | C 7 | 6 |
| 4 | | | | 770 | 21 | S 49 | 279 | C 7 | 5 |
| 5 | | | | 1150 | 32 | 99 | 289 | C 7 | 5 |
| 6 | | | | 968 | 19 | 50 | 322 | C 7 | 6 |
| 7 | | | | 740 | 10 | 20 | 356 | C 7 | 7 |
| 8 | | | | 605 | C 7 | 11 | 513 | 16 | 22 |
| 9 | | | | 530 | C 7 | 10 | 989 | 23 | 61 |
| 10 | | | | 456 | C 7 | 9 | 746 | 7 | 14 |
| 11 | | | | 570 | C 7 | 11 | 580 | 4 | 6 |
| 12 | | | | 510 | C 7 | 10 | 575 | 4 | 6 |
| 13 | | | | 430 | C 7 | 8 | 1230 | 30 | 100 |
| 14 | | | | 280 | C 7 | 5 | 1720 | 94 | S 506 |
| 15 | | | | 340 | C 7 | 6 | 2020 | 74 | S 435 |
| 16 | | | | 314 | C 7 | 6 | 1220 | 14 | 46 |
| 17 | | | | 293 | C 7 | 6 | 835 | C 5 | 11 |
| 18 | | | | 279 | C 7 | 5 | 849 | C 5 | 11 |
| 19 | | | | 269 | C 7 | 5 | 704 | C 5 | 9 |
| 20 | | | | 333 | C 7 | 6 | 575 | C 5 | 8 |
| 21 | | | | 380 | C 7 | 7 | 495 | C 5 | 7 |
| 22 | | | | 376 | C 7 | 7 | 434 | C 5 | 6 |
| 23 | | | | 545 | C 7 | 10 | 374 | C 5 | 5 |
| 24 | | | | 510 | C 7 | 10 | 389 | C 5 | 5 |
| 25 | | | | 456 | C 7 | 9 | 416 | C 5 | 6 |
| 26 | | | | 466 | C 7 | 9 | 485 | C 5 | 7 |
| 27 | | | | 485 | C 7 | 9 | 550 | C 5 | 7 |
| 28 | | | | 498 | C 7 | 8 | 580 | C 5 | 8 |
| 29 | | | | --- | --- | --- | 686 | C 5 | 9 |
| 30 | | | | --- | --- | --- | 968 | 12 | 31 |
| 31 | | | | --- | --- | --- | 891 | 6 | 14 |
| Total | | | | 13929 | --- | 452 | 21109 | --- | 1382 |

S Computed by subdividing day.
C Composite period.

CHEHALIS RIVER BASIN--Continued

12-0354. WYNOOCHEE RIVER NEAR GRISDALE, WASH.--Continued

Suspended sediment, February to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 752 | C 3 | 6 | 289 | C 4 | 3 | 260 | C 2 | 1 |
| 2 | 692 | C 3 | 6 | 325 | C 4 | 4 | 296 | C 2 | 2 |
| 3 | 585 | C 3 | 5 | 452 | C 4 | 5 | 276 | C 2 | 1 |
| 4 | 560 | C 3 | 5 | 590 | C 4 | 6 | 257 | C 2 | 1 |
| 5 | 600 | C 3 | 5 | 704 | C 4 | 8 | 247 | C 2 | 1 |
| 6 | 692 | C 3 | 6 | 856 | 12 | 9 | 293 | C 2 | 2 |
| 7 | 752 | C 3 | 6 | 698 | C 4 | 8 | 340 | C 2 | 2 |
| 8 | 722 | C 3 | 6 | 585 | C 4 | 6 | 333 | C 2 | 2 |
| 9 | 620 | C 3 | 5 | 626 | C 4 | 7 | 318 | C 2 | 2 |
| 10 | 690 | C 3 | 6 | 530 | C 4 | 6 | 329 | C 2 | 2 |
| 11 | 1060 | C 3 | 9 | 434 | C 4 | 5 | 348 | C 2 | 2 |
| 12 | 668 | C 3 | 5 | 430 | C 4 | 5 | 314 | C 2 | 2 |
| 13 | 540 | C 3 | 4 | 394 | C 4 | 4 | 286 | C 2 | 2 |
| 14 | 555 | C 3 | 4 | 348 | C 4 | 4 | 296 | C 2 | 2 |
| 15 | 565 | C 3 | 5 | 456 | C 4 | 5 | 348 | C 2 | 2 |
| 16 | 545 | C 3 | 4 | 456 | C 4 | 5 | 389 | C 2 | 2 |
| 17 | 510 | C 3 | 4 | 368 | C 4 | 4 | 329 | C 2 | 2 |
| 18 | 466 | C 3 | 4 | 340 | C 4 | 4 | 286 | C 2 | 2 |
| 19 | 430 | C 3 | 3 | 376 | C 4 | 4 | 289 | C 2 | 2 |
| 20 | 402 | C 3 | 3 | 425 | C 4 | 5 | 263 | C 2 | 1 |
| 21 | 380 | C 3 | 3 | 412 | C 4 | 4 | 254 | C 2 | 1 |
| 22 | 372 | C 3 | 3 | 356 | C 4 | 4 | 241 | C 2 | 1 |
| 23 | 372 | C 3 | 3 | 310 | C 4 | 3 | 247 | C 2 | 1 |
| 24 | 376 | C 3 | 3 | 314 | C 4 | 3 | 235 | C 2 | 1 |
| 25 | 376 | C 3 | 3 | 398 | C 4 | 4 | 227 | C 2 | 1 |
| 26 | 352 | C 3 | 3 | 443 | C 4 | 5 | 224 | C 2 | 1 |
| 27 | 333 | C 3 | 3 | 360 | C 4 | 4 | 337 | C 2 | 2 |
| 28 | 310 | C 3 | 3 | 310 | C 4 | 3 | 500 | C 2 | 3 |
| 29 | 296 | C 3 | 2 | 296 | C 4 | 3 | 329 | C 2 | 2 |
| 30 | 289 | C 3 | 2 | 300 | C 4 | 3 | 272 | C 2 | 1 |
| 31 | -- | -- | -- | 283 | C 4 | 3 | -- | -- | -- |
| Total | 15862 | -- | 129 | 13464 | -- | 146 | 8963 | -- | 49 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 254 | C 3 | 2 | 115 | C 3 | 1 | 74 | C 3 | 1 |
| 2 | 244 | C 3 | 2 | 112 | C 3 | 1 | 73 | C 3 | 1 |
| 3 | 250 | C 3 | 2 | 111 | C 3 | 1 | 71 | C 3 | 1 |
| 4 | 257 | C 3 | 2 | 109 | C 3 | 1 | 70 | C 3 | 1 |
| 5 | 244 | C 3 | 2 | 106 | C 3 | 1 | 68 | C 3 | 1 |
| 6 | 232 | C 3 | 2 | 103 | C 3 | 1 | 67 | C 3 | 1 |
| 7 | 224 | C 3 | 2 | 100 | C 3 | 1 | 67 | C 3 | 1 |
| 8 | 227 | C 3 | 2 | 97 | C 3 | 1 | 66 | C 3 | 1 |
| 9 | 227 | C 3 | 2 | 96 | C 3 | 1 | 65 | C 3 | 1 |
| 10 | 221 | C 3 | 2 | 94 | C 3 | 1 | 67 | C 3 | 1 |
| 11 | 208 | C 3 | 2 | 92 | C 3 | 1 | 79 | C 3 | 1 |
| 12 | 192 | C 3 | 2 | 89 | C 3 | 1 | 77 | C 3 | 1 |
| 13 | 190 | C 3 | 2 | 92 | C 3 | 1 | 68 | C 3 | 1 |
| 14 | 185 | C 3 | 1 | 89 | C 3 | 1 | 65 | C 3 | 1 |
| 15 | 178 | C 3 | 1 | 88 | C 3 | 1 | 65 | C 3 | 1 |
| 16 | 174 | C 3 | 1 | 87 | C 3 | 1 | 64 | C 3 | 1 |
| 17 | 165 | C 3 | 1 | 84 | C 3 | 1 | 109 | C 3 | 1 |
| 18 | 163 | C 3 | 1 | 82 | C 3 | 1 | 163 | C 3 | 1 |
| 19 | 159 | C 3 | 1 | 80 | C 3 | 1 | 108 | C 3 | 1 |
| 20 | 153 | C 3 | 1 | 79 | C 3 | 1 | 89 | C 3 | 1 |
| 21 | 147 | C 3 | 1 | 78 | C 3 | 1 | 80 | C 3 | 1 |
| 22 | 145 | C 3 | 1 | 77 | C 3 | 1 | 78 | C 3 | 1 |
| 23 | 145 | C 3 | 1 | 77 | C 3 | 1 | 89 | C 3 | 1 |
| 24 | 139 | C 3 | 1 | 76 | C 3 | 1 | 83 | C 3 | 1 |
| 25 | 139 | C 3 | 1 | 76 | C 3 | 1 | 80 | C 3 | 1 |
| 26 | 134 | C 3 | 1 | 78 | C 3 | 1 | 92 | C 3 | 1 |
| 27 | 130 | C 3 | 1 | 134 | C 3 | 1 | 93 | C 3 | 1 |
| 28 | 129 | C 3 | 1 | 100 | C 3 | 1 | 85 | C 3 | 1 |
| 29 | 127 | C 3 | 1 | 87 | C 3 | 1 | 82 | C 3 | 1 |
| 30 | 123 | C 3 | 1 | 82 | C 3 | 1 | 78 | C 3 | 1 |
| 31 | 128 | C 3 | 1 | 77 | C 3 | 1 | -- | -- | -- |
| Total | 5625 | -- | 44 | 2847 | -- | 31 | 2415 | -- | 30 |

Total dischcarge for period (cfs-days)..... 84214
Total load for period (tons)..... 2263

C Composite period.

CHEHALIS RIVER BASIN--Continued

12-0381. WISHKAH RIVER NEAR WISHKAH, WASH.

LOCATION.--Lat 47°04'20", long 123°46'10", at Wishkah Road bridge, 500 feet upstream from East Fork, 2.3 miles downstream from Hamilton Canyon, and 3.2 miles south of Wishkah, Grays Harbor County.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 6, 1965. | | 13 | | | | 5.6 | 2.9 | 4.2 | 0.2 | | 29 | 0 | 5.4 | 3.8 | 0.1 | 1.5 | | 52 | 26 | 2 | | 76 | 6.7 | 15 | 9.1 | 11000 |
| Nov. 1..... | | 14 | | | | 6.4 | 2.6 | 4.2 | .5 | | 32 | 0 | 3.6 | 3.5 | .1 | .5 | | 51 | 26 | 0 | | 74 | 6.8 | 10 | 9.9 | 36 |
| Dec. 6..... | | 10 | | | | 3.2 | 1.7 | 3.0 | .4 | | 18 | 0 | 2.2 | 3.0 | .0 | 1.2 | | 36 | 15 | 0 | | 45 | 6.9 | 5 | 10.9 | -- |
| Jan. 4, 1966. | | 11 | | | | 4.0 | 1.6 | 3.0 | .5 | | 20 | 0 | 2.8 | 3.5 | .0 | 1.1 | | 37 | 16 | 0 | | 49 | 7.0 | 10 | 12.3 | 91 |
| Feb. 8..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | -- | -- |
| Mar. 9..... | | 8.3 | | | | 3.6 | .6 | 2.7 | .3 | | 14 | 0 | 2.2 | 3.0 | .0 | .8 | | 29 | 12 | 0 | | 38 | 6.7 | 5 | 10.2 | 36 |
| Apr. 19..... | | 13 | | | | 4.8 | 2.1 | 3.9 | .3 | | 28 | 0 | 2.2 | 2.8 | .0 | .2 | | 45 | 20 | 0 | | 61 | 7.0 | 5 | 11.7 | 36 |
| May 4..... | | 14 | | | | 5.3 | 2.3 | 4.0 | .4 | | 32 | 0 | 2.4 | 3.0 | .1 | .2 | | A 48 | 23 | 0 | | 70 | 7.1 | 5 | 10.2 | 91 |
| June 7..... | | 15 | | | | 6.3 | 2.8 | 4.3 | .3 | | 38 | 0 | 2.6 | 3.5 | .1 | .2 | | 55 | 27 | 0 | | 75 | 7.2 | 5 | 9.9 | 230 |
| July 6..... | | 14 | | | | 6.7 | 2.7 | 4.5 | .1 | | 38 | 0 | 2.6 | 3.5 | .1 | .3 | | 56 | 28 | 0 | | 77 | 7.1 | 5 | 10.8 | 36 |
| Aug. 2..... | | 16 | | | | 1.7 | 3.4 | 4.9 | .6 | | 43 | 0 | 2.8 | 4.5 | .1 | .4 | | A 61 | 33 | 0 | | 88 | 7.0 | 5 | 9.4 | 36 |
| Sept. 29..... | | 16 | | | | 7.5 | 3.3 | 4.5 | .8 | | 43 | 0 | 3.2 | 4.2 | .1 | .0 | | 63 | 32 | 0 | | 85 | 7.3 | 10 | 8.7 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 1030 | 0.00 | 0.01 | 0.03 | 0.05 | 0.00 | 0.00 |
| Aug. 2..... | 1405 | .01 | .02 | .00 | .01 | .00 | .00 |

## HOQUIAM RIVER BASIN

### 12-0385. WEST FORK HOQUIAM RIVER NEAR HOQUIAM, WASH.

LOCATION.--Lat 47°03'05", long 123°55'25", at bridge on U.S. Highway 101, 0.5 mile downstream from Poison Creek, 0.8 mile downstream from Hoover Creek, and 4.2 miles northwest of Hoquiam, Grays Harbor County.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 6, 1965. | | 13 | | | | 4.4 | 2.2 | 4.3 | 0.2 | | 23 | 0 | 0.4 | 5.5 | 0.1 | 1.2 | | 45 | 20 | 1 | | 63 | 7.0 | 25 | 8.9 | 2400 |
| Nov. 1..... | | 16 | | | | 5.6 | 3.0 | 4.6 | .4 | | 33 | 0 | .2 | 5.8 | .1 | .2 | | 53 | 26 | 0 | | 76 | 7.2 | 10 | 9.4 | 230 |
| Dec. 6..... | | 9.3 | | | | 2.8 | 1.1 | 3.6 | .3 | | 14 | 0 | .4 | 4.8 | .0 | .6 | | 34 | 12 | 0 | | 43 | 6.9 | 10 | 10.7 | -- |
| Jan. 4, 1966. | | 11 | | | | 2.8 | 1.4 | 3.4 | .4 | | 16 | 0 | 1.4 | 5.2 | .0 | .5 | | 34 | 12 | 0 | | 47 | 6.9 | 5 | 11.7 | 73 |
| Feb. 8..... | | 9.9 | | | | 3.6 | .7 | 3.6 | 1.3 | | 16 | 0 | .2 | 4.5 | .0 | .5 | | 34 | 12 | 0 | | 44 | 6.9 | 10 | 11.4 | 91 |
| Mar. 9..... | | 8.2 | | | | 2.0 | 1.2 | 3.1 | .2 | | 12 | 0 | 1.2 | 4.2 | .1 | .5 | | 30 | 10 | 0 | | 40 | 6.8 | 5 | 11.0 | 73 |
| Apr. 19..... | | 14 | | | | 4.0 | 1.8 | 3.9 | .2 | | 23 | 0 | 1.0 | 5.0 | .0 | .1 | | 40 | 17 | 0 | | 58 | 7.1 | 5 | 12.1 | 150 |
| May 4..... | | 15 | | | | 5.2 | 1.8 | 4.1 | .4 | | 27 | 0 | .2 | 5.0 | .0 | .2 | | A 45 | 20 | 0 | | 64 | 7.1 | 5 | 10.8 | 91 |
| June 7..... | | 16 | | | | 5.4 | 2.6 | 4.7 | .3 | | 32 | 0 | .4 | 5.5 | .0 | .3 | | 53 | 24 | 0 | | 71 | 7.1 | 5 | 10.2 | 430 |
| July 6..... | | 16 | | | | 5.8 | 2.9 | 4.9 | .2 | | 36 | 0 | .2 | 5.2 | .1 | .3 | | 53 | 26 | 0 | | 76 | 6.9 | 15 | 10.1 | 36 |
| Aug. 2..... | | 11 | | | | 6.6 | 3.2 | 4.9 | .4 | | 39 | 0 | .6 | 6.5 | .1 | .2 | | 58 | 30 | 0 | | 82 | 7.0 | 5 | 10.2 | 430 |
| Sept. 28..... | | 18 | | | | 5.0 | 2.8 | 6.1 | .9 | | 32 | 0 | 2.0 | 7.2 | .1 | .7 | | 70 | 24 | 0 | | 69 | 6.8 | 30 | 8.0 | 2400 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966..... | 0945 | 0.00 | 0.02 | 0.03 | 0.05 | 0.00 | 0.01 |
| Aug. 2..... | 1240 | .01 | .02 | .01 | .01 | .00 | .00 |

QUINAULT RIVER BASIN

12-0393. NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WASH.
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'45", long 123°37'25", temperature recorder at gaging station 5.2 miles upstream from mouth, and 18 miles northeast of Amanda Park, Jefferson County.
DRAINAGE AREA.--74.1 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 54°F Sept. 4, 5; minimum, 35°F Jan. 1, 2, 5, 6.
EXTREMES, March 1965 to September 1966.--Water temperatures: Maximum, 58°F Aug. 7, 16-18, 1965; minimum, 35°F Jan. 1, 2, 5, 6, 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$ | | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | Calcium, magnesium | Noncarbonate | | | | | | |
| Sept. 14, 1965 | 276 | 4.5 | | | | 18 | 0.7 | 1.8 | 0.1 | | 45 | 0 | 14 | 0.0 | 0.1 | 0.0 | | 62 | 48 | 11 | | 108 | 7.6 | 5 | | |
| Apr. 15, 1966 | 853 | 4.1 | | | | 12 | .7 | 1.5 | .4 | | 32 | 0 | 8.8 | .5 | .0 | .1 | | 44 | 33 | 7 | | 76 | 6.9 | 5 | | |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 51 | 50 | 50 | 49 | 50 | 49 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 45 | 46 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 47 | 48 |
| Minimum .... | 49 | 49 | 49 | 49 | 48 | 49 | 48 | 49 | 49 | 47 | 48 | 48 | 48 | 47 | 46 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 44 |
| Minimum .... | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 37 | 38 | 38 | 39 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 36 | 37 | 39 |
| Minimum .... | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 37 | 37 | 37 | 38 | 38 | 39 | 40 | 39 | 38 | 38 | 38 | 38 | 37 | 37 | 36 | 36 | 36 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Minimum .... | 35 | 35 | 36 | 36 | 35 | 35 | 36 | 37 | 37 | 38 | 38 | 38 | 37 | 38 | 39 | 39 | 39 | 38 | 37 | 37 | 37 | 38 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | -- | -- | 38 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 36 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 38 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 38 | 37 | 38 | 39 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 |
| Minimum .... | 36 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 36 | 36 | 38 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 38 | 38 | 39 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 38 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 40 | -- | 40 |
| Minimum .... | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | -- | 39 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 40 | 42 | 42 | 42 | 41 | 42 | 42 | 40 | 40 | 40 | 40 | 42 | 43 | 43 | 42 | 41 | 41 | 43 | 44 | 44 | 41 | 42 | 43 | 44 | 42 | 41 | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 39 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 39 | 40 | 40 | 41 | 40 | 40 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 46 | 45 | 44 | 45 | 45 | 44 | 43 | 44 | 44 | 47 | 47 | 46 | 46 | 45 | 45 | 44 | 44 | 46 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 47 | -- | 45 |
| Minimum .... | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 43 | 43 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 44 | 45 | 45 | 46 | 45 | 45 | 45 | -- | 44 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 47 | 49 | 48 | 49 | 50 | 50 | 50 | 48 | 49 | 49 | 49 | 47 | 48 | 47 | 49 | 48 | 47 | 48 | 49 | 49 | 48 | 47 | 47 | 47 | 49 | 49 | 50 | 50 | 50 | 48 |
| Minimum .... | 46 | 45 | 46 | 46 | 47 | 48 | 47 | 48 | 46 | 46 | 46 | 45 | 46 | 47 | 46 | 47 | 47 | 47 | 46 | 44 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 47 | 48 | 47 | 46 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 52 | 51 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 51 |
| Minimum .... | 48 | 48 | 49 | 49 | 48 | 48 | 49 | 50 | 50 | 50 | 48 | 49 | 50 | 49 | 50 | 51 | 50 | 50 | 50 | 49 | 50 | 51 | 50 | 51 | 51 | 50 | 50 | 49 | 49 | 49 | 49 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 53 | 54 | 54 | 53 | 52 | 52 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 53 | 52 | 51 | 50 | 51 | 51 | 52 | 52 | 51 | -- | 52 |
| Minimum .... | 49 | 50 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 50 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 51 | 49 | -- | 50 |

## SKOKOMISH RIVER BASIN

### 12-0565. NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WASH.

LOCATION.--Lat 47°30'55", long 123°19'45", temperature recorder at gaging station 1.2 miles upstream from Lake Cushman, 2 miles upstream from Dry Creek, and 11.5 miles northwest of Hoodsport, Mason County.
DRAINAGE AREA.--57.2 square miles.
RECORDS AVAILABLE.--Water temperatures: April 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 55°F Aug. 15, 18; minimum, 33°F Dec. 27.
EXTREMES, April 1965 to September 1966.--Water temperatures: Maximum, 57°F Aug. 17, 18, 1965; minimum, 33°F Dec. 27, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 48 | 48 | 48 | 47 | 47 | 48 | 48 | 47 | 46 | 46 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | -- | -- | -- | -- | 46 |
| Minimum .... | 47 | 47 | 47 | 48 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | -- | -- | -- | -- | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | 43 |
| Minimum .... | -- | -- | -- | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 39 | 39 | 40 | 39 | 39 | -- | 42 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 36 | 36 | 37 | 37 | 35 | 36 | 35 | 35 | 38 |
| Minimum .... | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 37 | 35 | 36 | 36 | 36 | 33 | 34 | 34 | 34 | 34 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 34 | 35 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 38 |
| Minimum .... | 34 | 34 | 34 | 35 | 34 | 34 | 35 | 36 | 37 | 37 | 37 | 37 | 36 | 37 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | -- | -- | -- | 40 |
| Minimum .... | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 39 | 39 | 40 | 38 | 38 | 39 | 37 | 37 | 37 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 42 | -- | 40 |
| Minimum .... | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 40 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | -- | 40 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 43 | 42 | 42 | 42 | 41 | 42 | 43 | 43 | 42 | 41 | 42 | 43 | 43 | 41 | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 39 | 39 | 41 | 41 | 41 | 39 | 40 | 41 | 41 | 40 | 40 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 41 | 41 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | -- | 44 |
| Minimum .... | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 43 | 45 | 45 | 45 | 45 | 44 | 45 | -- | 43 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 47 | 47 | 46 | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 51 | 51 | 51 | 52 | 53 | 53 | 52 | 49 |
| Minimum .... | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 45 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 50 | 50 | 49 | 49 | 49 | 50 | 51 | 51 | 51 | 48 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 54 | 55 | 54 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 52 | 54 | 52 | 52 | 51 | 52 | 53 |
| Minimum .... | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 54 | 54 | 54 | 52 | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 50 | 51 | 51 | 50 | 51 | 52 | 52 | 52 | 52 | 53 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | -- | 52 |
| Minimum .... | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | -- | 50 |

## 12-0595. NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WASH.

**LOCATION.**--Lat 47°19'40", long 123°14'30", temperature recorder at gaging station,1 mile upstream from mouth, 6 miles southwest of Potlatch, Mason County, and 7 miles downstream from city of Tacoma's Cushman Dam No. 2.
**DRAINAGE AREA.**--117 square miles, including 99 square miles above Cushman Dam No. 2, which is normally noncontributing.
**RECORDS AVAILABLE.**--Water temperatures: March 1965 to September 1966.
**EXTREMES, 1965-66.**--Water temperatures: Maximum, 64°F on several days during July and August; minimum, 34°F Dec. 27.
**EXTREMES, March 1965 to September 1966.**--Water temperatures: Maximum, 65°F July 30, 1965; minimum, 34°F Dec. 27, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 52 | 52 | 51 | 54 | 53 | 54 | 55 | 52 | 53 | 52 | 53 | 52 | 52 | 50 | 52 | 51 | 50 | 51 | 52 | 51 | 51 | 52 | 52 | 52 | 51 | 52 | 53 | 53 | 52 | 52 |
| Minimum .... | 49 | 49 | 51 | 51 | 51 | 51 | 50 | 51 | 52 | 49 | 49 | 52 | 52 | 52 | 50 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 51 | 52 | 51 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 49 | 50 | 50 | 51 | 51 | 50 | 49 | 49 | 49 | 49 | 48 | 46 | 46 | 46 | 45 | 45 | 46 | 46 | 46 | -- | 49 |
| Minimum .... | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 49 | 49 | 50 | 49 | 50 | 48 | 49 | 49 | 49 | 48 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 48 | 46 | 45 | 45 | 45 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 40 | 42 | 42 | 40 | 39 | 39 | 39 | 40 | 43 |
| Minimum .... | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 45 | 43 | 42 | 41 | 42 | 41 | 42 | 42 | 43 | 43 | 42 | 39 | 40 | 40 | 40 | 34 | 38 | 38 | 39 | 39 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 41 |
| Minimum .... | 36 | 37 | 38 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 41 | 43 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | -- | -- | -- | 43 |
| Minimum .... | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 43 | 42 | 44 | 44 | 43 | 44 | 44 | 44 | 43 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 42 | 43 | 43 | 43 | 42 | 44 | 44 | 44 | 44 | 46 | 45 | 45 | 44 | 44 | 43 | 43 | 42 | 45 | 45 | 46 | 47 | 48 | 49 | 48 | 49 | 50 | 49 | 51 | 45 |
| Minimum .... | 42 | 42 | 42 | 42 | 41 | 43 | 42 | 42 | 42 | 43 | 42 | 44 | 44 | 45 | 44 | 43 | 43 | 43 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 45 | 44 | 45 | 47 | 47 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 51 | 51 | 53 | 54 | 52 | 51 | 54 | 51 | 49 | 50 | 50 | 50 | 51 | 54 | 54 | 53 | 54 | 55 | 52 | 53 | 51 | 51 | 55 | 54 | 52 | 52 | 51 | 53 | -- | 52 |
| Minimum .... | 46 | 45 | 44 | 44 | 46 | 46 | 48 | 48 | 49 | 48 | 48 | 46 | 46 | 48 | 48 | 48 | 46 | 45 | 45 | 48 | 47 | 48 | 49 | 49 | 49 | 46 | 47 | 46 | 47 | 47 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 56 | 56 | 57 | 57 | 54 | 58 | 59 | 58 | 55 | 58 | 57 | 57 | 52 | 51 | 55 | 57 | 57 | 58 | 59 | 57 | 53 | 57 | 59 | 61 | 57 | 58 | 58 | 60 | 56 | 56 | 57 |
| Minimum .... | 46 | 47 | 48 | 48 | 48 | 51 | 50 | 50 | 52 | 51 | 49 | 52 | 50 | 48 | 50 | 48 | 49 | 48 | 50 | 51 | 51 | 48 | 48 | 49 | 51 | 52 | 50 | 49 | 50 | 51 | 50 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 54 | 56 | 53 | 60 | 61 | 58 | 56 | 60 | 60 | 57 | 55 | 54 | 62 | 63 | 60 | 60 | 58 | 60 | 57 | 55 | 58 | 55 | 57 | 57 | 58 | 56 | 59 | 57 | 56 | -- | 58 |
| Minimum .... | 50 | 52 | 52 | 50 | 51 | 52 | 54 | 53 | 52 | 53 | 52 | 50 | 52 | 52 | 53 | 54 | 54 | 53 | 53 | 51 | 51 | 50 | 53 | 50 | 51 | 53 | 54 | 53 | 52 | 52 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 53 | 54 | 57 | 55 | 58 | 62 | 63 | 62 | 57 | 59 | 61 | 60 | 55 | 58 | 57 | 63 | 61 | 57 | 60 | 63 | 62 | 60 | 59 | 60 | 63 | 64 | 64 | 64 | 63 | 62 | 60 |
| Minimum .... | 53 | 53 | 53 | 53 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 53 | 53 | 52 | 52 | 54 | 53 | 53 | 53 | 52 | 53 | 52 | 53 | 52 | 52 | 53 | 54 | 54 | 54 | 54 | 53 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 63 | 57 | 62 | 62 | 61 | 58 | 58 | 60 | 62 | 61 | 64 | 60 | 62 | 60 | 62 | 62 | 61 | 61 | 62 | 58 | 60 | 61 | 59 | 56 | 61 | 58 | 57 | 57 | 59 | 60 |
| Minimum .... | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 53 | 56 | 55 | 54 | 54 | 53 | 53 | 53 | 52 | 54 | 55 | 55 | 55 | 54 | 54 | 55 | 52 | 53 | 53 | 52 | 54 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 58 | 60 | 60 | 61 | 58 | 58 | 59 | 57 | 56 | 56 | 58 | 58 | 56 | 56 | 56 | 56 | 59 | 58 | 58 | 59 | 59 | 59 | 57 | 57 | 57 | 59 | 58 | 58 | 57 | -- | 58 |
| Minimum .... | 52 | 54 | 54 | 53 | 54 | 54 | 54 | 53 | 54 | 54 | 54 | 53 | 52 | 54 | 54 | 55 | 55 | 54 | 53 | 53 | 53 | 54 | 56 | 55 | 55 | 55 | 55 | 54 | 55 | 53 | -- | 54 |

SKOKOMISH RIVER BASIN--Continued

12-0598. SOUTH FORK SKOKOMISH RIVER NEAR HOODSPORT, WASH.

LOCATION.--Lat 47°26'45", long 123°24'55", temperature recorder at gaging station 100 feet downstream from Pine Creek, and 13.5 miles west of Hoodsport, Mason County.
DRAINAGE AREA.--26.0 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 55°F on several days during July and August; minimum, 36°F during December, and January to March.
EXTREMES, 1964-66.--Water temperatures: Maximum, 57°F on several days during July 1965; minimum, 34°F Jan. 1, 2, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 48 | 47 | 47 | 48 | 47 | 47 | 48 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 47 |
| Minimum .... | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 45 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 42 | 42 | 42 | 43 | -- | 45 |
| Minimum .... | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 42 | 42 | 42 | 42 | 42 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 39 | 40 | 41 | 40 | 39 | 39 | 38 | 39 | 41 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 39 | 39 | 39 | 40 | 36 | 38 | 38 | 37 | 38 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 38 | 39 | 37 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 41 | 41 | 42 | 40 |
| Minimum .... | 36 | 37 | 38 | 38 | 36 | 36 | 37 | 39 | 39 | 39 | 39 | 38 | 37 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | -- | -- | -- | 41 |
| Minimum .... | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 40 | 39 | 40 | 39 | 38 | 38 | 40 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 39 | 40 | 40 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 43 | 43 | 41 | 42 | 41 |
| Minimum .... | 40 | 40 | 40 | 38 | 38 | 39 | 36 | 36 | 37 | 38 | 40 | 41 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | 43 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 44 | 44 | 42 | 43 | 43 | 43 | 42 | 44 | 43 | -- | 43 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 44 | 42 | 44 | 44 | 44 | 44 | 45 | 45 | 43 | 42 | 42 | 43 | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 47 | 47 | 44 | 45 | 46 | 47 | 45 | 44 | 45 |
| Minimum .... | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 43 | 43 | 43 | 42 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 43 | 44 | 44 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 49 | 50 | 48 | 48 | 46 | 48 | 46 | 46 | 48 | 46 | 48 | 47 | 47 | 46 | 47 | 48 | 46 | -- | 47 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | 44 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 47 | 47 | 47 | 48 | 52 | 52 | 53 | 49 | 50 | 52 | 54 | 49 | 52 | 50 | 51 | 51 | 51 | 53 | 54 | 54 | 52 | 50 | 52 | 52 | 54 | 55 | 55 | 55 | 51 | 51 |
| Minimum .... | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 48 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 52 | 54 | 55 | 54 | 53 | 51 | 52 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 52 | 54 | 50 | 50 | 53 | 51 | 50 | 50 | 53 | 53 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 54 | 54 | 53 | 51 | 52 | 53 | 53 | 51 | 50 | 51 | 52 | 51 | 50 | 49 | 49 | 50 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | 52 | 52 | 52 | 51 | -- | 51 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | -- | 50 |

SKOKOMISH RIVER BASIN--Continued

12-0615. SKOKOMISH RIVER NEAR POTLATCH, WASH.

LOCATION (revised).--Lat 47°18'35", long 123°10'30", temperature recorder 0.6 mile upstream from gaging station, on upstream side of right pier of bridge on U.S. Highway 101, 2.8 miles downstream from confluence of North and South Forks, 4.7 miles southwest of Potlatch, Mason County, and 5.5 miles upstream from mouth.
DRAINAGE AREA.--227 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1960 to September 1961.
Water temperatures: May 1955 to September 1962, October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 59°F July 8, 9, 12, 29; minimum, 37°F Dec. 27, Jan. 6.
EXTREMES, 1955-62, 1963-66.--Water temperatures: Maximum, 69°F July 13, 1961; minimum (1955-62, 1964-66), 35°F Jan. 1, 2, 1965.
REMARKS.--Thermograpb bulb buried in streambed Jan. 14-28. Temperatures for perion Aug. 19 to Sept. 8 are well temperatures adjusted to spot water temperatures taken in the river. Thermograph removed temporarily and no record obtained Sept. 8-20.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. 7, 1966. | 2370 | 11 | | | | 6.4 | 1.6 | 1.7 | 0.1 | | 29 | 0 | 1.0 | 1.2 | 0.0 | 0.2 | | 41 | 22 | 0 | | 56 | 7.1 | 5 | 11.3 | 91 |
| Aug. 1..... | 216 | 12 | | | | 9.0 | 2.3 | 2.3 | .2 | | 40 | 0 | 1.6 | 1.8 | .1 | .3 | | 50 | 32 | 0 | | 74 | 7.0 | 0 | 11.0 | 91 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 0925 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 |
| Aug. 1..... | 1055 | .01 | .02 | .02 | .01 | .00 | .04 |

SKOKOMISH RIVER BASIN--Continued

12-0615. SKOKOMISH RIVER NEAR POTLATCH, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 50 | 49 | 50 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 51 | 51 | 50 | 49 | 50 | 49 | 48 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 |
| Minimum .... | 48 | 48 | 48 | 48 | 48 | 50 | 49 | 50 | 50 | 48 | 49 | 50 | 50 | 50 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 49 | 48 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 46 | 46 | 46 | 45 | 45 | 46 | 46 | 46 | -- | 48 |
| Minimum .... | 50 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 45 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 42 | 43 | 42 | 43 | 44 | 44 | 44 | 43 | 43 | 42 | 43 | 43 | 41 | 40 | 41 | 41 | 42 | 44 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 45 | 44 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 43 | 43 | 40 | 41 | 42 | 41 | 37 | 40 | 40 | 40 | 40 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 41 | 41 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 43 | 43 | -- |
| Minimum .... | 39 | 40 | 40 | 40 | 40 | 37 | 40 | 42 | 42 | 42 | 42 | 41 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 43 | 43 | 43 | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 44 | 43 | 44 | 45 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | -- | -- | -- | 44 |
| Minimum .... | 43 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 43 | 42 | 42 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 42 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 42 | 43 | 42 | 41 | 42 | 42 | 41 | 41 | 41 | 43 | 43 | 45 | 46 | 46 | 46 | 45 | 46 | 45 | 44 | 45 | 43 |
| Minimum .... | 41 | 42 | 42 | 41 | 41 | 43 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 44 | 42 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 46 | 46 | 46 | 47 | 46 | 45 | 47 | 45 | 44 | 45 | 44 | 45 | 47 | 49 | 48 | 48 | 49 | 50 | 48 | 49 | 48 | 47 | 49 | 50 | 48 | 49 | 49 | 51 | -- | 47 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 43 | 42 | 42 | 42 | 44 | 45 | 45 | 44 | 43 | 43 | 45 | 45 | 46 | 46 | 46 | 46 | 44 | 45 | 46 | 46 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 52 | 52 | 51 | 50 | 49 | 51 | 51 | 52 | 49 | 52 | 52 | 51 | 49 | 48 | 51 | 52 | 53 | 53 | 54 | 52 | 50 | 53 | 54 | 56 | 52 | 54 | 54 | 55 | 53 | 53 | 52 |
| Minimum .... | 45 | 46 | 46 | 45 | 45 | 46 | 46 | 46 | 47 | 47 | 46 | 48 | 47 | 46 | 47 | 45 | 47 | 47 | 48 | 49 | 48 | 46 | 47 | 48 | 50 | 49 | 48 | 48 | 49 | 50 | 48 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 50 | 52 | 49 | 54 | 55 | 52 | 53 | 55 | 55 | 54 | 52 | 53 | 57 | 58 | 57 | 57 | 56 | 56 | 54 | 53 | 55 | 52 | 55 | 54 | 54 | 52 | 54 | 53 | 53 | -- | 54 |
| Minimum .... | 48 | 49 | 48 | 48 | 47 | 49 | 50 | 50 | 50 | 50 | 50 | 48 | 49 | 51 | 51 | 53 | 52 | 51 | 51 | 50 | 50 | 49 | 51 | 49 | 50 | 51 | 51 | 50 | 49 | 49 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 51 | 55 | 53 | 55 | 58 | 59 | 59 | 58 | 58 | 59 | 58 | 54 | 54 | 55 | 58 | 57 | 56 | 56 | 57 | 57 | 57 | 56 | 56 | 57 | 58 | 58 | 59 | 58 | 58 | 56 |
| Minimum .... | 50 | 50 | 50 | 51 | 51 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 51 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 58 | 55 | 57 | 57 | 57 | 54 | 55 | 56 | 56 | 56 | 57 | 55 | 57 | 55 | -- | -- | 53 | 53 | 52 | 51 | 51 | 50 | 51 | 51 | 52 | 51 | 51 | 50 | 50 | 54 |
| Minimum .... | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | -- | -- | 53 | 51 | 51 | 51 | 50 | 50 | 50 | 51 | 50 | 49 | 50 | 50 | 49 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 50 | 50 | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 53 | 53 | 53 | 52 | 51 | 52 | 53 | 52 | 52 | 52 | -- | -- |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 50 | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | -- | -- |

## CHICO CREEK BASIN

### 12-0720. CHICO CREEK NEAR BREMERTON, WASH.

LOCATION.--Lat 47°35'30", long 122°42'30", at gaging station at State Highway 3, 0.5 mile downstream from Dickerson Creek, and 2.5 miles northwest of Bremerton, Kitsap County.
DRAINAGE AREA.--15.3 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1964 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965. | 3.9 | 13 | | | | 8.4 | 3.4 | 3.4 | 0.6 | | 43 | 0 | 2.6 | 2.5 | 0.1 | 0.6 | | 56 | 35 | 0 | | 84 | 7.1 | 5 | 10.1 | 2400 |
| Nov. 19..... | 21 | 12 | | | | 8.8 | 3.2 | 3.3 | .6 | | 40 | 0 | 3.0 | 2.5 | .1 | 2.7 | | 56 | 35 | 2 | | 85 | 6.9 | 20 | -- | -- |
| Dec. 20..... | 16 | 12 | | | | 7.2 | 3.4 | 3.2 | .4 | | 36 | 0 | 3.4 | 2.2 | .1 | 2.1 | | 57 | 32 | 2 | | 80 | 6.9 | 5 | -- | -- |
| Jan. 11, 1966 | 194 | 8.4 | | | | 5.6 | 1.5 | 2.0 | .2 | | 22 | 0 | 3.4 | 1.5 | .1 | 1.3 | | 36 | 20 | 2 | | 53 | 6.9 | 15 | 12.7 | 430 |
| Feb. 3..... | 39 | 9.6 | | | | 7.2 | 1.7 | 3.4 | .4 | | 32 | 0 | 2.8 | 1.5 | .1 | .8 | | 45 | 25 | 0 | | 62 | 7.3 | 15 | -- | -- |
| Mar. 18..... | 130 | 8.0 | | | | 5.2 | 1.7 | 2.0 | .3 | | 24 | 0 | 3.2 | .5 | .1 | .7 | | 36 | 20 | 0 | | 49 | 7.4 | 10 | -- | -- |
| Apr. 18..... | 18 | 11 | | | | 6.3 | 2.2 | 2.7 | .4 | | 30 | 0 | 3.2 | 1.8 | .1 | .5 | | 49 | 24 | 0 | | 68 | 7.0 | 10 | 10.6 | 430 |
| May 19..... | 7.8 | 13 | | | | 7.2 | 2.8 | 3.0 | .3 | | 37 | 0 | 2.8 | 1.5 | .1 | .4 | | 49 | 30 | 0 | | 72 | 7.3 | 5 | -- | -- |
| June 10..... | 4.6 | 13 | | | | 8.0 | 2.5 | 3.1 | .3 | | 40 | 0 | 3.0 | 2.0 | .1 | .7 | | A 53 | 30 | 0 | | 76 | 7.2 | 5 | -- | -- |
| July 11..... | 3.3 | 13 | | | | 8.4 | 3.0 | 3.3 | .4 | | 43 | 0 | 2.8 | 2.0 | .1 | .6 | | 55 | 34 | 0 | | 82 | 7.1 | 0 | 9.9 | 2400 |
| Aug. 29..... | .5 | 14 | | | | 9.2 | 3.5 | 3.3 | .3 | | 46 | 0 | 2.8 | 2.0 | .1 | .6 | | 62 | 39 | 0 | | 87 | 7.0 | 5 | -- | -- |
| Sept. 30..... | .5 | 15 | | | | 9.5 | 3.5 | 3.4 | .8 | | 50 | 0 | 2.4 | 3.0 | .1 | .8 | | 64 | 38 | 0 | | 91 | 7.5 | 5 | -- | -- |

A Calculated from determined constituents.

GOLDSBOROUGH CREEK BASIN

12-0770. GOLDSBOROUGH CREEK AT SHELTON, WASH.

LOCATION.--Lat 47°12'30", long 123°06'00", at bridge on U.S. Highway 101 in Shelton, Mason County, and 0.3 mile upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: November 1964 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | g. med: Unfiltered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | | 16 | | | | 18 | 8.1 | 4.1 | 0.6 | | 86 | 0 | 7.8 | 3.5 | 0.2 | 0.6 | | 110 | 78 | 8 | | 165 | 7.3 | 40 | 12.0 | 4600 |
| Nov. 2..... | | 18 | | | | 21 | 8.3 | 4.1 | .6 | | 98 | 0 | 7.0 | 4.0 | .1 | .4 | | 121 | 87 | 6 | | 183 | 7.5 | 50 | 9.7 | 4600 |
| Dec. 6..... | | 12 | | | | 6.8 | 2.9 | 2.8 | .4 | | 32 | 0 | 2.4 | 2.5 | .1 | .8 | | 56 | 29 | 3 | | 70 | 6.9 | 40 | 10.7 | -- |
| Jan. 11, 1966 | | 9.9 | | | | 5.6 | 2.4 | 2.4 | .2 | | 26 | 0 | 2.6 | 3.0 | .1 | 1.1 | | 43 | 24 | 2 | | 60 | 7.1 | 25 | 12.2 | 91 |
| Feb. 7..... | | 13 | | | | 9.6 | 4.0 | 2.7 | .2 | | 47 | 0 | 3.2 | 2.5 | .1 | .4 | | 67 | 40 | 2 | | 92 | 7.1 | 35 | 10.7 | 1500 |
| Mar. 9..... | | 8.2 | | | | 4.8 | 1.8 | 2.0 | .4 | | 21 | 0 | 2.8 | 1.5 | .1 | .7 | | 40 | 20 | 2 | | 49 | 6.8 | 25 | 11.2 | 230 |
| Apr. 18..... | | 14 | | | | 16 | 5.7 | 3.2 | .4 | | 77 | 0 | 4.6 | 1.5 | .1 | .5 | | 85 | 63 | 0 | | 136 | 7.4 | 20 | 10.7 | 91 |
| May 4..... | | 15 | | | | 19 | 7.0 | 3.6 | .4 | | 87 | 0 | 5.8 | 2.2 | .1 | .5 | | 96 | 76 | 5 | | 163 | 7.2 | 30 | 10.1 | 36 |
| June 7..... | | 16 | | | | 23 | 9.2 | 4.1 | .3 | | 108 | 0 | 7.6 | 3.5 | .1 | .6 | | 128 | 96 | 7 | | 189 | 7.3 | 50 | 8.8 | 91 |
| July 11..... | | 16 | | | | 23 | 9.6 | 4.2 | .4 | | 114 | 0 | 8.2 | 3.2 | .1 | .6 | | 132 | 97 | 4 | | 199 | 7.4 | 50 | 10.1 | 2400 |
| Aug. 1..... | | 17 | | | | 25 | 11 | 4.3 | .5 | | 124 | 0 | 8.8 | 3.0 | .1 | .4 | | 142 | 108 | 6 | | 217 | 7.2 | 50 | 10.5 | 430 |
| Sept. 29..... | | 17 | | | | 32 | 14 | 4.7 | .7 | | 150 | 0 | 11 | 5.5 | .1 | .9 | | 178 | 136 | 4 | | 255 | 7.5 | 90 | 8.5 | 91 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Aug. 1, 1966.... | 1020 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.02 |

## NISQUALLY RIVER BASIN

### 12-0825. NISQUALLY RIVER NEAR NATIONAL, WASH.

LOCATION.--Lat 46°45'10", long 122°05'00", temperature recorder at gaging station 100 feet downstream from railroad bridge, 1 mile west of National, Pierce County, 2.5 miles west of Ashford, and 3 miles upstream from Mineral Creek.
DRAINAGE AREA.--133 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 61°F July 27-29; minimum, 36°F Jan. 24, Mar. 2, 4.
EXTREMES, 1951-66.--Water temperatures: Maximum, 65°F July 13, 1961; minimum (1951-63, 1965-66), freezing point on many days during winter months.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 50 | 49 | 48 | 48 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 46 | 44 | 45 | 44 | 44 | 48 | 48 | 49 | 48 | 49 | 49 | 49 | 48 | 47 | 48 | 48 | 48 | 48 |
| Minimum .... | 47 | 47 | 47 | 48 | 47 | 47 | 44 | 45 | 48 | 44 | 45 | 47 | 47 | 46 | 44 | 41 | 43 | 43 | 42 | 44 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 46 | 44 | 47 | 46 | 45 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 47 | 46 | 46 | 47 | 46 | 48 | 48 | 46 | 44 | 45 | 45 | 46 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 43 | -- | 45 |
| Minimum .... | 45 | 46 | 46 | 45 | 45 | 44 | 46 | 46 | 44 | 43 | 44 | 44 | 44 | 45 | 46 | 45 | 45 | 45 | 46 | 45 | 45 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 45 | 45 | 45 | 45 | 44 | 43 | 43 | 42 | 42 | 41 | 41 | 40 | 39 | 39 | 41 | 41 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 41 |
| Minimum .... | 43 | 43 | 43 | 44 | 44 | 45 | 44 | 43 | 42 | 42 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 39 | 38 | 37 | 37 | 37 | 38 | 37 | 38 | 38 | 38 | 37 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 37 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 37 | 38 | 38 | 38 | 37 | 38 | 38 | 40 | 40 | 41 | 40 | 40 | 39 |
| Minimum .... | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 37 | 37 | 37 | 37 | 37 | 36 | 37 | 37 | 38 | 39 | 40 | 40 | 39 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 38 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 41 | 42 | 41 | 44 | 44 | 44 | 43 | 43 | 41 | 40 | 40 | 38 | -- | -- | -- | 40 |
| Minimum .... | 38 | 38 | 38 | 39 | 39 | 40 | 38 | 38 | 37 | 37 | 38 | 37 | 38 | 38 | 37 | 39 | 39 | 39 | 39 | 40 | 39 | 41 | 40 | 38 | 40 | 40 | 38 | 37 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 39 | 41 | 37 | 43 | 40 | 41 | 40 | 40 | 41 | 43 | 43 | 42 | 41 | 41 | 40 | 42 | 41 | 40 | 39 | 40 | 43 | 46 | 47 | 49 | 49 | 49 | 49 | 49 | 44 | 48 | 43 |
| Minimum .... | 37 | 36 | 37 | 36 | 37 | 39 | 38 | 40 | 40 | 39 | 38 | 41 | 41 | 41 | 40 | 39 | 39 | 40 | 38 | 37 | 37 | 38 | 39 | 39 | 39 | 40 | 40 | 41 | 41 | 42 | 42 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 47 | 47 | 49 | 50 | 50 | 49 | 47 | 44 | 43 | 43 | 42 | 45 | 45 | 46 | 49 | 46 | 45 | 45 | 41 | 44 | 42 | 49 | 48 | 44 | 43 | 48 | 46 | 49 | 47 | -- | 46 |
| Minimum .... | 42 | 41 | 40 | 41 | 41 | 41 | 41 | 42 | 43 | 42 | 41 | 42 | 41 | 42 | 42 | 42 | 41 | 40 | 40 | 39 | 39 | 41 | 41 | 41 | 40 | 38 | 39 | 40 | 40 | 41 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 52 | 51 | 50 | 44 | 49 | 50 | 47 | 43 | 48 | 47 | 43 | 42 | 41 | 43 | 50 | 53 | 53 | 51 | 47 | 43 | 51 | 54 | 55 | 49 | 48 | 50 | 51 | 45 | 47 | 48 |
| Minimum .... | 39 | 40 | 40 | 41 | 41 | 42 | 40 | 41 | 42 | 41 | 41 | 42 | 41 | 39 | 40 | 40 | 39 | 40 | 42 | 43 | 42 | 40 | 39 | 42 | 43 | 44 | 40 | 39 | 40 | 41 | 41 | 41 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 43 | 44 | 56 | 54 | 50 | 52 | 52 | 47 | 46 | 50 | 46 | 56 | 57 | 54 | 50 | 54 | 53 | 50 | 49 | 54 | 48 | 49 | 57 | 57 | 52 | 53 | 51 | 53 | -- | 51 |
| Minimum .... | 40 | 42 | 42 | 42 | 43 | 44 | 45 | 43 | 44 | 44 | 43 | 43 | 44 | 44 | 44 | 46 | 45 | 46 | 47 | 44 | 45 | 44 | 45 | 45 | 44 | 47 | 48 | 47 | 43 | 46 | -- | 44 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 47 | 47 | 57 | 55 | 53 | 57 | 59 | 59 | 57 | 56 | 56 | 57 | 55 | 56 | 57 | 59 | 57 | 56 | 57 | 59 | 59 | 58 | 53 | 55 | 59 | 61 | 61 | 61 | 59 | 58 | 56 |
| Minimum .... | 47 | 46 | 46 | 46 | 47 | 48 | 48 | 48 | 47 | 48 | 48 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 45 | 46 | 46 | 49 | 46 | 45 | 46 | 46 | 47 | 47 | 48 | 47 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 57 | 57 | 56 | 57 | 57 | 57 | 56 | 55 | 54 | 56 | 57 | 55 | 58 | 59 | 55 | 58 | 58 | 59 | 59 | 59 | -- | 56 | 57 | 51 | 49 | 51 | 55 | 50 | 54 | 56 | 56 |
| Minimum .... | 48 | 49 | 50 | 52 | 52 | 53 | 52 | 52 | 53 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 48 | 48 | 46 | 47 | 46 | -- | 47 | 47 | 49 | 48 | 48 | 45 | 46 | 48 | 47 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 55 | 57 | 58 | 59 | 57 | 57 | 58 | 58 | 55 | 54 | 57 | 57 | 55 | 52 | 53 | 53 | 54 | 55 | 56 | 58 | 57 | 54 | 53 | 54 | 54 | 57 | 56 | 56 | 56 | -- | 56 |
| Minimum .... | 48 | 48 | 48 | 46 | 49 | 49 | 51 | 51 | 51 | 51 | 51 | 49 | 49 | 50 | 48 | 50 | 51 | 51 | 46 | 47 | 48 | 49 | 49 | 51 | 53 | 54 | 54 | 53 | 52 | 51 | -- | 50 |

NISQUALLY RIVER BASIN--Continued

12-0865. NISQUALLY RIVER AT LA GRANDE, WASH.

LOCATION.--Lat 46°50'30", long 122°19'35", temperature recorder at gaging station 0.5 mile downstream from city of Tacoma powerplant, 0.5 mile northwest of La Grande, Pierce County, and 0.8 mile upstream from Mashel River.
DRAINAGE AREA.--292 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 55°F on many days during October and September.
REMARKS.--Recorder not functioning properly Dec. 20. Bulb out of water Jan. 19 to Feb. 7. Recorder not operating Feb. 22 to Mar. 2, Apr. 8-14. Thermograph pen not functioning Apr. 15-21. Temperature ranges not determined.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 54 |
| Minimum .... | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 55 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 54 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 51 | 53 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 47 | 46 | 46 | 46 | -- | 51 |
| Minimum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 47 | 46 | 46 | 46 | 46 | -- | 51 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | -- | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 43 |
| Minimum .... | 46 | 46 | 45 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | -- | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 39 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 38 | 38 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 37 | 38 | 38 | 37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 |
| Minimum .... | -- | -- | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | -- | -- |
| Minimum .... | 40 | 40 | 40 | 39 | 39 | 39 | 39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 43 | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 |
| Minimum .... | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 43 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | -- | 46 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 47 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 |
| Minimum .... | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | -- | 53 |
| Minimum .... | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | -- | 53 |

## CHAMBERS CREEK BASIN

### 12-0915. CHAMBERS CREEK BELOW LEACH CREEK, NEAR STEILACOOM, WASH.

LOCATION.--Lat 47°11'35", long 122°34'25", at Chambers Creek Road bridge, 0.9 mile upstream from mouth, 1.5 miles northeast of Steilacoom, Pierce County.
DRAINAGE AREA.--104 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965. | | 22 | | | | 12 | 5.2 | 5.8 | 1.6 | | 51 | 0 | 12 | 4.5 | 0.1 | 4.8 | | A 93 | 51 | 9 | | 138 | 7.0 | 10 | 8.9 | 11000 |
| Nov. 3..... | | 17 | | | | 12 | 4.9 | 6.2 | 1.4 | | 55 | 0 | 9.8 | 4.5 | .1 | 2.8 | | A 86 | 50 | 5 | | 131 | 7.2 | 5 | 8.9 | 150 |
| Dec. 14..... | | 20 | | | | 12 | 5.3 | 5.7 | 1.5 | | 51 | 0 | 12 | 5.0 | .2 | 4.1 | | A 91 | 52 | 10 | | 136 | 7.0 | 5 | 11.5 | 930 |
| Jan. 11, 1966 | | 17 | | | | 10 | 5.0 | 5.6 | 1.2 | | 45 | 0 | 10 | 4.5 | .2 | 4.5 | | 82 | 46 | 8 | | 123 | 7.0 | 5 | 11.4 | 210 |
| Feb. 2..... | | 17 | | | | 11 | 4.6 | 5.5 | 1.1 | | 46 | 0 | 11 | 5.0 | .1 | 4.8 | | 86 | 46 | 9 | | 126 | 7.2 | 5 | 11.6 | 230 |
| Mar. 15..... | | 14 | | | | 10 | 5.0 | 5.3 | 1.3 | | 46 | 0 | 10 | 4.8 | .1 | 4.3 | | 77 | 46 | 8 | | 122 | 7.1 | 5 | 10.3 | 36 |
| Apr. 14..... | | 13 | | | | 12 | 4.3 | 5.6 | 1.1 | | 50 | 0 | 9.6 | 4.2 | .1 | 4.4 | | 80 | 48 | 6 | | 126 | 7.1 | 10 | 10.6 | 36 |
| May 27..... | | 12 | | | | 11 | 5.2 | 5.8 | 1.1 | | 54 | 0 | 9.2 | 5.0 | .1 | 4.1 | | 80 | 49 | 4 | | 127 | 7.0 | 5 | 10.3 | 2400 |
| June 13..... | | 13 | | | | 12 | 5.1 | 5.9 | 1.2 | | 54 | 0 | 9.6 | 4.5 | .1 | 3.8 | | 84 | 51 | 6 | | 131 | 7.3 | 5 | 9.4 | 430 |
| July 11..... | | 13 | | | | 12 | 5.1 | 5.9 | 1.3 | | 56 | 0 | 9.2 | 5.0 | .1 | 3.9 | | 83 | 51 | 5 | | 132 | 7.6 | 0 | 9.7 | 230 |
| Aug. 15..... | | 21 | | | | 12 | 6.2 | 6.2 | 1.5 | | 57 | 0 | 11 | 6.0 | .1 | 5.0 | | A 97 | 56 | 9 | | 132 | 7.0 | 0 | 9.9 | 36 |
| Sept. 27..... | | 21 | | | | 12 | 6.1 | 6.0 | 1.4 | | 57 | 0 | 11 | 5.5 | .1 | 4.6 | | 95 | 55 | 9 | | 140 | 7.8 | 5 | 9.6 | 11000 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 11, 1966... | 1215 | 0.00 | 0.00 | 0.03 | 0.05 | 0.02 | 0.04 |
| Sept. 27..... | | .00 | .00 | .01 | .00 | | |

PUYALLUP RIVER BASIN

12-0966. WHITE RIVER NEAR GREENWATER, WASH.

LOCATION.--Lat 46°53'50", long 121°31'40", temperature recorder at gaging station at Yakima Park road crossing, 1 mile upstream from Fryingpan Creek, and 18.5 miles south of Greenwater, Pierce County.
DRAINAGE AREA.--16.2 square miles.
RECORDS AVAILABLE.--Water temperatures: December 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 47°F June 5, July 4; minimum, freezing point on several days during December, and Mar. 21.
EXTREMES, 1964-66.--Water temperatures: Maximum, 48°F July 14, 1965; minimum, freezing point on many days during winter months.
REMARKS.--Recorder not operating properly May 18, 19; temperature range not determined.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 41 | 38 | 39 | 41 | 40 | 40 | 38 | 39 | 40 | 37 | 39 | 37 | 36 | 36 | 38 | 37 | 37 | 41 | 39 | 41 | 40 | 41 | 40 | 39 | 40 | 38 | 40 | 38 | 39 | 39 |
| Minimum .... | 37 | 37 | 36 | 36 | 36 | 37 | 35 | 36 | 35 | 35 | 35 | 35 | 35 | 34 | 33 | 33 | 34 | 34 | 34 | 36 | 35 | 37 | 37 | 37 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 39 | 38 | 37 | 38 | 38 | 38 | 37 | 37 | 37 | 36 | 39 | 39 | 39 | 39 | 39 | 39 | 37 | 37 | 37 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 35 | -- | 37 |
| Minimum .... | 36 | 36 | 36 | 35 | 36 | 35 | 36 | 36 | 34 | 34 | 35 | 36 | 36 | 38 | 38 | 37 | 38 | 37 | 36 | 36 | 36 | 34 | 34 | 34 | 35 | 34 | 34 | 33 | 34 | 34 | -- | 35 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 35 | 34 | 35 | 34 | 34 | 33 | 32 | 32 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 32 | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 34 | 34 |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 34 | 34 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 34 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 33 | 33 | 33 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 33 | 34 | 34 | 34 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 |
| Minimum .... | 33 | 33 | 33 | 34 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 34 | 34 | 34 | 34 | 34 | 34 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 36 | 36 | 36 | 35 | 36 | 36 | 35 | 34 | -- | -- | -- | 35 |
| Minimum .... | 33 | 34 | 34 | 34 | 35 | 34 | 34 | 34 | 33 | 33 | 34 | 33 | 34 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 34 | 34 | 35 | 35 | 34 | 34 | -- | -- | -- | 34 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 34 | 35 | 35 | 36 | 35 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 36 | 35 | 34 | 34 | 34 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 36 | 37 | 36 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 34 | 34 | 33 | 33 | 33 | 33 | 32 | 33 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 35 | 34 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 37 | 36 | 36 | 36 | 36 | 38 | 37 | 38 | 39 | 37 | 37 | 38 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 39 | 40 | 39 | -- | 38 |
| Minimum .... | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 36 | 36 | 35 | 35 | 34 | 34 | 35 | 35 | 36 | 36 | 35 | 34 | 34 | 35 | 36 | 36 | 37 | -- | 35 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 39 | 39 | 38 | 36 | 39 | 40 | 40 | 38 | 40 | 41 | 39 | 38 | 38 | 40 | 43 | -- | -- | 42 | 37 | 42 | 43 | 43 | 43 | 39 | 40 | 42 | 41 | 40 | 40 | 40 |
| Minimum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 36 | 36 | 36 | 35 | 35 | 35 | 36 | 35 | 35 | -- | -- | 36 | 34 | 34 | 35 | 35 | 36 | 34 | 34 | 34 | 34 | 36 | 35 | 35 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 38 | 41 | 47 | 45 | 43 | 41 | 42 | 40 | 40 | 44 | 41 | 44 | 46 | 45 | 41 | 42 | 40 | 40 | 40 | 43 | 40 | 43 | 46 | 41 | 44 | 39 | 40 | 42 | -- | 42 |
| Minimum .... | 35 | 36 | 37 | 37 | 36 | 37 | 37 | 36 | 38 | 37 | 37 | 37 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 35 | 35 | 36 | 38 | 38 | 37 | 36 | 35 | -- | 37 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 39 | 47 | 43 | 42 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 43 | 41 | 41 | 45 | 39 | 45 | 44 | 43 | 41 | 38 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 |
| Minimum .... | 37 | 37 | 37 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 37 | 37 | 38 | 37 | 38 | 37 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 36 | 35 | 35 | 37 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 43 | 41 | 43 | 43 | 43 | 41 | 43 | 41 | 41 | 43 | 41 | 43 | 43 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 43 | 40 | 39 | 39 | 41 | 40 | 41 | 42 | 41 |
| Minimum .... | 35 | 35 | 36 | 37 | 37 | 35 | 37 | 36 | 37 | 36 | 35 | 35 | 37 | 36 | 37 | 35 | 35 | 35 | 35 | 36 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 36 | 36 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 43 | 42 | 41 | 42 | 43 | 41 | 41 | 40 | 41 | 40 | 42 | 42 | 43 | 43 | 40 | 40 | 41 | 41 | 44 | 44 | 43 | 42 | -- | 42 |
| Minimum .... | 36 | 37 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 39 | 38 | 36 | 37 | 38 | 37 | 38 | 38 | 36 | 36 | 37 | 38 | 38 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | -- | 38 |

## 12-1015. PUYALLUP RIVER AT PUYALLUP, WASH.

LOCATION.--Lat 47°12'30", long 122°19'35", temperature recorder at gaging station, 0.8 mile upstream from bridge at Clark Creek, 1 mile northwest of Puyallup, Pierce County, and 7 miles upstream from mouth.
DRAINAGE AREA.--948 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.
Water temperatures: August 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 65°F July 27-29, Aug. 3; minimum, 35°F Dec. 15.
EXTREMES, August 1965 to September 1966.--Water temperatures: Maximum, 65°F July 27-29, Aug. 3, 1966; minimum, 35°F Dec. 15, 1965.
REMARKS.--Bulb out of water Aug. 29-31, 1965. Clock stopped Sept. 12, 13, 1965; temperature range not determined.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965. | 1460 | 17 | | | | 8.4 | 2.5 | 5.0 | 1.1 | | 33 | 0 | 12 | 2.0 | 0.1 | 0.8 | | 69 | 31 | 4 | | 93 | 6.7 | 5 | 9.5 | 24000 |
| Nov. 3..... | 1210 | 15 | | | | 8.4 | 2.2 | 5.0 | 1.1 | | 35 | 0 | 9.4 | 2.2 | .2 | .3 | | 64 | 30 | 2 | | 86 | 6.8 | 5 | 9.8 | 1100 |
| Dec. 14..... | 2000 | 18 | | | | 11 | 3.1 | 5.4 | 1.8 | | 46 | 0 | 11 | 3.0 | .2 | 2.0 | | A 78 | 40 | 2 | | 112 | 6.8 | 15 | 11.8 | 11000 |
| Jan. 11, 1966 | 3430 | 14 | | | | 8.4 | 1.2 | 3.9 | .9 | | 28 | 0 | 8.2 | 2.0 | .1 | 1.4 | | 56 | 26 | 3 | | 75 | 6.8 | 15 | 12.1 | 2400 |
| Feb. 1..... | 2180 | 17 | | | | 9.6 | 2.6 | 4.9 | .9 | | 43 | 0 | 8.4 | 2.2 | .1 | .9 | | 72 | 35 | 0 | | 95 | 7.1 | 15 | 12.1 | 4600 |
| Mar. 15..... | 2980 | 14 | | | | 7.2 | 2.3 | 3.8 | 1.0 | | 34 | 0 | 6.0 | 2.0 | .1 | 1.3 | | 56 | 28 | 0 | | 77 | 7.0 | 20 | 11.1 | 1500 |
| Apr. 11..... | 5220 | 12 | | | | 4.8 | 1.7 | 2.9 | .6 | | 24 | 0 | 5.0 | 1.0 | .2 | .3 | | 44 | 19 | 0 | | 54 | 7.1 | 10 | 11.2 | 24000 |
| May 27..... | 4650 | 11 | | | | 4.8 | 1.5 | 3.0 | .5 | | 22 | 0 | 5.2 | 1.5 | .1 | .2 | | 43 | 18 | 0 | | 54 | 6.8 | 5 | 10.3 | 930 |
| June 13..... | 4550 | 11 | | | | 5.3 | 1.1 | 3.0 | .4 | | 24 | 0 | 5.2 | 1.0 | .1 | .1 | | A 39 | 18 | 0 | | 52 | 7.1 | 5 | 10.6 | 4600 |
| July 11..... | 3850 | 11 | | | | 5.3 | 1.4 | 3.0 | .7 | | 23 | 0 | 5.6 | .8 | .1 | .3 | | 39 | 19 | 0 | | 52 | 6.8 | 10 | 10.3 | 4600 |
| Aug. 15..... | 2200 | 11 | | | | 6.1 | 2.2 | 3.4 | .7 | | 24 | 0 | 8.8 | 2.0 | .1 | .2 | | A 46 | 24 | 4 | | 60 | 6.7 | 5 | 10.7 | 11000 |
| Sept. 27..... | 1510 | 14 | | | | 7.5 | 1.6 | 3.8 | 1.1 | | 31 | 0 | 8.2 | 2.8 | .1 | .2 | | 59 | 25 | 0 | | 71 | 7.1 | 10 | 10.1 | 11000 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 0905 | 0.01 | 0.01 | 0.08 | 0.05 | 0.00 | 0.01 |
| Sept. 27..... | 1705 | .00 | .00 | .02 | .01 | | .02 |

PUYALLUP RIVER BASIN--Continued

12-1015. PUYALLUP RIVER AT PUYALLUP, WASH.--Continued

Temperature (°F) of water, August to September 1965

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 63 | 64 | 64 | 64 | 64 | 61 | 59 | 61 | 60 | 59 | 60 | 60 | 61 | 61 | 60 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 55 | 59 | 59 | 59 | 59 | 55 | 55 | 56 | 58 | 56 | 56 | 56 | 56 | 56 | 53 | -- | -- | -- | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 60 | 61 | 59 | 61 | 62 | 64 | 61 | 60 | 60 | 57 | -- | -- | 57 | 55 | 54 | 54 | 55 | 55 | 57 | 57 | 56 | 58 | 58 | 57 | 55 | 55 | 54 | 55 | 58 | -- | 58 |
| Minimum .... | 57 | 57 | 56 | 56 | 56 | 52 | 54 | 52 | 55 | 52 | 53 | -- | -- | 54 | 51 | 50 | 50 | 47 | 49 | 50 | 52 | 53 | 53 | 52 | 52 | 51 | 50 | 48 | 51 | 52 | -- | 52 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 57 | 54 | 54 | 57 | 56 | 55 | 55 | 52 | 54 | 54 | 55 | 56 | 53 | 48 | 51 | 48 | 50 | 53 | 53 | 52 | 52 | 55 | 52 | 52 | 51 | 52 | 52 | 52 | 52 | 53 |
| Minimum .... | 51 | 52 | 52 | 53 | 51 | 53 | 50 | 52 | 52 | 49 | 48 | 51 | 52 | 51 | 48 | 45 | 47 | 47 | 47 | 49 | 48 | 49 | 48 | 49 | 50 | 50 | 48 | 49 | 48 | 50 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 50 | 50 | 49 | 48 | 50 | 50 | 48 | 48 | 50 | 50 | 49 | 50 | 51 | 51 | 50 | 48 | 50 | 49 | 48 | 49 | 46 | 47 | 47 | 47 | 47 | 46 | 45 | 46 | -- | 49 |
| Minimum .... | 49 | 50 | 48 | 49 | 48 | 46 | 47 | 48 | 47 | 46 | 46 | 46 | 47 | 48 | 48 | 48 | 46 | 47 | 47 | 47 | 46 | 46 | 41 | 42 | 43 | 44 | 43 | 43 | 42 | 43 | -- | 46 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 47 | 46 | 46 | 45 | 47 | 46 | 44 | 43 | 45 | 44 | 44 | 42 | 41 | 40 | 40 | 41 | 42 | 44 | 42 | 43 | 42 | 41 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 38 | 42 |
| Minimum .... | 45 | 45 | 43 | 45 | 43 | 45 | 44 | 42 | 41 | 43 | 40 | 41 | 40 | 37 | 35 | 37 | 36 | 38 | 41 | 41 | 42 | 40 | 39 | 37 | 37 | 37 | 38 | 39 | 39 | 38 | 37 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 37 | 38 | 40 | 40 | 41 | 42 | 39 | 40 | 41 | 42 | 44 | 42 | 40 | 40 | 39 | 40 | 39 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 41 | 41 | 44 | 44 | 42 | 40 |
| Minimum .... | 37 | 37 | 37 | 37 | 37 | 39 | 40 | 39 | 38 | 39 | 39 | 40 | 41 | 40 | 40 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 39 | 37 | 38 | 38 | 39 | 40 | 41 | 41 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 41 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 43 | 44 | 43 | 47 | 46 | 44 | 44 | 43 | 44 | 44 | 43 | 40 | -- | -- | -- | 43 |
| Minimum .... | 39 | 38 | 38 | 40 | 41 | 41 | 41 | 40 | 41 | 40 | 40 | 39 | 40 | 40 | 37 | 40 | 42 | 41 | 40 | 42 | 42 | 41 | 42 | 40 | 42 | 42 | 40 | 39 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 42 | 40 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 45 | 48 | 47 | 44 | 45 | 45 | 43 | 44 | 42 | 45 | 46 | 48 | 49 | 50 | 49 | 50 | 52 | 52 | 51 | 50 | 45 |
| Minimum .... | 37 | 37 | 38 | 37 | 39 | 40 | 39 | 41 | 42 | 40 | 40 | 42 | 44 | 44 | 43 | 41 | 40 | 43 | 42 | 40 | 38 | 40 | 42 | 43 | 44 | 44 | 44 | 45 | 46 | 47 | 44 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 52 | 50 | 51 | 51 | 50 | 49 | 49 | 49 | 48 | 47 | 46 | 49 | 49 | 49 | 51 | 51 | 50 | 50 | 47 | 48 | 48 | 49 | 50 | 51 | 51 | 51 | 51 | 53 | 52 | -- | 50 |
| Minimum .... | 46 | 45 | 46 | 45 | 46 | 47 | 47 | 47 | 46 | 45 | 45 | 43 | 44 | 47 | 47 | 45 | 45 | 43 | 44 | 46 | 45 | 46 | 47 | 47 | 48 | 46 | 47 | 48 | 46 | 49 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 57 | 57 | 57 | 55 | 55 | 56 | 53 | 51 | 55 | 52 | 52 | 51 | 52 | 52 | 54 | 56 | 58 | 57 | 55 | 53 | 56 | 59 | 61 | 58 | 55 | 56 | 57 | 53 | 54 | 55 |
| Minimum .... | 48 | 50 | 52 | 52 | 51 | 49 | 48 | 50 | 49 | 47 | 47 | 50 | 49 | 48 | 50 | 49 | 47 | 48 | 51 | 53 | 51 | 49 | 49 | 51 | 53 | 53 | 50 | 49 | 51 | 51 | 50 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 51 | 50 | 53 | 61 | 62 | 60 | 57 | 59 | 56 | 54 | 55 | 53 | 59 | 62 | 60 | 57 | 60 | 59 | 57 | 57 | 60 | 57 | 57 | 59 | 60 | 58 | 58 | 56 | 59 | -- | 57 |
| Minimum .... | 50 | 48 | 49 | 48 | 49 | 54 | 55 | 53 | 53 | 52 | 48 | 48 | 50 | 52 | 54 | 55 | 54 | 53 | 55 | 52 | 53 | 54 | 54 | 51 | 51 | 56 | 56 | 55 | 51 | 52 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 54 | 53 | 56 | 56 | 57 | 59 | 61 | 59 | 59 | 59 | 60 | 59 | 57 | 59 | 60 | 62 | 62 | 61 | 62 | 62 | 64 | 63 | 62 | 63 | 64 | 65 | 65 | 65 | 63 | 64 | 60 |
| Minimum .... | 53 | 52 | 50 | 51 | 53 | 52 | 53 | 55 | 55 | 56 | 54 | 53 | 55 | 55 | 54 | 55 | 55 | 56 | 57 | 55 | 56 | 59 | 58 | 59 | 55 | 56 | 57 | 60 | 60 | 58 | 59 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 65 | 63 | 64 | 64 | 64 | 62 | 63 | 60 | 62 | 63 | 62 | 62 | 62 | 60 | 61 | 62 | 62 | 64 | 64 | 62 | 60 | 60 | 58 | 58 | 59 | 60 | 61 | 61 | 62 | 62 |
| Minimum .... | 58 | 57 | 60 | 59 | 56 | 57 | 59 | 59 | 58 | 57 | 53 | 55 | 58 | 55 | 56 | 58 | 54 | 56 | 55 | 58 | 58 | 57 | 56 | 54 | 55 | 52 | 54 | 53 | 53 | 53 | 53 | 56 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 60 | 61 | 62 | 62 | 60 | 61 | 63 | 59 | 57 | 58 | 60 | 60 | 58 | 57 | 60 | 59 | 59 | 58 | 59 | 60 | 59 | 59 | 57 | 57 | 59 | 59 | 59 | 59 | 58 | -- | 59 |
| Minimum .... | 53 | 55 | 54 | 54 | 56 | 56 | 53 | 54 | 55 | 54 | 54 | 52 | 52 | 55 | 52 | 53 | 55 | 53 | 51 | 52 | 53 | 55 | 54 | 52 | 53 | 54 | 52 | 53 | 55 | 52 | -- | 54 |

## DUWAMISH RIVER BASIN

### 12-1126. BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WASH.

LOCATION.--Lat 47°18'35", long 122°10'05", at State Fish Hatchery diversion dam 1.0 mile upstream from gaging station, 1.8 miles upstream from mouth, and 3 miles east of Auburn, King County.
DRAINAGE AREA.--66.7 square miles, excluding 3.67 square miles in vicinity of Youngs Lake, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--Minor inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965. | 19 | 19 | | | | 10 | 4.6 | 5.4 | 0.7 | | 57 | 0 | 6.2 | 2.5 | 0.1 | 0.6 | | 77 | 44 | 0 | | 115 | 7.4 | 5 | 9.9 | 230 |
| Nov. 3..... | 29 | 19 | | | | 11 | 4.2 | 5.1 | 1.3 | | 58 | 0 | 6.4 | 2.5 | .1 | .9 | | 81 | 45 | 0 | | 115 | 7.2 | 10 | 10.0 | 230 |
| Dec. 16..... | 42 | 17 | | | | 10 | 3.8 | 5.0 | 1.2 | | 46 | 0 | 8.2 | 2.5 | .2 | 2.1 | | A 73 | 41 | 0 | | 108 | 7.1 | 15 | 12.2 | 110 |
| Jan. 11, 1966 | 297 | 12 | | | | 8.4 | 2.8 | 5.6 | 1.2 | | 35 | 0 | 9.6 | 2.5 | .2 | 3.2 | | 67 | 32 | 4 | | 95 | 7.3 | 20 | 11.7 | 430 |
| Feb. 1..... | 130 | 13 | | | | 8.8 | 3.4 | 5.4 | .8 | | 42 | 0 | 9.4 | 2.5 | .1 | 2.2 | | 69 | 36 | 2 | | 101 | 7.3 | 15 | 12.6 | 750 |
| Mar. 24..... | 171 | 11 | | | | 8.8 | 3.0 | 5.5 | 1.0 | | 42 | 0 | 9.6 | 2.5 | .1 | 2.0 | | 65 | 34 | 0 | | 100 | 7.3 | 15 | 11.9 | 0 |
| Apr. 11..... | 158 | 12 | | | | 8.8 | 3.3 | 5.0 | 1.0 | | 44 | 0 | 8.0 | 2.0 | .2 | 1.5 | | 67 | 36 | 0 | | 96 | 7.1 | 30 | 10.9 | 24000 |
| May 11..... | 62 | 12 | | | | 9.8 | 3.8 | 5.7 | .5 | | 49 | 0 | 8.4 | 2.6 | .1 | .8 | | 68 | 40 | 0 | | 106 | 7.1 | 5 | 9.4 | -- |
| June 13..... | 49 | 15 | | | | 10 | 3.7 | 5.5 | .7 | | 52 | 0 | 7.8 | 2.0 | .1 | .8 | | 73 | 40 | 0 | | 105 | 7.5 | 5 | 9.7 | 91 |
| July 11..... | 47 | 15 | | | | 11 | 3.8 | 5.5 | .8 | | 53 | 0 | 7.4 | 2.0 | .1 | 1.0 | | 74 | 43 | 0 | | 109 | 7.2 | 10 | 9.7 | 210 |
| Aug. 15..... | 31 | 18 | | | | 10 | 4.0 | 5.3 | .9 | | 55 | 0 | 6.8 | 2.0 | .1 | 1.0 | | 78 | 42 | 0 | | 106 | 7.0 | 5 | 10.8 | 430 |
| Sept. 27..... | 32 | 18 | | | | 11 | 4.0 | 5.3 | 1.0 | | 58 | 0 | 5.4 | 2.8 | .1 | .8 | | 80 | 44 | 0 | | 111 | 7.6 | 5 | 10.2 | 4600 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 24, 1966... | 1115 | 0.00 | 0.01 | 0.06 | 0.05 | 0.00 | 0.04 |
| Sept. 27..... | 1600 | .00 | .00 | .03 | .00 | | .00 |

DUWAMISH RIVER BASIN--Continued

12-1130. GREEN RIVER NEAR AUBURN, WASH.

LOCATION.--Lat 47°18'05", long 122°10'25", at bridge on State Highway 18, 0.1 mile upstream from Big Soos Creek, 1.8 miles east of Auburn, King County, and 2.1 miles upstream from gaging station.
DRAINAGE AREA.--399 square miles, excluding 3.67 square miles in the vicinity of Youngs Lake, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: March 1952 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F July 28, 29, Aug. 2-4.
EXTREMES, 1952-66.--Water temperatures: Maximum, 75°F July 28, 1958; minimum (1952-62, 1963-65), 33°F Feb. 16, 17, Dec. 18-21, 1964.
REMARKS.--Temperature recorder located at gaging station. Minor inflow between sampling point and gaging station except during periods of heavy local runoff. Temperature recorder not operating properly Jan. 15 to Feb. 3.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965. | 252 | 14 | | | | 10 | 2.9 | 5.4 | 0.3 | | 49 | 0 | 4.4 | 3.0 | 0.1 | 0.7 | | 64 | 37 | 0 | | 101 | 7.2 | 0 | 8.4 | 230 |
| Nov. 3..... | 310 | 13 | | | | 10 | 2.6 | 6.0 | .7 | | 46 | 0 | 4.8 | 2.8 | .1 | .7 | | 64 | 36 | 0 | | 96 | 7.0 | 5 | 9.5 | 430 |
| Dec. 14..... | 759 | 13 | | | | 7.6 | 1.8 | 3.8 | .6 | | 32 | 0 | 4.4 | 2.0 | .1 | 1.0 | | 51 | 26 | 0 | | 73 | 6.9 | 5 | 12.0 | 930 |
| Jan. 11, 1966 | 1650 | 13 | | | | 6.8 | 1.9 | 3.8 | .5 | | 30 | 0 | 5.4 | 1.8 | .1 | 1.9 | | 54 | 25 | 0 | | 70 | 7.2 | 10 | 12.2 | 930 |
| Feb. 1..... | 1100 | 13 | | | | 7.2 | 1.7 | 3.8 | .4 | | 32 | 0 | 4.8 | 2.2 | .1 | 1.0 | | 52 | 25 | 0 | | 71 | 7.1 | 5 | 12.4 | 0 |
| Mar. 16..... | 2050 | 9.6 | | | | 5.6 | 1.6 | 3.2 | .6 | | 26 | 0 | 3.8 | 1.5 | .1 | .7 | | 45 | 20 | 0 | | 59 | 6.9 | 5 | 12.1 | 230 |
| Apr. 11..... | 3400 | 11 | | | | 4.8 | .9 | 2.4 | .5 | | 21 | 0 | 2.2 | 1.0 | .1 | .4 | | A 33 | 16 | 0 | | 44 | 7.0 | 5 | 11.8 | 4600 |
| May 11..... | 2020 | 12 | | | | 4.8 | 1.2 | 2.9 | .3 | | 24 | 0 | 2.2 | 1.2 | .1 | .2 | | A 37 | 17 | 0 | | 49 | 7.1 | 0 | 10.7 | -- |
| June 13..... | 907 | 12 | | | | 6.5 | 1.5 | 3.5 | .4 | | 33 | 0 | 3.4 | 1.5 | .1 | .3 | | 48 | 22 | 0 | | 64 | 7.1 | 5 | 12.3 | -- |
| July 11..... | 1020 | 12 | | | | 6.3 | 1.6 | 3.4 | .4 | | 30 | 0 | 3.0 | 1.2 | .1 | .4 | | A 43 | 22 | 0 | | 60 | 7.1 | 10 | 9.5 | 930 |
| Aug. 15..... | 265 | 14 | | | | 10 | 2.9 | 5.1 | .5 | | 48 | 0 | 5.0 | 3.0 | .1 | .9 | | 65 | 37 | 0 | | 95 | 6.9 | 5 | 10.8 | 390 |
| Sept. 27..... | 259 | 16 | | | | 10 | 2.9 | 5.1 | 1.1 | | 49 | 0 | 5.2 | 3.5 | .1 | 1.0 | | A 69 | 37 | 0 | | 104 | 7.3 | 5 | 11.0 | 930 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966... | 1420 | 0.01 | 0.01 | 0.03 | 0.05 | 0.00 | 0.00 |
| Sept. 27..... | 1535 | .00 | .00 | .01 | .00 | .00 | .02 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 56 | 55 | 55 | 56 | 57 | 57 | 57 | 56 | 54 | 54 | 56 | 56 | 54 | 54 | 53 | 53 | 52 | 53 | 53 | 51 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 54 |
| Minimum .... | 55 | 55 | 54 | 55 | 55 | 55 | 54 | 55 | 56 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | --- | 48 |
| Minimum .... | 51 | 51 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | --- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 45 | 42 | 41 | 41 | 41 | 43 | 43 | 44 | 44 | 44 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 43 |
| Minimum .... | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 42 | 41 | 41 | 41 | 41 | 41 | 43 | 43 | 44 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 44 | 44 | 45 | 45 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | --- | --- | --- | 43 |
| Minimum .... | --- | --- | --- | 40 | 41 | 41 | 42 | 42 | 42 | 41 | 42 | 41 | 41 | 42 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 42 | --- | --- | --- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 46 | 46 | 47 | 47 | 47 | 46 | 47 | 47 | 45 | 44 |
| Minimum .... | 41 | 42 | 42 | 41 | 41 | 44 | 43 | 44 | 45 | 42 | 42 | 43 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 40 | 40 | 42 | 43 | 44 | 44 | 46 | 46 | 46 | 45 | 45 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 45 | 45 | 46 | 48 | 49 | 49 | 49 | 48 | 49 | 48 | 47 | 48 | 48 | 48 | 49 | 49 | 50 | 50 | 52 | 52 | --- | 48 |
| Minimum .... | 45 | 44 | 44 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 44 | 45 | 46 | 48 | 47 | 48 | 46 | 46 | 47 | 46 | 47 | 47 | 47 | 48 | 47 | 47 | 49 | 48 | 51 | --- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 60 | 59 | 57 | 56 | 53 | 51 | 52 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 49 | 53 | 58 | 59 | 57 | 57 | 55 | 59 | 61 | 63 | 60 | 55 | 58 | 60 | 58 | 54 | 55 |
| Minimum .... | 49 | 52 | 54 | 54 | 52 | 51 | 50 | 48 | 50 | 49 | 48 | 49 | 48 | 48 | 48 | 48 | 48 | 50 | 52 | 54 | 54 | 52 | 51 | 52 | 54 | 54 | 52 | 50 | 52 | 53 | 51 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 54 | 52 | 52 | 61 | 64 | 61 | 58 | 61 | 58 | 56 | 57 | 56 | 58 | 61 | 60 | 57 | 61 | 60 | 58 | 57 | 61 | 59 | 56 | 61 | 62 | 60 | 62 | 60 | 61 | --- | 59 |
| Minimum .... | 52 | 52 | 52 | 51 | 52 | 55 | 57 | 55 | 54 | 56 | 54 | 53 | 54 | 54 | 55 | 57 | 56 | 55 | 58 | 55 | 55 | 55 | 56 | 55 | 54 | 57 | 58 | 56 | 55 | 55 | --- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 55 | 54 | 55 | 55 | 57 | 57 | 60 | 59 | 57 | 60 | 63 | 59 | 58 | 61 | 62 | 65 | 63 | 64 | 65 | 66 | 67 | 64 | 63 | 63 | 66 | 68 | 69 | 69 | 66 | 67 | 62 |
| Minimum .... | 55 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 56 | 55 | 55 | 57 | 55 | 55 | 57 | 57 | 58 | 57 | 56 | 56 | 57 | 57 | 59 | 57 | 57 | 58 | 59 | 60 | 60 | 60 | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 69 | 69 | 69 | 67 | 67 | 67 | 67 | 66 | 65 | 64 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 62 | 62 | 62 | 60 | 60 | 62 | 62 | 60 | 62 | 65 |
| Minimum .... | 60 | 60 | 61 | 62 | 61 | 60 | 60 | 62 | 62 | 60 | 57 | 60 | 62 | 60 | 60 | 62 | 59 | 59 | 60 | 60 | 60 | 61 | 60 | 60 | 60 | 59 | 58 | 57 | 57 | 58 | 56 | 60 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 64 | 64 | 65 | 64 | 63 | 64 | 63 | 62 | 60 | 60 | 60 | 60 | 58 | 59 | 59 | 60 | 60 | 60 | 61 | 62 | 62 | 61 | 58 | 59 | 60 | 61 | 61 | 60 | --- | 61 |
| Minimum .... | 57 | 59 | 58 | 58 | 60 | 60 | 60 | 59 | 60 | 60 | 58 | 56 | 57 | 58 | 57 | 58 | 58 | 58 | 56 | 56 | 57 | 58 | 60 | 58 | 58 | 58 | 58 | 58 | 59 | 58 | --- | 58 |

DUWAMISH RIVER BASIN--Continued

12-1133.5. GREEN RIVER AT TUKWILA, WASH.

LOCATION.--Lat 47°27'55", long 122°14'50", at gaging station at State Highway 181, 0.8 mile southeast of Tukwila, King County, and 1 mile upstream from Black River.
DRAINAGE AREA.--440 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to June 1966 (discontinued).
Sediment records: October 1963 to June 1966 (discontinued).
EXTREMES, October 1965 to June 1966.--Water temperatures: Minimum, 36°F on several days during December and January.
Sediment concentrations: Maximum daily, 239 ppm Apr. 11; minimum daily, 16 ppm on many days during May and June.
Sediment loads: Maximum daily, 2,320 tons Apr. 11; minimum daily, 29 tons June 5, 6.
EXTREMES, 1963 to June 1966.--Water temperatures: Maximum (1963-65), 72°F Aug. 24, 1964; minimum, freezing point Dec. 18, 1964.
Sediment concentrations: Maximum daily, 1,000 ppm Jan. 28, 1965; minimum daily, 7 ppm Nov. 21, 1964.
Sediment loads: Maximum daily, 31,000 tons Jan. 30, 1965; minimum daily, 7 tons Oct. 3, 5-7, 1963.

Temperature (°F) of water, October 1965 to June 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 57 | 56 | 56 | 57 | 56 | 55 | 55 | 56 | 55 | 53 | 53 | 52 | 52 | 52 | 51 | 51 | 50 | 49 | 49 | 50 | 49 | 49 | 55 |
| November | 48 | 48 | 50 | 50 | 50 | 48 | 49 | 49 | 48 | 48 | 48 | — | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | — | 45 |
| December | — | 40 | 42 | 42 | 42 | 43 | 42 | 43 | 43 | 43 | 42 | 41 | 40 | 40 | 38 | 37 | 37 | 38 | 38 | 37 | 37 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 39 |
| January | 37 | 36 | 36 | 37 | 38 | 38 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 38 |
| February | 39 | 40 | 40 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | — | — | — | 40 |
| March | 40 | 41 | 39 | 39 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | — | 43 | 42 | 44 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | — | 42 |
| April | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 51 | 52 | 51 | 52 | 52 | 52 | — | 52 | 50 | 52 | — | — | 52 | 52 | — | — |
| May | 53 | — | 53 | 55 | 55 | 52 | 51 | 51 | 52 | 52 | 53 | 53 | 53 | 52 | 52 | 52 | 54 | 54 | 54 | 54 | 52 | 53 | 54 | 60 | 62 | 62 | 61 | 63 | 63 | 63 | 56 | 55 |
| June | 59 | 59 | 60 | 60 | 61 | 61 | — | 62 | — | 58 | 58 | 57 | 60 | 58 | 60 | 58 | 60 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| July | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| August | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| September | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

DUWAMISH RIVER BASIN--Continued

12-1133.5. GREEN RIVER AT TUKWILA, WASH.--Continued

Suspended sediment, period October 1965 to June 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 264 | 52 | 37 | 338 | C 45 | 41 | 542 | C 45 | 66 |
| 2 | 274 | C 52 | 38 | 323 | C 45 | 39 | 620 | C 45 | 75 |
| 3 | 276 | C 52 | 39 | 342 | C 45 | 42 | 797 | C 45 | 97 |
| 4 | 283 | C 52 | 40 | 540 | C 45 | 66 | 1200 | C 45 | 146 |
| 5 | 335 | C 52 | 47 | 872 | C 45 | 106 | 1880 | C 45 | 228 |
| 6 | 360 | C 52 | 51 | 917 | C 45 | 111 | 1510 | C 45 | 183 |
| 7 | 395 | C 52 | 55 | 815 | C 45 | 99 | 1390 | C 45 | 169 |
| 8 | 508 | C 52 | 71 | 686 | C 45 | 83 | 1550 | C 45 | 188 |
| 9 | 582 | C 52 | 82 | 590 | C 45 | 72 | 1340 | C 45 | 163 |
| 10 | 580 | C 52 | 81 | 562 | C 45 | 68 | 1210 | C 45 | 147 |
| 11 | 572 | C 52 | 80 | 565 | C 45 | 69 | 1060 | C 45 | 129 |
| 12 | 572 | C 52 | 80 | 565 | C 45 | 69 | 953 | C 45 | 116 |
| 13 | 578 | C 52 | 81 | 515 | C 45 | 63 | 872 | C 45 | 106 |
| 14 | 599 | C 52 | 84 | 488 | C 45 | 59 | 809 | C 45 | 98 |
| 15 | 620 | C 52 | 87 | 465 | C 45 | 56 | 752 | C 45 | 91 |
| 16 | 605 | C 52 | 85 | 448 | C 45 | 54 | 701 | C 45 | 85 |
| 17 | 575 | C 52 | 81 | 440 | C 45 | 53 | 662 | C 45 | 80 |
| 18 | 570 | C 52 | 80 | 440 | C 45 | 53 | 620 | C 45 | 75 |
| 19 | 632 | C 52 | 89 | 488 | C 45 | 59 | 599 | C 45 | 73 |
| 20 | 869 | C 52 | 122 | 485 | C 45 | 59 | 599 | C 45 | 73 |
| 21 | 935 | C 52 | 131 | 475 | C 45 | 58 | 695 | C 45 | 84 |
| 22 | 905 | C 52 | 127 | 662 | C 45 | 80 | 713 | C 45 | 87 |
| 23 | 869 | C 52 | 122 | 800 | C 45 | 97 | 647 | C 45 | 79 |
| 24 | 830 | C 52 | 117 | 698 | C 45 | 85 | 740 | C 45 | 90 |
| 25 | 782 | C 52 | 110 | 668 | C 45 | 81 | 728 | C 45 | 88 |
| 26 | 716 | C 52 | 101 | 653 | C 45 | 79 | 641 | C 45 | 78 |
| 27 | 650 | C 52 | 91 | 695 | C 45 | 84 | 800 | C 45 | 98 |
| 28 | 565 | C 52 | 79 | 677 | C 45 | 82 | 1350 | C 45 | 164 |
| 29 | 458 | C 52 | 64 | 608 | C 45 | 74 | 1480 | C 45 | 180 |
| 30 | 375 | C 52 | 53 | 565 | C 45 | 69 | 1150 | C 45 | 140 |
| 31 | 352 | C 52 | 49 | --- | --- | --- | 965 | C 45 | 117 |
| Total | 17486 | --- | 2454 | 17385 | --- | 2110 | 29575 | --- | 3593 |

C Composite period.

DUWAMISH RIVER BASIN--Continued

12-1133.5. GREEN RIVER AT TUKWILA, WASH.--Continued

Suspended sediment, period October 1965 to June 1966--Continued

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 860 | C 55 | 128 | 1170 | C 28 | 88 | 1310 | C 44 | 196 |
| 2 | 1060 | C 55 | 157 | 1090 | C 28 | 82 | 1200 | C 44 | 143 |
| 3 | 1070 | C 55 | 159 | 1030 | C 28 | 78 | 1160 | C 44 | 138 |
| 4 | 1020 | C 55 | 151 | 998 | C 28 | 75 | 1090 | C 44 | 130 |
| 5 | 1000 | 140 | 378 | 980 | C 28 | 74 | 1050 | C 44 | 125 |
| 6 | 1790 | 220 | 1060 | 962 | C 28 | 73 | 1040 | C 44 | 124 |
| 7 | 2930 | 120 | 755 | 962 | C 28 | 73 | 1060 | C 44 | 126 |
| 8 | 2340 | 93 | 587 | 965 | C 28 | 73 | 1100 | C 44 | 131 |
| 9 | 2340 | 67 | 423 | 956 | C 28 | 72 | 1500 | C 44 | 178 |
| 10 | 1880 | C 66 | 335 | 971 | C 28 | 73 | 2100 | 105 | 595 |
| 11 | 1760 | C 66 | 314 | 953 | C 28 | 72 | 1940 | 70 | 367 |
| 12 | 2100 | C 66 | 374 | 1110 | C 28 | 84 | 1690 | 42 | 192 |
| 13 | 2770 | C 66 | 494 | 1070 | C 28 | 81 | 1760 | 50 | 238 |
| 14 | 3520 | C 66 | 627 | 1030 | C 28 | 78 | 2340 | 75 | 474 |
| 15 | 3100 | C 66 | 552 | 1000 | C 28 | 76 | 2440 | C 40 | 264 |
| 16 | 2500 | C 66 | 445 | 944 | C 28 | 71 | 2280 | C 40 | 246 |
| 17 | 2090 | C 66 | 372 | 905 | C 28 | 68 | 1960 | C 40 | 212 |
| 18 | 1800 | C 66 | 321 | 896 | C 28 | 68 | 1750 | C 40 | 189 |
| 19 | 1630 | C 66 | 290 | 881 | C 28 | 67 | 1650 | C 40 | 178 |
| 20 | 1470 | C 25 | 99 | 896 | C 28 | 68 | 1590 | C 40 | 172 |
| 21 | 1350 | C 25 | 91 | 1050 | C 28 | 79 | 1540 | C 40 | 166 |
| 22 | 1260 | C 25 | 85 | 1110 | C 28 | 84 | 1420 | C 40 | 153 |
| 23 | 1190 | C 25 | 80 | 1260 | C 56 | 191 | 1270 | C 40 | 137 |
| 24 | 1150 | C 25 | 78 | 1280 | C 56 | 194 | 1210 | C 40 | 131 |
| 25 | 1070 | C 25 | 72 | 1230 | C 56 | 186 | 1200 | C 40 | 130 |
| 26 | 1030 | C 25 | 70 | 1180 | C 56 | 178 | 1310 | C 40 | 141 |
| 27 | 1020 | C 25 | 69 | 1200 | C 56 | 181 | 1600 | C 40 | 173 |
| 28 | 1030 | C 25 | 70 | 1460 | C 56 | 221 | 1940 | C 40 | 210 |
| 29 | 1030 | C 25 | 70 | --- | --- | --- | 2200 | C 40 | 238 |
| 30 | 1110 | C 25 | 75 | --- | --- | --- | 2680 | 69 | 499 |
| 31 | 1210 | C 25 | 82 | --- | --- | --- | 3790 | 192 | 1960 |
| Total | 50880 | --- | 8863 | 29539 | --- | 2808 | 52170 | --- | 8316 |

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3490 | 104 | 980 | 1010 | C 25 | 68 | 695 | C 16 | 30 |
| 2 | 3790 | 94 | 962 | 767 | C 25 | 52 | 773 | C 16 | 33 |
| 3 | 3400 | 90 | 826 | 920 | C 25 | 62 | 797 | C 16 | 34 |
| 4 | 2820 | 67 | 510 | 1170 | C 25 | 79 | 716 | C 16 | 31 |
| 5 | 2600 | C 49 | 344 | 2100 | 29 | 164 | 677 | C 16 | 29 |
| 6 | 2640 | C 49 | 349 | 4320 | 158 | 1840 | 668 | C 16 | 29 |
| 7 | 2840 | C 49 | 376 | 4800 | 148 | 1920 | 758 | C 16 | 33 |
| 8 | 3050 | C 49 | 403 | 4530 | 102 | 1250 | 794 | C 16 | 34 |
| 9 | 3020 | C 49 | 400 | 4270 | 180 | 2070 | 794 | C 16 | 34 |
| 10 | 3528 | 127 | 1210 | 3050 | 46 | 378 | 818 | C 16 | 35 |
| 11 | 3600 | 239 | 2320 | 2420 | C 41 | 268 | 833 | C 16 | 36 |
| 12 | 3670 | 158 | 1570 | 2000 | C 41 | 221 | 836 | C 16 | 36 |
| 13 | 2960 | C 39 | 312 | 1820 | C 41 | 202 | 827 | C 16 | 36 |
| 14 | 2520 | C 39 | 265 | 1670 | C 41 | 185 | 1190 | C 16 | 51 |
| 15 | 2330 | C 39 | 245 | 1560 | C 41 | 173 | 1220 | 52 | 171 |
| 16 | 2290 | C 39 | 241 | 1570 | C 41 | 174 | 953 | 36 | 93 |
| 17 | 2280 | C 39 | 240 | 1310 | C 41 | 145 | 896 | 28 | 68 |
| 18 | 2160 | C 39 | 227 | 947 | C 16 | 41 | 890 | C 19 | 46 |
| 19 | 1940 | C 39 | 204 | 827 | C 16 | 36 | 881 | C 19 | 45 |
| 20 | 1800 | C 39 | 190 | 776 | C 16 | 34 | 878 | C 19 | 45 |
| 21 | 1820 | C 39 | 192 | 731 | C 16 | 32 | 875 | C 19 | 45 |
| 22 | 1750 | C 39 | 184 | 719 | C 16 | 31 | 878 | C 19 | 45 |
| 23 | 1690 | C 39 | 178 | 716 | C 16 | 31 | 869 | C 19 | 45 |
| 24 | 1670 | C 39 | 176 | 713 | C 16 | 31 | 875 | C 19 | 45 |
| 25 | 1730 | C 39 | 182 | 710 | C 16 | 31 | 737 | C 19 | 38 |
| 26 | 1800 | C 39 | 190 | 713 | C 16 | 31 | 689 | C 19 | 35 |
| 27 | 1710 | C 39 | 180 | 734 | C 16 | 32 | 686 | C 19 | 35 |
| 28 | 1590 | C 39 | 167 | 716 | C 16 | 31 | 782 | C 19 | 40 |
| 29 | 1520 | C 39 | 160 | 704 | C 16 | 30 | 785 | C 19 | 40 |
| 30 | 1470 | C 39 | 155 | 701 | C 16 | 30 | 728 | C 19 | 37 |
| 31 | --- | --- | --- | 701 | C 16 | 30 | --- | --- | --- |
| Total | 79470 | --- | 13938 | 49695 | --- | 9702 | 24798 | --- | 1354 |

Total discharge for period (cfs-days)..... 385188
Total load for period (tons)..... 53138

C Composite period.

## 12-1134. DUWAMISH RIVER AT TUKWILA, WASH.

LOCATION.--Lat 47°28'58", long 122°16'00", at county bridge (Foster Street Bridge), in Tukwila, King County, 1.7 miles west of Renton, and 10 miles upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: July 1959 to September 1962.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965. | | 16 | | | | 12 | 4.5 | 14 | 1.4 | | 60 | 0 | 7.0 | 14 | 0.1 | 3.6 | | 103 | 48 | 0 | | 171 | 6.8 | 5 | 5.8 | 24000 |
| Nov. 3..... | | 17 | | | | 14 | 4.2 | 16 | 1.6 | | 65 | 0 | 7.0 | 18 | .2 | 3.5 | | 113 | 52 | 0 | | 185 | 6.9 | 5 | 7.3 | 24000 |
| Dec. 4..... | | 15 | | | | 9.2 | 2.5 | 6.9 | 1.3 | | 38 | 0 | 6.2 | 5.5 | .1 | 3.4 | | 72 | 33 | 2 | | 104 | 6.6 | 10 | 11.1 | 11000 |
| Jan. 11, 1966 | | 13 | | | | 8.0 | 2.8 | 5.8 | 1.1 | | 35 | 0 | 7.8 | 4.0 | .1 | 3.5 | | 62 | 32 | 3 | | 94 | 6.9 | 10 | 10.8 | 110000 |
| Feb. 2..... | | 14 | | | | 8.8 | 2.6 | 7.5 | 1.0 | | 42 | 0 | 6.4 | 7.0 | .1 | 2.1 | | 72 | 33 | 0 | | 107 | 7.1 | 10 | 11.3 | 2400 |
| Mar. 15..... | | 13 | | | | 6.4 | 2.2 | 5.0 | 1.0 | | 30 | 0 | 5.2 | 3.5 | .1 | 1.6 | | A 53 | 25 | 0 | | 77 | 6.7 | 10 | 9.9 | 750 |
| Apr. 11..... | | 12 | | | | 4.8 | 1.5 | 4.3 | .5 | | 24 | 0 | 3.0 | 3.2 | .1 | 1.1 | | 47 | 18 | 0 | | 59 | 6.7 | 10 | 10.8 | 24000 |
| May 10..... | | 12 | | | | 5.0 | 1.6 | 5.4 | .5 | | 26 | 0 | 3.2 | 5.5 | .1 | .8 | | 50 | 19 | 0 | | 68 | 6.9 | 5 | 10.4 | 930 |
| June 13..... | | 13 | | | | 7.9 | 2.4 | 7.6 | .8 | | 39 | 0 | 4.6 | 7.5 | .1 | 2.1 | | 69 | 30 | 0 | | 100 | 6.8 | 5 | 10.8 | -- |
| July 11..... | | 12 | | | | 7.1 | 2.0 | 6.0 | .8 | | 34 | 0 | 3.8 | 4.8 | .1 | 1.7 | | 57 | 26 | 0 | | 84 | 6.8 | 0 | 9.5 | 930 |
| Aug. 15..... | | 17 | | | | 13 | 5.0 | 16 | 1.6 | | 62 | 0 | 6.8 | 19 | .1 | 4.5 | | A 114 | 53 | 2 | | 179 | 6.7 | 5 | 8.8 | 24000 |
| Sept. 17..... | | 16 | | | | 14 | 4.3 | 14 | 1.4 | | 62 | 0 | 6.8 | 15 | .1 | 3.9 | | 106 | 52 | 2 | | 170 | 6.8 | 5 | 7.5 | 11000 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1030 | 0.01 | 0.01 | 0.07 | 0.05 | 0.00 | 0.03 |
| Sept. 17..... | 1325 | .01 | .01 | .02 | .00 | .00 | .09 |

## LAKE WASHINGTON BASIN

### 12-1175. CEDAR RIVER NEAR LANDSBURG, WASH.

LOCATION.--Lat 47°23'35", long 121°57'10", temperature recorder at gaging station, 2 miles upstream from Landsburg and intake of Seattle municipal water-supply system, 4.8 miles east of Maple Valley, King County, 5 miles downstream from Taylor Creek, and 12 miles downstream from Chester Morse Lake.
DRAINAGE AREA.--122 square miles, including Rock Creek drainage upstream from Walsh Lake diversion.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to July 1960.
Water temperatures: August 1953 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 62°F July 27; minimum, 39°F on several days during December and January.
EXTREMES, 1953-66.--Water temperatures: Maximum, 67°F July 27, 28, 1960, July 13, 1961; minimum, 36°F Jan. 30 to Feb. 2, Feb. 14-17, 1956, Jan. 23-27, 1957, Jan. 18, 19, 1960.
REMARKS.--Recorder stopped Apr. 13-18; temperature range 44°F to 47°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 49 | 49 | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 49 |
| Minimum .... | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | 47 |
| Minimum .... | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 42 | 43 | 42 | 43 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 42 | 43 |
| Minimum .... | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 39 | 40 | 41 | 39 | 39 | 39 | 40 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 41 | 43 | 41 | 42 | 41 | 43 | 42 | 43 | 44 | 44 | 44 | 44 | 42 |
| Minimum .... | 40 | 41 | 42 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 41 | 43 | 44 | 44 | 41 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 43 | 43 | 44 | 43 | 43 | 44 | 44 | 42 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 43 | 44 | 45 | 43 | 43 | -- | -- | -- | 44 |
| Minimum .... | 41 | 40 | 40 | 40 | 41 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 43 | 40 | 40 | 42 | 42 | 41 | 41 | 44 | 43 | 42 | 42 | 42 | 43 | 42 | 41 | 41 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 42 | 42 | 44 | 44 | 44 | 44 | 43 | 44 | 43 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 44 | 46 | 45 | 48 | 48 | 46 | 46 | 45 | 45 | 44 |
| Minimum .... | 41 | 41 | 40 | 40 | 40 | 44 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 42 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 49 | 50 | 47 | 48 | 46 | 46 | 47 | 46 | 45 | -- | -- | -- | -- | -- | -- | 47 | 45 | 46 | 45 | 45 | 46 | 46 | 46 | 47 | 46 | 48 | 48 | -- | 46 |
| Minimum .... | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 45 | 44 | 44 | -- | -- | -- | -- | -- | -- | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 51 | 51 | 51 | 49 | 51 | 53 | 50 | 50 | 51 | 50 | 50 | 49 | 49 | 50 | 51 | 52 | 52 | 51 | 50 | 51 | 52 | 52 | 53 | 52 | 52 | 53 | 53 | 50 | 52 | 51 |
| Minimum .... | 46 | 46 | 47 | 47 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 50 | 48 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 51 | 51 | 51 | 56 | 54 | 54 | 54 | 55 | 54 | 54 | 54 | 54 | 57 | 58 | 57 | 56 | 57 | 56 | 56 | 56 | 58 | 56 | 56 | 58 | 58 | 57 | 57 | 56 | 56 | -- | 55 |
| Minimum .... | 50 | 50 | 50 | 50 | 51 | 51 | 52 | 51 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 52 | 53 | 53 | 54 | 54 | 53 | 52 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 52 | 51 | 52 | 53 | 53 | 55 | 57 | 57 | 55 | 57 | 58 | 53 | 53 | 54 | 55 | 57 | 55 | 56 | 57 | 57 | 57 | 56 | 54 | 59 | 59 | 62 | 60 | 60 | 59 | 59 | 56 |
| Minimum .... | 52 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 52 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 52 | 52 | 53 | 55 | 54 | 53 | 54 | 52 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 59 | 55 | 57 | 58 | 58 | 59 | 59 | 54 | 57 | 57 | 55 | 57 | 57 | 56 | 57 | 57 | 57 | 57 | 57 | 55 | 59 | 59 | 54 | 54 | 56 | 60 | 58 | 55 | 59 | 57 |
| Minimum .... | 55 | 54 | 53 | 53 | 53 | 52 | 53 | 53 | 54 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 54 | 53 | 53 | 53 | 53 | 54 | 53 | 52 | 53 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 56 | 56 | 57 | 55 | 56 | 56 | 56 | 54 | 54 | 58 | 58 | 57 | 57 | 57 | 54 | 55 | 54 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | -- | 55 |
| Minimum .... | 52 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 51 | 52 | 53 | 54 | 54 | 53 | 53 | 51 | 52 | 52 | 53 | 54 | 53 | 53 | 53 | 52 | 52 | 53 | 52 | -- | 53 |

## 12-1190. CEDAR RIVER AT RENTON, WASH.

LOCATION.--Lat 47°28'10", long 122°09'30", temperature recorder at gaging station, 125 feet downstream from bridge on Mill Avenue at Renton, King County, and 1.5 miles upstream from mouth.
DRAINAGE AREA.--186 square miles, including 3.67 square miles in vicinity of Youngs Lake in Big Soos Creek basin.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1961.
Water temperatures: August 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 71°F Aug. 2, 3; minimum, 36°F Dec. 24, Feb. 1.
EXTREMES, August 1965 to September 1966.--Water temperatures: Maximum, 71°F Aug. 2, 3, 1966; minimum, 36°F Dec. 24, 1965, Feb. 1, 1966.
REMARKS.--Thermograph not operating properly Feb. 18-26; temperature range 40°F to 47°F. Bulb out of water Mar. 27 to Apr. 5; no temperature range determined.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 14, 1965 | 589 | 11 | | | | 7.2 | 1.4 | 2.6 | 0.6 | | 30 | 0 | 4.0 | 1.2 | 0.1 | 0.7 | | A 44 | 24 | 0 | | 61 | 7.0 | 5 | 11.8 | 230 |
| Mar. 16, 1966 | 1010 | 9.8 | | | | 6.4 | 1.3 | 2.7 | .4 | | 26 | 0 | 3.6 | 1.5 | .1 | .7 | | 42 | 21 | 0 | | 58 | 7.0 | 5 | 11.6 | 36 |
| June 13..... | 522 | 11 | | | | 7.9 | 1.4 | 2.4 | .3 | | 34 | 0 | 2.8 | 1.0 | .1 | .4 | | 44 | 26 | 0 | | 65 | 7.2 | 5 | 12.0 | -- |
| Sept. 17..... | 244 | 11 | | | | 10 | 2.1 | 3.0 | .6 | | 42 | 0 | 3.4 | 1.0 | .1 | .4 | | 53 | 34 | 0 | | 77 | 7.1 | 0 | 10.5 | 4600 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966... | 1335 | 0.01 | 0.01 | 0.03 | 0.05 | 0.00 | 0.02 |

Temperature (°F) of water, August to September 1965

| Month | Day 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 64 | 66 | 63 | 60 | 62 | 65 | 63 | 64 | 63 | 63 | 63 | 65 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 59 | 58 | 58 | 56 | 55 | 57 | 57 | 57 | 56 | 54 | 53 | 55 | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 59 | 63 | 61 | 62 | 62 | 63 | 61 | 61 | 62 | 58 | 58 | 56 | 57 | 57 | 58 | 57 | 58 | 58 | 59 | 58 | 59 | 61 | 60 | 59 | 55 | 58 | 56 | 56 | 58 | -- | 59 |
| Minimum .... | 57 | 57 | 55 | 53 | 55 | 54 | 53 | 55 | 55 | 53 | 55 | 55 | 54 | 54 | 54 | 52 | 50 | 50 | 51 | 51 | 53 | 54 | 54 | 52 | 52 | 53 | 53 | 50 | 52 | 53 | -- | 53 |

LAKE WASHINGTON BASIN--Continued

12-1190. CEDAR RIVER AT RENTON, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 57 | 55 | 56 | 58 | 57 | 58 | 56 | 55 | 54 | 54 | 56 | 54 | 53 | 52 | 54 | 52 | 53 | 54 | 54 | 53 | 54 | 54 | 53 | 53 | 52 | 54 | 54 | 54 | 53 | 55 |
| Minimum .... | 51 | 53 | 52 | 53 | 52 | 54 | 51 | 52 | 52 | 50 | 50 | 52 | 53 | 51 | 51 | 48 | 50 | 50 | 50 | 51 | 50 | 50 | 49 | 49 | 50 | 50 | 48 | 50 | 49 | 51 | 50 | 51 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 52 | 52 | 50 | 52 | 52 | 51 | 50 | 50 | 50 | 51 | 52 | 51 | 51 | 51 | 50 | 52 | 50 | 49 | 48 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 48 | -- | 50 |
| Minimum .... | 50 | 50 | 49 | 50 | 50 | 49 | 49 | 50 | 49 | 48 | 48 | 48 | 48 | 50 | 49 | 49 | 48 | 49 | 49 | 49 | 48 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 48 | 48 | 47 | 48 | 47 | 46 | 46 | 46 | 45 | 45 | 44 | 43 | 42 | 43 | 42 | 44 | 45 | 45 | 44 | 43 | 42 | 41 | 41 | 42 | 41 | 41 | 41 | 41 | 40 | 44 |
| Minimum .... | 45 | 46 | 46 | 47 | 46 | 47 | 46 | 44 | 43 | 44 | 42 | 43 | 42 | 40 | 39 | 41 | 39 | 41 | 43 | 44 | 43 | 41 | 38 | 36 | 39 | 40 | 38 | 40 | 40 | 40 | 39 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 44 | 44 | 43 | 42 | 42 | 43 | 41 | 40 | 42 | 42 | 42 | 41 | 42 | 42 | 44 | 46 | 46 | 45 | 44 | 43 |
| Minimum .... | 40 | 40 | 40 | 40 | 39 | 40 | 41 | 41 | 39 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 40 | 41 | 40 | 39 | 40 | 40 | 40 | 38 | 39 | 39 | 41 | 44 | 45 | 43 | 42 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 44 | 44 | 42 | 43 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 45 | 42 | -- | -- | -- | -- |
| Minimum .... | 36 | 38 | 39 | 41 | 41 | 42 | 42 | 40 | 41 | 40 | 40 | 37 | 39 | 39 | 37 | 39 | 42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | 40 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 42 | 46 | 44 | 46 | 45 | 46 | 45 | 47 | 46 | 48 | 48 | 46 | 46 | 46 | 44 | 45 | 44 | 45 | 47 | 49 | 50 | 51 | 52 | -- | -- | -- | -- | -- | 46 |
| Minimum .... | 39 | 39 | 39 | 38 | 40 | 43 | 42 | 42 | 43 | 41 | 40 | 43 | 44 | 44 | 43 | 42 | 41 | 42 | 42 | 41 | 40 | 39 | 41 | 41 | 43 | 43 | -- | -- | -- | -- | -- | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | 54 | 51 | 48 | 50 | 50 | 47 | 46 | 49 | 49 | 51 | 53 | 53 | 51 | 51 | 48 | 48 | 48 | 48 | 50 | 50 | 50 | 51 | 51 | 52 | 55 | -- | 50 |
| Minimum .... | -- | -- | -- | -- | -- | 45 | 45 | 46 | 46 | 46 | 44 | 43 | 44 | 46 | 47 | 45 | 45 | 44 | 43 | 46 | 46 | 46 | 46 | 46 | 47 | 45 | 46 | 46 | 45 | 47 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 52 | 51 | 53 | 58 | 54 | 59 | 60 | 55 | 52 | 55 | 52 | 51 | 50 | 50 | 53 | 54 | 56 | 57 | 54 | 52 | 56 | 56 | 57 | 59 | 55 | 55 | 59 | 60 | 53 | 55 | 55 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 51 | 50 | 48 | 49 | 48 | 48 | 48 | 47 | 47 | 47 | 49 | 50 | 49 | 48 | 48 | 48 | 49 | 51 | 48 | 47 | 48 | 50 | 49 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 59 | 57 | 57 | 61 | 61 | 61 | 56 | 62 | 61 | 58 | 60 | 56 | 63 | 66 | 62 | 59 | 65 | 64 | 64 | 61 | 64 | 57 | 59 | 61 | 62 | 59 | 61 | 61 | 61 | -- | 60 |
| Minimum .... | 47 | 49 | 47 | 48 | 49 | 52 | 53 | 52 | 52 | 53 | 52 | 52 | 52 | 53 | 53 | 55 | 55 | 54 | 55 | 53 | 53 | 53 | 54 | 53 | 52 | 54 | 56 | 55 | 53 | 54 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 54 | 58 | 56 | 58 | 60 | 65 | 60 | 58 | 63 | 65 | 59 | 58 | 62 | 64 | 66 | 64 | 65 | 65 | 67 | 67 | 66 | 63 | 65 | 68 | 69 | 69 | 70 | 67 | 70 | 63 |
| Minimum .... | 54 | 53 | 52 | 52 | 53 | 54 | 54 | 54 | 55 | 56 | 54 | 54 | 56 | 54 | 54 | 55 | 56 | 56 | 56 | 54 | 54 | 55 | 56 | 57 | 55 | 55 | 55 | 57 | 58 | 57 | 58 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 71 | 71 | 66 | 70 | 70 | 70 | 66 | 66 | 63 | 67 | 69 | 64 | 68 | 70 | 68 | 69 | 69 | 69 | 70 | 70 | 65 | 68 | 64 | 60 | 60 | 65 | 64 | 61 | 62 | 63 | 67 |
| Minimum .... | 57 | 57 | 58 | 60 | 58 | 57 | 57 | 60 | 57 | 58 | 54 | 57 | 60 | 58 | 58 | 59 | 56 | 57 | 57 | 57 | 57 | 59 | 58 | 58 | 58 | 57 | 57 | 55 | 53 | 56 | 53 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 62 | 65 | 66 | 66 | 63 | 63 | 64 | 63 | 60 | 57 | 62 | 62 | 58 | 59 | 60 | 58 | 60 | 59 | 60 | 61 | 62 | 60 | 57 | 58 | 58 | 59 | 61 | 61 | 59 | -- | 61 |
| Minimum .... | 53 | 57 | 56 | 55 | 56 | 57 | 56 | 56 | 58 | 57 | 56 | 52 | 53 | 54 | 54 | 55 | 56 | 55 | 52 | 52 | 53 | 54 | 56 | 54 | 55 | 55 | 54 | 53 | 55 | 53 | -- | 55 |

LAKE WASHINGTON BASIN--Continued

12-1216. ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WASH.

LOCATION.--Lat 47°33'09", long 122°02'48", at gaging station at bridge on SE 56th Street, 1.0 mile upstream from mouth, and 1.5 miles northwest of Issaquah, King County.
DRAINAGE AREA.--54.7 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1964 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965. | 35 | 19 | | | | 13 | 4.9 | 7.4 | 1.1 | | 66 | 0 | 7.0 | 3.2 | 0.1 | 3.0 | | A 91 | 53 | 0 | | 138 | 7.0 | 5 | 8.9 | 1500 |
| Nov. 30..... | 82 | 16 | | | | 9.2 | 3.7 | 5.7 | .8 | | 44 | 0 | 6.2 | 3.2 | .1 | 4.0 | | 78 | 38 | 2 | | 103 | 7.0 | 10 | -- | -- |
| Dec. 14..... | 83 | 16 | | | | 10 | 3.3 | 5.4 | 1.0 | | 43 | 0 | 8.0 | 2.8 | .1 | 4.0 | | 71 | 38 | 4 | | 105 | 6.8 | 20 | 11.2 | 24000 |
| Jan. 12, 1966 | 470 | 12 | | | | 5.6 | 2.2 | 3.5 | .5 | | 23 | 0 | 5.4 | 2.5 | .1 | 4.3 | | 53 | 23 | 4 | | 67 | 7.0 | 20 | 11.6 | 11000 |
| Feb. 15..... | 204 | 16 | | | | 7.2 | 2.8 | 4.2 | .6 | | 32 | 0 | 6.4 | 2.0 | .1 | 3.9 | | A 59 | 30 | 4 | | 83 | 7.1 | 10 | | |
| Apr. 4..... | 119 | 15 | | | | 8.8 | 2.8 | 4.5 | .7 | | 40 | 0 | 6.8 | 2.5 | .1 | 2.3 | | 67 | 34 | 0 | | 91 | 7.0 | 10 | -- | -- |
| Apr. 12..... | 255 | 13 | | | | 6.8 | 2.7 | 4.0 | .6 | | 32 | 0 | 6.4 | 1.8 | .1 | 2.6 | | 59 | 28 | 2 | | 78 | 6.9 | 20 | 11.1 | 11000 |
| June 14..... | 53 | 15 | | | | 11 | 4.0 | 6.4 | .8 | | 56 | 0 | 6.6 | 2.5 | .1 | 1.7 | | 78 | 44 | 0 | | 117 | 7.0 | 10 | -- | -- |
| July 12..... | 53 | 16 | | | | 11 | 3.8 | 6.1 | .8 | | 54 | 0 | 6.4 | 3.0 | .1 | 2.1 | | 80 | 43 | 0 | | 112 | 7.0 | 10 | 10.6 | 11000 |
| Aug. 8..... | 31 | 17 | | | | 12 | 5.1 | 7.5 | 1.0 | | 64 | 0 | 8.6 | 3.0 | .1 | 3.2 | | 90 | 51 | 0 | | 128 | 6.8 | 5 | -- | -- |
| Sept. 6..... | 25 | 18 | | | | 14 | 4.8 | 7.5 | 1.3 | | 63 | 0 | 11 | 4.0 | .1 | 3.0 | | 96 | 54 | 4 | | 140 | 7.0 | 5 | -- | -- |

A Calculated from determined constituents.

LAKE WASHINGTON BASIN--Continued

12-1252. SAMMAMISH RIVER NEAR WOODINVILLE, WASH.

LOCATION.--Lat 47°42'15", long 122°08'30", temperature recorder at gaging station, 3.5 miles upstream from Bear Creek, and 3.5 miles southeast of Woodinville, King County.
DRAINAGE AREA.--157 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 74°F July 31; minimum, 40°F Dec. 27, 28.
EXTREMES, August 1965 to September 1966.--Water temperatures: Maximum, 74°F July 31, 1966; minimum, 40°F Dec. 27, 28, 1965.
REMARKS.--Clock stopped Sept. 10-14, 1965 and Sept. 26 to Oct. 14, 1965; temperature ranges 57°F to 63°F and 54°F to 61°F, respectively. Thermograph not operating properly Oct. 15-27, 1965; temperature range not determined.

Temperature (°F) of water, August to September 1965

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 67 | 70 | 68 | 67 | 65 | 67 | 68 | 67 | 65 | 64 | 66 | 67 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 64 | 64 | 65 | 63 | 62 | 62 | 64 | 62 | 61 | 58 | 57 | 59 | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 63 | 64 | 63 | 65 | 65 | 65 | 63 | 64 | -- | -- | -- | -- | -- | 58 | 60 | 58 | 59 | 60 | 60 | 59 | 60 | 63 | 63 | 62 | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 61 | 61 | 59 | 58 | 59 | 58 | 57 | 58 | 60 | -- | -- | -- | -- | -- | 57 | 53 | 53 | 52 | 53 | 55 | 56 | 56 | 56 | 56 | 57 | -- | -- | -- | -- | -- | -- | -- |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 56 | 56 | 56 | 56 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 54 | 53 | 54 | 53 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 56 | 53 | 54 | 55 | 54 | 54 | 54 | 55 | 54 | 54 | 52 | 54 | 54 | 53 | 55 | 53 | 52 | 52 | 52 | 51 | 50 | 48 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | -- | 52 |
| Minimum .... | 54 | 53 | 52 | 52 | 53 | 52 | 52 | 53 | 53 | 52 | 52 | 51 | 51 | 53 | 53 | 53 | 51 | 51 | 52 | 51 | 50 | 48 | 45 | 46 | 46 | 46 | 46 | 47 | 46 | 47 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 50 | 49 | 50 | 49 | 49 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 45 | 44 | 46 | 47 | 46 | 46 | 44 | 44 | 42 | 43 | 43 | 42 | 41 | 42 | 42 | 42 | 46 |
| Minimum .... | 48 | 48 | 48 | 49 | 48 | 49 | 49 | 48 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 44 | 43 | 44 | 45 | 46 | 44 | 44 | 41 | 41 | 42 | 42 | 40 | 40 | 41 | 42 | 42 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 43 | 44 | 43 | 43 | 42 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 44 |
| Minimum .... | 42 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 43 | 44 | 44 | 43 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 44 | 44 | 44 | 44 | 46 | 45 | 47 | 46 | 45 | 46 | 46 | 46 | 46 | 45 | 44 | -- | -- | -- | 44 |
| Minimum .... | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 42 | 41 | 41 | 42 | 41 | 42 | 43 | 43 | 43 | 44 | 43 | 44 | 44 | 42 | 44 | 44 | 43 | 43 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 42 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 45 | 47 | 46 | 45 | 45 | 45 | 45 | 44 | 43 | 45 | 46 | 48 | 48 | 48 | 48 | 47 | 50 | 52 | 53 | 54 | 46 |
| Minimum .... | 42 | 42 | 42 | 41 | 42 | 43 | 43 | 43 | 44 | 43 | 42 | 44 | 45 | 44 | 44 | 43 | 42 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 45 | 48 | 51 | 50 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 52 | 51 | 52 | 53 | 52 | 51 | 51 | 52 | 51 | 50 | 51 | 52 | 55 | 52 | 51 | 51 | 51 | 50 | 51 | 52 | 51 | 52 | 50 | 52 | 53 | 54 | 55 | 56 | -- | 52 |
| Minimum .... | 46 | 46 | 46 | 45 | 46 | 49 | 49 | 48 | 49 | 49 | 48 | 46 | 47 | 49 | 50 | 48 | 46 | 45 | 45 | 48 | 48 | 50 | 50 | 48 | 48 | 47 | 49 | 49 | 50 | 52 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 60 | 58 | 60 | 59 | 62 | 61 | 60 | 57 | 61 | 60 | 57 | 56 | 54 | 57 | 60 | 60 | 59 | 57 | 55 | 58 | 61 | 61 | 62 | 61 | 60 | 59 | 60 | 57 | 59 | 59 |
| Minimum .... | 51 | 51 | 54 | 50 | 52 | 57 | 55 | 55 | 54 | 51 | 53 | 56 | 55 | 53 | 52 | 51 | 53 | 52 | 53 | 54 | 53 | 52 | 54 | 54 | 53 | 55 | 53 | 53 | 53 | 54 | 53 | 53 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 59 | 55 | 57 | 64 | 65 | 64 | 62 | 66 | 66 | 63 | 64 | 62 | 67 | 69 | 68 | 64 | 68 | 68 | 67 | 64 | 67 | 65 | 63 | 65 | 65 | 65 | 67 | 66 | 67 | -- | 64 |
| Minimum .... | 56 | 55 | 54 | 54 | 55 | 58 | 59 | 59 | 59 | 62 | 60 | 60 | 60 | 59 | 62 | 64 | 61 | 60 | 63 | 61 | 61 | 60 | 61 | 59 | 58 | 61 | 62 | 61 | 61 | 61 | -- | 60 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 60 | 58 | 63 | 62 | 64 | 67 | 70 | 68 | 65 | 66 | 69 | 67 | 65 | 68 | 68 | 72 | 71 | 70 | 70 | 70 | 70 | 70 | 66 | 68 | 70 | 72 | 73 | 73 | 73 | 74 | 68 |
| Minimum .... | 60 | 58 | 57 | 57 | 61 | 60 | 62 | 64 | 63 | 62 | 61 | 62 | 64 | 63 | 63 | 64 | 65 | 66 | 66 | 63 | 63 | 62 | 63 | 62 | 61 | 62 | 63 | 64 | 64 | 64 | 65 | 62 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 73 | 73 | 68 | 69 | 69 | 68 | 65 | 65 | 64 | 67 | 68 | 66 | 69 | 68 | 67 | 68 | 70 | 70 | 71 | 71 | 68 | 69 | 68 | 67 | 63 | 66 | 67 | 65 | 65 | 66 | 68 |
| Minimum .... | 62 | 62 | 62 | 64 | 61 | 60 | 59 | 60 | 61 | 60 | 57 | 59 | 62 | 60 | 61 | 61 | 59 | 62 | 62 | 61 | 62 | 63 | 62 | 63 | 63 | 62 | 61 | 61 | 59 | 60 | 58 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 65 | 67 | 68 | 68 | 67 | 65 | 66 | 66 | 65 | 61 | 62 | 62 | 61 | 61 | 61 | 61 | 63 | 62 | 63 | 64 | 64 | 64 | 61 | 61 | 62 | 63 | 65 | 63 | 64 | -- | 64 |
| Minimum .... | 58 | 61 | 60 | 60 | 61 | 62 | 60 | 60 | 61 | 61 | 59 | 57 | 58 | 58 | 58 | 58 | 59 | 59 | 57 | 57 | 58 | 59 | 60 | 59 | 59 | 59 | 58 | 59 | 60 | 59 | -- | 59 |

## SNOHOMISH RIVER BASIN

### 12-1350. WALLACE RIVER AT GOLD BAR, WASH.

LOCATION.--Lat 47°51'50", long 121°41'45", temperature recorder at gaging station 30 feet downstream from highway bridge, 0.2 mile north of Gold Bar, Snohomish County, and 1.2 miles upstream from Olney Creek.
DRAINAGE AREA.--19.0 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1955 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 65°F Aug. 3, 7, 21; minimum, 37°F on several days during December and January.
EXTREMES, 1955-66.--Water temperatures: Maximum, 70°F July 29, Aug. 8, 9, 1960, July 13, 1961; minimum, freezing point on several days during February 1956, January 1957, and Dec. 16-18, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 53 | 52 | 51 | 51 | 52 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 50 |
| Minimum .... | 51 | 51 | 50 | 52 | 51 | 51 | 50 | 51 | 50 | 49 | 49 | 50 | 49 | 49 | 47 | 46 | 46 | 46 | 46 | 47 | 47 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 43 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | -- | 45 |
| Minimum .... | 49 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 40 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 |
| Minimum .... | 42 | 42 | 42 | 41 | 41 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 38 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 39 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 40 |
| Minimum .... | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | -- | -- | -- | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 41 | 41 | 40 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 40 | 41 | 41 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 41 |
| Minimum .... | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 41 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 45 | 44 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 44 | 45 | 46 | 47 | 46 | -- | 45 |
| Minimum .... | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 45 | 45 | -- | 43 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 51 | 50 | 51 | 50 | 48 | 50 | 51 | 49 | 48 | 50 | 49 | 48 | 47 | 46 | 47 | 48 | 51 | 50 | 49 | 49 | 47 | 50 | 53 | 53 | 51 | 49 | 51 | 52 | 50 | 49 | 50 |
| Minimum .... | 45 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 47 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 48 | 48 | 47 | 46 | 47 | 49 | 50 | 49 | 48 | 48 | 49 | 49 | 49 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 50 | 49 | 48 | 53 | 54 | 51 | 52 | 53 | 52 | 49 | 49 | 49 | 53 | 56 | 54 | 53 | 54 | 53 | 52 | 52 | 54 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 54 | -- | 52 |
| Minimum .... | 49 | 49 | 48 | 48 | 48 | 50 | 50 | 50 | 51 | 49 | 48 | 48 | 49 | 49 | 50 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 52 | 52 | 51 | 50 | 50 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 51 | 52 | 52 | 52 | 53 | 57 | 57 | 56 | 55 | 57 | 56 | 55 | 55 | 56 | 58 | 58 | 57 | 56 | 58 | 59 | 59 | 58 | 55 | 58 | 60 | 61 | 62 | 61 | 61 | 56 |
| Minimum .... | 52 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 54 | 54 | 54 | 54 | 55 | 55 | 54 | 54 | 55 | 55 | 55 | 54 | 54 | 55 | 55 | 55 | 54 | 54 | 55 | 56 | 57 | 56 | 57 | 54 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 65 | 61 | 64 | 63 | 65 | 60 | 61 | 58 | 61 | 63 | 59 | 61 | 63 | 63 | 63 | 63 | 64 | 64 | 65 | 59 | 63 | 63 | 59 | 58 | 58 | 57 | 56 | 57 | 58 | 61 |
| Minimum .... | 57 | 57 | 59 | 59 | 59 | 58 | 58 | 59 | 58 | 57 | 55 | 57 | 57 | 57 | 58 | 58 | 57 | 57 | 57 | 57 | 58 | 58 | 57 | 58 | 58 | 57 | 57 | 56 | 55 | 56 | 55 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 60 | 62 | 62 | 58 | 57 | 60 | 61 | 57 | 56 | 57 | 56 | 55 | 55 | 56 | 57 | 56 | 55 | 56 | 57 | 59 | 58 | 56 | 56 | 56 | 56 | 57 | 55 | 56 | -- | 57 |
| Minimum .... | 55 | 56 | 56 | 57 | 56 | 57 | 55 | 55 | 55 | 56 | 55 | 54 | 55 | 54 | 54 | 54 | 55 | 55 | 53 | 53 | 54 | 55 | 56 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | -- | 55 |

SNOHOMISH RIVER BASIN--Continued

12-1555. SNOHOMISH RIVER AT SNOHOMISH, WASH.

LOCATION.--Lat 47°54'40", long 122°05'50", at gaging station at bridge on State Highway 9 in Snohomish, Snohomish County, and 0.8 mile downstream from Pilchuck River.
DRAINAGE AREA.--1,714 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: July 1959 to September 1961.
REMARKS.--Only discharges above 10,000 cfs are published.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965. | -- | 11 | | | | 7.2 | 1.0 | 2.7 | 0.4 | | 27 | 0 | 3.4 | 1.8 | 0.0 | 0.4 | | A 41 | 22 | 0 | | 62 | 7.0 | 10 | 9.1 | 930 |
| Nov. 3..... | -- | 6.1 | | | | 4.8 | 1.1 | 1.9 | .5 | | 20 | 0 | 2.8 | 1.5 | .1 | .5 | | 32 | 16 | 0 | | 46 | 6.8 | 5 | 10.3 | 930 |
| Dec. 14..... | -- | 6.9 | | | | 5.2 | .9 | 2.0 | .6 | | 20 | 0 | 3.4 | 1.2 | .2 | .8 | | A 31 | 17 | 0 | | 47 | 6.9 | 5 | 12.1 | 930 |
| Jan. 12, 1966 | 20000 | 6.4 | | | | 4.0 | 1.2 | 1.8 | .4 | | 16 | 0 | 3.4 | 1.2 | .1 | 1.7 | | 34 | 15 | 2 | | 41 | 6.9 | 10 | 12.0 | 930 |
| Feb. 1..... | -- | 6.5 | | | | 4.8 | .8 | 2.1 | .6 | | 17 | 0 | 3.2 | 1.0 | .1 | .5 | | 32 | 15 | 1 | | 44 | 7.0 | 5 | 12.3 | 2400 |
| Mar. 15..... | 18000 | 5.5 | | | | 3.6 | .9 | 1.6 | .5 | | 14 | 0 | 2.8 | 1.5 | .1 | .9 | | A 24 | 13 | 2 | | 36 | 6.8 | 5 | -- | -- |
| Apr. 12..... | 27500 | 4.6 | | | | 2.8 | .8 | 1.3 | .5 | | 13 | 0 | 2.0 | .8 | .1 | .6 | | 23 | 10 | 0 | | 29 | 6.7 | 10 | 12.0 | 430 |
| May 11..... | 18400 | 5.1 | | | | 2.4 | .6 | 1.4 | .2 | | 13 | 0 | 2.0 | .0 | .1 | .5 | | 19 | 9 | 0 | | 29 | 6.6 | 5 | 11.4 | 150 |
| June 16..... | 19800 | 3.9 | | | | 2.6 | .5 | 1.0 | .4 | | 12 | 0 | 1.4 | .2 | .1 | .2 | | 16 | 8 | 0 | | 24 | 6.7 | 5 | 10.7 | 210 |
| July 12..... | 10800 | 4.5 | | | | 3.4 | 1.0 | 1.4 | .3 | | 15 | 0 | 1.6 | 1.0 | .0 | .3 | | 22 | 12 | 0 | | 32 | 6.7 | 5 | 10.1 | 4600 |
| Aug. 16..... | -- | 6.4 | | | | 5.7 | 1.5 | 2.5 | .5 | | 24 | 0 | 2.8 | 2.0 | .1 | .5 | | 35 | 20 | 0 | | 52 | 7.0 | 5 | 9.5 | 4600 |
| Sept. 13..... | -- | 7.5 | | | | 7.2 | 1.7 | 2.9 | .7 | | 29 | 0 | 3.2 | 2.5 | .1 | .5 | | 42 | 25 | 1 | | 61 | 6.9 | 5 | 11.0 | 4600 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1155 | 0.01 | 0.01 | 0.05 | 0.05 | 0.00 | 0.00 |
| Sept. 13..... | 1130 | .00 | .00 | .00 | .00 | .00 | .01 |

STILLAGUAMISH RIVER BASIN

12-1677. STILLAGUAMISH RIVER NEAR SILVANA, WASH.

LOCATION.--Lat 48°11'50", long 122°12'30", at bridge on U.S. Highway 99, 1.5 miles east of Silvana, Snohomish County, and 7 miles downstream from confluence of the North and South Forks.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965. | | 8.7 | | | | 10 | 3.4 | 3.3 | 0.4 | | 48 | 0 | 3.8 | 2.8 | 0.1 | 0.2 | | A 57 | 39 | 0 | | 96 | 7.3 | 5 | 9.7 | 1500 |
| Nov. 3..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | A -- | -- | -- | | -- | -- | -- | 10.5 | 230 |
| Dec. 15..... | | 8.3 | | | | 7.2 | 1.5 | 2.3 | .7 | | 30 | 0 | 3.6 | 1.8 | .1 | 1.1 | | 42 | 24 | 0 | | 64 | 7.0 | 5 | 12.9 | 230 |
| Jan. 12, 1966 | | 5.3 | | | | 4.8 | 1.3 | 1.3 | .4 | | 19 | 0 | 3.2 | 1.2 | .1 | 1.2 | | 33 | 17 | 2 | | 44 | 7.1 | 10 | 12.3 | 150 |
| Feb. 1..... | | 5.8 | | | | 5.6 | 1.3 | 2.7 | .4 | | 22 | 0 | 3.6 | 1.0 | .1 | .8 | | 34 | 19 | 1 | | 48 | 7.1 | 5 | 12.8 | 91 |
| Mar. 16..... | | 4.6 | | | | 4.0 | 1.3 | 1.3 | .5 | | 18 | 0 | 2.4 | 1.0 | .1 | .7 | | A 25 | 15 | 0 | | 39 | 6.8 | 15 | 11.3 | 430 |
| Apr. 12..... | | 4.5 | | | | 3.6 | 1.3 | 1.3 | .3 | | 17 | 0 | 2.4 | .8 | .1 | .5 | | 22 | 14 | 0 | | 37 | 6.9 | 20 | 12.0 | 150 |
| May 10..... | | 3.9 | | | | 3.3 | 1.0 | 1.1 | .3 | | 16 | 0 | 1.6 | .5 | .1 | .3 | | 25 | 12 | 0 | | 34 | 6.9 | 5 | 11.6 | 91 |
| June 16..... | | 3.9 | | | | 3.7 | 1.0 | 1.2 | .2 | | 17 | 0 | 1.8 | .5 | .1 | .2 | | 21 | 13 | 0 | | 34 | 6.9 | 5 | 10.2 | 23 |
| July 12..... | | 5.3 | | | | 5.2 | 1.6 | 1.7 | .4 | | 24 | 0 | 3.2 | 1.0 | .0 | .4 | | 31 | 20 | 0 | | 47 | 6.8 | 5 | 10.5 | 91 |
| Aug. 16..... | | 7.3 | | | | 8.2 | 2.5 | 2.6 | .7 | | 37 | 0 | 3.2 | 2.5 | .0 | .3 | | 43 | 31 | 1 | | 71 | 7.1 | 0 | 9.8 | 110 |
| Sept. 14..... | | 8.4 | | | | 9.6 | 3.1 | 3.0 | .6 | | 44 | 0 | 3.4 | 2.0 | .1 | .2 | | 52 | 37 | 1 | | 85 | 7.1 | 0 | 12.0 | 30 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966.... | 1150 | 0.01 | 0.01 | 0.07 | 0.05 | 0.00 | 0.00 |
| Sept. 14..... | 1100 | .01 | .01 | .02 | .00 | .00 | .02 |

## 12-1685. PILCHUCK CREEK NEAR BRYANT, WASH.

LOCATION.--Lat 48°16'00", long 122°09'45", temperature recorder at gaging station 500 feet upstream from highway bridge, and 2 miles north of Bryant, Snohomish County.
DRAINAGE AREA.--52.0 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1952 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F Aug. 3; minimum, 37°F Dec. 24-27.
EXTREMES, 1952-66.--Water temperatures: Maximum, 82°F July 28, 1958; minimum, 33°F on many days during winter months.
REMARKS.--Thermograph not operating Nov. 29 to Dec. 20; temperature range not determined.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 52 | 52 | 52 | 51 | 52 | 52 | 53 | 52 | 50 | 50 | 51 | 51 | 50 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 50 | 51 |
| Minimum .... | 54 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | 50 | 49 | 50 | 50 | 50 | 49 | 47 | 48 | 49 | 48 | 48 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 45 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | 48 |
| Minimum .... | 50 | 50 | 49 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 46 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | 41 | 39 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 41 | 39 | 38 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | -- | -- | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 40 |
| Minimum .... | 38 | 38 | -- | -- | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | -- | -- | -- | 42 |
| Minimum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 41 | 41 | 41 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 43 | 42 | 40 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 41 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 45 | 45 | 45 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 43 | 44 | 44 | 44 | 45 | 46 | 46 | 47 | 47 | 45 | 43 |
| Minimum .... | 38 | 39 | 40 | 40 | 40 | 42 | 41 | 42 | 41 | 42 | 42 | 43 | 45 | 44 | 44 | 43 | 43 | 43 | 43 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 43 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 47 | 47 | 48 | 48 | 48 | 47 | 46 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 45 | 45 | 44 | 46 | 46 | 48 | 47 | -- | 46 |
| Minimum .... | 45 | 43 | 43 | 44 | 45 | 45 | 46 | 47 | 47 | 46 | 44 | 40 | 41 | 43 | 43 | 44 | 44 | 44 | 44 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 45 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 52 | 52 | 52 | 52 | 52 | 50 | 52 | 52 | 50 | 52 | 52 | 50 | 47 | 46 | 45 | 48 | 51 | 52 | 52 | 51 | 49 | 52 | 53 | 56 | 56 | 52 | 53 | 55 | 53 | 52 | 51 |
| Minimum .... | 46 | 48 | 48 | 48 | 50 | 45 | 45 | 49 | 50 | 49 | 48 | 50 | 47 | 46 | 45 | 43 | 45 | 46 | 50 | 51 | 48 | 47 | 48 | 50 | 52 | 52 | 49 | 48 | 50 | 51 | 50 | 48 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 54 | 51 | 51 | 57 | 59 | 58 | 57 | 60 | 58 | 52 | 53 | 53 | 56 | 61 | 62 | 61 | 62 | 61 | 59 | 58 | 59 | 58 | 57 | 61 | 60 | 59 | 59 | 61 | 61 | -- | 58 |
| Minimum .... | 50 | 51 | 50 | 50 | 50 | 54 | 57 | 56 | 56 | 52 | 51 | 52 | 52 | 52 | 55 | 59 | 59 | 58 | 58 | 56 | 55 | 56 | 56 | 55 | 56 | 58 | 58 | 58 | 56 | 57 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 57 | 54 | 54 | 54 | 55 | 58 | 61 | 63 | 61 | 61 | 62 | 61 | 61 | 61 | 62 | 65 | 64 | 63 | 64 | 65 | 65 | 64 | 64 | 62 | 62 | 66 | 68 | 68 | 67 | 66 | 62 |
| Minimum .... | 57 | 54 | 52 | 52 | 53 | 54 | 55 | 57 | 58 | 60 | 59 | 59 | 61 | 60 | 60 | 60 | 60 | 61 | 61 | 60 | 59 | 60 | 61 | 62 | 60 | 58 | 60 | 62 | 63 | 63 | 63 | 59 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 69 | 70 | 67 | 68 | 68 | 68 | 66 | 67 | 64 | 65 | 65 | 64 | 65 | 67 | 63 | 65 | 66 | 67 | 68 | 69 | 64 | 67 | 66 | 62 | 61 | 61 | 59 | 58 | 58 | 59 | 65 |
| Minimum .... | 62 | 63 | 64 | 64 | 62 | 62 | 62 | 64 | 63 | 61 | 58 | 61 | 63 | 61 | 62 | 61 | 59 | 60 | 60 | 61 | 61 | 62 | 60 | 61 | 61 | 61 | 59 | 57 | 55 | 56 | 55 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 63 | 64 | 64 | 60 | 61 | 62 | 63 | 61 | 59 | 58 | 58 | 57 | 57 | 58 | 58 | 58 | 57 | 56 | 57 | 59 | 60 | 58 | 58 | 58 | 58 | 59 | 59 | 58 | -- | 59 |
| Minimum .... | 56 | 59 | 58 | 58 | 59 | 59 | 58 | 58 | 59 | 59 | 58 | 57 | 57 | 57 | 57 | 57 | 58 | 57 | 54 | 53 | 54 | 56 | 58 | 57 | 57 | 57 | 56 | 57 | 58 | 56 | -- | 57 |

## 12-1790. SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WASH.

LOCATION.--Lat 48°36'25", long 121°21'35", temperature recorder at gaging station, 0.8 mile upstream from Alma Creek, and 7 miles north of Marblemount, Skagit County.
DRAINAGE AREA.--1,274 square miles, of which 400 square miles is in Canada.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to July 1960.
Water temperatures: January 1953 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 56°F Sept. 5; minimum, 39°F on many days during January to March.
EXTREMES, 1953-66.--Water temperatures: Maximum, 56°F July 30, 1961, Sept. 5, 1966; minimum, 35°F Mar. 1, 1956.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 48 | 49 | 49 | 49 | 49 | 49 | 48 |
| Minimum .... | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 49 | 49 | 49 | 48 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | -- | 47 |
| Minimum .... | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 43 |
| Minimum .... | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| Minimum .... | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | -- | -- | -- | 39 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 40 |
| Minimum .... | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | -- | 42 |
| Minimum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 46 | 45 | 45 | 44 | 45 | 46 | 45 | 44 | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 47 | 45 | 45 | 46 | 47 | 45 | 45 | 45 |
| Minimum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 44 | 43 | 43 | 44 | 44 | 44 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 45 | 47 | 47 | 47 | 47 | 46 | 46 | 45 | 46 | 46 | 47 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 48 | 47 | 47 | 48 | 48 | 47 | 47 | 47 | 47 | -- | 47 |
| Minimum .... | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 46 | 45 | 46 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 47 | 47 | 48 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 53 | 50 | 51 | 51 | 53 | 50 |
| Minimum .... | 47 | 46 | 46 | 46 | 46 | 47 | 48 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 49 | 48 | 49 | 50 | 50 | 50 | 50 | 48 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 51 | 51 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 53 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 53 | 52 |
| Minimum .... | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 55 | 55 | 56 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | -- | 52 |
| Minimum .... | 51 | 51 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | -- | 51 |

## 12-1825. CASCADE RIVER AT MARBLEMOUNT, WASH.

LOCATION.--Lat 48°31'25", long 121°23'00", temperature recorder at gaging station 1.5 miles downstream from Boulder Creek, 2 miles east of Marblemount, Skagit County, and 2.5 miles upstream from mouth.
DRAINAGE AREA.--168 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1952 to September 1964, October 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 54°F Aug. 3, 4; minimum, freezing point Jan. 5.
EXTREMES, 1952-63, 1965-66.--Water temperatures: Maximum, 58°F July 27-29, 1958, on several days during August 1961, Aug. 12, 13, 1963; minimum, freezing point Feb. 1, 2, 18, 1956, Nov. 16, 1959, Jan. 19, 1960, Jan. 5, 1966.
REMARKS.--Bulb out of water Oct. 1-5, 10-29, Oct. 31 to Nov. 2, Nov. 11-12, Feb. 12-25, Feb. 28 to Mar. 8.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | 48 | 48 | 49 | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 50 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | 47 | 47 | 48 | 48 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 48 | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | -- | -- | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | -- | 44 |
| Minimum .... | -- | -- | 45 | 46 | 46 | 45 | 45 | 46 | 45 | 44 | -- | -- | 43 | 44 | 44 | 45 | 44 | 43 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 38 | 37 | 36 | 35 | 35 | 35 | 36 | 36 | 37 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 38 |
| Minimum .... | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 38 | 37 | 36 | 35 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 34 | 34 | 34 | 34 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 36 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 38 |
| Minimum .... | 34 | 34 | 34 | 34 | 32 | 33 | 36 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 37 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 38 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 40 | -- | -- | -- | -- | -- |
| Minimum .... | 38 | 37 | 37 | 38 | 38 | 40 | 39 | 38 | 38 | 38 | 37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 38 | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 42 | 42 | 44 | 43 | 43 | 43 | 42 | 42 | 43 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | -- | 43 |
| Minimum .... | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 39 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 43 | 41 | 42 | 42 | 43 | 43 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 47 | 46 | 44 | 46 | 46 | 44 | 44 | 46 | 45 | 44 | 43 | 43 | 43 | 47 | 48 | 48 | 46 | 46 | 45 | 46 | 50 | 51 | 47 | 46 | 48 | 49 | 47 | 45 | 46 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 44 | 43 | 42 | 43 | 41 | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 45 | 46 | 45 | 43 | 44 | 44 | 45 | 45 | 43 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 47 | 45 | 45 | 51 | 50 | 50 | 50 | 48 | 47 | 46 | 48 | 47 | 52 | 52 | 49 | 48 | 47 | 47 | 46 | 46 | 49 | 47 | 46 | 49 | 49 | 47 | 47 | 47 | 47 | -- | 48 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 45 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 47 | 47 | 46 | 45 | 45 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 46 | 48 | 48 | 49 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 50 | 50 | 49 | 49 | 50 | 49 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 53 | 53 | 53 | 52 | 50 |
| Minimum .... | 46 | 46 | 45 | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 49 | 48 | 48 | 47 | 48 | 47 | 47 | 48 | 49 | 49 | 47 | 47 | 49 | 49 | 50 | 50 | 49 | 47 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 54 | 54 | 53 | 52 | 53 | 52 | 52 | 50 | 51 | 51 | 51 | 51 | 53 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | 53 | 53 | 51 | 50 | 50 | 50 | 49 | 50 | 52 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 49 | 48 | 49 | 50 | 49 | 50 | 50 | 49 | 49 | 49 | 48 | 49 | 49 | 49 | 51 | 51 | 50 | 50 | 49 | 49 | 49 | 48 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 50 | 50 | 52 | 52 | 51 | 50 | 50 | 50 | 50 | 49 | 50 | 52 | 52 | 50 | 49 | 49 | 49 | 49 | 50 | 49 | -- | 50 |
| Minimum .... | 49 | 50 | 49 | 49 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 49 | 49 | 51 | 50 | 50 | 50 | 50 | 48 | 48 | 49 | 50 | 50 | 49 | 49 | 48 | 49 | 49 | 49 | 48 | -- | 49 |

SKAGIT RIVER BASIN--Continued

12-2005. SKAGIT RIVER NEAR MOUNT VERNON, WASH.

LOCATION.--Lat 48°26'40", long 122°20'00", at gaging station at bridge on U.S. Highway 99, 1 mile north of Mount Vernon, Skagit County, and 3 miles downstream from Nookachamps Creek.
DRAINAGE AREA.--3,093 square miles, of which 400 square miles is in Canada.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: July 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 60°F Sept. 5, 6; minimum, 39° on several days during December and January.
EXTREMES, 1962-66.--Water temperatures: Maximum, 62°F Aug. 8, 9, 30, 31, 1963; minimum, 36°F Dec. 17, 1964.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965 | 4480 | 8.3 | | | | 8.0 | 1.7 | 1.7 | 0.5 | | 32 | 0 | 4.8 | 0.8 | 0.0 | 0.2 | | A 42 | 27 | 1 | | 67 | 7.2 | 5 | 10.0 | 24000 |
| Nov. 3..... | 16000 | 5.6 | | | | 6.4 | 1.0 | 1.1 | .6 | | 22 | 0 | 5.2 | .5 | .1 | .4 | | A 32 | 20 | 2 | | 51 | 7.0 | 5 | 10.8 | 930 |
| Dec. 15..... | 13900 | 6.4 | | | | 8.4 | 1.4 | 1.4 | .8 | | 30 | 0 | 5.2 | .5 | .1 | .3 | | 40 | 26 | 2 | | 63 | 7.0 | 5 | 12.1 | 430 |
| Jan. 12, 1966 | 18400 | 6.5 | | | | 8.0 | 1.5 | 1.3 | .5 | | 29 | 0 | 5.0 | .2 | .1 | .6 | | 40 | 26 | 2 | | 62 | 7.2 | 5 | 12.1 | 430 |
| Feb. 1..... | 13900 | 6.8 | | | | 9.6 | 1.0 | 1.4 | .7 | | 32 | 0 | 5.4 | .5 | .1 | .3 | | 44 | 28 | 2 | | 65 | 7.2 | 5 | 12.5 | 36 |
| Mar. 16..... | 19200 | 6.1 | | | | 7.2 | 1.6 | 1.3 | .6 | | 28 | 0 | 4.8 | .5 | .1 | .4 | | 38 | 24 | 2 | | 58 | 7.0 | 5 | 11.2 | 430 |
| Apr. 12..... | 22200 | 5.5 | | | | 6.0 | 1.3 | 1.1 | .5 | | 24 | 0 | 4.0 | .2 | .1 | .4 | | 32 | 20 | 1 | | 50 | 7.1 | 5 | 12.1 | 91 |
| May 10..... | 29700 | 5.2 | | | | 5.0 | 1.0 | 1.0 | .5 | | 20 | 0 | 3.4 | .2 | .1 | .3 | | 29 | 16 | 0 | | 43 | 7.0 | 0 | 11.6 | 91 |
| June 16..... | 24600 | 4.4 | | | | 4.8 | .3 | 1.0 | .4 | | 16 | 0 | 2.8 | .5 | .1 | .2 | | A 22 | 13 | 0 | | 35 | 6.7 | 5 | 10.6 | 430 |
| July 12..... | 20200 | 4.5 | | | | 4.8 | .9 | .9 | .5 | | 18 | 0 | 3.2 | .0 | .1 | .2 | | 26 | 16 | 1 | | 39 | 6.9 | 0 | 10.5 | 4600 |
| Aug. 16..... | 10900 | 5.0 | | | | 5.7 | 1.1 | 1.3 | .7 | | 22 | 0 | 3.6 | 1.0 | .0 | .2 | | A 30 | 19 | 1 | | 40 | 6.9 | 5 | 10.4 | 2400 |
| Sept. 14.... | 7530 | 10 | | | | 7.4 | 1.4 | 1.4 | .6 | | 30 | 0 | 4.4 | .5 | .0 | .2 | | A 41 | 24 | 0 | | 53 | 7.3 | 5 | 11.8 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966... | 1040 | 0.00 | 0.00 | 0.03 | 0.05 | 0.00 | 0.02 |
| Sept. 14..... | 0950 | .01 | .01 | .06 | .00 | .00 | .00 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 51 | 52 | -- | 51 | 51 | 50 | 50 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 |
| Minimum .... | -- | 50 | 50 | -- | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 47 | 48 | 48 | 47 | 47 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | -- | 47 |
| Minimum .... | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 43 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 40 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 44 | 43 | 43 | 43 | 43 | 42 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 44 | 43 |
| Minimum .... | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 44 | 45 | 46 | 46 | 46 | 44 | 43 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 45 | 45 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 45 | 44 | 43 | 43 | 46 | 46 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 47 | 48 | 48 | 47 | 49 | 49 | 49 | -- | 46 |
| Minimum .... | 43 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 45 | 44 | 43 | 43 | 42 | 43 | 43 | 45 | 46 | 46 | 45 | 46 | 45 | 45 | 45 | 45 | 47 | 45 | 45 | 47 | 48 | 48 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 52 | 52 | 51 | 51 | 50 | 47 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 50 | 51 | 52 | 52 | 51 | 51 | 49 | 51 | 53 | 53 | 51 | 50 | 52 | 52 | 51 | 50 |
| Minimum .... | 47 | 49 | 51 | 50 | 50 | 45 | 45 | 47 | 49 | 47 | 47 | 49 | 48 | 47 | 47 | 47 | 47 | 50 | 51 | 51 | 51 | 48 | 48 | 49 | 51 | 51 | 48 | 49 | 50 | 51 | 48 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 50 | 49 | 52 | 55 | 55 | 53 | 52 | 52 | 50 | 49 | 49 | 52 | 54 | 54 | 53 | 52 | 52 | 52 | 51 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | -- | 52 |
| Minimum .... | 48 | 50 | 48 | 48 | 49 | 52 | 53 | 52 | 52 | 50 | 49 | 49 | 49 | 49 | 52 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 52 | 51 | 50 | 52 | 52 | 51 | 51 | 51 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 50 | 52 | 52 | 52 | 54 | 55 | 55 | 55 | 54 | 56 | 56 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 56 | 56 | 56 | 55 | 54 | 55 | 58 | 58 | 58 | 58 | 58 | 55 |
| Minimum .... | 52 | 50 | 50 | 50 | 52 | 51 | 52 | 54 | 55 | 54 | 53 | 54 | 55 | 55 | 54 | 53 | 53 | 53 | 54 | 53 | 54 | 55 | 54 | 54 | 53 | 52 | 55 | 57 | 57 | 57 | 56 | 54 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 59 | 59 | 57 | 58 | 59 | 59 | 58 | 57 | 55 | 56 | 56 | 56 | 57 | 57 | 57 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 57 | 55 | 56 | 56 | 56 | 56 | 58 |
| Minimum .... | 56 | 57 | 57 | 57 | 56 | 57 | 57 | 58 | 57 | 55 | 54 | 55 | 56 | 55 | 56 | 57 | 56 | 57 | 58 | 58 | 58 | 58 | 57 | 58 | 57 | 55 | 55 | 55 | 56 | 55 | 55 | 56 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 59 | 60 | 60 | 58 | 56 | 58 | 58 | 57 | 55 | 55 | 55 | 55 | 54 | 54 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 54 | 54 | 54 | 55 | 55 | 55 | -- | 56 |
| Minimum .... | 56 | 57 | 56 | 57 | 58 | 58 | 56 | 56 | 56 | 57 | 55 | 55 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 56 | 54 | 54 | 53 | 54 | 54 | 54 | 54 | -- | 55 |

## WHATCOM CREEK BASIN

### 12-2025. WHATCOM LAKE NEAR BELLINGHAM, WASH.

LOCATION.--Lat 48°45'45", long 122°25'10", at bridge on Electron Avenue, 2.1 miles east of Bellingham, Whatcom County.
RECORDS AVAILABLE.--Chemical analyses: October 1964 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965 | | 2.5 | | | | 7.2 | 0.7 | 3.3 | 0.3 | | 24 | 0 | 5.2 | 2.2 | 0.0 | 0.5 | | A 34 | 21 | 2 | | 61 | 7.1 | 5 | 9.0 | 930 |
| Nov. 3..... | | 1.6 | | | | 5.6 | 1.4 | 3.2 | .5 | | 24 | 0 | 5.4 | 2.2 | .0 | .5 | | 34 | 20 | 0 | | 58 | 6.8 | 5 | 9.9 | 23 |
| Dec. 15..... | | 2.3 | | | | 5.6 | 1.3 | 3.2 | .6 | | 23 | 0 | 5.6 | 2.2 | .1 | .3 | | A 32 | 20 | 0 | | 57 | 7.0 | 5 | 11.2 | 430 |
| Jan. 12, 1966 | | 2.1 | | | | 5.6 | 1.3 | 3.6 | .4 | | 21 | 0 | 5.6 | 2.0 | .1 | .8 | | 32 | 20 | 2 | | 58 | 7.0 | 10 | 12.2 | 430 |
| Feb. 1..... | | 2.2 | | | | 5.6 | 1.4 | 3.5 | .4 | | 22 | 0 | 5.4 | 2.2 | .1 | .6 | | 34 | 20 | 2 | | 58 | 7.1 | 10 | 12.3 | 230 |
| Mar. 16..... | | 1.5 | | | | 5.6 | 1.3 | 2.9 | .6 | | 22 | 0 | 5.2 | 2.5 | .1 | .6 | | 31 | 19 | 1 | | 57 | 7.1 | 5 | 11.7 | 91 |
| Apr. 12..... | | 1.4 | | | | 5.6 | 1.2 | 3.0 | .6 | | 22 | 0 | 5.2 | 2.2 | .1 | .5 | | 30 | 19 | 1 | | 57 | 7.0 | 5 | 11.4 | 230 |
| May 10..... | | .8 | | | | 4.8 | 1.6 | 3.1 | .4 | | 23 | 0 | 5.0 | 2.5 | .1 | .2 | | 32 | 18 | 0 | | 57 | 7.0 | 5 | 10.6 | 36 |
| June 16..... | | .9 | | | | 5.6 | 1.2 | 3.3 | .4 | | 24 | 0 | 4.8 | 2.5 | .1 | .2 | | 30 | 19 | 0 | | 57 | 6.9 | 5 | 9.8 | 23 |
| July 12..... | | 1.0 | | | | 5.0 | 1.7 | 3.1 | .4 | | 22 | 0 | 4.8 | 2.5 | .1 | .4 | | 32 | 20 | 2 | | 56 | 6.8 | 5 | 10.2 | 23 |
| Aug. 16..... | | .6 | | | | 5.4 | 1.9 | 3.1 | .4 | | 23 | 0 | 5.0 | 3.0 | .1 | .5 | | 30 | 22 | 2 | | 57 | 6.6 | 5 | 9.2 | 91 |
| Sept. 13.... | | 1.4 | | | | 5.8 | 1.6 | 3.0 | .4 | | 24 | 0 | 5.0 | 1.5 | .1 | .4 | | 31 | 21 | 2 | | 56 | 6.8 | 0 | 11.1 | 100 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966.... | 0920 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.01 |
| Sept. 13..... | 1850 | .01 | .01 | .02 | .00 | .00 | .02 |

## NOOKSACK RIVER BASIN

### 12-2131. NOOKSACK RIVER AT FERNDALE, WASH.

LOCATION.--Lat 48°50'43", long 122°35'12", at Main Street Bridge at Ferndale, Whatcom County, 1.3 miles downstream from Tenmile Creek.
RECORDS AVAILABLE.--Chemical analyses: October 1961 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 4, 1965. | | 9.3 | | | | 13 | 4.5 | 3.9 | 0.6 | | 50 | 0 | 14 | 3.5 | 0.1 | 0.5 | | 75 | 51 | 10 | | 126 | 7.2 | 5 | 9.8 | 4600 |
| Nov. 3..... | | 7.0 | | | | 8.0 | 2.7 | 2.1 | .7 | | 28 | 0 | 8.4 | 1.5 | .1 | 1.0 | | 51 | 31 | 8 | | 74 | 6.8 | 20 | 10.7 | 230 |
| Dec. 15..... | | 11 | | | | 12 | 3.6 | 3.2 | .8 | | 44 | 0 | 11 | 2.5 | .1 | 1.2 | | A 67 | 44 | 8 | | 106 | 7.1 | 10 | 12.6 | 430 |
| Jan. 12, 1966 | | 8.5 | | | | 8.4 | 3.4 | 2.6 | .9 | | 32 | 0 | 9.2 | 2.8 | .1 | 2.5 | | 55 | 35 | 9 | | 88 | 7.0 | 20 | 12.2 | 430 |
| Feb. 1..... | | 9.3 | | | | 10 | 3.4 | 3.4 | .6 | | 40 | 0 | 9.2 | 2.2 | .1 | 1.3 | | 63 | 39 | 6 | | 94 | 7.4 | 20 | 12.5 | 430 |
| Mar. 15..... | | 7.4 | | | | 8.0 | 2.8 | 2.4 | .8 | | 32 | 0 | 7.4 | 1.8 | .1 | 1.0 | | 49 | 32 | 6 | | 77 | 7.1 | 20 | 11.5 | 750 |
| Apr. 12..... | | 7.0 | | | | 7.6 | 2.8 | 2.3 | .7 | | 32 | 0 | 7.0 | 1.5 | .2 | .8 | | 49 | 30 | 4 | | 75 | 7.1 | 20 | 12.3 | 2400 |
| May 10..... | | 5.9 | | | | 6.2 | 2.2 | 1.2 | .5 | | 26 | 0 | 5.4 | .8 | .2 | .3 | | 43 | 24 | 3 | | 58 | 7.0 | 15 | 5.1 | 930 |
| June 16..... | | 5.1 | | | | 6.4 | 1.6 | 1.5 | .3 | | 24 | 0 | 5.6 | 1.0 | .1 | .2 | | 34 | 22 | 3 | | 55 | 6.9 | 5 | 10.1 | 430 |
| July 12..... | | 6.2 | | | | 7.7 | 2.2 | 1.7 | .4 | | 29 | 0 | 7.6 | 1.2 | .0 | .1 | | 40 | 28 | 4 | | 66 | 6.8 | 10 | 10.5 | 430 |
| Aug. 16..... | | 6.4 | | | | 9.3 | 2.6 | 2.2 | .6 | | 31 | 0 | 10 | 2.0 | .1 | .3 | | 48 | 34 | 8 | | 70 | 7.1 | 0 | 10.3 | 24000 |
| Sept. 13..... | | 8.4 | | | | 12 | 3.4 | 2.9 | .7 | | 38 | 0 | 12 | 4.0 | .2 | 1.2 | | 66 | 44 | 13 | | 99 | 7.1 | 5 | 11.9 | 11000 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966.... | 1740 | 0.01 | 0.01 | 0.08 | 0.05 | 0.00 | 0.00 |
| Sept. 13..... | 1805 | .01 | .01 | .01 | .00 | .00 | .01 |

## KOOTENAI RIVER BASIN

### 12-3018.5. KOOTENAI RIVER AT WARLAND BRIDGE, NEAR LIBBY, MONT.

LOCATION.--Lat 48°30'00", long 115°17'10", temperature recorder at gaging station, on right bank at county road bridge, 0.1 mile downstream from Barron Creek, 14.5 miles northeast of Libby, Lincoln County, and at mile 228.6.
DRAINAGE AREA.--8,892 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1962 to September 1966.
EXTREMES, 1962-66.--Water temperatures: Maximum, 68°F Aug. 14, 15, 1963.
REMARKS.--Recorder removed Nov. 16 to June 2, recorder stopped July 17 to Sept. 21. Records furnished by Corps of Engineers, U.S. Army.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 48 | 48 | 49 | 49 | 49 | 50 | 50 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 46 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 46 |
| Minimum .... | -- | 47 | 47 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 47 | 46 | 46 | 46 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 43 | 43 | 45 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 41 | 42 | 42 | 41 | 40 | 39 | 40 | 40 | 40 | 37 | 36 | 37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 42 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 39 | 37 | 35 | 35 | 36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 50 | 50 | 50 | 50 | 52 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 53 | 55 | 56 | 57 | 58 | 58 | 56 | 54 | 54 | 54 | 55 | 53 | 54 | 55 | 56 | 56 | 56 | -- | 54 |
| Minimum .... | -- | 50 | 49 | 49 | 49 | 49 | 50 | 51 | 52 | 52 | 50 | 50 | 50 | 50 | 51 | 54 | 55 | 56 | 56 | 54 | 52 | 52 | 53 | 52 | 52 | 53 | 54 | 55 | 55 | 55 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 56 | 56 | 54 | 55 | 57 | 58 | 60 | 60 | 61 | 61 | 60 | 60 | 59 | 60 | 62 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 56 | 56 | 54 | 52 | 52 | 54 | 56 | 58 | 58 | 59 | 60 | 59 | 59 | 59 | 59 | 60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 61 | 61 | 61 | 60 | 59 | 58 | 58 | 58 | 58 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 60 | 60 | 60 | 59 | 58 | 58 | 57 | 58 | 57 | -- | -- |

## 12-3020. FISHER RIVER NEAR JENNINGS, MONT.

LOCATION (revised).--Lat 48°14'50", long 115°17'30", temperature recorder at gaging station on left bank, 0.4 mile downstream from bridge, 2.4 miles downstream from Wolf Creek, 8.5 miles southeast of Jennings, Lincoln County, and 10 miles upstream from mouth.
DRAINAGE AREA.--780 square miles.
RECORDS AVAILABLE.--Water temperatures: May to November 1963, May 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F July 15, 16.
EXTREMES, 1963-66.--Water temperatures: Maximum, 72°F Aug. 1, 1965; minimum (1963-64), freezing point Nov. 21, 22, 1963.
REMARKS.--Recorder removed Oct. 8 to June 2; recorder stopped Sept. 2-12. Records furnished by Corps of Engineers, U.S. Army. Prior to Dec. 16, 1965, recorder at site 0.4 mile upstream.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 61 | 61 | 62 | 63 | 64 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 57 | 58 | 59 | 60 | 61 | 61 | 61 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | 51 | 49 | 49 | 53 | 53 | 54 | 54 | 53 | 52 | 52 | 52 | 56 | 57 | 58 | 58 | 59 | 58 | 56 | 56 | 55 | 56 | 56 | 57 | 59 | 60 | 60 | 60 | 61 | -- | 56 |
| Minimum .... | -- | -- | 49 | 47 | 47 | 49 | 50 | 52 | 52 | 51 | 50 | 49 | 50 | 50 | 52 | 53 | 55 | 55 | 54 | 54 | 53 | 53 | 52 | 53 | 51 | 55 | 57 | 57 | 58 | 57 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 60 | 57 | 57 | 62 | 63 | 66 | 66 | 66 | 65 | 65 | 65 | 66 | 67 | 69 | 69 | 67 | 65 | 68 | 67 | 65 | 65 | 66 | 66 | 66 | 65 | 65 | 65 | 67 | 67 | 68 | 65 |
| Minimum .... | 57 | 57 | 54 | 55 | 55 | 59 | 60 | 61 | 61 | 61 | 60 | 60 | 61 | 62 | 63 | 64 | 62 | 61 | 62 | 62 | 59 | 60 | 61 | 62 | 63 | 59 | 59 | 60 | 61 | 61 | 63 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 68 | 68 | 68 | 66 | 66 | 66 | 65 | 66 | 66 | 66 | 65 | 61 | 62 | 65 | 65 | 65 | 64 | 63 | 58 | 61 | 62 | 63 | 63 | 63 | 63 | 62 | 60 | 60 | 57 | 57 | 64 |
| Minimum .... | 62 | 62 | 63 | 62 | 63 | 60 | 60 | 61 | 62 | 62 | 62 | 58 | 58 | 57 | 59 | 60 | 59 | 58 | 58 | 55 | 54 | 56 | 57 | 56 | 58 | 62 | 59 | 57 | 57 | 56 | 54 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 60 | 60 | 60 | 60 | 59 | 59 | 60 | 60 | 59 | 59 | 59 | 59 | 55 | 55 | 55 | 56 | 56 | 56 | -- | -- |
| Minimum .... | 53 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57 | 57 | 56 | 56 | 55 | 55 | 57 | 57 | 55 | 55 | 56 | 54 | 54 | 54 | 53 | 53 | 55 | 50 | -- | -- |

KOOTENAI RIVER BASIN--Continued

12-3045. YAAK RIVER NEAR TROY, MONT.

LOCATION.--Lat 48°33'45", long 115°58'05", temperature recorder at gaging station, on right bank 400 feet upstream from bridge on U.S. Higbway 2, 0.2 mile upstream from moutb, and 7.5 miles northwest of Troy, Lincoln County.
DRAINAGE AREA.--766 square miles.
RECORDS AVAILABLE.--Water temperatures: May to November 1963, May 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 75°F Aug. 3.
EXTREMES, 1963-66.--Water temperatures: Maximum, 75°F Aug. 9, 1965, Aug. 3, 1966; minimum (1963-64), freezing point Nov. 30, 1963.
REMARKS.--Recorder removed Nov. 15 to June 2. Records furnished by Corps of Engineers, U.S. Army.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 51 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 50 | 47 | 49 | 49 | 50 | 48 | 45 | 45 | 46 | 45 | 45 | 44 | 44 | 43 | 43 | 44 | 44 | 45 | 45 | 47 | 45 | 47 |
| Minimum .... | 47 | 46 | 48 | 49 | 50 | 50 | 50 | 50 | 50 | 48 | 45 | 45 | 45 | 48 | 48 | 45 | 44 | 43 | 44 | 43 | 44 | 43 | 43 | 42 | 42 | 43 | 42 | 42 | 44 | 45 | 43 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 41 | 43 | 43 | 43 | 42 | 40 | 42 | 42 | 42 | 41 | 39 | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 42 | 41 | 41 | 41 | 43 | 41 | 40 | 39 | 40 | 41 | 41 | 39 | 37 | 37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | 49 | 47 | 48 | 51 | 53 | 53 | 53 | 51 | 51 | 51 | 51 | 53 | 55 | 57 | 57 | 57 | 57 | 56 | 56 | 61 | 63 | 54 | 57 | 57 | 58 | 58 | 60 | 60 | -- | 55 |
| Minimum .... | -- | -- | 47 | 46 | 46 | 47 | 49 | 49 | 51 | 50 | 50 | 49 | 49 | 49 | 50 | 52 | 54 | 55 | 55 | 55 | 52 | 53 | 51 | 52 | 51 | 53 | 54 | 56 | 55 | 55 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 59 | 57 | 56 | 61 | 64 | 65 | 66 | 66 | 66 | 67 | 67 | 68 | 69 | 70 | 70 | 69 | 72 | 70 | 69 | 67 | 68 | 69 | 69 | 69 | 66 | 67 | 69 | 70 | 70 | 72 | 67 |
| Minimum .... | 57 | 57 | 55 | 55 | 54 | 58 | 59 | 61 | 62 | 62 | 62 | 62 | 64 | 63 | 66 | 66 | 65 | 64 | 65 | 64 | 62 | 63 | 65 | 66 | 66 | 61 | 63 | 64 | 65 | 66 | 67 | 62 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 72 | 72 | 75 | 72 | 71 | 71 | 71 | 71 | 73 | 71 | 71 | 67 | 65 | 64 | 69 | 72 | 69 | 69 | 68 | 64 | 65 | 67 | 68 | 69 | 68 | 68 | 68 | 66 | 63 | 58 | 60 | 68 |
| Minimum .... | 67 | 67 | 67 | 67 | 67 | 65 | 65 | 67 | 67 | 67 | 65 | 63 | 62 | 60 | 62 | 64 | 62 | 62 | 61 | 57 | 59 | 60 | 61 | 61 | 61 | 65 | 64 | 62 | 58 | 57 | 56 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 65 | 66 | 68 | 68 | 66 | 66 | 67 | 67 | 67 | 66 | 65 | 63 | 66 | 66 | 64 | 63 | 63 | 65 | 65 | 63 | 63 | 63 | 63 | 59 | 59 | 59 | 60 | 61 | 60 | -- | 64 |
| Minimum .... | 58 | 59 | 59 | 61 | 61 | 61 | 60 | 61 | 60 | 59 | 60 | 60 | 59 | 59 | 58 | 58 | 57 | 58 | 61 | 58 | 57 | 57 | 58 | 58 | 58 | 58 | 57 | 57 | 58 | 55 | -- | 59 |

## 12-3050. KOOTENAI RIVER AT LEONIA, IDAHO

LOCATION.--Lat 48°37'04", long 116°02'47", temperature recorder at gaging station at Leonia, Boundary County, 450 feet east of Montana-Idaho State line, 0.5 mile upstream from Boulder Creek, and at mile 171.6.
DRAINAGE AREA.--11,740 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1962 to May 1963, April 1965 to September 1966.
EXTREMES, 1962-63, 1965.--Water temperatures: Maximum, 67°F Aug. 2, 3, 1965; minimum (1962-63), freezing point on many days during winter months.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 49 | 49 | 49 | 50 | 50 | 50 | 51 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 46 | 45 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 46 |
| Minimum .... | 48 | 47 | 48 | 48 | 48 | 49 | 50 | 50 | 50 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 46 | 45 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 40 | 40 | 40 | 39 | 37 | 36 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | 42 | 41 | 40 | 40 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 37 | 36 | 36 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 45 | 46 | 48 | 50 | 50 | 50 | 49 | 49 | 52 | 53 | 54 | 54 | 53 | 52 | 52 | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 45 | 44 | 46 | 48 | 50 | 49 | 48 | 48 | 49 | 51 | 53 | 53 | 52 | 52 | 50 | --- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 49 | 49 | 49 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 53 | 55 | 56 | 57 | 57 | 56 | 56 | 54 | 54 | 54 | 54 | 55 | 56 | 56 | 57 | 57 | --- | 53 |
| Minimum .... | 50 | 49 | 49 | 49 | 49 | 49 | 50 | 51 | 52 | 52 | 51 | 51 | 50 | 50 | 52 | 53 | 55 | 56 | 56 | 55 | 54 | 54 | 54 | 53 | 53 | 54 | 55 | 56 | 56 | 56 | --- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 56 | 55 | 54 | 56 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 64 | 63 | --- | --- | --- | --- | --- | 60 |
| Minimum .... | 57 | 56 | 55 | 54 | 54 | 54 | 56 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | --- | --- | --- | --- | --- | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | 68 | 67 | 66 | 65 | 66 | 66 | 65 | 65 | 64 | 63 | 62 | 62 | 63 | 63 | 63 | 63 | 61 | 60 | 62 | 62 | 63 | 63 | 64 | 64 | 63 | 63 | 60 | 59 | 63 |
| Minimum .... | --- | --- | --- | 67 | 66 | 65 | 65 | 65 | 65 | 65 | 64 | 63 | 62 | 61 | 61 | 62 | 62 | 63 | 61 | 60 | 60 | 60 | 61 | 62 | 62 | 63 | 63 | 62 | 60 | 59 | 58 | 62 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 60 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 61 | 61 | 59 | 60 | 59 | 59 | 59 | 60 | 59 | 59 | 59 | 58 | 58 | 57 | 57 | 56 | 57 | 56 | --- | 60 |
| Minimum .... | 58 | 58 | 58 | 60 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 60 | 59 | 58 | 59 | 58 | 58 | 58 | 59 | 58 | 58 | 58 | 57 | 57 | 57 | 56 | 56 | 56 | 55 | --- | 59 |

KOOTENAI RIVER BASIN--Continued

## 12-3185. KOOTENAI RIVER NEAR COPELAND, IDAHO

LOCATION.--Lat 48°54'45", long 116°25'00", at ferry crossing, approximately 1 mile upstream from gaging station near Copeland, Boundary County, and 123.2 miles upstream from mouth.
DRAINAGE AREA.--13,400 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Water temperatures: May to September 1966.
Sediment records: May to September 1966.
EXTREMES, May to September 1966.--Water temperatures: Maximum, 68°F Aug. 1, 3, 6, 7, 10.
Sediment concentrations: Maximum daily, 740 ppm May 30; minimum daily, 2 ppm on several days during September.
Sediment loads: Maximum daily, 155,000 tons May 30; minimum daily, 28 tons Sept. 30.
REMARKS.--This station is maintained by the United States in cooperation with Canada.

Temperature (°F) of water, May to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 53 | 54 | 54 | 54 | 53 | 53 | -- |
| June | 52 | 52 | -- | 48 | 50 | 51 | -- | 53 | 53 | 54 | 54 | 54 | 53 | 53 | 52 | 53 | 54 | 57 | 57 | 57 | -- | 56 | 56 | 56 | 57 | 54 | 57 | 57 | 57 | 59 | -- | 54 |
| July | 58 | 58 | 58 | 57 | 58 | 56 | 56 | 57 | 60 | 60 | 60 | 60 | 61 | 60 | 60 | 61 | 62 | 62 | 63 | 62 | 62 | 63 | 65 | 62 | 63 | 62 | 62 | 62 | 63 | 63 | 64 | 61 |
| August | 68 | -- | 68 | 67 | 67 | 68 | 68 | 66 | 66 | 68 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 64 | 65 | 64 | 62 | 64 | 63 | 63 | 63 | 64 | 62 | -- | 61 | 65 |
| September | 60 | 60 | 60 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 63 | -- | 61 | -- | -- | 62 | -- | -- | 63 | -- | 62 | -- | 62 | -- | 61 | -- | 61 | -- | -- |

KOOTENAI RIVER BASIN--Continued

12-3185. KOOTENAI RIVER NEAR COPELAND, IDAHO--Continued

Suspended sediment, May to September 1966

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | | | | --- | --- | --- | 82500 | 566 | 126000 |
| 2 | | | | --- | --- | --- | 84200 | 525 | 119000 |
| 3 | | | | --- | --- | --- | 85400 | 280 B | 65000 |
| 4 | | | | --- | --- | --- | 82400 | 287 | 63900 |
| 5 | | | | --- | --- | --- | 77700 | 253 | 53100 |
| 6 | | | | --- | --- | --- | 74200 | 236 | 47300 |
| 7 | | | | --- | --- | --- | 70700 | 270 B | 52000 |
| 8 | | | | --- | --- | --- | 65100 | 198 | 34800 |
| 9 | | | | --- | --- | --- | 60900 | 203 | 33400 |
| 10 | | | | --- | --- | --- | 60100 | 200 | 32500 |
| 11 | | | | --- | --- | --- | 62300 | 170 | 28600 |
| 12 | | | | --- | --- | --- | 62800 | 176 | 29800 |
| 13 | | | | --- | --- | --- | 59200 | 145 | 23200 |
| 14 | | | | --- | --- | --- | 53200 | 123 | 17700 |
| 15 | | | | --- | --- | --- | 48000 | 89 | 11500 |
| 16 | | | | --- | --- | --- | 44900 | 83 | 10100 |
| 17 | | | | --- | --- | --- | 43700 | 71 | 8380 |
| 18 | | | | --- | --- | --- | 44500 | 67 | 8050 |
| 19 | | | | --- | --- | --- | 47400 | 78 | 9980 |
| 20 | | | | --- | --- | --- | 49800 | 95 | 12800 |
| 21 | | | | --- | --- | --- | 49200 | 95 B | 13000 |
| 22 | | | | --- | --- | --- | 45700 | 81 | 9990 |
| 23 | | | | --- | --- | --- | 41700 | 70 | 7880 |
| 24 | | | | --- | --- | --- | 38900 | 72 | 7560 |
| 25 | | | | --- | --- | --- | 37000 | 52 | 5190 |
| 26 | | | | 39100 | 39 | 4120 | 35500 | 49 | 4700 |
| 27 | | | | 46300 | 80 | 10000 | 33600 | 41 | 3720 |
| 28 | | | | 57200 | 174 | 26900 | 32400 | 38 | 3320 |
| 29 | | | | 69000 | 420 | 78200 | 31900 | 34 | 2930 |
| 30 | | | | 77400 | 740 | 155000 | 33100 | 30 | 2680 |
| 31 | | | | 81000 | 690 | 151000 | --- | --- | --- |
| Total | | | | 370000 | --- | 425220 | 1638000 | --- | 848080 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 35700 | 90 | A 8700 | 13800 | C 10 | 373 | 8510 | C 8 | 184 |
| 2 | 34900 | 36 | 3390 | 13700 | C 10 | 370 | 7940 | C 8 | 172 |
| 3 | 33600 | 30 | 2720 | 13400 | C 10 | 362 | 7500 | C 8 | 162 |
| 4 | 35700 | 36 | 3470 | 13200 | C 10 | 356 | 7070 | C 8 | 153 |
| 5 | 39800 | 67 | 7200 | 13100 | C 10 | 354 | 6700 | C 8 | 145 |
| 6 | 39300 | 70 | 7430 | 12800 | C 10 | 346 | 6550 | C 8 | 141 |
| 7 | 36500 | 100 | A 9900 | 12800 | C 10 | 346 | 6290 | C 8 | 136 |
| 8 | 35200 | 65 | 6180 | 12600 | C 10 | 340 | 6210 | C 4 | 67 |
| 9 | 35300 | 49 | 4670 | 12100 | C 10 | 327 | 6150 | C 4 | 66 |
| 10 | 35300 | 49 | 4670 | 11600 | C 10 | 313 | 6150 | C 4 | 66 |
| 11 | 34600 | 43 | 4020 | 11400 | C 10 | 308 | 6120 | C 4 | 66 |
| 12 | 33700 | 41 | 3730 | 11000 | C 8 | 238 | 6120 | C 4 | 66 |
| 13 | 32100 | 51 | 4420 | 10700 | C 8 | 231 | 6120 | C 4 | 66 |
| 14 | 29500 | 30 | 2390 | 10600 | C 8 | 229 | 6010 | C 4 | 65 |
| 15 | 27400 | 24 | 1780 | 9960 | C 8 | 215 | 5800 | C 2 | 31 |
| 16 | 25600 | 22 | 1520 | 9320 | C 8 | 201 | 5800 | C 2 | 31 |
| 17 | 25300 | 17 | 1160 | 9270 | C 8 | 200 | 5780 | C 2 | 31 |
| 18 | 25100 | 16 | 1080 | 8800 | C 8 | 190 | 5780 | C 2 | 31 |
| 19 | 23900 | C 12 | 774 | 8820 | C 8 | 191 | 5870 | C 2 | 32 |
| 20 | 21600 | C 12 | 700 | 8560 | C 8 | 185 | 5560 | C 2 | 30 |
| 21 | 20600 | C 12 | 667 | 8370 | C 8 | 181 | 5560 | C 2 | 30 |
| 22 | 20000 | C 12 | 648 | 8210 | C 8 | 177 | 5620 | C 2 | 30 |
| 23 | 18900 | C 12 | 612 | 7900 | C 8 | 171 | 5390 | C 2 | 29 |
| 24 | 17600 | C 12 | 570 | 7500 | C 8 | 162 | 5630 | C 2 | 30 |
| 25 | 16900 | C 12 | 548 | 7400 | C 8 | 160 | 5320 | C 2 | 29 |
| 26 | 16400 | C 12 | 531 | 7220 | C 8 | 156 | 5390 | C 2 | 29 |
| 27 | 16300 | C 12 | 528 | 7380 | C 8 | 159 | 5310 | C 2 | 29 |
| 28 | 15700 | C 12 | 509 | 7500 | C 8 | 162 | 5290 | C 2 | 29 |
| 29 | 14800 | C 12 | 480 | 8060 | C 8 | 174 | 5560 | C 2 | 30 |
| 30 | 14100 | C 10 | 381 | 8570 | C 8 | 185 | 5250 | C 2 | 28 |
| 31 | 13800 | C 10 | 373 | 8810 | C 8 | 190 | --- | --- | --- |
| Total | 825200 | --- | 85751 | 314450 | --- | 7552 | 182350 | --- | 2034 |

Total discharge for period (cfs-days)..... 3330000
Total load for period (tons)..... 1368637

A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.

KOOTENAI RIVER BASIN--Continued

12-3220. KOOTENAI RIVER AT PORTHILL, IDAHO

LOCATION.--Lat 49°00'00", long 116°30'10", temperature recorder at gaging station on right bank 300 feet upstream from international boundary at Porthill, Boundary County, and at mile 105.63.
DRAINAGE AREA.--13,700 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: January 1949 to September 1950.
Water temperatures: January 1949 to September 1950, May 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F Aug. 3-7.
EXTREMES, 1949-50, 1963-66.--Water temperatures: Maximum, 69°F on several days during August 1949, Aug. 3-5, 1965; minimum (1949-50, 1963-65), freezing point on many days during winter months of most years.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 49 | 48 | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 47 |
| Minimum .... | 50 | 49 | 48 | 48 | 48 | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | -- | 41 |
| Minimum .... | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 36 | -- | 40 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 |
| Minimum .... | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 36 | 36 | 36 | 35 | 35 | 35 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | -- |
| Minimum .... | 33 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | -- | -- | -- | -- |
| Minimum .... | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | 34 | 35 | 36 | 36 | 36 | 36 | 37 | 38 | 38 | 39 | 39 | 40 | 40 | 41 | 42 | 42 | 42 | 43 | 44 | -- |
| Minimum .... | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | 33 | 34 | 35 | 36 | 36 | 36 | 36 | 37 | 38 | 38 | 39 | 39 | 40 | 40 | 41 | 42 | 42 | 42 | 43 | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 44 | 44 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 45 | 44 | 43 | 43 | 43 | 44 | 45 | 47 | 48 | 48 | 47 | 47 | -- | 45 |
| Minimum .... | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 45 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | 47 | 47 | 47 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 49 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 49 | 50 | 50 | 48 | 48 | 48 | 48 | 48 | 49 | 51 | 53 | 54 | 54 | 53 | 53 | 54 | 55 | 56 | 57 | 56 | 55 | 51 |
| Minimum .... | 46 | 46 | 47 | 49 | 51 | 51 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 51 | 53 | 53 | 53 | 53 | 53 | 54 | 55 | 56 | 55 | 54 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 53 | 52 | 51 | 51 | 50 | 51 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 54 | 56 | 56 | 57 | 57 | 56 | 55 | 54 | 54 | 54 | 54 | 55 | 56 | 56 | -- | 54 |
| Minimum .... | 53 | 52 | 51 | 51 | 50 | 50 | 50 | 51 | 52 | 53 | 53 | 53 | 52 | 52 | 52 | 51 | 52 | 54 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 56 | -- | 53 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 57 | 56 | 55 | 55 | 56 | 58 | 60 | 60 | 60 | 60 | 60 | 61 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 64 | 64 | 64 | 64 | 65 | 61 |
| Minimum .... | 56 | 57 | 57 | 56 | 55 | 55 | 55 | 55 | 56 | 58 | 60 | 60 | 60 | 60 | 60 | 61 | 61 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 64 | 64 | 64 | 64 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 66 | 65 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 63 | 64 | 64 | 64 | 64 | 65 |
| Minimum .... | 64 | 65 | 66 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 66 | 65 | 64 | 64 | 64 | 63 | 63 | 63 | 64 | 64 | 64 | 63 | 64 | 63 | 63 | 63 | 63 | 63 | 63 | 65 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 64 | 64 | 64 | 64 | 64 | 64 | 63 | 63 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 62 | 61 | -- | 62 |
| Minimum .... | 63 | 62 | 61 | 61 | 61 | 61 | 61 | 61 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 61 | 61 | -- | 62 |

## PEND OREILLE RIVER BASIN

### 12-3598. SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 47°58'45", long 113°33'50", temperature recorder at gaging station, on left bank 1,000 feet downstream from Tin Creek, 0.2 mile upstream from Twin Creek, 36 miles southeast of Hungry Horse, Flathead County, and at mile 46.5.
DRAINAGE AREA.--1,160 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 64°F July 31, Aug. 1, 2, 4; minimum, freezing point on many days during January to March.
EXTREMES, May 1965 to September 1966.--Water temperatures: Maximum, 64°F July 31, Aug. 1, 2, 4, 1966; minimum, freezing point on many days during winter months.
REMARKS.--Recorder stopped Dec. 7 to Jan. 6.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 45 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 44 | 42 | 42 | 43 | 43 | 42 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 40 | 41 | 41 | 40 | 40 | 41 | 43 | 42 | 42 |
| Minimum .... | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 40 | 41 | 41 | 42 | 40 | 39 | 40 | 39 | 40 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 41 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 37 | 37 | 37 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 36 | 36 | 37 | 36 | 35 | 36 | 35 | 36 | 37 | — | 38 |
| Minimum .... | 39 | 38 | 38 | 38 | 39 | 38 | 37 | 37 | 38 | 39 | 37 | 36 | 37 | 37 | 37 | 38 | 38 | 39 | 39 | 36 | — | 35 | 35 | 36 | 35 | 35 | 35 | 35 | 35 | 36 | — | 37 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 35 | 35 | 36 | 37 | 36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 35 | 34 | 35 | 35 | 36 | 36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 33 | 34 | 34 | 36 | 37 | 36 | 35 | 34 | 35 | 36 | 35 | 34 | 34 | 33 | 33 | 33 | 34 |
| Minimum .... | -- | -- | -- | -- | -- | -- | 32 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 33 | 34 | 34 | 36 | 35 | 34 | 33 | 34 | 35 | 33 | 33 | 33 | 32 | 32 | 32 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 34 | 35 | 34 | 34 | 33 | 34 | 33 | 33 | 34 | 34 | 35 | 34 | 34 | 34 | 34 | -- | -- | -- | 34 |
| Minimum .... | 32 | 32 | 33 | 33 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 35 | 36 | 37 | 37 | 35 | 34 | 34 | 33 | 33 | 33 | 34 | 34 | 33 | 33 | 33 | 34 | 36 | 34 | 34 | 35 | 36 | 36 | 36 | 37 | 39 | 39 | 39 | 38 | 38 | 37 | 35 |
| Minimum .... | 33 | 34 | 34 | 35 | 35 | 32 | 33 | 33 | 32 | 33 | 32 | 32 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 34 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 40 | 39 | 37 | 36 | 37 | 37 | 38 | 39 | 39 | 42 | 43 | 42 | 39 | 39 | 40 | 39 | — | 39 |
| Minimum .... | 36 | 37 | 37 | 37 | 37 | 38 | 39 | 38 | 37 | 38 | 38 | 38 | 37 | 38 | 39 | 37 | 36 | 36 | 36 | 36 | 37 | 38 | 38 | 39 | 40 | 39 | 38 | 37 | 37 | 38 | — | 38 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 42 | 41 | 40 | 41 | 41 | 41 | 42 | 43 | 43 | 46 | 46 | 44 | 42 | 45 | 46 | 47 | 47 | 46 | 46 | 46 | 45 | 44 |
| Minimum .... | 39 | 41 | 41 | 40 | 39 | 39 | 40 | 40 | 40 | 41 | 40 | 38 | 38 | 39 | 40 | 40 | 39 | 40 | 41 | 43 | 42 | 40 | 39 | 41 | 42 | 42 | 43 | 43 | 43 | 44 | 43 | 41 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 44 | 43 | 43 | 46 | 46 | 47 | 47 | 47 | 46 | 44 | 44 | 47 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 51 | 52 | 54 | 54 | 53 | — | 48 |
| Minimum .... | 43 | 44 | 42 | 41 | 41 | 42 | 44 | 44 | 45 | 45 | 43 | 43 | 43 | 44 | 45 | 45 | 46 | 48 | 48 | 48 | 47 | 48 | 47 | 46 | 47 | 47 | 50 | 51 | 52 | 51 | — | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 50 | 52 | 54 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 59 | 60 | 60 | 61 | 62 | 62 | 60 | 61 | 62 | 63 | 63 | 61 | 61 | 62 | 63 | 63 | 64 | 59 |
| Minimum .... | 51 | 52 | 50 | 49 | 49 | 51 | 54 | 55 | 56 | 56 | 54 | 55 | 54 | 56 | 55 | 57 | 58 | 57 | 59 | 59 | 57 | 56 | 57 | 58 | 59 | 57 | 56 | 57 | 57 | 58 | 59 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 63 | 64 | 62 | 63 | 63 | 63 | 63 | 62 | 63 | 59 | 58 | 59 | 62 | 63 | 63 | 62 | 60 | 55 | 58 | 59 | 60 | 61 | 61 | 60 | 59 | 59 | 59 | 59 | 56 | 61 |
| Minimum .... | 58 | 58 | 59 | 58 | 59 | 58 | 58 | 58 | 57 | 58 | 58 | 56 | 55 | 55 | 56 | 57 | 57 | 57 | 55 | 53 | 52 | 53 | 54 | 54 | 55 | 57 | 56 | 54 | 55 | 56 | 53 | 56 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 59 | 60 | 60 | 61 | 61 | 61 | 61 | 60 | 59 | 58 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 59 | 59 | 59 | 59 | 58 | 56 | 55 | 54 | 53 | 54 | 52 | — | 58 |
| Minimum .... | 52 | 53 | 53 | 54 | 55 | 55 | 56 | 57 | 56 | 55 | 55 | 56 | 55 | 55 | 54 | 54 | 53 | 53 | 55 | 55 | 54 | 54 | 55 | 54 | 53 | 53 | 53 | 52 | 52 | 49 | — | 54 |

PEND OREILLE RIVER BASIN--Continued

12-3600. TWIN CREEK NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 47°59'10", long 113°33'30", temperature recorder at gaging station, on left bank 300 feet upstream from road bridge, 0.1 mile upstream from mouth, and 36 miles southeast of Hungry Horse, Flathead County.
DRAINAGE AREA.--47.0 square miles.
RECORDS AVAILABLE.--Water temperatures: May to September 1965, May to September 1966.
EXTREMES, May to September 1966.--Water temperatures: Maximum, 64°F Aug. 1, 2, 4, 9.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F July 30, 1965.

Temperature (°F) of water, May to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 45 | 44 | 44 | 42 | 40 | 44 | 44 | 42 | 42 | 42 | 40 | 41 | 41 | 40 | 43 | 47 | 46 | 48 | 44 | 41 | 43 | 49 | 49 | 49 | 46 | 48 | 46 | 46 | 47 | 44 |
| Minimum .... | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 37 | 38 | 39 | 38 | 37 | 38 | 37 | 38 | 39 | 38 | 38 | 39 | 41 | 40 | 39 | 39 | 39 | 40 | 40 | 41 | 41 | 40 | 41 | 40 | 39 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 43 | 43 | 40 | 42 | 49 | 47 | 50 | 47 | 46 | 43 | 45 | 44 | 49 | 51 | 51 | 51 | 51 | 48 | 49 | 48 | 47 | 48 | 45 | 50 | 52 | 55 | 56 | 53 | 54 | --- | 48 |
| Minimum .... | 41 | 41 | 39 | 38 | 40 | 41 | 41 | 41 | 42 | 43 | 42 | 41 | 40 | 43 | 41 | 41 | 43 | 43 | 42 | 44 | 42 | 44 | 41 | 43 | 42 | 42 | 44 | 45 | 46 | 44 | --- | 42 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 50 | 48 | 46 | 54 | 57 | 60 | 59 | 59 | 55 | 58 | 54 | 58 | 58 | 61 | 60 | 58 | 60 | 61 | 59 | 60 | 61 | 62 | 63 | 61 | 61 | 61 | 62 | 63 | 63 | 63 | 58 |
| Minimum .... | 43 | 47 | 45 | 44 | 43 | 45 | 47 | 48 | 48 | 48 | 46 | 46 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 49 | 47 | 47 | 49 | 49 | 53 | 48 | 48 | 49 | 49 | 50 | 52 | 48 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 61 | 64 | 61 | 63 | 63 | 62 | 64 | 61 | 60 | 56 | 54 | 57 | 62 | 62 | 62 | 61 | 52 | 53 | 59 | 60 | 60 | 62 | 61 | 57 | 53 | 60 | 59 | 57 | 58 | 60 |
| Minimum .... | 50 | 50 | 52 | 51 | 52 | 50 | 51 | 50 | 51 | 51 | 52 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 49 | 48 | 45 | 46 | 47 | 47 | 48 | 52 | 52 | 51 | 51 | 51 | 47 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 60 | 60 | 61 | 61 | 61 | 60 | 60 | 60 | 60 | 57 | 53 | 53 | 57 | 54 | 56 | 57 | 56 | 55 | 58 | 58 | 58 | 58 | 55 | 52 | 53 | 51 | 52 | 52 | 50 | --- | 57 |
| Minimum .... | 46 | 48 | 49 | 49 | 49 | 49 | 50 | 51 | 49 | 48 | 49 | 51 | 50 | 50 | 48 | 48 | 47 | 47 | 50 | 49 | 48 | 49 | 50 | 49 | 49 | 50 | 50 | 50 | 46 | 43 | --- | 49 |

PEND OREILLE RIVER BASIN--Continued

12-3606. SOLDIER CREEK NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 47°59'30", long 113°34'50", temperature recorder at gaging station, on left bank 200 feet upstream from culverts on west shore road, 0.2 mile upstream from mouth, and 35 miles southeast of Hungry Horse, Flathead County.
DRAINAGE AREA.--4.77 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 54°F on several days during July to September; minimum, freezing point on many days during January to March.
EXTREMES, 1964-66.--Water temperatures: Maximum, 55°F on several days in 1965; minimum, freezing point on many days during winter months each year.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 42 | 42 | 43 | 44 | 44 | 44 | 43 | 42 | 40 | 42 | 41 | 41 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 38 | 39 | 39 | 41 | 39 | 41 |
| Minimum .... | 38 | 38 | 39 | 40 | 42 | 42 | 43 | 43 | 42 | 42 | 39 | 38 | 40 | 40 | 40 | 38 | 38 | 38 | 40 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 39 | 38 | 39 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 39 | 39 | 40 | 40 | 39 | 38 | 37 | 38 | 38 | 37 | 34 | 35 | 35 | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 37 | 37 | 36 | 35 | 35 | 35 | 35 | 35 | 34 | --- | 37 |
| Minimum .... | 37 | 37 | 37 | 38 | 39 | 37 | 37 | 36 | 36 | 37 | 34 | 34 | 34 | 34 | 35 | 36 | 37 | 37 | 37 | 38 | 37 | 36 | 36 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | --- | 36 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 35 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 36 | 37 | 37 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 35 |
| Minimum .... | 33 | 34 | 35 | 36 | 36 | 37 | 36 | 37 | 36 | 35 | 36 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | --- | --- | --- | 32 |
| Minimum .... | 33 | 33 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 32 | --- | --- | --- | 32 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 33 | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 32 | 33 | 32 | 32 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 33 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 34 | 34 | 34 | 34 | 33 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 36 | 36 | 35 | 35 | 35 | 37 | 38 | 38 | 39 | 39 | 38 | 37 | 36 | 38 | 38 | --- | 36 |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 35 | 35 | 34 | 33 | 34 | 35 | 36 | 37 | 36 | 37 | 36 | 36 | 35 | 34 | 36 | --- | 35 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 41 | 42 | 41 | 40 | 39 | 38 | 39 | 39 | 38 | 39 | 39 | 41 | 42 | 41 | 41 | 40 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 41 |
| Minimum .... | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 39 | 39 | 39 | 40 | 41 | 42 | 42 | 42 | 43 | 43 | 39 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 43 | 43 | 41 | 42 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 45 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 48 | 49 | 49 | 49 | --- | 45 |
| Minimum .... | 43 | 43 | 43 | 41 | 41 | 41 | 42 | 42 | 43 | 44 | 43 | 43 | 42 | 42 | 43 | 44 | 45 | 45 | 46 | 45 | 45 | 46 | 44 | 44 | 44 | 44 | 46 | 46 | 48 | 48 | --- | 44 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 48 | 47 | 48 | 50 | 52 | 52 | 52 | 52 | 52 | 51 | 52 | 52 | 53 | 54 | 53 | 53 | 54 | 54 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 53 | 53 | 54 | 52 |
| Minimum .... | 47 | 48 | 47 | 47 | 46 | 47 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 50 | 50 | 52 | 49 | 49 | 49 | 50 | 50 | 52 | 50 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 52 | 53 | 53 | 53 | 52 | 50 | 51 | 53 | 53 | 53 | 52 | 52 | 50 | 49 | 50 | 50 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 52 | 52 |
| Minimum .... | 51 | 51 | 52 | 51 | 52 | 51 | 50 | 50 | 50 | 51 | 52 | 48 | 49 | 49 | 50 | 51 | 51 | 50 | 50 | 49 | 47 | 47 | 48 | 48 | 49 | 52 | 52 | 51 | 51 | 52 | 49 | 50 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 51 | 53 | 53 | 53 | 54 | 54 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | --- | 51 |
| Minimum .... | 47 | 48 | 49 | 50 | 51 | 51 | 52 | 53 | 51 | 50 | 50 | 52 | 51 | 50 | 49 | 49 | 48 | 49 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 49 | 48 | 49 | 48 | 44 | --- | 49 |

PEND OREILLE RIVER BASIN--Continued

12-3610. SULLIVAN CREEK NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 48°01'45", long 113°42'10", temperature recorder at gaging station on left bank, 0.2 mile downstream from Quintonkon Creek, 1 mile upstream from Hungry Horse Reservoir flow line, and 30 miles southeast of Hungry Horse, Flathead County.
DRAINAGE AREA.--71.3 square miles.
RECORDS AVAILABLE.--Water temperatures: May to October 1963, July 1964 to September 1965, May to September 1966.
EXTREMES, May to September 1966.--Water temperatures: Maximum, 61°F Aug. 1, 2.
EXTREMES, 1963-66.--Water temperatures: Maximum, 62°F Aug. 2, 10, 1965.
REMARKS.--Recorder stopped Sept. 9-30. Records furnished by Corps of Engineers, U.S. Army.

Temperature (°F) of water, May to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 47 | 47 | 45 | 47 | 44 | 46 | 46 | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 41 | 41 | 41 | 41 | 41 | 42 | 42 | --- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 43 | 41 | 42 | 46 | 46 | 48 | 46 | 46 | 44 | 45 | 44 | 48 | 49 | 50 | 50 | 49 | 47 | 49 | 48 | 47 | 48 | 48 | 47 | 51 | 52 | 53 | 53 | 52 | --- | 47 |
| Minimum .... | 42 | 42 | 40 | 39 | 41 | 41 | 41 | 42 | 43 | 44 | 43 | 42 | 41 | 44 | 43 | 43 | 44 | 44 | 44 | 45 | 43 | 45 | 43 | 44 | 43 | 43 | 45 | 45 | 47 | 46 | --- | 43 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 50 | 49 | 47 | 53 | 55 | 57 | 56 | 56 | 53 | 56 | 53 | 55 | 57 | 59 | 59 | 58 | 59 | 60 | 58 | 58 | 59 | 59 | 60 | 59 | 58 | 58 | 59 | 60 | 60 | 60 | 57 |
| Minimum .... | 46 | 48 | 47 | 46 | 45 | 47 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 50 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 52 | 50 | 50 | 50 | 51 | 51 | 53 | 50 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 59 | 59 | 59 | 59 | 59 | 59 | 60 | 59 | 59 | 55 | 54 | 55 | 60 | 60 | 59 | 59 | 55 | 53 | 56 | 57 | 57 | 58 | 58 | 56 | 54 | 55 | 55 | 54 | 54 | 57 |
| Minimum .... | 52 | 52 | 53 | 53 | 54 | 52 | 52 | 52 | 52 | 53 | 54 | 50 | 51 | 52 | 52 | 51 | 51 | 50 | 52 | 50 | 47 | 48 | 48 | 48 | 49 | 53 | 52 | 51 | 51 | 51 | 47 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 56 | 57 | 57 | 57 | 56 | 57 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | 47 | 48 | 49 | 50 | 50 | 50 | 52 | 52 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 12-3615. GRAVES CREEK NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 48°07'50", long 113°48'35", temperature recorder at gaging station, on left bank 500 feet upstream from Hungry Horse Reservoir flow line, and 22 miles southeast of Hungry Horse, Flathead County.
DRAINAGE AREA.--27.0 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1964 to September 1966.
EXTREMES, 1965-66.--Maximum, 62°F on several days during July and August; minimum, freezing point on many days during January to March.
EXTREMES, 1964-66.--Water temperatures: Maximum, 62°F on several days in 1966; minimum, freezing point on many days during winter months each year.
REMARKS.--Recorder stopped Apr. 19 to May 24.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 44 | 46 | 46 | 45 | 45 | 43 | 44 | 43 | 44 | 44 | 42 | 41 | 42 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 40 | 42 | 41 | 42 | 40 | 43 |
| Minimum .... | 42 | 42 | 42 | 42 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 40 | 43 | 42 | 42 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 39 | 39 | 40 | 39 | 38 | 39 | 39 | 40 | 39 | 41 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 41 | 41 | 41 | 39 | 40 | 41 | 41 | 40 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 37 | 36 | 36 | 36 | 37 | 36 | 36 | --- | 39 |
| Minimum .... | 39 | 39 | 39 | 40 | 41 | 39 | 39 | 39 | 40 | 40 | 35 | 35 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 37 | 36 | 35 | 35 | 36 | 36 | 35 | 34 | --- | 38 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 37 | 38 | 38 | 38 | 38 | 38 | 37 | 36 | 35 | 36 | 36 | 35 | 34 | 33 | 33 | 33 | 34 | 34 | 35 | 34 | 34 | 33 | 33 | 34 | 34 | 33 | 34 | 34 | 34 | 34 | 35 |
| Minimum .... | 36 | 36 | 37 | 38 | 38 | 38 | 37 | 36 | 35 | 34 | 35 | 35 | 34 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 33 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 33 | 33 | 34 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 |
| Minimum .... | 33 | 33 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 34 | 33 | 32 | 33 | 33 | 33 | 33 | 32 | --- | --- | --- | 32 |
| Minimum .... | 33 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | --- | --- | --- | 32 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 34 | 33 | 34 | 33 | 34 | 35 | 36 | 37 | 37 | 36 | 36 | 36 | 35 | 34 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 33 | 34 | 33 | 33 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 34 | 32 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 37 | 36 | 37 | 36 | 37 | 36 | 36 | 35 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 35 | 36 | 34 | 34 | 34 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 45 | 45 | 44 | 44 | 43 | 44 | 43 | --- |
| Minimum .... | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 40 | 41 | 42 | 42 | 43 | 42 | --- | --- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 40 | 40 | 44 | 45 | 47 | 46 | 45 | 43 | 43 | 42 | 45 | 46 | 46 | 48 | 48 | 46 | 45 | 45 | 45 | 46 | 45 | 45 | 47 | 49 | 50 | 49 | 50 | --- | 45 |
| Minimum .... | 42 | 43 | 40 | 39 | 40 | 39 | 41 | 42 | 43 | 43 | 43 | 41 | 40 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 42 | 44 | 43 | 42 | 42 | 42 | 43 | 44 | 46 | 44 | --- | 42 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 47 | 46 | 45 | 49 | 51 | 53 | 54 | 54 | 51 | 55 | 52 | 54 | 55 | 57 | 58 | 58 | 58 | 59 | 58 | 58 | 58 | 59 | 60 | 59 | 58 | 59 | 60 | 61 | 62 | 62 | 55 |
| Minimum .... | 44 | 46 | 45 | 44 | 42 | 45 | 47 | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 50 | 51 | 51 | 51 | 51 | 52 | 50 | 50 | 51 | 51 | 53 | 50 | 50 | 50 | 51 | 52 | 53 | 49 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 62 | 62 | 60 | 59 | 61 | 60 | 62 | 62 | 59 | 56 | 57 | 57 | 61 | 60 | 60 | 58 | 54 | 54 | 57 | 58 | 58 | 58 | 59 | 56 | 54 | 57 | 55 | 54 | 54 | 58 |
| Minimum .... | 52 | 52 | 53 | 53 | 55 | 52 | 52 | 52 | 52 | 53 | 54 | 50 | 51 | 53 | 52 | 52 | 51 | 50 | 51 | 50 | 47 | 48 | 48 | 48 | 49 | 53 | 52 | 52 | 51 | 50 | 48 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 57 | 58 | 58 | 59 | 58 | 58 | 60 | 60 | 58 | 56 | 56 | 58 | 57 | 57 | 58 | 58 | 56 | 58 | 58 | 58 | 58 | 56 | 55 | 56 | 54 | 55 | 54 | 52 | --- | 57 |
| Minimum .... | 48 | 49 | 49 | 50 | 50 | 50 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 50 | 51 | 54 | 53 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 52 | 49 | 47 | --- | 51 |

PEND OREILLE RIVER BASIN--Continued

12-3616. CANYON CREEK NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 48°12'50", long 113°45'40", temperature recorder at gaging station, on right bank 50 feet downstream from bridge on east shore road, 400 feet upstream from Hungry Horse Reservoir flow line, and 18 miles southeast of Hungry Horse, Flathead County.
DRAINAGE AREA (revised).--4.59 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 52°F on several days during August; minimum, freezing point on many days during January to March.
EXTREMES, 1964-66.--Water temperatures: Maximum, 53°F Aug. 3, 1965; minimum, freezing point on many days during winter months each year.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 42 | 42 | 42 | 41 | 39 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 41 | 40 | 41 |
| Minimum .... | 39 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 41 | 41 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 41 | 41 | 40 | 39 | 39 | 39 | 39 | 39 | 36 | 36 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 36 | 36 | 36 | 35 | 34 | 34 | 34 | 34 | 33 | -- | 37 |
| Minimum .... | 40 | 40 | 39 | 40 | 40 | 39 | 39 | 38 | 38 | 39 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 38 | 38 | 36 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | -- | 37 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 |
| Minimum .... | 33 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 33 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| Minimum .... | 33 | 33 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 32 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 32 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 34 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 34 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 37 | 36 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 41 | 39 | 38 | 38 | 39 | -- | 38 |
| Minimum .... | 35 | 35 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 37 | 38 | 37 | 36 | 35 | 34 | 34 | 36 | 37 | 38 | 39 | 40 | 39 | 38 | 37 | 37 | 38 | -- | 37 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 42 | 42 | 41 | 40 | 40 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 44 | 44 | 42 | 41 | 44 | 44 | 44 | 43 | 45 | 43 | 45 | 45 | 42 |
| Minimum .... | 39 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 42 | 42 | 40 | 40 | 40 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 41 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 41 | 42 | 45 | 45 | 46 | 44 | 44 | 43 | 42 | 42 | 46 | 45 | 47 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 45 | 46 | 48 | 48 | 47 | -- | 45 |
| Minimum .... | 42 | 43 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 43 | 43 | 42 | 43 | 45 | 45 | 46 | 45 | -- | 43 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 47 | 46 | 46 | 48 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 50 |
| Minimum .... | 45 | 47 | 46 | 45 | 44 | 46 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 49 | 50 | 51 | 51 | 51 | 51 | 51 | 49 | 49 | 49 | 50 | 51 | 49 | 49 | 49 | 50 | 50 | 51 | 49 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 49 | 50 | 51 | 51 | 50 | 50 | 49 | 49 | 48 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 48 | 50 |
| Minimum .... | 51 | 51 | 51 | 51 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 49 | 48 | 49 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 48 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 49 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 46 | -- | 48 |
| Minimum .... | 46 | 47 | 47 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 48 | 48 | 49 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 44 | -- | 48 |

## PEND OREILLE RIVER BASIN--Continued

### 12-3619.6. EMERY CREEK NEAR HUNGRY HORSE, MONT.

LOCATION.--Lat 48°21'30", long 113°55'35", temperature recorder at gaging station, on left bank 1,000 feet upstream from bridge on east shore road, 900 feet upstream from Hungry Horse Reservoir flow line, and 6 miles southeast of Hungry Horse, Flathead County.
DRAINAGE AREA.--26.4 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 57°F Aug. 1-4, 10; minimum, freezing point on many days during December to March.
EXTREMES, 1964-66.--Water temperatures: Maximum, 58°F on several days in 1965; minimum, freezing point on many days during winter months each year.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 43 | 42 | 45 | 46 | 45 | 43 | 43 | 41 | 41 | 42 | 43 | 41 | 42 | 40 | 41 | 40 | 41 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 42 | 40 | 42 |
| Minimum .... | 40 | 39 | 38 | 40 | 40 | 38 | 39 | 38 | 38 | 38 | 37 | 36 | 36 | 36 | 37 | 36 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 34 | 33 | 33 | 34 | 35 | 34 | 33 | --- | 37 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 42 | 42 | 43 | 41 | 40 | 39 | 37 | 37 | 40 | 40 | 40 | 37 | 38 | 39 | 39 | 38 | 38 | 38 | 37 | 37 | 38 | 37 | 36 | 38 | 37 | 39 | 37 | 39 |
| Minimum .... | 36 | 36 | 35 | 38 | 38 | 37 | 37 | 36 | 37 | 37 | 35 | 34 | 34 | 36 | 36 | 35 | 36 | 37 | 37 | 37 | 36 | 35 | 34 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | --- | 35 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 35 | 35 | 35 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 34 | 34 | 34 |
| Minimum .... | 33 | 34 | 34 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 33 | 33 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Minimum .... | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 33 | 34 | 34 | 34 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 33 | 32 | 32 | 32 | 33 | 33 | 33 | --- | --- | --- | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | --- | --- | --- | 32 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 32 | 32 | --- | --- | --- | 32 | 32 | 32 | 34 | 35 | 35 | 35 | 35 | 35 | 36 | 35 | 36 | 36 | 35 | 34 | 33 | 32 | 35 | 37 | 38 | 38 | 38 | 38 | 36 | 35 | 35 |
| Minimum .... | 32 | 32 | 32 | --- | --- | --- | 32 | 32 | 32 | 32 | 34 | 33 | 34 | 34 | 34 | 35 | 34 | 33 | 34 | 34 | 33 | 32 | 32 | 32 | 32 | 33 | 34 | 34 | 34 | 34 | 34 | 33 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 37 | 36 | 39 | 39 | 39 | 38 | 38 | 37 | 38 | 38 | 37 | 38 | 37 | 39 | 38 | 38 | 38 | 37 | 37 | 38 | 39 | 38 | 41 | 41 | 39 | 38 | 38 | 40 | 38 | --- | 38 |
| Minimum .... | 34 | 35 | 34 | 35 | 36 | 36 | 37 | 36 | 36 | 36 | 36 | 36 | 35 | 36 | 37 | 36 | 35 | 34 | 34 | 36 | 37 | 38 | 38 | 38 | 38 | 38 | 36 | 36 | 36 | 37 | --- | 36 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 42 | 42 | 42 | 42 | 40 | 42 | 43 | 42 | 42 | 40 | 39 | 39 | 39 | 40 | 40 | 43 | 43 | 44 | 43 | 41 | 41 | 46 | 47 | 48 | 46 | 48 | 47 | 47 | 47 | 43 |
| Minimum .... | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 39 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 40 | 41 | 39 | 38 | 39 | 40 | 41 | 43 | 43 | 43 | 44 | 43 | 39 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 44 | 39 | 41 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 48 | 46 | 48 | 48 | 48 | 46 | 47 | 46 | 46 | 46 | 45 | 45 | 48 | 47 | 50 | 50 | 50 | --- | 46 |
| Minimum .... | 43 | 43 | 39 | 36 | 39 | 40 | 40 | 41 | 42 | 43 | 42 | 41 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 45 | 43 | 44 | 43 | 43 | 43 | 42 | 45 | 44 | 46 | 44 | --- | 42 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 47 | 47 | 46 | 49 | 51 | 53 | 53 | 51 | 50 | 51 | 50 | 52 | 52 | 54 | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 54 | 55 | 53 | 54 | 54 | 55 | 56 | 56 | 55 | 52 |
| Minimum .... | 44 | 46 | 46 | 45 | 44 | 46 | 47 | 47 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 48 | 47 | 47 | 47 | 47 | 45 | 46 | 47 | 47 | 48 | 46 | 46 | 47 | 48 | 48 | 49 | 47 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 57 | 53 | 56 | 55 | 54 | 56 | 57 | 56 | 52 | 49 | 51 | 56 | 56 | 55 | 55 | 49 | 51 | 52 | 53 | 53 | 54 | 54 | 52 | 49 | 53 | 49 | 49 | 50 | 53 |
| Minimum .... | 48 | 48 | 49 | 49 | 50 | 47 | 48 | 48 | 48 | 48 | 50 | 46 | 47 | 47 | 48 | 47 | 47 | 46 | 47 | 46 | 44 | 44 | 44 | 44 | 44 | 48 | 48 | 47 | 47 | 46 | 44 | 47 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 54 | 54 | 55 | 54 | 55 | 54 | 54 | 53 | 52 | 52 | 52 | 52 | 50 | 52 | 52 | 51 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 48 | 48 | 49 | 46 | --- | 52 |
| Minimum .... | 44 | 44 | 45 | 45 | 45 | 46 | 48 | 48 | 46 | 46 | 46 | 48 | 47 | 46 | 46 | 46 | 45 | 45 | 48 | 46 | 46 | 45 | 46 | 45 | 47 | 47 | 47 | 47 | 43 | 40 | --- | 46 |

PEND OREILLE RIVER BASIN--Continued

12-3625. SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT.

LOCATION.--Lat 48°21'30", long 114°02'15", temperature recorder at gaging station, on right bank 1.5 miles downstream from Hungry Horse Dam, 3.5 miles upstream from mouth, and 7 miles east of Columbia Falls, Flathead County.
DRAINAGE AREA.--1,663 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F Aug. 9-11; minimum, 37°F on many days during January to June.
EXTREMES, 1964-66.--Water temperatures: Maximum, 66°F Aug. 9-11, 1966; minimum, 36°F on many days in 1965.
REMARKS.--Recorder stopped Dec. 15-31; range in temperature 40°F to 41°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 43 | 43 | 43 | 44 | 44 | 47 | 40 | 40 | 40 | 40 | 40 | 40 | 41 |
| Minimum .... | 39 | 39 | 39 | 40 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 41 | 42 | 42 | 39 | 40 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | --- | 41 |
| Minimum .... | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | 41 | 41 | --- | 40 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 41 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minimum .... | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 |
| Minimum .... | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 37 | 38 | 38 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | --- | --- | --- | 38 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 37 | 37 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | --- | --- | --- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 39 | 38 | 38 | 38 | 39 | 38 | 39 | 38 | 38 | 39 | 39 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 |
| Minimum .... | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 39 | 38 | 39 | 38 | 38 | 38 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | --- | 39 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 38 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | --- | 38 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 38 | 39 | 38 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | --- | 38 |
| Minimum .... | 38 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 38 | 39 | --- | 38 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 40 | 39 | 40 | 40 | 39 | 40 | 40 | 42 | 43 | 42 | 41 | 43 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 45 | 47 | 40 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 42 | 39 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 42 | 51 | 54 | 60 | 63 | 65 | 65 | 66 | 66 | 66 | 65 | 64 | 64 | 65 | 65 | 65 | 65 | 62 | 62 | 63 | 64 | 64 | 40 | 43 | 43 | 43 | 42 | 41 | 39 | 39 | 56 |
| Minimum .... | 39 | 39 | 42 | 49 | --- | 59 | 61 | 62 | 62 | 63 | 63 | 62 | 62 | 63 | 62 | 62 | 61 | 62 | 61 | 61 | 60 | 60 | 40 | 39 | 39 | 41 | 39 | 39 | 39 | 39 | 39 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 43 | 44 | 44 | 43 | 39 | 39 | 39 | 39 | 43 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 42 | 42 | 42 | 41 | 39 | 40 | 40 | 40 | --- | 40 |
| Minimum .... | 39 | 39 | 40 | 41 | 41 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 41 | 39 | 39 | 39 | 39 | 39 | --- | 39 |

PEND OREILLE RIVER BASIN--Continued

12-3630. FLATHEAD RIVER AT COLUMBIA FALLS, MONT.

LOCATION.--Lat 48°21'50", long 114°11'10", at gaging station at county road bridge at Columbia Falls, Flathead County, 5.7 miles downstream from South Fork, and at mile 143.0.
DRAINAGE AREA.--4,464 square miles.
RECORDS AVAILABLE.--Chemical analyses: January 1949 to September 1950, August 1963 to September 1966.
Water temperatures: January 1949 to September 1950, August 1963 to September 1966.
Sediment records: July 1965 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 150 ppm Apr. 1-7; minimum, 84 ppm Jan. 1-9.
Hardness: Maximum, 99 ppm Oct. 11-18; minimum, 78 ppm July 1-19.
Specific conductance: Maximum daily, 201 micromhos Mar. 3; minimum daily, 143 micromhos June 13.
Water temperatures: Maximum, 68°F Aug. 1, 7; minimum, freezing point Nov. 27.
Sediment concentrations: Maximum daily, 800 ppm May 7; minimum daily, 1 ppm on several days during October, July to September.
Sediment loads: Maximum daily, 71,000 tons May 7; minimum daily, 6 tons Aug. 26.
EXTREMES, 1949-50, 1963-66.--Dissolved solids: Maximum, 150 ppm Apr. 1-7, 1966; minimum, 77 ppm July 1-10, 1950.
Hardness: Maximum, 119 ppm Jan. 11-31, 1949; minimum, 67 ppm June 1-10, 1949.
Specific conductance (1963-66): Maximum daily, 220 micromhos July 21, 1964; minimum daily, 135 micromhos June 4, 1964.
Water temperatures: Maximum, 69°F Aug. 23, 1963; minimum, freezing point on many days during winter months.
Sediment concentrations (July 1965 to September 1966): Maximum daily, 800 ppm May 7, 1966; minimum daily, 1 ppm on several days.
Sediment loads (July 1965 to September 1966): Maximum daily, 71,000 tons May 7, 1966; minimum daily, 6 tons Aug. 26, 1966.
REMARKS.--Daily samples for chemical analysis composited by discharge.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | | |
| Oct. 1-10, 1965 | 5509 | 4.6 | | 26 | 6.6 | 1.1 | 0.6 | 111 | 0 | 4.8 | 0.4 | 0.0 | 0.0 | 0.01 | 104 | 0.14 | 1550 | 92 | 1 | 0.0 | 180 | 7.8 | 1 |
| Oct. 11-18..... | 3676 | 4.6 | | 28 | 7.1 | 1.0 | .4 | 114 | 0 | 6.0 | .2 | .0 | .0 | .02 | 106 | .14 | 1050 | 99 | 5 | .0 | 188 | 8.0 | 3 |
| Oct. 19-25..... | 2881 | 4.6 | | 28 | 6.4 | 1.0 | .4 | 115 | 0 | 5.5 | .2 | .0 | .0 | .01 | 100 | .14 | 778 | 96 | 1 | .0 | 188 | 7.7 | 3 |
| Oct. 26-31..... | 11020 | 4.8 | | 26 | 5.6 | 1.1 | .4 | 107 | 0 | 3.8 | .4 | .0 | .1 | .01 | 102 | .14 | 3030 | 88 | 0 | .0 | 179 | 7.8 | 2 |
| Nov. 1-10..... | 5231 | 5.9 | | 27 | 6.0 | 1.4 | .4 | 118 | 0 | 5.0 | .7 | .0 | .0 | .03 | 104 | .14 | 1470 | 92 | 0 | .1 | 189 | 7.6 | 3 |
| Nov. 11-28..... | 3257 | 5.3 | | 26 | 7.6 | 1.0 | .4 | 112 | 0 | 4.0 | 1.5 | .1 | .0 | .01 | 105 | .14 | 923 | 96 | 4 | .0 | 186 | 7.4 | 2 |
| Nov. 29-Dec. 8. | 10490 | 4.7 | | 25 | 6.2 | .9 | .4 | 104 | 0 | 4.5 | .2 | .0 | .0 | .00 | 102 | .14 | 2890 | 88 | 2 | .0 | 174 | 7.7 | 5 |
| Dec. 9-12..... | 4725 | 4.8 | | 28 | 5.4 | .9 | .4 | 108 | 0 | 1.5 | .3 | .1 | .0 | .01 | 105 | .14 | 1340 | 92 | 3 | .0 | 178 | 7.6 | 3 |
| Dec. 13-31..... | 10670 | 4.3 | | 25 | 5.2 | .7 | .4 | 101 | 0 | 3.5 | .2 | .0 | .0 | .01 | 97 | .13 | 2790 | 84 | 1 | .0 | 161 | 7.6 | 5 |
| Jan. 1-9, 1986. | 11000 | 5.2 | | 24 | 5.6 | 1.8 | 1.0 | 98 | 0 | 2.8 | 1.8 | .0 | .0 | .09 | 84 | .11 | 2490 | 82 | 1 | .1 | 158 | 7.4 | -- |
| Jan. 10-20..... | 11320 | 5.6 | | 24 | 5.6 | 1.8 | 1.0 | 101 | 0 | 2.8 | 1.8 | .0 | .0 | .07 | 90 | .12 | 2750 | 82 | 0 | .1 | 158 | 7.4 | -- |
| Jan. 21-31..... | 7539 | 5.2 | | 24 | 6.2 | 1.8 | 1.0 | 104 | 0 | 4.7 | 1.8 | .0 | .0 | .06 | 90 | .12 | 1830 | 85 | 0 | .1 | 166 | 7.5 | -- |
| Feb. 1-9..... | 4327 | 4.4 | | 24 | 6.1 | 1.2 | .3 | 105 | 0 | 4.4 | .0 | .2 | .6 | .00 | 94 | .13 | 1100 | 85 | 0 | .0 | 170 | 7.6 | -- |
| Feb. 10-19..... | 4162 | 4.2 | | 25 | 6.0 | 1.1 | .3 | 107 | 0 | 4.4 | .0 | .1 | .1 | .01 | 100 | .14 | 1120 | 87 | 0 | .0 | 174 | 7.7 | -- |
| Feb. 20-26..... | 3008 | 4.1 | | 25 | 6.4 | 1.1 | .4 | 105 | 0 | 4.6 | .0 | .1 | .1 | .00 | 98 | .13 | 796 | 90 | 2 | .0 | 174 | 7.7 | -- |

PEND OREILLE RIVER BASIN--Continued

12-3630. FLATHEAD RIVER AT COLUMBIA FALLS, MONT.--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | | |
| Mar. 1-9, 1966. | 6577 | 4.4 | | 23 | 6.6 | 1.8 | 0.8 | 95 | 0 | 2.5 | 2.1 | 0.1 | 0.0 | 0.01 | 100 | 0.14 | 1780 | 85 | 7 | 0.1 | 167 | 7.5 | -- |
| Mar. 10-22..... | 2167 | 5.0 | | 29 | 5.6 | 2.5 | 1.2 | 113 | 0 | 4.9 | 1.8 | .1 | .0 | .06 | 128 | .17 | 749 | 96 | 3 | .1 | 197 | 7.4 | -- |
| Mar. 23-31..... | 2782 | 5.5 | | 25 | 7.5 | 1.8 | .5 | 106 | 0 | 2.5 | .7 | .1 | .0 | .00 | 108 | .15 | 811 | 94 | 7 | .1 | 186 | 7.7 | -- |
| Apr. 1-7..... | 6884 | 5.3 | | 24 | 7.2 | 1.4 | 1.0 | 103 | 0 | .0 | 2.8 | .2 | .6 | .00 | 150 | .20 | 2790 | 90 | 5 | .1 | 176 | 7.5 | -- |
| Apr. 8-18..... | 9276 | 5.2 | | 24 | 7.1 | 1.4 | .8 | 102 | 0 | .0 | 2.1 | .3 | .9 | .00 | 140 | .19 | 3510 | 90 | 6 | .1 | 170 | 7.5 | -- |
| Apr. 19-30..... | 8160 | 4.6 | | 24 | 7.5 | 1.2 | .8 | 102 | 0 | .0 | 1.8 | .2 | 1.0 | .00 | 142 | .19 | 3130 | 90 | 6 | .0 | 170 | 7.5 | -- |
| May 1-15..... | 22660 | 5.1 | | 28 | 4.4 | 1.1 | .4 | 108 | 0 | 4.8 | .4 | .0 | .0 | .02 | 99 | .13 | 6060 | 88 | 0 | .0 | 185 | 8.0 | 2 |
| May 16-31..... | 22600 | 4.8 | | 27 | 4.3 | 1.0 | .4 | 101 | 0 | 3.5 | 3.4 | .1 | .0 | .01 | 96 | .13 | 5860 | 85 | 2 | .0 | 166 | 7.8 | 3 |
| June 1-30..... | 25160 | 3.6 | | 22 | 6.1 | 1.1 | .4 | 94 | 0 | 4.5 | .5 | .1 | .1 | .01 | 85 | .12 | 5770 | 80 | 2 | .0 | 154 | 7.4 | 3 |
| July 1-19..... | 14170 | 4.1 | | 22 | 5.1 | 1.1 | .2 | 94 | 0 | 4.0 | .2 | .0 | .0 | .01 | 85 | .12 | 3250 | 76 | 0 | .0 | 154 | 7.5 | 2 |
| July 20-31..... | 6391 | 4.4 | | 24 | 6.3 | .9 | .2 | 101 | 0 | 7.2 | .2 | .0 | .0 | .01 | 93 | .13 | 1600 | 86 | 3 | .0 | 165 | 7.8 | 1 |
| Aug. 1-31..... | 4369 | 4.6 | | 26 | 6.6 | .9 | .4 | 109 | 0 | 6.5 | .2 | .0 | .0 | .02 | 105 | .14 | 1240 | 92 | 2 | .0 | 180 | 7.6 | 1 |
| Sept. 1-30..... | 6886 | 3.9 | | 25 | 6.2 | 1.2 | .6 | 107 | 0 | 3.2 | .8 | .1 | .4 | .02 | 102 | .14 | 1900 | 88 | 0 | .0 | 170 | 7.6 | 1 |
| Weighted average.... | -- | 4.5 | | 25 | 5.8 | 1.2 | 0.5 | 102 | -- | 3.9 | 1.0 | 0.1 | 0.1 | 0.01 | 98 | 0.13 | 2550 | 85 | 2 | 0.0 | 167 | 7.6 | -- |
| Time-weigbted average.... | 9662 | 4.6 | | 25 | 6.1 | 1.2 | 0.5 | 104 | -- | 4.0 | 0.9 | 0.1 | 0.1 | 0.01 | 102 | -- | -- | 88 | 2 | 0.0 | 172 | 7.6 | -- |
| Tons per day. | -- | 117 | | 642 | 150 | 30 | 13 | 2650 | -- | 102 | 26 | 1.7 | 3.1 | 0.44 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 174 | 169 | 163 | 149 | 147 | 195 | 175 | 184 | 152 | 155 | 173 | 175 |
| 2..... | 177 | 186 | 159 | 155 | 161 | 187 | 178 | 171 | 158 | 147 | 171 | 171 |
| 3..... | 176 | 185 | 162 | 155 | 157 | 201 | 174 | 171 | 153 | 144 | 176 | 188 |
| 4..... | 175 | 162 | 162 | 154 | 167 | 161 | 176 | 170 | 146 | 144 | 177 | 190 |
| 5..... | 177 | 185 | 162 | 152 | 189 | 160 | 178 | 170 | 151 | 147 | 177 | 194 |
| 6..... | 174 | 161 | 160 | 154 | 154 | 164 | 179 | 197 | 149 | 147 | 177 | 165 |
| 7..... | 171 | 184 | 158 | 155 | 153 | 160 | 174 | 176 | 151 | 147 | 180 | 175 |
| 8..... | 172 | 169 | 159 | 157 | 153 | 158 | 170 | 168 | 148 | 145 | 178 | 168 |
| 9..... | 176 | 183 | 167 | 161 | 155 | 159 | 176 | 170 | 151 | 147 | 180 | 173 |
| 10..... | 177 | 170 | 174 | 157 | 164 | 193 | 169 | 168 | 148 | 147 | 180 | 168 |
| 11..... | 183 | 169 | 177 | 155 | 191 | 195 | 169 | 165 | 152 | 147 | 181 | 194 |
| 12..... | 183 | 171 | 178 | 156 | 190 | 198 | 169 | 161 | 148 | 151 | 181 | 166 |
| 13..... | 182 | 171 | 161 | 156 | 187 | 198 | 169 | 158 | 143 | 151 | 183 | 164 |
| 14..... | 175 | 169 | 158 | 155 | 156 | 181 | 171 | 162 | 151 | 152 | 181 | 162 |
| 15..... | 182 | 165 | 158 | 155 | 156 | 197 | 173 | 166 | 151 | 156 | 184 | 183 |
| 16..... | 182 | 169 | 158 | 154 | 157 | 198 | 176 | 162 | 148 | 154 | 184 | 164 |
| 17..... | 184 | 169 | 157 | 155 | 169 | 197 | 170 | 162 | 148 | 154 | 184 | 164 |
| 18..... | 183 | 154 | 156 | 154 | 161 | 198 | 172 | 168 | 145 | 156 | 184 | 164 |
| 19..... | 185 | 169 | 159 | 158 | 153 | 200 | 174 | 168 | 145 | 156 | 186 | 164 |
| 20..... | 182 | 169 | 156 | 161 | 183 | 198 | 175 | 166 | 145 | 158 | 183 | 170 |
| 21..... | 166 | 171 | 157 | 154 | 152 | 198 | 177 | 166 | 145 | 162 | 184 | 163 |
| 22..... | 186 | 168 | 158 | 155 | 157 | 180 | 178 | 159 | 146 | 162 | 188 | 176 |
| 23..... | 186 | 158 | 157 | 157 | 159 | 169 | 179 | 177 | 147 | 163 | 188 | 183 |
| 24..... | 184 | 183 | 153 | 152 | 170 | 174 | 180 | 163 | 147 | 166 | 191 | 198 |
| 25..... | 185 | 187 | 152 | 159 | 191 | 199 | 174 | 154 | 154 | 162 | 196 | 197 |
| 26..... | 165 | 185 | 155 | 157 | 192 | 200 | 162 | 163 | 149 | 164 | 199 | 164 |
| 27..... | 166 | 184 | 153 | 157 | 163 | 198 | 169 | 159 | 154 | 167 | 169 | 164 |
| 28..... | 166 | 183 | 154 | 161 | 162 | 199 | 173 | 171 | 151 | 169 | 180 | 178 |
| 29..... | 166 | 168 | 154 | 191 | -- | 194 | 173 | 168 | 146 | 167 | 166 | 172 |
| 30..... | 164 | 156 | 154 | 192 | -- | 188 | 171 | 150 | 146 | 173 | 166 | 167 |
| 31..... | 165 | — | 151 | 158 | -- | 179 | -- | 166 | — | 173 | 170 | -- |
| Average | 176 | 172 | 159 | 158 | 166 | 186 | 173 | 167 | 148 | 155 | 180 | 174 |

PEND OREILLE RIVER BASIN--Continued

12-3630. FLATHEAD RIVER AT COLUMBIA FALLS, MONT.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 48 | 47 | 49 | 52 | 48 | 45 | 55 | 55 | 51 | 49 | 50 | 49 | 48 | 48 | 48 | 47 | 46 | 46 | 45 | 44 | 46 | 45 | 44 | 47 | 45 | 45 | 44 | 44 | 45 | 49 | 48 | 47 |
| November | 45 | 43 | 41 | 44 | 42 | 43 | 44 | 42 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 39 | 37 | 38 | 36 | 33 | 32 | 38 | 38 | 40 | --- | 41 |
| December | 40 | 43 | 43 | 44 | 45 | 42 | 43 | 43 | 41 | 40 | 39 | 40 | 41 | 40 | 41 | 40 | 41 | 41 | 42 | 41 | 40 | 38 | 41 | 42 | 40 | 41 | 40 | 42 | 41 | 40 | 41 | 41 |
| January | 42 | 40 | 38 | 38 | 39 | 40 | 41 | 40 | 40 | 40 | 39 | 41 | 40 | 40 | 40 | 39 | 39 | 39 | 37 | 37 | 38 | 36 | 35 | 35 | 35 | 35 | 35 | 38 | 37 | 38 | 39 | 38 |
| February | 41 | 41 | 40 | 42 | 41 | 38 | 39 | 38 | 39 | 38 | 38 | 37 | 39 | 36 | 38 | 38 | 39 | 39 | 42 | 41 | 40 | 41 | 41 | 41 | 38 | 38 | 40 | 42 | --- | --- | --- | 39 |
| March | 37 | 38 | 37 | 39 | 40 | 40 | 40 | 41 | 41 | 43 | 43 | 43 | 41 | 41 | 41 | 41 | 40 | 39 | 40 | 40 | 39 | 41 | 42 | 43 | 47 | 44 | 46 | 47 | 46 | 47 | 43 | 42 |
| April | 43 | 44 | 43 | 45 | 44 | 46 | 47 | 46 | 43 | 43 | 43 | 42 | 42 | 42 | 46 | 42 | 42 | 41 | 40 | 41 | 42 | 43 | 44 | 46 | 47 | 46 | 45 | 43 | 44 | 44 | --- | 44 |
| May | 49 | 52 | 52 | 49 | 48 | 48 | 42 | 50 | 49 | 49 | 46 | 43 | 45 | 44 | 44 | 44 | 44 | 47 | 46 | 48 | 45 | 46 | 47 | 55 | 52 | 52 | 53 | 53 | 52 | 50 | 50 | 48 |
| June | 51 | 48 | 47 | 48 | 48 | 48 | 53 | 51 | 51 | 49 | 49 | 50 | 47 | 49 | 50 | 52 | 53 | 54 | 43 | 51 | 50 | 52 | 51 | 48 | 51 | 53 | 54 | 54 | 54 | 53 | --- | 50 |
| July | 54 | 52 | 49 | 49 | 53 | 56 | 58 | 58 | 57 | 55 | 56 | 54 | 59 | 60 | 51 | 56 | 60 | 63 | 64 | 64 | 65 | 63 | 63 | 61 | 60 | 58 | 60 | 61 | 62 | 64 | 65 | 58 |
| August | 68 | 60 | 66 | 66 | 63 | 64 | 68 | 65 | 64 | 65 | 64 | 62 | 58 | 62 | 64 | 64 | 65 | 64 | 58 | 58 | 60 | 63 | 63 | 60 | 60 | 60 | 50 | 53 | 56 | 50 | 50 | 61 |
| September | 57 | 43 | 56 | 62 | 65 | 51 | 52 | 53 | 52 | 50 | 58 | 48 | 49 | 48 | 49 | 51 | 50 | 53 | 48 | 47 | 51 | 52 | 57 | 57 | 54 | 46 | 45 | 49 | 48 | 46 | --- | 52 |

PEND OREILLE RIVER BASIN--Continued

12-3630. FLATHEAD RIVER AT COLUMBIA FALLS, MONT.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 8220 | 17 | 380 | 11000 | 11 | 330 | 10800 | 20 | 580 |
| 2 | 5590 | 4 | 60 | 11000 | 12 | 360 | 11000 | 24 | 710 |
| 3 | 5220 | 1 | 14 | 9360 | 11 | 280 | 11000 | 15 | 450 |
| 4 | 5200 | 4 | 56 | 2440 | 8 | 53 | 11100 | 14 | 420 |
| 5 | 5200 | 5 | 70 | 2430 | 5 | 33 | 11300 | 16 | 490 |
| 6 | 5220 | 5 | 70 | 2410 | 7 | 46 | 11400 | 18 | 550 |
| 7 | 6010 | 7 | 110 | 2400 | 12 | 78 | 11300 | 15 | 460 |
| 8 | 5340 | 5 | 72 | 2330 | 5 | 31 | 10500 | 11 | 310 |
| 9 | 4630 | 5 | 62 | 3120 | 6 | 51 | 7050 | 14 | 270 |
| 10 | 4460 | 4 | 48 | 5820 | 7 | 110 | 5290 | 9 | 130 |
| 11 | 5040 | 6 | 82 | 3090 | 8 | 67 | 3420 | 8 | 74 |
| 12 | 5680 | 10 | 150 | 3120 | 11 | 93 | 3140 | 6 | 51 |
| 13 | 3260 | 5 | 44 | 3040 | 9 | 74 | 6790 | 20 | 370 |
| 14 | 3160 | 7 | 60 | 2940 | 5 | 40 | 10900 | 20 | 590 |
| 15 | 3160 | 8 | 68 | 3440 | 8 | 74 | 10700 | 13 | 380 |
| 16 | 3130 | 6 | 51 | 4370 | 9 | 110 | 10600 | 9 | 260 |
| 17 | 3010 | 7 | 57 | 3840 | 7 | 73 | 10700 | 9 | 260 |
| 18 | 2970 | 4 | 32 | 3700 | 6 | 60 | 10700 | 10 | 290 |
| 19 | 2920 | 11 | 87 | 3310 | 4 | 36 | 11000 | 10 | 300 |
| 20 | 2890 | 12 | 94 | 3350 | 4 | 36 | 11100 | 10 | 300 |
| 21 | 2840 | 6 | 46 | 2820 | 5 | 38 | 11000 | 12 | 360 |
| 22 | 2810 | 9 | 68 | 3700 | 6 | 60 | 10900 | 12 | 350 |
| 23 | 2800 | 7 | 53 | 5230 | 8 | 110 | 10700 | 10 | 290 |
| 24 | 2780 | 8 | 60 | 3030 | 14 | 110 | 10600 | 10 | 290 |
| 25 | 3130 | 8 | 68 | 2410 | 14 | 91 | 10800 | 12 | 350 |
| 26 | 10900 | 28 | 820 | 2540 | 9 | 62 | 10700 | 12 | 350 |
| 27 | 11000 | 16 | 480 | 2400 | 6 | 39 | 10800 | 11 | 320 |
| 28 | 11100 | 10 | 300 | 2300 | 6 | 37 | 11100 | 13 | 390 |
| 29 | 11100 | 5 | 150 | 5660 | 12 | 180 | 11300 | 12 | 370 |
| 30 | 11000 | 10 | 300 | 10800 | 14 | 410 | 11200 | 10 | 300 |
| 31 | 11000 | 9 | 270 | --- | --- | --- | 11100 | 10 | 300 |
| Total | 170770 | --- | 4282 | 127400 | --- | 3172 | 309990 | --- | 10915 |
| | JANUARY | | | FEBRUARY | | | MARCH | | |
| 1 | 11100 | 8 | 240 | 4870 | 14 | 180 | 2030 | 4 | 22 |
| 2 | 11000 | 8 | 240 | 4050 | 12 | 130 | 1530 | 7 | 29 |
| 3 | 10800 | 9 | 260 | 3980 | 6 | 64 | 2860 | 5 | 39 |
| 4 | 10400 | 9 | 250 | 3240 | 4 | 35 | 8550 | 6 | 140 |
| 5 | 10500 | 8 | 230 | 1690 | 5 | 23 | 8560 | 4 | 92 |
| 6 | 10900 | 7 | 210 | 1660 | 11 | 49 | 8800 | 9 | 210 |
| 7 | 11300 | 9 | 270 | 4730 | 13 | 170 | 8910 | 8 | 190 |
| 8 | 11500 | 12 | 370 | 5920 | 11 | 180 | 8910 | 9 | 220 |
| 9 | 11500 | 9 | 280 | 8800 | 7 | 170 | 9040 | 9 | 220 |
| 10 | 11400 | 10 | 310 | 6580 | 5 | 89 | 2830 | 9 | 69 |
| 11 | 11400 | 11 | 340 | 1660 | 6 | 27 | 1820 | 7 | 34 |
| 12 | 11400 | 10 | 310 | 1620 | 5 | 22 | 1770 | 9 | 43 |
| 13 | 11400 | 7 | 220 | 1550 | 3 | 13 | 1740 | 4 | 19 |
| 14 | 11400 | 7 | 220 | 4170 | 6 | 68 | 2410 | 9 | 59 |
| 15 | 11400 | 8 | 250 | 6330 | 8 | 140 | 1890 | 8 | 41 |
| 16 | 11300 | 9 | 270 | 5040 | 12 | 160 | 1920 | 5 | 26 |
| 17 | 11300 | 9 | 270 | 4790 | 7 | 91 | 1880 | 3 | 15 |
| 18 | 11400 | 10 | 310 | 4120 | 6 | 67 | 1800 | 4 | 19 |
| 19 | 11200 | 10 | 300 | 5760 | 5 | 78 | 1790 | 3 | 14 |
| 20 | 10900 | 13 | 380 | 3590 | 4 | 39 | 1780 | 4 | 19 |
| 21 | 10900 | 10 | 290 | 6420 | 15 | 260 | 1740 | 10 | 47 |
| 22 | 11000 | 10 | 300 | 4130 | 20 | 220 | 4800 | 10 | 130 |
| 23 | 11100 | 8 | 240 | 3890 | 17 | 180 | 3190 | 4 | 34 |
| 24 | 9120 | 8 | 200 | 1820 | 16 | 79 | 2200 | 4 | 24 |
| 25 | 8870 | 7 | 170 | 1440 | 19 | 74 | 1730 | 2 | 9 |
| 26 | 8890 | 10 | 240 | 1430 | 14 | 54 | 1780 | 3 | 14 |
| 27 | 7340 | 16 | 320 | 1440 | 17 | 66 | 1900 | 6 | 31 |
| 28 | 5970 | 16 | 260 | 2910 | 22 | 170 | 2120 | 15 | 86 |
| 29 | 2540 | 15 | 100 | --- | --- | --- | 2910 | 20 | 160 |
| 30 | 1810 | 24 | 120 | --- | --- | --- | 3340 | 21 | 190 |
| 31 | 5390 | 29 | 420 | --- | --- | --- | 5870 | 48 | 760 |
| Total | 306430 | --- | 8190 | 107630 | --- | 2898 | 112000 | --- | 3005 |

PEND OREILLE RIVER BASIN--Continued

12-3630. FLATHEAD RIVER AT COLUMBIA FALLS, MONT.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 6800 | 99 | 1800 | 8600 | 15 | 350 | 39100 | 390 | 41000 |
| 2 | 7310 | 70 | 1400 | 8910 | 16 | 380 | 38000 | 310 | 32000 |
| 3 | 7250 | 49 | 960 | 10400 | 25 | 700 | 31500 | 230 | 20000 |
| 4 | 6650 | 26 | 470 | 14400 | 160 | 6200 | 32000 | 220 | 19000 |
| 5 | 6350 | 32 | 550 | 20500 | 550 | 30000 | 30400 | 170 | 14000 |
| 6 | 6480 | 26 | 450 | 26400 | 700 | 50000 | 28900 | 140 | 11000 |
| 7 | 7350 | 32 | 640 | 33000 | 800 | 71000 | 27500 | 130 | 9700 |
| 8 | 8120 | 39 | 860 | 31200 | 430 | 36000 | 28000 | 110 | 8300 |
| 9 | 8680 | 42 | 980 | 29300 | 260 | 21000 | 28300 | 120 | 9200 |
| 10 | 9890 | 78 | 2100 | 31400 | 270 | 23000 | 31600 | 140 | 12000 |
| 11 | 10600 | 85 | 2400 | 33400 | 290 | 26000 | 31300 | 160 | 14000 |
| 12 | 10500 | 55 | 1600 | 28800 | 230 | 18000 | 27900 | 110 | 8300 |
| 13 | 9750 | 31 | 820 | 24600 | 150 | 10000 | 24000 | 82 | 5300 |
| 14 | 8860 | 16 | 380 | 20900 | 110 | 6200 | 23500 | 82 | 5200 |
| 15 | 8440 | 25 | 570 | 18100 | 75 | 3700 | 23500 | 68 | 4300 |
| 16 | 9290 | 28 | 700 | 16200 | 58 | 2500 | 22800 | 58 | 3600 |
| 17 | 9320 | 25 | 630 | 14700 | 42 | 1700 | 24000 | 55 | 3600 |
| 18 | 8590 | 20 | 460 | 13500 | 32 | 1200 | 23900 | 53 | 3400 |
| 19 | 8110 | 12 | 260 | 12800 | 28 | 970 | 23600 | 44 | 2800 |
| 20 | 7420 | 11 | 220 | 13700 | 47 | 1700 | 22400 | 46 | 2800 |
| 21 | 6850 | 10 | 180 | 15200 | 150 | 6200 | 21100 | 35 | 2000 |
| 22 | 6410 | 8 | 140 | 19500 | 150 | 7900 | 19900 | 36 | 1900 |
| 23 | 6030 | 9 | 150 | 19000 | 110 | 5600 | 20600 | 46 | 2600 |
| 24 | 5930 | 10 | 160 | 18400 | 100 | 5000 | 17100 | 36 | 1700 |
| 25 | 7550 | 10 | 200 | 18600 | 71 | 3600 | 19400 | 34 | 1800 |
| 26 | 11700 | 23 | 730 | 21800 | 94 | 5500 | 17900 | 37 | 1800 |
| 27 | 10500 | 22 | 620 | 29500 | -- E | 12000 | 17800 | 21 | 1000 |
| 28 | 10100 | 17 | 460 | 34400 | -- E | 20000 | 19100 | 25 | 1300 |
| 29 | 8720 | 13 | 310 | 37500 | -- E | 26000 | 19800 | 35 | 1900 |
| 30 | 8600 | 17 | 390 | 37800 | -- E | 37000 | 19800 | 25 | 1300 |
| 31 | -- | -- | -- | 39000 | 480 | 51000 | -- | -- | -- |
| Total | 248150 | -- | 21590 | 701510 | -- | 490400 | 754700 | -- | 246800 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 20700 | 22 | 1200 | 4020 | 2 | 22 | 7870 | 2 | 42 |
| 2 | 18200 | 17 | 840 | 6100 | 10 | 160 | 5670 | 3 | 46 |
| 3 | 21700 | 18 | 1100 | 3810 | 3 | 31 | 2630 | 1 | 7 |
| 4 | 19500 | 19 | 1000 | 3700 | 2 | 20 | 2500 | 2 | 14 |
| 5 | 17600 | 19 | 900 | 4560 | 8 | 98 | 2420 | 3 | 20 |
| 6 | 15200 | 16 | 660 | 3590 | 2 | 19 | 7000 | 7 | 130 |
| 7 | 14400 | 11 | 430 | 3530 | 2 | 19 | 7580 | 13 | 270 |
| 8 | 14900 | 8 | 320 | 3440 | 2 | 19 | 6670 | 30 | 540 |
| 9 | 14900 | 10 | 400 | 3460 | 2 | 19 | 5510 | 10 | 150 |
| 10 | 14300 | 7 | 270 | 3400 | 3 | 28 | 5290 | 6 | 86 |
| 11 | 13900 | 12 | 450 | 3310 | 3 | 27 | 2680 | 4 | 29 |
| 12 | 14200 | 12 | 460 | 3270 | 2 | 18 | 7480 | 10 | 200 |
| 13 | 10800 | 9 | 260 | 3240 | 1 | 9 | 11000 | 8 | 240 |
| 14 | 10800 | 12 | 350 | 3260 | 1 | 9 | 11000 | 6 | 180 |
| 15 | 13100 | 14 | 500 | 3190 | 1 | 9 | 11000 | 6 | 180 |
| 16 | 11500 | 8 | 250 | 3120 | 3 | 25 | 11000 | 6 | 180 |
| 17 | 8620 | 3 | 70 | 3070 | 1 | 8 | 11000 | 6 | 180 |
| 18 | 7830 | 4 | 85 | 3040 | 1 | 8 | 11000 | 5 | 150 |
| 19 | 7060 | 6 | 110 | 3010 | 1 | 8 | 11000 | 5 | 150 |
| 20 | 6720 | 4 | 73 | 3060 | 1 | 8 | 11000 | 5 | 150 |
| 21 | 8370 | 10 | 230 | 3110 | 1 | 8 | 10500 | 5 | 140 |
| 22 | 6510 | 2 | 35 | 3040 | 1 | 8 | 4570 | 3 | 37 |
| 23 | 6470 | 4 | 70 | 4610 | 21 | 260 | 3050 | 2 | 16 |
| 24 | 7340 | 6 | 120 | 11300 | 16 | 490 | 1880 | 2 | 10 |
| 25 | 8170 | 4 | 88 | 3400 | 3 | 28 | 1840 | 3 | 15 |
| 26 | 6530 | 2 | 35 | 2320 | 1 | 6 | 5360 | 2 | 29 |
| 27 | 6220 | 1 | 17 | 7560 | 2 | 41 | 9310 | 6 | 150 |
| 28 | 5960 | 2 | 32 | 3550 | 2 | 19 | 3890 | 6 | 63 |
| 29 | 5750 | 4 | 62 | 6770 | 2 | 37 | 7380 | 5 | 100 |
| 30 | 4510 | 4 | 49 | 8620 | 5 | 120 | 7510 | 4 | 81 |
| 31 | 4140 | 3 | 34 | 9990 | 6 | 160 | -- | -- | -- |
| Total | 345900 | -- | 10500 | 135450 | -- | 1741 | 206590 | -- | 3585 |

Total discharge for year (cfs-days)..... 3526520
Total load for year (tons)..... 807078

E Estimated.

PEND OREILLE RIVER BASIN--Continued

12-3955. PEND OREILLE RIVER AT NEWPORT, WASH.

LOCATION.--At bridge on U.S. Highway 2 at Newport, Pend Oreille County, 0.2 mile downstream from gaging station, and 1.8 miles downstream from Albeni Falls Dam.
DRAINAGE AREA.--24,200 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
REMARKS.--No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 17, 1966 | 15300 | 5.9 | | | | 24 | 6.4 | 3.0 | 0.9 | | 98 | 0 | 10 | 0.5 | 0.2 | 0.4 | | 99 | 86 | 6 | | 177 | 7.6 | 0 | 9.2 | 91 |
| Nov. 14..... | 15600 | 6.6 | | | | 23 | 6.3 | 2.9 | .9 | | 94 | 0 | 10 | 1.0 | .2 | .3 | | 102 | 83 | 6 | | 172 | 7.7 | 5 | 10.2 | 91 |
| Dec. 16..... | 20500 | 5.6 | | | | 24 | 6.5 | 2.9 | 1.3 | | 99 | 0 | 11 | 1.0 | .2 | .1 | | 106 | 87 | 6 | | 180 | 7.7 | 0 | 7.6 | 130 |
| Jan. 16, 1966 | 18900 | 6.6 | | | | 23 | 6.5 | 2.7 | .9 | | 95 | 0 | 10 | .5 | .2 | .3 | | 99 | 84 | 6 | | 177 | 7.5 | 5 | 11.1 | 73 |
| Feb. 13..... | 19600 | 5.6 | | | | 24 | 6.1 | 3.4 | 2.0 | | 98 | 0 | 11 | .2 | .3 | .1 | | 101 | 85 | 4 | | 179 | 7.5 | 10 | 11.3 | 23 |
| Mar. 13..... | 21500 | 5.6 | | | | 23 | 6.1 | 3.8 | 1.2 | | 97 | 0 | 10 | 1.0 | .2 | .1 | | 103 | 82 | 3 | | 177 | 7.0 | 5 | 12.1 | 36 |
| Apr. 24..... | 31000 | 6.6 | | | | 21 | 5.3 | 2.8 | .9 | | 88 | 0 | 11 | .5 | .1 | .2 | | 93 | 74 | 2 | | 163 | 7.7 | 5 | 12.3 | 30 |
| May 22..... | 39000 | 5.6 | | | | 18 | 4.9 | 2.8 | .8 | | 76 | 0 | 8.8 | 1.5 | .1 | .2 | | 79 | 65 | 2 | | 137 | 7.2 | 5 | 10.4 | 90 |
| June 19..... | 41000 | 4.7 | | | | 19 | 4.8 | 2.3 | 1.0 | | 80 | 0 | 7.4 | .0 | .1 | .4 | | A 79 | 68 | 2 | | 143 | 7.5 | 0 | 9.0 | 73 |
| July 17..... | 23800 | 3.6 | | | | 21 | 5.6 | 2.4 | .8 | | 90 | 0 | 7.6 | .2 | .1 | .0 | | 86 | 76 | 2 | | 157 | 7.7 | 0 | 8.3 | 230 |
| Aug. 20..... | 8070 | 4.3 | | | | 21 | 5.6 | 2.4 | .8 | | 91 | 0 | 7.4 | 1.0 | .1 | .3 | | 91 | 76 | 1 | | 158 | 7.6 | 0 | 8.7 | 230 |
| Sept. 18..... | 20800 | 4.4 | | | | 25 | 6.2 | 2.5 | .8 | | 102 | 0 | 8.6 | .5 | .2 | .3 | | 99 | 88 | 4 | | 170 | 7.7 | 5 | 9.8 | 2400 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 13, 1966.... | 1320 | 0.01 | 0.01 | 0.03 | 0.05 | 0.00 | 0.00 |
| Sept. 18..... | 1320 | | | | | | .02 |

## COLUMBIA RIVER MAIN STEM

### 12-3995. COLUMBIA RIVER AT INTERNATIONAL BOUNDARY, WASH.
(Irrigation network station)

LOCATION.--Lat 48°55'00", long 117°47'40", at bridge on State Highway 25 at Northport, Stevens County, 12 miles downstream from gaging station at international boundary, and at mile 734.1.
DRAINAGE AREA.--59,700 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: February 1910 to January 1911, November 1951 to September 1966.
Water temperatures: November 1951 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 104 ppm Feb. 1-28; minimum, 75 ppm July 23 to Aug. 17.
Hardness: Maximum, 88 ppm Feb. 1-28; minimum, 64 ppm July 23 to Aug. 31.
Specific conductance: Maximum daily, 196 micromhos Mar. 22; minimum daily, 128 micromhos July 27, Aug. 24, 25.
Water temperatures: Maximum, 63°F Aug. 8, 27, Sept. 4-6; minimum, 37°F on several days during January and February.
EXTREMES, 1958-66.--Dissolved solids: Maximum, 158 ppm Feb. 23, 1963; minimum, 71 ppm July 8-25, 1964.
Hardness: Maximum, 128 ppm Feb. 23, 1963; minimum, 62 ppm July 16-31, Aug. 16-31, 1959, July 1-31, 1961, July 26 to Aug. 15, 1964.
Specific conductance: Maximum daily, 257 micromhos Feb. 23, 1963; minimum daily, 123 micromhos Aug. 2, 1960, Aug. 12, 1963.
Water temperatures: Maximum, 70°F May 14, 19, 1959; minimum, freezing point on several days during January in 1960, 1962, and 1963.
REMARKS.--No apreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-31, 1965.. | 60226 | 4.5 | | 23 | 4.6 | 2.0 | 0.8 | 76 | 0 | 16 | 0.8 | 0.2 | 0.8 | 0.01 | 88 | 0.12 | 14310 | 76 | 14 | 0.1 | 159 | 7.6 |
| Nov. 1-30..... | 58700 | 4.5 | | 23 | 4.8 | 1.9 | .8 | 77 | 0 | 16 | 1.2 | .2 | .6 | -- | 90 | .12 | 14260 | 78 | 15 | .1 | 161 | 7.5 |
| Dec. 1-31..... | 47503 | 4.7 | | 24 | 5.6 | 2.2 | .9 | 83 | 0 | 18 | .8 | .2 | .4 | -- | 96 | .13 | 12310 | 83 | 15 | .1 | 173 | 7.7 |
| Jan. 2-31, 1966.. | 41677 | 5.3 | | 26 | 4.9 | 2.6 | .8 | 83 | 0 | 19 | .8 | .2 | .6 | .00 | 97 | .13 | 10920 | 85 | 17 | .1 | 179 | 7.8 |
| Feb. 1-28..... | 41689 | 5.0 | | 26 | 5.6 | 2.7 | .9 | 86 | 0 | 20 | .8 | .3 | .5 | -- | 96 | .13 | 10810 | 88 | 17 | .1 | 183 | 7.6 |
| Mar. 1-31..... | 48103 | 5.3 | | 25 | 5.9 | 2.4 | .9 | 88 | 0 | 19 | 1.0 | .2 | .6 | -- | 101 | .14 | 13120 | 87 | 15 | .1 | 183 | 7.7 |
| Apr. 1-12..... | 79392 | 5.7 | | 22 | 5.4 | 2.2 | .9 | 81 | 0 | 15 | 1.0 | .3 | .2 | -- | 91 | .12 | 19510 | 78 | 12 | .1 | 163 | 7.6 |
| Apr. 13-May 12... | 104670 | 4.9 | | 23 | 4.6 | 2.1 | 1.3 | 80 | 0 | 15 | .5 | .2 | .4 | .02 | 87 | .12 | 24590 | 76 | 10 | .1 | 159 | 7.5 |
| May 13-June 7.... | 216580 | 4.6 | | 22 | 4.0 | 1.7 | .8 | 72 | 0 | 14 | .5 | .2 | .4 | -- | 83 | .11 | 48540 | 72 | 13 | .1 | 148 | 7.5 |
| June 8-25..... | 285720 | 4.4 | | 22 | 3.8 | 1.9 | .9 | 74 | 0 | 13 | .5 | .2 | .7 | -- | 84 | .11 | 64800 | 70 | 9 | .1 | 147 | 7.2 |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June 26-July 22, 1966. | 239070 | 4.0 | | 20 | 4.0 | 1.4 | 0.6 | 70 | 0 | 12 | 0.0 | 0.2 | 0.6 | 0.00 | 77 | 0.10 | 49700 | 66 | 8 | 0.1 | 137 | 7.3 |
| July 23-Aug. 17.. | 153540 | 3.7 | | 19 | 3.9 | -- | .5 | 66 | 0 | 11 | 1.0 | .2 | .9 | -- | 75 | .10 | 31090 | 64 | 10 | .1 | 132 | 7.3 |
| Aug. 18-31..... | 86690 | 3.3 | | 19 | 3.9 | 1.1 | .5 | 65 | 0 | 12 | 1.0 | .2 | .6 | -- | 81 | .11 | 18960 | 64 | 10 | .1 | 131 | 7.3 |
| Sept. 1-30..... | 75690 | 3.6 | | 22 | 4.4 | 1.3 | .4 | 72 | 0 | 13 | 1.0 | .2 | .6 | -- | 79 | .11 | 16140 | 73 | 14 | .1 | 145 | 7.5 |
| Weighted average..... | -- | 4.4 | | 22 | 4.4 | 1.8 | 0.8 | 74 | -- | 14 | 0.6 | 0.2 | 0.6 | -- | 84 | 0.11 | 23600 | 73 | 12 | 0.1 | 150 | 7.4 |
| Time-weighted average..... | 103900 | 4.6 | | 23 | 4.7 | 2.0 | 0.8 | 77 | -- | 16 | 0.8 | 0.2 | 0.6 | -- | 88 | -- | -- | 77 | 13 | 0.1 | 159 | 7.5 |
| Tons per day... | -- | 1230 | | 6140 | 1220 | 493 | 216 | 20800 | -- | 3950 | 175 | 58 | 165 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Analyses of biological parameters

| Date of collection | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|
| Dec. 27, 1965 | 13.0 | 390 |
| Mar. 22, 1966 | 13.7 | 73 |
| June 7..... | 12.3 | 150 |
| Sept. 27..... | 9.7 | 230 |

COLUMBIA RIVER MAIN STEM--Continued

12-3995. COLUMBIA RIVER AT INTERNATIONAL BOUNDARY, WASH.--Continued

Specific conductance of water, water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 158 | 158 | -- | -- | 180 | 182 | 179 | 162 | 144 | 142 | 131 | 134 |
| 2..... | 161 | 156 | -- | 174 | 181 | 181 | 169 | 162 | 144 | 139 | 129 | 139 |
| 3..... | 161 | 157 | 167 | 175 | 180 | 178 | 167 | 164 | 145 | 140 | 130 | 134 |
| 4..... | 158 | 157 | 166 | 176 | -- | 180 | 165 | -- | 148 | 138 | 129 | 134 |
| 5..... | 163 | 159 | 169 | 174 | 180 | 180 | 171 | 150 | 147 | 134 | 131 | 140 |
| 6..... | 162 | 160 | 169 | 175 | 183 | 175 | 171 | 150 | 146 | 134 | 133 | 142 |
| 7..... | 164 | 158 | 169 | 178 | 182 | 174 | 166 | 148 | 145 | 137 | 131 | 141 |
| 8..... | 163 | 157 | 173 | 178 | 183 | 178 | 162 | 147 | 146 | 138 | 134 | 144 |
| 9..... | 159 | 155 | 175 | 181 | 180 | 176 | 159 | 148 | 146 | 139 | 137 | 145 |
| 10..... | 161 | 159 | 176 | 176 | 179 | 178 | 159 | 147 | 145 | 138 | 134 | 146 |
| 11..... | 159 | 158 | 171 | 177 | 182 | 181 | 159 | 149 | 146 | 136 | 130 | 146 |
| 12..... | 158 | 160 | 170 | 177 | 181 | 178 | 159 | 148 | 146 | 135 | 130 | 147 |
| 13..... | 161 | 156 | 170 | 180 | 182 | 177 | 156 | 149 | 147 | 134 | 129 | 148 |
| 14..... | 160 | 161 | 176 | 181 | 182 | 175 | 162 | 149 | 142 | 133 | 131 | 146 |
| 15..... | 169 | 157 | 175 | 179 | 184 | 173 | 161 | 153 | 147 | 134 | 130 | 150 |
| 16..... | 160 | 159 | 174 | 180 | 183 | -- | 162 | 151 | 151 | 135 | 129 | 144 |
| 17..... | 161 | 162 | 176 | 178 | 183 | 173 | 165 | 152 | 148 | 133 | 131 | 150 |
| 18..... | 159 | 164 | 172 | 178 | 185 | 173 | 166 | 155 | 162 | 132 | 130 | -- |
| 19..... | 160 | 162 | 176 | 178 | 183 | 173 | 160 | 154 | 144 | 131 | 129 | 150 |
| 20..... | 159 | 163 | 176 | -- | 181 | 176 | 163 | 153 | 149 | -- | 131 | 152 |
| 21..... | 161 | 161 | 175 | 181 | 184 | 174 | 165 | 151 | 146 | 132 | 133 | 148 |
| 22..... | 159 | 195 | 179 | 181 | 181 | 196 | 166 | 151 | 152 | 131 | 131 | 148 |
| 23..... | 161 | 166 | 177 | 181 | 181 | 194 | 166 | 151 | 146 | 131 | 131 | 147 |
| 24..... | 159 | 166 | 175 | 181 | 183 | 178 | 165 | 153 | 145 | 135 | 128 | 147 |
| 25..... | 161 | 163 | 175 | 180 | 183 | 189 | 163 | 152 | 147 | 135 | 128 | 147 |
| 26..... | 158 | 163 | 173 | 180 | 185 | 183 | 163 | 148 | 143 | 133 | 131 | 149 |
| 27..... | 159 | 167 | 174 | 181 | 184 | 182 | 163 | 144 | 144 | 128 | 131 | 148 |
| 28..... | 163 | 169 | 171 | 180 | 183 | 181 | 165 | 143 | 143 | 129 | 129 | 153 |
| 29..... | 161 | 168 | 173 | 179 | -- | 178 | 165 | 144 | 143 | 135 | 132 | 150 |
| 30..... | 161 | 171 | 175 | 180 | -- | 176 | 162 | 145 | 142 | 138 | 131 | 164 |
| 31..... | 159 | -- | 176 | 181 | -- | 173 | -- | 145 | -- | 134 | 131 | -- |
| Average | 160 | 162 | 173 | 178 | 182 | 178 | 164 | 150 | 146 | 134 | 130 | 145 |

COLUMBIA RIVER MAIN STEM--Continued

12-3995. COLUMBIA RIVER AT INTERNATIONAL BOUNDARY, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 57 | 58 | 60 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 55 | 55 | 55 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 54 | 54 | 53 | 53 | 53 | 53 | 52 | 55 |
| November | 52 | 52 | 52 | 51 | 52 | 51 | 51 | 51 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 42 | 47 | 47 | 46 | 45 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | -- | 48 |
| December | -- | -- | 44 | 44 | 43 | 43 | 45 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 41 |
| January | -- | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | -- | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 38 | 38 | 38 | 38 |
| February | 38 | 37 | 38 | -- | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | -- | -- | -- | 38 |
| March | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | -- | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 42 | 42 | -- | -- | -- | -- | -- | 40 |
| April | -- | -- | -- | -- | -- | -- | 46 | 46 | 46 | 47 | 47 | 47 | 46 | 45 | 46 | 46 | 46 | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 47 | 46 | 46 | 47 | 47 | 48 | -- | 46 |
| May | 48 | 48 | 48 | -- | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 52 | 52 | 52 | 51 | 51 | 49 |
| June | 52 | 52 | 52 | 50 | 49 | 50 | 51 | 50 | 51 | 51 | 51 | 51 | 51 | 52 | 54 | 54 | 55 | 56 | 54 | 56 | 54 | 54 | 50 | 51 | 52 | 52 | 52 | 53 | 53 | 53 | -- | 52 |
| July | 53 | 54 | 54 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 56 | 57 | 57 | 57 | 56 | 57 | -- | 59 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 61 | 60 | 57 |
| August | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | 62 | 62 | 62 | 61 | 61 | 62 | 62 | 62 | 62 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | 61 | 61 | 62 | 62 |
| September | 62 | 62 | 62 | 63 | 63 | 63 | 62 | 61 | 61 | 61 | 61 | 60 | 61 | 61 | 61 | 61 | 60 | -- | 60 | 60 | 60 | 59 | -- | 58 | 58 | 59 | 59 | -- | 58 | 68 | -- | 61 |

SPOKANE RIVER BASIN

12-4310. LITTLE SPOKANE RIVER AT DARTFORD, WASH.

LOCATION.--Lat 47°47'00", long 117°24'10", at Mill Road bridge 0.5 mile east of Dartford, Spokane County, and 0.6 mile upstream from gaging station.
DRAINAGE AREA.--665 square miles, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1966.
REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 17, 1965 | 157 | 17 | | | | 32 | 8.6 | 5.6 | 2.1 | | 143 | 0 | 6.6 | 2.0 | 0.3 | 1.5 | | 145 | 115 | 0 | | 242 | 7.9 | 5 | 11.0 | 430 |
| Nov. 14..... | 181 | 17 | | | | 32 | 7.7 | 5.7 | 2.4 | | 138 | 0 | 7.0 | 1.8 | .2 | 1.7 | | A 144 | 112 | 0 | | 236 | 7.9 | 5 | 11.3 | 2400 |
| Dec. 16..... | 182 | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 8.1 | 930 |
| Jan. 16, 1966 | 267 | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 10.2 | 430 |
| Feb. 13..... | 190 | 19 | | | | 30 | 7.6 | 5.7 | 2.2 | | 130 | 0 | 8.2 | 2.0 | .1 | 1.9 | | 141 | 106 | 0 | | 226 | 7.7 | 5 | 11.5 | 130 |
| Mar. 13..... | 625 | 21 | | | | 18 | 4.1 | 5.5 | 2.6 | | 77 | 0 | 7.2 | 2.0 | .3 | 2.6 | | 110 | 62 | 0 | | 150 | 7.2 | 20 | 8.6 | 4600 |
| Apr. 24..... | 332 | 17 | | | | 21 | 3.9 | 4.7 | 1.6 | | 90 | 0 | 5.2 | 1.0 | .2 | .8 | | 103 | 68 | 0 | | 160 | 7.6 | 5 | 10.5 | 93 |
| May 22..... | 214 | 16 | | | | 25 | 6.0 | 4.9 | 1.5 | | 110 | 0 | 5.6 | 1.5 | .3 | 1.2 | | 115 | 87 | 0 | | 187 | 7.7 | 5 | 10.4 | 4600 |
| June 19..... | 160 | 14 | | | | 28 | 7.1 | 5.3 | 1.7 | | 124 | 0 | 6.0 | 1.5 | .3 | 1.6 | | 127 | 99 | 0 | | 211 | 7.7 | 5 | 9.2 | 930 |
| July 17..... | 137 | 14 | | | | 30 | 7.4 | 5.1 | 1.9 | | 130 | 0 | 6.2 | 1.5 | .4 | 1.3 | | A 132 | 106 | 0 | | 217 | 7.8 | 5 | 8.5 | 2400 |
| Aug. 19..... | 107 | 16 | | | | 33 | 8.1 | 5.5 | 2.0 | | 146 | 0 | 6.8 | 2.5 | .2 | 1.6 | | 142 | 116 | 0 | | 234 | 7.8 | 0 | 8.7 | 930 |
| Sept. 18..... | 120 | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.2 | 750 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 13, 1966... | 1715 | 0.03 | 0.03 | 0.17 | 0.05 | 0.00 | 0.00 |
| Sept. 18..... | 1615 | .01 | .01 | .02 | .00 | .00 | |

12-4330. SPOKANE RIVER AT LONG LAKE, WASH.

LOCATION.--Lat 47°50'20", long 117°51'05", at bridge 0.2 mile downstream from gaging station, 1.2 miles upstream from Chamokane Creek, and 12 miles north of Reardon, Lincoln County.
DRAINAGE AREA.--5,920 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: July 1959 to September 1962.
REMARKS.--No inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 17, 1965 | 2610 | 7.3 | | | | 23 | 9.5 | 4.6 | 2.0 | | 106 | 0 | 12 | 3.8 | 0.2 | 2.7 | | 119 | 96 | 10 | | 208 | 7.3 | 5 | 5.1 | 91 |
| Nov. 14..... | 2270 | 7.3 | | | | 22 | 8.6 | 4.1 | 1.9 | | 98 | 0 | 12 | 3.8 | .2 | 2.7 | | 115 | 90 | 10 | | 196 | 7.4 | 5 | 6.4 | 430 |
| Dec. 14..... | 4610 | 10 | | | | 15 | 6.3 | 2.9 | 1.4 | | 67 | 0 | 11 | 2.0 | .2 | 1.4 | | 90 | 64 | 8 | | 141 | 7.2 | 5 | 8.5 | 200 |
| Jan. 16, 1966 | 6050 | 11 | | | | 16 | 6.5 | 3.2 | 1.2 | | 70 | 0 | 11 | 2.5 | .2 | 1.8 | | 92 | 67 | 10 | | 151 | 7.2 | 5 | 10.0 | 150 |
| Feb. 13..... | 4880 | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 11.8 | 470 |
| Mar. 13..... | 5740 | 12 | | | | 18 | 6.0 | 5.6 | 2.0 | | 78 | 0 | 13 | 2.5 | .3 | 3.5 | | 105 | 70 | 6 | | 167 | 7.0 | 15 | 9.1 | 2400 |
| May 22..... | 14300 | 7.5 | | | | 8.8 | 2.1 | 2.2 | 1.0 | | 28 | 0 | 10 | 1.0 | .3 | .5 | | 49 | 31 | 8 | | 78 | 6.9 | 5 | 11.5 | 23 |
| June 19..... | 5960 | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.3 | 2400 |
| July 17..... | 2250 | 6.6 | | | | 15 | 5.4 | 3.7 | 2.1 | | 65 | 0 | 11 | 3.0 | .3 | 1.3 | | 82 | 60 | 6 | | 140 | 7.5 | 5 | 6.9 | 360 |
| Sept. 18..... | 1300 | 8.4 | | | | 25 | 9.3 | 5.4 | 2.4 | | 112 | 0 | 12 | 6.0 | .2 | 2.6 | | A 126 | 101 | 9 | | 216 | 7.5 | 5 | 5.7 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 13, 1966... | 1030 | 0.02 | 0.02 | 0.12 | 0.05 | 0.01 | 0.03 |
| Sept. 18..... | 1115 | .01 | .01 | .02 | .01 | | .03 |

## CRAB CREEK BASIN

### 12-4726. CRAB CREEK NEAR BEVERLY, WASH.
(Formerly reported as Crab Creek near Smyrna, Wash.)

LOCATION (revised).--Lat 46°49'55", long 119°48'55", at county bridge 4.8 miles east of Beverly, Grant County, 0.7 miles upstream from gaging station, and 5.2 miles upstream from mouth.
DRAINAGE AREA.--4,842 square miles, of which 665 square miles in the vicinity of Soap Lake is noncontributing.
RECORDS AVAILABLE.--Chemical analyses: August 1959 to September 1966.
Water temperatures: August 1959 to September 1962.
REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (calculated) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 9, 1965. | 123 | 24 | | | | 46 | 31 | 137 | 15 | | 342 | 17 | 156 | 56 | 0.9 | 2.5 | | 653 | 244 | 0 | | 1040 | 8.6 | 10 | 9.5 | 210 |
| Nov. 13..... | 138 | 43 | | | | 51 | 34 | 174 | 19 | | 411 | 19 | 191 | 66 | 1.1 | 4.0 | | 804 | 268 | 0 | | 1210 | 8.6 | 15 | 12.1 | 36 |
| Dec. 4..... | 150 | 27 | | | | 54 | 35 | 169 | 18 | | 430 | 0 | 200 | 68 | 1.0 | 6.2 | | 790 | 278 | 0 | | 1210 | 8.2 | 15 | 11.7 | 91 |
| Jan. 8, 1966. | 120 | 25 | | | | 42 | 29 | 239 | 23 | | 482 | 24 | 201 | 76 | 1.0 | 4.3 | | A 905 | 224 | 0 | | 1380 | 8.5 | 35 | 12.3 | 0 |
| Feb. 19..... | 130 | 21 | | | | 42 | 26 | 109 | 13 | | 309 | 0 | 138 | 47 | .8 | 4.2 | | 553 | 210 | 0 | | 876 | 8.1 | 5 | 13.2 | 0 |
| Mar. 22..... | 120 | 24 | | | | 41 | 29 | 238 | 22 | | 448 | 39 | 203 | 77 | 1.1 | 4.4 | | A 906 | 221 | 0 | | 1370 | 8.7 | 10 | 11.0 | 2100 |
| Apr. 13..... | 80 | 21 | | | | 43 | 33 | 142 | 15 | | 358 | 0 | 176 | 59 | 1.0 | 2.3 | | 668 | 242 | 0 | | 1050 | 8.1 | 10 | 11.1 | 91 |
| May 11..... | 71 | 15 | | | | 38 | 28 | 119 | 13 | | 330 | 0 | 143 | 46 | .9 | 2.8 | | 568 | 210 | 0 | | 933 | 7.9 | 10 | 9.5 | 140 |
| June 15..... | 117 | 19 | | | | 38 | 24 | 102 | 13 | | 297 | 3 | 120 | 41 | .9 | 1.6 | | 508 | 194 | 0 | | 797 | 8.3 | 10 | 10.2 | 230 |
| July 13..... | 83 | 24 | | | | 41 | 26 | 120 | 15 | | 335 | 0 | 137 | 46 | 1.0 | 2.7 | | 578 | 210 | 0 | | 909 | 8.0 | 5 | 8.4 | 2400 |
| Aug. 17..... | 113 | 25 | | | | 48 | 28 | 96 | 12 | | 294 | 0 | 155 | 42 | .7 | 1.5 | | 553 | 235 | 0 | | 815 | 7.6 | 5 | 8.6 | 150 |
| Sept. 16..... | 150 | 27 | | | | 52 | 34 | 264 | 25 | | 526 | 0 | 302 | 89 | .9 | 1.5 | | 1050 | 270 | 0 | | 1560 | 8.0 | 5 | 6.0 | 430 |

A Residue at 180°C.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 2025 | 0.02 | 0.02 | 0.02 | 0.05 | 0.02 | 0.03 |
| Sept. 16..... | 0850 | .01 | .02 | .01 | .00 | | .05 |

YAKIMA RIVER BASIN

12-4840. WILSON CREEK AT THRALL, WASH.

LOCATION.--Lat 46°55'00", long 120°30'25", at bridge on Highway 97, 1.0 mile south of Thrall, Kittitas County, and approximately 100 feet upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 9, 1965. | | 27 | | | | 23 | 11 | 13 | 3.2 | | 146 | 0 | 6.8 | 3.2 | 0.3 | 1.5 | | 160 | 102 | 0 | | 253 | 7.5 | 5 | 9.2 | 2400 |
| Nov. 13..... | | 43 | | | | 34 | 18 | 25 | 4.8 | | 222 | 0 | 14 | 8.0 | .5 | 3.9 | | A 260 | 158 | 0 | | 402 | 7.8 | 5 | 8.9 | 230 |
| Dec. 4..... | | 43 | | | | 34 | 17 | 25 | 4.6 | | 222 | 0 | 14 | 9.2 | .4 | 3.5 | | 260 | 157 | 0 | | 400 | 7.7 | 5 | 9.0 | 430 |
| Jan. 8, 1966. | | 43 | | | | 34 | 16 | 25 | 4.5 | | 222 | 0 | 15 | 8.5 | .5 | 3.6 | | A 259 | 152 | 0 | | 395 | 7.3 | 5 | 10.8 | 430 |
| Feb. 19..... | | 39 | | | | 34 | 17 | 24 | 6.7 | | 213 | 0 | 13 | 11 | .4 | 6.1 | | A 256 | 153 | 0 | | 397 | 7.3 | 10 | 11.7 | 11000 |
| Mar. 21..... | | 35 | | | | 31 | 15 | 21 | 4.0 | | 200 | 0 | 12 | 7.0 | .3 | 3.7 | | 226 | 141 | 0 | | 347 | 7.3 | 10 | 9.8 | 1500 |
| Apr. 13..... | | 31 | | | | 20 | 8.7 | 11 | 1.8 | | 118 | 0 | 6.4 | 3.8 | .2 | 1.6 | | 143 | 86 | 0 | | 216 | 7.4 | 5 | 10.5 | 430 |
| May 11..... | | 28 | | | | 19 | 11 | 13 | 3.4 | | 138 | 0 | 8.8 | 4.0 | .2 | .9 | | 157 | 92 | 0 | | 246 | 7.4 | 10 | 8.3 | 4600 |
| June 14..... | | 25 | | | | 23 | 10 | 14 | 3.5 | | 146 | 0 | 7.6 | 3.2 | .3 | 1.8 | | A 160 | 98 | 0 | | 250 | 7.7 | 10 | 13.4 | 930 |
| July 13..... | | 24 | | | | 22 | 9.6 | 13 | 3.3 | | 136 | 0 | 7.0 | 3.5 | .3 | 1.2 | | 153 | 94 | 0 | | 236 | 7.9 | 5 | 9.0 | 290 |
| Aug. 17..... | | 31 | | | | 29 | 14 | 18 | 4.4 | | 192 | 0 | 8.8 | 5.0 | .3 | 1.8 | | 213 | 130 | 0 | | 319 | 7.5 | 5 | 8.9 | 150 |
| Sept. 16..... | | 26 | | | | 24 | 10 | 12 | 3.5 | | 142 | 0 | 6.4 | 3.5 | .2 | 2.3 | | 161 | 101 | 0 | | 246 | 7.3 | 10 | 8.1 | 4600 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 21, 1966... | 1730 | 0.01 | 0.01 | 0.06 | 0.05 | 0.00 | 0.02 |
| Sept. 16..... | 1955 | .01 | .01 | .04 | .00 | .00 | .00 |

YAKIMA RIVER BASIN--Continued

12-4849. YAKIMA RIVER AT ROZA DAM, WASH.

LOCATION.--Lat 46°46'50", long 120°27'10", at Roza diversion dam, 8.0 miles downstream from Umtanum Creek, 12.3 miles north of Yakima, Yakima County, and at mile 127.9.
DRAINAGE AREA.--1,802 square miles.
RECORDS AVAILABLE.--October 1965 to September 1966.
Water temperatures: October 1965 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 138 ppm Oct. 24 to Nov. 15; minimum, 54 ppm July 5-26.
Hardness: Maximum, 88 ppm Oct. 24 to Nov. 15; minimum, 34 ppm July 27 to Aug. 15.
Specific conductance: Maximum daily, 226 micromhos Mar. 7; minimum daily, 76 micromhos July 31.
Water temperatures: Maximum, 66°F July 11, Aug. 25; minimum, freezing point on several days during January.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluorids (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-14, 1965.. | | 13 | | 10 | 5.0 | 4.5 | 1.1 | 64 | 0 | 2.6 | 1.2 | 0.1 | 0.5 | | 71 | 0.10 | | 46 | 0 | 0.3 | 109 | 7.5 |
| Oct. 15-18, 20, 21, 23..... | | 20 | | 15 | 6.6 | 7.3 | 1.7 | 92 | 0 | 4.2 | 2.2 | .1 | .5 | | 100 | .14 | | 64 | 0 | .4 | 159 | 7.7 |
| Oct. 19..... | | -- | | -- | -- | 4.5 | -- | 63 | 0 | -- | -- | -- | -- | | 80 | .11 | | 46 | 0 | .3 | 111 | 7.6 |
| Oct. 22..... | | -- | | -- | -- | 4.4 | -- | 59 | 0 | -- | -- | -- | -- | | 72 | .10 | | 43 | 0 | .3 | 104 | 7.6 |
| Oct. 24-Nov. 15.. | | 23 | | 19 | 9.8 | 11 | 2.3 | 126 | 0 | 6.2 | 3.5 | .2 | 1.0 | | 138 | .18 | | 88 | 0 | .5 | 212 | 7.8 |
| Nov. 16-Dec. 10.. | | 22 | | 18 | 8.7 | 11 | 1.9 | 114 | 0 | 5.6 | 3.5 | .1 | 1.1 | | 125 | .17 | | 81 | 0 | .5 | 199 | 7.9 |
| Dec. 11-31..... | | 22 | | 23 | 5.9 | 9.8 | 1.6 | 110 | 0 | 5.8 | 3.0 | .2 | 1.5 | | 121 | .16 | | 82 | 0 | .5 | 195 | 7.8 |
| Jan. 1-26, 1966.. | | 22 | | 25 | 4.0 | 9.3 | 1.6 | 108 | 0 | 5.8 | 3.8 | .1 | 1.5 | | 121 | .16 | | 79 | 0 | .5 | 193 | 7.8 |
| Jan. 27-Feb. 14.. | | 21 | | 18 | 8.1 | 9.5 | 2.0 | 107 | 0 | 6.0 | 4.0 | .3 | 1.4 | | 119 | .16 | | 78 | 0 | .5 | 194 | 8.0 |
| Feb. 15-Mar. 9... | | 21 | | 18 | 9.6 | 10 | 2.5 | 114 | 0 | 6.0 | 4.2 | .2 | 2.0 | | 129 | .18 | | 84 | 0 | .5 | 208 | 7.8 |
| Mar. 10-24..... | | 21 | | 17 | 7.5 | 7.8 | 2.2 | 97 | 0 | 5.4 | 3.2 | .2 | 2.2 | | 117 | .16 | | 74 | 0 | .4 | 177 | 7.7 |
| Mar. 25-29..... | | 21 | | 15 | 6.6 | 7.0 | 1.6 | 87 | 0 | 4.8 | 2.2 | .2 | 1.7 | | 99 | .13 | | 64 | 0 | .4 | 158 | 7.7 |
| Mar. 30-Apr. 15.. | | 16 | | 11 | 4.3 | 4.2 | .9 | 61 | 0 | 2.6 | 1.0 | .2 | .8 | | 74 | .10 | | 45 | 0 | .3 | 108 | 7.5 |
| Apr. 16-29..... | | 14 | | 12 | 4.3 | 4.5 | 1.0 | 65 | 0 | 3.0 | 1.2 | .2 | .5 | | 74 | .10 | | 48 | 0 | .3 | 115 | 7.5 |
| Apr. 30-May 13... | | 13 | | 12 | 4.0 | 4.2 | 1.0 | 64 | 0 | 3.0 | 1.5 | .1 | .8 | | 69 | .09 | | 46 | 0 | .3 | 114 | 7.7 |
| May 14-27..... | | 12 | | 11 | 4.4 | 4.3 | 1.2 | 64 | 0 | 2.8 | 1.5 | .1 | .7 | | 69 | .09 | | 46 | 0 | .3 | 113 | 7.5 |
| May 28-June 7.... | | 14 | | 12 | 6.0 | 5.4 | 1.5 | 76 | 0 | 3.2 | 1.5 | .2 | .9 | | 78 | .11 | | 55 | 0 | .3 | 134 | 7.5 |
| June 8-July 4.... | | 12 | | 9.6 | 4.9 | 4.0 | 1.0 | 62 | 0 | 2.4 | 1.5 | .1 | .7 | | 65 | .09 | | 44 | 0 | .3 | 108 | 7.4 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| July 5-26, 1966.. | 10 | 8.0 | 3.9 | 3.1 | 0.7 | 50 | 0 | 2.0 | 1.0 | 0.1 | 0.5 | 54 | 0.07 | 36 | 0 | 0.2 | 87 | 7.3 |
| July 27-Aug. 15.. | 11 | 7.8 | 3.6 | 3.1 | .6 | 48 | 0 | 2.0 | 1.0 | .1 | .5 | 55 | .07 | 34 | 0 | .2 | 84 | 7.4 |
| Aug. 16-31..... | 12 | 8.8 | 3.9 | 3.7 | .8 | 53 | 0 | 2.2 | 1.0 | .1 | .6 | 60 | .08 | 38 | 0 | .3 | 93 | 7.5 |
| Sept. 1-14..... | 13 | 11 | 4.7 | 4.5 | .9 | 62 | 0 | 2.2 | 2.0 | .1 | .7 | 68 | .09 | 47 | 0 | .3 | 108 | 7.4 |
| Sept. 15-30..... | 15 | 13 | 5.3 | 5.0 | 1.0 | 71 | 0 | 3.0 | 2.0 | .1 | .7 | 78 | .11 | 54 | 0 | .3 | 122 | 7.6 |
| Time-weighted average..... | 17 | 14 | 5.9 | 6.6 | 1.4 | 83 | -- | 4.0 | 2.3 | 0.1 | 1.0 | 92 | -- | 60 | 0 | 0.4 | 146 | 7.6 |

Analyses of biological parameters

| Date of collection | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|
| Nov. 13, 1965 | 12.4 | 91 |
| Dec. 4..... | 12.0 | 230 |
| Jan. 8, 1966. | 13.7 | 36 |
| Feb. 19..... | 12.8 | 230 |
| Mar. 21..... | 12.3 | 930 |
| Apr. 13..... | 11.0 | 930 |
| May 11..... | 10.2 | 430 |
| June 14..... | 11.7 | 230 |
| July 13..... | 10.2 | 930 |
| Aug. 17..... | 9.5 | 150 |

YAKIMA RIVER BASIN--Continued

12-4849. YAKIMA RIVER AT ROZA DAM, WASH.--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 111 | 218 | 207 | 204 | 196 | 221 | 112 | 107 | 125 | 94 | 77 | 109 |
| 2..... | 110 | 217 | 206 | 204 | 195 | 222 | 111 | 111 | 125 | 97 | 77 | 109 |
| 3..... | 110 | 220 | 205 | 193 | 195 | 214 | 109 | 108 | 136 | 115 | 78 | 108 |
| 4..... | 108 | 218 | 205 | 203 | 193 | 212 | 111 | 108 | 144 | 111 | 77 | 109 |
| 5..... | 111 | 220 | 208 | 199 | 196 | 214 | 112 | 105 | 135 | 98 | 78 | 109 |
| 6..... | 111 | 213 | 206 | 186 | 198 | 212 | 112 | 105 | 129 | 99 | 80 | 107 |
| 7..... | 109 | 211 | 192 | 199 | 199 | 226 | 109 | 104 | 123 | 99 | 80 | 111 |
| 8..... | 110 | 209 | 185 | 193 | 202 | 207 | 109 | 114 | 117 | 97 | 83 | 105 |
| 9..... | 112 | 210 | 185 | 189 | 202 | 207 | 102 | 122 | 115 | 95 | 81 | 106 |
| 10..... | 111 | 215 | 185 | 191 | 200 | 201 | 97 | 118 | 114 | 92 | 81 | 106 |
| 11..... | 110 | 215 | 190 | 193 | 196 | 201 | 97 | 120 | 119 | 87 | 81 | 107 |
| 12..... | 112 | 218 | -- | 197 | 197 | 195 | 101 | 125 | 118 | 86 | 81 | 112 |
| 13..... | 113 | 215 | 191 | 193 | 185 | 194 | 106 | 133 | 118 | 86 | 85 | 110 |
| 14..... | 113 | 216 | 191 | 190 | 175 | 170 | 106 | -- | 117 | 84 | 86 | 123 |
| 15..... | 159 | 224 | 200 | 191 | 184 | 163 | 119 | 103 | 113 | 85 | 90 | 135 |
| 16..... | 152 | 208 | 200 | 191 | 185 | 165 | 123 | 102 | 112 | 85 | 85 | 124 |
| 17..... | 148 | 212 | 205 | 183 | 192 | 163 | 123 | 99 | 111 | 85 | 86 | 121 |
| 18..... | 147 | 208 | 202 | 183 | 197 | 170 | 107 | 107 | 110 | 87 | 86 | 123 |
| 19..... | -- | 205 | 197 | 182 | 208 | 174 | 109 | 110 | 109 | 84 | 88 | 127 |
| 20..... | 183 | 206 | 203 | 195 | 210 | 173 | 118 | 113 | 108 | 85 | 86 | 122 |
| 21..... | 195 | 208 | 195 | 197 | 202 | 173 | 124 | 114 | 106 | 82 | 88 | 124 |
| 22..... | -- | 201 | 195 | 199 | 201 | 173 | 125 | 114 | 105 | 83 | 86 | 122 |
| 23..... | 141 | 205 | 195 | 183 | 201 | 179 | 126 | 120 | 102 | 81 | 88 | 123 |
| 24..... | 202 | 192 | 203 | 189 | 199 | 179 | 117 | 128 | 100 | 78 | 90 | 120 |
| 25..... | 201 | 191 | 202 | 199 | 205 | 180 | 113 | 121 | 100 | 79 | 87 | 121 |
| 26..... | 202 | 197 | 202 | 194 | 210 | 167 | 111 | 117 | 97 | 79 | 88 | 119 |
| 27..... | 214 | 203 | -- | 193 | 210 | 167 | 105 | 122 | 95 | 80 | 88 | 118 |
| 28..... | 216 | 202 | -- | 191 | 209 | 142 | 112 | 131 | 95 | 78 | 90 | 118 |
| 29..... | 221 | 209 | 194 | 190 | -- | 133 | 110 | 122 | 95 | 78 | 92 | 120 |
| 30..... | 220 | 208 | 191 | 194 | -- | 122 | 106 | 141 | 93 | 78 | 94 | 117 |
| 31..... | 218 | -- | 192 | 195 | -- | 114 | -- | 137 | -- | 76 | 96 | -- |
| Average | 150 | 209 | 197 | 193 | 197 | 181 | 111 | 116 | 112 | 87 | 84 | 116 |

YAKIMA RIVER BASIN--Continued

12-4849. YAKIMA RIVER AT ROZA DAM, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 56 | 56 | 55 | 56 | 55 | 56 | 56 | 55 | 56 | 54 | 52 | 52 | 52 | 52 | 50 | 47 | 48 | 49 | -- | 48 | 50 | -- | 50 | 50 | 50 | 48 | 49 | 48 | 48 | -- | -- | 52 |
| November | 49 | 49 | 48 | 47 | 48 | 48 | 47 | 48 | 49 | 47 | 45 | 45 | 43 | 44 | 46 | 46 | 47 | 47 | 47 | 45 | 45 | 44 | 42 | 42 | 40 | 40 | 39 | 39 | 39 | 40 | -- | 45 |
| December | 39 | 39 | 40 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | -- | 41 | 38 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 34 | 34 | 34 | -- | -- | 35 | 34 | 33 | 38 |
| January | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 34 | 34 | 34 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 |
| February | 33 | 33 | 34 | 35 | 37 | 37 | 37 | 37 | 37 | 36 | 37 | 37 | 37 | 36 | 35 | 35 | 37 | 38 | 39 | 39 | 39 | 40 | 40 | 43 | 43 | 42 | 41 | 42 | -- | -- | -- | 38 |
| March | 37 | 36 | 38 | 38 | 39 | 40 | 41 | 40 | 40 | 41 | 41 | 44 | 45 | 46 | 43 | 40 | 40 | 42 | 40 | 40 | 40 | 40 | 41 | 44 | 45 | 47 | 47 | 48 | 48 | -- | 46 | 42 |
| April | 47 | 45 | 45 | 45 | 45 | 45 | 47 | 47 | 46 | 46 | 46 | 45 | 45 | 45 | 48 | 48 | 48 | 46 | 45 | 47 | 47 | 49 | 50 | 50 | 50 | 47 | 49 | 50 | 50 | 50 | -- | 47 |
| May | 49 | 50 | 53 | 55 | 55 | 55 | 50 | 52 | 54 | 52 | 51 | 54 | 51 | -- | 49 | 48 | 48 | 51 | 52 | 54 | 55 | 50 | 50 | 54 | 54 | 56 | 57 | 51 | 52 | 55 | 54 | 52 |
| June | 57 | 55 | 52 | 50 | 55 | 57 | 59 | 61 | 59 | 58 | 56 | 54 | 57 | 58 | 60 | 60 | 61 | 58 | 60 | 57 | 58 | 58 | 58 | 55 | 56 | 60 | 59 | 62 | 61 | 58 | -- | 58 |
| July | 60 | 56 | 55 | 55 | 56 | 58 | 59 | 61 | 61 | 62 | 66 | 61 | 62 | 61 | 59 | 59 | 59 | 60 | 59 | 58 | 58 | 60 | 60 | 59 | 56 | 57 | 64 | 59 | 60 | 60 | 60 | 59 |
| August | 60 | 63 | 62 | 62 | 62 | 63 | 61 | 63 | 61 | 65 | 65 | 65 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | 62 | 61 | 61 | 62 | 63 | 66 | 64 | 62 | 59 | 60 | 60 | 60 | 62 |
| September | 60 | 61 | 61 | 62 | 63 | 65 | 65 | 65 | 65 | 62 | 62 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 58 | 59 | 60 | 61 | 62 | 60 | 59 | 60 | 59 | 60 | 61 | 60 | -- | 61 |

YAKIMA RIVER BASIN--Continued

12-4895. NACHES RIVER NEAR NACHES, WASH.

LOCATION.--Lat 46°34'50", long 120°47'15", at State Highway 14, approximately 500 feet upstream from Tieton River, and 4.3 miles west of Naches, Yakima County.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 9, 1965. | | 13 | | | | 7.2 | 1.7 | 3.2 | 0.4 | | 36 | 0 | 2.6 | 1.2 | 0.1 | 0.1 | | 47 | 25 | 0 | | 68 | 7.5 | 5 | 11.1 | 0 |
| Nov. 6..... | | 13 | | | | 7.6 | 1.5 | 3.2 | .6 | | 35 | 0 | 2.6 | .8 | .1 | .1 | | A 46 | 25 | 0 | | 65 | 7.7 | 5 | 12.0 | 0 |
| Dec. 5..... | | 13 | | | | 7.6 | 1.4 | 3.2 | .6 | | 35 | 0 | 2.8 | 1.0 | .0 | .1 | | 52 | 25 | 0 | | 64 | 7.6 | 5 | 11.8 | 0 |
| Jan. 9, 1966. | | 13 | | | | 7.6 | 1.5 | 3.1 | .6 | | 34 | 0 | 3.4 | 1.0 | .1 | .1 | | 45 | 25 | 0 | | 67 | 7.3 | 5 | 13.4 | 0 |
| Feb. 19..... | | 14 | | | | 8.8 | 1.6 | 3.6 | .6 | | 40 | 0 | 3.4 | 1.2 | .1 | .1 | | 52 | 28 | 0 | | 75 | 7.4 | 5 | 11.5 | 0 |
| Mar. 22..... | | 14 | | | | 9.2 | 2.0 | 3.8 | .7 | | 44 | 0 | 3.6 | 1.5 | .1 | .1 | | 60 | 31 | 0 | | 82 | 7.4 | 5 | 13.4 | 0 |
| Apr. 13..... | | 16 | | | | 8.4 | 1.1 | 3.4 | .6 | | 36 | 0 | 2.4 | .5 | .1 | .1 | | 51 | 26 | 0 | | 67 | 7.4 | 5 | 11.6 | 36 |
| May 11..... | | 14 | | | | 5.8 | 1.1 | 2.7 | .3 | | 28 | 0 | 1.6 | .0 | .1 | .1 | | 38 | 19 | 0 | | 52 | 7.1 | 5 | 11.7 | 36 |
| June 14..... | | 11 | | | | 5.4 | .8 | 2.3 | .5 | | 26 | 0 | 1.6 | .2 | .1 | .0 | | 36 | 17 | 0 | | 47 | 7.3 | 5 | 11.2 | 230 |
| July 14..... | | 12 | | | | 6.3 | 1.2 | 2.6 | .4 | | 29 | 0 | 1.8 | .0 | .1 | .1 | | 40 | 20 | 0 | | 53 | 7.1 | 5 | 9.9 | 43 |
| Aug. 17..... | | 12 | | | | 6.5 | 1.2 | 2.7 | .6 | | 30 | 0 | 2.4 | .5 | .0 | .2 | | A 41 | 21 | 0 | | 55 | 7.3 | 0 | 9.6 | 23 |
| Sept. 16..... | | 13 | | | | 7.8 | 1.4 | 2.9 | .7 | | 34 | 0 | 2.4 | .5 | .1 | .1 | | A 46 | 26 | 0 | | 61 | 7.3 | 0 | 10.6 | 73 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 0900 | 0.01 | 0.01 | 0.02 | 0.05 | 0.00 | 0.02 |
| Sept. 16..... | 1805 | .03 | .03 | .02 | .01 | .00 | .04 |

YAKIMA RIVER BASIN--Continued

12-4930. TIETON RIVER AT OAK CREEK GAME RANGE, WASH.

LOCATION.--Lat 46°43'30", long 120°48'20', at logging road bridge at Oak Creek Game Range, 0.2 mile downstream from Oak Creek, 1.6 miles upstream from mouth, and 6 miles west of Naches, Yakima County.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 9, 1965 | | 16 | | | | 7.2 | 2.4 | 3.0 | 0.6 | | 38 | 0 | 3.2 | 0.8 | 0.1 | 0.1 | | A 52 | 28 | 0 | | 72 | 7.7 | 0 | 10.2 | 36 |
| Nov. 6..... | | 20 | | | | 11 | 3.8 | 4.8 | 1.4 | | 60 | 0 | 3.8 | 1.2 | .2 | .1 | | A 76 | 43 | 0 | | 106 | 7.7 | 5 | 11.9 | 0 |
| Dec. 5..... | | 18 | | | | 8.8 | 2.9 | 3.7 | 1.1 | | 46 | 0 | 4.2 | 1.0 | .1 | .1 | | A 63 | 34 | 0 | | 86 | 7.5 | 5 | 11.7 | 73 |
| Jan. 9, 1966 | | 19 | | | | 10 | 3.7 | 4.7 | 1.2 | | 57 | 0 | 4.0 | 1.0 | .2 | .1 | | 76 | 40 | 0 | | 103 | 7.3 | 5 | 14.0 | 0 |
| Feb. 19..... | | 17 | | | | 9.6 | 2.0 | 3.6 | 1.0 | | 44 | 0 | 4.0 | .5 | .1 | .0 | | 61 | 32 | 0 | | 82 | 7.3 | 5 | 12.8 | 0 |
| Mar. 22..... | | 19 | | | | 10 | 3.4 | 4.4 | 1.2 | | 54 | 0 | 4.0 | 1.0 | .0 | .2 | | 76 | 39 | 0 | | 100 | 7.5 | 5 | 13.3 | 0 |
| Apr. 13..... | | 27 | | | | 8.8 | 3.1 | 4.5 | 1.4 | | 51 | 0 | 3.0 | .5 | .1 | .3 | | 77 | 35 | 0 | | 90 | 7.4 | 25 | 11.0 | 0 |
| May 11..... | | 22 | | | | 7.2 | 2.9 | 3.4 | 1.1 | | 44 | 0 | 2.4 | .2 | .2 | .0 | | 63 | 30 | 0 | | 76 | 7.5 | 5 | 10.6 | 0 |
| June 14..... | | 16 | | | | 7.3 | 2.2 | 3.2 | 1.0 | | 38 | 0 | 3.0 | .5 | .2 | .1 | | 52 | 27 | 0 | | 69 | 7.4 | 5 | 10.4 | 91 |
| July 14..... | | 15 | | | | 6.5 | 1.9 | 2.8 | .8 | | 34 | 0 | 3.0 | .5 | .2 | .2 | | 47 | 24 | 0 | | 63 | 7.2 | 0 | 9.9 | 140 |
| Aug. 17..... | | 14 | | | | 6.7 | 1.9 | 2.6 | .9 | | 33 | 0 | 2.8 | 1.0 | .1 | .2 | | A 46 | 24 | 0 | | 61 | 7.1 | 0 | 9.6 | 23 |
| Sept. 16.... | | 15 | | | | 7.9 | 2.1 | 2.8 | .9 | | 36 | 0 | 3.2 | .0 | .1 | .2 | | A 50 | 28 | 0 | | 67 | 7.0 | 0 | 10.1 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 0840 | 0.00 | 0.00 | 0.03 | 0.05 | 0.00 | 0.00 |
| Sept. 16..... | 1820 | .00 | .00 | .01 | .00 | .00 | .04 |

YAKIMA RIVER BASIN--Continued

12-4987. NACHES RIVER NEAR YAKIMA, WASH.

LOCATION.--Lat 46°37'55", long 120°35'10", at bridge on old U.S. Highway 410, 1.8 miles north of Yakima, Yakima County, and 3.8 miles upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 9, 1965. | | 16 | | | | 9.6 | 3.0 | 4.6 | 1.0 | | 50 | 0 | 4.2 | 1.5 | 0.1 | 0.4 | | 65 | 36 | 0 | | 96 | 7.6 | 0 | 11.4 | 91 |
| Nov. 6..... | | 16 | | | | 10 | 2.9 | 4.8 | .9 | | 51 | 0 | 4.2 | 1.5 | .2 | .2 | | A 66 | 37 | 0 | | 94 | 7.9 | 5 | 13.5 | 36 |
| Dec. 5..... | | 15 | | | | 9.2 | 2.6 | 4.4 | .8 | | 46 | 0 | 4.0 | 1.5 | .0 | .2 | | 63 | 34 | 0 | | 87 | 8.0 | 5 | 12.6 | 91 |
| Jan. 9, 1966. | | 15 | | | | 10 | 2.7 | 4.7 | .8 | | 48 | 0 | 4.8 | 1.8 | .2 | .2 | | 63 | 36 | 0 | | 94 | 7.3 | 5 | 14.5 | 150 |
| Feb. 19..... | | 16 | | | | 11 | 2.7 | 4.8 | 1.2 | | 52 | 0 | 5.0 | 1.5 | .1 | .3 | | 70 | 38 | 0 | | 98 | 7.5 | 5 | 13.2 | 0 |
| Mar. 1..... | | 17 | | | | 8.5 | 1.3 | 3.8 | .6 | | 38 | 0 | 2.4 | 1.0 | .1 | .1 | | 60 | 26 | 0 | | 68 | 6.3 | 5 | --- | --- |
| Mar. 22..... | | 15 | | | | 10 | 3.3 | 4.5 | .8 | | 52 | 0 | 4.4 | 2.0 | .0 | .2 | | 72 | 38 | 0 | | 101 | 7.5 | 0 | 13.5 | 36 |
| Apr. 13..... | | 17 | | | | 8.8 | 1.5 | 3.6 | .8 | | 40 | 0 | 2.8 | .5 | .2 | .2 | | 57 | 28 | 0 | | 73 | 7.3 | 5 | 12.1 | 91 |
| May 11..... | | 15 | | | | 6.2 | 1.4 | 2.7 | .4 | | 30 | 0 | 2.0 | .2 | .1 | .1 | | 43 | 22 | 0 | | 55 | 7.2 | 5 | 11.4 | 230 |
| June 14..... | | 13 | | | | 6.2 | 1.3 | 2.8 | .5 | | 32 | 0 | 2.0 | .5 | .1 | .0 | | 46 | 21 | 0 | | 58 | 7.3 | 5 | 11.2 | 73 |
| July 14..... | | 14 | | | | 7.6 | 2.0 | 3.3 | .9 | | 38 | 0 | 3.0 | .5 | .1 | .2 | | 50 | 27 | 0 | | 70 | 7.0 | 5 | 9.5 | 93 |
| Aug. 17..... | | 15 | | | | 7.4 | 2.3 | 3.3 | .9 | | 38 | 0 | 3.2 | 1.0 | .1 | .2 | | 53 | 28 | 0 | | 69 | 7.2 | 0 | 10.5 | 73 |
| Sept. 16..... | | 16 | | | | 9.5 | 2.2 | 3.7 | .9 | | 44 | 0 | 3.6 | .5 | .1 | .2 | | A 59 | 32 | 0 | | 82 | 7.2 | 0 | 10.9 | 230 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 0935 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.06 |
| Sept. 16..... | 1730 | .01 | .01 | .01 | .01 | .00 | .03 |

## 12-5050. YAKIMA RIVER NEAR PARKER, WASH.

LOCATION.--Lat 46°29'50", long 120°26'35", at Sunnyside diversion dam, 700 feet upstream from gaging station, 1.5 miles east of Parker, Yakima County, 3 miles downstream from Ahtanum Creek, and at mile 103.7.
DRAINAGE AREA.--3,650 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1959 to September 1966.
Water temperatures: August 1959 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 140 ppm Oct. 19 to Nov. 17; minimum, 64 ppm May 3-25.
Hardness: Maximum, 83 ppm Oct. 26 to Nov. 17; minimum, 36 ppm May 3-25.
Specific conductance: Maximum daily, 260 micromhos Dec. 24; minimum daily, 82 micromhos May 7.
Water temperatures: Maximum, 70°F Sept. 1, 2, 4, 5; minimum, freezing point Dec. 23-25.
EXTREMES, 1959-66.--Dissolved solids: Maximum, 204 ppm Nov. 29, 30, 1962; minimum, 44 ppm Jan. 1-13, 1960.
Hardness: Maximum, 122 ppm Nov. 29, 30, 1963; minimum, 27 ppm Jan. 1-13, 1960.
Specific conductance: Maximum daily, 317 micromhos Nov. 29, 1963; minimum daily, 69 micromhos June 4, 1961, May 22, 1963.
Water temperatures: Maximum, 72°F on several days during July or August of most years; minimum, freezing point on many days during most years.
REMARKS.--Approximately 15 percent of yearly flow is diverted at Sunnyside Diversion Dam. No inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-18, 1965.. | 764 | 17 | | 13 | 5.8 | 8.2 | 1.3 | 81 | 0 | 5.6 | 2.5 | 0.1 | 0.7 | 0.21 | 93 | 0.13 | 192 | 56 | 0 | 0.5 | 149 | 7.8 |
| Oct. 19-25..... | 1297 | 22 | | 19 | 8.5 | 14 | 1.9 | 118 | 0 | 9.2 | 4.5 | .2 | 2.1 | .29 A | 140 | .18 | 476 | 82 | 0 | .7 | 220 | 7.8 |
| Oct. 26-Nov. 17.. | 1028 | 22 | | 19 | 8.6 | 14 | 2.0 | 118 | 0 | 9.8 | 4.8 | .2 | 1.1 | .32 | 138 | .19 | 383 | 83 | 0 | .7 | 226 | 7.6 |
| Nov. 18-Dec. 15.. | 1211 | 21 | | 18 | 7.3 | 12 | 2.0 | 107 | 0 | 9.4 | 4.5 | .2 | 1.1 | -- | 125 | .17 | 409 | 75 | 0 | .6 | 201 | 7.9 |
| Dec. 16-31..... | 940 | 22 | | 19 | 8.1 | 14 | 2.2 | 114 | 0 | 10 | 5.2 | .2 | 1.4 | -- | 137 | .19 | 348 | 81 | 0 | .7 | 220 | 7.7 |
| Jan. 1-31, 1966.. | 1004 | 22 | | 18 | 7.6 | 14 | 2.1 | 108 | 0 | 9.4 | 5.5 | .2 | 2.1 | -- | 127 | .17 | 344 | 76 | 0 | .7 | 209 | 7.8 |
| Feb. 1-28..... | 1121 | 21 | | 18 | 8.0 | 13 | 2.4 | 109 | 0 | 9.2 | 5.2 | .2 | 1.9 | -- | 133 | .18 | 403 | 78 | 0 | .6 | 209 | 7.8 |
| Mar. 1-12..... | 1477 | 23 | | 18 | 8.3 | 12 | 2.8 | 112 | 0 | 8.4 | 4.5 | .1 | 2.7 | -- | 132 | .18 | 526 | 79 | 0 | .6 | 209 | 7.8 |
| Mar. 13-26..... | 1600 | 22 | | 16 | 6.8 | 9.6 | 2.1 | 92 | 0 | 7.2 | 4.0 | .1 | 2.5 | -- | 114 | .16 | 492 | 68 | 0 | .5 | 176 | 7.5 |
| Mar. 27-30..... | 2245 | 21 | | 14 | 5.4 | 7.1 | 1.5 | 78 | 0 | 6.0 | 2.5 | .1 | 1.7 | -- | 102 | .14 | 618 | 57 | 0 | .4 | 147 | 7.5 |
| Mar. 31-Apr. 12.. | 4265 | 18 | | 10 | 4.3 | 5.1 | 1.1 | 60 | 0 | 4.0 | 1.5 | .1 | .8 | -- | 81 | .11 | 933 | 43 | 0 | .3 | 110 | 7.5 |
| Apr. 13-May 2.... | 864 | 16 | | 11 | 3.4 | 5.7 | 1.0 | 56 | 0 | 4.8 | 2.0 | .1 | .5 | -- | 70 | .10 | 163 | 42 | 0 | .4 | 108 | 7.6 |
| May 3-25..... | 1973 | 14 | | 9.6 | 2.9 | 5.0 | 1.0 | 50 | 0 | 4.0 | 1.5 | .1 | .5 | -- | 58 | .08 | 309 | 36 | 0 | .4 | 94 | 7.2 |
| May 26-June 3.... | 563 | 14 | | 10 | 3.2 | 5.8 | 1.0 | 54 | 0 | 4.8 | 1.5 | .1 | .6 | -- | 61 | .08 | 92.6 | 38 | 0 | .4 | 101 | 7.3 |

A Calculated from determined constituents.

YAKIMA RIVER BASIN--Continued

12-5050. YAKIMA RIVER NEAR PARKER, WASH.--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| June 4-July 2,1966 | 355 | 14 | | 10 | 3.8 | 6.0 | 1.0 | 58 | 0 | 5.0 | 1.5 | 0.1 | 0.6 | | 67 | 0.09 | 64.1 | 41 | 0 | 0.4 | 109 | 7.4 |
| July 3-22..... | 495 | 13 | | 10 | 4.3 | 6.0 | 1.0 | 60 | 0 | 4.8 | 2.0 | .1 | .5 | | 66 | .09 | 88.1 | 43 | 0 | .4 | 112 | 7.4 |
| July 23-Aug. 22... | 5057 | 14 | | 9.8 | 4.2 | 6.1 | 1.0 | 61 | 0 | 4.6 | 1.5 | .1 | .6 | | 67 | .09 | 915 | 42 | 0 | .4 | 105 | 7.2 |
| Aug. 23-31..... | 380 | 14 | | 10 | 4.1 | 6.4 | 1.1 | 62 | 0 | 4.6 | 2.0 | .1 | .6 | | 68 | .09 | 69.7 | 42 | 0 | .4 | 116 | 7.3 |
| Sept. 1-30..... | 281 | 17 | | 12 | 5.2 | 8.1 | 1.5 | 76 | 0 | 5.6 | 3.0 | .2 | .8 | | 83 | .11 | 63.0 | 52 | 0 | .5 | 141 | 7.6 |
| Weighted average..... | -- | 17 | | 13 | 5.4 | 8.3 | 1.5 | 78 | -- | 6.2 | 2.8 | 0.1 | 1.1 | -- | 91 | 0.12 | 351 | 55 | 0 | 0.5 | 144 | 7.4 |
| Time-weighted average..... | 1422 | 18 | | 14 | 5.8 | 9.2 | 1.6 | 83 | -- | 6.8 | 3.2 | 0.1 | 1.1 | -- | 97 | -- | -- | 59 | 0 | 0.5 | 156 | 7.5 |
| Tons per day... | -- | 67 | | 50 | 21 | 32 | 5.6 | 298 | -- | 24 | 11 | 0.5 | 4.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

A Calculated from determined constituents.

Analyses of biological parameters

| Date of collection | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|
| Nov. 6, 1965. | 11.4 | 2400 |
| Dec. 5..... | 12.4 | 2400 |
| Jan. 9, 1966. | 14.3 | 2400 |
| Feb. 19..... | 12.7 | 230 |
| Mar. 22..... | 11.9 | 1500 |
| June 15..... | 10.7 | 11000 |
| Sept. 16..... | 11.0 | 24000 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 142 | 244 | -- | 214 | 194 | 216 | 116 | 106 | 110 | 107 | 105 | 127 |
| 2..... | 144 | 244 | 216 | 215 | 206 | 215 | 115 | 105 | 110 | 107 | 106 | 128 |
| 3..... | 141 | 217 | 208 | 217 | 207 | 219 | 115 | 89 | 111 | 125 | 106 | -- |
| 4..... | 144 | 217 | 191 | 223 | 204 | 217 | 116 | 89 | 117 | 120 | 106 | 129 |
| 5..... | 144 | 216 | 192 | 222 | 211 | 218 | 118 | 89 | 117 | 118 | 108 | 131 |
| 6..... | 144 | 216 | 206 | 217 | 210 | 217 | 115 | 83 | 115 | 116 | 108 | 132 |
| 7..... | 143 | 218 | 209 | 224 | 211 | 217 | 111 | 82 | 108 | 112 | 111 | 133 |
| 8..... | 147 | 218 | 195 | 209 | 214 | 217 | 103 | 87 | 108 | 113 | 111 | 131 |
| 9..... | 147 | 218 | 187 | 207 | 221 | 203 | 101 | 89 | 107 | 113 | 110 | 130 |
| 10..... | 148 | 216 | 186 | 209 | 213 | 204 | 99 | 88 | 108 | 114 | 109 | 130 |
| 11..... | 148 | 216 | 210 | 208 | 211 | 195 | 90 | 88 | 106 | 114 | 110 | 135 |
| 12..... | 148 | 217 | 193 | 211 | 214 | 195 | 102 | 95 | 107 | 109 | 108 | 135 |
| 13..... | 146 | 215 | 193 | 213 | 210 | 180 | 115 | 96 | 110 | 107 | 109 | 135 |
| 14..... | 146 | 224 | 201 | 209 | 209 | 179 | 116 | 96 | 111 | 108 | 110 | 133 |
| 15..... | 145 | 222 | 207 | 209 | 205 | 194 | 115 | 96 | 102 | 108 | 111 | 151 |
| 16..... | 170 | 223 | 217 | 207 | 211 | 168 | 114 | 95 | 101 | 108 | 112 | 145 |
| 17..... | 170 | 207 | 216 | 207 | 218 | 169 | 108 | 97 | 101 | 111 | 114 | 146 |
| 18..... | 174 | 204 | 219 | 215 | 218 | 177 | 108 | 101 | 106 | 109 | 113 | 148 |
| 19..... | 181 | 205 | 209 | 214 | 220 | 177 | 112 | 102 | 101 | 108 | 113 | 153 |
| 20..... | 225 | 202 | 210 | 215 | 220 | -- | 113 | 101 | 107 | 107 | 113 | 150 |
| 21..... | 226 | 201 | 224 | 226 | 220 | 181 | 109 | 102 | 107 | 106 | 111 | 151 |
| 22..... | 227 | 200 | 224 | 216 | 217 | 181 | 108 | 99 | 106 | 108 | 113 | 148 |
| 23..... | 225 | 202 | 256 | 202 | 213 | 185 | 100 | 102 | 108 | 110 | 115 | 147 |
| 24..... | 228 | 209 | 260 | 196 | 208 | 187 | 101 | 103 | 114 | 107 | 115 | 146 |
| 25..... | 228 | 208 | 215 | 198 | 209 | 176 | 101 | 103 | 114 | 105 | 113 | 145 |
| 26..... | 240 | 197 | 213 | 201 | 209 | 176 | 104 | 91 | 114 | 106 | 114 | 145 |
| 27..... | 237 | 206 | 213 | 207 | 211 | 168 | 105 | 92 | 113 | 110 | 114 | 145 |
| 28..... | 238 | 206 | 212 | 208 | 211 | 152 | 106 | 92 | 109 | 109 | 112 | 145 |
| 29..... | 235 | 207 | 212 | 204 | -- | 140 | 106 | 98 | 109 | 112 | 115 | 146 |
| 30..... | 243 | 216 | 220 | 195 | -- | 131 | 106 | 99 | 108 | 107 | 120 | 147 |
| 31..... | 240 | -- | 217 | 194 | -- | 119 | -- | 110 | -- | 107 | 121 | -- |
| Average | 182 | 213 | 211 | 210 | 211 | 184 | 108 | 95 | 108 | 110 | 111 | 140 |

YAKIMA RIVER BASIN--Continued

12-5050. YAKIMA RIVER NEAR PARKER, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Aver-age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 55 | 56 | 61 | 58 | 55 | 56 | 56 | 56 | 57 | 56 | 53 | 54 | 55 | 55 | 55 | 54 | 53 | 49 | 50 | 53 | 53 | 53 | 50 | 50 | 51 | 53 | 53 | 52 | 53 | 53 | 51 | 54 |
| November | 51 | 51 | 50 | 49 | 51 | 51 | 50 | 50 | 50 | 51 | 50 | 48 | 46 | 47 | 48 | 49 | 48 | 47 | 46 | 47 | 46 | 45 | 43 | 42 | 41 | 40 | 38 | 38 | 38 | 38 | -- | 46 |
| December | -- | 38 | 42 | 43 | 43 | 44 | 43 | 41 | 42 | 43 | 41 | 38 | 38 | 36 | 33 | 33 | 34 | 33 | 36 | 33 | 34 | 33 | 32 | 32 | 32 | 33 | 33 | 35 | 36 | 34 | 34 | 37 |
| January | 35 | 36 | 36 | 35 | 35 | 36 | 37 | 36 | 36 | 35 | 35 | -- | 36 | 38 | 36 | 36 | 36 | 35 | 34 | 34 | 35 | 34 | 35 | 34 | 36 | 35 | 35 | 35 | 36 | 38 | 37 | 36 |
| February | 37 | 38 | 37 | 40 | 39 | 39 | 38 | 38 | 38 | 36 | 39 | 37 | 38 | 38 | 37 | 38 | 40 | 40 | 39 | 38 | 42 | 42 | 42 | 43 | 43 | 41 | 41 | 41 | -- | -- | -- | 39 |
| March | 37 | 37 | 38 | 37 | 38 | -- | 42 | 48 | 42 | 42 | 46 | 47 | 47 | 47 | 46 | 47 | 45 | 42 | 42 | -- | 42 | 42 | 45 | 49 | 54 | 54 | 48 | 48 | 48 | 47 | 47 | 45 |
| April | 46 | 45 | 46 | 46 | 45 | 53 | 50 | 49 | 48 | 47 | -- | 48 | 52 | 51 | 50 | 50 | 46 | 45 | 47 | 46 | 48 | 48 | 54 | 49 | 49 | 46 | 53 | 52 | 52 | 51 | -- | 49 |
| May | 54 | 52 | 53 | 53 | 54 | 56 | 53 | 55 | 53 | 51 | 49 | 51 | 51 | 49 | 49 | 48 | 54 | 56 | 56 | 52 | 52 | 56 | 50 | 57 | 56 | 53 | 53 | 54 | 56 | 50 | 50 | 53 |
| June | 51 | 52 | 51 | 56 | 56 | 62 | 56 | 59 | 62 | 57 | 61 | 61 | 57 | 62 | 68 | 66 | 66 | 68 | 66 | 58 | 60 | 58 | 56 | 66 | 56 | 66 | 61 | 67 | 58 | 56 | -- | 60 |
| July | 56 | 57 | 60 | 61 | 64 | 64 | 64 | 69 | 69 | 69 | 67 | 64 | 62 | 62 | 67 | 67 | 63 | 69 | 65 | 65 | 68 | 68 | 62 | 61 | 58 | 60 | 62 | 68 | 68 | 63 | -- | 64 |
| August | 62 | 68 | 69 | 67 | 63 | -- | 64 | 63 | 69 | 60 | 68 | 62 | 63 | 63 | 63 | 69 | 62 | 63 | 62 | 62 | 67 | 61 | 64 | 64 | 64 | 62 | 62 | 65 | 61 | 59 | 62 | 64 |
| September | 70 | 70 | -- | 70 | 70 | 65 | 65 | 63 | 64 | 64 | 59 | 59 | 61 | 61 | 59 | 62 | 61 | 61 | 58 | 58 | 60 | 64 | 63 | 62 | 61 | 61 | 64 | 63 | 63 | 60 | -- | 63 |

## 12-5105. YAKIMA RIVER AT KIONA, WASH.
(Irrigation network station)

LOCATION.--Lat 46°15'10", long 119°28'35", at highway bridge downstream from gaging station at Kiona, Benton County, 3.5 miles downstream from intake of Kiona Canal, and at mile 29.8.
DRAINAGE AREA.--5,600 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: December 1952 to September 1966.
Water temperatures: December 1952 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 226 ppm Oct. 1-16, Oct. 25 to Nov. 24, Aug. 21 to Sept. 30; minimum, 109 ppm Mar. 31 to Apr. 14.
Hardness: Maximum, 138 ppm Oct. 25 to Nov. 24; minimum, 60 ppm Mar. 31 to Apr. 14.
Specific conductance: Maximum daily, 404 micromhos Nov. 6; minimum daily, 138 micromhos May 8.
Water temperatures: Maximum, 75°F Aug. 14; minimum, 36°F on several days during December and January.
EXTREMES, 1952-66.--Dissolved solids: Maximum, 242 ppm Oct. 1-11, 1958; minimum, 76 ppm May 1-23, 1957, Dec. 16-31, 1959, Jan. 1-15, 1960.
Hardness: Maximum, 148 ppm Oct. 1-11, 1958; minimum, 42 ppm May 1-23, 1957, Dec. 16-31, 1959.
Specific conductance: Maximum daily, 409 micromhos Oct. 3, 10, 1961; minimum daily, 99 micromhos Dec. 17, 1959.
Water temperatures: Maximum, 84°F July 18, 1960, July 21, 1961; minimum, freezing point on several days during winter months.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-16, 1965.. | 2221 | 30 | | 33 | 12 | 22 | 3.5 | 178 | 0 | 22 | 7.0 | 0.3 | 4.3 | 0.03 | 226 | 0.31 | 1360 | 132 | 0 | 0.8 | 362 | 7.7 |
| Oct. 17-24..... | 2749 | 28 | | 30 | 11 | 20 | 3.0 | 163 | 0 | 20 | 6.2 | .2 | 4.0 | -- | 199 | .27 | 1480 | 122 | 0 | .8 | 324 | 7.6 |
| Oct. 25-Nov 24... | 2127 | 31 | | 35 | 12 | 24 | 3.6 | 186 | 0 | 24 | 8.0 | .3 | 4.4 | -- | 226 | .31 | 1300 | 138 | 0 | .9 | 378 | 7.7 |
| Nov. 25-Dec. 25.. | 1997 | 27 | | 31 | 12 | 22 | 3.5 | 170 | 0 | 23 | 8.5 | .3 | 3.7 | .02 | 212 | .29 | 1140 | 127 | 0 | .9 | 339 | 8.2 |
| Dec. 26-Jan. 7, 1966..... | 1724 | 26 | | 34 | 11 | 24 | 3.7 | 174 | 0 | 25 | 9.0 | .2 | 5.4 | -- | 224 | .30 | 1040 | 132 | 0 | .9 | 355 | 8.1 |
| Jan. 8-21..... | 2324 | 25 | | 29 | 10 | 24 | 3.5 | 156 | 0 | 23 | 8.0 | .2 | 4.0 | .02 | 204 | .28 | 1280 | 116 | 0 | 1.0 | 321 | 7.8 |
| Jan. 22-Feb. 5... | 1841 | 26 | | 31 | 12 | 24 | 3.8 | 172 | 0 | 24 | 8.5 | .2 | 3.5 | -- | 213 | .29 | 1060 | 126 | 0 | .9 | 344 | 7.8 |
| Feb. 6-14..... | 1736 | 27 | | 31 | 12 | 24 | 3.6 | 169 | 0 | 24 | 8.5 | .3 | 4.2 | -- | 212 | .29 | 994 | 126 | 0 | .9 | 344 | 8.0 |
| Feb. 15-28..... | 1901 | 26 | | 29 | 11 | 21 | 3.4 | 160 | 0 | 21 | 7.5 | .4 | 3.3 | -- | 194 | .26 | 996 | 120 | 0 | .8 | 324 | 8.0 |
| Mar. 1-10..... | 2291 | 25 | | 27 | 11 | 19 | 3.3 | 152 | 0 | 18 | 6.5 | .3 | 3.5 | -- | 182 | .25 | 1130 | 112 | 0 | .8 | 298 | 7.8 |
| Mar. 11-21..... | 3558 | 25 | | 20 | 8.3 | 13 | 2.8 | 112 | 0 | 12 | 5.0 | .3 | 3.3 | -- | 140 | .19 | 1340 | 84 | 0 | .6 | 223 | 7.7 |
| Mar. 22-27..... | 2435 | 26 | | 22 | 10 | 16 | 2.6 | 130 | 0 | 15 | 5.5 | .2 | 3.2 | -- | 162 | .22 | 1070 | 97 | 0 | .7 | 258 | 7.8 |
| Mar. 28-30..... | 3720 | 25 | | 21 | 7.9 | 14 | 2.5 | 116 | 0 | 14 | 5.0 | .2 | 2.8 | -- | 146 | .20 | 1470 | 85 | 0 | .7 | 232 | 7.8 |
| Mar. 31-Apr. 14.. | 5977 | 22 | | 15 | 5.3 | 8.2 | 1.8 | 80 | 0 | 8.0 | 2.5 | .1 | 1.8 | .00 | 109 | .15 | 1760 | 60 | 0 | .5 | 154 | 7.5 |
| Apr. 15-19..... | 2942 | 23 | | 19 | 7.4 | 12 | 2.2 | 104 | 0 | 12 | 4.0 | .1 | 1.7 | -- | 135 | .18 | 1070 | 78 | 0 | .6 | 207 | 7.6 |
| Apr. 20-23..... | 557 | 24 | | 23 | 8.2 | 15 | 2.6 | 122 | 0 | 15 | 4.8 | .2 | 2.3 | -- | 156 | .21 | 235 | 91 | 0 | .7 | 243 | 7.7 |
| Apr. 29-May 6.... | 1945 | 23 | | 26 | 10 | 17 | 3.2 | 140 | 0 | 18 | 5.2 | .3 | 3.6 | -- | 175 | .24 | 919 | 106 | 0 | .7 | 276 | 7.7 |
| May 7-12..... | 4913 | 20 | | 16 | 53 | 8.8 | -- | 81 | 0 | 8.8 | 3.0 | .2 | 2.5 | -- | 110 | .15 | 1460 | 62 | 0 | .2 | 162 | 7.5 |
| May 13-20..... | 2754 | 22 | | 22 | 7.5 | 13 | 2.6 | 114 | 0 | 13 | 4.5 | .2 | 3.1 | -- | 144 | .20 | 1070 | 86 | 0 | .6 | 224 | 7.7 |
| May 21-June 9.... | 2138 | 23 | | 27 | 9.7 | 17 | 3.0 | 140 | 0 | 18 | 5.8 | .3 | 3.7 | -- | 177 | .24 | 1020 | 108 | 0 | .7 | 278 | 7.8 |
| June 10-22..... | 1779 | 24 | | 29 | 10 | 19 | 3.3 | 153 | 0 | 20 | 6.5 | .3 | 4.0 | -- | 193 | .26 | 927 | 114 | 0 | .8 | 302 | 7.8 |

YAKIMA RIVER BASIN--Continued

12-5105. YAKIMA RIVER AT KIONA, WASH.--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| June 23-July 3, 1966. | 1700 | 24 | | 30 | 11 | 20 | 3.3 | 158 | 0 | 22 | 7.0 | 0.3 | 3.7 | -- | 196 | 0.26 | 87.1 | 120 | 0 | 0.8 | 315 | 7.9 |
| July 4-13..... | 2287 | 22 | | 27 | 9.7 | 17 | 3.2 | 144 | 0 | 18 | 5.5 | .3 | 2.8 | 0.00 | 179 | .24 | 1110 | 108 | 0 | .7 | 287 | 7.8 |
| July 14-22..... | 1632 | 24 | | 32 | 11 | 21 | 3.5 | 166 | 0 | 22 | 7.0 | .4 | 3.5 | -- | 206 | .28 | 908 | 126 | 0 | .8 | 329 | 7.9 |
| July 23-Aug 20... | 1408 | 25 | | 33 | 12 | 22 | 3.8 | 177 | 0 | 23 | 8.0 | .3 | 4.2 | -- | 215 | .29 | 817 | 132 | 0 | .8 | 340 | 7.8 |
| Aug. 21-31..... | 1565 | 24 | | 35 | 12 | 23 | 3.9 | 184 | 0 | 24 | 7.0 | .3 | 4.5 | -- | 226 | .31 | 955 | 137 | 0 | .9 | 362 | 7.7 |
| Sept. 1-30..... | 1804 | 26 | | 32 | 13 | 23 | 3.8 | 182 | 0 | 24 | 8.0 | .3 | 5.5 | .04 | 224 | .31 | 1100 | 134 | 0 | .9 | 362 | 7.7 |
| Weighted average..... | -- | 25 | | 27 | 12 | 19 | 3.1 | 147 | -- | 19 | 6.4 | 0.3 | 3.6 | -- | 185 | 0.25 | 1090 | 110 | 0 | 0.7 | 294 | 7.7 |
| Time-weighted average..... | A2245 | 26 | | 29 | 12 | 20 | 3.3 | 157 | -- | 20 | 6.9 | 0.3 | 3.9 | -- | 196 | -- | -- | 118 | 0 | 0.8 | 314 | 7.8 |
| Tons per day... | -- | 149 | | 161 | 70 | 110 | 18 | 872 | -- | 111 | 38 | 1.5 | 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

A Mean discharge based on 365 days; mean discharge for 360 days of chemical analyses, 2,192 cfs.

Analyses of biological parameters

| Date of collection | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|
| Nov. 6, 1965. | 9.2 | 2400 |
| Dec. 5..... | 11.4 | 240000 |
| Jan. 9, 1966. | 12.6 | 2400 |
| Feb. 19..... | 11.0 | 230 |
| Mar. 22..... | 11.2 | 2400 |
| June 15..... | 10.0 | 930 |
| Sept. 16..... | 10.6 | 2400 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | -- | 390 | 352 | 355 | 342 | 301 | 161 | 290 | 283 | 305 | -- | -- |
| 2..... | 341 | 395 | 356 | 351 | 340 | 292 | 152 | 283 | 274 | 310 | 348 | 345 |
| 3..... | 341 | 400 | 355 | 353 | 346 | 282 | 150 | 283 | 279 | 322 | 341 | 349 |
| 4..... | 350 | 374 | 361 | 368 | 351 | 292 | 148 | 290 | 288 | 294 | 338 | 351 |
| 5..... | 354 | 400 | 359 | 367 | 355 | 298 | 154 | 281 | 288 | 277 | 332 | 386 |
| 6..... | 359 | 404 | 353 | 363 | 350 | 303 | 161 | 227 | 281 | 255 | 348 | 373 |
| 7..... | 358 | 386 | 350 | 368 | 351 | 306 | 167 | 182 | 279 | 268 | -- | 377 |
| 8..... | 362 | 375 | 335 | 320 | 352 | 307 | 167 | 138 | 290 | 272 | 348 | 382 |
| 9..... | 354 | 366 | 338 | 287 | 352 | 302 | 154 | 141 | 293 | 270 | 345 | 370 |
| 10..... | 352 | 364 | 338 | 287 | 338 | 294 | 145 | 162 | 279 | 284 | 341 | 378 |
| 11..... | 355 | 368 | 333 | 314 | 348 | 224 | 143 | 174 | 283 | 296 | 341 | -- |
| 12..... | 368 | 376 | 316 | 326 | 351 | 239 | 145 | 174 | 283 | 305 | 336 | 368 |
| 13..... | 367 | 375 | 318 | 336 | 340 | 246 | 150 | 196 | 285 | 319 | 342 | 379 |
| 14..... | 382 | 374 | 325 | 352 | 333 | 241 | 160 | 223 | 285 | 329 | 342 | 380 |
| 15..... | 373 | 368 | 325 | 311 | 335 | 219 | 179 | 244 | 293 | 322 | 344 | -- |
| 16..... | 361 | 376 | 330 | 287 | 328 | 195 | 195 | 231 | 305 | 332 | 347 | 354 |
| 17..... | 305 | 377 | 341 | 311 | 331 | 196 | 217 | 215 | 311 | 316 | 331 | 334 |
| 18..... | 308 | 372 | 356 | 323 | 330 | 208 | 226 | 207 | 313 | 310 | 326 | 337 |
| 19..... | 325 | 370 | 360 | 333 | 327 | 217 | 216 | 223 | 325 | 319 | 332 | 342 |
| 20..... | 330 | 372 | 360 | 337 | 324 | 224 | -- | 248 | 317 | 329 | 346 | 342 |
| 21..... | 313 | 366 | 359 | 346 | 319 | 231 | 209 | 264 | 321 | 332 | 387 | 356 |
| 22..... | 315 | 359 | 357 | 358 | 322 | 242 | 225 | 279 | 329 | 335 | 355 | 356 |
| 23..... | 325 | 355 | 348 | 369 | 319 | 250 | 270 | 272 | 307 | 335 | -- | 361 |
| 24..... | 335 | 353 | 351 | 367 | 315 | 260 | -- | 262 | 310 | 335 | 355 | 378 |
| 25..... | 362 | 346 | 351 | 350 | 315 | 261 | -- | 262 | 322 | 338 | 363 | 383 |
| 26..... | 378 | 356 | 357 | 346 | 307 | 267 | -- | 281 | 289 | 348 | 351 | 374 |
| 27..... | 372 | 349 | 359 | 344 | 303 | 271 | -- | 293 | 299 | 320 | 351 | -- |
| 28..... | 351 | 350 | 359 | 351 | 301 | 254 | -- | 272 | 302 | 338 | 358 | 378 |
| 29..... | 374 | 340 | 353 | 354 | -- | 232 | 266 | 257 | 302 | 323 | 340 | 375 |
| 30..... | 390 | 344 | 358 | 352 | -- | 205 | 277 | 249 | -- | 332 | 331 | 383 |
| 31..... | 390 | -- | 356 | 349 | -- | 178 | -- | 274 | -- | 341 | -- | -- |
| Average | 351 | 370 | 347 | 339 | 333 | 252 | 184 | 237 | 297 | 313 | 345 | 365 |

YAKIMA RIVER BASIN--Continued

12-5105. YAKIMA RIVER AT KIONA, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Aver-age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | -- | 58 | 58 | 58 | 58 | 61 | -- | 59 | 57 | 56 | 56 | 56 | 57 | 56 | 56 | 56 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | -- | 52 | 53 | -- | 55 |
| November | 53 | 53 | 53 | 52 | 52 | 51 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | -- | 49 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 47 | 46 | 44 | 44 | 42 | 42 | 41 | 41 | -- | 48 |
| December | 40 | 42 | 42 | 44 | 44 | 44 | 45 | 44 | -- | 44 | 42 | 43 | 41 | 40 | -- | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 40 | 39 | 39 | 39 | 39 | 40 |
| January | 37 | 38 | 38 | 39 | -- | 39 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 39 | 38 | 37 | 37 | 38 | 38 | 36 | 36 | 36 | -- | 38 | 39 | 40 | 39 | 39 |
| February | 39 | 40 | 40 | 40 | 41 | 41 | 42 | -- | -- | 41 | 41 | 42 | 41 | 41 | 40 | 41 | 41 | 42 | 41 | 43 | 43 | 43 | 45 | 44 | 45 | 45 | 44 | -- | -- | -- | -- | 42 |
| March | 42 | 43 | 41 | 40 | 42 | 42 | 39 | 40 | 42 | 42 | 41 | 47 | 48 | 49 | 49 | 47 | 46 | -- | 45 | 44 | 44 | 44 | 45 | 47 | 48 | 49 | 51 | 54 | 55 | 55 | 54 | 46 |
| April | 52 | 50 | 50 | 50 | 50 | 52 | 54 | 55 | 54 | 53 | 51 | 50 | 49 | 49 | 53 | 51 | 54 | 52 | 50 | -- | 51 | 52 | 51 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | 60 | 59 | 62 | 64 | 65 | 64 | 62 | 57 | 57 | 57 | 57 | 57 | 55 | 53 | 55 | 53 | 54 | 56 | 59 | 62 | 63 | 58 | 58 | 61 | 69 | 69 | 69 | 64 | 64 | 62 | 58 | 60 |
| June | 59 | 58 | 58 | 58 | 61 | 63 | 66 | 65 | 67 | 66 | -- | 68 | 68 | 67 | 68 | 70 | 70 | 70 | 71 | 69 | 66 | 65 | 62 | 65 | 60 | 65 | 67 | 68 | -- | -- | -- | 65 |
| July | 66 | -- | -- | 63 | 65 | 66 | 68 | 70 | 71 | 70 | 70 | 71 | 70 | 71 | 70 | 71 | 72 | 72 | 72 | 69 | 70 | -- | 71 | 71 | 70 | 71 | 72 | 71 | 72 | 73 | 74 | 70 |
| August | -- | 74 | 74 | 74 | 73 | 72 | -- | 73 | 71 | 72 | 70 | 69 | 70 | 75 | -- | 72 | 71 | 71 | 70 | 70 | 70 | 70 | -- | 68 | 68 | 68 | 65 | 66 | -- | 63 | -- | 70 |
| September | -- | 65 | 67 | 67 | 68 | 68 | 68 | 68 | -- | 68 | -- | -- | 62 | 61 | -- | 62 | 63 | 63 | -- | -- | 63 | 64 | -- | 65 | 62 | 64 | -- | 63 | 64 | 62 | -- | -- |

## MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

### CHEHALIS RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0200. CHEHALIS RIVER NEAR DOTY, WASH. (463805 1231520) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 13, 1965 | 59 | 14 | | | | 6.8 | 2.0 | 5.9 | 0.6 | | 34 | 0 | 3.8 | 5.5 | 0.1 | 0.2 | | A 56 | 26 | 0 | | 79 | 7.4 | 10 | 9.2 | 4600 |
| Feb. 8, 1966. | 1060 | 13 | | | | 4.8 | 1.0 | 4.0 | .5 | | 17 | 0 | 3.0 | 3.8 | .1 | 1.1 | | 45 | 16 | 2 | | 55 | 6.9 | 5 | 11.8 | 930 |
| May 3..... | 170 | 14 | | | | 6.0 | 2.3 | 4.9 | .5 | | 28 | 0 | 3.4 | 4.5 | .1 | .3 | | A 50 | 24 | 2 | | 66 | 7.2 | 5 | 11.0 | 430 |
| Aug. 9..... | 34 | 14 | | | | 6.9 | 2.4 | 6.0 | .4 | | 35 | 0 | 3.0 | 6.0 | .1 | .4 | | 55 | 27 | 0 | | 78 | 6.9 | 15 | 9.0 | 210 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966..... | 1455 | 0.00 | 0.01 | 0.04 | 0.05 | 0.01 | 0.02 |
| Aug. 9..... | 1410 | .00 | .00 | .04 | .00 | .00 | .01 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0250. NEWAUKUM RIVER NEAR CHEHALIS, WASH. (463710 1225635) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 18, 1965 | 114 | 14 | | | | 7.6 | 2.0 | 5.2 | 0.8 | | 33 | 0 | 2.0 | 7.0 | 0.1 | 0.3 | | 55 | 27 | 0 | | 81 | 7.2 | 10 | 9.9 | 430 |
| Feb. 9, 1966. | 874 | 13 | | | | 4.4 | 1.2 | 3.5 | .4 | | 22 | 0 | 1.2 | 3.2 | .1 | .8 | | 42 | 16 | 0 | | 51 | 7.0 | 20 | 12.0 | 430 |
| May 2..... | 190 | 14 | | | | 6.4 | 1.3 | 4.2 | .5 | | 30 | 0 | 1.2 | 4.0 | .1 | .2 | | 47 | 22 | 0 | | 66 | 7.1 | 5 | 11.0 | 230 |
| Aug. 8..... | 44 | 13 | | | | 8.7 | 2.6 | 6.3 | .4 | | 39 | 0 | 1.2 | 9.0 | .1 | .3 | | A 61 | 32 | 0 | | 93 | 6.8 | 5 | 10.5 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 9, 1966.... | 1115 | 0.01 | 0.01 | 0.07 | 0.05 | 0.00 | 0.00 |
| Aug. 8..... | 1620 | .02 | .03 | .01 | .01 | .00 | .00 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

CHEHALIS RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0350. SATSOP RIVER NEAR SATSOP, WASH. (470005 1232935) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 1, 1965 | 606 | 12 | | | | 6.8 | 1.8 | 4.1 | 0.5 | | 31 | 0 | 4.8 | 2.0 | 0.1 | 0.4 | | 47 | 24 | 0 | | 70 | 7.0 | 5 | 10.4 | 91 |
| Feb. 8, 1966 | 3590 | 12 | | | | 4.0 | 1.5 | 3.2 | .3 | | 21 | 0 | 2.8 | 2.0 | .1 | .7 | | 39 | 16 | 0 | | 49 | 7.0 | 5 | 5.3 | 36 |
| May 4..... | 777 | 13 | | | | 5.6 | 1.9 | 3.2 | .3 | | 31 | 0 | 2.4 | 2.0 | .1 | .1 | | 44 | 22 | 0 | | 62 | 7.2 | 0 | 11.3 | 0 |
| Aug. 2..... | 272 | 14 | | | | 6.8 | 2.5 | 4.0 | .5 | | 35 | 0 | 3.2 | 3.0 | .1 | .3 | | 50 | 28 | 0 | | 72 | 6.9 | 5 | 10.7 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 1200 | 0.00 | 0.01 | 0.03 | 0.05 | 0.00 | 0.01 |
| Aug. 2..... | 1545 | .01 | .02 | .02 | .01 | .00 | .01 |

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0368. WYNOOCHEE RIVER NEAR MONTESANO, WASH. (470445 1234155) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 1, 1965 | | 8.8 | | | | 8.4 | 1.6 | 2.5 | 0.3 | | 34 | 0 | 3.0 | 2.0 | 0.0 | 0.4 | | 44 | 28 | 0 | | 68 | 7.3 | 0 | 10.7 | 91 |
| Feb. 8, 1966 | | 8.3 | | | | 5.2 | 1.2 | 2.1 | .3 | | 22 | 0 | 1.8 | 1.8 | .1 | .5 | | A 32 | 18 | 0 | | 47 | 7.0 | 5 | 11.4 | 91 |
| May 4..... | | 7.7 | | | | 7.6 | 1.3 | 1.9 | .2 | | 31 | 0 | 2.2 | 1.2 | .1 | .1 | | 37 | 24 | 0 | | 60 | 7.2 | 0 | 11.0 | 36 |
| Aug. 2..... | | 9.2 | | | | 8.7 | 1.9 | 2.7 | .4 | | 37 | 0 | 3.2 | 2.5 | .0 | .2 | | A 47 | 30 | 0 | | 71 | 6.8 | 5 | 9.3 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 1100 | 0.00 | 0.02 | 0.02 | 0.05 | 0.00 | 0.00 |
| Aug. 2..... | 1450 | .00 | .01 | .03 | .00 | .00 | .00 |

## HUMPTULIPS RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0390. HUMPTULIPS RIVER NEAR HUMPTULIPS, WASH. (471345 1235740) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 1, 1965 | 605 | 9.3 | | | | 6.4 | 1.8 | 3.0 | 0.3 | | 29 | 0 | 3.0 | 2.2 | 0.0 | 0.6 | | 41 | 23 | 0 | | 61 | 7.1 | 5 | 10.7 | 230 |
| Feb. 8, 1966 | 2210 | 8.7 | | | | 4.4 | 1.4 | 2.6 | .2 | | 21 | 0 | 2.4 | 2.5 | .1 | .5 | | A 33 | 17 | 0 | | 48 | 7.0 | 5 | 12.0 | 36 |
| May 4..... | 569 | 8.8 | | | | 6.0 | 1.5 | 2.6 | .1 | | 28 | 0 | 2.6 | 1.5 | .1 | .1 | | 36 | 21 | 0 | | 57 | 7.3 | 0 | 11.0 | 0 |
| Aug. 2..... | 174 | 10 | | | | 7.3 | 2.0 | 3.4 | .3 | | 34 | 0 | 3.6 | 3.0 | .1 | .2 | | A 47 | 26 | 0 | | 69 | 6.9 | 5 | 10.3 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 8, 1966.... | 0905 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 |
| Aug. 2..... | 1200 | .01 | .01 | .03 | .00 | .00 | .00 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

QUINAULT RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0395. QUINAULT RIVER AT QUINAULT LAKE, WASH. (472730123531[illegible]) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | 4180 | 4.4 | | | | 8.0 | 0.8 | 1.6 | 0.2 | | 25 | 0 | 5.2 | 1.5 | 0.1 | 0.3 | | 36 | 23 | 2 | | 59 | 6.9 | 5 | | |
| Aug. 2..... | 1580 | 4.4 | | | | 9.5 | .8 | 1.7 | .3 | | 29 | 0 | 6.4 | 2.0 | .1 | .1 | | A 40 | 27 | 3 | | 65 | 6.9 | 0 | 10.6 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1720 | 0.00 | 0.01 | 0.02 | 0.05 | 0.00 | 0.00 |
| Aug. 2..... | 1110 | .00 | .00 | .01 | .01 | .00 | .00 |

## QUEETS RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0406. QUEETS RIVER AT QUEETS, WASH. (473230 1242000) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | | 4.9 | | | | 5.2 | 0.8 | 2.3 | 0.4 | | 17 | 0 | 4.4 | 1.8 | 0.0 | 0.4 | | 32 | 16 | 2 | | 50 | 6.9 | 15 | 11.6 | 43 |
| Aug. 2..... | | 4.6 | | | | 9.6 | 1.0 | 2.4 | .3 | | 30 | 0 | 7.6 | 2.0 | .1 | .1 | | A 43 | 28 | 4 | | 72 | 7.1 | 5 | 9.8 | 60 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1635 | 0.00 | 0.00 | 0.06 | 0.05 | 0.00 | 0.00 |
| Aug. 2..... | 1010 | .00 | .01 | .00 | .00 | .00 | .00 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

HOH RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0412. HOH RIVER NEAR FORKS, WASH. (474825 1241500) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | 2720 | 5.0 | | | | 8.8 | 1.6 | 2.0 | 0.2 | | 29 | 0 | 6.8 | 1.8 | 0.1 | 0.2 | | 44 | 28 | 4 | | 70 | 7.2 | 5 | 11.2 | 36 |
| Aug. 2..... | 1500 | 3.4 | | | | 11 | .9 | 1.5 | .2 | | 30 | 0 | 8.6 | 2.0 | .2 | .2 | | A 44 | 31 | 6 | | 72 | 6.9 | 0 | 11.1 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1535 | 0.00 | 0.01 | 0.04 | 0.05 | 0.00 | 0.02 |
| Aug. 2..... | 0925 | .00 | .00 | .02 | .00 | .00 | .00 |

## QUILLAYUTE RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0420. SOLEDUCK RIVER ABOVE KUGEL CREEK, NEAR FAIRHOLM, WASH. (480400 1240550) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | | 5.3 | | | | 9.2 | 1.2 | 2.0 | 0.2 | | 32 | 0 | 5.2 | 1.5 | 0.1 | 0.1 | | 41 | 28 | 2 | | 70 | 7.4 | 5 | 11.8 | 30 |
| Aug. 2..... | | 4.7 | | | | 12 | 1.5 | 2.0 | .3 | | 39 | 0 | 6.4 | 1.5 | .1 | .1 | | A 49 | 36 | 4 | | 82 | 7.0 | 0 | 10.8 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1440 | 0.00 | 0.00 | 0.01 | 0.05 | 0.00 | 0.03 |
| Aug. 2..... | 0820 | .00 | .00 | .02 | .00 | .00 | .01 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

ELWHA RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0455. ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WASH. (480355 1233435) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | 1330 | 6.9 | | | | 15 | 1.7 | 2.3 | 0.2 | | 50 | 0 | 9.2 | 0.8 | 0.1 | 0.1 | | 63 | 44 | 4 | | 103 | 7.6 | 5 | 12.2 | 36 |
| Aug. 15..... | 1380 | 5.3 | | | | 13 | 1.0 | 1.8 | .2 | | 36 | 0 | 7.6 | .5 | .1 | .2 | | A 48 | 36 | 7 | | 77 | 7.0 | 0 | 11.4 | 23 |

DUNGENESS RIVER BASIN

12-0480. DUNGENESS RIVER NEAR SEQUIM, WASH. (480435 1230900)

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. 7, 1966 | 220 | 14 | | | | 19 | 3.9 | 3.9 | 0.3 | | 74 | 0 | 9.0 | 2.0 | 0.1 | 0.2 | | A88 | 64 | 3 | | 142 | 7.9 | 5 | 11.9 | 91 |
| Aug. 1..... | 458 | 4.6 | | | | 14 | 1.9 | 2.1 | .3 | | 50 | 0 | 6.0 | .5 | .1 | .3 | | A55 | 43 | 2 | | 95 | 7.4 | 5 | 11.2 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1255 | 0.00 | 0.00 | 0.03 | 0.05 | 0.00 | 0.04 |
| Aug. 1..... | 1445 | .00 | .02 | .04 | .00 | .00 | .02 |

BIG QUILCENE RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0523. BIG QUILCENE RIVER NEAR QUILCENE, WASH. (474840 1225435) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | | 12 | | | | 9.6 | 2.2 | 3.3 | 0.1 | | 38 | 0 | 2.0 | 5.0 | 0.0 | 0.6 | | 59 | 33 | 2 | | 85 | 7.3 | 5 | | |
| Aug. 1..... | | 7.2 | | | | 13 | 2.1 | 3.4 | .2 | | 47 | 0 | 2.4 | 6.0 | .0 | .5 | | 59 | 41 | 2 | | 101 | 7.3 | 0 | | |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966..... | 1200 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.01 |
| Aug. 1..... | 1340 | .00 | .00 | .00 | .01 | .00 | .04 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

DOSEWALLIPS RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0535. DOSEWALLIPS RIVER AT BRINNON, WASH. (474125 1225350) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | | 8.4 | | | | 11 | 1.8 | 1.8 | 0.2 | | 40 | 0 | 4.4 | 1.0 | 0.1 | 0.3 | | 52 | 35 | 2 | | 79 | 7.4 | 5 | 12.2 | 36 |
| Aug. 1..... | | 4.9 | | | | 12 | 1.3 | 1.5 | .3 | | 39 | 0 | 6.0 | .5 | .0 | .3 | | 45 | 36 | 4 | | 79 | 7.1 | 0 | 11.2 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1120 | 0.00 | 0.00 | 0.01 | 0.05 | 0.00 | 0.04 |
| Aug. 1..... | 1300 | .01 | .02 | .00 | .00 | .00 | .04 |

DUCKABUSH RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0541. DUCKABUSH RIVER AT U.S. HIGHWAY 101 BRIDGE, NEAR BRINNON, WASH. (473855 1225600) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | | 7.6 | | | | 8.8 | 2.0 | 7.6 | 0.4 | | 32 | 0 | 4.6 | 12 | 0.0 | 0.2 | | 61 | 30 | 4 | | 104 | 7.2 | 5 | 12.2 | 91 |
| Aug. 1..... | | 4.6 | | | | 9.7 | 1.2 | 1.4 | .1 | | 34 | 0 | 4.4 | .5 | .1 | .2 | | 37 | 29 | 1 | | 66 | 7.1 | 0 | 13.2 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1045 | 0.00 | 0.00 | 0.01 | 0.05 | 0.00 | 0.06 |
| Aug. 1..... | 1230 | .00 | .00 | .01 | .02 | .00 | .04 |

## HAMMA HAMMA RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0550. HAMMA HAMMA RIVER AT ELDON, WASH. (473245 1230225) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb. 7, 1966 | | 7.8 | | | | 6.4 | 1.4 | 1.0 | 0.2 | | 27 | 0 | 1.6 | 1.0 | 0.0 | 0.2 | | 34 | 22 | 0 | | 52 | 7.2 | 0 | 12.2 | 430 |
| Aug. 1..... | | 5.4 | | | | 9.3 | 1.4 | 1.3 | .1 | | 36 | 0 | 2.6 | .5 | .0 | .3 | | 37 | 29 | 0 | | 65 | 7.2 | 0 | 12.2 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 7, 1966.... | 1005 | 0.00 | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 |
| Aug. 1..... | 1150 | .00 | .01 | .01 | .00 | .00 | .02 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

DESCHUTES RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0800. DESCHUTES RIVER AT TUMWATER, WASH. (470055 1225405) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 17, 1965 | | 22 | | | | 9.6 | 3.5 | 5.8 | 1.1 | | 44 | 0 | 3.6 | 8.8 | 0.1 | 1.0 | | 84 | 38 | 2 | | 108 | 7.3 | 5 | 11.5 | 150 |
| Mar. 17, 1966 | | 16 | | | | 6.0 | 1.8 | 3.9 | .7 | | 30 | 0 | 2.2 | 2.5 | .1 | .8 | | 58 | 22 | 0 | | 66 | 7.1 | 20 | 11.5 | 430 |
| June 30..... | | 21 | | | | 10 | 3.0 | 6.2 | .9 | | 46 | 0 | 3.0 | 7.5 | .1 | 1.2 | | 79 | 38 | 0 | | 106 | 7.4 | 5 | 9.8 | 930 |
| Sept. 26..... | | 22 | | | | 12 | 3.8 | 7.1 | 1.2 | | 52 | 0 | 3.8 | 11 | .1 | 1.6 | | A 89 | 46 | 3 | | 122 | 7.4 | 5 | 11.3 | 2400 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 17, 1966... | 1340 | 0.01 | 0.01 | 0.09 | 0.05 | 0.00 | 0.00 |
| Sept. 26..... | 1405 | .00 | .00 | .02 | .00 | .00 | .01 |

## NISQUALLY RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0895. NISQUALLY RIVER AT MCKENNA, WASH. (465600 1223335) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 16, 1965 | 1030 | 13 | | | | 5.6 | 1.6 | 3.5 | 0.7 | | 28 | 0 | 2.8 | 2.2 | 0.1 | 0.3 | | 45 | 20 | 0 | | 59 | 7.3 | 10 | 12.0 | 230 |
| Mar. 17, 1966 | 945 | 15 | | | | 5.2 | 1.6 | 3.4 | .9 | | 26 | 0 | 2.8 | 1.0 | .1 | .7 | | 46 | 20 | 0 | | 57 | 6.9 | 20 | 12.3 | 91 |
| June 30..... | 413 | 12 | | | | 5.5 | 1.4 | 3.3 | .5 | | 27 | 0 | 1.8 | 1.5 | .0 | .2 | | 37 | 20 | 0 | | 54 | 7.3 | 5 | 10.9 | -- |
| Sept. 26..... | 341 | 12 | | | | 6.0 | 1.6 | 3.2 | .6 | | 32 | 0 | 2.2 | 1.0 | .0 | .3 | | 42 | 22 | 0 | | 57 | 7.4 | 5 | 11.3 | 1500 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 17, 1966... | 1300 | 0.01 | 0.01 | 0.11 | 0.05 | 0.00 | 0.01 |
| Sept. 26..... | 1450 | .00 | .00 | .02 | .00 | | .02 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

PUYALLUP RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-0935. PUYALLUP RIVER NEAR ORTING, WASH. (470220 1221215) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 16, 1965 | 291 | 16 | | | | 7.2 | 1.8 | 4.0 | 1.1 | | 30 | 0 | 6.6 | 2.8 | 0.1 | 0.3 | | 61 | 25 | 0 | | 72 | 7.4 | 10 | 13.4 | 91 |
| Mar. 17, 1966 | 652 | 16 | | | | 4.8 | 1.8 | 3.2 | .9 | | 26 | 0 | 4.0 | 1.0 | .2 | .5 | | 44 | 19 | 0 | | 56 | 7.2 | 15 | 11.8 | 30 |
| June 17..... | 1020 | 8.9 | | | | 4.0 | 1.4 | 2.2 | .3 | | 14 | 0 | 7.2 | 1.0 | .1 | .1 | | 32 | 16 | 4 | | 45 | 6.9 | 0 | 11.0 | 23 |
| Sept. 26..... | 526 | 11 | | | | 6.6 | 2.3 | 3.0 | .6 | | 19 | 0 | 14 | 1.0 | .1 | .1 | | 50 | 26 | 10 | | 65 | 7.1 | 10 | 11.2 | 430 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 17, 1966... | 1150 | 0.01 | 0.01 | 0.07 | 0.05 | 0.00 | 0.01 |
| Sept. 26..... | 1540 | .01 | .01 | .02 | .00 | .00 | .01 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-1005. WHITE RIVER NEAR SUMNER, WASH. (471555 1221340) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 14, 1965 | 127 | 20 | | | | 12 | 4.1 | 5.3 | 1.3 | | 49 | 0 | 14 | 3.2 | 0.2 | 1.6 | | 88 | 47 | 7 | | 123 | 7.5 | 10 | 13.0 | 390 |
| Mar. 16, 1966 | 264 | 17 | | | | 9.6 | 2.7 | 4.1 | 1.5 | | 38 | 0 | 10 | 2.5 | .2 | 2.1 | | 73 | 35 | 4 | | 97 | 7.0 | 20 | 11.0 | 230 |
| June 13..... | 1860 | 11 | | | | 5.2 | .9 | 2.8 | .6 | | 22 | 0 | 6.0 | .5 | .1 | .1 | | 43 | 16 | 0 | | 52 | 6.9 | 5 | 12.3 | 230 |
| Sept. 27..... | 64 | 14 | | | | 12 | 2.7 | 5.5 | 1.6 | | 40 | 3 | 15 | 3.0 | .2 | .5 | | 80 | 41 | 8 | | 113 | 8.7 | 10 | 10.1 | 11000 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966... | 1445 | 0.01 | 0.01 | 0.08 | 0.05 | 0.00 | 0.00 |
| Sept. 27..... | 1635 | .01 | .01 | .00 | .02 | | .03 |

LAKE WASHINGTON BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-1265. SAMMAMISH RIVER AT BOTHELL, WASH. (474500 1221210)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 14, 1965 | | 12 | | | | 10 | 5.3 | 5.8 | 1.3 | | 49 | 0 | 12 | 3.8 | 0.1 | 2.4 | | 77 | 47 | 7 | | 122 | 7.1 | 20 | 9.9 | 4600 |
| Mar. 15, 1966 | | 8.6 | | | | 8.4 | 4.1 | 4.7 | 1.5 | | 36 | 0 | 12 | 2.8 | .1 | 2.5 | | 65 | 38 | 8 | | 103 | 6.9 | 25 | 10.2 | 430 |
| June 14..... | | 11 | | | | 11 | 5.6 | 6.5 | 1.3 | | 54 | 0 | 16 | 3.5 | .2 | 2.0 | | 85 | 50 | 6 | | 134 | 6.9 | 20 | 10.6 | 2400 |
| Sept. 13..... | | 15 | | | | 13 | 6.2 | 7.2 | 1.5 | | 62 | 0 | 16 | 5.0 | .2 | 2.6 | | 98 | 58 | 7 | | 149 | 6.8 | 20 | 11.5 | 930 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1120 | 0.01 | 0.01 | 0.10 | 0.05 | 0.00 | 0.02 |
| Sept. 13..... | 1040 | .00 | .01 | .02 | .00 | | .01 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

SNOHOMISH RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-1345. SKYKOMISH RIVER NEAR GOLD BAR, WASH. (475015 1213925) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 14, 1965 | 2090 | 6.6 | | | | 4.0 | 1.1 | 2.0 | 0.6 | | 18 | 0 | 2.8 | 1.2 | 0.1 | 0.4 | | A 28 | 14 | 0 | | 41 | 7.0 | 5 | 12.8 | 0 |
| Mar. 24, 1966 | 1680 | 6.2 | | | | 4.8 | .7 | 2.1 | .6 | | 18 | 0 | 2.8 | 1.8 | .1 | .4 | | 30 | 15 | 0 | | 44 | 7.0 | 0 | 12.6 | 0 |
| June 16..... | 9690 | 3.6 | | | | 2.3 | .4 | 1.1 | .2 | | 10 | 0 | 1.2 | .5 | .0 | .1 | | 13 | 7 | 0 | | 20 | 6.8 | 5 | 11.6 | 23 |
| Sept. 14..... | 638 | 6.1 | | | | 5.5 | 1.0 | 3.3 | .7 | | 4 | 0 | 2.8 | 3.0 | .0 | .3 | | 35 | 18 | 0 | | 50 | 7.4 | 5 | 12.4 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 24, 1966... | 0835 | 0.00 | 0.01 | 0.01 | 0.05 | 0.00 | 0.02 |
| Sept. 14..... | 1245 | .00 | .00 | .02 | .00 | .00 | .04 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-1382. SULTAN RIVER AT SULTAN, WASH. (475140 1214910) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 14, 1965 | | 4.7 | | | | 4.8 | 0.1 | 1.3 | 0.4 | | 15 | 0 | 3.0 | 0.5 | 0.1 | 0.8 | | 23 | 12 | 0 | | 35 | 6.9 | 10 | 12.4 | 36 |
| Mar. 24, 1966 | | 4.8 | | | | 4.0 | .7 | 1.2 | .4 | | 14 | 0 | 3.2 | 1.0 | .1 | .6 | | 26 | 13 | 2 | | 35 | 6.8 | 5 | 12.6 | 0 |
| June 16..... | | 2.8 | | | | 3.2 | .1 | .8 | .2 | | 10 | 0 | 2.4 | .5 | .0 | .2 | | 15 | 8 | 0 | | 24 | 6.8 | 5 | 10.3 | 23 |
| Sept. 14..... | | 4.1 | | | | 5.1 | .9 | 1.2 | .3 | | 18 | 0 | 2.8 | 1.0 | .2 | .4 | | 26 | 16 | 1 | | 38 | 6.8 | 5 | 11.5 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 24, 1966... | 0910 | 0.00 | 0.02 | 0.04 | 0.05 | 0.00 | 0.00 |
| Sept. 14..... | 1210 | .01 | .01 | .02 | .00 | .00 | .00 |

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-1444. SNOQUALMIE RIVER AT SNOQUALMIE, WASH. (473140 1214840) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 16, 1965 | | 6.8 | | | | 4.8 | 0.5 | 1.8 | 0.5 | | 18 | 0 | 2.8 | 0.5 | 0.1 | 0.8 | | 28 | 14 | 0 | | 40 | 6.9 | 5 | 12.7 | 750 |
| Mar. 21, 1966 | | 5.5 | | | | 4.8 | .5 | 1.5 | .5 | | 16 | 0 | 2.8 | 1.0 | .0 | .7 | | 29 | 14 | 1 | | 40 | 6.5 | 5 | 12.4 | 930 |
| June 14..... | | 4.0 | | | | 2.4 | .3 | .9 | .2 | | 10 | 0 | 1.4 | .2 | .0 | .2 | | 20 | 7 | 0 | | 21 | 6.9 | 5 | 12.2 | 930 |
| Sept. 17..... | | 6.9 | | | | 7.5 | 1.2 | 2.0 | .6 | | 27 | 0 | 3.4 | 1.0 | .1 | .5 | | 35 | 24 | 2 | | 56 | 7.0 | 0 | 9.2 | 4600 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 21, 1966... | 1500 | 0.00 | 0.01 | 0.03 | 0.05 | 0.00 | 0.06 |
| Sept. 17..... | 1115 | .02 | .02 | .01 | .00 | .00 | .00 |

12-1485. TOLT RIVER NEAR CARNATION, WASH. (473815 1215455)

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 16, 1965 | 420 | 7.8 | | | | 6.0 | 1.2 | 1.9 | 0.4 | | 22 | 0 | 4.4 | 0.5 | 0.1 | 0.9 | | A 34 | 20 | 2 | | 50 | 7.1 | 10 | 12.8 | 91 |
| Mar. 22, 1966 | 373 | 7.0 | | | | 6.4 | 1.3 | 1.9 | .4 | | 24 | 0 | 4.4 | 1.0 | .0 | .6 | | 36 | 21 | 2 | | 55 | 6.6 | 5 | 12.6 | 0 |
| June 14..... | 706 | 5.2 | | | | 3.9 | .8 | 1.4 | .1 | | 15 | 0 | 3.0 | .5 | .1 | .3 | | 24 | 13 | 0 | | 34 | 7.0 | 10 | 12.4 | 230 |
| Sept. 17..... | 235 | 6.3 | | | | 6.2 | 1.5 | 1.9 | 0.4 | | 24 | 0 | 3.8 | 0.5 | 0.0 | 0.4 | | A 33 | 22 | 2 | | 50 | 6.9 | 0 | 10.6 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 1235 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.04 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

STILLAQUAMISH RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-1610. SOUTH FORK STILLAGUAMISH RIVER NEAR GRANITE FALLS, WASH. (480610 1215705) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 15, 1965 | 405 | 6.2 | | | | 6.0 | 1.1 | 1.6 | 0.4 | | 24 | 0 | 2.8 | 0.5 | 0.1 | 0.5 | | A 31 | 20 | 0 | | 48 | 7.2 | 5 | 13.7 | 430 |
| Mar. 15, 1966 | 2310 | 3.4 | | | | 3.2 | .7 | 1.0 | .2 | | 13 | 0 | 2.0 | .8 | .0 | .4 | | 20 | 11 | 0 | | 27 | 6.9 | 10 | 12.9 | 0 |
| June 16..... | 1610 | 2.8 | | | | 3.2 | .4 | .8 | .2 | | 12 | 0 | 1.6 | .5 | .1 | .2 | | 15 | 10 | 0 | | 25 | 6.8 | 5 | 11.3 | 23 |
| Sept. 13..... | 150 | 6.4 | | | | 8.0 | 1.9 | 2.1 | .3 | | 31 | 0 | 3.2 | 1.5 | .2 | .6 | | 38 | 28 | 2 | | 62 | 6.9 | 5 | 12.1 | 91 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1240 | 0.01 | 0.01 | 0.08 | <0.05 | 0.00 | 0.00 |
| Sept. 13..... | 1245 | .01 | .01 | .02 | .00 | .00 | .01 |

| 12-1670. NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WASH. (481605 1220045) | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 15, 1965 | 820 | 9.1 | | | | 7.6 | 2.1 | 2.2 | 0.7 | | 34 | 0 | 3.4 | 1.5 | 0.1 | 1.0 | | A45 | 28 | 0 | | 67 | 7.1 | 5 | 12.8 | 91 |
| Mar. 15, 1966 | 3870 | 5.0 | | | | 4.0 | 1.4 | 1.2 | .6 | | 19 | 0 | 2.6 | .5 | .0 | .6 | | 28 | 16 | 0 | | 40 | 7.1 | 20 | 11.9 | 36 |
| June 16..... | 1700 | 4.3 | | | | 4.1 | 1.2 | 1.2 | .2 | | 18 | 0 | 1.6 | .8 | .0 | .3 | | A23 | 15 | 0 | | 37 | 7.0 | 5 | 10.8 | 23 |
| Sept. 13..... | 296 | 10 | | | | 11. | 3.1 | 3.3 | .7 | | 47 | 0 | 3.4 | 3.0 | .1 | .3 | | A58 | 40 | 2 | | 91 | 7.0 | 5 | 13.8 | 430 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1325 | 0.01 | 0.01 | 0.08 | <0.05 | 0.00 | 0.00 |
| Sept. 13..... | 1345 | .01 | .01 | .01 | .00 | .00 | .01 |

SKAGIT RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-1810. SKAGIT RIVER AT MARBLEMOUNT, WASH. (483135 1212540) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 15, 1965 | | 5.6 | | | | 9.2 | 1.2 | 1.1 | 0.5 | | 32 | 0 | 4.6 | 0.0 | 0.1 | 0.3 | | A 39 | 28 | 2 | | 62 | 7.1 | 5 | 11.8 | 36 |
| Mar. 15, 1966 | | 5.1 | | | | 9.2 | 1.1 | 1.0 | .4 | | 31 | 0 | 4.8 | .0 | .0 | .3 | | 37 | 28 | 2 | | 62 | 7.2 | 5 | 12.7 | 0 |
| June 16..... | | 3.0 | | | | 4.0 | .6 | .6 | .2 | | 15 | 0 | 2.4 | .0 | .1 | .2 | | 18 | 12 | 0 | | 30 | 6.9 | 5 | 11.3 | 36 |
| Sept. 13..... | | 4.1 | | | | 7.1 | .9 | .9 | .6 | | 23 | 0 | 4.0 | .0 | .1 | .3 | | 27 | 21 | 2 | | 46 | 6.8 | 0 | 13.3 | 23 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1455 | 0.00 | 0.01 | 0.01 | <0.05 | 0.00 | 0.00 |
| Sept. 13..... | 1515 | .01 | .01 | .01 | .00 | .00 | .01 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

SAMISH RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-2015. SAMISH RIVER NEAR BURLINGTON, WASH. (483255 1222000) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 15, 1965 | 187 | 8.4 | | | | 7.6 | 2.3 | 3.1 | 0.7 | | 30 | 0 | 5.4 | 2.5 | 0.1 | 3.0 | | 48 | 26 | 4 | | 76 | 7.0 | 15 | 12.2 | 930 |
| Mar. 16, 1966 | 529 | 4.8 | | | | 5.6 | 1.5 | 2.4 | .7 | | 20 | 0 | 4.4 | 2.0 | .1 | 2.5 | | 36 | 20 | 4 | | 58 | 6.8 | 15 | 11.5 | 430 |
| June 16..... | 93 | 7.6 | | | | 8.7 | 2.7 | 3.3 | .5 | | 38 | 0 | 4.8 | 2.2 | .1 | 1.9 | | 51 | 32 | 2 | | 81 | 7.2 | 10 | 9.2 | 430 |
| Sept. 14..... | 28 | 11 | | | | 12 | 4.1 | 3.6 | 1.1 | | 52 | 0 | 5.9 | 3.0 | .1 | 2.8 | | 75 | 47 | 4 | | 109 | 6.9 | 10 | 240 | 240 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 16, 1966... | 1015 | 0.01 | 0.01 | 0.09 | <0.05 | 0.00 | 0.02 |
| Sept. 14..... | 0920 | .01 | .02 | .00 | .00 | .00 | .01 |

NOOKSACK RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-2105. NOOKSACK RIVER AT DEMING, WASH. (485030 1221725) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 15, 1965 | 2170 | 9.2 | | | | 11 | 3.1 | 2.0 | 0.7 | | 42 | 0 | 8.8 | 0.8 | 0.1 | 0.9 | | 56 | 40 | 6 | | 92 | 7.1 | 5 | 12.8 | 0 |
| Mar. 15, 1966 | 4820 | 6.5 | | | | 8.0 | 2.1 | 1.6 | .3 | | 31 | 0 | 5.6 | 1.0 | .0 | .7 | | 42 | 28 | 3 | | 66 | 6.9 | 10 | 11.7 | 150 |
| June 16..... | 6130 | 4.9 | | | | 6.5 | 1.8 | 1.1 | .8 | | 24 | 0 | 5.6 | .2 | .1 | .3 | | 36 | 24 | 4 | | 53 | 7.0 | 10 | 10.4 | 23 |
| Sept. 13..... | 1350 | 7.6 | | | | 10 | 2.9 | 2.0 | .6 | | 36 | 0 | 12 | 1.5 | .1 | .3 | | 56 | 40 | 10 | | 87 | 6.9 | 5 | 13.4 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 15, 1966... | 1700 | 0.01 | 0.01 | 0.06 | <0.05 | 0.00 | 0.01 |
| Sept. 13..... | 1715 | .01 | .01 | .00 | .01 | .00 | .01 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

KETTLE RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1955--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4049. KETTLE RIVER NEAR BARSTOW, WASH. (484330 1180340) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 27, 1965 | | 13 | | | | 27 | 6.4 | 5.1 | 1.1 | | 110 | 0 | 14 | 0.5 | 0.3 | 0.4 | | 124 | 94 | 4 | | 205 | 8.0 | 0 | 13.8 | 150 |
| Mar. 22, 1966 | | 8.4 | | | | 25 | 5.6 | 4.7 | 1.2 | | 100 | 0 | 13 | .5 | .3 | .1 | | 109 | 86 | 4 | | 188 | 7.6 | 5 | 12.1 | 23 |
| June 7..... | | 7.1 | | | | 5.3 | .8 | 1.2 | .5 | | 22 | 0 | 2.2 | .0 | .2 | .3 | | 32 | 16 | 0 | | 40 | 7.0 | 15 | 11.3 | 90 |
| Sept. 27..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.7 | 40 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 1130 | 0.00 | 0.02 | 0.03 | <0.05 | 0.00 | 0.04 |
| Sept. 27..... | 1200 | .00 | .00 | .01 | .02 | | .03 |

COLVILLE RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4090. COLVILLE RIVER AT KETTLE FALLS, WASH. (483335 1180545) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 27, 1965 | 126 | 18 | | | | 44 | 17 | 6.3 | 3.2 | | 212 | 0 | 18 | 2.0 | 0.2 | 1.7 | | 214 | 178 | 4 | | 369 | 7.9 | 5 | 12.0 | 1500 |
| Mar. 22, 1966 | 414 | 17 | | | | 47 | 17 | 7.3 | 3.1 | | 196 | 0 | 36 | 2.2 | .2 | 4.3 | | 236 | 188 | 28 | | 387 | 7.6 | 15 | 12.2 | 4600 |
| June 7..... | 232 | 16 | | | | 37 | 12 | 5.0 | 2.3 | | 166 | 0 | 14 | 1.0 | .2 | .8 | | 178 | 142 | 6 | | 280 | 7.8 | 10 | 8.2 | 4600 |
| Sept. 27..... | 96 | 16 | | | | 44 | 17 | 7.5 | 3.3 | | 218 | 0 | 18 | 2.0 | .2 | 1.4 | | 216 | 180 | 2 | | 368 | 7.8 | 5 | 8.0 | 750 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 1500 | 0.01 | 0.01 | 0.10 | <0.05 | 0.00 | 0.04 |
| Sept..27..... | 1600 | .00 | .00 | .01 | .00 | | .09 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

SPOKANE RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4195. SPOKANE RIVER ABOVE LIBERTY BRIDGE, NEAR OTIS ORCHARDS, WASH. (474155 1170235) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 17, 1965 | -- | -- | | | | -- | -- | -- | -- | | -- | | -- | -- | -- | -- | | -- | -- | -- | | -- | --- | -- | 9.8 | 390 |
| Nov. 14..... | -- | -- | | | | -- | -- | -- | -- | | -- | | -- | -- | -- | -- | | -- | -- | -- | | -- | --- | -- | 10.2 | 930 |
| Jan. 16, 1966 | -- | -- | | | | -- | -- | -- | -- | | -- | | -- | -- | -- | -- | | -- | -- | -- | | -- | --- | -- | 12.8 | 210 |
| Mar. 13..... | 6030 | -- | | | | -- | -- | -- | -- | | -- | | -- | -- | -- | -- | | -- | -- | -- | | -- | --- | -- | 12.3 | 1500 |
| May 22..... | 12300 | 7.4 | | | | 6.4 | 1.5 | 1.6 | 0.7 | | 22 | 0 | 9.2 | 0.5 | 0.3 | 0.1 | | 39 | 22 | 4 | | 58 | 6.8 | 5 | 10.7 | 430 |
| June 19..... | -- | -- | | | | -- | -- | -- | -- | | -- | | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.5 | 430 |
| July 17..... | -- | -- | | | | -- | -- | -- | -- | | -- | | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 8.7 | 360 |
| Sept. 18..... | 200 | 6.4 | | | | 7.1 | 1.8 | 1.5 | .7 | | 24 | 0 | 8.8 | .5 | .2 | 1.0 | | 50 | 25 | 6 | | 60 | 7.1 | 5 | 9.0 | 230 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 13, 1966.... | 1810 | 0.00 | 0.00 | 0.02 | 0.4 | 0.00 | 0.04 |
| Sept. 18..... | 1510 | .01 | .01 | .02 | .18 | .00 | .01 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4245. SPOKANE RIVER NEAR SPOKANE, WASH. (474425 1173110) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 16, 1965 | | 10 | | | | 15 | 5.4 | 2.8 | 1.3 | | 62 | 0 | 11 | 1.8 | 0.2 | 0.9 | | 84 | 60 | 8 | | 134 | 7.2 | 5 | 10.2 | 11000 |
| Feb. 13, 1966 | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.8 | 130 |
| Mar. 26..... | | 9.3 | | | | 10 | 3.3 | 2.3 | 1.2 | | 36 | 0 | 12 | .5 | .4 | 1.5 | | 62 | 38 | 9 | | 94 | 6.9 | 10 | 12.0 | 9300 |
| May 22..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.4 | 7500 |
| July 17..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 8.2 | 900 |
| Sept. 18..... | | 9.8 | | | | 28 | 10 | 5.8 | 1.9 | | 118 | 0 | 15 | 5.0 | 0.2 | 5.4 | | 139 | 111 | 14 | | 236 | 7.4 | 10 | 8.6 | 2400 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 26, 1966... | 1150 | 0.01 | 0.02 | 0.06 | 0.3 | 0.00 | 0.00 |

## SANPOIL RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4350. SANPOIL RIVER AT KELLER, WASH. (480505 1184126) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 27, 1965 | | 20 | | | | 26 | 6.4 | 6.2 | 1.1 | | 105 | 0 | 18 | 0.8 | 0.3 | 0.2 | | 130 | 91 | 5 | | 205 | 7.8 | 0 | 13.3 | 36 |
| Mar. 22, 1966 | | 18 | | | | 23 | 5.9 | 5.9 | 1.0 | | 94 | 0 | 16 | 1.0 | .3 | .4 | | 123 | 82 | 4 | | 187 | 7.7 | 10 | 13.0 | 36 |
| June 7..... | | 19 | | | | 22 | 5.2 | 6.0 | 1.3 | | 92 | 0 | 13 | .5 | .3 | .2 | | 119 | 76 | 1 | | 171 | 7.7 | 5 | 9.5 | 430 |
| Sept. 27..... | | 16 | | | | 30 | 6.6 | 7.1 | 1.3 | | 116 | 0 | 20 | .5 | .4 | .2 | | A 139 | 102 | 7 | | 215 | 7.7 | 0 | 10.3 | 90 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar..22, 1966... | 0930 | 0.00 | 0.00 | 0.04 | <0.05 | 0.00 | 0.02 |
| Sept. 27..... | 0825 | .00 | .00 | .00 | .00 | | .01 |

A Calculated from determined constituents.

## OKANOGAN RIVER BASIN

12-4395. OKANOGAN RIVER AT OROVILLE, WASH. (485555 1192505)

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 23, 1966. | 390 | 5.0 | | | | 36 | 9.3 | 10 | 2.4 | | 144 | 0 | 29 | 1.0 | 0.3 | 0.2 | | 164 | 128 | 10 | | 284 | 7.4 | 10 | 12.7 | 0 |
| May 10..... | 460 | 3.5 | | | | 35 | 9.2 | 10 | 2.0 | | 144 | 0 | 31 | .8 | .3 | .5 | | 167 | 126 | 8 | | 316 | 7.8 | 10 | 9.0 | 36 |
| Sept. 15..... | 395 | 7.2 | | | | 36 | 10 | 9.9 | 2.6 | | 144 | 0 | 30 | 2.0 | .2 | .7 | | 177 | 131 | 13 | | 290 | 7.5 | 5 | 10.4 | 0 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966... | 1325 | 0.00 | 0.01 | 0.02 | <0.05 | 0.00 | 0.04 |
| Sept. 15..... | 1300 | .00 | .01 | .01 | .00 | .00 | .00 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

OKANOGAN RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-4425. SIMILKAMEEN RIVER NEAR NIGHTHAWK, WASH. (485605 1192625)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mar. 23, 1966 | 440 | 9.6 | | | | 30 | 5.9 | 5.1 | 1.2 | | 108 | 0 | 21 | 1.0 | 0.2 | 0.1 | | 129 | 99 | 10 | | 215 | 7.8 | 0 | 12.2 | 0 |
| May 10..... | 9600 | 8.6 | | | | 9.7 | 1.8 | 1.7 | .5 | | 38 | 0 | 4.0 | .0 | .1 | .3 | | 52 | 32 | 0 | | 71 | 7.1 | 20 | 8.4 | 150 |
| Sept. 15..... | 445 | 11 | | | | 31 | 5.8 | 4.6 | 1.2 | | 108 | 0 | 19 | 1.5 | .1 | .2 | | 134 | 102 | 13 | | 211 | 7.4 | 5 | 11.1 | 0 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966... | 1345 | 0.00 | 0.00 | 0.01 | <0.05 | 0.01 | 0.02 |
| Sept. 15..... | 1335 | .01 | .01 | .01 | .00 | .00 | .02 |

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-4473. OKANOGAN RIVER NEAR MALOTT, WASH. (480610 1194230)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 13, 1965 | 1510 | 7.8 | | | | 28 | 7.7 | 6.9 | 1.6 | | 111 | 0 | 23 | 0.8 | 0.2 | 0.1 | | 132 | 102 | 10 | | 224 | 7.9 | 5 | 12.6 | 210 |
| Jan. 8, 1966. | 1150 | 8.7 | | | | 36 | 11 | 9.2 | 2.0 | | 143 | 0 | 34 | 1.2 | .2 | .3 | | 173 | 134 | 18 | | 298 | 7.8 | 5 | 13.7 | 91 |
| Mar. 23..... | 944 | 8.1 | | | | 37 | 9.6 | 10 | 1.9 | | 143 | 0 | 33 | 1.0 | .2 | .2 | | 171 | 132 | 15 | | 298 | 7.5 | 10 | 12.0 | 0 |
| May 10..... | 8400 | 8.4 | | | | 11 | 2.6 | 2.3 | .7 | | 45 | 0 | 5.8 | .2 | .2 | .4 | | 59 | 38 | 1 | | 86 | 7.1 | 20 | 9.2 | 150 |
| July 13..... | 2920 | 7.8 | | | | 19 | 3.9 | 4.1 | .8 | | 72 | 0 | 13 | .5 | .2 | .3 | | 85 | 64 | 4 | | 142 | 7.2 | 10 | 8.7 | 430 |
| Sept. 15..... | 762 | 10 | | | | 41 | 12 | 12 | 2.7 | | 165 | 0 | 41 | 1.0 | .4 | .3 | | 205 | 152 | 17 | | 344 | 8.0 | 5 | 10.9 | 91 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966... | 1150 | 0.00 | 0.00 | 0.01 | <0.05 | 0.00 | 0.02 |
| Sept. 15..... | 1115 | .01 | .01 | .01 | .00 | .01 | .01 |

## METHOW RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-4499.5. METHOW RIVER NEAR PATEROS, WASH.** (480300 1195410) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 13, 1965 | 389 | 12 | | | | 26 | 4.9 | 4.2 | 0.8 | | 102 | 0 | 8.8 | 0.2 | 0.3 | 0.7 | | A 108 | 85 | 2 | | 179 | 8.1 | 0 | 12.5 | 0 |
| Jan. 8, 1966. | 420 | 11 | | | | 24 | 5.8 | 4.0 | .8 | | 98 | 0 | 8.8 | .2 | .2 | .8 | | A 104 | 84 | 4 | | 176 | 7.6 | 5 | 14.2 | 0 |
| Mar. 23..... | 316 | 11 | | | | 27 | 5.3 | 4.4 | 1.0 | | 108 | 0 | 9.6 | .5 | .2 | .8 | | 112 | 90 | 1 | | 190 | 7.6 | 0 | 11.9 | 0 |
| May 10..... | 6670 | 7.7 | | | | 9.2 | 1.3 | 1.6 | .4 | | 35 | 0 | 3.2 | .2 | .2 | .3 | | 45 | 28 | 0 | | 64 | 7.0 | 10 | 10.6 | 430 |
| July 13..... | 1660 | 8.6 | | | | 16 | 2.5 | 2.6 | .6 | | 62 | 0 | 5.2 | .0 | .2 | .4 | | 68 | 50 | 0 | | 111 | 7.2 | 0 | 9.8 | 0 |
| Sept. 15..... | 443 | 13 | | | | 28 | 5.1 | 4.3 | 1.1 | | 110 | 0 | 10 | .0 | .2 | .9 | | A 117 | 91 | 1 | | 196 | 7.4 | 5 | 11.1 | 91 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966... | 1120 | 0.00 | 0.01 | 0.01 | <0.05 | 0.00 | 0.00 |
| Sept. 15..... | 1015 | .00 | .01 | .02 | .00 | .00 | .00 |

## CHELAN RIVER BASIN

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-4525. CHELAN RIVER AT CHELAN, WASH.** (475005 1200040) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 13, 1965 | 2050 | 4.4 | | | | 6.4 | 1.0 | 1.3 | 0.6 | | 24 | 0 | 4.0 | 0.0 | 0.1 | 0.1 | | 29 | 20 | 0 | | 49 | 7.2 | 0 | 10.4 | 0 |
| Jan. 8, 1966. | 2060 | 4.4 | | | | 6.4 | .9 | 1.3 | .6 | | 24 | 0 | 4.4 | .0 | .1 | .2 | | 29 | 20 | 0 | | 51 | 7.2 | 0 | 12.1 | 0 |
| Mar. 23..... | 2010 | 4.6 | | | | 6.4 | .8 | 1.3 | .8 | | 24 | 0 | 4.0 | .5 | .1 | .2 | | 30 | 19 | 0 | | 49 | 7.1 | 0 | 11.6 | 0 |
| May 10..... | 625 | 4.3 | | | | 6.3 | .9 | 1.4 | .5 | | 23 | 0 | 4.2 | .0 | .1 | .2 | | 32 | 19 | 0 | | 50 | 7.3 | 0 | 8.9 | 430 |
| July 13..... | 4300 | 4.6 | | | | 6.5 | 1.0 | 1.4 | .7 | | 24 | 0 | 4.2 | .0 | .1 | .1 | | 31 | 20 | 0 | | 50 | 7.0 | 0 | 9.4 | 23 |
| Sept. 14..... | 2050 | 4.3 | | | | 7.2 | 1.0 | 1.4 | .7 | | 24 | 0 | 4.2 | .0 | .1 | .1 | | A 31 | 22 | 2 | | 48 | 7.0 | 0 | 11.7 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966... | 1035 | 0.00 | 0.01 | 0.01 | <0.05 | 0.00 | 0.00 |
| Sept. 15..... | 0930 | .00 | .01 | .02 | .01 | .00 | |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

ENTAIT RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4530. ENTIAT RIVER NEAR ENTIAT, WASH. (474000 1201655) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 13, 1965 | | 14 | | | | 12 | 2.4 | 3.0 | 1.2 | | 51 | 0 | 5.2 | 0.2 | 0.2 | 0.3 | | A 64 | 40 | 0 | | 93 | 7.5 | 0 | 13.0 | 0 |
| Jan. 8, 1966. | | 14 | | | | 11 | 2.7 | 2.8 | 1.2 | | 49 | 0 | 5.2 | .5 | .2 | .5 | | 63 | 38 | 0 | | 94 | 7.3 | 0 | 14.2 | 0 |
| Mar. 22..... | | 13 | | | | 14 | 3.0 | 3.4 | 1.3 | | 60 | 0 | 6.4 | .5 | .1 | .3 | | 74 | 47 | 0 | | 114 | 7.4 | 0 | 12.0 | 360 |
| May 10..... | | 11 | | | | 4.2 | 0.8 | 1.3 | 0.7 | | 20 | 0 | 2.6 | .0 | .1 | 0.2 | | 32 | 14 | 0 | | 37 | 6.9 | 5 | 9.8 | 36 |
| July 13..... | | 9.2 | | | | 5.8 | 1.1 | 1.5 | .7 | | 24 | 0 | 3.2 | .0 | .1 | .2 | | 34 | 19 | 0 | | 47 | 6.9 | 0 | 10.7 | 91 |
| Sept. 15..... | | 13 | | | | 12 | 2.8 | 2.9 | 1.3 | | 52 | 0 | 6.0 | .0 | .1 | .5 | | 69 | 42 | 0 | | 100 | 7.1 | 5 | 13.2 | 91 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 1620 | 0.00 | 0.01 | 0.02 | <0.05 | 0.00 | 0.02 |
| Sept. 15..... | 0820 | .01 | .01 | .00 | .00 | .00 | .01 |

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-4578. WENATCHEE RIVER NEAR LEAVENWORTH, WASH. (474025 1203400)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 4, 1965. | | 7.7 | | | | 4.0 | 1.0 | 1.3 | 0.9 | | 19 | 0 | 3.0 | 0.5 | 0.1 | 0.2 | | 32 | 14 | 0 | | 39 | 7.1 | 5 | 11.2 | 0 |
| Mar. 23, 1966 | | 8.4 | | | | 4.8 | 1.0 | 1.5 | 1.2 | | 22 | 0 | 2.8 | .0 | .1 | .2 | | 34 | 16 | 0 | | 44 | 7.1 | 0 | 11.6 | 0 |
| June 16..... | | 5.8 | | | | 2.5 | .5 | 1.0 | .6 | | 12 | 0 | 1.8 | .0 | .1 | .3 | | 18 | 8 | 0 | | 25 | 6.8 | 5 | 10.8 | 0 |
| Sept. 14..... | | 7.2 | | | | 4.6 | 1.1 | 1.4 | 1.2 | | 20 | 0 | 2.6 | .0 | .1 | .3 | | 32 | 16 | 0 | | 39 | 6.9 | 5 | 11.1 | 0 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966... | 1720 | 0.00 | 0.01 | 0.02 | <0.05 | 0.00 | 0.00 |
| Sept. 14..... | 1545 | .00 | .01 | .01 | .00 | .00 | .00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12-4625.2. WENATCHEE RIVER AT WENATCHEE, WASH. (472730 1202010)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 13, 1965 | | 7.6 | | | | 5.6 | 2.6 | 2.1 | 1.0 | | 32 | 0 | 3.2 | 0.5 | 0.1 | 0.4 | | A 39 | 25 | 0 | | 60 | 7.7 | 5 | 12.0 | 91 |
| Jan. 8, 1966. | | 8.6 | | | | 5.6 | 3.5 | 2.0 | 1.2 | | 35 | 0 | 3.6 | .8 | .1 | .4 | | 42 | 28 | 0 | | 70 | 7.2 | 5 | 14.5 | 91 |
| Mar. 23..... | | 9.3 | | | | 8.0 | 4.5 | 2.8 | 1.2 | | 50 | 0 | 4.6 | 1.0 | .1 | .5 | | 57 | 38 | 0 | | 92 | 7.2 | 5 | 13.8 | 0 |
| May 11..... | | 7.2 | | | | 3.1 | 1.4 | 1.1 | .8 | | 19 | 0 | 2.0 | .2 | .1 | .3 | | 29 | 14 | 0 | | 37 | 7.0 | 5 | 11.4 | 91 |
| July 13..... | | 5.7 | | | | 3.3 | 1.5 | 1.1 | .6 | | 20 | 0 | 2.0 | .5 | .0 | .3 | | 23 | 14 | 0 | | 36 | 6.8 | 5 | 10.2 | 91 |
| Sept. 14..... | | 9.6 | | | | 8.3 | 4.3 | 3.3 | 1.3 | | 47 | 0 | 4.8 | 1.0 | .0 | .6 | | 61 | 38 | 0 | | 91 | 7.1 | 5 | 11.8 | 930 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^6$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 23, 1966.... | 0905 | 0.00 | 0.01 | 0.01 | <0.05 | 0.00 | 0.02 |
| Sept. 14..... | 1715 | .01 | .01 | .01 | .00 | .00 | .04 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN--Continued

YAKIMA RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4795. YAKIMA RIVER AT CLE ELUM, WASH. (471135 1205655) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 4, 1965. | 166 | 9.5 | | | | 9.2 | 3.3 | 3.0 | 0.4 | | 48 | 0 | 2.2 | 1.2 | 0.1 | 0.1 | | 54 | 36 | 0 | | 84 | 7.6 | 0 | 10.7 | 0 |
| Mar. 21, 1966 | 304 | 8.7 | | | | 8.4 | 2.8 | 3.5 | .4 | | 46 | 0 | 2.0 | 1.0 | .1 | .2 | | 52 | 32 | 0 | | 80 | 7.4 | 5 | 11.6 | 0 |
| June 14..... | 1800 | 6.1 | | | | 4.9 | 2.4 | 1.5 | .2 | | 32 | 0 | .0 | .5 | .1 | .0 | | 31 | 22 | 0 | | 54 | 7.2 | 5 | 12.5 | 23 |
| Sept. 17..... | 1650 | 6.0 | | | | 5.5 | 2.6 | 1.4 | .1 | | 31 | 0 | 1.2 | .0 | .0 | .1 | | A 32 | 24 | 0 | | 50 | 7.0 | 0 | 9.3 | 72 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 21, 1966... | 1615 | 0.00 | 0.00 | 0.01 | <0.05 | 0.00 | 0.00 |
| Sept. 17..... | 0950 | .01 | .01 | .00 | .00 | .00 | .01 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12-4806. TEANAWAY RIVER NEAR CLE ELUM, WASH. (471030 1204505) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec. 4, 1965. | | 12 | | | | 13 | 6.5 | 2.5 | 0.5 | | 74 | 0 | 2.4 | 1.2 | 0.1 | 0.0 | | 74 | 59 | 0 | | 124 | 7.6 | 5 | 11.4 | 36 |
| Mar. 21, 1966 | | 11 | | | | 14 | 7.0 | 3.6 | .5 | | 78 | 0 | 2.8 | 1.8 | .1 | 1.2 | | 83 | 64 | 0 | | 139 | 7.2 | 5 | 10.4 | 230 |
| June 14..... | | 11 | | | | 9.9 | 5.0 | 1.8 | .3 | | 59 | 0 | .6 | .0 | .1 | .0 | | 60 | 45 | 0 | | 96 | 7.5 | 5 | 11.6 | 23 |
| Sept. 17..... | | 18 | | | | 22 | 11 | 4.1 | .6 | | 126 | 0 | 2.2 | 1.5 | .1 | .2 | | A 122 | 100 | 0 | | 192 | 7.3 | 0 | 9.4 | 750 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 21, 1966... | 1645 | 0.00 | 0.01 | 0.04 | <0.05 | 0.00 | 0.00 |
| Sept. 17..... | 0855 | .00 | .00 | .01 | .00 | .00 | .02 |

PART 13. SNAKE RIVER BASIN

FLAT CREEK BASIN

13-0183. CACHE CREEK NEAR JACKSON, WYO.
(Hydrologic bench-mark station)

LOCATION.--Lat 43°26'50", long 110°41'50", at gaging station, 1.8 miles upstream from town of Jackson water-supply intakes, 4.5 miles southeast of Jackson, Teton County, and 5 miles upstream from mouth.
DRAINAGE AREA.--10 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Nov. 1, 1965..... | 7.5 | 5.7 | 0.05 | 45 | 15 | 2.0 | 0.8 | 212 | 0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.00 | 214 | 0.29 | 4.32 | 174 | 0 | -- | 325 | 8.1 |
| Dec. 9..... | 7.7 | 5.9 | .04 | 46 | 14 | 2.0 | .9 | 202 | 4 | 3.3 | .0 | .2 | .1 | .00 | 232 | .32 | 4.81 | 174 | 1 | -- | 324 | 8.4 |
| Jan. 4, 1966..... | 5.0 | 5.4 | .85 | 44 | 15 | 2.0 | .5 | 204 | 0 | 4.9 | .7 | .1 | .4 | .02 | 162 | .22 | 2.17 | 170 | 2 | -- | 311 | 8.2 |
| Feb. 2..... | 4.7 | 5.0 | .04 | 46 | 15 | 2.0 | .5 | 203 | 4 | 4.9 | 1.4 | .2 | .5 | .00 | 194 | .26 | 2.45 | 176 | 2 | -- | 321 | 8.4 |
| Mar. 11..... | 5.2 | 5.4 | .00 | 45 | 16 | 3.0 | .8 | 212 | 0 | 6.2 | .0 | .1 | .0 | .02 | 204 | .28 | 2.85 | 180 | 6 | -- | 331 | 8.0 |
| Apr. 5..... | 5.9 | 5.5 | .02 | 46 | 14 | 4.4 | 1.5 | 212 | 0 | 5.4 | .4 | .1 | .0 | .03 | 206 | .28 | 3.27 | 175 | 1 | 0.1 | 359 | 7.9 |
| May 3..... | 12 | 6.1 | .03 | 46 | 16 | 6.0 | 1.0 | 207 | 0 | 24 | 5.0 | .1 | .0 | .14 | 198 | .27 | 6.40 | 182 | 12 | .2 | 338 | 8.1 |
| June 7..... | 33 | 4.4 | .00 | 29 | 20 | 2.3 | .7 | 192 | 2 | 3.7 | .0 | .2 | .0 | .02 | 178 | .24 | 15.8 | 156 | 0 | -- | 308 | 8.2 |
| July 5..... | 16 | 4.4 | .06 | 32 | 17 | 2.0 | .6 | 167 | 10 | .0 | .0 | .2 | .0 | .00 | 166 | .23 | 7.16 | 150 | 0 | -- | 289 | 8.4 |
| Aug. 1..... | 10 | 4.6 | .02 | 43 | 13 | 3.1 | 1.1 | 195 | 0 | 5.0 | .0 | .2 | .0 | .00 | 174 | .24 | 4.68 | 162 | 2 | .1 | 306 | 7.8 |
| Sept. 6..... | 6.6 | 5.1 | .04 | 44 | 14 | 1.7 | .3 | 189 | 0 | 5.8 | 2.8 | .2 | .0 | .00 | 180 | .24 | 3.19 | 166 | 11 | -- | 313 | 8.1 |

SNAKE RIVER MAIN STEM

13-0225. SNAKE RIVER ABOVE RESERVOIR, NEAR ALPINE, WYO.

LOCATION.--Lat 43°18'06", long 110°46'33", at bridge at Astoria Springs, Teton County, 3 miles downstream from Hoback River, 13 miles upstream from gaging station, 15 miles northeast of Alpine, Lincoln County.
DRAINAGE AREA.--3,465 square miles, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.
Water temperatures: October 1965 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 248 ppm Nov. 16-30; minimum, 120 ppm June 18-30.
Hardness: Maximum, 190 ppm Dec. 19-31; minimum, 92 ppm May 28 to June 5.
Specific conductance: Maximum daily, 411 micromhos Apr. 19; minimum daily, 206 micromhos June 20, 23.
Water temperatures: Maximum, 59°F Aug. 14-18; minimum, freezing point on many days during November to March.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-20, 1965... | 2450 | 16 | | 44 | 11 | 7.4 | 1.9 | 142 | 0 | 51 | 0.7 | 0.5 | 0.0 | 0.05 | 226 | 0.31 | 1490 | 154 | 37 | 0.3 | 324 | 8.1 |
| Oct. 21-31..... | 1937 | 16 | | 46 | 12 | 6.5 | 1.7 | 145 | 0 | 52 | 4.3 | .5 | .0 | .03 | 228 | .31 | 1190 | 165 | 46 | .2 | 344 | 8.1 |
| Nov. 1-15..... | 1763 | 12 | | 48 | 14 | 7.0 | 1.4 | 156 | 0 | 54 | 5.3 | .4 | .0 | .02 | 238 | .32 | 1130 | 175 | 47 | .2 | 372 | 8.1 |
| Nov. 16-30..... | 1738 | 12 | | 48 | 14 | 7.0 | 1.5 | 162 | 0 | 53 | 5.3 | .4 | .0 | .00 | 248 | .34 | 1160 | 178 | 45 | .2 | 373 | 8.0 |
| Dec. 1-18..... | 1474 | 12 | | 52 | 13 | 8.0 | 1.8 | 156 | 0 | 59 | 5.3 | .5 | .0 | .02 | 240 | .33 | 955 | 184 | 56 | .3 | 382 | 7.9 |
| Dec. 19-31..... | 1412 | 12 | | 50 | 16 | 7.0 | 1.9 | 156 | 0 | 62 | 5.3 | .4 | .0 | .02 | 234 | .32 | 892 | 190 | 62 | .2 | 394 | 7.8 |
| Jan. 1-7, 1966.... | 1601 | 12 | | 43 | 11 | 6.0 | 1.5 | 122 | 6 | 56 | .7 | .4 | .0 | .07 | 204 | .28 | 882 | 153 | 43 | .2 | 323 | 8.4 |
| Jan. 8-31..... | 1679 | 14 | | 47 | 8.6 | 8.0 | 1.9 | 134 | 3 | 52 | 4.3 | .4 | .0 | .10 | 244 | .33 | 1110 | 153 | 38 | .3 | 331 | 8.4 |
| Feb. 1-15..... | 1724 | 13 | | 45 | 10 | 11 | 2.5 | 143 | 0 | 49 | 5.3 | .5 | .0 | .01 | 218 | .30 | 1010 | 156 | 39 | .4 | 344 | 8.2 |
| Feb. 16-28..... | 1650 | 14 | | 45 | -- | 11 | 3.0 | 131 | 6 | 53 | 5.3 | .4 | .0 | .05 | 222 | .30 | 989 | 158 | 41 | .5 | 344 | 8.3 |
| Mar. 1-31..... | 1681 | 14 | | 45 | 11 | 8.0 | 2.0 | 134 | 0 | 47 | 7.1 | .5 | .0 | .06 | 232 | .32 | 1050 | 157 | 47 | .3 | 350 | 7.7 |
| Apr. 1-22..... | 2894 | 14 | | 40 | 13 | 10 | 2.8 | 143 | 0 | 48 | 5.3 | .7 | .0 | .09 | 218 | .30 | 1700 | 155 | 38 | .4 | 330 | 7.3 |
| Apr. 23-30..... | 4260 | 14 | | 35 | 9.4 | 10 | 2.0 | 122 | 0 | 37 | 3.9 | .7 | .0 | .18 | 184 | .25 | 2120 | 125 | 25 | .4 | 285 | 7.1 |
| May 1-11..... | 9238 | 13 | | 38 | 5.8 | 7.6 | 1.2 | 118 | 0 | 31 | 5.3 | .4 | .0 | .06 | 170 | .23 | 4240 | 118 | 21 | .3 | 265 | 6.8 |
| May 12-27..... | 8548 | 11 | | 35 | 6.4 | 7.0 | .9 | 118 | 0 | 22 | 3.5 | .3 | .0 | .04 | 162 | .22 | 3740 | 114 | 17 | .3 | 256 | 7.1 |
| May 28-June 5..... | 12170 | 9.9 | | 28 | 5.2 | 5.8 | 1.2 | 113 | 0 | 19 | 1.8 | .4 | .0 | .07 | 124 | .17 | 4070 | 92 | 0 | .3 | 212 | 7.3 |
| June 6-17..... | 8469 | 11 | | 30 | 6.8 | 7.7 | 1.4 | 117 | 0 | 26 | 1.8 | .5 | .0 | .12 | 134 | .18 | 3060 | 102 | 6 | .3 | 235 | 7.2 |
| June 18-30..... | 9488 | 12 | | 29 | 5.5 | 7.2 | 2.1 | 107 | 0 | 23 | 2.8 | .5 | .0 | .12 | 120 | .16 | 3070 | 95 | 7 | .3 | 221 | 7.2 |
| July 1-31..... | 5564 | 14 | | 29 | 7.8 | 11 | 2.5 | 112 | 0 | 27 | 8.9 | .6 | .3 | .04 | 172 | .23 | 2580 | 104 | 12 | .5 | 258 | 8.0 |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aug. 1-31, 1966... | 4350 | 15 | | 29 | 9.8 | 11 | 1.6 | 103 | 0 | 36 | 13 | 0.8 | 0.1 | 0.09 | 170 | 0.23 | 2000 | 114 | 29 | 0.5 | 264 | 8.1 |
| Sept. 1-30..... | 4054 | 14 | | 37 | 5.2 | 13 | 1.3 | 110 | 0 | 44 | 7.1 | .6 | .0 | .14 | 194 | .26 | 2120 | 114 | 24 | .5 | 266 | 7.4 |
| Weighted average | -- | 13 | | 35 | 8.1 | 8.8 | 1.7 | 121 | -- | 35 | 5.5 | 0.5 | 0.0 | 0.07 | 177 | 0.24 | 1860 | 122 | 23 | 0.4 | 276 | 7.3 |
| Time-weighted average..... | 3886 | 13 | | 40 | 9.7 | 8.9 | 1.9 | 129 | -- | 43 | 5.7 | 0.5 | 0.0 | 0.06 | 202 | -- | -- | 140 | 33 | 0.3 | 308 | 7.5 |
| Tons per day.... | -- | 136 | | 372 | 87 | 93 | 18 | 1270 | -- | 367 | 58 | 5.4 | 0.5 | 0.79 | -- | -- | -- | -- | -- | -- | -- | -- |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 312 | 355 | 393 | 366 | 332 | 335 | 339 | 285 | 217 | 246 | 271 | 258 |
| 2..... | 317 | 356 | 388 | 299 | 338 | 330 | 335 | 290 | 209 | 248 | 270 | 256 |
| 3..... | 320 | 358 | 384 | 376 | 341 | 329 | 331 | 285 | 208 | 241 | 270 | 256 |
| 4..... | 322 | 358 | 381 | 263 | 341 | 336 | 339 | 269 | 218 | 246 | 268 | 262 |
| 5..... | 316 | 358 | 376 | 357 | 340 | 326 | 346 | 255 | 219 | 230 | 273 | 260 |
| 6..... | 321 | 362 | 377 | 250 | 340 | 354 | 344 | 263 | 240 | 246 | 270 | 261 |
| 7..... | 322 | 362 | 377 | 329 | 337 | 333 | 338 | 269 | 238 | 251 | 267 | 259 |
| 8..... | 322 | 360 | 389 | 331 | 338 | 332 | 340 | 251 | 243 | 249 | 269 | 259 |
| 9..... | 323 | 358 | 386 | 329 | 355 | 334 | 340 | 240 | 250 | 258 | 269 | 261 |
| 10..... | 325 | 356 | 383 | 330 | 345 | 334 | 350 | 242 | 238 | 258 | 261 | 261 |
| 11..... | 324 | 353 | 383 | 334 | 344 | 335 | 340 | 239 | 237 | 251 | 260 | 261 |
| 12..... | 325 | 358 | 380 | 332 | 342 | 331 | 332 | 242 | 240 | 249 | 263 | 263 |
| 13..... | 325 | 365 | 383 | 331 | 344 | 332 | 324 | 257 | 241 | 257 | 261 | 261 |
| 14..... | 324 | 359 | 383 | 327 | 342 | 339 | 330 | 255 | 241 | 268 | 258 | 260 |
| 15..... | 326 | 360 | 385 | 328 | 345 | 335 | 322 | 265 | 241 | 259 | 264 | 261 |
| 16..... | 323 | 356 | 396 | 331 | 347 | 333 | 320 | 265 | 224 | 268 | 263 | 261 |
| 17..... | 325 | 353 | 387 | 331 | 367 | 333 | 317 | 264 | 225 | 266 | 260 | 269 |
| 18..... | 328 | 358 | 386 | 342 | 340 | 332 | 321 | 262 | 216 | 268 | 263 | 268 |
| 19..... | 327 | 357 | 409 | 339 | 350 | 332 | 411 | 262 | 219 | 268 | 261 | 269 |
| 20..... | 326 | 362 | 405 | 339 | 352 | 335 | 323 | 255 | 206 | 270 | 264 | 268 |
| 21..... | 346 | 361 | 410 | 342 | 335 | 334 | 325 | 260 | 212 | 273 | 261 | 268 |
| 22..... | 352 | 361 | 406 | 340 | 340 | 332 | 316 | 263 | 212 | 273 | 260 | 268 |
| 23..... | 351 | 359 | 387 | 339 | 343 | 333 | 294 | 249 | 206 | 272 | 266 | 267 |
| 24..... | 355 | 357 | 392 | 330 | 340 | 333 | 294 | 261 | 222 | 271 | 259 | 265 |
| 25..... | 355 | 356 | 385 | 338 | 348 | 328 | 289 | 257 | 230 | 271 | 259 | 265 |
| 26..... | 358 | 360 | 381 | 337 | 344 | 334 | 289 | 255 | 231 | 272 | 258 | 265 |
| 27..... | 360 | 362 | 389 | 343 | 342 | 338 | 284 | 236 | 245 | 272 | 257 | 266 |
| 28..... | 361 | 364 | 387 | 337 | 344 | 337 | 290 | 220 | 230 | 270 | 258 | 266 |
| 29..... | 363 | 365 | 378 | 338 | -- | 337 | 292 | 220 | 236 | 271 | 258 | 262 |
| 30..... | 363 | 377 | 366 | 340 | -- | 337 | 288 | 222 | 226 | 273 | 264 | 263 |
| 31..... | 366 | -- | 369 | 339 | -- | 334 | -- | 216 | -- | 272 | 258 | -- |
| Average | 334 | 359 | 386 | 331 | 343 | 334 | 323 | 254 | 227 | 260 | 263 | 262 |

SNAKE RIVER MAIN STEM--Continued

13-0225. SNAKE RIVER ABOVE RESERVOIR, NEAR ALPINE, WYO.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 45 | 46 | 47 | 47 | 47 | 45 | 46 | 46 | 47 | 47 | 47 | 45 | 45 | 44 | 44 | 40 | 44 | 43 | 44 | 43 | 43 | 42 | 45 | 43 | 43 | 43 | 43 | 42 | 42 | 43 | 41 | 44 |
| November | 40 | 39 | 40 | 40 | 40 | 41 | 39 | 39 | 39 | 41 | 40 | 40 | 41 | 43 | 42 | 39 | 39 | 40 | 40 | 39 | 39 | 38 | 37 | 37 | 38 | 35 | 36 | 33 | 32 | 32 | -- | 39 |
| December | 33 | 32 | 32 | 35 | 35 | 34 | 32 | 32 | 34 | 33 | 37 | 37 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 34 | 33 |
| January | 32 | 32 | 32 | 33 | 33 | 34 | 35 | 34 | 33 | 32 | 33 | 33 | 34 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| February | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 36 | 32 | 34 | 35 | 34 | 34 | 32 | 34 | 33 | 34 | 34 | -- | -- | -- | 33 |
| March | 35 | 34 | 34 | 32 | 32 | 32 | 34 | 35 | 37 | 37 | 34 | 35 | 35 | 40 | 37 | 38 | 36 | 32 | 36 | 35 | 35 | 35 | 35 | 34 | 37 | 37 | 37 | 38 | 40 | 40 | 44 | 36 |
| April | 44 | 43 | 37 | 37 | 37 | 40 | 43 | 42 | 42 | 42 | 42 | 40 | 40 | 40 | 44 | 44 | 41 | 37 | 36 | 35 | 36 | 42 | 40 | 40 | 42 | 41 | 39 | 40 | 42 | 42 | -- | 40 |
| May | 42 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 43 | 42 | 44 | 42 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 42 | 42 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 44 |
| June | 47 | 47 | 48 | 48 | 47 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 50 | 53 | 53 | 52 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | -- | 50 |
| July | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 |
| August | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 |
| September | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 51 | 50 | 50 | 50 | 49 | -- | 53 |

## SALT RIVER BASIN

### 13-0275. SALT RIVER ABOVE RESERVOIR, NEAR ETNA, WYO.

LOCATION.--Lat 43°04'50", long 111°02'15", at gaging station, 3.5 miles northwest of Etna, Lincoln County, and 8 miles upstream from mouth.
DRAINAGE AREA.--829 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.
Water temperatures: October 1965 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 320 ppm Apr. 1-6; minimum, 238 ppm July 1-31.
Hardness: Maximum, 232 ppm Nov. 18-30, Dec. 14-31, Jan. 1-15, Mar. 20-31; minimum, 185 ppm July 1-31.
Specific conductance: Maximum daily, 553 micromhos Apr. 2, 6; minimum daily, 351 micromhos Aug. 3.
Water temperatures: Maximum, 62°F July 12; minimum, freezing point on several days during November to March.
REMARKS.--Daily samples for chemical analysis composited by discharge.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-14, 1965... | 763 | 6.5 | | 59 | 20 | 12 | 1.3 | 231 | 0 | 36 | 16 | 0.3 | 3.1 | 0.02 | 282 | 0.38 | 581 | 228 | 38 | 0.3 | 466 | 7.9 |
| Oct. 15-31..... | 717 | 5.9 | | 55 | 19 | 14 | 2.7 | 223 | 0 | 40 | 18 | .4 | 2.8 | .08 | 272 | .37 | 527 | 215 | 32 | .4 | 459 | 7.9 |
| Nov. 1-17..... | 677 | 7.1 | | 48 | 23 | 14 | 1.7 | 226 | 0 | 31 | 21 | .3 | 1.3 | .00 | 296 | .40 | 541 | 215 | 30 | .4 | 474 | 7.8 |
| Nov. 18-30..... | 699 | 8.2 | | 62 | 19 | 15 | 1.8 | 243 | 0 | 28 | 21 | .2 | 3.6 | .06 | 290 | .39 | 547 | 232 | 33 | .4 | 476 | 7.9 |
| Dec. 1-13..... | 619 | 8.0 | | 43 | 30 | 15 | 1.5 | 235 | 0 | 35 | 21 | .2 | .7 | .00 | 296 | .40 | 495 | 230 | 37 | .4 | 486 | 7.7 |
| Dec. 14-31..... | 564 | 5.8 | | 61 | 20 | 13 | 1.5 | 217 | 0 | 37 | 37 | .2 | 4.1 | .03 | 280 | .38 | 426 | 232 | 54 | .4 | 488 | 7.7 |
| Jan. 1-15, 1966... | 554 | 9.1 | | 60 | 20 | 15 | 1.2 | 231 | 0 | 57 | 17 | .2 | 3.7 | .07 | 292 | .40 | 437 | 232 | 42 | .4 | 474 | 8.1 |
| Jan. 16-31..... | 496 | 8.4 | | 60 | 20 | 15 | 1.2 | 231 | 0 | 54 | 18 | .2 | 3.6 | .11 | 294 | .40 | 394 | 230 | 40 | .4 | 479 | 7.9 |
| Feb. 1-14..... | 475 | 8.0 | | 66 | 16 | 16 | 1.8 | 232 | 0 | 35 | 20 | .1 | 3.5 | .05 | 276 | .38 | 354 | 229 | 39 | .5 | 498 | 8.1 |
| Feb. 15-28..... | 449 | 7.4 | | 65 | 14 | 16 | 1.8 | 232 | 0 | 35 | 20 | .1 | 2.8 | .04 | 280 | .38 | 339 | 219 | 29 | .5 | 498 | 7.9 |
| Mar. 1-19..... | 448 | 8.5 | | 64 | 17 | 17 | 1.5 | 220 | 6 | 51 | 20 | .2 | 2.9 | .00 | 286 | .39 | 346 | 228 | 38 | .5 | 501 | 8.4 |
| Mar. 20-31..... | 472 | 8.3 | | 58 | 21 | 21 | 1.5 | 223 | 6 | 41 | 27 | .2 | 3.2 | .02 | 306 | .42 | 390 | 232 | 39 | .6 | 525 | 8.4 |
| Apr. 1-6..... | 674 | 8.8 | | 59 | 18 | 28 | 1.8 | 226 | 0 | 44 | 35 | .1 | 2.2 | .03 | 320 | .44 | 582 | 221 | 36 | .8 | 532 | 7.9 |
| Apr. 7-23..... | 876 | 7.8 | | 63 | 14 | 23 | 1.5 | 233 | 0 | 33 | 26 | .0 | 1.6 | .19 | 302 | .41 | 714 | 216 | 25 | .7 | 504 | 7.7 |
| Apr. 24-30..... | 817 | 7.3 | | 52 | 18 | 18 | 1.0 | 217 | 0 | 25 | 21 | .0 | 1.0 | .11 | 264 | .36 | 582 | 201 | 23 | .5 | 455 | 7.5 |
| May 1-11..... | 1311 | 8.0 | | 56 | 14 | 14 | .8 | 223 | 0 | 19 | 20 | .1 | 1.3 | .03 | 250 | .34 | 885 | 198 | 15 | .4 | 418 | 7.5 |
| May 12-22..... | 1493 | 7.5 | | 55 | 13 | 14 | .8 | 209 | 0 | 30 | 18 | .1 | 1.4 | .05 | 246 | .33 | 992 | 191 | 20 | .4 | 429 | 8.0 |
| May 23-31..... | 974 | 7.5 | | 52 | 19 | 10 | .8 | 226 | 0 | 29 | 11 | .1 | 5.6 | .03 | 252 | .34 | 663 | 209 | 24 | .3 | 424 | 7.8 |
| June 1-15..... | 703 | 6.7 | | 50 | 20 | 13 | 2.5 | 218 | 0 | 30 | 14 | .3 | 2.0 | .08 | 252 | .34 | 478 | 210 | 31 | .4 | 441 | 7.8 |
| June 16-22..... | 555 | 7.4 | | 53 | 22 | 12 | 2.0 | 232 | 0 | 39 | 14 | .4 | 2.9 | .04 | 252 | .34 | 378 | 222 | 32 | .3 | 456 | 7.9 |
| June 23-30..... | 554 | 7.1 | | 54 | 22 | 12 | 1.5 | 239 | 0 | 33 | 14 | .3 | 2.9 | .06 | 278 | .38 | 416 | 223 | 27 | .3 | 465 | 8.0 |
| July 1-31..... | 467 | 7.3 | | 43 | 19 | 11 | .4 | 191 | 0 | 30 | 12 | .1 | 3.4 | .05 | 238 | .32 | 300 | 185 | 28 | .4 | 396 | 8.0 |
| Aug. 1-4..... | 426 | 7.4 | | 48 | 19 | 11 | 1.2 | 210 | 0 | 23 | 16 | .2 | 3.1 | .06 | 240 | .33 | 276 | 200 | 28 | .3 | 417 | 8.1 |

SALT RIVER BASIN--Continued

13-0275. SALT RIVER ABOVE RESERVOIR, NEAR ETNA, WYO.--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Aug. 5-31, 1966... | 428 | 8.2 | | 55 | 19 | 10 | 1.2 | 232 | 0 | 22 | 18 | 0.2 | 4.4 | 0.05 | 250 | 0.34 | 289 | 215 | 25 | 0.3 | 434 | 8.1 |
| Sept. 1-30..... | 511 | 8.3 | | 52 | 20 | 12 | 1.1 | 232 | 0 | 9.1 | 21 | .2 | 5.0 | .05 | 268 | .36 | 370 | 215 | 25 | .4 | 448 | 8.0 |
| Weighted average | -- | 7.6 | | 55 | 19 | 15 | 1.4 | 224 | -- | 32 | 20 | 0.2 | 2.9 | 0.05 | 272 | 0.37 | 466 | 215 | 30 | 0.4 | 461 | 7.9 |
| Time-weighted average..... | 633 | 7.6 | | 55 | 19 | 14 | 1.4 | 224 | -- | 33 | 20 | 0.2 | 3.1 | 0.05 | 273 | -- | -- | 217 | 32 | 0.4 | 463 | 7.9 |
| Tons per day.... | -- | 13 | | 95 | 32 | 25 | 2.4 | 384 | -- | 55 | 34 | 0.3 | 4.9 | 0.09 | -- | -- | -- | -- | -- | -- | -- | -- |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October ..... | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 51 | 49 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 47 |
| November ..... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 41 | 40 | 36 | 35 | 32 | -- | 43 |
| December ..... | 32 | 34 | 34 | 34 | 33 | 34 | 35 | 35 | 35 | 35 | 35 | 38 | 38 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 34 | 35 | 34 | 33 | 33 | 34 | 32 | 34 | 34 | 34 | 34 |
| January..... | 32 | 33 | 34 | 33 | 33 | 34 | 34 | 33 | 32 | 32 | 33 | 33 | 34 | 33 | 34 | 34 | 34 | 33 | 34 | 34 | 35 | 35 | 34 | 34 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 33 |
| February..... | 33 | 33 | 34 | 35 | 35 | 35 | 35 | 36 | 36 | 35 | 35 | 34 | 35 | 36 | 34 | 35 | 33 | 33 | 33 | 32 | 32 | 33 | 34 | 34 | 34 | 35 | 36 | 37 | -- | -- | -- | 34 |
| March..... | 38 | 35 | 33 | 32 | 34 | 35 | 37 | 37 | 39 | 40 | 40 | 39 | 41 | 40 | 41 | 42 | 43 | 42 | 40 | 41 | 42 | 43 | 43 | 44 | 43 | 44 | 45 | 46 | 47 | 47 | 48 | 41 |
| April..... | 47 | 48 | 48 | 48 | 47 | 48 | 47 | 47 | 47 | 48 | 49 | 49 | 48 | 49 | 48 | 49 | 48 | 47 | 48 | 47 | 47 | 46 | 49 | 48 | 47 | 46 | 46 | 48 | 50 | 50 | -- | 48 |
| May..... | 46 | 47 | 47 | 47 | 48 | 48 | 48 | 49 | 47 | 46 | 47 | 48 | 49 | 48 | 48 | 48 | 49 | 48 | 50 | 50 | 48 | 47 | 48 | 48 | 49 | 49 | 50 | 50 | 49 | 49 | 50 | 48 |
| June ..... | 50 | 47 | 48 | 47 | 47 | 47 | -- | 51 | 49 | 51 | 52 | 53 | 55 | 58 | 56 | 59 | 58 | 59 | 55 | 54 | 55 | 55 | 54 | 55 | 56 | 55 | 53 | 55 | 56 | 56 | -- | 53 |
| July..... | 53 | 53 | 53 | 51 | 53 | 54 | 54 | 58 | 57 | 60 | 58 | 62 | 59 | 55 | 52 | 53 | 50 | 54 | 54 | 55 | 55 | 57 | 54 | 58 | 57 | 54 | 54 | 56 | 56 | 54 | 55 | 55 |
| August..... | 53 | 53 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 53 | 53 | 52 | 53 | 52 | 51 | 50 | 52 | 51 | 50 | 51 | 50 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 46 | 47 | -- | 51 |
| September..... | 48 | 47 | 47 | 48 | 47 | 48 | 48 | 49 | 49 | 49 | 48 | 47 | 46 | 45 | 46 | 45 | 45 | 45 | 46 | 45 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 45 | 46 | 45 | -- | 46 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 466 | 451 | 515 | 491 | 498 | 474 | 512 | 408 | 449 | 457 | 478 | 501 |
| 2..... | 472 | 455 | 498 | 478 | 502 | 500 | 553 | 410 | 464 | 481 | 374 | 465 |
| 3..... | 470 | 460 | 498 | 478 | 502 | 502 | 526 | 415 | 469 | 484 | 351 | 470 |
| 4..... | 466 | 460 | 498 | 478 | 502 | 502 | 552 | 414 | 469 | 454 | 478 | 396 |
| 5..... | 465 | 454 | 498 | 479 | 490 | 500 | 552 | 444 | 465 | 475 | 352 | 414 |
| 6..... | 470 | 451 | 497 | 480 | 498 | 500 | 553 | 450 | 463 | 474 | 478 | 423 |
| 7..... | 470 | 440 | 493 | 488 | 498 | 499 | 522 | 447 | -- | 480 | 481 | 380 |
| 8..... | 468 | 453 | 498 | 490 | 500 | 498 | 522 | 447 | 473 | 477 | 485 | 477 |
| 9..... | 469 | 449 | 497 | 489 | 498 | 505 | 521 | 447 | 467 | 464 | 484 | 453 |
| 10..... | 465 | 469 | 498 | 486 | 499 | 505 | 521 | 448 | 483 | 474 | 478 | 481 |
| 11..... | 465 | 472 | 498 | 490 | 498 | 506 | 521 | 419 | 484 | 477 | 358 | 396 |
| 12..... | 468 | 487 | 489 | 490 | 498 | 511 | 475 | 426 | 479 | 473 | 470 | 494 |
| 13..... | 468 | 499 | 492 | 490 | 497 | 503 | 516 | 464 | 481 | 477 | 359 | 473 |
| 14..... | 473 | 501 | 487 | 484 | 496 | 505 | 520 | 464 | 477 | 482 | 483 | 494 |
| 15..... | 473 | 501 | 490 | 490 | 497 | 502 | 519 | 458 | 478 | 483 | 484 | 427 |
| 16..... | 481 | 478 | 482 | 488 | 498 | 506 | 508 | 436 | 472 | 482 | 483 | 450 |
| 17..... | 475 | 487 | 482 | 488 | 497 | 508 | 505 | 464 | 482 | 470 | 471 | 495 |
| 18..... | 455 | 487 | 482 | 488 | 496 | 508 | 501 | 466 | 481 | 481 | 451 | 464 |
| 19..... | 481 | 483 | 484 | 494 | 498 | 505 | 501 | 443 | 485 | 480 | 480 | 472 |
| 20..... | 448 | 484 | 510 | 492 | 498 | 521 | 503 | 400 | 479 | 457 | 477 | 469 |
| 21..... | 451 | 501 | 509 | 487 | 497 | 520 | 501 | 412 | 441 | 481 | 478 | 482 |
| 22..... | 457 | 501 | 506 | 489 | 487 | 519 | 505 | 364 | 489 | 479 | 475 | 448 |
| 23..... | 451 | 472 | 507 | 490 | 495 | 521 | 504 | 446 | 484 | 479 | 427 | 481 |
| 24..... | 451 | 474 | 506 | 492 | 496 | 527 | 489 | 459 | 489 | 479 | 505 | 479 |
| 25..... | 453 | 471 | 502 | 492 | 496 | 522 | 489 | 459 | 484 | 479 | 427 | 405 |
| 26..... | 456 | 499 | 502 | 492 | 494 | 516 | 427 | 462 | 485 | 482 | 430 | 461 |
| 27..... | 456 | 499 | 507 | 491 | 495 | 516 | 487 | 377 | 489 | 477 | 380 | 486 |
| 28..... | 454 | 500 | 500 | 492 | 495 | 521 | 486 | 436 | 488 | 483 | 434 | 486 |
| 29..... | 455 | 499 | 509 | 492 | -- | 526 | 426 | 381 | 481 | 483 | 442 | 436 |
| 30..... | 458 | 501 | 505 | 494 | -- | 515 | 424 | 448 | 482 | 482 | 492 | 488 |
| 31..... | 459 | -- | 505 | 496 | -- | 516 | -- | 444 | -- | 485 | -- | -- |
| Average | 463 | 477 | 498 | 488 | 496 | 509 | 504 | 434 | 476 | 476 | 448 | 458 |

SNAKE RIVER MAIN STEM

13-0375. SNAKE RIVER NEAR HEISE, IDAHO
(Irrigation network station)

LOCATION.--Lat 43°36'45", long 111°39'05", at Eagle Rock canal headgate 1.2 miles upstream from Heise, Jefferson County, 1.6 miles downstream from Anderson canal headgate, 1.8 miles downstream from gaging station, approximately 4.8 miles east of Ririe, and approximately 21 miles upstream from Henrys Fork.
DRAINAGE AREA.--5,752 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: January 1953 to September 1966.
Water temperatures: January 1953 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 270 ppm Apr. 15-18; minimum, 148 ppm June 11.
Hardness: Maximum, 208 ppm Apr. 15-18; minimum, 110 ppm June 11.
Specific conductance: Maximum daily, 472 micromhos Mar. 26; minimum daily, 261 micromhos June 11.
Water temperatures: Maximum, 65°F Aug. 14; minimum, freezing point Dec. 31, Jan. 19-21, Feb. 13.
EXTREMES, 1953-66.--Dissolved solids: Maximum, 378 ppm Nov. 11-20, 1956; minimum, 148 ppm June 11, 1966.
Hardness: Maximum, 276 ppm Feb. 1-28, 1955; minimum, 110 ppm June 11, 1966.
Specific conductance: Maximum daily, 791 micromhos Nov. 13, 1956; minimum daily, 240 micromhos June 27, 1954.
Water temperatures: Maximum, 67°F July 19, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Approximately 2.5 percent of normal annual streamflow of 5,000,000 acre-feet is diverted by Anderson canal between sampling point and gaging station. This diversion occurs during the months of May to November. Except for leakage through the headgate, no other diversion or appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-31, 1965.. | 4225 | 8.2 | | 47 | 12 | 11 | 1.9 | 160 | 0 | 42 | 10 | 0.1 | 0.6 | 0.03 | 218 | 0.30 | 2490 | 166 | 35 | 0.4 | 360 | 8.1 |
| Nov. 1-30..... | 2332 | -- | | -- | -- | 11 | -- | 164 | 0 | -- | -- | -- | -- | -- | 222 | .30 | 1400 | 177 | 42 | .4 | 381 | 8.1 |
| Dec. 1-2..... | 2470 | -- | | -- | -- | 11 | -- | 166 | 0 | -- | -- | -- | -- | -- | 227 | .31 | 1510 | 176 | 40 | .4 | 383 | 8.2 |
| Dec. 3..... | 2450 | -- | | -- | -- | 13 | -- | 160 | 0 | -- | -- | -- | -- | -- | 258 | .35 | 1710 | 189 | 58 | .4 | 419 | 7.5 |
| Dec. 4..... | 2430 | -- | | -- | -- | 11 | -- | 136 | 0 | -- | -- | -- | -- | -- | 200 | .27 | 1310 | 151 | 39 | .4 | 338 | 8.2 |
| Dec. 5-26..... | 2576 | -- | | -- | -- | 11 | -- | 164 | 0 | -- | -- | -- | -- | -- | 231 | .31 | 1610 | 177 | 42 | .4 | 384 | 8.2 |
| Dec. 27-31..... | 2588 | -- | | -- | -- | 11 | -- | 162 | 0 | -- | -- | -- | -- | -- | 226 | .31 | 1580 | 175 | 42 | .4 | 381 | 8.2 |
| Jan. 1-14, 1966.. | 2999 | 7.3 | | 54 | 13 | 13 | 1.9 | 176 | 0 | 52 | 13 | .4 | .5 | .12 | 247 | .34 | 2000 | 188 | 44 | .4 | 410 | 8.2 |
| Jan. 15-21..... | 3501 | -- | | -- | -- | 12 | -- | 178 | 0 | -- | -- | -- | -- | -- | 248 | .34 | 2340 | 199 | 53 | .4 | 426 | 8.1 |
| Jan. 22-Feb. 1... | 3170 | -- | | -- | -- | 12 | -- | 172 | 0 | -- | -- | -- | -- | -- | 243 | .33 | 2080 | 188 | 47 | .4 | 408 | 8.1 |
| Feb. 2-28..... | 7660 | -- | | -- | -- | 12 | -- | 178 | 0 | -- | -- | -- | -- | -- | 246 | .33 | 5090 | 195 | 49 | .4 | 420 | 8.1 |
| Mar. 1-17..... | 10510 | -- | | -- | -- | 14 | -- | 190 | 0 | -- | -- | -- | -- | -- | 265 | .36 | 7520 | 206 | 50 | .4 | 447 | 7.9 |
| Mar. 18-Apr. 14.. | 10560 | -- | | -- | -- | 13 | -- | 182 | 0 | -- | -- | -- | -- | -- | 249 | .34 | 7100 | 198 | 49 | .4 | 428 | 8.0 |
| Apr. 15-18..... | 10820 | -- | | -- | -- | 14 | -- | 190 | 0 | -- | -- | -- | -- | -- | 270 | .37 | 7890 | 208 | 52 | .4 | 455 | 7.8 |
| Apr. 19-May 3.... | 11670 | 8.0 | | 56 | 13 | 12 | 2.1 | 176 | 0 | 54 | 13 | .4 | 1.0 | .00 | 246 | .33 | 7750 | 193 | 49 | .4 | 422 | 7.9 |
| May 4-29..... | 13290 | -- | | -- | -- | 10 | -- | 162 | 0 | -- | -- | -- | -- | -- | 222 | .30 | 7970 | 174 | 41 | .3 | 377 | 7.8 |
| May 30-June 4.... | 15950 | -- | | -- | -- | 9.3 | -- | 158 | 0 | -- | -- | -- | -- | -- | 212 | .29 | 9130 | 162 | 32 | .3 | 358 | 8.0 |
| June 5..... | 13700 | -- | | -- | -- | 14 | -- | 134 | 0 | -- | -- | -- | -- | -- | 177 | .24 | 6550 | 142 | 32 | .5 | 297 | 8.2 |
| June 6-10..... | 13500 | -- | | -- | -- | 10 | -- | 158 | 0 | -- | -- | -- | -- | -- | 213 | .29 | 7760 | 165 | 35 | .3 | 359 | 7.8 |
| June 11..... | 13200 | -- | | -- | -- | 15 | -- | 96 | 0 | -- | -- | -- | -- | -- | 148 | .20 | 5270 | 110 | 31 | .6 | 260 | 8.2 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June 12-30, 1966. | 15070 | -- | | -- | -- | 9.2 | -- | 154 | 0 | -- | -- | -- | -- | -- | 204 | 0.28 | 8300 | 158 | 32 | 0.3 | 342 | 7.8 |
| July 1-28..... | 15990 | 8.7 | | 42 | 9.1 | 8.3 | 1.5 | 144 | 0 | 33 | 6.5 | 0.4 | 0.4 | 0.00 | 181 | .25 | 7810 | 142 | 24 | .3 | 306 | 7.5 |
| July 29-Aug. 8... | 12300 | -- | | 39 | 9.8 | 8.2 | -- | 137 | 0 | -- | -- | -- | -- | -- | 206 | .28 | 6840 | 138 | 26 | .3 | 297 | 7.5 |
| Aug. 9-Sept. 7... | 9012 | -- | | 42 | 10 | 9.3 | -- | 142 | 0 | -- | -- | -- | -- | -- | 203 | .28 | 4940 | 146 | 30 | .3 | 315 | 7.5 |
| Sept. 8-17..... | 7850 | -- | | 44 | 11 | 10 | -- | 147 | 0 | -- | -- | -- | -- | -- | 221 | .30 | 4680 | 155 | 34 | .3 | 340 | 7.8 |
| Sept. 18-30..... | 5463 | -- | | 48 | 11 | 12 | -- | 156 | 0 | -- | -- | -- | -- | -- | 237 | .32 | 3500 | 165 | 37 | .4 | 374 | 7.9 |
| Weighted average | -- | -- | | -- | -- | 11 | -- | 161 | -- | -- | -- | -- | -- | -- | 221 | 0.30 | 5070 | 170 | 38 | 0.4 | 368 | 7.8 |
| Time-weighted average..... | 8510 | -- | | -- | -- | 11 | -- | 163 | -- | -- | -- | -- | -- | -- | 226 | -- | -- | 173 | 40 | 0.4 | 376 | 7.8 |
| Tons per day... | -- | -- | | -- | -- | 243 | -- | 3700 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 348 | 375 | 397 | 401 | 406 | 435 | 444 | 416 | 354 | 320 | 300 | 321 |
| 2..... | 338 | 374 | 389 | 429 | 412 | 432 | 442 | 411 | 359 | 323 | 300 | 327 |
| 3..... | 348 | 368 | 419 | 424 | 416 | 418 | 445 | 414 | 357 | 323 | 295 | 328 |
| 4..... | 354 | 379 | 338 | 414 | 410 | 442 | 456 | 389 | 359 | 317 | 271 | 322 |
| 5..... | 354 | 376 | 407 | 413 | 402 | 442 | 453 | 390 | 305 | 314 | 301 | 328 |
| 6..... | 357 | 377 | 376 | 417 | 401 | 436 | 448 | 386 | 352 | 320 | 298 | 327 |
| 7..... | 362 | 379 | 389 | 427 | 405 | 431 | 445 | 395 | 369 | 320 | 300 | 330 |
| 8..... | 355 | 385 | 403 | 422 | 406 | 407 | 441 | 395 | 364 | 314 | 300 | 333 |
| 9..... | 355 | 380 | 381 | 422 | 403 | 429 | 445 | 385 | 359 | 311 | 303 | 335 |
| 10..... | 354 | 389 | 389 | 417 | 408 | 429 | 445 | 379 | 357 | 305 | 301 | 335 |
| 11..... | 354 | 389 | 386 | 417 | 424 | 446 | 447 | 385 | 261 | 308 | 312 | 335 |
| 12..... | 357 | 396 | 403 | 424 | 420 | 447 | 459 | 379 | 353 | 308 | 306 | 333 |
| 13..... | 362 | 400 | 388 | 427 | 398 | 434 | 462 | 376 | 352 | 308 | 303 | 337 |
| 14..... | 358 | 388 | 385 | 410 | 425 | 448 | 470 | 377 | 354 | 308 | 303 | 337 |
| 15..... | 366 | 384 | 389 | 430 | 422 | 444 | 467 | 376 | 353 | 305 | 308 | 338 |
| 16..... | 361 | 386 | 377 | 425 | 429 | -- | 464 | 376 | 344 | 300 | 310 | 338 |
| 17..... | 373 | 395 | 403 | 423 | 428 | 446 | 453 | 375 | 332 | 300 | 310 | 361 |
| 18..... | 373 | 390 | 391 | 412 | 431 | 455 | 450 | 376 | 335 | 300 | 310 | 376 |
| 19..... | 367 | 350 | 392 | 423 | 429 | 454 | 436 | 378 | 335 | 300 | 307 | 372 |
| 20..... | 352 | 354 | 385 | 425 | 427 | 465 | 436 | 374 | 349 | 300 | 304 | 374 |
| 21..... | 366 | 394 | 385 | 423 | 426 | 462 | 425 | 369 | 335 | 297 | 310 | 375 |
| 22..... | 366 | 408 | 387 | 411 | 421 | 453 | 431 | 375 | 332 | 303 | 312 | 377 |
| 23..... | 375 | 381 | 404 | 409 | 422 | 459 | 420 | 379 | 323 | 297 | 312 | 382 |
| 24..... | 372 | 381 | 386 | 371 | 423 | 457 | 421 | 377 | 335 | 297 | 312 | 384 |
| 25..... | 374 | 385 | 373 | 411 | 425 | 468 | 435 | 374 | 332 | 295 | 315 | 374 |
| 26..... | 377 | 382 | 406 | 408 | 422 | 472 | 420 | 368 | 326 | 295 | 312 | 374 |
| 27..... | 369 | 404 | 384 | 402 | 420 | 440 | 419 | 373 | 339 | 300 | 312 | 376 |
| 28..... | 373 | 393 | 391 | 398 | 418 | 439 | 420 | 370 | 332 | 297 | 315 | 373 |
| 29..... | 381 | 400 | 393 | 407 | -- | 442 | 417 | 374 | 335 | 286 | 315 | 364 |
| 30..... | 379 | 397 | 363 | 411 | -- | 442 | 419 | 351 | 326 | 301 | 315 | 362 |
| 31..... | 376 | -- | 398 | 408 | -- | 440 | -- | 354 | -- | 293 | 318 | -- |
| Average | 363 | 385 | 388 | 414 | 417 | 444 | 441 | 380 | 341 | 305 | 306 | 351 |

SNAKE RIVER MAIN STEM--Continued

13-0375. SNAKE RIVER NEAR HEISE, IDAHO--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 50 | -- | 53 | 53 | 51 | 51 | 53 | 53 | 54 | -- | 53 | 53 | 53 | 53 | 50 | 51 | 49 | 50 | 50 | 48 | -- | 49 | 52 | 48 | 49 | 50 | 48 | 49 | 48 | 50 | 48 | 51 |
| November | 47 | 48 | 49 | 47 | 49 | 48 | 47 | 49 | 46 | 48 | 47 | 46 | 48 | 47 | 46 | 46 | 46 | 48 | 47 | 46 | 43 | 46 | 44 | 44 | 42 | 39 | 43 | 41 | 40 | 40 | -- | 46 |
| December | 40 | -- | 44 | -- | 44 | 43 | 41 | 41 | 43 | 44 | 42 | -- | 39 | 40 | 34 | 37 | 37 | 35 | 33 | 33 | 33 | 34 | 37 | 34 | -- | 36 | 33 | 38 | 38 | 38 | 32 | 38 |
| January | 34 | 35 | 34 | 35 | 34 | 37 | 40 | 36 | 38 | 37 | 34 | 36 | 36 | 35 | 34 | 37 | 35 | 34 | 32 | 32 | 32 | 34 | 35 | 34 | 33 | 35 | 35 | 33 | 33 | 34 | 35 | 35 |
| February | 36 | 35 | 35 | 34 | 36 | 35 | 36 | 34 | 36 | 34 | 33 | 34 | 32 | 35 | 33 | 34 | 36 | 37 | 39 | 39 | 38 | 33 | 34 | 34 | 36 | 37 | 38 | 36 | -- | -- | -- | 35 |
| March | 36 | 35 | 35 | 36 | 35 | 35 | 37 | 39 | 41 | 37 | 41 | 37 | 39 | 40 | 40 | 38 | 40 | 39 | 40 | 38 | 41 | 40 | 40 | 41 | 42 | 45 | 45 | 43 | 46 | 44 | -- | 40 |
| April | 43 | 45 | 41 | 41 | 43 | 45 | 45 | 43 | 43 | 41 | 40 | 41 | 44 | 44 | 46 | 49 | 41 | 39 | 39 | 39 | 38 | 39 | 42 | 43 | 42 | 42 | 44 | 42 | 42 | 38 | -- | 42 |
| May | 46 | 41 | 46 | 44 | 46 | 46 | 48 | 43 | 45 | 43 | 42 | 44 | 44 | 45 | 43 | 46 | 47 | 47 | 47 | 51 | 47 | 46 | 49 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 46 |
| June | 47 | 47 | 49 | 44 | 49 | 48 | 46 | 49 | 47 | 48 | 46 | 48 | 47 | 48 | 48 | 49 | 49 | 51 | 49 | 50 | 50 | 50 | 49 | 48 | 47 | 50 | 50 | 51 | 54 | 59 | -- | 49 |
| July | 55 | 51 | 50 | 51 | 51 | 52 | 52 | 52 | 52 | 57 | 53 | 53 | 52 | 53 | 53 | 56 | 59 | 60 | 59 | 55 | 59 | 57 | 57 | 56 | 56 | 61 | 61 | 56 | 60 | 61 | 58 | 55 |
| August | 58 | 58 | 57 | 58 | 59 | 62 | 58 | 62 | 59 | 58 | 58 | 58 | 59 | 65 | 59 | 62 | 59 | 59 | 61 | 59 | 58 | 58 | 59 | 60 | 59 | 60 | 61 | 61 | 64 | 64 | 62 | 60 |
| September | 60 | 58 | 59 | 64 | 59 | 58 | 59 | 64 | 64 | 59 | 62 | 59 | 58 | 58 | 58 | 58 | 60 | 61 | 60 | 61 | 57 | 57 | 60 | 60 | 58 | 54 | 55 | 55 | 59 | 57 | -- | 59 |

HENRYS FORK BASIN

13-0550. TETON RIVER NEAR ST. ANTHONY, IDAHO

LOCATION.--Lat 43°55'40", long 111°36'55", temperature recorder at gaging station on right bank, 0.5 mile upstream from railroad bridge, 4 miles southeast of St. Anthony, Fremont County, and at mile 22.
DRAINAGE AREA.--890 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: April 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 71°F July 18, 19, 24, Aug. 2; minimum, freezing point on many days during January and February.
EXTREMES, 1964-66.--Water temperatures: Maximum, 71°F July 18, 19, 24, Aug. 2, 1966; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 2, 1965 | 738 | 13 | | 47 | 14 | 3.6 | 1.4 | 208 | 0 | 8.4 | 1.8 | 0.3 | 1.4 | 0.08 | 193 | 0.25 | 38 | 175 | 4 | 0.1 | 332 | 8.1 |
| May 6, 1966 | 1160 | 12 | | 25 | 6.6 | 2.1 | 1.0 | 105 | 0 | 6.4 | .5 | .3 | 1.1 | .00 | A 111 | .15 | 348 | 90 | 4 | .1 | 182 | 7.6 |
| June 6 | 1040 | 7.3 | | 31 | 9.5 | 2.3 | .8 | 130 | 5 | 5.6 | 1.0 | .2 | .2 | .02 | 127 | .17 | 357 | 116 | 12 | .1 | 221 | 8.6 |
| July 13 | 828 | 12 | | 36 | 13 | 2.8 | 1.1 | 176 | 0 | 6.0 | .8 | .2 | .9 | .02 | 160 | .20 | 358 | 144 | 0 | .1 | 277 | 7.5 |
| Aug. 11 | 658 | -- | | 36 | 13 | -- | -- | 180 | 0 | -- | 1.5 | .3 | -- | -- | A 171 | -- | 304 | 144 | 0 | -- | 281 | 7.8 |

A Residue at 180°C.

**Temperature (°F) of water, water year October 1965 to September 1966**

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 51 | 52 | 52 | 52 | 50 | 51 | 52 | 52 | 52 | 52 | 51 | 50 | 49 | 49 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 48 |
| Minimum .... | 45 | 46 | 46 | 47 | 48 | 47 | 47 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 46 | 45 | 44 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 45 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | 40 | 39 | 39 | 39 | 38 | 36 | 36 | 36 | 34 | --- | 42 |
| Minimum .... | 43 | 42 | 42 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 41 | 40 | 39 | 39 | 39 | 38 | 36 | 36 | 35 | 34 | 34 | --- | 41 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 36 | 36 | 36 | 35 | 33 | 35 | 36 | 37 | 37 | 37 | 37 | 35 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 |
| Minimum .... | 34 | 34 | 34 | 34 | 36 | 35 | 33 | 33 | 33 | 35 | 36 | 37 | 37 | 35 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 36 | 37 | 37 | 36 | 33 | 34 | 34 | 35 | 35 | 35 | 33 | 33 | 33 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 34 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 36 | 36 | 33 | 32 | 33 | 33 | 33 | 35 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 37 | 37 | 38 | 38 | 38 | 36 | 35 | 36 | 37 | 38 | 38 | --- | --- | --- | 35 |
| Minimum .... | 32 | 33 | 34 | 33 | 34 | 34 | 35 | 33 | 33 | 32 | 33 | 33 | 33 | 33 | 32 | 34 | 34 | 34 | 36 | 37 | 37 | 35 | 34 | 34 | 35 | 36 | 37 | 35 | --- | --- | --- | 34 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 36 | 35 | 35 | 35 | 37 | 39 | 42 | 42 | 41 | 40 | 39 | 41 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 42 | 44 | 45 | 46 | 48 | 47 | 48 | 48 | 41 |
| Minimum .... | 37 | 36 | 34 | 34 | 33 | 33 | 35 | 37 | 39 | 41 | 38 | 38 | 38 | 39 | 40 | 40 | 36 | 35 | 38 | 36 | 38 | 35 | 37 | 38 | 40 | 41 | 41 | 40 | 41 | 42 | 43 | 38 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 46 | 45 | 43 | 46 | 48 | 49 | 50 | 50 | 47 | 46 | 46 | 49 | 51 | 53 | 53 | 53 | 47 | 42 | 43 | 45 | 50 | 51 | 54 | 54 | 51 | 46 | 50 | 50 | 50 | --- | 49 |
| Minimum .... | 42 | 42 | 41 | 40 | 41 | 44 | 45 | 45 | 47 | 46 | 41 | 43 | 43 | 45 | 47 | 49 | 47 | 42 | 39 | 40 | 41 | 44 | 46 | 46 | 49 | 46 | 43 | 43 | 46 | 45 | --- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 59 | 60 | 60 | 58 | 56 | 54 | 53 | 52 | 51 | 48 | 47 | 51 | 50 | 50 | 54 | 54 | 55 | 56 | 58 | 57 | 54 | 50 | 55 | 60 | 61 | 60 | 56 | 58 | 58 | 57 | 55 |
| Minimum .... | 46 | 50 | 53 | 54 | 53 | 52 | 51 | 52 | 51 | 48 | 46 | 45 | 46 | 46 | 45 | 49 | 49 | 49 | 50 | 52 | 54 | 47 | 44 | 47 | 52 | 54 | 55 | 53 | 53 | 54 | 54 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 59 | 57 | 55 | 57 | 57 | 56 | 58 | 60 | 58 | 55 | 55 | 58 | 62 | 62 | 65 | 64 | 62 | 65 | 64 | 62 | 59 | 58 | 58 | 60 | 64 | 67 | 68 | 68 | 68 | --- | 61 |
| Minimum .... | 52 | 52 | 53 | 50 | 49 | 52 | 53 | 53 | 54 | 54 | 50 | 48 | 51 | 54 | 57 | 57 | 60 | 58 | 58 | 60 | 59 | 56 | 53 | 54 | 52 | 55 | 58 | 60 | 60 | 62 | --- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 68 | 66 | 67 | 68 | 70 | 69 | 70 | 68 | 69 | 70 | 69 | 69 | 69 | 69 | 67 | 69 | 71 | 71 | 69 | 69 | 70 | 70 | 71 | 69 | 69 | 69 | 69 | 69 | 70 | 69 | 69 |
| Minimum .... | 63 | 60 | 60 | 60 | 60 | 60 | 62 | 62 | 63 | 62 | 63 | 64 | 62 | 62 | 61 | 61 | 62 | 62 | 64 | 64 | 63 | 63 | 63 | 63 | 65 | 62 | 61 | 62 | 62 | 61 | 65 | 62 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 71 | 69 | 67 | 68 | 69 | 69 | 67 | 69 | 68 | 66 | 66 | 65 | 66 | 66 | 67 | 68 | 67 | 65 | 62 | 61 | 62 | 63 | 64 | 65 | 65 | 61 | 62 | 62 | 62 | 62 | 66 |
| Minimum .... | 63 | 64 | 64 | 61 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 60 | 59 | 59 | 59 | 59 | 60 | 62 | 61 | 58 | 55 | 54 | 55 | 56 | 57 | 59 | 56 | 55 | 56 | 57 | 57 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 59 | 61 | 62 | 62 | 64 | 64 | 63 | 63 | 63 | 61 | 61 | 61 | 58 | 52 | 51 | 55 | 58 | 59 | 61 | 61 | 61 | 61 | 61 | 61 | 57 | 55 | 55 | 55 | 55 | --- | 59 |
| Minimum .... | 57 | 56 | 55 | 56 | 56 | 57 | 58 | 58 | 56 | 57 | 57 | 56 | 56 | 52 | 49 | 48 | 49 | 52 | 55 | 56 | 57 | 58 | 58 | 57 | 57 | 54 | 52 | 52 | 53 | 51 | --- | 55 |

HENRYS FORK BASIN--Continued

13-0565. HENRYS FORK NEAR REXBURG, IDAHO

LOCATION.--Lat 43°49'35", long 111°54'12" at bridge on State Highway 88, 200 feet upstream from gaging station, 6 miles west of Rexburg, Madison County, and 9.3 miles upstream from mouth.
DRAINAGE AREA.--2,920 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 2, 1965..... | 2230 | 23 | | 22 | 6.1 | 11 | 2.2 | 114 | 0 | 4.8 | 4.2 | 1.7 | 0.1 | 0.07 | 132 | 0.18 | 795 | 80 | 0 | 0.5 | 204 | 8.0 |
| Nov. 24..... | 2310 | 28 | | 18 | 5.4 | 13 | 2.3 | 102 | 0 | 5.2 | 5.0 | 1.8 | .6 | .08 | A 129 | .17 | 805 | 67 | 0 | .7 | 194 | 7.2 |
| Dec. 27..... | 2190 | 28 | | 20 | 6.3 | 13 | 2.2 | 111 | 0 | 6.4 | 5.0 | 1.7 | .4 | .12 | A 138 | .18 | 816 | 76 | 0 | .7 | 210 | 7.8 |
| Feb. 15, 1966.... | 1710 | 32 | | 18 | 5.4 | 16 | 2.3 | 104 | 0 | 5.4 | 6.2 | 1.8 | .9 | .05 | 140 | .19 | 646 | 67 | 0 | .9 | 202 | 7.6 |
| Mar. 11..... | 1840 | -- | | -- | -- | -- | -- | 103 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 67 | 0 | -- | -- | 7.7 |
| Apr. 12..... | 2190 | 25 | | 20 | 6.1 | 12 | 2.2 | 108 | 0 | 5.2 | 4.8 | 1.5 | .7 | .06 | 132 | .18 | 781 | 75 | 0 | .6 | 200 | 7.7 |
| May 13..... | 3060 | 20 | | 13 | 3.9 | 8.1 | 1.6 | 72 | 0 | 3.8 | 3.0 | 1.1 | .7 | .02 | 95 | .13 | 785 | 48 | 0 | .5 | 133 | 7.3 |
| June 13..... | 1410 | 19 | | 19 | 5.4 | 10 | 2.3 | 98 | 0 | 4.0 | 4.0 | 1.3 | .4 | .05 | 116 | .16 | 442 | 70 | 0 | .5 | 182 | 7.0 |
| July 11..... | 670 | 13 | | 24 | 7.2 | 11 | 2.4 | 128 | 0 | 4.2 | 3.2 | 1.4 | .5 | .04 | 136 | .18 | 246 | 90 | 0 | .5 | 223 | 7.5 |
| Aug. 9..... | 992 | 24 | | 23 | 6.6 | 11 | 2.3 | 119 | 0 | 4.0 | 3.5 | 1.6 | .4 | .05 | A 136 | .18 | 364 | 84 | 0 | .5 | 211 | 7.6 |
| Sept. 13..... | 1090 | 26 | | 19 | 5.6 | 12 | 2.3 | 104 | 0 | 3.8 | 3.5 | 1.7 | .5 | .09 | A 126 | .15 | 371 | 70 | 0 | .6 | 189 | 7.4 |

A Calculated from determined constituents.

## PORTNEUF RIVER BASIN

### 13-0755. PORTNEUF RIVER AT POCATELLO, IDAHO

LOCATION.--Lat 42°51'40", long 112°27'25", at Fremont Street Bridge at Pocatello, Bannock County, 30 feet downstream from gaging station, 2.5 miles upstream from Pocatello Creek, and 16.8 miles upstream from mouth.
DRAINAGE AREA.--1,250 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 3, 1965..... | 220 | 25 | | 58 | 33 | 40 | 11 | 336 | 0 | 41 | 41 | 0.4 | 2.0 | 0.14 | 417 | 0.55 | 248 | 280 | 5 | 1.0 | 693 | 8.1 |
| Dec. 13..... | 303 | 27 | | 67 | 34 | 37 | 9.4 | 356 | 0 | 41 | 38 | .2 | 4.6 | .09 | 441 | .60 | 361 | 308 | 16 | .9 | 725 | 8.1 |
| Jan. 19, 1966.... | 272 | 26 | | 74 | 36 | 38 | 7.9 | 377 | 0 | 43 | 40 | .2 | 4.0 | .08 | 454 | .60 | 333 | 332 | 22 | .9 | 755 | 8.0 |
| Feb. 24..... | 281 | 25 | | 74 | 31 | 36 | 8.8 | 371 | 0 | 40 | 39 | .3 | 4.5 | .04 | 442 | .60 | 335 | 314 | 10 | .9 | 717 | 8.1 |
| Mar. 28..... | 551 | 21 | | 66 | 26 | 29 | 8.1 | 312 | 0 | 32 | 33 | .3 | 3.3 | .05 | A 377 | .51 | 561 | 272 | 16 | .8 | 617 | 8.0 |
| May 2..... | 340 | 20 | | 64 | 28 | 31 | 8.9 | 318 | 0 | 36 | 32 | .3 | 1.9 | .03 | 378 | .51 | 347 | 274 | 14 | .8 | 642 | 8.1 |
| June 10..... | 51 | 16 | | 47 | 24 | 35 | 20 | 276 | 0 | 38 | 37 | .4 | 1.1 | .07 | A 362 | .49 | 49.8 | 216 | 0 | 1.0 | 613 | 7.3 |
| July 15..... | 6.5 | 8 | | 51 | 29 | 44 | 17 | 300 | 0 | 46 | 44 | .4 | 1.2 | .10 | 399 | .53 | 7.00 | 246 | 0 | 1.2 | 674 | 7.8 |
| Sept. 29..... | 69 | 30 | | 66 | 31 | 46 | 16 | 344 | 10 | 51 | 46 | .4 | 1.1 | .17 | 467 | .61 | 87.0 | 292 | 10 | 1.2 | 738 | 8.4 |

A Residue at 180°C.

## RAFT RIVER BASIN

### 13-0780. RAFT RIVER AT PETERSON RANCH, NEAR BRIDGE, IDAHO

LOCATION.--Lat 42°04'00", long 113°27'00", at gaging station 100 feet upstream from One Mile Creek, 7.5 miles southwest of Bridge Post Office, Cassia County, 16 miles south of Malta, and 45.6 miles upstream from mouth.
DRAINAGE AREA.--412 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1965 to September 1966.

Chemical analyses, in parts per million, August 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Aug. 10, 1965.... | 10 | 35 | | 125 | 30 | 101 | 8.0 | 283 | 0 | 94 | 230 | 0.9 | 2.4 | 0.15 | 800 | 1.09 | 21.6 | 434 | 202 | 2.1 | 1290 | 8.0 |
| Nov. 16..... | 13 | 33 | | 112 | 24 | 82 | 7.3 | 256 | 0 | 74 | 192 | 0.7 | .4 | .12 | 659 | .90 | 23.1 | 376 | 166 | 1.8 | 1130 | 8.1 |
| Jan. 5, 1966..... | 11 | 34 | | 114 | 22 | 83 | 5.5 | 246 | 0 | 74 | 198 | .6 | 1.6 | .12 | A 654 | .86 | 19.4 | 376 | 174 | 2.2 | 1140 | 8.1 |
| Feb. 9..... | 14 | 32 | | 102 | 19 | 74 | 6.3 | 247 | 0 | 63 | 164 | .5 | 3.1 | .05 | 596 | .81 | 22.5 | 334 | 131 | 1.8 | 1010 | 7.9 |
| Mar. 25..... | 18 | 31 | | 93 | 20 | 83 | 6.5 | 269 | 0 | 57 | 150 | .7 | .8 | .06 | 586 | .80 | 28.5 | 312 | 92 | 2.1 | 953 | 8.0 |
| Apr. 29..... | 13 | 30 | | 109 | 23 | 90 | 7.0 | 235 | 0 | 80 | 208 | .6 | .0 | .10 | 684 | .93 | 24.0 | 368 | 175 | 2.0 | 1140 | 7.9 |
| June 2..... | 8.8 | 26 | | 115 | 26 | 97 | 6.9 | 254 | 0 | 88 | 222 | .7 | .8 | .21 | A 707 | .94 | 16.8 | 394 | 186 | 2.1 | 1210 | 8.2 |
| July 2..... | 5.9 | 28 | | 119 | 27 | 102 | 7.3 | 234 | 0 | 96 | 240 | .9 | .6 | .10 | 798 | 1.16 | 12.7 | 408 | 216 | 2.2 | 1260 | 8.0 |
| Aug. 17..... | 4.3 | 30 | | 122 | 30 | 95 | 7.6 | 256 | 0 | 93 | 232 | 1.2 | 1.4 | .13 | 751 | 1.02 | 8.72 | 428 | 218 | 2.0 | 1280 | 8.1 |
| Sept. 28..... | 4.1 | 31 | | 126 | 29 | 97 | 7.4 | 286 | 0 | 90 | 235 | 1.4 | .6 | .17 | A 759 | 1.00 | 8.40 | 434 | 200 | 2.0 | 1200 | 8.0 |

A Calculated from determined constituents.

RAFT RIVER BASIN--Continued

13-0799. RAFT RIVER AT YALE, IDAHO

LOCATION.--Lat 42°34'11", long 113°13'42", at county road bridge 0.5 mile south of Yale, Cassia County, 1.5 miles downstream from Calder Creek, and approximately 2 miles upstream from mouth.
DRAINAGE AREA.--1,510 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1965 to September 1966.

Chemical analyses, in parts per million, August 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Aug. 11, 1965.... | | 52 | | 74 | 37 | 162 | 19 | 474 | 0 | 62 | 170 | 0.6 | -- | 0.30 | 810 | 0.98 | | 338 | 0 | 3.8 | 1330 | 8.0 |
| Oct. 5..... | | 51 | | 66 | 37 | 167 | 20 | 496 | 0 | 60 | 158 | .7 | 3.3 | .36 | 808 | 1.07 | | 316 | 0 | 4.1 | 1320 | 7.9 |
| Nov. 15..... | | 54 | | 69 | 35 | 168 | 20 | 516 | 0 | 57 | 146 | .7 | 5.4 | .33 | 810 | 1.09 | | 318 | 0 | 4.1 | 1320 | 7.7 |
| Jan. 3, 1966..... | | 52 | | 77 | 34 | 140 | 14 | 414 | 0 | 64 | 182 | .6 | 4.0 | .28 | 772 | 1.03 | | 332 | 0 | 3.3 | 1270 | 7.6 |
| Feb. 7..... | | 47 | | 73 | 32 | 115 | 17 | 328 | 0 | 68 | 167 | .5 | 3.1 | .12 | A 688 | .94 | | 314 | 45 | 2.8 | 1140 | 7.4 |
| Mar. 23..... | | 47 | | 80 | 34 | 120 | 14 | 326 | 0 | 76 | 182 | .5 | 3.0 | .19 | 717 | .98 | | 340 | 73 | 2.8 | 1160 | 7.8 |
| Apr. 29..... | | 46 | | 76 | 35 | 128 | 15 | 357 | 0 | 74 | 187 | .6 | .4 | .28 | A 742 | 1.01 | | 334 | 0 | 3.0 | 1250 | 7.6 |
| May 31..... | | 48 | | 66 | 33 | 160 | 19 | 438 | 0 | 66 | 165 | .6 | 2.0 | .30 | 775 | 1.02 | | 300 | 0 | 4.0 | 1240 | 8.0 |
| July 1..... | | 48 | | 70 | 35 | 153 | 18 | 451 | 0 | 62 | 161 | .6 | 3.3 | .21 | 773 | 1.04 | | 318 | 0 | 3.7 | 1260 | 8.0 |
| Aug. 15..... | | 46 | | 61 | 35 | 143 | 18 | 419 | 0 | 58 | 158 | .7 | 1.4 | .26 | 727 | .98 | | 296 | 0 | 3.6 | 1200 | 8.1 |
| Sept. 26..... | | 49 | | 74 | 34 | 138 | 18 | 470 | 0 | 53 | 150 | .6 | 1.7 | .33 | 750 | .99 | | 324 | 0 | 3.3 | 1210 | 8.1 |

A Residue at 180°C.

SALMON FALLS CREEK BASIN

13-1081.5. SALMON FALLS CREEK NEAR BANBURY HOT SPRINGS, IDAHO

LOCATION.--Lat 42°41'47", long 114°51'14", at bridge on new U.S. Highway 30, 1.5 miles northwest of Banbury Hot Springs, Twin Falls County, 2.1 miles upstream from mouth, and 8 miles northwest of Buhl.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 6, 1965..... | | 41 | | 80 | 26 | 64 | 8.1 | 260 | 2 | 148 | 51 | 1.1 | 9.1 | 0.18 | A 559 | 0.74 | | 306 | 89 | 1.6 | 838 | 8.3 |
| Nov. 29..... | | 45 | | 85 | 26 | 72 | 9.0 | 266 | 2 | 164 | 56 | 1.0 | 12 | .13 | 604 | .82 | | 320 | 99 | 1.7 | 903 | 8.3 |
| Jan. 9, 1966..... | | 48 | | 88 | 28 | 74 | 7.7 | 274 | 0 | 174 | 58 | .9 | 7.4 | .14 | 632 | .86 | | 334 | 109 | 1.8 | 946 | 8.0 |
| Feb. 11..... | | 47 | | 88 | 27 | 74 | 9.7 | 266 | 0 | 178 | 62 | .8 | 12 | .09 | 636 | .86 | | 332 | 114 | 1.8 | 947 | 8.1 |
| Mar. 22..... | | 47 | | 83 | 29 | 78 | 8.7 | 260 | 0 | 181 | 61 | .9 | 12 | .10 | 634 | .86 | | 326 | 112 | 1.9 | 912 | 8.0 |
| Apr. 23..... | | 38 | | 80 | 24 | 60 | 8.3 | 256 | 0 | 147 | 50 | 1.1 | 6.7 | .08 | 549 | .75 | | 300 | 90 | 1.5 | 824 | 8.1 |
| June 8..... | | 34 | | 77 | 26 | 62 | 8.1 | 249 | 6 | 138 | 52 | 1.1 | 7.2 | .15 | 540 | .73 | | 299 | 85 | 1.6 | 815 | 8.4 |
| July 7..... | | 41 | | 79 | 27 | 72 | 9.0 | 262 | 6 | 151 | 59 | 1.3 | 7.7 | .18 | 602 | .82 | | 308 | 94 | 1.8 | 880 | 8.4 |
| Aug. 22..... | | 41 | | 85 | 27 | 70 | 8.8 | 280 | 7 | 153 | 56 | 1.1 | 9.1 | .23 | A 597 | .80 | | 323 | 94 | 1.7 | 873 | 8.4 |
| Sept. 28..... | | 40 | | 84 | 25 | 64 | 8.6 | 273 | 2 | 148 | 50 | .9 | 8.5 | .13 | A 566 | .76 | | 312 | 89 | 1.6 | 814 | 8.3 |

A Calculated from determined constituents.

## 13-1325. BIG LOST RIVER NEAR ARCO, IDAHO

LOCATION.--Lat 43°35'16", long 113°16'13", at bridge on county road, 3 miles southeast of Arco, Butte County.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1, 1965..... | -- | 15 | | 51 | 13 | 7.8 | 1.7 | 209 | 0 | 17 | 4.8 | 0.3 | 0.7 | 0.00 | 214 | 0.27 | -- | 180 | 8 | 0.3 | 358 | 8.0 |
| Dec. 1..... | -- | 14 | | 62 | 14 | 9.3 | 1.7 | 247 | 0 | 20 | 5.5 | .3 | 2.4 | .04 | 251 | .34 | -- | 212 | 10 | .3 | 434 | 8.0 |
| Jan. 10, 1966.... | -- | 13 | | 58 | 13 | 8.2 | 1.3 | 227 | 0 | 20 | 4.0 | .3 | 1.7 | .00 | 232 | .31 | -- | 198 | 12 | .3 | 402 | 7.9 |
| Feb. 15..... | -- | 13 | | 56 | 15 | 8.1 | 1.2 | 230 | 0 | 20 | 4.5 | .4 | 1.7 | .01 | 233 | .31 | -- | 202 | 13 | .2 | 403 | 8.0 |
| Mar. 28..... | -- | 11 | | 55 | 13 | 7.8 | 1.8 | 219 | 0 | 20 | 5.2 | .3 | 1.3 | .00 | A 225 | .31 | -- | 192 | 12 | .2 | 384 | 8.2 |
| May 4..... | -- | 11 | | 59 | 13 | 9.1 | 1.5 | 234 | 0 | 22 | 6.8 | .3 | 2.0 | .03 | A 245 | .33 | -- | 202 | 10 | .3 | 405 | 8.1 |
| June 9..... | 23 | 12 | | 51 | 17 | 11 | 2.0 | 223 | 0 | 26 | 8.5 | .3 | .4 | .00 | A 255 | .35 | 1.58 | 197 | 14 | .3 | 449 | 7.9 |
| July 8..... | 9.3 | 16 | | 56 | 17 | 13 | 2.8 | 240 | 0 | 28 | 8.8 | .4 | .1 | .02 | A 265 | .36 | 6.65 | 210 | 13 | .4 | 442 | 7.1 |
| Aug. 25..... | 3.4 | 16 | | 69 | 19 | 14 | 2.6 | 291 | 0 | 28 | 10 | .4 | .2 | .07 | 302 | .39 | 2.77 | 250 | 12 | .4 | 508 | 7.9 |
| Sept. 30..... | 1.8 | 16 | | 58 | 18 | 14 | 2.8 | 256 | 0 | 27 | 10 | .4 | .0 | .07 | 272 | .34 | 1.32 | 218 | 8 | .4 | 461 | 7.9 |

A Residue at 180°C.

## BIG WOOD RIVER BASIN

### 13-1525. BIG WOOD RIVER NEAR GOODING, IDAHO

LOCATION.--Lat 42°53'10", long 114°48'10", at gaging station at Hudson Ranch, 3.1 miles downstream from bridge on Bliss-Gooding highway, 4.2 miles downstream from Little Wood River, 5.5 miles upstream from diversion dam for King Hill project, 6 miles southwest of Gooding, Gooding County, and 7.8 miles upstream from mouth.
DRAINAGE AREA.--2,990 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: September 1965 to September 1966.

Chemical analyses, in parts per million, September 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Sept. 30, 1965... | -- | 15 | | 54 | 15 | 20 | 4.1 | 200 | 7 | 41 | 17 | 1.0 | 0.6 | 0.04 | 275 | 0.37 | -- | 198 | 22 | 0.6 | 444 | 8.6 |
| Nov. 28..... | 101 | 12 | | 56 | 14 | 16 | 3.0 | 218 | 3 | 33 | 12 | .8 | 1.1 | .07 | 259 | .35 | 60.6 | 198 | 15 | 0.5 | 440 | 8.3 |
| Jan. 3, 1966..... | 62 | 14 | | 56 | 13 | 5.8 | 1.6 | 225 | 0 | 17 | 2.5 | .3 | 3.3 | .05 | A 225 | .30 | 37.7 | 194 | 10 | .2 | 388 | 8.2 |
| Feb. 7..... | 91 | 14 | | 54 | 14 | 5.8 | 1.3 | 220 | 0 | 16 | 2.2 | .3 | 3.5 | .00 | 220 | .30 | 54.1 | 192 | 12 | .2 | 383 | 8.2 |
| Mar. 16..... | 239 | 14 | | 40 | 9.7 | 5.6 | 3.7 | 163 | 0 | 13 | 2.5 | .3 | 3.6 | .02 | A 173 | .23 | 112 | 140 | 6 | .2 | 289 | 7.6 |
| Apr. 24..... | 516 | 13 | | 47 | 12 | 15 | 2.0 | 180 | 0 | 31 | 12 | .9 | 1.0 | .02 | A 223 | .30 | 311 | 166 | 18 | .5 | 385 | 7.8 |
| July 5..... | 87 | 11 | | 56 | 17 | 22 | 4.5 | 214 | 0 | 49 | 19 | 1.4 | 1.2 | .08 | 288 | .39 | 67.7 | 210 | 34 | .7 | 482 | 8.0 |
| Aug. 22..... | 44 | 13 | | 62 | 17 | 25 | 4.7 | 236 | 0 | 53 | 22 | 1.3 | 1.2 | .20 | A 317 | .41 | 37.7 | 224 | 31 | .7 | 526 | 8.1 |

A Calculated from determined constituents.

## SNAKE RIVER MAIN STEM

### 13-1545. SNAKE RIVER AT KING HILL, IDAHO

LOCATION.--Lat 43°00'10", long 115°12'05", at county highway bridge, approximately 400 yards downstream from gaging station at King Hill, Elmore County, and 20 miles downstream from Big Wood River.
DRAINAGE AREA.--35,800 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: March 1951 to September 1966.
Water temperatures: March 1951 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 341 ppm Oct. 1-13; minimum, 228 ppm June 7.
Hardness: Maximum, 214 ppm Oct. 14 to Nov. 12; minimum, 140 ppm June 13.
Specific conductance: Maximum daily, 563 micromhos Oct. 17; minimum daily, 419 micromhos June 13.
Water temperatures: Maximum, 69°F Aug. 2, 3; minimum, 41°F Jan. 19, 21, Feb. 15.
EXTREMES, 1951-66.--Dissolved solids: Maximum, 375 ppm May 13, 14, 1963; minimum, 206 ppm Dec. 23, 24, 1964.
Hardness: Maximum, 221 ppm Apr. 14, 15, 1963; minimum, 125 ppm Dec. 23, 24, 1964.
Specific conductance: Maximum daily, 594 micromhos Oct. 3, 1952; minimum daily, 329 micromhos Dec. 23, 1964.
Water temperatures: Maximum, 73°F Aug. 2, 1955; minimum, 40°F Feb. 2, 1956.
REMARKS.--No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-13, 1965.. | 9752 | 33 | | 50 | 19 | 35 | 4.1 | 232 | 0 | 57 | 24 | 0.7 | 4.0 | 0.05 | A 341 | 0.46 | 8980 | 205 | 15 | 1.1 | 543 | 8.1 |
| Oct. 14-Nov. 12.. | 11995 | -- | | -- | -- | 34 | -- | 232 | 0 | -- | -- | -- | -- | -- | 339 | .46 | 10980 | 214 | 24 | 1.0 | 540 | 8.1 |
| Nov. 13-Dec. 2... | 12155 | -- | | -- | -- | 32 | -- | 230 | 0 | -- | -- | -- | -- | -- | 335 | .46 | 10990 | 211 | 22 | 1.0 | 531 | 8.1 |
| Dec. 3-31..... | 16886 | -- | | -- | -- | 28 | -- | 220 | 0 | -- | -- | -- | -- | -- | 310 | .42 | 14130 | 206 | 26 | .8 | 505 | 8.1 |
| Jan. 1-16, 1966.. | 15950 | 27 | | 52 | 18 | 28 | 4.2 | 217 | 0 | 49 | 22 | .9 | 3.5 | .04 | A 312 | .42 | 13440 | 202 | 24 | .9 | 499 | 8.1 |
| Jan. 17-31..... | 15600 | -- | | -- | -- | 29 | -- | 218 | 0 | -- | -- | -- | -- | -- | 305 | .41 | 12850 | 200 | 21 | .9 | 504 | 8.1 |
| Feb. 1-28..... | 14470 | -- | | -- | -- | 29 | -- | 216 | 0 | -- | -- | -- | -- | -- | 305 | .41 | 11920 | 200 | 23 | .9 | 504 | 8.1 |
| Mar. 1-31..... | 11480 | -- | | -- | -- | 28 | -- | 213 | 0 | -- | -- | -- | -- | -- | 300 | .41 | 9300 | 192 | 17 | .9 | 498 | 8.1 |
| Apr. 1-8..... | 9661 | -- | | -- | -- | 28 | -- | 202 | 0 | -- | -- | -- | -- | -- | 281 | .38 | 7330 | 180 | 14 | .9 | 464 | 7.9 |
| Apr. 9-16..... | 8030 | -- | | -- | -- | 29 | -- | 204 | 0 | -- | -- | -- | -- | -- | 290 | .39 | 6290 | 182 | 15 | .9 | 469 | 7.9 |
| Apr. 17-26..... | 7880 | 29 | | 46 | 19 | 31 | 4.5 | 210 | 0 | 50 | 24 | .7 | 3.5 | .04 | A 311 | .42 | 6620 | 192 | 20 | 1.0 | 501 | 7.9 |
| Apr. 27-28..... | 7365 | -- | | 46 | 19 | 32 | -- | 212 | 0 | -- | -- | -- | -- | -- | 307 | .42 | 6100 | 192 | 18 | 1.0 | 508 | 8.0 |
| Apr. 29-May 16... | 6893 | -- | | 45 | 20 | 32 | -- | 214 | 0 | -- | -- | -- | -- | -- | 310 | .42 | 5770 | 194 | 18 | 1.0 | 505 | 8.1 |
| May 17-31..... | 6823 | -- | | 43 | 20 | 32 | -- | 208 | 0 | -- | -- | -- | -- | -- | 308 | .42 | 5670 | 188 | 17 | 1.0 | 501 | 8.0 |
| June 1-6..... | 6935 | -- | | -- | -- | 33 | -- | 210 | 0 | -- | -- | -- | -- | -- | 311 | .42 | 5820 | 191 | 19 | 1.0 | 502 | 8.0 |
| June 7..... | 7400 | -- | | -- | -- | 37 | -- | 170 | 0 | -- | -- | -- | -- | -- | 228 | .31 | 4560 | 145 | 5 | 1.3 | 413 | 8.2 |
| June 8-12..... | 7356 | -- | | -- | -- | 33 | -- | 216 | 0 | -- | -- | -- | -- | -- | 322 | .44 | 6400 | 196 | 19 | 1.0 | 511 | 8.1 |

A Calculated from determined constituents.

SNAKE RIVER MAIN STEM--Continued

13-1545. SNAKE RIVER AT KING HILL, IDAHO--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| June 13, 1966.... | 7350 | -- | | -- | -- | 37 | -- | 154 | 0 | -- | -- | -- | -- | -- | 243 | 0.33 | 4820 | 140 | 14 | 1.4 | 419 | 8.0 |
| June 14-30..... | 7152 | -- | | -- | -- | 34 | -- | 214 | 0 | -- | -- | -- | -- | -- | 317 | .43 | 6120 | 194 | 18 | 1.1 | 504 | 8.1 |
| July 1-30..... | 7259 | 29 | | 44 | 20 | 34 | 4.5 | 216 | 0 | 53 | 24 | 0.7 | 3.0 | 0.04 | A 318 | .43 | 6230 | 194 | 17 | 1.1 | 510 | 8.1 |
| July 31-Aug. 18.. | 7743 | -- | | 46 | 20 | 32 | -- | 224 | 0 | -- | -- | -- | -- | -- | 318 | .43 | 6650 | 198 | 14 | 1.0 | 512 | 7.9 |
| Aug. 19-Sept. 14. | 8031 | -- | | 48 | 20 | 33 | -- | 230 | 0 | -- | -- | -- | -- | -- | 332 | .45 | 7200 | 202 | 13 | 1.0 | 513 | 8.0 |
| Sept. 15-30..... | 8586 | -- | | 50 | 20 | 34 | -- | 234 | 0 | -- | -- | -- | -- | -- | 340 | .46 | 7880 | 208 | 16 | 1.0 | 522 | 7.9 |
| Weighted average | -- | -- | | -- | -- | 31 | -- | 220 | -- | -- | -- | -- | -- | -- | 316 | 0.43 | 9040 | 200 | 20 | 0.9 | 510 | 8.1 |
| Time-weighted average..... | 10590 | -- | | -- | -- | 31 | -- | 219 | -- | -- | -- | -- | -- | -- | 317 | -- | -- | 199 | 19 | 1.0 | 509 | 8.0 |
| Tons per day... | -- | -- | | -- | -- | 882 | -- | 6290 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

A Calculated from determined constituents.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October ..... | 59 | 60 | 60 | 60 | 58 | 58 | 60 | 62 | 62 | 60 | 60 | 60 | 59 | 55 | 59 | 57 | 55 | 54 | 55 | 56 | 55 | 56 | 56 | 57 | 57 | 56 | 56 | 57 | 56 | 56 | 56 | 58 |
| November ..... | 55 | 55 | 54 | 54 | 54 | 55 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 53 | 53 | 54 | 54 | 53 | 53 | 52 | 51 | 51 | 52 | 51 | 51 | 52 | 50 | 48 | 48 | 48 | -- | 52 |
| December ..... | 48 | 47 | 47 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 45 | 44 | 44 | 44 | 45 | 43 | 43 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 43 | 44 |
| January..... | 44 | 42 | 43 | 44 | 45 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 43 | 44 | 43 | 41 | 42 | 41 | 42 | 43 | 44 | 42 | 43 | 43 | 44 | 44 | 45 | 44 | 44 |
| February..... | 45 | 44 | 45 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 43 | 43 | 42 | 42 | 41 | 42 | 43 | 45 | 45 | 46 | 47 | 46 | 46 | 45 | 46 | 47 | 47 | 46 | -- | -- | -- | 45 |
| March..... | 46 | 44 | 43 | 42 | 43 | 44 | 45 | 47 | 47 | 48 | 49 | 48 | 50 | 49 | 48 | 50 | 51 | 50 | 51 | 50 | 49 | 48 | 49 | 51 | 53 | 54 | 55 | 56 | 58 | 58 | 58 | 49 |
| April..... | 57 | 57 | 58 | 57 | 58 | 57 | 57 | 59 | 58 | 58 | 57 | 57 | 58 | 60 | 61 | 59 | 58 | 56 | 55 | 53 | 54 | 54 | 55 | 56 | 57 | 57 | 58 | 58 | 57 | 59 | -- | 57 |
| May..... | 59 | 61 | 62 | 63 | 63 | 65 | 65 | 65 | 64 | 62 | 61 | 59 | 59 | 58 | 58 | 58 | 59 | 60 | 61 | 63 | 64 | 62 | 61 | 62 | 63 | 63 | 65 | 65 | 66 | 65 | 64 | 62 |
| June ..... | 63 | 61 | 61 | 61 | 62 | 63 | 62 | 63 | 63 | 62 | 62 | 63 | 65 | 67 | 66 | 66 | 67 | 67 | 68 | 68 | 66 | 65 | 63 | 63 | 64 | 65 | 64 | 66 | 68 | 67 | -- | 64 |
| July..... | 67 | 68 | 67 | 68 | 67 | 67 | 68 | 65 | 67 | 68 | 67 | 67 | 68 | 65 | 65 | 68 | 67 | 67 | 67 | 68 | 67 | 67 | 68 | 67 | 67 | 68 | 66 | 67 | 67 | 67 | 67 | 67 |
| August..... | 67 | 69 | 69 | 68 | 67 | 66 | 68 | 67 | 66 | 67 | 66 | 65 | 64 | 64 | 64 | 65 | 65 | 64 | 65 | 64 | 65 | 64 | 65 | 65 | 66 | 64 | 65 | 64 | 64 | 63 | 64 | 65 |
| September..... | 63 | 64 | 62 | 62 | 64 | 64 | 64 | 66 | 64 | 65 | 65 | 64 | 62 | 60 | 61 | 60 | 62 | 63 | 62 | 63 | 64 | 64 | 64 | 64 | 64 | 62 | 61 | 63 | 63 | 62 | -- | 63 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 554 | 537 | 533 | 517 | 507 | 522 | 466 | 514 | 472 | 491 | 498 | 505 |
| 2 | 554 | 533 | 538 | 515 | 512 | 499 | 489 | 507 | 513 | 511 | 499 | 505 |
| 3 | 531 | 536 | 529 | 518 | 502 | 493 | 472 | 507 | 513 | 512 | 481 | 499 |
| 4 | 556 | 534 | 530 | 519 | 502 | 501 | 437 | 507 | 510 | 514 | 516 | 511 |
| 5 | 555 | 537 | 526 | 515 | 506 | 480 | 461 | 494 | 510 | 495 | 519 | 510 |
| 6 | 555 | 537 | 512 | 515 | 510 | 490 | 455 | 504 | 507 | 494 | 505 | 508 |
| 7 | 551 | 535 | 516 | 510 | 507 | 504 | 449 | 504 | 422 | 475 | 507 | 506 |
| 8 | 547 | 533 | 512 | 501 | 507 | 503 | 433 | 507 | 498 | 493 | 516 | 501 |
| 9 | 545 | 525 | 514 | 498 | 507 | 502 | 477 | 507 | 511 | 482 | 513 | 506 |
| 10 | 550 | 532 | 514 | 504 | 507 | 486 | 486 | 506 | 510 | 480 | 516 | 509 |
| 11 | 512 | 536 | 511 | 505 | 503 | 484 | 458 | 506 | 521 | 486 | 518 | 505 |
| 12 | 544 | 528 | 513 | 505 | 507 | 490 | 458 | 513 | 521 | 498 | 508 | 501 |
| 13 | 549 | 529 | 511 | 499 | 502 | 497 | 464 | 513 | 419 | 507 | 514 | 507 |
| 14 | 557 | 532 | 511 | 494 | 502 | 504 | 471 | 510 | 513 | 517 | 516 | 505 |
| 15 | 555 | 533 | 512 | 491 | 503 | 501 | 469 | 511 | 508 | 509 | 518 | 512 |
| 16 | 550 | 537 | 510 | 491 | 504 | 499 | 481 | 510 | 515 | 516 | 518 | 515 |
| 17 | 563 | 537 | 511 | 476 | 506 | 500 | 508 | 501 | 516 | 519 | 520 | 516 |
| 18 | 552 | 538 | 509 | 484 | 505 | 506 | 508 | 509 | 517 | 516 | 477 | 513 |
| 19 | 549 | 533 | 510 | 483 | 503 | 509 | 511 | 487 | 455 | 522 | 519 | 517 |
| 20 | 539 | 536 | 512 | 501 | 502 | 514 | 510 | 487 | 513 | 519 | 516 | 513 |
| 21 | 530 | 538 | 512 | 504 | 496 | 504 | 503 | 499 | 514 | 526 | 516 | 516 |
| 22 | 544 | 533 | 512 | 505 | 502 | 496 | 503 | 501 | 515 | 526 | 507 | 520 |
| 23 | 538 | 535 | 513 | 509 | 507 | 496 | 477 | 503 | 517 | 524 | 518 | 520 |
| 24 | 541 | 536 | 513 | 510 | 507 | 500 | 505 | 479 | 515 | 523 | 505 | 504 |
| 25 | 542 | 533 | 511 | 507 | 507 | 499 | 507 | 485 | 460 | 524 | 504 | 512 |
| 26 | 535 | 532 | 510 | 499 | 506 | 487 | 497 | 510 | 510 | 527 | 502 | 515 |
| 27 | 535 | 529 | 508 | 499 | 503 | 488 | 510 | 508 | 519 | 528 | 497 | 532 |
| 28 | 538 | 536 | 512 | 506 | 502 | 476 | 506 | 506 | 516 | 520 | 497 | 524 |
| 29 | 529 | 536 | 508 | 512 | -- | 480 | 507 | 505 | 516 | 525 | 502 | 528 |
| 30 | 529 | 537 | 511 | 513 | -- | 478 | 516 | 507 | 517 | 529 | 504 | 528 |
| 31 | 538 | -- | 515 | 502 | -- | 478 | -- | 501 | -- | 496 | 504 | -- |
| Average | 544 | 534 | 514 | 503 | 505 | 495 | 483 | 503 | 502 | 509 | 508 | 512 |

## BOISE RIVER BASIN

### 13-2000. MORES CREEK ABOVE ROBIE CREEK, NEAR ARROWROCK DAM, IDAHO

LOCATION.--Lat 43°38'45", long 115°58'45", temperature recorder at gaging station on left bank at State roadside park, 1.7 miles upstream from Robie Creek, 5 miles northwest of Arrowrock Dam, Boise County, and at mile 5.8.
DRAINAGE AREA.--399 square miles.
RECORDS AVAILABLE.--Water temperatures: December 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, freezing point on several days during December and January.
EXTREMES, 1964-66.--Water temperatures: Maximum (1964-65), 75°F Aug. 1, 1965; minimum (1965-66), freezing point on several days during December 1965 and January 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 51 | 49 | 49 | 51 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 51 |
| Minimum .... | 48 | 49 | 50 | 49 | 51 | 50 | 50 | 50 | 50 | 51 | 50 | 50 | 51 | 50 | 51 | 47 | 46 | 45 | 49 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 46 | 46 | 46 | 45 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 48 | 48 | 47 | 47 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 47 | 46 | 46 | 46 | 44 | 43 | 43 | 42 | 41 | 41 | 39 | 38 | 38 | 37 | 36 | 35 | -- | 44 |
| Minimum .... | 45 | 44 | 45 | 46 | 46 | 46 | 43 | 43 | 42 | 43 | 44 | 44 | 44 | 45 | 45 | 44 | 45 | 44 | 43 | 41 | 42 | 39 | 40 | 39 | 38 | 37 | 36 | 36 | 35 | 35 | -- | 42 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 35 | 36 | 36 | 35 | 35 | 35 | 35 | 37 | 37 | 36 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 35 |
| Minimum .... | 34 | 34 | 34 | 35 | 35 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 33 | 34 | 33 | 33 | 33 | 33 | 32 | 33 | 33 | 33 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 34 | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 33 | 32 | 33 | 33 | 33 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 34 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 36 | 36 | 37 | 37 | -- | -- | -- | 34 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 36 | -- | -- | -- | 33 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 35 | 35 | 35 | 35 | 37 | 38 | 39 | 39 | 40 | 41 | 39 | 39 | 39 | 40 | 41 | 40 | 40 | 40 | 40 | 41 | 42 | 44 | 47 | 47 | 47 | 46 | 47 | 47 | 47 | 41 |
| Minimum .... | 35 | 34 | 34 | 34 | 34 | 34 | 35 | 36 | 37 | 36 | 34 | 35 | 37 | 36 | 36 | 37 | 36 | 36 | 38 | 36 | 37 | 35 | 35 | 36 | 38 | 39 | 39 | 39 | 39 | 40 | 41 | 36 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 47 | 47 | 48 | 49 | 49 | 50 | 50 | 47 | 47 | 47 | 48 | 51 | 53 | 53 | 53 | 47 | 47 | 46 | 48 | 51 | 51 | 54 | 54 | 52 | 48 | 50 | 52 | 53 | -- | 50 |
| Minimum .... | 41 | 43 | 41 | 40 | 41 | 42 | 43 | 44 | 46 | 45 | 43 | 44 | 42 | 43 | 45 | 48 | 46 | 43 | 41 | 41 | 43 | 42 | 45 | 45 | 49 | 47 | 43 | 43 | 45 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 58 | 60 | 61 | 60 | 61 | 60 | 60 | 60 | 58 | 57 | 54 | 56 | 56 | 54 | 57 | 58 | 59 | 60 | 62 | 62 | 61 | 57 | 61 | 64 | 65 | 66 | 66 | 64 | 66 | 65 | 60 |
| Minimum .... | 47 | 49 | 51 | 53 | 54 | 55 | 52 | 53 | 56 | 53 | 51 | 49 | 50 | 51 | 47 | 51 | 50 | 50 | 52 | 54 | 56 | 54 | 49 | 52 | 55 | 57 | 59 | 60 | 58 | 58 | 58 | 53 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 64 | 63 | 59 | 61 | 61 | 63 | 66 | 65 | 65 | 65 | 64 | 66 | 68 | 70 | 70 | 71 | 72 | 72 | 72 | 71 | 68 | 67 | 66 | 67 | 70 | 72 | 74 | 76 | 76 | -- | 68 |
| Minimum .... | 55 | 57 | 57 | 53 | 51 | 55 | 57 | 60 | 62 | 60 | 60 | 58 | 59 | 62 | 64 | 65 | 65 | 68 | 67 | 68 | 67 | 63 | 63 | 62 | 60 | 62 | 66 | 68 | 71 | 71 | -- | 62 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 75 | 73 | 72 | 72 | 74 | 75 | 76 | 75 | 75 | 77 | 72 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 80 | 79 | 78 | 78 | 79 | 78 | 79 | 78 | 78 | 78 | 79 | 78 | 77 | 77 |
| Minimum .... | 70 | 70 | 66 | 66 | 67 | 69 | 70 | 70 | 71 | 72 | 71 | 72 | 72 | 72 | 72 | 71 | 71 | 71 | 73 | 74 | 73 | 71 | 72 | 73 | 73 | 71 | 71 | 72 | 71 | 72 | 74 | 71 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 79 | 80 | 80 | 82 | 81 | 79 | 78 | 78 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 72 | 73 | 75 | 75 | 75 | 73 | 72 | 72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 61 | 61 | 61 | 60 | 59 | 57 | 58 | 58 | 58 | 58 | 62 | 62 | 62 | 62 | 62 | 58 | 58 | 56 | 57 | 58 | 58 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 56 | 57 | 57 | 56 | 56 | 54 | 54 | 56 | 57 | 57 | 58 | 59 | 59 | 59 | 57 | 57 | 56 | 53 | 53 | 54 | 55 | -- | -- |

BOISE RIVER BASIN--Continued

13-2020. BOISE RIVER NEAR BOISE, IDAHO

LOCATION.--Lat 43°31'33", long 116°04'02", at cableway below gaging station, 0.3 mile downstream from Lydle Gulch, 1.5 miles upstream from diversion dam for New York Canal, and 9 miles southeast of Boise, Ada County.
DRAINAGE AREA.--2,680 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1965 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 6, 1965..... | 3040 | 8.7 | | 8.8 | 0.8 | 3.1 | 0.7 | 37 | 0 | 2.2 | 0.0 | 0.3 | 0.2 | 0.00 | 46 | 0.06 | 378 | 25 | 0 | 0.3 | 64 | 7.2 |
| Dec. 5, 1965..... | 172 | 11 | | 10 | 1.2 | 3.5 | .8 | 43 | 0 | 2.6 | .0 | .3 | .4 | .01 | 56 | .08 | 26.0 | 30 | 0 | .3 | 78 | 7.3 |
| Jan. 11, 1966.... | 172 | 11 | | 10 | 1.6 | 3.8 | .6 | 44 | 0 | 3.6 | .0 | .3 | .4 | .08 | 57 | .08 | 26.5 | 32 | 0 | .3 | 81 | 7.4 |
| Feb. 24..... | 177 | 11 | | 10 | 1.8 | 4.0 | .7 | 46 | 0 | 3.6 | .2 | .4 | .5 | .00 | A 56 | .07 | 26.8 | 32 | 0 | .3 | 84 | 7.5 |
| Mar. 22..... | 1590 | 11 | | 10 | 1.8 | 4.0 | 1.0 | 48 | 0 | 3.2 | .0 | .3 | .5 | .00 | 58 | .08 | 249 | 32 | 0 | .3 | 85 | 7.4 |
| Apr. 20..... | 4460 | 11 | | 11 | 1.2 | 4.3 | .9 | 45 | 0 | 3.2 | .0 | .3 | .1 | .02 | 55 | .07 | 662 | 32 | 0 | .3 | 86 | 7.2 |
| June 9..... | 4640 | 9.4 | | 10 | 1.1 | 3.8 | .6 | 40 | 0 | 2.6 | .0 | .2 | .5 | .01 | 50 | .07 | 626 | 30 | 0 | .3 | 75 | 6.9 |
| July 31..... | 4270 | 8.9 | | 9.3 | 1.2 | 3.4 | .7 | 38 | 0 | 2.8 | .0 | .3 | .4 | .03 | 46 | .06 | 530 | 28 | 0 | .3 | 71 | 7.1 |
| Sept. 15..... | 2440 | 11 | | 11 | 1.5 | 4.2 | .9 | 48 | 0 | 3.0 | .2 | .3 | .8 | .05 | A 57 | .07 | 376 | 34 | 0 | .3 | 85 | 7.3 |

A Calculated from determined constituents.

BOISE RIVER BASIN--Continued

## 13-2125. BOISE RIVER AT NOTUS, IDAHO
(Irrigation network station)

LOCATION.--Lat 43°43'21", long 116°47'34" at highway bridge 1,100 feet downstream from gaging station, 0.2 mile southeast of Notus, Canyon County, and 7 miles northwest of Caldwell.
DRAINAGE AREA.--3,820 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: January 1939 to January 1940, November 1950 to September 1966.
Water temperatures: November 1950 to September 1966.
Sediment records: January 1939 to June 1940.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 421 ppm Sept. 21-25; minimum, 262 ppm June 2-15.
Hardness: Maximum, 179 ppm Oct. 16-30; minimum, 116 ppm June 2-15.
Specific conductance: Maximum daily, 663 micromhos Dec. 3; minimum daily, 396 micromhos June 3.
Water temperatures: Maximum, 82°F July 16.
EXTREMES, 1939-40, 1950-66.--Dissolved solids: Maximum, 914 ppm Aug. 21-31, 1939; minimum, 77 ppm May 1-10, 1952, June 11-20, 1953.
Hardness: Maximum, 284 ppm July 21-31, 1939; minimum, 35 ppm June 11-26, 1953.
Specific conductance: Maximum daily, 1,470 micromhos July 30, Aug. 26, 1939; minimum daily, 82 micromhos Apr. 27, 1952.
Water temperatures: Maximum, 85°F on several days during summer months in 1951, 1952, 1954; minimum (1939-40, 1950-64), freezing point Jan. 31, 1956, Jan. 11-14, 1963.
REMARKS.--No appreciable inflow between gaging station and sampling point except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-15, 1965.. | 1454 | -- | | -- | -- | 62 | -- | 237 | 2 | -- | -- | -- | -- | -- | 359 | 0.49 | 1410 | 162 | 0 | 2.1 | 546 | 8.3 |
| Oct. 16-30..... | 960 | 34 | | 48 | 14 | 70 | 4.3 | 268 | 0 | 75 | 18 | 0.6 | 6.8 | 0.04 | 406 | .55 | 1050 | 179 | 0 | 2.3 | 617 | 8.1 |
| Nov. 15-Dec. 3... | 901 | -- | | -- | -- | 60 | -- | 238 | 0 | -- | -- | -- | -- | -- | 352 | .48 | 856 | 165 | 0 | 2.0 | 577 | 7.9 |
| Dec. 4-15..... | 814 | -- | | -- | -- | 62 | -- | 292 | 0 | -- | -- | -- | -- | -- | 365 | .50 | 802 | 164 | 0 | 2.1 | 589 | 7.6 |
| Dec. 16-Jan. 5, 1966..... | 746 | -- | | -- | -- | 61 | -- | 239 | 0 | -- | -- | -- | -- | -- | 363 | .49 | 731 | 160 | 0 | 2.1 | 562 | 7.9 |
| Jan. 6-13..... | 728 | -- | | -- | -- | 56 | -- | 213 | 6 | -- | -- | -- | -- | -- | 347 | .47 | 682 | 118 | 0 | 2.2 | 532 | 8.4 |
| Jan. 14-28..... | 707 | 29 | | 43 | 12 | 60 | 5.0 | 238 | 0 | 65 | 21 | .5 | 5.0 | .06 | A 358 | .49 | 683 | 158 | 0 | 2.1 | 560 | 7.7 |
| Jan. 29-Feb. 27.. | 667 | -- | | -- | -- | 56 | -- | 217 | 0 | -- | -- | -- | -- | -- | 336 | .46 | 605 | 146 | 0 | 2.0 | 538 | 7.5 |
| June 2-15..... | 660 | -- | | -- | -- | 44 | -- | 178 | 0 | -- | -- | -- | -- | -- | 262 | .36 | 467 | 116 | 0 | 1.8 | 415 | 7.5 |
| June 16-29..... | 286 | -- | | -- | -- | 62 | -- | 220 | 0 | -- | -- | -- | -- | -- | 344 | .47 | 266 | 140 | 0 | 2.3 | 524 | 7.6 |
| June 30-July 3... | 144 | -- | | -- | -- | 72 | -- | 242 | 0 | -- | -- | -- | -- | -- | 390 | .53 | 152 | 154 | 0 | 2.5 | 592 | 7.7 |
| July 4-21..... | 215 | 27 | | 39 | 11 | 62 | 4.2 | 224 | 0 | 64 | 16 | .6 | 4.1 | .06 | 340 | .46 | 197 | 142 | 0 | 2.3 | 527 | 7.6 |
| July 22-29..... | 210 | -- | | -- | -- | 67 | -- | 236 | 0 | -- | -- | -- | -- | -- | 368 | .50 | 209 | 150 | 0 | 2.4 | 563 | 7.7 |
| Aug. 1-31..... | 190 | -- | | 44 | 13 | 72 | -- | 254 | 0 | -- | -- | -- | -- | -- | 403 | .55 | 207 | 164 | 0 | 2.5 | 608 | 7.9 |
| Sept. 1-20..... | 409 | -- | | 42 | 12 | 59 | -- | 237 | 0 | -- | -- | -- | -- | -- | 370 | .50 | 409 | 154 | 0 | 2.1 | 555 | 8.0 |
| Sept. 21-25..... | 201 | -- | | 40 | 13 | 76 | -- | 276 | 0 | -- | -- | -- | -- | -- | 421 | .57 | 228 | 154 | 0 | 2.7 | 634 | 8.0 |
| Sept. 26-30..... | 353 | -- | | 42 | 12 | 61 | -- | 244 | 0 | -- | -- | -- | -- | -- | 369 | .50 | 352 | 154 | 0 | 2.1 | 557 | 8.1 |

A Calculated from determined constituents.

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 531 | -- | 576 | 537 | 537 | | | | -- | 576 | 542 | 552 |
| 2 | 541 | -- | 574 | 550 | 535 | | | | 400 | 597 | 602 | 551 |
| 3 | 547 | -- | 663 | 540 | 532 | | | | 396 | 599 | 588 | 558 |
| 4 | 539 | -- | 588 | 564 | 530 | | | | 413 | 551 | 585 | 571 |
| 5 | 540 | -- | 588 | 580 | 533 | | | | 411 | 552 | 599 | 581 |
| 6 | 543 | -- | 638 | 531 | 534 | | | | 398 | 533 | 608 | 554 |
| 7 | 542 | -- | 594 | 563 | 544 | | | | 419 | 548 | 602 | 578 |
| 8 | 539 | -- | 595 | 539 | 542 | | | | 407 | 546 | 605 | 553 |
| 9 | 543 | -- | 595 | 530 | 550 | | | | 419 | 527 | 601 | 565 |
| 10 | 538 | -- | 587 | 536 | 547 | | | | 420 | 550 | 618 | 557 |
| 11 | 537 | -- | 583 | 532 | 548 | | | | 417 | 562 | 618 | 578 |
| 12 | 545 | -- | 586 | 533 | 549 | | | | 408 | 499 | 644 | 572 |
| 13 | 538 | -- | 586 | 544 | 551 | | | | 412 | 536 | 631 | 572 |
| 14 | 541 | -- | 616 | 563 | 567 | | | | 449 | 559 | 637 | 555 |
| 15 | 543 | 567 | 627 | 582 | 548 | | | | 467 | 565 | 610 | 536 |
| 16 | 599 | 570 | 544 | 549 | 553 | | | | 516 | 490 | 601 | 524 |
| 17 | 600 | 571 | 538 | 554 | 548 | | | | 572 | 545 | 621 | 533 |
| 18 | 601 | 572 | 541 | 572 | 560 | | | | 574 | 540 | 601 | 561 |
| 19 | 597 | 574 | 578 | 555 | 571 | | | | 526 | 473 | 607 | 559 |
| 20 | 612 | 572 | 590 | 559 | 561 | | | | 538 | 470 | 640 | 553 |
| 21 | 609 | 564 | 562 | 573 | 556 | | | | 555 | 479 | 637 | 584 |
| 22 | 604 | 571 | 580 | 580 | 532 | | | | 541 | 549 | 606 | 632 |
| 23 | 612 | 566 | 580 | 566 | 542 | | | | 520 | 548 | 616 | 654 |
| 24 | 604 | 575 | 564 | 569 | 554 | | | | 481 | 551 | 624 | 644 |
| 25 | 612 | 570 | 563 | 581 | 547 | | | | 468 | 565 | 633 | 642 |
| 26 | 615 | 571 | 569 | 548 | 534 | | | | 485 | 547 | 642 | 600 |
| 27 | 624 | 569 | 590 | 562 | 522 | | | | 485 | 510 | 655 | 586 |
| 28 | 642 | -- | 580 | 576 | -- | | | | 554 | 587 | 629 | 560 |
| 29 | 628 | 567 | 564 | 522 | -- | | | | 553 | 624 | 603 | 554 |
| 30 | 651 | 575 | 549 | 528 | -- | | | | 591 | -- | 583 | 524 |
| 31 | -- | -- | 543 | 552 | -- | | | | -- | -- | 557 | -- |
| Average | 562 | -- | 581 | 554 | 545 | | | | 476 | 543 | 611 | 571 |

BOISE RIVER BASIN--Continued

13-2125. BOISE RIVER AT NOTUS, IDAHO--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Aver-age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 71 | 69 | 65 | 66 | 68 | 66 | 67 | 68 | 69 | 69 | 66 | 67 | 69 | 69 | 69 | 61 | 61 | 62 | 60 | 60 | 62 | 61 | 60 | 60 | 60 | 55 | 55 | 58 | 55 | 55 | -- | 63 |
| November | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | 45 | 45 | 45 | 44 | 43 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 42 | 41 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 39 | 39 | 43 | 43 | 40 | 42 | 40 | 42 |
| January | 41 | 41 | 42 | 42 | 42 | 41 | 40 | 41 | 40 | 43 | 41 | 40 | 42 | 40 | 39 | 40 | 37 | 38 | 39 | 37 | 37 | 36 | 38 | 36 | 36 | 38 | 38 | 37 | 39 | 40 | 39 | 39 |
| February | 39 | 39 | 38 | -- | 39 | 38 | 39 | 38 | 38 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 38 | 39 | 39 | 38 | 39 | 39 | 40 | -- | -- | -- | -- | 39 |
| March | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | -- | 68 | 59 | 60 | 64 | 63 | 67 | 67 | 65 | 68 | 65 | 64 | 67 | 70 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 65 | 72 | 75 | 80 | 76 | -- | -- |
| July | 75 | 72 | 76 | 78 | 77 | 78 | 77 | 78 | 78 | 76 | -- | -- | -- | 74 | 74 | 82 | 80 | 79 | 76 | 67 | 70 | 76 | 80 | 80 | 76 | 76 | 78 | 77 | 75 | -- | -- | 76 |
| August | 75 | 75 | 76 | 78 | 78 | 77 | 76 | 69 | 74 | 77 | 70 | 71 | 68 | 72 | 71 | 73 | 75 | 72 | 75 | 70 | 70 | 69 | 73 | 75 | 72 | 64 | 67 | 72 | 66 | 64 | 64 | 72 |
| September | 65 | 65 | 68 | 69 | 69 | 70 | 68 | 70 | 67 | 68 | 67 | 65 | 64 | 62 | 66 | 68 | 69 | 65 | 65 | 68 | 69 | 70 | 71 | 69 | 65 | 60 | 65 | 66 | 65 | 63 | -- | 67 |

## 13-2513. WEST BRANCH WEISER RIVER NEAR TAMARACK, IDAHO

LOCATION.--Lat 45°01'14", long 116°26'06", temperature recorder at gaging station on left bank at Price Valley Guard station, 0.1 mile upstream from East Branch Weiser River, and 5.2 miles northwest of Tamarack, Adams County.
DRAINAGE AREA.--3.96 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1959 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 62°F July 31; minimum, freezing point on several days during winter months.
EXTREMES, 1959-66.--Water temperatures: Maximum (1959-63, 1964-66), 62°F July 20, 1960, Aug. 12, 1963, July 31, 1966; minimum, freezing point on several days during winter months.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 47 | 47 | 47 | 48 | 48 | 47 | 48 | 48 | 48 | 46 | 46 | 47 | 47 | 47 | 44 | 42 | 44 | 46 | 45 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 43 | 42 | 42 | 42 | 45 |
| Minimum .... | 40 | 41 | 42 | 42 | 46 | 43 | 42 | 43 | 43 | 43 | 42 | 41 | 45 | 43 | 44 | 40 | 40 | 41 | 44 | 40 | 40 | 40 | 39 | 39 | 39 | 38 | 37 | 40 | 38 | 38 | 38 | 41 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 43 | 42 | 42 | 40 | 40 | 40 | 39 | 39 | 39 | 40 | 41 | 41 | 42 | 40 | 40 | 41 | 39 | 38 | 38 | 37 | 36 | 34 | 34 | 34 | 34 | 34 | 34 | -- | 39 |
| Minimum .... | 37 | 37 | 37 | 39 | 38 | 39 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 40 | 41 | 40 | 39 | 39 | 39 | 37 | 37 | 36 | 36 | 34 | 34 | 34 | 34 | 33 | 32 | 33 | -- | 37 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 35 | 36 | 36 | 35 | 34 | 34 | 36 | 36 | 36 | 36 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 36 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 35 | 35 |
| Minimum .... | 33 | 33 | 33 | 34 | 35 | 35 | 33 | 34 | 33 | 34 | 36 | 36 | 35 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 35 | 34 | 34 | 34 | 35 | 34 | 34 | 34 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 35 |
| Minimum .... | 35 | 35 | 35 | 34 | 34 | 34 | 33 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 35 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 33 | 33 | 34 | 34 | 33 | 34 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | -- | -- | -- | 34 |
| Minimum .... | 32 | 32 | 32 | 33 | 34 | 34 | 34 | 33 | 33 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 33 | 32 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 35 | 35 | 35 | -- | -- | -- | 33 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 35 | 35 | 36 | 37 | 38 | 37 | 37 | 37 | 35 |
| Minimum .... | 34 | 33 | 33 | 33 | 33 | 33 | 32 | 33 | 32 | 32 | 34 | 35 | 33 | 34 | 35 | 35 | 34 | 34 | 35 | 34 | 35 | 33 | 33 | 34 | 34 | 35 | 36 | 35 | 34 | 34 | 36 | 34 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 40 | 42 | 41 | 43 | 43 | 41 | 41 | 41 | 39 | 41 | 41 | 43 | 45 | 43 | 41 | 42 | 43 | 42 | 45 | -- | 41 |
| Minimum .... | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 39 | 38 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 38 | 37 | 38 | 39 | 38 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | -- | 38 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 47 | 47 | 47 | 46 | 46 | 48 | 48 | 45 | 47 | 47 | 44 | 46 | 45 | 43 | 45 | 48 | 49 | 50 | 52 | 51 | 49 | 49 | 52 | 54 | 56 | 56 | 56 | 55 | 56 | 54 | 49 |
| Minimum .... | 39 | 40 | 40 | 41 | 41 | 42 | 40 | 41 | 43 | 42 | 41 | 40 | 41 | 41 | 40 | 42 | 40 | 40 | 41 | 43 | 45 | 43 | 39 | 42 | 44 | 46 | 49 | 49 | 49 | 49 | 47 | 43 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 52 | 44 | 51 | 51 | 53 | 53 | 51 | 50 | 49 | 50 | 53 | 56 | 56 | 55 | 58 | 58 | 57 | 56 | 54 | 54 | 52 | 51 | 53 | 55 | 55 | 58 | 59 | 59 | -- | 54 |
| Minimum .... | 44 | 47 | 46 | 40 | 41 | 43 | 48 | 47 | 49 | 47 | 45 | 43 | 45 | 49 | 48 | 48 | 50 | 51 | 50 | 52 | 50 | 48 | 48 | 48 | 44 | 46 | 49 | 50 | 53 | 53 | -- | 47 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 57 | 55 | 56 | 57 | 59 | 60 | 60 | 59 | 58 | 58 | 59 | 59 | 60 | 60 | 58 | 57 | 59 | 60 | 59 | 57 | 57 | 58 | 59 | 58 | 57 | 57 | 58 | 58 | 56 | 62 | 58 |
| Minimum .... | 51 | 53 | 49 | 48 | 50 | 51 | 52 | 53 | 54 | 53 | 51 | 52 | 52 | 52 | 52 | 52 | 50 | 51 | 52 | 53 | 49 | 49 | 50 | 52 | 53 | 49 | 50 | 51 | 50 | 50 | 54 | 51 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 60 | 59 | 58 | 57 | 56 | 55 | 57 | 57 | 57 | 54 | 51 | 53 | 54 | 55 | 55 | 56 | 56 | 53 | 52 | 52 | 53 | 55 | 55 | 55 | 53 | 53 | 52 | 50 | 50 | 55 |
| Minimum .... | 51 | 51 | 55 | 53 | 52 | 50 | 49 | 51 | 50 | 51 | 52 | 47 | 46 | 46 | 47 | 48 | 49 | 50 | 50 | 47 | 45 | 45 | 47 | 48 | 51 | 53 | 48 | 49 | 50 | 45 | 44 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 51 | 52 | 54 | 54 | 55 | 55 | 53 | 52 | 52 | 51 | 49 | 50 | 50 | 53 | 53 | 52 | 51 | 52 | 53 | 54 | 54 | 52 | 50 | 51 | 50 | 51 | 52 | 51 | -- | 52 |
| Minimum .... | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 51 | 47 | 46 | 47 | 48 | 46 | 48 | 48 | 49 | 49 | 48 | 50 | 47 | 48 | 49 | 50 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | -- | 47 |

## SNAKE RIVER MAIN STEM

### 13-2902. SNAKE RIVER BELOW PINE CREEK, AT OXBOW, OREG.

LOCATION.--Lat 44°58'40", long 116°51'25", temperature recorder at gaging station on right bank at Oxbow, Baker County, 0.1 mile upstream from Hansaker Creek, 0.1 mile north of Oxbow school, 0.3 mile downstream from Pine Creek, 3.2 miles south of Homestead, and at mile 269.65.
DRAINAGE AREA.--73,150 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1956 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 71°F on several days during August and September; minimum, 36°F on several days during January and February.
EXTREMES, 1956-66.--Water temperatures: Maximum (1956-62, 1963-66), 81°F July 25, 1956; minimum, freezing point on several days during January 1957.
REMARKS.--Clock stopped Aug. 9-16; temperature range, 68°F to 70°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 58 | 58 | 57 | 57 | 57 | 57 | 56 | 56 | 55 | 60 |
| Minimum .... | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 58 | 58 | 57 | 57 | 57 | 57 | 56 | 56 | 55 | 55 | 59 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | -- | 53 |
| Minimum .... | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | -- | 53 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 46 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 46 |
| Minimum .... | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 42 | 42 | 42 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 |
| Minimum .... | 41 | 40 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 36 | 36 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 37 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 38 | 37 | 38 | 37 | 38 | 37 | 38 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | -- | -- | -- | 38 |
| Minimum .... | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 39 | 39 | 39 | -- | -- | -- | 37 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 43 |
| Minimum .... | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 42 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 48 | 47 | 48 | 49 | 50 | 51 | 52 | 52 | 52 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 52 | 50 | 52 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | -- | 51 |
| Minimum .... | 46 | 46 | 47 | 47 | 47 | 47 | 48 | 50 | 50 | 51 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 50 | 50 | 50 | 52 | 53 | 53 | 53 | 53 | 53 | 54 | 53 | -- | 51 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 54 | 54 | 55 | 56 | 56 | 55 | 55 | 55 | 54 | 55 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 60 | 59 | 57 |
| Minimum .... | 53 | 53 | 54 | 54 | 54 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 59 | 59 | 59 | 59 | 59 | 56 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 61 | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 62 | 62 | 63 | 63 | 63 | 63 | 64 | 64 | -- | 62 |
| Minimum .... | 59 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 62 | 62 | 62 | 62 | 61 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | 63 | 63 | 64 | -- | 62 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 64 | 63 | 64 | 64 | 64 | 64 | 65 | 65 | 65 | 66 | 66 | 65 | 66 | 66 | 66 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 66 |
| Minimum .... | 64 | 64 | 63 | 63 | 63 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 65 | 65 | 65 | 66 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 68 | 68 | 68 | 65 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | -- | -- | -- | -- | -- | -- | -- | -- | 70 | 70 | 70 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 71 | 70 | 70 | 70 | -- |
| Minimum .... | 67 | 67 | 68 | 68 | 68 | 68 | 69 | 69 | -- | -- | -- | -- | -- | -- | -- | -- | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 70 | 70 | 69 | 69 | 69 | -- | 70 |
| Minimum .... | 70 | 70 | 70 | 70 | 70 | 70 | 71 | 71 | 70 | 70 | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 70 | 70 | 70 | 69 | 68 | 69 | 69 | -- | 70 |

## 13-2920. IMNAHA RIVER AT IMNAHA, OREG.

LOCATION.--Lat 45°33'45", long 116°50'00", temperature recorder at gaging station, 0.3 mile downstream from Big Sheep Creek, at Imnaha, Wallowa County, and at mile 19.3.
DRAINAGE AREA.--622 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, not determined; minimum, freezing point on many days during December to March.
EXTREMES, August 1965 to September 1966.--Water temperatures: Maximum, 72°F Aug. 16, 1965; minimum, freezing point on many days during December 1965 to March 1966.
REMARKS.--Recorder stopped July 19 to Aug. 24, Aug. 30 to Sept. 30; temperature ranges, 58°F to 72°F, and 51°F to 65°F, respectively.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 57 | 57 | 56 | 57 | 57 | 58 | 59 | 57 | 56 | 55 | 54 | 55 | 52 | 52 | 48 | 49 | 50 | 52 | 51 | 51 | 50 | 50 | 51 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 53 |
| Minimum .... | 49 | 50 | 51 | 51 | 52 | 51 | 51 | 52 | 52 | 50 | 49 | 48 | 52 | 49 | 47 | 44 | 45 | 45 | 50 | 47 | 48 | 48 | 47 | 48 | 48 | 47 | 47 | 49 | 48 | 49 | 48 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 50 | 51 | 49 | 48 | 45 | 46 | 46 | 47 | 46 | 44 | 46 | 49 | 48 | 48 | 46 | 46 | 46 | 44 | 43 | 44 | 42 | 41 | 40 | 40 | 38 | 37 | 36 | 36 | -- | 45 |
| Minimum .... | 48 | 49 | 47 | 49 | 47 | 45 | 43 | 44 | 44 | 45 | 44 | 42 | 42 | 46 | 46 | 44 | 45 | 46 | 43 | 42 | 45 | 42 | 41 | 40 | 38 | 39 | 36 | 34 | 34 | 33 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 39 | 41 | 42 | 42 | 41 | 41 | 40 | 39 | 39 | 41 | 38 | 37 | 36 | 34 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 36 | 36 | 37 | 37 | 37 | 37 | 36 |
| Minimum .... | 33 | 36 | 38 | 41 | 41 | 39 | 37 | 37 | 35 | 38 | 39 | 38 | 36 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 34 | 35 | 34 | 34 | 35 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 32 | 36 | 37 | 39 | 40 | 40 | 40 | 37 | 36 | 37 | 37 | 38 | 38 | 38 | 34 | 32 | 32 | 33 | 32 | 32 | 33 | 34 | 33 | 33 | 32 | 32 | 34 | 34 | 34 | 33 | 35 |
| Minimum .... | 32 | 32 | 32 | 36 | 34 | 38 | 37 | 37 | 34 | 34 | 36 | 36 | 37 | 38 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 34 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 33 | 35 | 39 | 38 | 37 | 37 | 38 | 36 | 34 | 34 | 34 | 33 | 35 | 33 | 36 | 36 | 38 | 37 | 41 | 40 | 41 | 39 | 41 | 41 | 40 | 41 | 40 | -- | -- | -- | 37 |
| Minimum .... | 32 | 32 | 32 | 35 | 36 | 33 | 33 | 34 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 36 | 35 | 36 | 36 | 36 | 36 | 37 | 37 | 38 | -- | -- | -- | 34 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 35 | 35 | 34 | 38 | 40 | 42 | 42 | 43 | 43 | 43 | 45 | 43 | 44 | 42 | 41 | 42 | 41 | 42 | 41 | 40 | 43 | 44 | 46 | 48 | 49 | 48 | 49 | 49 | 49 | 48 | 43 |
| Minimum .... | 34 | 32 | 32 | 32 | 32 | 34 | 38 | 39 | 41 | 41 | 36 | 40 | 42 | 40 | 40 | 39 | 38 | 38 | 40 | 38 | 39 | 37 | 38 | 39 | 42 | 43 | 43 | 43 | 42 | 43 | 43 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 48 | 48 | 50 | 50 | 50 | 50 | 48 | 48 | 49 | 47 | 49 | 49 | 50 | 51 | 47 | 44 | 45 | 45 | 47 | 47 | 51 | 53 | 52 | 48 | 47 | 48 | 50 | 50 | -- | 49 |
| Minimum .... | 43 | 44 | 42 | 42 | 43 | 44 | 44 | 43 | 45 | 45 | 43 | 44 | 42 | 44 | 46 | 47 | 43 | 41 | 39 | 41 | 44 | 44 | 45 | 45 | 49 | 44 | 43 | 41 | 43 | 44 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 53 | 53 | 53 | 51 | 52 | 53 | 52 | 50 | 48 | 48 | 48 | 47 | 46 | 49 | 52 | 53 | 54 | 56 | 55 | 50 | 52 | 55 | 56 | 57 | 56 | 55 | 54 | 53 | 52 | 52 |
| Minimum .... | 45 | 47 | 49 | 47 | 46 | 47 | 45 | 46 | 47 | 45 | 45 | 44 | 44 | 44 | 43 | 45 | 45 | 46 | 48 | 50 | 51 | 46 | 44 | 48 | 51 | 52 | 52 | 49 | 50 | 50 | 48 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 53 | 50 | 56 | 55 | 59 | 57 | 56 | 52 | 53 | 55 | 56 | 59 | 59 | 58 | 60 | 58 | 58 | 57 | 54 | 56 | 54 | 53 | 57 | 60 | 62 | 64 | 61 | 61 | -- | 57 |
| Minimum .... | 46 | 50 | 47 | 46 | 47 | 52 | 53 | 54 | 52 | 50 | 50 | 49 | 51 | 54 | 53 | 54 | 54 | 55 | 54 | 55 | 52 | 50 | 51 | 50 | 47 | 52 | 54 | 56 | 57 | 54 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 56 | 62 | 65 | 66 | 66 | 66 | 64 | 64 | 66 | 66 | 67 | 68 | 67 | 68 | 68 | 69 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 55 | 55 | 52 | 51 | 56 | 58 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 67 | 64 | 63 | 64 | 64 | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 62 | 57 | 61 | 62 | 60 | -- | -- | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

GRANDE RONDE RIVER BASIN

13-3315. MINAM RIVER AT MINAM, OREG.
(Hydrologic bench-mark station)

LOCATION.--Lat 45°37'12", long 117°43'28", temperature recorder at gaging station, 0.3 mile west of Minam, Wallowa County, and at mile 3.0.
DRAINAGE AREA.--240 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 75°F Aug. 2, 3, 7; minimum, freezing point on many days during winter months.
REMARKS.--Miscellaneous chemical analyses of this station will be found on Page 216, under Miscellaneous analyses.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 57 | 57 | 52 | 56 | 59 | 59 | 58 | 59 | 58 | 56 | 54 | 57 | 51 | 48 | 50 | 47 | 50 | 52 | 50 | 49 | 50 | 48 | 47 | 48 | 46 | 46 | 50 | 49 | 49 | 48 | 52 |
| Minimum .... | 43 | 45 | 46 | 46 | 49 | 48 | 49 | 48 | 49 | 47 | 45 | 44 | 48 | 47 | 42 | 41 | 42 | 41 | 43 | 42 | 40 | 40 | 39 | 39 | 39 | 38 | 38 | 43 | 41 | 41 | 39 | 43 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 48 | 47 | 44 | 43 | 41 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 44 | 39 | 42 | 40 | 38 | 38 | 36 | 36 | 36 | 33 | 32 | 32 | -- | -- |
| Minimum .... | 39 | 39 | 39 | 42 | 40 | 38 | 36 | 36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | 38 | 36 | 39 | 37 | 35 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Minimum .... | -- | -- | -- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 48 | 49 | 48 | 47 | 48 | 47 | 45 | 46 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | 35 | 36 | 37 | 38 | 37 | 38 | 39 | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 45 | 46 | 46 | 48 | 49 | 49 | 48 | 45 | 46 | 44 | 44 | 48 | 46 | 50 | 51 | 46 | 44 | 44 | 41 | 42 | 46 | 50 | 54 | 51 | 45 | 47 | 47 | 50 | 53 | -- | 47 |
| Minimum .... | 39 | 40 | 37 | 37 | 38 | 40 | 41 | 41 | 43 | 42 | 41 | 40 | 38 | 40 | 43 | 43 | 40 | 36 | 33 | 36 | 38 | 40 | 40 | 41 | 44 | 40 | 38 | 37 | 40 | 41 | -- | 40 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 53 | 52 | 50 | 48 | 49 | 50 | 50 | 46 | 45 | 44 | 46 | 44 | 44 | 49 | 50 | 52 | 53 | 54 | 53 | 47 | 51 | 54 | 56 | 55 | 54 | 53 | 52 | 50 | 48 | 50 |
| Minimum .... | 42 | 44 | 45 | 44 | 44 | 44 | 42 | 43 | 44 | 42 | 41 | 42 | 41 | 40 | 38 | 42 | 41 | 42 | 44 | 47 | 47 | 41 | 39 | 45 | 48 | 49 | 48 | 47 | 47 | 47 | 45 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 50 | 49 | 47 | 56 | 56 | 59 | 56 | 53 | 51 | 51 | 55 | 59 | 60 | 60 | 57 | 58 | 60 | 56 | 54 | 52 | 55 | 54 | 50 | 58 | 60 | 63 | 65 | 60 | 60 | -- | 56 |
| Minimum .... | 43 | 46 | 45 | 44 | 44 | 49 | 51 | 52 | 50 | 48 | 47 | 46 | 49 | 53 | 52 | 52 | 53 | 53 | 52 | 51 | 49 | 48 | 49 | 45 | 44 | 48 | 52 | 54 | 51 | 49 | -- | 49 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 60 | 57 | 62 | 65 | 67 | 68 | 66 | 66 | 68 | 68 | 66 | 68 | 68 | 69 | 71 | 70 | -- | -- | -- | -- | -- | -- | 71 | 69 | 69 | 70 | 72 | 73 | 72 | 74 | 67 |
| Minimum .... | 52 | 51 | 50 | 47 | 52 | 55 | 55 | 56 | 57 | 57 | 55 | 55 | 55 | 57 | 54 | 58 | 58 | -- | -- | -- | -- | -- | -- | 54 | 53 | 52 | 52 | 55 | 55 | 57 | 59 | 54 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 74 | 75 | 75 | 74 | 74 | 73 | 75 | 73 | 74 | 74 | 72 | 70 | 65 | 72 | 73 | 73 | 73 | 74 | 72 | 71 | 71 | 69 | 71 | 73 | 67 | 68 | 68 | 69 | 64 | 66 | 67 | 71 |
| Minimum .... | 57 | 59 | 61 | 59 | 59 | 56 | 58 | 60 | 58 | 58 | 58 | 53 | 55 | 54 | 55 | 56 | 57 | 58 | 57 | 54 | 53 | 54 | 56 | 58 | 60 | 60 | 59 | 58 | 58 | 56 | 51 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 70 | 71 | 72 | 73 | 73 | 70 | 71 | 71 | 70 | 69 | 66 | 61 | 64 | 66 | 67 | 69 | 69 | 66 | 69 | 71 | 72 | 69 | 62 | 62 | 58 | 62 | 64 | 65 | 61 | -- | 67 |
| Minimum .... | 57 | 53 | 54 | 55 | 57 | 60 | 57 | 59 | 56 | 65 | 56 | 54 | 53 | 54 | 55 | 57 | 56 | 56 | 58 | 54 | 56 | 57 | 57 | 54 | 52 | 54 | 52 | 50 | 52 | 48 | -- | 55 |

## 13-3343. SNAKE RIVER NEAR ANATONE, WASH.

LOCATION.--Lat 46°05'55", long 116°58'30", temperature recorder at gaging station on left bank, 1.5 miles downstream from Grande Ronde River, 7.8 miles east of Anatone, Asotin County, 22 miles south of Clarkston, and at mile 167.2.
DRAINAGE AREA.--92,960 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: September 1959 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 76°F Aug. 1; minimum, 34°F Jan. 17, 18, 20-22.
EXTREMES, 1959-66.--Water temperatures: Maximum, 77°F Aug. 11, 1960, Aug. 13, 1963; minimum, freezing point Jan. 25, 26, 1962, Dec. 22, 1964.
REMARKS.--Bulb out of water Dec. 18-20, May 1-4, June 22 to July 15, Aug. 22.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 61 | 61 | 61 | 61 | 62 | 62 | 62 | 61 | 61 | 60 | 60 | 59 | 59 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 58 |
| Minimum .... | 60 | 60 | 61 | 61 | 61 | 61 | 61 | 62 | 61 | 61 | 60 | 59 | 59 | 59 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 58 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 50 | 53 | 53 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | -- | 50 |
| Minimum .... | 53 | 53 | 53 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 49 | 49 | 48 | 48 | 45 | 46 | 46 | 47 | 47 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 45 | 47 | 47 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 40 | -- | -- | -- | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 42 |
| Minimum .... | 45 | 45 | 45 | 45 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 41 | 40 | 40 | -- | -- | -- | 39 | 39 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 37 | 37 | 37 | 36 | 36 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 36 |
| Minimum .... | 37 | 37 | 37 | 36 | 36 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 34 | 34 | 35 | 34 | 34 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 36 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 37 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | -- | -- | -- | 38 |
| Minimum .... | 37 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 48 | 49 | 49 | 49 | 49 | 50 | 51 | 44 |
| Minimum .... | 41 | 40 | 40 | 39 | 39 | 40 | 40 | 41 | 41 | 42 | 43 | 43 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 48 | 49 | 49 | 49 | 49 | 49 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 53 | 54 | 54 | 53 | 50 | 50 | 50 | 50 | 52 | 54 | 56 | 55 | 54 | 54 | 55 | 56 | -- | 52 |
| Minimum .... | 49 | 49 | 48 | 48 | 49 | 50 | 51 | 52 | 52 | 52 | 51 | 51 | 50 | 51 | 51 | 53 | 53 | 51 | 50 | 49 | 50 | 50 | 50 | 52 | 54 | 54 | 53 | 53 | 53 | 54 | -- | 51 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | 59 | 59 | 57 | 57 | 57 | 56 | 55 | 54 | 53 | 53 | 53 | 53 | 54 | 56 | 57 | 62 | 60 | 59 | 57 | 57 | 58 | 60 | 60 | 60 | 59 | 58 | 58 | 57 |
| Minimum .... | -- | -- | -- | -- | 59 | 58 | 55 | 55 | 55 | 55 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 53 | 55 | 57 | 58 | 57 | 55 | 56 | 56 | 57 | 59 | 59 | 58 | 58 | 56 | 56 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 57 | 57 | 57 | 58 | 60 | 61 | 61 | 61 | 60 | 59 | 60 | 62 | 64 | 64 | 66 | 66 | 66 | 66 | 65 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 55 | 56 | 56 | 56 | 55 | 56 | 58 | 60 | 60 | 60 | 59 | 58 | 58 | 59 | 61 | 63 | 64 | 64 | 65 | 65 | 63 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 73 | 73 | 74 | 73 | 73 | 72 | 72 | 72 | 74 | 74 | 72 | 73 | 74 | 74 | 74 | 75 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 71 | 71 | 72 | 72 | 71 | 70 | 70 | 70 | 71 | 71 | 70 | 70 | 70 | 71 | 72 | 72 | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 76 | 75 | 75 | 75 | 74 | 74 | 73 | 73 | 73 | 73 | 73 | 72 | 70 | 72 | 73 | 73 | 73 | 73 | 72 | 71 | 71 | -- | 73 | 73 | 71 | 71 | 70 | 70 | 70 | 68 | 69 | 72 |
| Minimum .... | 72 | 73 | 73 | 73 | 72 | 71 | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 69 | 70 | 70 | 71 | 71 | 70 | 69 | 69 | -- | 70 | 70 | 70 | 70 | 69 | 69 | 68 | 67 | 67 | 70 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 69 | 70 | 71 | 72 | 72 | 71 | 71 | 71 | 71 | 70 | 68 | 67 | 67 | 68 | 68 | 69 | 68 | 68 | 67 | 68 | 69 | 69 | 68 | 67 | 66 | 66 | 67 | 67 | 65 | -- | 69 |
| Minimum .... | 67 | 67 | 68 | 69 | 70 | 70 | 70 | 69 | 69 | 69 | 69 | 67 | 66 | 66 | 66 | 67 | 67 | 68 | 67 | 66 | 67 | 68 | 68 | 68 | 66 | 65 | 65 | 65 | 66 | 64 | -- | 67 |

SNAKE RIVER MAIN STEM--Continued

13-3353. SNAKE RIVER ABOVE CLEARWATER RIVER, AT CLARKSTON, WASH.
(International Hydrological Decade River Station)

LOCATION.--Lat 46°25'15", long 117°02'05", at bridge on U.S. Highway 410 at Clarkston, Asotin County, 0.2 mile upstream from Clearwater River, and 4.2 miles downstream from Tammany Creek.
RECORDS AVAILABLE.--Chemical analyses: October 1961 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (calculated) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 3, 1965. | | 20 | | | | 33 | 12 | 29 | 3.6 | | 158 | 0 | 42 | 12 | 0.5 | 1.8 | | 232 | 130 | 0 | | 381 | 7.8 | 5 | -- | -- |
| Dec. 28..... | | 25 | | | | 42 | 15 | 34 | 3.9 | | 198 | 0 | 52 | 18 | .6 | 3.0 | | 290 | 167 | 4 | | 472 | 8.2 | 0 | 12.5 | 36 |
| Jan. 12, 1966 | | 24 | | | | 41 | 14 | 28 | 3.7 | | 183 | 0 | 45 | 16 | .7 | 3.1 | | 266 | 162 | 12 | | 436 | 8.0 | 0 | -- | -- |
| Feb. 16..... | | 23 | | | | 39 | 13 | 26 | 3.6 | | 175 | 0 | 42 | 15 | .8 | 3.1 | | 252 | 152 | 8 | | 410 | 7.8 | 0 | -- | -- |
| Mar. 8..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 12.5 | 23 |
| Mar. 23..... | | 23 | | | | 36 | 12 | 25 | 3.3 | | 162 | 0 | 37 | 13 | .7 | 2.1 | | 232 | 139 | 6 | | 379 | 7.8 | 5 | -- | -- |
| Apr. 28..... | | 17 | | | | 20 | 5.9 | 14 | 2.2 | | 92 | 0 | 20 | 7.0 | .4 | .3 | | 132 | 74 | 0 | | 212 | 7.6 | 5 | -- | -- |
| June 6..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 10.0 | 150 |
| June 22..... | | 11 | | | | 17 | 5.5 | 14 | 1.9 | | 81 | 0 | 20 | 5.5 | .4 | .4 | | 116 | 65 | 0 | | 188 | 7.5 | 5 | -- | -- |
| July 27..... | | 14 | | | | 25 | 11 | 29 | 3.4 | | 136 | 0 | 42 | 13 | .6 | .8 | | 206 | 108 | 0 | | 337 | 7.8 | 5 | -- | -- |
| Aug. 11..... | | 15 | | | | 27 | 12 | 32 | 3.5 | | 146 | 0 | 48 | 16 | .6 | 1.0 | | 227 | 17 | 0 | | 336 | 7.2 | 5 | -- | -- |
| Sept. 22..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 8.3 | 430 |

## 13-3361. MEADOW CREEK NEAR LOWELL, IDAHO

LOCATION.--Lat 46°02', long 115°17', temperature recorder at gaging station on right bank, 0.8 mile upstream from mouth, and 16.5 miles southeast of Lowell, Idaho County.
DRAINAGE AREA.--241 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F sometime during period July 17 to Aug. 29; minimum, freezing point on many days during winter months.
EXTREMES, 1964-66.--Water temperatures: Maximum, 69°F Aug. 1, 2, 1965, and sometime during period July 17 to Aug. 29, 1966; minimum, freezing point on many days during winter months.
REMARKS.--Clock stopped Jan. 21 to Feb. 19, Apr. 5 to May 10, July 17 to Aug. 29; temperature ranges, 32°F to 34°F, 35°F to 49°F, and 56°F to 69°F, respectively.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 48 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 47 |
| Minimum .... | 46 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 49 | 48 | 48 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 41 | 39 | 39 | 39 | 39 | 38 | 37 | 37 | 37 | 34 | 33 | -- | 41 |
| Minimum .... | 42 | 42 | 43 | 43 | 44 | 44 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 41 | 39 | 39 | 39 | 39 | 38 | 37 | 37 | 37 | 34 | 33 | 33 | -- | 40 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 34 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 |
| Minimum .... | 33 | 33 | 34 | 34 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 35 | 36 | 35 | 35 | 36 | 36 | 36 | 37 | 36 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 34 | 33 | 33 | 34 | 36 | 35 | 37 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 36 | 35 | 34 | 37 | 36 | 37 | 38 | 38 | 38 | 39 | 39 | 40 | 41 | 36 |
| Minimum .... | 34 | 33 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 36 | 35 | 35 | 36 | 35 | 36 | 35 | 35 | 34 | 35 | 34 | 33 | 34 | 34 | 34 | 35 | 36 | 35 | 35 | 36 | 36 | 37 | 35 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 40 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 36 | 38 | 37 | 36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 47 | 45 | 45 | 45 | 43 | 44 | 46 | 47 | 48 | 51 | 51 | 49 | 47 | 50 | 52 | 53 | 53 | 54 | 54 | 53 | 51 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 45 | 41 | 42 | 42 | 40 | 43 | 41 | 41 | 43 | 45 | 47 | 42 | 39 | 43 | 45 | 47 | 48 | 49 | 49 | 48 | 47 | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 49 | 47 | 52 | 53 | 55 | 54 | 54 | 54 | 50 | 51 | 52 | 57 | 56 | 58 | 60 | 59 | 59 | 58 | 57 | 54 | 54 | 52 | 55 | 58 | 61 | 61 | 64 | 62 | -- | 55 |
| Minimum .... | 46 | 48 | 47 | 44 | 44 | 48 | 50 | 50 | 53 | 50 | 48 | 47 | 48 | 51 | 52 | 52 | 55 | 55 | 54 | 55 | 54 | 52 | 51 | 50 | 47 | 51 | 53 | 56 | 59 | 57 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 59 | 56 | 58 | 61 | 63 | 65 | 64 | 64 | 64 | 65 | 65 | 65 | 65 | 66 | 67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 56 | 56 | 53 | 51 | 54 | 57 | 59 | 60 | 60 | 60 | 59 | 60 | 60 | 61 | 61 | 61 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 59 | 59 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57 | 55 | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 60 | 61 | 62 | 62 | 62 | 63 | 62 | 61 | 61 | 60 | 59 | 58 | 56 | 56 | 58 | 57 | 57 | 59 | 60 | 60 | 60 | 59 | 57 | 55 | 55 | 55 | 56 | 53 | -- | 59 |
| Minimum .... | 54 | 54 | 55 | 56 | 57 | 58 | 58 | 59 | 58 | 57 | 57 | 57 | 56 | 56 | 55 | 54 | 55 | 55 | 56 | 56 | 58 | 57 | 57 | 57 | 55 | 53 | 53 | 52 | 53 | 50 | -- | 56 |

CLEARWATER RIVER BASIN--Continued

13-3410. NORTH FORK CLEARWATER RIVER AT AHSAHKA, IDAHO

LOCATION.--Lat 46°31'00", long 116°37'35", temperature recorder on right bank at cableway at Ahsahka, Clearwater County, and at mile 0.4.
DRAINAGE AREA.--2,440 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1959 to August 1960.
Water temperatures: October 1957 to September 1966.
Sediment records: January to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F Aug. 2; minimum, freezing point on several days during winter months.
Sediment concentrations: Maximum daily, 349 ppm May 6; minimum daily, 2 ppm on many days in July and August.
Sediment loads: Maximum daily, 21,200 tons May 6; minimum daily, 6 tons Aug. 12, 13, 17.
EXTREMES, 1957-66.--Water temperatures: Maximum, 84°F Aug. 11-13, 1963; minimum, freezing point on many days during winter months.
Sediment concentrations (January to September 1966): Maximum daily, 349 ppm May 6, 1966; minimum daily, 2 ppm on many days in July and August 1966.
Sediment loads (January to September 1966): Maximum daily, 19,900 tons May 6, 1966; minimum daily, 6 tons Aug. 12, 13, 17, 1966.
REMARKS.--Clock stopped Nov. 21 to Dec. 7, Jan. 5-16; temperature ranges, 37°F to 43°F, 34°F to 37°F, respectively. Water discharge computed by subtracting the discharge of Clearwater River at Orofino from that of Clearwater River near Peck.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 55 | 56 | 55 | 56 | 57 | 57 | 58 | 57 | 56 | 56 | 54 | 54 | 53 | 52 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 48 | 48 | 49 | 49 | 53 |
| Minimum .... | 52 | 52 | 52 | 53 | 53 | 54 | 55 | 55 | 55 | 55 | 54 | 53 | 54 | 53 | 53 | 52 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 51 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 46 | 46 | 45 | 44 | 44 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 37 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 39 | 38 | 39 | 38 | 37 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | -- |
| Minimum .... | 34 | 34 | 34 | 34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 34 | 34 | 35 | 36 | 35 | 35 | 34 | 34 | 34 | 34 | 33 | 33 | 34 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 38 | 37 | 38 | 38 | -- | -- | -- | 35 |
| Minimum .... | 32 | 32 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | -- | -- | -- | 34 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 37 | 37 | 37 | 36 | 37 | 37 | 37 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 39 | 40 | 42 | 43 | 44 | 44 | 44 | 43 | 42 | 43 | 44 | 40 |
| Minimum .... | 38 | 37 | 36 | 35 | 34 | 35 | 36 | 37 | 37 | 37 | 38 | 39 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 43 | 44 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 45 | 46 | 46 | 44 | 43 | 42 | 42 | 44 | 46 | 47 | 48 | 49 | 46 | 45 | 46 | 47 | -- | 45 |
| Minimum .... | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 45 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 44 | 43 | 41 | 42 | 42 | 42 | 44 | 46 | 47 | 46 | 45 | 45 | 45 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 50 | 51 | 51 | 50 | 50 | 48 | 48 | 49 | 49 | 47 | 47 | 46 | 46 | 45 | 46 | 47 | 48 | 50 | 52 | 52 | 51 | 48 | 51 | 52 | 54 | 54 | 54 | 53 | 54 | 54 | 50 |
| Minimum .... | 47 | 48 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 46 | 45 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 48 | 50 | 51 | 48 | 46 | 48 | 50 | 52 | 53 | 52 | 52 | 52 | 50 | 48 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 52 | 50 | 51 | 54 | 56 | 56 | 57 | 55 | 55 | 54 | 53 | 54 | 57 | 59 | 61 | 63 | 62 | 60 | 59 | 58 | 57 | 56 | 56 | 59 | 63 | 65 | 65 | 65 | --- | 57 |
| Minimum .... | 49 | 51 | 49 | 48 | 48 | 51 | 54 | 55 | 55 | 55 | 54 | 53 | 53 | 53 | 54 | 57 | 59 | 61 | 60 | 59 | 57 | 57 | 56 | 55 | 54 | 56 | 59 | 61 | 63 | 63 | --- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 62 | 60 | 62 | 65 | 69 | 71 | 72 | 71 | 69 | 71 | 71 | 71 | 73 | 74 | 76 | 75 | 75 | 74 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 72 | 73 | 73 | 75 | 71 |
| Minimum .... | 62 | 60 | 59 | 58 | 59 | 62 | 64 | 66 | 67 | 66 | 66 | 66 | 67 | 68 | 69 | 71 | 71 | 71 | 71 | 71 | 69 | 69 | 69 | 70 | 70 | 69 | 68 | 69 | 69 | 70 | 71 | 67 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 76 | 77 | 76 | 76 | 75 | 76 | 76 | 75 | 76 | 76 | 74 | 73 | 70 | 72 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 73 | 71 | 71 | 69 | 67 | 66 | 66 | 65 | 72 |
| Minimum .... | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 69 | 70 | 70 | 69 | 66 | 66 | 65 | 65 | 66 | 66 | 66 | 66 | 65 | 66 | 63 | 64 | 64 | 65 | 67 | 66 | 66 | 65 | 64 | 61 | 67 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 67 | 68 | 69 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 66 | 65 | 65 | 65 | 65 | 66 | 66 | 65 | 66 | 68 | 69 | 68 | 68 | 66 | 64 | 63 | 63 | 63 | 62 | --- | 67 |
| Minimum .... | 62 | 61 | 61 | 62 | 62 | 63 | 63 | 64 | 64 | 63 | 64 | 63 | 62 | 62 | 62 | 61 | 61 | 62 | 63 | 62 | 63 | 63 | 64 | 63 | 64 | 62 | 61 | 60 | 60 | 58 | --- | 62 |





Particle-size analyses of suspended sediment, January to September 1966

(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Mar. 10, 1966..... | 1230 | 43 | | 6610 | 157 | 2800 | 9 | 15 | 24 | 34 | 48 | 61 | 74 | 95 | 100 | -- | | VPWC |
| Mar. 12..... | 1745 | 45 | | 4530 | 27 | 330 | -- | 21 | -- | -- | -- | 70 | 75 | 90 | 100 | -- | | VPWC |
| Mar. 29..... | 1710 | 54 | | 9590 | 144 | 3730 | -- | 9 | -- | -- | -- | 37 | 41 | 57 | 99 | 100 | | VPWC |
| Apr. 1..... | 1330 | 46 | | 15000 | 228 | 9230 | 8 | 12 | 18 | 28 | 38 | 51 | 64 | 85 | 100 | -- | | VPWC |
| Apr. 11..... | 1035 | 45 | | 16100 | 94 | 4090 | -- | -- | -- | -- | -- | 38 | 49 | 66 | 99 | 100 | | V |
| May 3..... | 1330 | 52 | | 13700 | 56 | 2070 | -- | 13 | -- | -- | -- | 60 | 76 | 97 | 100 | -- | | VPWC |
| May 6..... | 1315 | 54 | | 23200 | 296 | 18500 | -- | 6 | -- | 14 | -- | 31 | 45 | 74 | 100 | -- | | VPWC |

CLEARWATER RIVER BASIN--Continued

13-3410. NORTH FORK CLEARWATER RIVER AT AHSAHKA, IDAHO--Continued

Suspended sediment, January to September 1966

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | -- | -- | -- | 1690 | C 7 | 32 | 2040 | 10 | 55 |
| 2 | -- | -- | -- | 1480 | C 7 | 28 | 1900 | 7 | 36 |
| 3 | -- | -- | -- | 1380 | C 7 | 26 | 1710 | 6 | 28 |
| 4 | -- | -- | -- | 1340 | C 7 | 25 | 1590 | 7 | 30 |
| 5 | -- | -- | -- | 1610 | C 8 | 35 | 1490 | 4 | 16 |
| 6 | -- | -- | -- | 1790 | C 8 | 39 | 1650 | 8 | 36 |
| 7 | -- | -- | -- | 1930 | C 8 | 42 | 2050 | 13 | 72 |
| 8 | -- | -- | -- | 1890 | C 8 | 41 | 2210 | 16 | 95 |
| 9 | -- | -- | -- | 1730 | C 8 | 37 | 3600 | 114 S | 1350 |
| 10 | -- | -- | -- | 1550 | C 8 | 33 | 6340 | 172 | 2940 |
| 11 | -- | -- | -- | 1500 | C 5 | 20 | 6220 | 64 | 1070 |
| 12 | -- | -- | -- | 1500 | C 5 | 20 | 5010 | 30 | 406 |
| 13 | -- | -- | -- | 1500 | C 5 | 20 | 5230 | 85 S | 1300 |
| 14 | -- | -- | -- | 1500 | C 5 | 20 | 7690 | 173 | 3590 |
| 15 | -- | -- | -- | 1500 | C 5 | 20 | 8430 | 128 | 2910 |
| 16 | -- | -- | -- | 1450 | C 5 | 20 | 7590 | 52 | 1070 |
| 17 | -- | -- | -- | 1450 | C 5 | 20 | 6170 | 32 | 533 |
| 18 | -- | -- | -- | 1450 | C 5 | 20 | 4840 | 18 | 235 |
| 19 | -- | -- | -- | 1500 | C 5 | 20 | 4390 | 16 | 190 |
| 20 | -- | -- | -- | 1580 | 16 | 68 | 4270 | 13 | 150 |
| 21 | -- | -- | -- | 1440 | 13 | 51 | 3820 | 17 | 175 |
| 22 | -- | -- | -- | 1750 | 11 | 52 | 3330 | 10 | 90 |
| 23 | -- | -- | -- | 1770 | 8 | 38 | 3050 | 10 | 82 |
| 24 | -- | -- | -- | 1810 | 8 | 39 | 2930 | 10 | 79 |
| 25 | 1780 | C 7 | 34 | 1820 | 7 | 34 | 3110 | 11 | 92 |
| 26 | 1800 | C 7 | 34 | 1890 | 14 | 71 | 3850 | 18 | 187 |
| 27 | 1760 | C 7 | 33 | 1920 | 15 | 78 | 5530 | 38 | 567 |
| 28 | 1610 | C 7 | 30 | 1990 | 10 | 54 | 7320 | 61 | 1210 |
| 29 | 1870 | C 7 | 35 | -- | -- | -- | 9200 | 114 | 2830 |
| 30 | 1970 | C 7 | 37 | -- | -- | -- | 10900 | 162 | 4770 |
| 31 | 1850 | C 7 | 35 | -- | -- | -- | 12900 | 210 | 7310 |
| Total | 12640 | -- | 238 | 45710 | -- | 1003 | 150360 | -- | 33504 |

| | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 14600 | 271 | 10700 | 8300 | 9 | 202 | 12000 | 23 | 745 |
| 2 | 14700 | 165 | 6550 | 9400 | 23 | 584 | 11900 | 30 | 964 |
| 3 | 13400 | 102 | 3690 | 11600 | 77 S | 2680 | 11500 | 30 | 932 |
| 4 | 12500 | 50 | 1690 | 14300 | 150 J | 6500 | 10500 | 21 | 595 |
| 5 | 11100 | 37 | 1110 | 17300 | 292 S | 15000 | 9400 | 12 | 305 |
| 6 | 11700 | 44 | 1390 | 20600 | 349 S | 21200 | 8600 | 13 | 302 |
| 7 | 12900 | 57 | 1990 | 22800 | 227 S | 14500 | 8400 | 11 | 249 |
| 8 | 14300 | 93 | 3590 | 22200 | 129 | 7730 | 8400 | 15 | 340 |
| 9 | 15700 | 138 | 5850 | 20500 | 123 | 6810 | 8400 | 17 | 386 |
| 10 | 15700 | 99 | 4200 | 20500 | 115 | 6370 | 8600 | 16 | 372 |
| 11 | 15500 | 81 | 3390 | 17800 | 62 | 2980 | 9000 | 46 S | 1300 |
| 12 | 15500 | 56 | 2340 | 16300 | 126 S | 5800 | 9000 | 16 | 389 |
| 13 | 13600 | 48 | 1760 | 15100 | 64 | 2610 | 8000 | 13 | 281 |
| 14 | 12000 | 41 | 1330 | 13300 | 48 | 1720 | 7500 | 11 | 223 |
| 15 | 12000 | 44 | 1430 | 12100 | 33 | 1080 | 7300 | 12 | 237 |
| 16 | 13200 | 50 | 1780 | 11400 | 40 | 1230 | 7200 | 8 | 156 |
| 17 | 13700 | 50 | 1850 | 10200 | 70 | 1930 | 7200 | 10 | 194 |
| 18 | 12500 | 28 | 945 | 9800 | 66 | 1750 | 7200 | 10 | 194 |
| 19 | 11000 | 18 | 535 | 9400 | 20 | 508 | 6800 | 8 | 147 |
| 20 | 9900 | 17 | 454 | 9600 | 18 | 467 | 6700 | 10 | 181 |
| 21 | 9100 | 13 | 319 | 10200 | 21 | 578 | 7200 | 12 | 233 |
| 22 | 8700 | 15 | 352 | 10800 | 23 S | 788 | 6400 | 10 | 173 |
| 23 | 8400 | 10 | 227 | 10400 | 17 | 477 | 5900 | 6 | 96 |
| 24 | 7800 | 10 | 211 | 9500 | 19 | 487 | 5900 | 8 | 127 |
| 25 | 8800 | 17 | 404 | 9800 | 32 | 847 | 6600 | 10 | 178 |
| 26 | 10000 | 22 | 594 | 7600 | 38 | 780 | 5500 | 6 | 89 |
| 27 | 9500 | 19 | 487 | 12000 | 46 | 1490 | 4970 | 4 | 54 |
| 28 | 8600 | 15 | 348 | 13100 | 52 S | 2080 | 4730 | 5 | 64 |
| 29 | 8300 | 8 | 179 | 13000 | 51 S | 2020 | 4640 | 12 | 150 |
| 30 | 8100 | 8 | 175 | 12700 | 45 S | 1740 | 4800 | 28 | 363 |
| 31 | -- | -- | -- | 13500 | 44 S | 1770 | -- | -- | -- |
| Total | 352800 | -- | 59870 | 415100 | -- | 114708 | 230240 | -- | 10019 |

S Computed by subdividing day.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

CLEARWATER RIVER BASIN--Continued

13-3410. NORTH FORK CLEARWATER RIVER AT AHSAHKA, IDAHO--Continued

Suspended sediment, January to September 1966--Continued

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 4390 | 28 | 332 | 1610 | C 2 | 9 | 1380 | C 6 | 22 |
| 2 | 4040 | 20 | 218 | 1550 | C 2 | 8 | 1230 | C 6 | 20 |
| 3 | 3910 | 9 | 95 | 1500 | C 2 | 8 | 1230 | C 6 | 20 |
| 4 | 3990 | 7 | 75 | 1550 | C 2 | 8 | 1230 | C 6 | 20 |
| 5 | 3840 | 9 | 93 | 1480 | C 2 | 8 | 1220 | C 6 | 20 |
| 6 | 3570 | 13 | 125 | 1420 | C 2 | 8 | 1100 | C 5 | 15 |
| 7 | 3370 | 23 | 209 | 1390 | C 2 | 8 | 970 | C 5 | 13 |
| 8 | 3290 | 18 | 160 | 1380 | C 2 | 7 | 950 | C 5 | 13 |
| 9 | 3130 | 10 | 85 | 1380 | C 2 | 7 | 930 | C 5 | 13 |
| 10 | 3070 | C 7 | 57 | 1330 | C 2 | 7 | 950 | C 5 | 13 |
| 11 | 3100 | C 7 | 59 | 1240 | C 2 | 7 | 910 | C 5 | 12 |
| 12 | 3000 | C 7 | 57 | 1160 | C 2 | 6 | 910 | C 5 | 12 |
| 13 | 2870 | C 7 | 54 | 1130 | C 2 | 6 | 1040 | C 5 | 14 |
| 14 | 2780 | C 7 | 53 | 1210 | C 2 | 7 | 1180 | C 5 | 16 |
| 15 | 2700 | C 7 | 51 | 1350 | C 2 | 7 | 1010 | C 5 | 14 |
| 16 | 2570 | C 7 | 49 | 1230 | C 2 | 7 | 880 | C 5 | 12 |
| 17 | 2450 | C 7 | 46 | 1120 | C 2 | 6 | 910 | C 5 | 12 |
| 18 | 2320 | C 7 | 44 | 1110 | 37 | 111 | 890 | C 5 | 12 |
| 19 | 2290 | C 3 | 19 | 1050 | 23 | 65 | 850 | C 5 | 11 |
| 20 | 2230 | C 3 | 18 | 1040 | 7 | 20 | 850 | C 5 | 11 |
| 21 | 2140 | C 3 | 17 | 1030 | 7 | 19 | 870 | C 5 | 12 |
| 22 | 2060 | C 3 | 17 | 1060 | C 3 | 9 | 840 | C 5 | 11 |
| 23 | 2000 | C 3 | 16 | 1030 | C 3 | 8 | 820 | C 5 | 11 |
| 24 | 1970 | C 3 | 16 | 1020 | C 3 | 8 | 790 | C 5 | 11 |
| 25 | 1890 | C 3 | 15 | 1030 | C 3 | 8 | 810 | C 5 | 11 |
| 26 | 1810 | C 3 | 15 | 1030 | C 3 | 8 | 810 | C 5 | 11 |
| 27 | 1790 | C 3 | 14 | 1530 | 7 | A 29 | 830 | C 5 | 11 |
| 28 | 1730 | C 3 | 14 | 2110 | 21 | 120 | 830 | C 5 | 11 |
| 29 | 1690 | C 2 | 9 | 1810 | 10 | 49 | 810 | C 5 | 11 |
| 30 | 1660 | C 2 | 9 | 1500 | 8 | 32 | 780 | C 5 | 11 |
| 31 | 1660 | C 2 | 9 | 1540 | 16 | 67 | --- | --- | --- |
| Total | 83260 | --- | 2050 | 40920 | --- | 677 | 28810 | --- | 406 |

Total discharge for period (cfs-days)..... 1359840
Total load for period (tons)..... 222475

A Computed from partly estimated-concentration graph.
C Composite period.

## 13-3410.5. CLEARWATER RIVER NEAR PECK, IDAHO

LOCATION.--Lat 46°30'00", long 116°23'30", temperature recorder at gaging station on left bank, 2 miles upstream from Big Canyon Creek, 2.2 miles northeast of Peck, Nez Perce County, 3 miles downstream from North Fork Clearwater River, and at mile 37.4.
DRAINAGE AREA.--8,040 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 76°F Aug. 1-4; minimum, freezing point on many days during January and February.
EXTREMES, 1964-66.--Water temperatures: Maximum, 77°F Aug. 1, 2, 1965; minimum, freezing point on many days during January and February 1966.
REMARKS.--Clock stopped Jan. 27 to Feb. 19; temperature range, 32°F to 34°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 54 | 54 | 54 | 55 | 55 | 54 | 55 | 54 | 54 | 54 | 53 | 53 | 52 | 50 | 49 | 47 | 48 | 47 | 47 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 50 |
| Minimum .... | 51 | 51 | 52 | 53 | 53 | 54 | 54 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 50 | 49 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 46 | 45 | 46 | 46 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 41 | 40 | 40 | -- | 44 |
| Minimum .... | 46 | 46 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 41 | 40 | 40 | 39 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 37 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 37 |
| Minimum .... | 38 | 38 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 37 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | -- | -- | -- | -- | -- | 34 |
| Minimum .... | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 36 | 36 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 35 | 36 | 36 | 37 | 38 | 38 | 38 | 38 | 38 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 38 | 40 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 40 |
| Minimum .... | 38 | 38 | 37 | 35 | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 40 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 43 | 42 | 42 | 44 | 45 | 47 | 48 | 48 | 46 | 45 | 47 | 48 | -- | 44 |
| Minimum .... | 42 | 42 | 41 | 41 | 42 | 42 | 44 | 44 | 44 | 43 | 43 | 44 | 43 | 44 | 45 | 45 | 45 | 43 | 41 | 41 | 41 | 42 | 44 | 45 | 47 | 46 | 45 | 45 | 45 | 47 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 51 | 51 | 50 | 50 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | 48 | 48 | 49 | 50 | 52 | 52 | 52 | 50 | 51 | 53 | 54 | 54 | 54 | 53 | 52 | 52 | 50 |
| Minimum .... | 48 | 49 | 50 | 50 | 50 | 48 | 47 | 47 | 48 | 47 | 46 | 48 | 46 | 47 | 46 | 46 | 47 | 48 | 49 | 50 | 52 | 50 | 48 | 48 | 52 | 53 | 52 | 52 | 52 | 51 | 51 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 50 | 50 | 53 | 54 | 55 | 55 | 54 | 54 | 52 | 51 | 53 | 56 | 57 | 59 | 60 | 60 | 60 | 59 | 58 | 57 | 56 | 55 | 58 | 61 | 63 | 64 | 65 | -- | 56 |
| Minimum .... | 49 | 50 | 50 | 49 | 48 | 50 | 53 | 54 | 54 | 54 | 52 | 51 | 51 | 51 | 53 | 56 | 57 | 59 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 55 | 58 | 60 | 63 | 64 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 63 | 61 | 62 | 65 | 67 | 69 | 70 | 70 | 70 | 71 | 71 | 71 | 72 | 73 | 74 | 74 | 75 | 74 | 73 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 73 | 74 | 74 | 75 | 71 |
| Minimum .... | 63 | 61 | 61 | 60 | 61 | 63 | 66 | 67 | 68 | 68 | 68 | 68 | 68 | 69 | 70 | 70 | 72 | 71 | 72 | 71 | 69 | 69 | 70 | 70 | 70 | 69 | 69 | 69 | 70 | 70 | 71 | 68 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 76 | 76 | 76 | 76 | 75 | 74 | 75 | 74 | 75 | 74 | 72 | 71 | 70 | 71 | 71 | 72 | 71 | 71 | 70 | 70 | 70 | 69 | 70 | 71 | 70 | 69 | 68 | 69 | 68 | 67 | 66 | 72 |
| Minimum .... | 71 | 72 | 72 | 72 | 72 | 70 | 70 | 71 | 71 | 71 | 70 | 67 | 66 | 67 | 68 | 68 | 67 | 68 | 68 | 67 | 66 | 66 | 66 | 66 | 68 | 67 | 66 | 68 | 66 | 66 | 64 | 68 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 67 | 68 | 68 | 69 | 68 | 69 | 69 | 69 | 68 | 68 | 65 | 66 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 67 | 67 | 66 | 65 | 65 | 64 | 63 | 62 | 62 | 61 | -- | 66 |
| Minimum .... | 64 | 64 | 65 | 66 | 66 | 67 | 66 | 67 | 67 | 65 | 65 | 63 | 63 | 64 | 64 | 63 | 63 | 64 | 64 | 63 | 65 | 65 | 65 | 64 | 62 | 62 | 61 | 60 | 60 | 58 | -- | 64 |

## 13-3425. CLEARWATER RIVER AT SPALDING, IDAHO

LOCATION.--Lat 46°26'55", long 116°49'35", temperature recorder at gaging station on left bank, 0.4 mile downstream from Lapwai Creek, 0.5 mile west of Spalding Post Office, Nez Perce County, 3,100 feet downstream from bridge on U.S. Highway 12, and at mile 11.6.
DRAINAGE AREA.--9,570 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1959 to August 1960.
Water temperatures: September 1959 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 78°F Aug. 2; minimum, 33°F Feb. 13.
EXTREMES, 1959-66.--Water temperatures: Maximum, 82°F Aug. 13, 1963; minimum, freezing point on many days during winter months of most years.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 60 | 60 | 60 | 60 | 62 | 61 | 62 | 62 | 62 | 61 | 59 | 58 | 58 | 57 | 56 | 55 | 53 | 55 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 56 |
| Minimum .... | 56 | 56 | 57 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 57 | 55 | 57 | 56 | 56 | 53 | 53 | 51 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 51 | 50 | 50 | 50 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 44 | 44 | 43 | 42 | 42 | 42 | 41 | 39 | 38 | -- | 46 |
| Minimum .... | 49 | 50 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 47 | 47 | 47 | 47 | 46 | 45 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 39 | 37 | 36 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 36 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 37 |
| Minimum .... | 36 | 37 | 38 | 38 | 38 | 40 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 36 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 36 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 36 | 35 | 36 | 37 | 37 | 37 | 37 | 36 | 36 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 37 | 36 | 36 | 37 | 35 |
| Minimum .... | 34 | 34 | 34 | 34 | 35 | 35 | 36 | 36 | 35 | 35 | 35 | 36 | 37 | 37 | 36 | 36 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 36 | 36 | 35 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 36 | 36 | 35 | 36 | 36 | 37 | 37 | 39 | 38 | 42 | 43 | 42 | 41 | 42 | 44 | 43 | 43 | 42 | -- | -- | -- | 38 |
| Minimum .... | 34 | 34 | 34 | 34 | 36 | 36 | 36 | 36 | 36 | 34 | 36 | 35 | 33 | 34 | 34 | 35 | 36 | 36 | 36 | 38 | 38 | 38 | 40 | 39 | 41 | 41 | 41 | 41 | -- | -- | -- | 36 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 43 | 40 | 39 | 40 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 41 | 41 | 43 | 41 | 40 | 41 | 40 | 41 | 41 | 42 | 43 | 45 | 47 | 46 | 46 | 44 | 45 | 42 |
| Minimum .... | 40 | 39 | 38 | 36 | 38 | 39 | 40 | 40 | 40 | 40 | 38 | 40 | 42 | 41 | 40 | 40 | 39 | 37 | 39 | 38 | 38 | 38 | 38 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 44 | 45 | 45 | 47 | 47 | 47 | 47 | 45 | 44 | 44 | 45 | 44 | 46 | 47 | 46 | 45 | 44 | 43 | 44 | 45 | 49 | 51 | 51 | 50 | 48 | 48 | 50 | 50 | -- | 46 |
| Minimum .... | 43 | 41 | 41 | 40 | 41 | 42 | 44 | 45 | 45 | 44 | 44 | 43 | 42 | 44 | 44 | 46 | 45 | 44 | 42 | 42 | 42 | 43 | 44 | 46 | 48 | 48 | 46 | 44 | 46 | 47 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 51 | 53 | 52 | 52 | 51 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 47 | 48 | 50 | 51 | 52 | 54 | 54 | 54 | 52 | 51 | 54 | 56 | 56 | 56 | 56 | 55 | 55 | 52 |
| Minimum .... | 48 | 50 | 49 | 52 | 51 | 49 | 48 | 48 | 48 | 48 | 47 | 48 | 47 | 47 | 47 | 47 | 48 | 50 | 51 | 52 | 54 | 52 | 50 | 50 | 51 | 54 | 56 | 56 | 55 | 55 | 54 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 53 | 52 | 55 | 58 | 59 | 59 | 57 | 55 | 54 | 54 | 55 | 58 | 61 | 62 | 64 | 63 | 63 | 62 | 60 | 59 | 59 | 58 | 61 | 65 | 66 | 68 | 68 | -- | 59 |
| Minimum .... | 52 | 52 | 53 | 51 | 51 | 52 | 55 | 58 | 57 | 55 | 53 | 52 | 53 | 54 | 55 | 59 | 60 | 62 | 62 | 62 | 61 | 59 | 58 | 58 | 56 | 57 | 60 | 63 | 66 | 65 | -- | 57 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 66 | 63 | 65 | 66 | 68 | 71 | 73 | 73 | 73 | 73 | 73 | 74 | 74 | 76 | 76 | 77 | 77 | 77 | 76 | 76 | 76 | 76 | 76 | 74 | 74 | 75 | 75 | 76 | 76 | 76 | 73 |
| Minimum .... | 66 | 63 | 62 | 62 | 63 | 65 | 67 | 70 | 71 | 71 | 70 | 69 | 70 | 72 | 72 | 73 | 73 | 73 | 74 | 72 | 70 | 70 | 70 | 72 | 70 | 69 | 70 | 70 | 70 | 70 | 72 | 69 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 77 | 78 | 77 | 76 | 76 | 76 | 76 | 75 | 75 | 74 | 74 | 72 | 71 | 70 | 72 | 72 | 72 | 72 | 71 | 70 | 70 | 69 | 70 | 70 | 70 | 69 | 69 | 69 | 66 | 66 | 66 | 72 |
| Minimum .... | 72 | 72 | 72 | 72 | 72 | 70 | 71 | 72 | 71 | 72 | 70 | 67 | 67 | 67 | 68 | 68 | 67 | 68 | 69 | 67 | 66 | 66 | 66 | 67 | 69 | 66 | 66 | 66 | 63 | 62 | 61 | 68 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 66 | 66 | 67 | 68 | 68 | 68 | 69 | 68 | 68 | 66 | 64 | 63 | 64 | 64 | 62 | 64 | 64 | 64 | 63 | 64 | 65 | 66 | 64 | 64 | 62 | 62 | 60 | 60 | 60 | -- | 65 |
| Minimum .... | 61 | 62 | 64 | 64 | 66 | 66 | 66 | 66 | 64 | 65 | 63 | 60 | 60 | 62 | 61 | 60 | 60 | 62 | 61 | 60 | 62 | 63 | 64 | 62 | 62 | 60 | 58 | 58 | 58 | 56 | -- | 62 |

## TUCANNON RIVER BASIN

### 13-3445. TUCANNON RIVER NEAR STARBUCK, WASH.

LOCATION.--Lat 46°30'20", long 118°03'55", at county road bridge 180 feet upstream from gaging station, 3 miles east of Starbuck, Columbia County, and 3.5 miles downstream from Pataha Creek.
DRAINAGE AREA.--431 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, 34°F Mar. 3.
Sediment concentrations: Maximum daily, 40,400 ppm Sept. 14; minimum daily, 4 ppm Oct. 29, 30.
Sediment loads: Maximum daily, 127,000 tons Sept. 14; minimum daily, 1 ton on several days in October, November and August.
EXTREMES, 1962-66.--Water temperatures: Maximum (1962-65), 82°F Aug. 1, 1965; minimum, freezing point Dec. 11, 12, 1963.
Sediment concentrations: Maximum daily, 99,800 ppm Dec. 22, 1964; minimum daily, 4 ppm Oct. 29, 30, 1965.
Sediment loads: Maximum daily, 1,600,000 tons Dec. 22, 1964; minimum daily, 1 ton on several days in 1966.
REMARKS.--Maximum observed during water year: Sediment concentration, 102,000 ppm Sept. 14.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 50 | 49 | 65 | 54 | 55 | 56 | 65 | 54 | 65 | 61 | 49 | 48 | 55 | 56 | 53 | 54 | 57 | 51 | 52 | 47 | 47 | 46 | 59 | 54 | 46 | 46 | 45 | 55 | 57 | 58 | 53 | 54 |
| November | 46 | 51 | 47 | 53 | 50 | 52 | 46 | 46 | 45 | 44 | 45 | 45 | 51 | 52 | 48 | 48 | 48 | 47 | 49 | 50 | 48 | 47 | 46 | 48 | 42 | 41 | 44 | 45 | 38 | 39 | -- | 47 |
| December | 39 | 44 | 42 | 47 | 46 | 44 | 43 | 47 | 48 | 45 | 43 | 45 | 43 | 44 | 40 | 38 | 37 | 39 | 37 | 36 | 41 | 40 | 38 | 40 | 41 | 41 | 44 | 47 | 43 | 40 | 39 | 42 |
| January | 41 | 42 | 39 | 44 | 40 | 44 | 45 | 44 | 38 | 41 | 42 | 40 | 44 | 44 | 45 | 42 | 38 | 39 | 39 | 34 | 37 | 37 | 42 | 39 | 35 | 36 | 37 | 41 | 41 | 46 | 42 | 41 |
| February | 37 | 38 | 36 | 42 | 46 | 42 | 40 | 40 | 39 | 37 | 40 | 43 | 42 | 40 | 37 | 36 | 42 | 42 | 42 | 41 | 40 | 40 | 45 | 42 | 44 | 45 | 45 | 42 | -- | -- | -- | 41 |
| March | 40 | 36 | 34 | 35 | 42 | 47 | 43 | 45 | 49 | 44 | 42 | 45 | 51 | 47 | 44 | 44 | 40 | 37 | 45 | 49 | 41 | 39 | 40 | 41 | 43 | 45 | 48 | 47 | 45 | 49 | 47 | 43 |
| April | 46 | 45 | 44 | 42 | 44 | 47 | 48 | 49 | 50 | 49 | 48 | 47 | 48 | 46 | 53 | 49 | 49 | 45 | 39 | 45 | 45 | 47 | 49 | 51 | 60 | 46 | 45 | 45 | 47 | 50 | -- | 47 |
| May | 61 | 52 | 53 | 54 | 55 | 58 | 50 | 54 | 54 | 49 | 50 | 51 | 47 | 47 | 55 | 54 | 47 | 47 | 50 | 55 | 55 | 52 | 49 | 52 | 54 | 57 | 55 | 57 | 58 | 60 | 51 | 53 |
| June | 51 | -- | 58 | -- | 64 | -- | 58 | -- | 61 | -- | 53 | -- | 57 | -- | 58 | -- | 61 | -- | 67 | -- | 58 | -- | 58 | -- | 71 | -- | 62 | 69 | 58 | -- | -- | -- |
| July | 60 | -- | -- | 60 | 61 | 64 | -- | 65 | -- | 72 | -- | 62 | -- | 64 | -- | 64 | -- | 65 | -- | 60 | -- | 60 | -- | 76 | -- | 60 | -- | 63 | -- | 65 | -- | -- |
| August | 65 | 73 | 61 | -- | 64 | -- | -- | -- | 64 | -- | 75 | -- | 73 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 69 | -- | -- | 70 | -- | 73 | -- |
| September | -- | 77 | -- | -- | -- | -- | 72 | -- | 72 | -- | -- | 65 | -- | 62 | -- | 72 | -- | -- | -- | -- | 68 | -- | 72 | -- | -- | -- | -- | -- | -- | 51 | -- | -- |

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Jan. 6, 1966 | 1150 | 38 | | 432 | 7780 | 9070 | 23 | 36 | 55 | 79 | 94 | 98 | 99 | 100 | | | | VPWC |
| Apr. 2 | 1130 | | | 444 | 589 | 706 | 24 | 20 | 26 | 41 | 58 | | | | | | | VPWC |

TUCANNON RIVER BASIN--Continued

13-3445. TUCANNON RIVER NEAR STARBUCK, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 77 | 14 | 3 | 81 | 7 | 2 | 90 | 36 | 9 |
| 2 | 77 | 14 | 3 | 77 | 7 | 1 | 94 | 16 | 4 |
| 3 | 76 | 9 | 2 | 81 | 6 | 1 | 94 | 20 | 5 |
| 4 | 76 | 10 | 2 | 86 | 12 | 3 | 94 | 16 | 4 |
| 5 | 79 | 12 | 3 | 81 | 11 | 2 | 94 | 15 | 4 |
| 6 | 85 | 11 | 3 | 79 | 6 | 1 | 94 | 28 | 7 |
| 7 | 83 | 6 | 1 | 79 | 6 | 1 | 92 | 13 | 3 |
| 8 | 77 | 12 | 2 | 83 | 10 | 2 | 94 | 16 | 4 |
| 9 | 77 | 8 | 2 | 85 | 12 | 3 | 92 | 28 | 7 |
| 10 | 79 | 6 | 1 | 83 | 10 | 2 | 94 | 18 | 5 |
| 11 | 79 | 9 | 2 | 83 | 10 | 2 | 92 | 12 | 3 |
| 12 | 79 | 12 | 3 | 83 | 10 | 2 | 90 | 12 | 3 |
| 13 | 81 | 16 | 3 | 83 | 8 | 2 | 86 | 13 | 3 |
| 14 | 81 | 40 | 9 | 88 | 7 | 2 | 85 | 56 | 13 |
| 15 | 83 | 11 | 2 | 88 | 15 | 4 | 86 | 42 | 10 |
| 16 | 83 | 26 | 6 | 86 | 14 | 3 | 83 | 42 | 9 |
| 17 | 85 | 10 | 2 | 86 | 12 | 3 | 83 | 53 | 12 |
| 18 | 83 | 16 | 4 | 86 | 13 | 3 | 85 | 66 | 15 |
| 19 | 79 | 12 | 3 | 88 | 16 | 4 | 86 | 79 | 18 |
| 20 | 81 | 12 | 3 | 90 | 12 | 3 | 86 | 48 | 11 |
| 21 | 79 | 26 | 6 | 94 | 15 | 4 | 90 | 64 | 16 |
| 22 | 79 | 16 | 3 | 92 | 16 | 4 | 85 | 38 | 9 |
| 23 | 79 | 8 | 2 | 96 | 18 | 5 | 79 | 70 | 15 |
| 24 | 77 | 13 | 3 | 94 | 20 | 5 | 88 | 82 | 19 |
| 25 | 77 | 10 | 2 | 98 | 17 | 4 | 96 | 69 | 18 |
| 26 | 77 | 26 | 5 | 94 | 12 | 3 | 98 | 56 | 15 |
| 27 | 79 | 12 | 3 | 96 | 15 | 4 | 90 | 185 | 45 |
| 28 | 79 | 6 | 1 | 94 | 10 | 3 | 94 | 257 | 65 |
| 29 | 77 | 4 | 1 | 90 | 9 | 2 | 98 | 330 | 87 |
| 30 | 77 | 4 | 1 | 90 | 14 | 3 | 96 | 260 | 67 |
| 31 | 79 | 7 | 1 | --- | --- | --- | 90 | 60 | 15 |
| Total | 2459 | --- | 87 | 2614 | --- | 83 | 2798 | --- | 520 |
| | JANUARY | | | FEBRUARY | | | MARCH | | |
| 1 | 88 | 63 | 15 | 96 | 12 | 3 | 130 | 32 | 11 |
| 2 | 102 | 90 | 25 | 96 | 22 | 6 | 121 | 32 | 10 |
| 3 | 106 | 78 | 22 | 98 | 22 | 6 | 117 | 41 | 13 |
| 4 | 123 | 178 | 59 | 102 | 23 | 6 | 117 | 41 | 13 |
| 5 | 123 | 131 | 44 | 102 | 42 | 12 | 114 | 31 | 10 |
| 6 | 320 | 4300 | S 4700 | 104 | 20 | 6 | 117 | 38 | 12 |
| 7 | 218 | 362 | 213 | 106 | 28 | 8 | 123 | 54 | 18 |
| 8 | 209 | 185 | 104 | 104 | 24 | 7 | 121 | 32 | 10 |
| 9 | 191 | 106 | 55 | 104 | 20 | 6 | 142 | 68 | 26 |
| 10 | 168 | 68 | 31 | 102 | 14 | 4 | 188 | 196 | 99 |
| 11 | 154 | 48 | 20 | 102 | 15 | 4 | 185 | 117 | 58 |
| 12 | 142 | 44 | 17 | 108 | 18 | 5 | 177 | 74 | 35 |
| 13 | 134 | 40 | 14 | 102 | 22 | 6 | 179 | 69 | 33 |
| 14 | 137 | 38 | 14 | 110 | 22 | 7 | 226 | 162 | 99 |
| 15 | 132 | 30 | 11 | 102 | 7 | 2 | 274 | 237 | 175 |
| 16 | 128 | 26 | 9 | 102 | 13 | 4 | 268 | 146 | 106 |
| 17 | 121 | 24 | 8 | 102 | 16 | 4 | 236 | 68 | 43 |
| 18 | 121 | 23 | 8 | 102 | 14 | 4 | 212 | 57 | 33 |
| 19 | 117 | 27 | 9 | 108 | 44 | 13 | 197 | 39 | 21 |
| 20 | 108 | 25 | 7 | 108 | 240 | 70 | 182 | 33 | 16 |
| 21 | 110 | 21 | 6 | 134 | 1200 | 434 | 185 | 45 | 22 |
| 22 | 108 | 15 | 4 | 134 | 730 | 264 | 157 | 24 | 10 |
| 23 | 104 | 18 | 5 | 134 | 250 | 90 | 160 | 33 | 14 |
| 24 | 98 | 14 | 4 | 134 | 122 | 44 | 165 | 50 | 22 |
| 25 | 98 | 14 | 4 | 137 | 63 | 23 | 174 | 45 | 21 |
| 26 | 98 | 16 | 4 | 137 | 71 | 26 | 200 | 67 | 36 |
| 27 | 94 | 15 | 4 | 137 | 40 | 15 | 229 | 125 | 77 |
| 28 | 96 | 18 | 5 | 134 | 37 | 13 | 282 | 335 | 255 |
| 29 | 94 | 15 | 4 | --- | --- | --- | 318 | 415 | 356 |
| 30 | 92 | 13 | 3 | --- | --- | --- | 349 | 410 | 386 |
| 31 | 94 | 18 | 5 | --- | --- | --- | 376 | 415 | 421 |
| Total | 4028 | --- | 5433 | 3141 | --- | 1092 | 6021 | --- | 2461 |

S Computed by subdividing day.

TUCANNON RIVER BASIN--Continued

13-3445. TUCANNON RIVER NEAR STARBUCK, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 400 | 430 | 464 | 144 | 12 | 5 | 171 | C 21 | 10 |
| 2 | 436 | 580 | 683 | 147 | 20 | 8 | 163 | C 21 | 9 |
| 3 | 428 | 325 | 376 | 179 | 45 | 22 | 185 | C 21 | 10 |
| 4 | 372 | 200 | 201 | 229 | 120 | 74 | 179 | C 21 | 10 |
| 5 | 333 | 133 | 120 | 292 | 325 | 256 | 157 | C 21 | 9 |
| 6 | 311 | 105 | 88 | 364 | 555 | 545 | 144 | C 21 | 8 |
| 7 | 322 | 132 | 115 | 396 | 555 | 593 | 137 | C 21 | 8 |
| 8 | 345 | 156 | 145 | 360 | 345 | 335 | 134 | C 21 | 8 |
| 9 | 364 | 180 | 177 | 341 | 190 | 175 | 134 | C 21 | 8 |
| 10 | 364 | 150 | 147 | 337 | 135 | 123 | 140 | C 21 | 8 |
| 11 | 341 | 116 | 107 | 315 | 130 | 110 | 137 | C 21 | 8 |
| 12 | 326 | 91 | 80 | 278 | 125 | 94 | 130 | C 21 | 7 |
| 13 | 289 | 67 | 52 | 257 | 103 | 71 | 125 | C 21 | 7 |
| 14 | 254 | 58 | 40 | 232 | 62 | 39 | 119 | C 21 | 7 |
| 15 | 240 | 52 | 34 | 212 | 51 | 29 | 112 | C 15 | 5 |
| 16 | 260 | 68 | 48 | 200 | 35 | 19 | 106 | C 15 | 4 |
| 17 | 282 | 72 | 55 | 182 | 38 | 19 | 104 | C 15 | 4 |
| 18 | 264 | 48 | 34 | 168 | 36 | 16 | 98 | C 15 | 4 |
| 19 | 236 | 34 | 22 | 160 | 38 | 16 | 96 | C 15 | 4 |
| 20 | 218 | 35 | 21 | 157 | 36 | 15 | 92 | C 15 | 4 |
| 21 | 206 | 29 | 16 | 171 | 39 | 18 | 90 | C 15 | 4 |
| 22 | 185 | 28 | 14 | 188 | 45 | 23 | 88 | C 15 | 4 |
| 23 | 174 | 30 | 14 | 171 | 23 | 11 | 88 | C 15 | 4 |
| 24 | 157 | 24 | 10 | 160 | 27 | 12 | 88 | C 15 | 4 |
| 25 | 165 | 21 | 9 | 160 | 35 | 15 | 86 | C 15 | 3 |
| 26 | 174 | 24 | 11 | 165 | 37 | 16 | 83 | C 15 | 3 |
| 27 | 177 | 22 | 10 | 179 | 42 | 20 | 79 | C 15 | 3 |
| 28 | 168 | 26 | 12 | 182 | 38 | 19 | 76 | C 15 | 3 |
| 29 | 157 | 16 | 7 | 179 | 28 | 14 | 72 | C 15 | 3 |
| 30 | 147 | 17 | 7 | 177 | 20 | 10 | 72 | C 15 | 3 |
| 31 | -- | -- | -- | 174 | 27 | 13 | -- | -- | -- |
| Total | 8095 | -- | 3119 | 6861 | -- | 2735 | 3485 | -- | 176 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 70 | 16 | 3 | 53 | C 13 | 2 | 55 | C 13 | 2 |
| 2 | 80 | 210 B | 50 | 49 | C 13 | 2 | 52 | C 13 | 2 |
| 3 | 102 | 300 B | 83 | 49 | C 13 | 2 | 52 | C 13 | 2 |
| 4 | 86 | 190 | 44 | 49 | C 13 | 2 | 53 | C 13 | 2 |
| 5 | 79 | 100 | 21 | 49 | C 13 | 2 | 53 | C 13 | 2 |
| 6 | 69 | 24 | 4 | 50 | C 13 | 2 | 52 | C 13 | 2 |
| 7 | 70 | C 13 | 2 | 52 | C 13 | 2 | 50 | C 13 | 2 |
| 8 | 67 | C 13 | 2 | 50 | C 13 | 2 | 50 | C 13 | 2 |
| 9 | 64 | C 13 | 2 | 49 | C 13 | 2 | 50 | C 13 | 2 |
| 10 | 64 | C 13 | 2 | 49 | C 13 | 2 | 50 | C 13 | 2 |
| 11 | 62 | C 13 | 2 | 46 | C 13 | 2 | 53 | C 13 | 2 |
| 12 | 62 | C 13 | 2 | 46 | C 13 | 2 | 53 | C 13 | 2 |
| 13 | 64 | C 13 | 2 | 48 | C 13 | 2 | 71 | 9530 S | 12000 |
| 14 | 64 | C 13 | 2 | 48 | C 13 | 2 | 330 | 40400 S | 127000 |
| 15 | 61 | C 13 | 2 | 46 | C 13 | 2 | 90 | 1600 B | 390 |
| 16 | 59 | C 13 | 2 | 43 | C 13 | 2 | 77 | 620 | 129 |
| 17 | 59 | C 13 | 2 | 42 | C 13 | 1 | 70 | 380 B | 72 |
| 18 | 58 | C 13 | 2 | 42 | C 13 | 1 | 69 | 200 B | 37 |
| 19 | 56 | C 13 | 2 | 43 | C 13 | 2 | 69 | 80 B | 15 |
| 20 | 56 | C 13 | 2 | 45 | C 13 | 2 | 69 | -- E | 13 |
| 21 | 56 | C 13 | 2 | 46 | C 13 | 2 | 69 | 61 | 11 |
| 22 | 56 | C 13 | 2 | 48 | C 13 | 2 | 67 | -- E | 10 |
| 23 | 55 | C 13 | 2 | 49 | C 13 | 2 | 67 | 52 | 9 |
| 24 | 55 | C 13 | 2 | 50 | C 13 | 2 | 67 | -- E | 8 |
| 25 | 56 | C 13 | 2 | 46 | C 13 | 2 | 67 | -- E | 7 |
| 26 | 56 | C 13 | 2 | 48 | C 13 | 2 | 69 | -- E | 7 |
| 27 | 56 | C 13 | 2 | 49 | C 13 | 2 | 70 | C 20 | 4 |
| 28 | 55 | C 13 | 2 | 52 | C 13 | 2 | 70 | C 20 | 4 |
| 29 | 53 | C 13 | 2 | 58 | C 13 | 2 | 70 | C 20 | 4 |
| 30 | 52 | C 13 | 2 | 67 | C 13 | 2 | 70 | C 20 | 4 |
| 31 | 55 | C 13 | 2 | 59 | C 13 | 2 | -- | -- | -- |
| Total | 1965 | -- | 255 | 1520 | -- | 60 | 2154 | -- | 139748 |

Total discharge for year (cfs-days)..... 45141
Total load for year (tons)..... 155769

E Estimated.
S Computed by subdividing day.
B Computed from estimated-concentration graph.
C Composite period.

## 13-3510. PALOUSE RIVER AT HOOPER, WASH.
(Formerly reported as Palouse River near Hooper, Wash.)

LOCATION.--Lat 46°45'30", long 118°08'50", at bridge on State Highway 26 at Hooper, Whitman County, 150 feet upstream from gaging station, and 0.4 mile upstream from Cow Creek.
DRAINAGE AREA.--2,500 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: October 1961 to September 1966.
Sediment records: October 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, 34°F Dec. 16, Jan. 5, 17, 24, 25.
Sediment concentrations: Maximum daily, 3,840 ppm Jan. 6; minimum daily, 7 ppm on several days during November and December.
Sediment loads: Maximum daily, 13,500 tons Mar. 11; minimum daily, less than 0.50 ton on many days during July, August, and September.
EXTREMES, 1961-66.--Water temperatures (1961-64, 1965-66): Maximum (1962-64), 86°F July 12, 1964; minimum (1961-64, 1965-66), freezing point on several days during December 1961, January 1962, January and February 1963.
Sediment concentrations: Maximum daily, 45,100 ppm Feb. 5, 1963; minimum daily, 6 ppm on several days during November 1961.
Sediment loads: Maximum daily, 2,110,000 tons Feb. 5, 1963; minimum daily, less than 0.50 ton on many days during July, August and September 1966.
REMARKS.--Maximum observed during water year: Sediment concentration, 6,380 ppm Jan. 6.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (calculated) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 25, 1965 | 58 | 12 | | | | 30 | 11 | 25 | 4.6 | | 187 | 0 | 9.8 | 10 | 0.4 | 1.3 | | 196 | 122 | 0 | | 335 | 7.9 | 5 | | |
| Dec. 9..... | 103 | 23 | | | | 27 | 9.7 | 20 | 3.8 | | 156 | 0 | 8.4 | 7.2 | .4 | 4.3 | | 181 | 108 | 0 | | 292 | 7.8 | 5 | | |
| Jan. 13, 1966 | 508 | 22 | | | | 19 | 6.7 | 12 | 4.2 | | 94 | 0 | 10 | 3.5 | .2 | 14 | | A 147 | 75 | 0 | | 211 | 7.4 | 20 | | |
| Feb. 10..... | 324 | 25 | | | | 22 | 7.8 | 15 | 4.0 | | 116 | 0 | 9.8 | 5.0 | .3 | 11 | | A 167 | 87 | 0 | | 239 | 7.8 | 15 | | |
| Mar. 14..... | 1540 | 24 | | | | 13 | 3.7 | 8.5 | 2.8 | | 62 | 0 | 7.2 | 2.2 | .2 | 9.1 | | A 122 | 49 | 0 | | 140 | 7.3 | 20 | | |
| Apr. 6..... | 897 | 22 | | | | 10 | 3.4 | 6.7 | 2.1 | | 56 | 0 | 4.4 | 2.0 | .2 | 2.6 | | A 88 | 39 | 0 | | 112 | 7.3 | 10 | | |
| May 12..... | 202 | 13 | | | | 15 | 5.2 | 12 | 2.6 | | 91 | 0 | 5.2 | 3.2 | .3 | .8 | | A 103 | 59 | 0 | | 166 | 7.9 | 5 | | |
| June 14..... | 77 | 14 | | | | 24 | 8.9 | 20 | 3.8 | | 147 | 0 | 8.4 | 7.5 | .4 | 2.2 | | 161 | 96 | 0 | | 267 | 7.3 | 5 | | |
| July 21..... | 13 | 25 | | | | 29 | 11 | 24 | 4.4 | | 183 | 0 | 10 | 7.5 | .4 | 1.4 | | 203 | 118 | 0 | | 322 | 7.8 | 5 | | |
| Aug. 24..... | .4 | 28 | | | | 38 | 16 | 32 | 7.5 | | 238 | 0 | 15 | 18 | .4 | 1.3 | | 273 | 161 | 0 | | 439 | 8.1 | 10 | | |
| Sept. 30..... | 7.4 | 15 | | | | 26 | 13 | 24 | 4.1 | | 162 | 12 | 12 | 7.0 | .3 | .9 | | 193 | 118 | 0 | | 316 | 8.6 | 5 | | |

A Residue at 180°C.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| July 21, 1966... | 0910 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.04 |

PALOUSE RIVER BASIN--Continued

13-3510. PALOUSE RIVER AT HOOPER, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | -- | 63 | -- | 62 | -- | -- | 62 | -- | 63 | -- | 60 | -- | 60 | -- | 54 | -- | -- | 55 | -- | 56 | -- | -- | -- | -- | 56 | -- | 55 | 53 | 55 | -- | -- | -- |
| November | 54 | -- | 52 | -- | -- | 49 | -- | 57 | -- | 49 | -- | 47 | -- | -- | 51 | -- | 47 | -- | 58 | -- | 46 | -- | 43 | -- | 42 | -- | 42 | -- | 39 | 38 | -- | -- |
| December | -- | -- | -- | 44 | -- | 43 | -- | 45 | 42 | 43 | -- | 42 | -- | 37 | -- | 34 | -- | 36 | -- | 36 | -- | 35 | -- | 35 | -- | -- | 38 | -- | 39 | -- | -- | -- |
| January | 35 | -- | 35 | 36 | 34 | 40 | 41 | 38 | 36 | 39 | 38 | 40 | 42 | 41 | 41 | 35 | 34 | 35 | 35 | 36 | 35 | 38 | 35 | 34 | 34 | 36 | 35 | 39 | 39 | 39 | 40 | 37 |
| February | 39 | 37 | 37 | 41 | 39 | 39 | 40 | 39 | 39 | 38 | 38 | 35 | 37 | 38 | 39 | 40 | 40 | 41 | 42 | -- | 44 | 43 | 43 | 40 | 45 | 44 | 43 | 41 | -- | -- | -- | 40 |
| March | 40 | 38 | 38 | 38 | 40 | -- | 43 | 45 | 46 | 45 | 46 | 47 | 46 | 47 | 46 | 44 | 42 | 43 | 42 | 43 | 42 | 44 | 46 | 48 | 50 | 52 | -- | -- | -- | -- | -- | 44 |
| April | -- | 52 | 52 | 54 | 55 | 43 | 58 | 59 | -- | 56 | 54 | 49 | 53 | 55 | 58 | 56 | 54 | -- | 49 | 48 | -- | 52 | -- | -- | 60 | -- | 53 | -- | 58 | -- | -- | -- |
| May | 63 | -- | 73 | -- | 76 | -- | -- | 71 | -- | -- | 64 | 59 | 57 | -- | 55 | -- | -- | -- | 68 | -- | 68 | -- | 62 | -- | 75 | -- | 71 | -- | 65 | -- | 60 | -- |
| June | -- | -- | 57 | -- | 68 | -- | 72 | -- | 71 | -- | 64 | -- | 67 | -- | -- | 72 | 72 | -- | -- | 70 | -- | 67 | -- | 63 | -- | -- | 73 | -- | 69 | -- | -- | -- |
| July | 66 | -- | -- | 69 | -- | 74 | -- | 77 | -- | -- | 73 | -- | 75 | -- | 74 | -- | -- | 73 | -- | 72 | 70 | 74 | -- | -- | 70 | -- | 72 | -- | 71 | -- | -- | -- |
| August | 77 | -- | -- | 74 | -- | -- | -- | 75 | -- | 74 | -- | 70 | -- | -- | 72 | -- | 72 | -- | 74 | -- | -- | 70 | -- | -- | 68 | 64 | -- | -- | 66 | -- | -- | -- |
| September | 66 | -- | -- | -- | -- | 66 | -- | -- | -- | 77 | -- | 64 | -- | 64 | -- | 65 | -- | -- | 63 | -- | -- | 67 | -- | -- | -- | 63 | -- | 62 | -- | -- | -- | -- |

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Jan. 6, 1966 | 1920 | 40 | | 814 | 6380 | 14000 | 36 | 56 | 79 | 92 | 100 | | | | | | | PWC |
| Mar. 10 | 0910 | 43 | | 1510 | 1120 | 4570 | 42 | 54 | 70 | 86 | 99 | | | | | | | PWC |
| Mar. 10 | 1800 | 45 | | 1890 | 1570 | 8010 | 44 | 56 | 71 | 83 | 97 | | | | | | | PWC |

PALOUSE RIVER BASIN--Continued

13-3510. PALOUSE RIVER AT HOOPER, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no daily concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day |
| 1 | 48 | C 10 | 1 | 63 | C 10 | 2 | 102 | C 10 | 3 |
| 2 | 49 | C 10 | 1 | 63 | C 10 | 2 | 95 | C 10 | 3 |
| 3 | 48 | C 10 | 1 | 63 | C 10 | 2 | 95 | C 10 | 3 |
| 4 | 49 | C 10 | 1 | 66 | C 10 | 2 | 95 | C 10 | 3 |
| 5 | 49 | C 10 | 1 | 68 | C 10 | 2 | 95 | C 10 | 3 |
| 6 | 46 | C 10 | 1 | 69 | C 10 | 2 | 102 | C 10 | 3 |
| 7 | 47 | C 10 | 1 | 69 | C 10 | 2 | 98 | C 10 | 3 |
| 8 | 49 | C 10 | 1 | 69 | C 10 | 2 | 98 | C 10 | 3 |
| 9 | 47 | C 10 | 1 | 70 | C 10 | 2 | 103 | C 10 | 3 |
| 10 | 48 | C 10 | 1 | 77 | C 10 | 2 | 108 | C 10 | 2 |
| 11 | 49 | C 10 | 1 | 81 | C 10 | 2 | 111 | C 10 | 2 |
| 12 | 49 | C 10 | 1 | 77 | C 10 | 2 | 110 | C 10 | 2 |
| 13 | 49 | C 10 | 1 | 78 | C 10 | 2 | 108 | C 10 | 2 |
| 14 | 51 | C 10 | 1 | 78 | C 10 | 2 | 108 | C 10 | 2 |
| 15 | 51 | C 10 | 1 | 81 | C 10 | 2 | 106 | C 10 | 2 |
| 16 | 52 | C 10 | 1 | 81 | C 10 | 2 | 105 | C 10 | 2 |
| 17 | 54 | C 10 | 1 | 89 | C 10 | 2 | 90 | C 10 B | 3 |
| 18 | 55 | C 10 | 1 | 86 | C 10 | 2 | 75 | C 10 A | 9 |
| 19 | 55 | C 10 | 1 | 79 | C 10 | 2 | 65 | C 10 B | 9 |
| 20 | 57 | C 10 | 2 | 78 | C 10 | 2 | 75 | C 10 A | 20 |
| 21 | 58 | C 10 | 2 | 81 | C 10 | 2 | 100 | C 10 B | 23 |
| 22 | 58 | C 10 | 2 | 81 | C 10 | 2 | 103 | C 10 | 11 |
| 23 | 60 | C 10 | 2 | 92 | C 7 | 2 | 90 | C 7 B | 5 |
| 24 | 60 | C 10 | 2 | 97 | C 7 | 2 | 85 | C 7 A | 5 |
| 25 | 58 | C 10 | 2 | 105 | C 7 | 2 | 80 | C 7 B | 6 |
| 26 | 64 | C 10 | 2 | 108 | C 7 | 2 | 90 | C 7 B | 7 |
| 27 | 64 | C 10 | 2 | 113 | C 7 | 2 | 102 | C 7 | 4 |
| 28 | 63 | C 10 | 2 | 115 | C 7 | 2 | 111 | C 7 B | 3 |
| 29 | 61 | C 10 | 2 | 115 | C 7 | 2 | 134 | C 7 | 8 |
| 30 | 60 | C 10 | 2 | 110 | C 7 | 2 | 141 | C 7 B | 10 |
| 31 | 61 | C 10 | 2 | --- | --- | --- | 120 | C 7 B | 11 |
| Total | 1669 | --- | 43 | 2502 | --- | 60 | 3100 | --- | 175 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day |
| 1 | 75 | 40 A | 8 | 281 | 142 | 108 | 547 | 240 | 354 |
| 2 | 134 | 50 B | 18 | 268 | 203 | 147 | 487 | 170 | 224 |
| 3 | 138 | 45 A | 17 | 265 | 208 | 149 | 410 | 130 | 144 |
| 4 | 152 | 42 S | 19 | 240 | 143 | 93 | 365 | 100 | 99 |
| 5 | 250 | 72 | 49 | 255 | 95 | 65 | 330 | 90 | 80 |
| 6 | 865 | 3840 S | 10200 | 368 | 270 | 268 | 315 | 80 B | 68 |
| 7 | 875 | 2430 | 5740 | 475 | 380 | 487 | 330 | 80 | 71 |
| 8 | 1240 | 1180 | 3950 | 386 | 595 | 620 | 471 | 150 | 191 |
| 9 | 1120 | 560 | 1690 | 355 | 540 | 518 | 660 | 405 | 722 |
| 10 | 765 | 310 | 640 | 324 | 335 | 293 | 1640 | 1360 S | 6450 |
| 11 | 597 | 225 | 363 | 284 | 220 | 169 | 2260 | 2220 | 13500 |
| 12 | 483 | 168 | 219 | 262 | 155 | 110 | 1600 | 940 | 4060 |
| 13 | 508 | 120 | 165 | 250 | 110 | 74 | 1310 | 360 | 1270 |
| 14 | 630 | 115 | 196 | 255 | 100 | 69 | 1540 | 350 | 1460 |
| 15 | 680 | 125 | 230 | 262 | 95 | 67 | 2170 | 790 | 4630 |
| 16 | 645 | 145 | 252 | 232 | 80 | 50 | 2110 | 590 | 3360 |
| 17 | 512 | 119 | 165 | 237 | 70 | 45 | 1620 | 340 | 1490 |
| 18 | 386 | 95 | 99 | 247 | 70 | 47 | 1190 | 160 | 514 |
| 19 | 352 | 82 | 78 | 242 | 70 | 46 | 984 | 120 | 319 |
| 20 | 300 | 68 | 55 | 265 | 80 B | 57 | 930 | 110 | 276 |
| 21 | 275 | 44 | 33 | 434 | 130 | 152 | 919 | 102 | 253 |
| 22 | 262 | 43 | 30 | 592 | 610 | 975 | 875 | 102 | 241 |
| 23 | 273 | 44 | 32 | 695 | 625 | 1170 | 760 | 103 | 211 |
| 24 | 234 | 35 | 22 | 716 | 540 | 1040 | 908 | 141 | 346 |
| 25 | 228 | 85 | 52 | 610 | 410 | 675 | 990 | 256 | 684 |
| 26 | 232 | 30 | 19 | 645 | 390 | 679 | 924 | 315 | 786 |
| 27 | 234 | 31 | 20 | 640 | 330 | 570 | 954 | 310 B | 800 |
| 28 | 237 | 37 | 24 | 601 | 285 | 462 | 1090 | 360 B | 1100 |
| 29 | 240 | 35 | 23 | --- | --- | --- | 1240 | --- | 1100 |
| 30 | 252 | 41 | 28 | --- | --- | --- | 1410 | --- | 1100 |
| 31 | 270 | 51 | 37 | --- | --- | --- | 1520 | --- | 1100 |
| Total | 13444 | --- | 24473 | 10686 | --- | 9205 | 32859 | --- | 47003 |

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.

PALOUSE RIVER BASIN--Continued

13-3510. PALOUSE RIVER AT HOOPER, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 1570 | 210 B | 890 | 270 | C 14 | 10 | 79 | C 12 | 3 |
| 2 | 1550 | 181 | 757 | 255 | C 14 | 10 | 79 | C 12 | 3 |
| 3 | 1470 | 153 | 607 | 244 | C 14 | 9 | 91 | C 12 | 3 |
| 4 | 1260 | 121 | 412 | 232 | C 14 | 9 | 95 | C 12 | 3 |
| 5 | 1030 | 94 | 261 | 240 | C 14 | 9 | 111 | C 12 | 4 |
| 6 | 897 | 78 | 189 | 252 | C 14 | 10 | 103 | C 12 | 3 |
| 7 | 842 | 82 | 186 | 275 | C 14 | 10 | 103 | C 12 | 3 |
| 8 | 870 | 91 | 214 | 281 | C 14 | 11 | 111 | C 12 | 4 |
| 9 | 936 | 98 B | 250 | 273 | C 14 | 10 | 100 | C 12 | 3 |
| 10 | 1010 | 98 | 267 | 237 | C 14 | 9 | 91 | C 12 | 3 |
| 11 | 1030 | 99 | 275 | 218 | C 18 | 11 | 79 | C 21 | 4 |
| 12 | 886 | 85 | 203 | 202 | C 18 | 10 | 78 | C 21 | 4 |
| 13 | 787 | 66 | 140 | 189 | C 18 | 9 | 78 | C 21 | 4 |
| 14 | 710 | 57 | 109 | 178 | C 18 | 9 | 77 | C 21 | 4 |
| 15 | 606 | 55 | 90 | 166 | C 18 | 8 | 78 | C 21 | 4 |
| 16 | 538 | 50 | 73 | 160 | C 18 | 8 | 72 | C 21 | 4 |
| 17 | 516 | 49 | 68 | 162 | C 18 | 8 | 63 | C 21 | 4 |
| 18 | 547 | C 30 | 44 | 156 | C 18 | 8 | 54 | C 21 | 3 |
| 19 | 452 | C 30 | 37 | 154 | C 18 | 7 | 50 | C 27 | 4 |
| 20 | 444 | C 30 | 36 | 139 | C 18 | 7 | 47 | C 27 | 3 |
| 21 | 410 | C 30 | 33 | 129 | C 18 | 6 | 42 | C 27 | 3 |
| 22 | 396 | C 30 | 32 | 122 | C 10 | 3 | 41 | C 27 | 3 |
| 23 | 382 | C 30 | 31 | 123 | C 10 | 3 | 39 | C 27 | 3 |
| 24 | 358 | C 30 | 29 | 118 | C 10 | 3 | 35 | C 27 | 3 |
| 25 | 324 | C 23 | 20 | 110 | C 10 | 3 | 36 | C 27 | 3 |
| 26 | 306 | C 23 | 19 | 98 | C 10 | 3 | 34 | C 27 | 2 |
| 27 | 309 | C 23 | 19 | 89 | C 10 | 2 | 34 | C 27 | 2 |
| 28 | 321 | C 23 | 20 | 88 | C 10 | 2 | 28 | C 27 | 2 |
| 29 | 318 | C 23 | 20 | 81 | C 10 | 2 | 27 | C 27 | 2 |
| 30 | 295 | C 23 | 18 | 85 | C 10 | 2 | 32 | C 27 | 2 |
| 31 | --- | --- | --- | 85 | C 10 | 2 | --- | --- | --- |
| Total | 21370 | --- | 5349 | 5411 | --- | 213 | 1987 | --- | 95 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 29 | C 17 | 1 | 3.8 | 11 | T | 1.8 | 290 A | 1 |
| 2 | 28 | C 17 | 1 | 4.9 | --- | T | 2.3 | 210 B | 1 |
| 3 | 32 | C 17 | 1 | 3.6 | --- | T | 1.8 | --- | T |
| 4 | 36 | C 17 | 2 | 2.7 | 120 A | 1 | 1.2 | --- | T |
| 5 | 39 | C 17 | 2 | 2.1 | 120 B | 1 | 1.2 | C 44 | T |
| 6 | 36 | C 17 | 2 | 1.6 | --- | T | 1.5 | C 44 | T |
| 7 | 38 | C 17 | 2 | 1.9 | --- | T | 1.8 | C 44 | T |
| 8 | 33 | C 17 | 2 | 1.6 | 70 | T | 2.1 | C 44 | T |
| 9 | 34 | C 17 | 2 | 1.8 | --- | T | 1.8 | C 44 | T |
| 10 | 25 | C 17 | 1 | 1.5 | 35 | T | 2.1 | C 44 | T |
| 11 | 23 | C 17 | 1 | .7 | --- | T | 2.3 | C 44 | T |
| 12 | 19 | C 17 | 1 | .7 | 40 | T | 1.1 | C 44 | T |
| 13 | 19 | C 17 | 1 | 1.1 | --- | T | 1.3 | C 44 | T |
| 14 | 18 | C 17 | 1 | .9 | 23 | T | 4.4 | C 26 | T |
| 15 | 17 | C 17 | 1 | 1.1 | 23 | T | 6.6 | C 26 | T |
| 16 | 14 | C 17 | 1 | 1.2 | C 23 | T | 5.6 | C 26 | T |
| 17 | 12 | C 42 | 1 | 1.6 | C 23 | T | 4.9 | C 26 | T |
| 18 | 11 | C 42 | 1 | 1.5 | C 23 | T | 4.4 | C 26 | T |
| 19 | 9.8 | C 42 | 1 | 1.9 | C 23 | T | 5.2 | C 26 | T |
| 20 | 9.8 | C 42 | 1 | 1.5 | C 23 | T | 5.9 | C 26 | T |
| 21 | 13 | C 42 | 1 | 1.0 | C 23 | T | 7.4 | C 15 | T |
| 22 | 14 | C 42 | 2 | .9 | C 23 | T | 7.4 | C 15 | T |
| 23 | 13 | C 42 | 1 | .9 | C 23 | T | 7.0 | C 15 | T |
| 24 | 11 | C 30 | 1 | .4 | C 23 | T | 5.6 | C 15 | T |
| 25 | 9.3 | C 30 | 1 | .3 | C 23 | T | 5.2 | C 15 | T |
| 26 | 9.8 | C 30 | 1 | .3 | C 23 | T | 5.2 | C 15 | T |
| 27 | 8.8 | C 30 | 1 | .2 | C 23 | T | 7.4 | C 15 | T |
| 28 | 8.1 | C 30 | 1 | .1 | C 23 | T | 7.7 | C 15 | T |
| 29 | 7.7 | C 30 | 1 | .1 | C 23 | T | 6.3 | C 15 | T |
| 30 | 5.9 | C 30 | T | .2 | --- | T | 7.4 | C 15 | T |
| 31 | 3.1 | C 30 | T | 1.3 | --- | T | --- | --- | --- |
| Total | 586.3 | --- | 37 | 43.4 | --- | 6 | 125.9 | --- | 10 |

Total discharge for year (cfs-days)..... 93783.6
Total load for year (tons)..... 86669

T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.

## SNAKE RIVER MAIN STEM

### 13-3530. SNAKE RIVER BELOW ICE HARBOR DAM, WASH.

LOCATION (revised).--Lat 46°14'45", long 118°52'40", at south fishladder at Ice Harbor Dam, 1.1 mile upstream from gaging station, 10.5 miles east of Pasco, Franklin County, and at river mile 9.7.
DRAINAGE AREA.--108,500 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (calculated) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 25, 1965 | 33100 | 24 | | | | 36 | 11 | 33 | 3.6 | | 164 | 0 | 49 | 15 | 0.5 | 2.5 | | 256 | 135 | 0 | | 418 | 7.8 | 5 | -- | -- |
| Dec. 5..... | 40400 | 22 | | | | 34 | 13 | 30 | 3.4 | | 164 | 0 | 45 | 14 | .5 | 2.1 | | 245 | 137 | 2 | | 399 | 7.8 | 5 | 10.9 | 140 |
| Jan. 13, 1966 | 35300 | 22 | | | | 34 | 13 | 25 | 3.4 | | 158 | 0 | 39 | 14 | .6 | 2.9 | | A 235 | 138 | 8 | | 383 | 7.9 | 5 | -- | -- |
| Mar. 22..... | 36500 | 20 | | | | 22 | 6.8 | 14 | 2.3 | | 95 | 0 | 20 | 8.0 | .4 | 2.9 | | 144 | 83 | 5 | | 228 | 7.3 | 10 | 12.9 | 930 |
| May 3..... | 47300 | 14 | | | | 13 | 4.3 | 8.7 | 1.5 | | 60 | 0 | 12 | 4.0 | .4 | .4 | | 88 | 50 | 0 | | 136 | 7.5 | 5 | -- | -- |
| June 15..... | 58700 | 9.3 | | | | 11 | 3.2 | 8.3 | 1.2 | | 53 | 0 | 12 | 3.8 | .3 | .2 | | 75 | 40 | 0 | | 120 | 7.4 | 5 | 10.8 | 36 |
| July 28..... | 22000 | 10 | | | | 19 | 6.5 | 19 | 2.4 | | 96 | 0 | 25 | 8.2 | .4 | .5 | | 138 | 74 | 0 | | 232 | 7.2 | 5 | -- | -- |
| Aug. 31..... | 15400 | 13 | | | | 25 | 10 | 29 | 3.3 | | 126 | 0 | 40 | 15 | .5 | 1.8 | | 200 | 104 | 0 | | 324 | 7.2 | 5 | -- | -- |
| Sept. 16..... | 15700 | 13 | | | | 26 | 11 | 32 | 3.5 | | 136 | 0 | 44 | 16 | .5 | 1.1 | | 214 | 110 | 0 | | 346 | 7.8 | 5 | 10.2 | 91 |

A Residue at 180°C.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 1810 | 0.02 | 0.02 | 0.02 | 0.05 | 0.00 | 0.01 |
| Aug. 31..... | 0930 | .01 | .01 | .03 | .00 | .00 | .03 |
| Sept. 16..... | 1115 | .01 | .01 | .01 | .00 | .01 | -- |

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| **SNAKE RIVER MAIN STEM** | | | | | | | | | | | | | | | | | | | | | | |
| **13-0235. SNAKE RIVER AT ALPINE, WYO. (431040 1110220)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 5, 1965..... | | | | | | 6.6 | | 136 | 0 | 32 | 4.0 | | | | | | | 135 | 24 | 0.2 | 288 | 7.9 |
| **13-0325. SNAKE RIVER NEAR IRWIN, IDAHO (432110 1111310)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 5, 1965..... | 4100 | | | | | 6.9 | | 120 | 8 | 33 | 5.0 | | | | | | | 137 | 24 | 0.3 | 280 | 8.7 |
| **DIVERSIONS BETWEEN GAGING STATIONS NEAR HEISE AND AT LORENZO** | | | | | | | | | | | | | | | | | | | | | | |
| **13-0382. BURGESS CANAL NEAR RIGBY, IDAHO (433950 1115500)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | | | | | | | | 150 | 2 | | | | | | | | | 155 | 28 | | 336 | 8.3 |
| **HENRYS FORK BASIN** | | | | | | | | | | | | | | | | | | | | | | |
| **13-0395. HENRYS FORK NEAR LAKE, IDAHO (443500 1112000)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | 17 | 2.9 | | 27 | 12 | 2.5 | 1.4 | 140 | 2 | 3.2 | 0.5 | 0.2 | 0.5 | | 121 | 0.16 | 5.55 | 117 | 0 | 0.1 | 226 | 8.3 |
| **13-0405. BIG SPRINGS CREEK AT BIG SPRINGS, IDAHO (442958 1111517)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | 186 | | | | | 14 | | 44 | 0 | | 2.0 | 3.4 | | | | | | 15 | 0 | | 99 | 6.8 |
| **13-0408. MOOSE CREEK NEAR BIG SPRINGS, IDAHO (442905 1111707)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | | | | | | 14 | | 44 | 0 | | | 3.4 | | | | | | 14 | 0 | | 98 | 7.6 |
| **13-0495. FALLS RIVER NEAR CHESTER, IDAHO (440030 1113300)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | 570 | 40 | | | | 43 | | 68 | 0 | | | 3.0 | | | | | | 26 | 0 | | 159 | 8.1 |
| **13-0554. REXBURG CANAL AT REXBURG, IDAHO (434935 1114740)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | | | | | | | | 186 | 0 | | | | | | | | | 152 | 0 | | 303 | 8.2 |

SNAKE RIVER MAIN STEM

13-0571. SNAKE RIVER NEAR ROBERTS, IDAHO (434320 1120500)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965..... | | | | | | 12 | | 124 | 8 | 23 | 7.5 | | | | | | | 122 | 7 | 0.5 | 281 | 8.6 |

BLACKFOOT RIVER BASIN

13-0685. BLACKFOOT RIVER NEAR BLACKFOOT, IDAHO (430750 1122835)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965..... | 334 | 12 | | | | 11 | | 188 | 0 | | | 0.6 | | | | | | 173 | 18 | | 371 | 8.1 |

SNAKE RIVER MAIN STEM

13-0695. SNAKE RIVER NEAR BLACKFOOT, IDAHO (430730 1123040)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965..... | 4280 | | | | | 12 | | 156 | 0 | 26 | 8.5 | | | | | | | 141 | 12 | 0.4 | 321 | 7.7 |

PORTNEUF RIVER BASIN

13-0739. MARSH CREEK NEAR DOWNEY, IDAHO (422430 1120920)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 3, 1965..... | | | | | | 38 | | 294 | 0 | | 58 | 0.2 | | | | | | 278 | 36 | | 695 | 7.9 |

SNAKE RIVER MAIN STEM

13-0770. SNAKE RIVER AT NEELEY, IDAHO (424620 1125245)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965..... | 6590 | | | | | 19 | | 192 | 8 | 44 | 16 | | | | | | | 198 | 26 | 0.6 | 445 | 8.4 |

RAFT RIVER BASIN

13-0776.59. RAFT RIVER NEAR YOST, UTAH (415740 1133940)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 10, 1966..... | | | | | | 50 | | 242 | 0 | | 79 | | | | | | | 220 | 22 | 1.5 | 699 | 7.7 |

13-0776.7. CIRCLE CREEK NEAR ALMO, IDAHO (420450 1134050)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 10, 1966..... | | | | | | | | 214 | 0 | | | | | | | | | 145 | 0 | | 414 | 7.9 |

13-0776.76. ALMO CREEK NEAR ALMO, IDAHO (420645 1133850)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 9, 1966..... | | | | | | | | 21 | 1 | | | | | | | | | 16 | 0 | | 53 | 8.8 |

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| **RAFT RIVER BASIN--Continued** | | | | | | | | | | | | | | | | | | | | | | |
| **13-0776.8. EDWARDS CREEK NEAR ALMO, IDAHO (420735 1133750)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | | 8.8 | | | | 29 | | 141 | 14 | | 9.5 | | | | | | | 96 | 0 | | 291 | 9.0 |
| **13-0776.9. JOHNSON CREEK NEAR YOST, UTAH (415700 1133415)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | | 2.3 | | 29 | 10 | 23 | 2.0 | 120 | 8 | 15 | 28 | | | | | | | 114 | 2 | 0.9 | 321 | 8.8 |
| **13-0777. GEORGE CREEK NEAR YOST, UTAH (415510 1132850)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | 57 | 7.1 | | 9.2 | 2.0 | 5.9 | 1.0 | 38 | 0 | 5.8 | 5.2 | 0.2 | 2.0 | 0.00 | 63 | 0.09 | 9.70 | 32 | 0 | 0.5 | 94 | 7.3 |
| June 2..... | 21 | 6.3 | | 10 | 2.5 | 6.6 | .7 | 44 | 0 | 5.6 | 6.0 | .1 | 1.1 | .09 | 65 | .09 | 3.69 | 36 | 0 | .5 | 104 | 7.4 |
| **13-0781. ONEMILE CREEK NEAR STANDROD, UTAH (415815 1132550)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | | 4.4 | | 20 | 3.9 | 12 | 1.7 | 80 | 0 | 8.6 | 14 | | | | | | | 66 | 0 | 0.6 | 189 | 7.9 |
| **13-0785. RAFT RIVER AT BRIDGE, IDAHO (420745 1132040)** | | | | | | | | | | | | | | | | | | | | | | |
| May 11, 1966..... | | | | | | 123 | | 231 | 0 | | 265 | | | | | | | 395 | 205 | 2.7 | 1310 | 8.1 |
| **13-0790. CLEAR CREEK NEAR NAF, IDAHO (415800 1131705)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | 108 | 7.4 | | 8.8 | 2.2 | 7.5 | 1.3 | 38 | 0 | 5.6 | 7.5 | 0.2 | 1.6 | 0.00 | 68 | 0.09 | 19.8 | 31 | 0 | 0.6 | 100 | 7.3 |
| June 1..... | 42 | 6.0 | | 10 | 2.6 | 8.9 | 1.1 | 46 | 0 | 5.6 | 9.8 | .1 | .5 | .03 | 74 | .10 | 8.39 | 36 | 0 | .7 | 116 | 7.3 |
| Aug. 16..... | 1.8 | 11 | | 20 | 5.0 | 19 | 1.6 | 82 | 0 | 10 | 26 | .2 | .5 | .03 | 134 | .18 | .02 | 70 | 4 | 1.0 | 234 | 7.9 |
| **13-0790.5. KELSAW CANYON NEAR STREVELL, IDAHO (420510 1131240)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | | | | | | | | 163 | 8 | | | | | | | | | 174 | 27 | | 437 | 8.7 |
| **13-0790.54. SIXMILE CANYON ABOVE GUNNELL RANCH, NEAR BRIDGE, IDAHO (420725 1130935)** | | | | | | | | | | | | | | | | | | | | | | |
| May 10, 1966..... | | | | | | | | 186 | 2 | | | | | | | | | 164 | 8 | | 345 | 8.3 |
| **13-0790.58. EIGHTMILE CANYON NEAR BRIDGE, IDAHO (420743 1131220)** | | | | | | | | | | | | | | | | | | | | | | |
| May 11, 1966..... | | | | | | | | 150 | 1 | | | | | | | | | 128 | 4 | | 283 | 8.4 |

13-0791. CASSIA CREEK ABOVE STINSON CREEK, NEAR ELBA, IDAHO (421510 1133925)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 12, 1966..... | | | | | | | | 84 | 8 | | | | | | | | | 78 | 0 | | 172 | 8.9 |

13-0791.05. STENSON CREEK NEAR ELBA, IDAHO (421505 1133920)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 12, 1966..... | | | | | | | | 14 | 1 | | | | | | | | | 10 | 0 | | 37 | 8.6 |

13-0791.2. DRY CREEK NEAR ELBA, IDAHO (421320 1133610)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 9, 1966..... | | | | | | | | 16 | 0 | | | | | | | | | 11 | 0 | | 40 | 7.6 |

13-0792. CASSIA CREEK NEAR ELBA, IDAHO (4217 11331)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 9, 1966..... | | 18 | | 23 | 4.9 | 9.8 | 2.6 | 99 | 0 | 5.4 | 10 | 0.3 | 0.7 | 0.00 | A124 | 0.16 | | 78 | 0 | 0.5 | 200 | 7.6 |
| June 3..... | | 16 | | 27 | 7.2 | 14 | 3.0 | 128 | 0 | 6.2 | 13 | .3 | .4 | .05 | 160 | .22 | | 97 | 0 | .6 | 248 | 7.6 |
| Aug. 17..... | | 32 | | 49 | 12 | 25 | 5.3 | 212 | 0 | 13 | 28 | .7 | 1.0 | -- | A270 | -- | | 172 | 0 | .8 | 445 | 7.8 |

13-0795.5. CASSIA CREEK AT MALTA, IDAHO (421825 1132210)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 9, 1966..... | | | | | | 19 | | 134 | 2 | | 18 | | | | | | | 102 | 0 | 0.8 | 281 | 8.3 |

13-0796.6. SUBLETT CREEK BELOW SUBLETT RESERVOIR, NEAR SUBLETT, IDAHO (421930 1130246)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 11, 1966..... | | 17 | | 53 | 25 | 17 | 2.0 | 268 | 0 | 16 | 26 | 0.2 | 1.8 | 0.00 | A290 | 0.38 | | 236 | 16 | 0.5 | 512 | 7.8 |
| May 31..... | | 15 | | 48 | 27 | 16 | .8 | 265 | 0 | 13 | 26 | .2 | 1.8 | .10 | A279 | .37 | | 231 | 14 | .5 | 499 | 7.5 |
| Aug. 15..... | | 13 | | 30 | 26 | 17 | 1.5 | 210 | 0 | 14 | 26 | .2 | .2 | .04 | A231 | .30 | | 182 | 10 | .5 | 428 | 7.6 |

SNAKE RIVER MAIN STEM

13-0815. SNAKE RIVER NEAR MINIDOKA, IDAHO (423705 1133515)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965..... | 5240 | | | | | 20 | | 176 | 16 | 44 | 17 | | | | | | | 199 | 28 | 0.6 | 436 | 8.8 |

13-0880. SNAKE RIVER AT MILNER, IDAHO (423150 1140100)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 5, 1965..... | 421 | | | | | 23 | | 220 | 0 | 46 | 18 | | | | | | | 204 | 24 | 0.7 | 474 | 8.2 |

A Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| **SNAKE RIVER MAIN STEM--Continued** | | | | | | | | | | | | | | | | | | | | | | |
| **13-0905. SNAKE RIVER NEAR TWIN FALLS, IDAHO (423600 1142710)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 6, 1965..... | | | | | | 51 | | 244 | 12 | 75 | 33 | | | | | | | 232 | 12 | 1.5 | 624 | 8.5 |
| **13-0940. SNAKE RIVER NEAR BUHL, IDAHO (424000 1144240)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 6, 1965..... | 3110 | | | | | 50 | | 266 | 6 | 79 | 38 | | | | | | | 255 | 26 | 1.4 | 676 | 8.4 |
| **MUD LAKE-LOST RIVER BASINS** | | | | | | | | | | | | | | | | | | | | | | |
| **13-1169.9. BIRCH CREEK NEAR LONE PINE, IDAHO (440915 1125440)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | | 9.0 | | | | 5.1 | | 160 | 4 | | | 0.2 | | | | | | 163 | 26 | | 321 | 8.3 |
| **13-1270. BIG LOST RIVER BELOW MACKAY RESERVOIR, NEAR MACKAY, IDAHO (435620 1133850)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | 588 | 13 | | 37 | 9.4 | 5.1 | 1.4 | 151 | 0 | 14 | 3.0 | 0.3 | 0.4 | 0.00 | 151 | 0.21 | 240 | 132 | 8 | 0.2 | 267 | 8.2 |
| June 9, 1966..... | 663 | 9.4 | | 35 | 8.8 | 4.9 | 1.2 | 138 | 0 | 15 | 2.8 | .2 | .3 | .05 | 139 | .19 | 249 | 124 | 10 | .2 | 252 | 7.7 |
| Aug. 26..... | 235 | 12 | | 41 | 11 | 5.8 | 1.3 | 166 | 0 | 17 | 4.0 | .4 | .3 | .06 | 175 | .24 | 111 | 148 | 12 | .2 | 287 | 7.4 |
| **13-1325.12. BIG LOST RIVER NEAR ARCO, IDAHO (433250 1130030)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | | 12 | | | | 7.4 | | 208 | 0 | | | 0.3 | | | | | | 180 | 10 | | 356 | 8.2 |
| **SNAKE RIVER MAIN STEM** | | | | | | | | | | | | | | | | | | | | | | |
| **13-1350. SNAKE RIVER BELOW LOWER SALMON FALLS, NEAR HAGERMAN, IDAHO (425055 1145402)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 6, 1965..... | 7660 | | | | | 38 | | 224 | 8 | 61 | 27 | | | | | | | 216 | 19 | 1.1 | 558 | 8.4 |
| **BIG WOOD RIVER BASIN** | | | | | | | | | | | | | | | | | | | | | | |
| **13-1535. BIG WOOD RIVER NEAR BLISS, IDAHO (425150 1145345)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 6, 1965..... | | | | | | 22 | | 180 | 12 | | 13 | | | | | | | 177 | 9 | | 417 | 8.7 |
| **BRUNEAU RIVER BASIN** | | | | | | | | | | | | | | | | | | | | | | |
| **13-1685. BRUNEAU RIVER NEAR HOT SPRINGS, IDAHO (424617 1154310)** | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 6, 1965..... | 125 | 33 | | 17 | 2.3 | 21 | | 88 | 4 | | 5.0 | 2.2 | | 0.06 | | | | 52 | 0 | 1.3 | 196 | 8.6 |

SNAKE RIVER MAIN STEM

13-1725. SNAKE RIVER NEAR WILSON, IDAHO (432030 1163600)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 6, 1965..... | | | | | | 38 | | 172 | 10 | 59 | 25 | | | | | | | 170 | 12 | 1.3 | 473 | 8.6 |

BOISE RIVER BASIN

13-2021.8. WEST MADDEN LATERAL NEAR NAMPA, IDAHO (432810 1163420)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 6, 1965..... | | | | | | | | 34 | 2 | | | | | | | | | 25 | 0 | | 69 | 8.9 |

13-2108. FIFTEENMILE CREEK NEAR CALDWELL, IDAHO (433948 1163434)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 7, 1965..... | | | | | | | | 176 | 0 | | | | | | | | | 118 | 0 | | 384 | 7.9 |

13-2128. SAND RUN GULCH (CO-OP CANAL) NEAR PARMA, IDAHO (434036 1165027)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 7, 1965..... | | | | | | | | 104 | 8 | | | | | | | | | 81 | 0 | | 256 | 8.7 |

SNAKE RIVER MAIN STEM

13-2131. SNAKE RIVER AT NYSSA, OREG. (435235 1165900)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 7, 1965..... | | | | | | 45 | | 236 | 0 | 69 | 24 | | | | | | | 203 | 10 | 1.4 | 560 | 8.2 |

PAYETTE RIVER BASIN

13-2510. PAYETTE RIVER NEAR PAYETTE, IDAHO (440230 1165530)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 7, 1965..... | 1910 | 13 | | 14 | 2.4 | 16 | 1.4 | 82 | 0 | 9.4 | 3.0 | 0.5 | 0.5 | 0.01 | A101 | 0.14 | 521 | 45 | 0 | 1.0 | 158 | 7.5 |
| June 16, 1966.... | 1990 | 11 | | 12 | 2.4 | 15 | 1.4 | 74 | 0 | 8.0 | 3.0 | .4 | .2 | .04 | A96 | .13 | 516 | 40 | 0 | 1.0 | 144 | 7.0 |
| Aug. 15..... | 1590 | 16 | | 16 | 3.5 | 21 | 2.0 | 102 | 0 | 12 | 4.0 | .5 | .6 | .01 | 126 | .16 | 541 | 54 | 0 | 1.2 | 195 | 7.5 |

WEISER RIVER BASIN

13-2674. WEISER RIVER AT WEISER, IDAHO (441435 1165726)

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 7, 1965..... | | 18 | | 24 | 9.0 | 29 | 4.1 | 150 | 3 | 24 | 6.5 | 0.4 | 0.2 | 0.14 | 194 | 0.26 | | 97 | 0 | 1.3 | 305 | 8.4 |
| Apr. 2, 1966..... | | 25 | | 6.8 | 3.6 | 4.2 | 1.2 | 48 | 0 | 2.4 | .5 | .1 | .6 | .02 | A69 | .09 | | 32 | 0 | .2 | 87 | 7.0 |
| May 31..... | | 19 | | 8.4 | 3.2 | 5.7 | 1.5 | 52 | 0 | 3.6 | .5 | .1 | .3 | .03 | 74 | .10 | | 34 | 0 | .4 | 95 | 7.0 |
| Aug. 16..... | | 35 | | 36 | 14 | 56 | 8.0 | 250 | 0 | 55 | 9.0 | .5 | 1.5 | .14 | A336 | .46 | | 148 | 0 | 2.0 | 515 | 7.4 |

A Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| **SNAKE RIVER MAIN STEM** | | | | | | | | | | | | | | | | | | | | | | |
| 13-2897.2. SNAKE RIVER AT BROWNLEE DAM, IDAHO (445020 1165400) | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 7, 1965..... | | | | | | 43 | | 200 | 0 | 61 | 20 | | | | | | | 161 | 0 | 1.5 | 491 | 8.0 |
| **SALMON RIVER BASIN** | | | | | | | | | | | | | | | | | | | | | | |
| 13-2985. SALMON RIVER NEAR CHALLIS, IDAHO (442818 1141213) | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | | | | | | | | 88 | 0 | | | | | | | | | 71 | 0 | | 163 | 7.6 |
| 13-2986. WARM SPRING CREEK NEAR CHALLIS, IDAHO (442653 1140834) | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | | | | | | | | 272 | 0 | | | | | | | | | 279 | 56 | | 700 | 8.1 |
| 13-3020. PAHSIMEROI RIVER NEAR MAY, IDAHO (444131 1140252) | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | | 17 | | 46 | 16 | 11 | 1.9 | 204 | 2 | 20 | 9.2 | 0.2 | 1.3 | 0.01 | A225 | 0.30 | | 181 | 10 | 0.4 | 372 | 8.3 |
| May 9, 1966..... | | 16 | | 42 | 16 | 12 | 2.3 | 198 | 0 | 22 | 8.2 | .3 | 1.2 | .00 | 219 | .30 | | 170 | 8 | .4 | 368 | 8.0 |
| Aug. 29..... | | 19 | | 49 | 17 | 13 | 2.3 | 229 | 0 | 25 | 10 | .2 | 1.1 | .06 | A250 | .33 | | 192 | 5 | .4 | 413 | 7.6 |
| 13-3053. LEMHI RIVER NEAR SALMON, IDAHO (450747 1134747) | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | | 21 | | 50 | 18 | 27 | 3.4 | 228 | 3 | 48 | 12 | 0.3 | 0.3 | 0.06 | 296 | 0.40 | | 200 | 8 | 0.8 | 468 | 8.4 |
| June 13, 1966.... | | 20 | | 54 | 18 | 36 | 3.8 | 243 | 0 | 68 | 14 | .4 | .1 | .07 | 338 | .46 | | 208 | 10 | 1.1 | 536 | 7.9 |
| Aug. 29..... | | 25 | | 69 | 22 | 54 | 5.8 | 317 | 0 | 92 | 20 | .4 | .6 | .12 | 463 | .63 | | 262 | 2 | 1.5 | 677 | 7.7 |
| 13-3170. SALMON RIVER AT WHITE BIRD, IDAHO (454504 1161922) | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 25, 1965.... | 5890 | 14 | | 22 | 4.7 | 8.0 | 1.4 | 93 | 0 | 13 | 2.5 | 0.4 | 0.1 | 0.00 | A112 | 0.15 | 1780 | 74 | 0 | 0.4 | 180 | 7.9 |
| June 7, 1966..... | 19800 | 9.5 | | 8.4 | 1.4 | 3.2 | .6 | 37 | 0 | 4.0 | .0 | .2 | .1 | .01 | 50 | .07 | 2670 | 27 | 0 | .3 | 70 | 7.2 |
| Aug. 23..... | 2970 | 12 | | 19 | 3.8 | 8.1 | 1.4 | 83 | 0 | 11 | 2.0 | .5 | .2 | .12 | 104 | .14 | 834 | 63 | 0 | .4 | 156 | 7.3 |
| 13-3315. MINAM RIVER AT MINAM, OREG. (453712 1174328) | | | | | | | | | | | | | | | | | | | | | | |
| Jan. 5, 1966..... | 100 | 15 | 0.04 | 6.4 | 1.0 | 2.2 | 0.9 | 30 | 0 | 1.2 | 0.0 | 0.1 | 0.3 | | 37 | | | 20 | 0 | | 55 | 7.0 |
| Apr. 11..... | 564 | 17 | .15 | 4.4 | 1.4 | 2.1 | 1.0 | 26 | 0 | .0 | .0 | .1 | .2 | | 38 | | | 17 | 0 | | 46 | 7.1 |
| Aug. 23..... | 57 | 14 | -- | 6.1 | 1.5 | 2.6 | 1.3 | 33 | 0 | 1.0 | .0 | .1 | .3 | | 41 | | | 21 | 0 | | 57 | 7.2 |

A Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN--Continued

DEADMAN CREEK BASIN

13-3436.8. DEADMAN CREEK NEAR CENTRAL FERRY, WASH.

Monthly and annual summary of suspended-sediment discharge, water year October 1965 to September 1966

| Month | Suspended sediment (tons) | |
|---|---|---|
| October 1965 | E | 1 |
| November | E | 1 |
| December | E | 2 |
| January 1966 | A | 1,000 |
| February | E | 32 |
| March | A | 110 |
| April | E | 4 |
| May | E | 1 |
| June | T | -- |
| July | E | 5,700 |
| August | T | -- |
| September | A | 39,000 |
| Total for year | A | 46,000 |

E Estimated.
A Partly estimated.
T Less than 0.50 ton.

Drainage area 135 square miles.
Discharge weighted mean concentration for year (ppm), 13,000 (estimated).
Sediment yield (tons/square mile), 341.
Maximum daily load, 32,000 tons Sept. 13.
Minimum daily load, less than 0.50 ton on many days.
Maximum daily concentration, 36,000 ppm Sept. 14.
Minimum observed concentration, 4 ppm May 24, Sept. 7.
Maximum observed concentration, 101,000 ppm Sept. 14.
Estimated runoff, 1,300 cfs days.

13-3438. MEADOW CREEK NEAR CENTRAL FERRY, WASH.

Monthly and annual summary of suspended-sediment discharge, water year October 1965 to September 1966

| Month | Discharge (cfs) | Suspended sediment (tons) | |
|---|---|---|---|
| October 1965 | 50.2 | E | 2 |
| November | 46.0 | E | 2 |
| December | 45.2 | E | 2 |
| January 1966 | 106.0 | A | 390 |
| February | 76.1 | E | 7 |
| March | 81.4 | E | 73 |
| April | 60.7 | E | 2 |
| May | 39.4 | E | 1 |
| June | 27.4 | T | -- |
| July | 71.3 | E | 10,000 |
| August | 26.7 | T | -- |
| September | 252.9 | A | 70,000 |
| Total for year | 883.3 | A | 80,000 |

E Estimated.
A Partly estimated.
T Less than 0.50 ton.

Drainage area 66.2 square miles.
Discharge weighted mean concentration for year (ppm), 32,000.
Sediment yield (tons/square mile), 1,200.
Maximum daily load, 68,000 tons Sept. 13.
Minimum daily load, less than 0.50 ton on many days.
Maximum daily concentration, 24,000 ppm July 2.
Maximum observed concentration, 77,000 ppm Sept. 14.
Minimum observed concentration, 2 ppm Aug. 2.

MISCELLANEOUS ANALYSES OF STREAMS IN SNAKE RIVER BASIN--Continued

DEADMAN CREEK BASIN--Continued

13-3436.8. DEADMAN CREEK NEAR CENTRAL FERRY, WASH.

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Nov. 9, 1965 | 1200 | 45 | | 1.0 | 11 | T | | | | | | | | | | | | |
| Nov. 30 | 1220 | 35 | | 4.1 | 17 | T | | | | | | | | | | | | |
| Jan. 4, 1966 | 1425 | 40 | | 9.4 | 16 | T | | | | | | | | | | | | |
| Jan. 6 | 1320 | 42 | | 58 | 3750 | 587 | | | | | | | | | | | | |
| Jan. 6 | 1625 | 42 | | F 43 | 1900 | 221 | | | | | | | | | | | | |
| Jan. 6 | 2335 | 42 | | 91 | 2260 | 555 | | | | | | | | | | | | |
| Jan. 7 | 0945 | 42 | | 26 | 776 | 54 | | | | | | | | | | | | |
| Feb. 1 | 1410 | 39 | | 6.7 | 31 | 1 | | | | | | | | | | | | |
| Mar. 1 | 1145 | 41 | | 6.1 | 46 | 1 | | | | | | | | | | | | |
| Mar. 10 | 1030 | 44 | | 8.7 | 1200 | 28 | | | | | | | | | | | | |
| Mar. 28 | 1545 | 69 | | 9.7 | 16 | T | | | | | | | | | | | | |
| Apr. 28 | 1140 | 55 | | F 3.9 | 9 | T | | | | | | | | | | | | |
| May 24 | 1350 | 78 | | .8 | 4 | T | | | | | | | | | | | | |
| June 28 | 1220 | 81 | | .2 | 7 | T | | | | | | | | | | | | |
| Aug. 2 | 1250 | 75 | | .2 | 8 | T | | | | | | | | | | | | |
| Aug. 26 | 1110 | 68 | | .6 | 8 | T | | | | | | | | | | | | |
| Sept. 7 | 1520 | 79 | | 1.4 | 4 | T | | | | | | | | | | | | |
| Sept. 14 | 0135 | 50 | | 19 | 101000 | 5570 | 17 | 28 | 44 | 71 | 97 | 100 | | | | | | PWC |
| Sept. 14 | 0820 | 54 | | 25 | 32200 | 2250 | | | | | | | | | | | | |
| Sept. 14 | 1025 | 56 | | 18 | 27400 | 1330 | | | | | | | | | | | | |
| Sept. 14 | 1500 | 68 | | 10 | 19700 | 532 | | | | | | | | | | | | |
| Sept. 16 | 1435 | 73 | | 1.1 | 1300 | 4 | | | | | | | | | | | | |

T Less than 0.50 ton.
F Discharge at time of sampling.

DEADMAN CREEK BASIN--Continued

13-3438. MEADOW CREEK NEAR CENTRAL FERRY, WASH.

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Nov. 9, 1965 | 1210 | 44 | | 1.6 | 15 | 0.1 | -- | -- | -- | -- | -- | | | | | | | |
| Jan. 4, 1966 | 1415 | 42 | | 2.6 | 46 | .3 | -- | -- | -- | -- | -- | | | | | | | |
| Jan. 6 | 1330 | 42 | | 23 | 2820 | 175 | 30 | 48 | 69 | 90 | 100 | | | | | | | PWC |
| Jan. 6 | 1635 | 42 | | 18 | 1420 | 69 | -- | -- | -- | -- | -- | | | | | | | |
| Jan. 6 | 2350 | 42 | | 30 | 2080 | 168 | -- | -- | -- | -- | -- | | | | | | | |
| Jan. 7 | 0955 | 43 | | 11 | 630 | 19 | -- | -- | -- | -- | -- | | | | | | | |
| Feb. 1 | 1400 | 41 | | 1.7 | 20 | .1 | -- | -- | -- | -- | -- | | | | | | | |
| Mar. 1 | 1135 | 42 | | 2.6 | 24 | .2 | -- | -- | -- | -- | -- | | | | | | | |
| Mar. 10 | 1050 | 44 | | 3.0 | 138 | 1.1 | -- | -- | -- | -- | -- | | | | | | | |
| Mar. 28 | 1535 | 68 | | 3.0 | 56 | .4 | -- | -- | -- | -- | -- | | | | | | | |
| Apr. 28 | 1040 | 53 | | 1.7 | 10 | T | -- | -- | -- | -- | -- | | | | | | | |
| May 24 | 1345 | 76 | | 1.2 | 6 | T | -- | -- | -- | -- | -- | | | | | | | |
| June 28 | 1210 | 80 | | .9 | 6 | T | -- | -- | -- | -- | -- | | | | | | | |
| Aug. 2 | 1230 | 73 | | D 1.0 | 2 | T | -- | -- | -- | -- | -- | | | | | | | |
| Aug. 26 | 1130 | 68 | | .8 | 5 | T | -- | -- | -- | -- | -- | | | | | | | |
| Sept. 7 | 1505 | 71 | | .9 | 4 | T | -- | -- | -- | -- | -- | | | | | | | |
| Sept. 14 | 0120 | -- | | E 40 | 77000 | 8620 | 21 | 33 | 56 | 74 | 100 | | | | | | | PWC |
| Sept. 14 | 0840 | -- | | F 11 | 17700 | 526 | -- | -- | -- | -- | -- | | | | | | | |
| Sept. 14 | 1525 | 69 | | E 6.0 | 7240 | 117 | -- | -- | -- | -- | -- | | | | | | | |
| Sept. 16 | 1445 | 71 | | D 1.8 | 292 | 1 | -- | -- | -- | -- | -- | | | | | | | |

E Estimated.
T Less than 0.50 ton.
D Daily mean discharge.
F Discharge at time of sampling.

PART 14. PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA RIVER BASIN

WALLA WALLA RIVER BASIN

14-0136. MILL CREEK BELOW BLUE CREEK, NEAR WALLA WALLA, WASH.

LOCATION.--Lat 46°04'55", long 118°11'25", at county road bridge 2 miles downstream from Blue Creek, 6.0 miles downstream from gaging station near Walla Walla, and 5.5 miles east of Walla Walla, Walla Walla County.
DRAINAGE AREA.--91 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, freezing point Jan. 20.
Sediment concentrations: Maximum daily, 620 ppm Jan. 6; minimum daily, 2 ppm on many days
Sediment loads: Maximum daily, 420 tons Mar. 14; minimum daily, less than 0.50 ton on many days
EXTREMES, 1962-66.--Water temperatures: Maximum (1962-65), 75°F July 1, 15, 1965; minimum, freezing point Dec. 26, 1962.
Sediment concentrations: Maximum daily, 8,000 ppm Dec. 23, 1964; minimum daily, 2 ppm Nov. 3, 4, 1962, Nov. 1-5, 1963, Mar. 7, 8, and on many days during 1965 and 1966 water year.
Sediment loads: Maximum daily, 59,300 tons Dec. 23, 1964; minimum daily, less than 0.50 ton on many days in 1962-66.
REMARKS.--Maximum observed during water year: Sediment concentration, 2,320 ppm Mar. 9. Records of discharge given are the combined discharge of Blue Creek near Walla Walla and Mill Creek near Walla Walla. No appreciable inflow between gaging stations and sampling point.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | -- | 60 | -- | 54 | -- | 53 | 63 | -- | 55 | -- | 50 | -- | 53 | -- | 50 | -- | 53 | -- | 50 | -- | 49 | -- | 53 | -- | 47 | -- | 49 | -- | 48 | -- | 51 | -- |
| November | 49 | 49 | 48 | 50 | 48 | 47 | 45 | 45 | 46 | 44 | 47 | 45 | 45 | 46 | 47 | 47 | 45 | 47 | 47 | 45 | 46 | 46 | 43 | -- | 39 | 42 | 42 | 43 | 37 | 38 | -- | 45 |
| December | 38 | 43 | 42 | 45 | 46 | 41 | 42 | 42 | 42 | 42 | 39 | 41 | 39 | 37 | 36 | 33 | 33 | 33 | 36 | 35 | 38 | 36 | 37 | 36 | 35 | 36 | 36 | 43 | 38 | 38 | 38 | 39 |
| January | 37 | 33 | 34 | 38 | 38 | 40 | 42 | 41 | 39 | 40 | 40 | 40 | 42 | 43 | 39 | 35 | 36 | 36 | 35 | 32 | 35 | 35 | 35 | 33 | 34 | 34 | 35 | 37 | 38 | 38 | 40 | 37 |
| February | 35 | 35 | 35 | 40 | 39 | 38 | 38 | 37 | 37 | 35 | 37 | 36 | 36 | 34 | 36 | 37 | 38 | 38 | 39 | 42 | 40 | 40 | 41 | 39 | 39 | 41 | 41 | 40 | -- | -- | -- | 38 |
| March | 38 | 35 | 37 | 36 | 42 | 43 | 41 | 42 | 44 | 40 | 41 | 41 | 44 | 43 | 42 | 40 | 38 | 39 | 40 | 41 | 36 | 42 | 44 | 47 | 42 | 42 | 44 | 44 | 43 | 45 | 48 | 41 |
| April | 45 | 46 | 46 | 55 | 53 | 52 | 54 | 55 | 51 | 46 | 48 | 44 | 45 | 44 | 56 | 50 | 52 | 48 | 49 | 45 | 45 | 53 | 59 | 59 | 55 | 47 | 47 | -- | 45 | 49 | -- | 50 |
| May | 54 | 48 | 51 | -- | -- | 51 | 48 | 51 | -- | -- | 48 | -- | 45 | -- | 49 | -- | 48 | -- | 50 | -- | 51 | -- | 48 | -- | 71 | 66 | 53 | -- | -- | 57 | -- | -- |
| June | 56 | 48 | 51 | 49 | -- | 65 | -- | 64 | -- | 61 | -- | 55 | -- | 67 | -- | 59 | -- | -- | -- | -- | -- | -- | -- | 53 | -- | -- | -- | -- | -- | 68 | -- | -- |
| July | -- | 57 | 58 | 58 | -- | -- | 60 | -- | 73 | -- | 67 | -- | 73 | -- | 65 | -- | 70 | -- | 71 | -- | 73 | -- | 67 | -- | 67 | -- | 68 | -- | 68 | -- | 67 | -- |
| August | -- | 60 | -- | 66 | -- | 74 | -- | 74 | -- | 68 | -- | 66 | -- | 68 | -- | 67 | -- | 74 | -- | 70 | -- | 61 | -- | 70 | -- | 60 | -- | 68 | -- | 58 | -- | -- |
| September | 56 | -- | 65 | -- | 74 | -- | 58 | -- | 56 | -- | 60 | 55 | -- | 58 | -- | 61 | -- | 59 | -- | 56 | -- | 59 | -- | -- | -- | 61 | -- | 61 | -- | 61 | -- | -- |

WALLA WALLA RIVER BASIN--Continued

14-0136. MILL CREEK BELOW BLUE CREEK, NEAR WALLA WALLA, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 32 | C 3 | T | 30 | 2 | T | 40 | 10 | 1 |
| 2 | 32 | C 3 | T | 30 | 2 | T | 50 | 28 | 4 |
| 3 | 32 | C 3 | T | 30 | 2 | T | 50 | 14 | 2 |
| 4 | 32 | C 3 | T | 36 | 11 | 1 | 52 | 14 | 2 |
| 5 | 45 | 21 | B 3 | 35 | 8 | 1 | 48 | 7 | 1 |
| 6 | 35 | 12 | 1 | 32 | 5 | T | 44 | 7 | 1 |
| 7 | 34 | 8 | 1 | 32 | 4 | T | 42 | 8 | 1 |
| 8 | 34 | C 4 | T | 32 | 4 | T | 41 | 8 | 1 |
| 9 | 34 | C 4 | T | 32 | 4 | T | 37 | 8 | 1 |
| 10 | 34 | C 4 | T | 31 | 4 | T | 36 | 6 | 1 |
| 11 | 34 | C 4 | T | 33 | 6 | 1 | 34 | 4 | T |
| 12 | 34 | C 4 | T | 33 | 9 | 1 | 32 | 4 | T |
| 13 | 34 | C 4 | T | 33 | 6 | 1 | 31 | 2 | T |
| 14 | 34 | C 4 | T | 41 | 31 | 3 | 30 | 3 | T |
| 15 | 36 | C 4 | T | 35 | 10 | 1 | 28 | 2 | T |
| 16 | 34 | C 4 | T | 33 | 8 | 1 | 28 | 2 | T |
| 17 | 34 | C 4 | T | 33 | 6 | 1 | 28 | 3 | T |
| 18 | 34 | C 4 | T | 32 | 8 | 1 | 28 | 2 | T |
| 19 | 34 | C 4 | T | 34 | 8 | 1 | 28 | 2 | T |
| 20 | 34 | C 4 | T | 36 | 19 | 2 | 30 | 2 | T |
| 21 | 32 | C 4 | T | 42 | 9 | 1 | 31 | 6 | 1 |
| 22 | 30 | C 4 | T | 38 | 5 | 1 | 30 | 2 | T |
| 23 | 30 | C 4 | T | 41 | 11 | 1 | 30 | 3 | T |
| 24 | 30 | C 4 | T | 42 | --- | 1 | 31 | 4 | T |
| 25 | 30 | C 4 | T | 42 | 7 | 1 | 31 | 4 | T |
| 26 | 30 | C 4 | T | 42 | 6 | 1 | 30 | 5 | T |
| 27 | 30 | C 4 | T | 46 | 8 | 1 | 32 | 6 | 1 |
| 28 | 30 | C 4 | T | 42 | --- | 1 | 36 | 4 | T |
| 29 | 30 | C 4 | T | 40 | 8 | 1 | 37 | 4 | T |
| 30 | 30 | C 4 | T | 40 | 7 | 1 | 35 | 4 | T |
| 31 | 30 | C 4 | T | --- | --- | --- | 35 | 6 | 1 |
| Total | 1018 | --- | 14 | 1078 | --- | 27 | 1095 | --- | 23 |

| | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 3 | T | 63 | 6 | 1 | 124 | 10 | 3 |
| 2 | 35 | 11 | 1 | 58 | 6 | 1 | 106 | 9 | 3 |
| 3 | 39 | 24 | 3 | 62 | 4 | 1 | 93 | 9 | 2 |
| 4 | 52 | 25 | 4 | 64 | 10 | 2 | 84 | 8 | 2 |
| 5 | 109 | 480 | 141 | 69 | 6 | 1 | 78 | 7 | 1 |
| 6 | 228 | 620 | 382 | 75 | 8 | 2 | 72 | 6 | 1 |
| 7 | 336 | 160 | 145 | 72 | 6 | 1 | 72 | 10 | 2 |
| 8 | 266 | 208 | 149 | 66 | 5 | 1 | 95 | 19 | 5 |
| 9 | 199 | 42 | 23 | 66 | 6 | 1 | 232 | 449 | S 386 |
| 10 | 155 | 28 | 12 | 58 | 2 | T | 365 | 264 | S 276 |
| 11 | 120 | 16 | 5 | 58 | 2 | T | 255 | 40 | 28 |
| 12 | 96 | 10 | 3 | 59 | 2 | T | 208 | 30 | 17 |
| 13 | 111 | 14 | 4 | 55 | 2 | T | 323 | 335 | 292 |
| 14 | 122 | 13 | 4 | 54 | 2 | T | 420 | 370 | 420 |
| 15 | 122 | 10 | 3 | 55 | 5 | 1 | 359 | 85 | 82 |
| 16 | 106 | 8 | 2 | 52 | 2 | T | 286 | 40 | 31 |
| 17 | 93 | 8 | 2 | 51 | 4 | 1 | 225 | 27 | 16 |
| 18 | 87 | 7 | 2 | 54 | 3 | T | 197 | 23 | 12 |
| 19 | 71 | 7 | 1 | 57 | 5 | 1 | 193 | 24 | 13 |
| 20 | 61 | 8 | 1 | 130 | 91 | 32 | 182 | 15 | 7 |
| 21 | 57 | 6 | 1 | 169 | 54 | 25 | 173 | 65 | 30 |
| 22 | 54 | 6 | 1 | 174 | 29 | 14 | 152 | 31 | 13 |
| 23 | 54 | 4 | 1 | 176 | 23 | 11 | 149 | 125 | 50 |
| 24 | 54 | 4 | 1 | 168 | 16 | 7 | 198 | 195 | 104 |
| 25 | 51 | 6 | 1 | 163 | 24 | 11 | 260 | 200 | 140 |
| 26 | 50 | 4 | 1 | 176 | 37 | 18 | 317 | 205 | 175 |
| 27 | 50 | 3 | T | 169 | 19 | 9 | 367 | 245 | 243 |
| 28 | 53 | 4 | 1 | 147 | 14 | 6 | 420 | 290 | 329 |
| 29 | 56 | 5 | 1 | --- | --- | --- | 459 | 205 | 254 |
| 30 | 62 | 4 | 1 | --- | --- | --- | 471 | 160 | 203 |
| 31 | 69 | 7 | 1 | --- | --- | --- | 476 | 260 | 334 |
| Total | 3053 | --- | 898 | 2620 | --- | 149 | 7411 | --- | 3474 |

S Computed by subdividing day.
T Less than 0.50 ton.
B Computed from estimated concentration graph.
C Composite period.

WALLA WALLA RIVER BASIN--Continued

14-0136. MILL CREEK BELOW BLUE CREEK, NEAR WALLA WALLA, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day |
| 1 | 430 | 160 | 186 | 113 | 8 | 2 | 50 | 2 | T |
| 2 | 408 | 80 | 88 | 133 | 8 | 3 | 52 | 3 | T |
| 3 | 300 | 50 | 40 | 163 | 18 | 8 | 70 | 16 A | 3 |
| 4 | 249 | 49 | 33 | 184 | -- | 10 | 64 | 6 | 1 |
| 5 | 238 | 44 | 28 | 194 | -- | 10 | 58 | C 6 | 1 |
| 6 | 249 | 39 | 26 | 203 | 38 | 21 | 54 | C 6 | 1 |
| 7 | 270 | 30 | 22 | 166 | 15 | 7 | 50 | C 6 | 1 |
| 8 | 285 | 24 | 18 | 146 | 9 | 4 | 50 | C 6 | 1 |
| 9 | 286 | 30 | 23 | 140 | C 6 | 2 | 55 | C 6 | 1 |
| 10 | 250 | 16 | 11 | 127 | C 6 | 2 | 55 | C 6 | 1 |
| 11 | 234 | 15 | 9 | 114 | C 6 | 2 | 53 | C 6 | 1 |
| 12 | 215 | 260 A | 150 | 102 | C 6 | 2 | 49 | C 6 | 1 |
| 13 | 177 | 15 | 7 | 92 | C 6 | 1 | 46 | C 6 | 1 |
| 14 | 157 | 28 | 12 | 88 | C 6 | 1 | 45 | C 6 | 1 |
| 15 | 163 | 26 | 11 | 80 | C 6 | 1 | 43 | C 3 | T |
| 16 | 186 | 11 | 6 | 75 | C 6 | 1 | 43 | C 3 | T |
| 17 | 182 | 10 | 5 | 73 | C 6 | 1 | 42 | C 3 | T |
| 18 | 154 | 10 | 4 | 65 | C 6 | 1 | 40 | C 3 | T |
| 19 | 133 | 12 | 4 | 65 | C 6 | 1 | 38 | C 3 | T |
| 20 | 125 | 16 | 5 | 65 | C 6 | 1 | 38 | C 3 | T |
| 21 | 122 | 10 | 3 | 70 | C 6 | 1 | 38 | C 3 | T |
| 22 | 108 | 10 | 3 | 70 | C 6 | 1 | 38 | C 3 | T |
| 23 | 105 | 9 | 3 | 60 | C 6 | 1 | 38 | C 3 | T |
| 24 | 109 | 6 | 2 | 58 | C 6 | 1 | 43 | C 3 | T |
| 25 | 121 | 10 | 3 | 58 | C 6 | 1 | 39 | C 3 | T |
| 26 | 128 | 24 A | 8 | 62 | C 6 | 1 | 36 | C 3 | T |
| 27 | 118 | 6 | 2 | 66 | C 6 | 1 | 34 | C 3 | T |
| 28 | 105 | -- | 2 | 59 | C 6 | 1 | 33 | C 3 | T |
| 29 | 103 | 6 | 2 | 60 | C 6 | 1 | 33 | C 3 | T |
| 30 | 104 | 6 | 2 | 58 | C 6 | 1 | 33 | C 3 | T |
| 31 | -- | -- | -- | 55 | C 6 | 1 | -- | -- | -- |
| Total | 5814 | -- | 718 | 3064 | -- | 92 | 1360 | -- | 20 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | -- | T | 26 | C 2 | T | 26 | C 2 | T |
| 2 | 51 | 20 | 3 | 26 | C 2 | T | 24 | C 2 | T |
| 3 | 69 | 40 | 7 | 26 | C 2 | T | 24 | C 2 | T |
| 4 | 49 | 6 | 1 | 26 | C 2 | T | 24 | C 2 | T |
| 5 | 40 | C 3 | T | 26 | C 2 | T | 23 | C 2 | T |
| 6 | 38 | C 3 | T | 26 | C 2 | T | 24 | C 2 | T |
| 7 | 38 | C 3 | T | 26 | C 2 | T | 24 | C 2 | T |
| 8 | 34 | C 3 | T | 26 | C 2 | T | 24 | C 2 | T |
| 9 | 33 | C 3 | T | 26 | C 2 | T | 24 | C 2 | T |
| 10 | 33 | C 3 | T | 26 | C 2 | T | 24 | C 2 | T |
| 11 | 33 | C 3 | T | 26 | C 2 | T | 24 | C 2 | T |
| 12 | 33 | C 3 | T | 26 | C 2 | T | 26 | C 2 | T |
| 13 | 36 | C 3 | T | 26 | C 2 | T | 26 | C 2 | T |
| 14 | 33 | C 3 | T | 26 | C 2 | T | 28 | C 2 | T |
| 15 | 32 | C 3 | T | 26 | C 2 | T | 28 | C 2 | T |
| 16 | 31 | C 3 | T | 26 | C 2 | T | 27 | C 2 | T |
| 17 | 31 | C 3 | T | 25 | C 2 | T | 26 | C 2 | T |
| 18 | 29 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 19 | 29 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 20 | 28 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 21 | 28 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 22 | 28 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 23 | 28 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 24 | 28 | C 3 | T | 25 | C 2 | T | 25 | C 2 | T |
| 25 | 29 | C 3 | T | 25 | C 2 | T | 26 | C 2 | T |
| 26 | 29 | C 3 | T | 25 | C 2 | T | 26 | C 2 | T |
| 27 | 28 | C 3 | T | 25 | C 2 | T | 26 | C 2 | T |
| 28 | | | | 26 | C 2 | T | 26 | C 2 | T |
| 29 | 27 | C 3 | T | 32 | C 2 | T | 26 | C 2 | T |
| 30 | 27 | C 3 | T | 28 | C 2 | T | 26 | C 2 | T |
| 31 | 26 | C 3 | T | 26 | C 2 | T | -- | -- | -- |
| Total | 1041 | -- | 18 | 803 | -- | 4 | 757 | -- | 4 |

Total discharge for year (cfs-days)..... 29114
Total load for year (tons)..... 5441

T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.
C Composite period.

## 14-0185. WALLA WALLA RIVER NEAR TOUCHET, WASH.

LOCATION.--Lat 46°02'15", long 118°45'55", at county road bridge, 0.9 mile downstream from Warm Springs Canyon, 2.5 miles downstream from gaging station, and 3.7 miles west of Touchet, Walla Walla County.
DRAINAGE AREA.--1,657 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: July 1959 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, 33°F Dec. 23.
Sediment concentrations: Maximum daily, 3,860 ppm Mar. 10; minimum daily, 14 ppm on several days during Sept.
Sediment loads: Maximum daily, 22,600 tons Mar. 10; minimum daily, less than 0.50 ton Sept. 25, 26, 28-30.
EXTREMES, 1959-66.--Water temperatures: Maximum (1959-65), 94°F Aug. 4, 1961; minimum (1959-61, 1962-66), freezing point on several days during winter months.
Sediment concentrations (1962-66): Maximum daily, 58,800 ppm Feb. 5, 1963; minimum daily, 4 ppm June 20, 1963.
Sediment loads (1962-66): Maximum daily, 3,230,000 tons Dec. 23, 1964; minimum daily, less than 0.50 ton on many days.
REMARKS.--Maximum observed during water year: Sediment concentration, 6,950 ppm Jan. 6. No appreciable inflow between gaging station and sampling point.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 21, 1965 | 49 | 33 | | | | 40 | 14 | 31 | 5.2 | | 204 | 0 | 34 | 17 | 0.2 | 1.4 | | 275 | 156 | 0 | | 449 | 8.0 | 5 | -- | -- |
| Dec. 3..... | 215 | 34 | | | | 26 | 11 | 21 | 4.6 | | 142 | 0 | 17 | 14 | .2 | 3.5 | | 203 | 109 | 0 | | 304 | 7.7 | 10 | -- | -- |
| Dec. 5..... | 226 | 33 | | | | 24 | 9.0 | 18 | 4.0 | | 129 | 0 | 16 | 10 | .1 | 2.7 | | 182 | 97 | 0 | | 273 | 8.1 | 5 | 10.9 | 230 |
| Jan. 12, 1966 | 672 | 32 | | | | 14 | 5.6 | 9.5 | 3.0 | | 76 | 0 | 8.0 | 5.8 | .2 | 3.0 | | 129 | 58 | 0 | | 166 | 7.2 | 5 | -- | -- |
| Mar. 22..... | 862 | 30 | | | | 12 | 4.2 | 7.1 | 2.7 | | 60 | 0 | 5.8 | 4.5 | .1 | 2.2 | | 100 | 48 | 0 | | 133 | 7.2 | 10 | 10.9 | 2400 |
| May 3..... | 347 | 30 | | | | 16 | 4.7 | 12 | 3.1 | | 84 | 0 | 9.6 | 6.5 | .2 | .5 | | A 124 | 60 | 0 | | 176 | 7.6 | 15 | -- | -- |
| May 27..... | 77 | 26 | | | | 26 | 9.3 | 20 | 3.9 | | 132 | 0 | 25 | 12 | .2 | 1.0 | | 189 | 103 | 0 | | 286 | 7.4 | 5 | -- | -- |
| June 15..... | 48 | 22 | | | | 33 | 11 | 26 | 5.1 | | 166 | 0 | 31 | 16 | .4 | .4 | | 227 | 128 | 0 | | 368 | 8.1 | 5 | 10.9 | 110 |
| July 25..... | 22 | 26 | | | | 58 | 19 | 54 | 7.9 | | 287 | 0 | 60 | 36 | .4 | 1.9 | | A 404 | 222 | 0 | | 656 | 7.7 | 5 | -- | -- |
| Aug. 31..... | 44 | 32 | | | | 76 | 26 | 68 | 8.3 | | 350 | 0 | 107 | 36 | .4 | 2.5 | | 514 | 296 | 10 | | 778 | 8.1 | 5 | -- | -- |
| Sept. 16..... | 22 | 29 | | | | 63 | 26 | 64 | 8.1 | | 294 | 0 | 99 | 44 | .3 | 1.0 | | A 479 | 264 | 23 | | 749 | 7.4 | 5 | 12.0 | 150 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966... | 1710 | 0.01 | 0.01 | 0.04 | 0.05 | 0.00 | 0.05 |
| Aug. 31..... | 0820 | -- | .01 | .02 | .00 | .00 | .03 |
| Sept. 16..... | 1245 | .01 | .01 | .02 | .00 | .00 | -- |

WALLA WALLA RIVER BASIN--Continued

14-0185. WALLA WALLA RIVER NEAR TOUCHET, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | -- | 56 | -- | 58 | -- | 61 | -- | 64 | -- | 56 | -- | 57 | -- | 58 | -- | 48 | -- | 54 | -- | 53 | 54 | 52 | -- | 54 | -- | 49 | -- | 53 | -- | 57 | -- | -- |
| November | 52 | 53 | 53 | 52 | 55 | 51 | 49 | 48 | 50 | 49 | 46 | 45 | 46 | 48 | 51 | 49 | 48 | 49 | 49 | 50 | 49 | 47 | 46 | 44 | 43 | 42 | 41 | 42 | 41 | 39 | -- | 48 |
| December | 41 | 45 | 42 | 45 | 44 | 43 | 44 | 43 | 45 | 45 | 43 | 41 | 41 | 39 | 35 | 35 | 34 | 35 | 35 | 35 | 39 | 37 | 33 | 36 | 35 | 34 | 38 | 42 | 40 | 39 | 38 | 39 |
| January | 37 | 38 | 38 | 40 | 39 | 42 | 42 | 45 | 39 | 40 | 42 | 43 | 45 | 44 | 42 | 37 | 38 | 37 | 36 | 35 | 35 | 37 | 38 | 37 | 35 | 36 | 37 | 38 | 39 | 40 | 40 | 39 |
| February | 38 | 37 | 38 | 39 | 40 | 41 | 40 | 40 | 39 | 37 | 41 | 41 | 38 | 41 | 37 | 40 | 43 | 42 | 43 | 45 | 43 | 42 | 43 | 42 | 43 | 46 | 44 | 43 | -- | -- | -- | 41 |
| March | 42 | 41 | 39 | -- | -- | -- | -- | 47 | 49 | 44 | 42 | 44 | 48 | 47 | 44 | 43 | 42 | 42 | 44 | 42 | 43 | 40 | 42 | 44 | 41 | 48 | 47 | 49 | 48 | 50 | 50 | 45 |
| April | 48 | 47 | 43 | 46 | 49 | 51 | 51 | 52 | 53 | 52 | 52 | 49 | 46 | 50 | 61 | 57 | 53 | 48 | 49 | 48 | 51 | 52 | 57 | 52 | 55 | 51 | 50 | 50 | 64 | 59 | -- | 52 |
| May | 62 | 61 | 64 | -- | 67 | -- | 60 | 63 | 68 | 59 | 57 | 62 | -- | 54 | -- | 58 | -- | 63 | -- | 64 | -- | 54 | -- | 64 | -- | 72 | 68 | 63 | -- | 61 | -- | -- |
| June | 62 | -- | 58 | -- | 61 | -- | 71 | -- | 69 | -- | 63 | -- | 62 | -- | 68 | -- | 73 | -- | 71 | -- | 67 | -- | 70 | -- | 73 | -- | 71 | -- | 67 | -- | -- | -- |
| July | 67 | -- | 59 | 66 | 71 | 78 | -- | 80 | -- | 72 | -- | 74 | -- | 72 | -- | 78 | -- | 75 | -- | 72 | -- | 79 | -- | 73 | 71 | -- | 76 | -- | 74 | -- | -- | -- |
| August | 72 | -- | 74 | -- | 72 | -- | -- | 71 | -- | 79 | -- | 81 | -- | -- | 74 | -- | 69 | -- | 72 | -- | -- | 70 | -- | 79 | -- | 63 | -- | -- | 63 | 68 | 70 | -- |
| September | -- | 67 | -- | -- | 78 | -- | 69 | -- | 66 | -- | -- | 60 | -- | 59 | -- | 66 | -- | -- | 63 | -- | 66 | -- | 68 | -- | -- | 62 | -- | 64 | -- | 70 | -- | -- |

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Jan. 6, 1966 | 1525 | 43 | | 1580 | 5520 | 23500 | 23 | 18 | 44 | 68 | 85 | 98 | 100 | -- | | | | VPWC |
| Mar. 10 | 1050 | 44 | | 2550 | 4960 | 34100 | 11 | 18 | 26 | 38 | 58 | 90 | 98 | 100 | | | | VPWC |
| Mar. 14 | 0930 | 48 | | 2250 | 2180 | 13200 | 10 | 16 | 22 | 34 | 59 | 82 | 92 | 100 | | | | VPWC |
| Mar. 27 | 1625 | 53 | | 1850 | 1270 | 6340 | 12 | 16 | 23 | 30 | 55 | 84 | 96 | 100 | | | | VPWC |
| Mar. 29 | 0935 | 49 | | 2430 | 2070 | 13600 | 9 | 12 | 17 | 27 | 50 | 84 | 94 | 100 | | | | VPWC |
| Apr. 1 | 1310 | -- | | 2470 | 1410 | 9400 | 10 | 14 | 21 | 33 | 54 | 84 | 93 | 100 | | | | VPWC |

WALLA WALLA RIVER BASIN--Continued

14-0185. WALLA WALLA RIVER NEAR TOUCHET, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 100 | C 47 | 13 | 54 | 19 | 3 | 178 | 32 | 15 |
| 2 | 104 | C 47 | 13 | 56 | 22 | 3 | 188 | 48 | 24 |
| 3 | 109 | C 47 | 14 | 56 | 36 | 5 | 215 | 70 | 41 |
| 4 | 109 | C 47 | 14 | 71 | 27 | 5 | 226 | 63 | 38 |
| 5 | 88 | C 47 | 11 | 72 | 43 | 8 | 226 | 65 | 40 |
| 6 | 111 | C 47 | 14 | 78 | 28 | 6 | 215 | 77 | 45 |
| 7 | 119 | C 47 | 15 | 74 | 28 | 6 | 207 | 85 | 48 |
| 8 | 102 | C 47 | 13 | 77 | 54 | 11 | 207 | 54 | 30 |
| 9 | 80 | C 47 | 10 | 91 | 32 | 8 | 215 | 48 | 28 |
| 10 | 62 | C 30 | 5 | 93 | 25 | 6 | 229 | 55 | 34 |
| 11 | 59 | C 30 | 5 | 100 | 26 | 7 | 235 | 51 | 32 |
| 12 | 46 | C 30 | 4 | 104 | 40 | 11 | 229 | 39 | 24 |
| 13 | 46 | C 30 | 4 | 109 | 40 | 12 | 229 | 50 | 31 |
| 14 | 46 | C 30 | 4 | 109 | 36 | 11 | 229 | 64 | 40 |
| 15 | 46 | C 30 | 4 | 125 | 44 | 15 | 232 | 49 | 31 |
| 16 | 48 | C 30 | 4 | 127 | 56 | 19 | 256 | 72 | 50 |
| 17 | 50 | C 30 | 4 | 119 | 64 | 21 | 272 | 94 | 69 |
| 18 | 57 | C 30 | 5 | 129 | 69 | 24 | 269 | 103 | 75 |
| 19 | 56 | C 30 | 5 | 127 | 47 | 16 | 259 | 66 | 46 |
| 20 | 50 | C 30 | 4 | 121 | 44 | 14 | 285 | 59 | 45 |
| 21 | 49 | C 30 | 4 | 123 | 42 | 14 | 322 | 107 | 93 |
| 22 | 49 | C 30 | 4 | 140 | 44 | 17 | 291 | 100 | 79 |
| 23 | 46 | C 30 | 4 | 151 | 49 | 20 | 275 | 70 | 52 |
| 24 | 46 | C 30 | 4 | 163 | 53 | 23 | 308 | 118 | 98 |
| 25 | 46 | C 30 | 4 | 175 | 58 | 27 | 294 | 75 | 60 |
| 26 | 45 | C 30 | 4 | 165 | 32 | 14 | 288 | 49 | 38 |
| 27 | 45 | C 30 | 4 | 173 | 34 | 16 | 315 | 86 | 73 |
| 28 | 48 | C 30 | 4 | 180 | 37 | 18 | 325 | 88 | 77 |
| 29 | 50 | C 30 | 4 | 170 | 28 | 13 | 318 | 99 | 85 |
| 30 | 51 | C 30 | 4 | 178 | 32 | 15 | 329 | 76 | 68 |
| 31 | 51 | C 30 | 4 | --- | --- | --- | 311 | 64 | 54 |
| Total | 2014 | --- | 209 | 3510 | --- | 388 | 7977 | --- | 1563 |

| | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 301 | 64 | 52 | 420 | 48 | 54 | 700 | 108 | 204 |
| 2 | 332 | 108 | 97 | 412 | 48 | 53 | 627 | 78 | 132 |
| 3 | 400 | 142 | 153 | 404 | 48 | 52 | 584 | 82 | 129 |
| 4 | 404 | 140 | 153 | 416 | 42 | 47 | 544 | 61 | 90 |
| 5 | 468 | 172 | 217 | 452 | 100 | 122 | 512 | 71 | 98 |
| 6 | 1240 | 3280 | S 14900 | 472 | 176 | 224 | 496 | 70 | 94 |
| 7 | 1430 | 2180 | 8420 | 480 | 194 | 251 | 536 | 88 | 127 |
| 8 | 1510 | 1190 | 4850 | 468 | 96 | 121 | 568 | 117 | 179 |
| 9 | 1430 | 1010 | 3900 | 464 | 81 | 101 | 1020 | 1330 | S 3990 |
| 10 | 976 | 400 | 1050 | 456 | 60 | 74 | 2170 | 3860 | 22600 |
| 11 | 773 | 260 | 543 | 432 | 54 | 63 | 1770 | 1510 | 7220 |
| 12 | 672 | 214 | 388 | 444 | 53 | 64 | 1310 | 690 | 2440 |
| 13 | 663 | 212 | 380 | 440 | 54 | 64 | 1370 | 650 | 2400 |
| 14 | 686 | 206 | 382 | 440 | 53 | 63 | 2110 | 1720 | 9800 |
| 15 | 710 | 159 | 305 | 428 | 44 | 51 | 2040 | 1620 | 8920 |
| 16 | 663 | 121 | 217 | 416 | 53 | 60 | 1700 | 890 | 4090 |
| 17 | 604 | 96 | 157 | 428 | 66 | 76 | 1340 | 520 | 1880 |
| 18 | 572 | 101 | 156 | 420 | 75 | 85 | 1090 | 322 | 948 |
| 19 | 544 | 98 | 144 | 440 | 78 | 93 | 1010 | 282 | 769 |
| 20 | 492 | 84 | 112 | 500 | 120 | A 160 | 946 | 249 | 636 |
| 21 | 464 | 73 | 91 | 735 | 411 | 816 | 952 | 232 | 596 |
| 22 | 448 | 68 | 82 | 822 | 362 | 803 | 862 | 182 | 424 |
| 23 | 440 | 63 | 75 | 812 | 273 | 599 | 856 | 200 | 462 |
| 24 | 444 | 51 | 61 | 817 | 216 | 476 | 880 | 184 | 437 |
| 25 | 404 | 48 | 52 | 812 | 195 | 428 | 1100 | 570 | 1690 |
| 26 | 400 | 48 | 52 | 839 | 268 | 607 | 1390 | 710 | 2660 |
| 27 | 400 | 54 | 58 | 839 | 265 | 600 | 1720 | 1270 | 5900 |
| 28 | 396 | 54 | 58 | 762 | 149 | 307 | 2060 | 1670 | 9290 |
| 29 | 384 | 56 | 58 | --- | --- | --- | 2210 | 1580 | 9430 |
| 30 | 392 | 58 | 61 | --- | --- | --- | 2360 | 1740 | 11100 |
| 31 | 404 | 58 | 63 | --- | --- | --- | 2410 | 1750 | 11400 |
| Total | 19466 | --- | 37287 | 15270 | --- | 6514 | 39243 | --- | 120135 |

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
C Composite period.

WALLA WALLA RIVER BASIN--Continued

14-0185. WALLA WALLA RIVER NEAR TOUCHET, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 2390 | 1400 | 9030 | 265 | 22 | 16 | 77 | 18 | 4 |
| 2 | 2350 | 1240 | 7870 | 294 | 35 | 28 | 78 | --- | E 4 |
| 3 | 1960 | 830 | 4390 | 347 | 27 | 25 | 98 | 24 | 6 |
| 4 | 1540 | 650 | 2700 | 432 | 43 B | 50 | 188 | 63 | B 32 |
| 5 | 1310 | 440 | 1560 | 520 | 84 A | 120 | 142 | 26 | 10 |
| 6 | 1260 | 410 | 1390 | 636 | 170 B | 290 | 109 | C 20 | 6 |
| 7 | 1330 | 480 | 1720 | 725 | 580 | 1140 | 91 | C 20 | 5 |
| 8 | 1400 | 468 | 1770 | 572 | 370 | 571 | 78 | C 20 | 4 |
| 9 | 1450 | 432 | 1690 | 500 | 140 | 189 | 86 | C 20 | 5 |
| 10 | 1360 | 314 | 1150 | 432 | 84 | 98 | 74 | C 20 | 4 |
| 11 | 1250 | 244 | 824 | 432 | 67 | 78 | 77 | C 20 | 4 |
| 12 | 1120 | 228 | 689 | 357 | 61 | 59 | 75 | C 20 | 4 |
| 13 | 946 | 239 | 610 | 311 | 44 B | 37 | 65 | C 20 | 4 |
| 14 | 762 | 175 | 360 | 272 | 30 | 22 | 56 | C 20 | 3 |
| 15 | 690 | 169 | 315 | 238 | 32 B | 21 | 48 | C 20 | 3 |
| 16 | 756 | 185 | 378 | 212 | 36 | 21 | 39 | C 20 | 2 |
| 17 | 817 | 178 | 393 | 185 | 32 B | 16 | 33 | C 20 | 2 |
| 18 | 735 | 124 | 246 | 151 | 21 | 9 | 31 | C 20 | 2 |
| 19 | 600 | 98 | 159 | 123 | 27 B | 9 | 33 | C 20 | 2 |
| 20 | 524 | 103 | 146 | 113 | 34 | 10 | 29 | C 20 | 2 |
| 21 | 512 | 80 | 111 | 113 | 24 B | 7 | 25 | C 20 | 1 |
| 22 | 444 | 76 | 91 | 123 C | 16 | 5 | 24 | C 20 | 1 |
| 23 | 392 | 86 | 91 | 136 C | 16 | 6 | 25 | C 20 | 1 |
| 24 | 354 | 58 | 55 | 111 C | 16 | 5 | 26 | C 20 | 1 |
| 25 | 361 | 58 | 57 | 93 C | 16 | 4 | 34 | C 20 | 2 |
| 26 | 384 | 60 | 62 | 88 C | 16 | 4 | 41 | C 20 | 2 |
| 27 | 404 | 49 | 53 | 77 C | 16 | 3 | 34 | C 20 | 2 |
| 28 | 350 | 41 | 39 | 83 C | 16 | 4 | 30 | C 20 | 2 |
| 29 | 298 | 34 | 27 | 85 C | 16 | 4 | 27 | C 20 | 1 |
| 30 | 265 | 30 | 21 | 91 C | 16 | 4 | 25 | C 20 | 1 |
| 31 | --- | --- | --- | 85 C | 16 | 4 | --- | --- | --- |
| Total | 28314 | --- | 37997 | 8202 | --- | 2859 | 1796 | --- | 122 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 29 | 2 | 17 C | 29 | 1 | 16 C | 31 | 1 |
| 2 | 39 | 41 B | 4 | 15 C | 29 | 1 | 14 C | 31 | 1 |
| 3 | 111 | 50 | 15 | 14 C | 29 | 1 | 13 C | 31 | 1 |
| 4 | 158 | 44 | 19 | 15 C | 29 | 1 | 12 C | 31 | 1 |
| 5 | 131 | 30 | 11 | 12 C | 29 | 1 | 12 C | 31 | 1 |
| 6 | 88 | 21 | 5 | 12 C | 29 | 1 | 12 C | 31 | 1 |
| 7 | 72 C | 21 | 4 | 11 C | 29 | 1 | 12 C | 31 | 1 |
| 8 | 59 C | 21 | 3 | 12 C | 29 | 1 | 12 C | 31 | 1 |
| 9 | 57 C | 21 | 3 | 11 C | 29 | 1 | 13 C | 31 | 1 |
| 10 | 54 C | 21 | 3 | 12 C | 29 | 1 | 12 C | 31 | 1 |
| 11 | 49 C | 21 | 3 | 12 C | 29 | 1 | 12 C | 31 | 1 |
| 12 | 47 C | 21 | 3 | 12 C | 29 | 1 | 14 C | 31 | 1 |
| 13 | 50 C | 21 | 3 | 12 C | 29 | 1 | 14 C | 31 | 1 |
| 14 | 50 C | 21 | 3 | 11 C | 29 | 1 | 15 C | 31 | 1 |
| 15 | 45 C | 21 | 3 | 12 C | 29 | 1 | 16 C | 31 | 1 |
| 16 | 42 C | 21 | 2 | 12 C | 29 | 1 | 22 C | 31 | 2 |
| 17 | 38 C | 21 | 2 | 12 C | 29 | 1 | 19 C | 31 | 2 |
| 18 | 36 C | 21 | 2 | 12 C | 29 | 1 | 17 C | 31 | 1 |
| 19 | 35 C | 21 | 2 | 12 C | 29 | 1 | 16 C | 31 | 1 |
| 20 | 33 C | 21 | 2 | 11 C | 29 | 1 | 16 C | 31 | 1 |
| 21 | 31 C | 21 | 2 | 11 C | 29 | 1 | 14 C | 31 | 1 |
| 22 | 31 C | 21 | 2 | 12 C | 29 | 1 | 14 C | 31 | 1 |
| 23 | 30 C | 21 | 2 | 12 C | 29 | 1 | 14 C | 31 | 1 |
| 24 | 24 C | 21 | 1 | 12 C | 29 | 1 | 13 C | 31 | 1 |
| 25 | 22 C | 21 | 1 | 12 C | 29 | 1 | 12 C | 14 | T |
| 26 | 22 C | 21 | 1 | 11 C | 29 | 1 | 12 C | 14 | T |
| 27 | 24 C | 21 | 1 | 11 C | 29 | 1 | 14 C | 14 | 1 |
| 28 | 22 C | 21 | 1 | 11 C | 29 | 1 | 12 C | 14 | T |
| 29 | 20 C | 21 | 1 | 14 C | 29 | 1 | 12 C | 14 | T |
| 30 | 20 C | 21 | 1 | 13 C | 29 | 1 | 12 C | 14 | T |
| 31 | 18 C | 21 | 1 | 14 C | 29 | 1 | --- | --- | --- |
| Total | 1482 | --- | 108 | 382 | --- | 31 | 418 | --- | 29 |

Total discharge for year (cfs-days)..... 128074
Total load for year (tons)..... 207242

E Estimated.
T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.

COLUMBIA RIVER MAIN STEM

14-0192. COLUMBIA RIVER BELOW McNARY DAM, NEAR UMATILLA, OREG.

LOCATION.--Lat 45°56'12", long 119°17'48", at McNary Dam, Benton County, 1.2 miles upstream from gaging station, 2.5 miles east of Plymouth, and approximately 3 miles upstream from Umatilla River.
DRAINAGE AREA.--214,000 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to September 1966.
Water temperatures: October 1961 to September 1962.
Sediment records: May 1965 to September 1966 (discontinued).
EXTREMES, 1965-66.--Sediment concentrations: Maximum daily, 38 ppm Apr. 29; minimum daily, 1 ppm Mar. 2, Aug. 5.
Sediment loads: Maximum daily, 24,200 tons June 29, minimum daily, 373 tons Mar. 2.
EXTREMES, May 1965 to September 1966.--Sediment concentrations: Maximum daily, 40 ppm May 20, 1965; minimum daily, 1ppm Mar. 2, Aug. 5, 1966.
Sediment loads: Maximum daily, 49,200 tons June 8, 1965; minimum daily, 373 tons Mar. 2, 1966.
REMARKS.--Sediment samples collected at gaging station, 1.2 miles downstream from McNary Dam, 2 miles northeast of Umatilla, 2.3 miles upstream from Umatilla River, and at mile 290.8. No appreciable inflow between sampling point and gaging station.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (1000 cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 28, 1965 | 108 | 12 | | | | 26 | 7.4 | 14 | 1.7 | | 108 | 0 | 26 | 6.0 | 0.3 | 0.6 | 0.21 | A 147 | 95 | 6 | | 252 | 7.4 | 5 | -- | -- |
| Nov. 26..... | 101 | 11 | | | | 26 | 7.4 | 12 | 2.8 | | 110 | 0 | 20 | 6.0 | .3 | 1.3 | .23 | 146 | 95 | 5 | | 241 | 7.5 | 5 | -- | -- |
| Dec. 5..... | 91.2 | 9.8 | | | | 25 | 6.7 | 11 | 1.7 | | 100 | 0 | 23 | 5.8 | .2 | 1.2 | .20 | 133 | 90 | 8 | | 226 | 7.8 | 5 | 10.1 | 230 |
| Jan. 17, 1966 | 103 | 11 | | | | 26 | 7.3 | 10 | 1.7 | | 103 | 0 | 24 | 5.0 | .2 | 1.2 | .29 | 138 | 95 | 10 | | 239 | 7.6 | 5 | -- | -- |
| Feb. 14..... | 104 | 9.2 | | | | 26 | 7.6 | 9.0 | 1.6 | | 104 | 0 | 22 | 5.2 | .4 | 1.1 | .27 | 133 | 96 | 11 | | 229 | 7.8 | 5 | -- | -- |
| Mar. 22..... | 133 | 11 | | | | 24 | 6.4 | 7.8 | 1.6 | | 90 | 0 | 20 | 4.5 | .3 | 1.8 | .24 | 122 | 86 | 12 | | 206 | 7.5 | 15 | 11.6 | 91 |
| Apr. 25..... | 122 | 8.9 | | | | 19 | 5.4 | 5.1 | 1.2 | | 76 | 0 | 15 | 2.0 | .4 | .6 | .16 | 94 | 70 | 8 | | 163 | 7.4 | 5 | -- | -- |
| May 24..... | 281 | 6.2 | | | | 20 | 4.2 | 2.8 | .7 | | 69 | 0 | 14 | .8 | .1 | .6 | .01 | 84 | 68 | 11 | | 145 | 7.4 | 10 | -- | -- |
| June 15..... | 352 | 5.4 | | | | 18 | 4.2 | 3.2 | .8 | | 66 | 0 | 13 | 1.0 | .2 | .4 | -- | 78 | 62 | 8 | | 137 | 7.3 | 5 | 12.3 | 36 |
| July 28..... | 228 | 3.4 | | | | 20 | 4.3 | 3.2 | .8 | | 74 | 0 | 13 | 1.0 | .2 | .5 | .06 | A 82 | 68 | 7 | | 147 | 7.3 | 5 | -- | -- |
| Aug. 8..... | 155 | 4.2 | | | | 21 | 4.7 | 4.0 | 1.0 | | 75 | 0 | 14 | 2.0 | .3 | .7 | .26 | A 88 | 72 | 10 | | 156 | 7.2 | 5 | -- | -- |
| Sept. 16..... | 84.5 | 5.4 | | | | 23 | 5.6 | 7.6 | 1.4 | | 88 | 0 | 19 | 3.5 | .4 | 1.0 | -- | 110 | 80 | 8 | | 181 | 7.5 | 5 | 9.9 | 36 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Mar. 22, 1966.... | 1540 | 0.01 | 0.01 | 0.06 | 0.05 | 0.00 | 0.00 |
| Aug. 8..... | 1240 | .01 | .02 | .00 | .00 | .00 | .02 |

COLUMBIA RIVER MAIN STEM--Continued

14-0192. COLUMBIA RIVER BELOW McNARY DAM, NEAR UMATILLA, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (1000 cfs) | Suspended sediment | | Mean discharge (1000 cfs) | Suspended sediment | | Mean discharge (1000 cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 108 | 11 | 3210 | 93.0 | 9 | 2260 | 130 | 8 | 2810 |
| 2 | 95.9 | 10 | 2590 | 96.5 | 8 | 2080 | 110 | 7 | 2080 |
| 3 | 95.8 | 10 | 2590 | 96.6 | 8 | 2090 | 93.4 | 6 | 1510 |
| 4 | 95.9 | 10 | 2590 | 96.7 | 9 | 2350 | 91.1 | 8 | 1970 |
| 5 | 107 | 12 | 3470 | 93.8 | 10 | 2530 | 91.3 | 9 | 2220 |
| 6 | 99.5 | 13 | 3490 | 99.5 | 10 | 2690 | 92.6 | 10 | 2500 |
| 7 | 88.8 | 12 | 2880 | 91.2 | 10 | 2460 | 108 | 9 | 2620 |
| 8 | 94.5 | 11 | 2810 | 94.4 | 11 | 2800 | 95.5 | 8 | 2060 |
| 9 | 98.8 | 10 | 2670 | 97.5 | 12 | 3160 | 97.7 | 10 | 2640 |
| 10 | 94.9 | 12 | 3070 | 116 | 12 | 3760 | 116 | 12 | 3760 |
| 11 | 95.4 | 13 | 3350 | 121 | 11 | 3590 | 99.7 | 10 | 2690 |
| 12 | 123 | 12 | 3990 | 112 | 10 | 3020 | 93.6 | 8 | 2020 |
| 13 | 112 | 10 | 3020 | 104 | 10 | 2810 | 106 | 6 | 1720 |
| 14 | 117 | 12 | 3790 | 92.6 | 10 | 2500 | 133 | 7 | 2510 |
| 15 | 113 | 14 | 4270 | 93.1 | 10 | 2510 | 131 | 8 | 2830 |
| 16 | 112 | 14 | 4230 | 105 | 10 | 2830 | 132 | 8 | 2850 |
| 17 | 96.6 | 14 | 3650 | 111 | 11 | 3300 | 130 | 8 | 2810 |
| 18 | 108 | 14 | 4080 | 110 | 11 | 3270 | 104 | 8 | 2250 |
| 19 | 117 | 15 | 4740 | 105 | 12 | 3400 | 94.6 | 8 | 2040 |
| 20 | 112 | 14 | 4230 | 101 | 11 | 3000 | 121 | 8 | 2610 |
| 21 | 109 | 14 | 4120 | 91.2 | 10 | 2460 | 132 | 7 | 2490 |
| 22 | 111 | 12 | 3600 | 93.6 | 9 | 2270 | 118 | 6 | 1910 |
| 23 | 101 | 12 | 3270 | 109 | 10 | 2940 | 129 | 6 | 2090 |
| 24 | 97.4 | 12 | 3160 | 135 | 10 | 3640 | 86.5 | 7 | 1630 |
| 25 | 99.2 | 12 | 3210 | 108 | 9 | 2620 | 84.1 | 6 | 1360 |
| 26 | 101 | 14 | 3820 | 102 | 8 | 2200 | 89.7 | 5 | 1210 |
| 27 | 97.8 | 16 | 4220 | 91.6 | 9 | 2230 | 91.6 | 4 | 989 |
| 28 | 109 | 11 | 3240 | 91.9 | 10 | 2480 | 129 | 4 | 1390 |
| 29 | 95.7 | 6 | 1550 | 103 | 11 | 3060 | 118 | 5 | 1590 |
| 30 | 90.9 | 7 | 1720 | 117 | 10 | 3160 | 116 | 4 | 1250 |
| 31 | 91.2 | 8 | 1970 | -- | -- | -- | 116 | 3 | 940 |
| Total | 3188.3 | -- | 102600 | 3072.2 | -- | 83470 | 3380.4 | -- | 65349 |
| | JANUARY | | | FEBRUARY | | | MARCH | | |
| 1 | 101 | 4 | 1090 | 117 | 4 | 1260 | 153 | 2 | 826 |
| 2 | 92.3 | 5 | 1250 | 131 | 4 | 1410 | 138 | 1 | 373 |
| 3 | 106 | 6 | 1720 | 132 | 4 | 1430 | 109 | 2 | 589 |
| 4 | 119 | 6 | 1930 | 122 | 4 | 1320 | 144 | 2 | 778 |
| 5 | 110 | 6 | 1780 | 120 | 4 | 1300 | 105 | 2 | 567 |
| 6 | 116 | 6 | 1880 | 103 | 4 | 1110 | 93.5 | 3 | 757 |
| 7 | 109 | 5 | 1470 | 112 | 4 | 1210 | 93.2 | 4 | 1010 |
| 8 | 126 | 6 | 2040 | 110 | 6 | 1780 | 123 | 5 | 1660 |
| 9 | 92.7 | 6 | 1500 | 114 | 8 | 2460 | 89.5 | 7 | 1690 |
| 10 | 102 | 6 | 1650 | 115 | 7 | 2170 | 135 | 5 | 1820 |
| 11 | 109 | 7 | 2060 | 131 | 6 | 2120 | 131 | 4 | 1410 |
| 12 | 114 | 8 | 2460 | 117 | 7 | 2210 | 101 | 4 | 1090 |
| 13 | 101 | 7 | 1910 | 100 | 8 | 2160 | 98.8 | 4 | 1070 |
| 14 | 107 | 6 | 1730 | 105 | 9 | 2550 | 116 | 5 | 1570 |
| 15 | 101 | 8 | 2180 | 121 | 8 | 2610 | 132 | 6 | 2140 |
| 16 | 91.8 | 10 | 2480 | 126 | 6 | 2040 | 137 | 7 | 2590 |
| 17 | 103 | 12 | 3340 | 119 | 6 | 1930 | 140 | 5 | 1890 |
| 18 | 128 | 9 | 3110 | 111 | 5 | 1500 | 132 | 2 | 713 |
| 19 | 113 | 6 | 1830 | 114 | 6 | 1850 | 131 | 6 | 2120 |
| 20 | 129 | 4 | 1390 | 88.0 | 7 | 1660 | 124 | 10 | 3350 |
| 21 | 115 | 2 | 621 | 103 | 8 | 2220 | 124 | 15 | 5020 |
| 22 | 103 | 2 | 556 | 104 | 7 | 1970 | 135 | 15 | 5470 |
| 23 | 94.7 | 2 | 511 | 112 | 6 | 1810 | 116 | 14 | 4380 |
| 24 | 102 | 2 | 551 | 127 | 4 | 1370 | 113 | 13 | 3970 |
| 25 | 121 | 2 | 653 | 126 | 3 | 1020 | 111 | 12 | 3600 |
| 26 | 125 | 2 | 675 | 114 | 4 | 1230 | 124 | 12 | 4020 |
| 27 | 115 | 3 | 931 | 131 | 3 | 1060 | 89.5 | 11 | 2660 |
| 28 | 127 | 4 | 1370 | 157 | 2 | 848 | 122 | 10 | 3290 |
| 29 | 120 | 4 | 1300 | -- | -- | -- | 135 | 12 | 4370 |
| 30 | 107 | 4 | 1160 | -- | -- | -- | 156 | 14 | 5900 |
| 31 | 106 | 4 | 1140 | -- | -- | -- | 171 | 14 | 6460 |
| Total | 3406.5 | -- | 48268 | 3282.0 | -- | 47608 | 3822.5 | -- | 77153 |

COLUMBIA RIVER MAIN STEM--Continued

14-0192. COLUMBIA RIVER BELOW McNARY DAM, NEAR UMATILLA, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (1000 cfs) | Suspended sediment | | Mean discharge (1000 cfs) | Suspended sediment | | Mean discharge (1000 cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 172 | 13 | 6040 | 129 | 24 | 8360 | 335 | 22 | 19900 |
| 2 | 156 | 13 | 5480 | 136 | 18 | 6610 | 326 | 22 | 19400 |
| 3 | 134 | 12 | 4340 | 136 | 15 | 5510 | 332 | 19 | 17000 |
| 4 | 126 | 12 | 4080 | 143 | 12 | 4630 | 348 | 20 | 18800 |
| 5 | 147 | 15 | 5950 | 176 | 12 | 5700 | 351 | 22 | 20800 |
| 6 | 151 | 19 | 7750 | 210 | 13 | 7370 | 352 | 23 | 21900 |
| 7 | 137 | 16 | 5920 | 257 | 16 | 11100 | 358 | 20 | 19300 |
| 8 | 133 | 14 | 5030 | 293 | 18 | 14200 | 363 | 18 | 17600 |
| 9 | 137 | 13 | 4810 | 325 | 20 | 17500 | 369 | 19 | 18900 |
| 10 | 136 | 13 | 4770 | 350 | 24 | 22700 | 378 | 20 | 20400 |
| 11 | 143 | 12 | 4630 | 303 | 29 | 23700 | 391 | 19 | 20100 |
| 12 | 175 | 12 | 5670 | 292 | 24 | 18900 | 394 | 19 | 20200 |
| 13 | 176 | 11 | 5230 | 348 | 18 | 16900 | 386 | 18 | 18800 |
| 14 | 156 | 13 | 5480 | 325 | 19 | 16700 | 373 | 16 | 16100 |
| 15 | 126 | 16 | 5440 | 290 | 19 | 14900 | 355 | 23 | 22000 |
| 16 | 116 | 16 | 5010 | 274 | 20 | 14800 | 334 | 22 | 19800 |
| 17 | 97.3 | 17 | 4470 | 263 | 19 | 13500 | 326 | 22 | 19400 |
| 18 | 120 | 17 | 5510 | 248 | 18 | 12100 | 320 | 21 | 18100 |
| 19 | 153 | 14 | 5780 | 245 | 18 | 11900 | 316 | 20 | 17100 |
| 20 | 149 | 11 | 4430 | 244 | 17 | 11200 | 315 | 20 | 17000 |
| 21 | 147 | 10 | 3970 | 254 | 18 | 12300 | 315 | 19 | 16200 |
| 22 | 149 | 10 | 4020 | 268 | 19 | 13700 | 318 | 18 | 15500 |
| 23 | 128 | 12 | 4150 | 270 | 20 | 14600 | 312 | 19 | 16000 |
| 24 | 123 | 15 | 4980 | 283 | 16 | 12200 | 294 | 20 | 15900 |
| 25 | 123 | 18 | 5980 | 264 | 18 | 12800 | 305 | 20 | 16500 |
| 26 | 150 | 17 | 6880 | 255 | 19 | 13100 | 310 | 20 | 16700 |
| 27 | 150 | 16 | 6480 | 254 | 20 | 13700 | 299 | 20 | 16100 |
| 28 | 157 | 27 | 11400 | 277 | 21 | 15700 | 286 | 26 | 20100 |
| 29 | 156 | 38 | 16000 | 292 | 21 | 16600 | 280 | 32 | 24200 |
| 30 | 142 | 31 | 11900 | 322 | 22 | 19100 | 276 | 22 | 16400 |
| 31 | --- | -- | -- | 330 | 22 | 19600 | --- | -- | -- |
| Total | 4265.3 | -- | 181580 | 8056 | -- | 421680 | 10017 | -- | 556200 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 269 | 12 | 8720 | 191 | 4 | 2060 | 99.1 | 2 | 535 |
| 2 | 268 | 15 | 10900 | 174 | 6 | 2820 | 94.0 | 2 | 508 |
| 3 | 272 | 18 | 13200 | 183 | 8 | 3950 | 95.1 | 3 | 770 |
| 4 | 281 | 21 | 15900 | 158 | 4 | 1710 | 91.3 | 6 | 1480 |
| 5 | 280 | 20 | 15100 | 158 | 1 | 427 | 85.2 | 9 | 2070 |
| 6 | 277 | 19 | 14200 | 140 | 2 | 756 | 86.8 | 6 | 1410 |
| 7 | 272 | 20 | 14700 | 130 | 4 | 1400 | 93.7 | 4 | 1010 |
| 8 | 270 | 20 | 14600 | 159 | 6 | 2580 | 97.9 | 6 | 1590 |
| 9 | 279 | 21 | 15800 | 160 | 5 | 2160 | 108 | 7 | 2040 |
| 10 | 285 | 22 | 16900 | 155 | 4 | 1670 | 104 | 10 | 2810 |
| 11 | 279 | 23 | 17300 | 151 | 3 | 1220 | 87.7 | 13 | 3080 |
| 12 | 282 | 11 | 8380 | 148 | 2 | 799 | 90.2 | 16 | 3900 |
| 13 | 279 | 17 | 12800 | 126 | 2 | 680 | 108 | 10 | 2920 |
| 14 | 281 | 4 | 3030 | 126 | 2 | 680 | 96.6 | 4 | 1040 |
| 15 | 277 | 4 | 2990 | 142 | 2 | 767 | 91.8 | 6 | 1490 |
| 16 | 273 | 6 | 4420 | 143 | 4 | 1540 | 85.9 | 6 | 1390 |
| 17 | 260 | 8 | 5620 | 130 | 5 | 1750 | 84.6 | 4 | 914 |
| 18 | 254 | 11 | 7540 | 125 | 4 | 1350 | 85.7 | 4 | 926 |
| 19 | 246 | 12 | 7970 | 150 | 4 | 1620 | 89.3 | 4 | 964 |
| 20 | 253 | 12 | 8200 | 93.3 | 4 | 1010 | 107 | 4 | 1160 |
| 21 | 250 | 12 | 8100 | 91.8 | 4 | 991 | 93.6 | 4 | 1010 |
| 22 | 242 | 11 | 7190 | 111 | 3 | 899 | 93.9 | 4 | 1010 |
| 23 | 238 | 11 | 7070 | 126 | 3 | 1020 | 94.0 | 4 | 1020 |
| 24 | 226 | 10 | 6100 | 104 | 3 | 842 | 93.8 | 4 | 1010 |
| 25 | 216 | 10 | 5830 | 117 | 2 | 632 | 88.5 | 4 | 956 |
| 26 | 220 | 6 | 3560 | 107 | 2 | 578 | 89.0 | 4 | 961 |
| 27 | 235 | 3 | 1900 | 88.8 | 2 | 480 | 109 | 4 | 1180 |
| 28 | 229 | 2 | 1240 | 85.3 | 4 | 921 | 94.7 | 4 | 1020 |
| 29 | 210 | 2 | 1130 | 86.2 | 2 | 465 | 99.6 | 4 | 1080 |
| 30 | 205 | 3 | 1660 | 103 | 2 | 556 | 99.3 | 4 | 1070 |
| 31 | 206 | 3 | 1670 | 112 | 2 | 605 | --- | -- | -- |
| Total | 7914 | -- | 263720 | 4074.4 | -- | 38938 | 2837.3 | -- | 42324 |

Total discharge for year (in 1000 cfs-days)..... 47315.9
Total load for year (tons)..... 192890

## UMATILLA RIVER BASIN

### 14-0200. UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OREG.

LOCATION.--Lat 45°43'11", long 118°19'20", temperature recorder at gaging station, 0.8 mile downstream from Ryan Creek, 2.2 miles upstream from Meacham Creek, 2.5 miles northeast of Gibbon, Umatilla County, and at mile 83.1.
DRAINAGE AREA.--125 square miles (revised).
RECORDS AVAILABLE.--Water temperatures: June 1959 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 73°F July 18, 29, Aug. 1, 2; minimum, freezing point Dec. 17, Feb. 14, 15.
EXTREMES, 1959-66.--Water temperatures: Maximum, 77°F July 13, 15, 21, 1961; minimum, freezing point on several days during winter months of most years.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 57 | 57 | 56 | 56 | 56 | 58 | 58 | 57 | 55 | 54 | 53 | 54 | 52 | 51 | 50 | 50 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 52 | 51 | 50 | 50 | 53 |
| Minimum .... | 48 | 49 | 50 | 51 | 53 | 51 | 52 | 52 | 51 | 50 | 48 | 48 | 51 | 49 | 48 | 47 | 47 | 47 | 48 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 48 | 46 | 46 | 45 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 49 | 51 | 49 | 47 | 46 | 47 | 48 | 46 | 47 | 46 | 48 | 49 | 48 | 48 | 48 | 49 | 48 | 46 | 46 | 46 | 45 | 44 | 42 | 43 | 43 | 41 | 40 | 41 | -- | 46 |
| Minimum .... | 45 | 46 | 46 | 49 | 45 | 43 | 44 | 45 | 45 | 43 | 45 | 44 | 45 | 47 | 45 | 45 | 46 | 46 | 45 | 44 | 45 | 44 | 43 | 41 | 40 | 41 | 41 | 40 | 38 | 38 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 42 | 42 | 44 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | 39 | 37 | 35 | 33 | 35 | 35 | 34 | 36 | 37 | 35 | 36 | 38 | 38 | 38 | 42 | 40 | 40 | 39 | 39 |
| Minimum .... | 38 | 40 | 40 | 41 | 42 | 40 | 40 | 40 | 40 | 40 | 38 | 39 | 38 | 36 | 34 | 33 | 32 | 33 | 33 | 33 | 34 | 34 | 33 | 34 | 34 | 36 | 35 | 38 | 38 | 38 | 38 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 39 | 40 | 41 | 41 | 42 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 38 | 37 | 38 | 38 | 37 | 37 | 37 | 37 | 38 | 37 | 39 | 39 | 41 | 41 | 41 | 41 | 39 |
| Minimum .... | 37 | 34 | 35 | 39 | 39 | 39 | 39 | 39 | 38 | 39 | 39 | 39 | 39 | 40 | 38 | 36 | 36 | 37 | 36 | 34 | 35 | 36 | 33 | 35 | 35 | 36 | 37 | 39 | 39 | 40 | 38 | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 40 | 41 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 38 | 39 | 38 | 37 | 39 | 39 | 39 | 41 | 42 | 41 | 41 | 41 | 42 | 43 | 42 | 42 | 41 | -- | -- | -- | 40 |
| Minimum .... | 36 | 36 | 37 | 39 | 39 | 36 | 38 | 37 | 37 | 36 | 36 | 34 | 36 | 32 | 32 | 35 | 36 | 36 | 36 | 39 | 38 | 39 | 40 | 39 | 39 | 40 | 40 | 38 | -- | -- | -- | 37 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 39 | 39 | 39 | 39 | 42 | 40 | 40 | 42 | 43 | 45 | 43 | 42 | 42 | 41 | 43 | 42 | 41 | 44 | 40 | 43 | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 43 |
| Minimum .... | 38 | 35 | 35 | 34 | 36 | 37 | 37 | 39 | 39 | 38 | 38 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 39 | 36 | 36 | 35 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 40 | 38 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 47 | 48 | 48 | 48 | 48 | 48 | 45 | 44 | 43 | 42 | 46 | 46 | 49 | 48 | 46 | 45 | 46 | 41 | 45 | 46 | 52 | 55 | 50 | 46 | 51 | 51 | 52 | 54 | -- | 47 |
| Minimum .... | 41 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 41 | 41 | 40 | 41 | 42 | 43 | 41 | 40 | 39 | 40 | 41 | 40 | 42 | 43 | 45 | 43 | 43 | 42 | 43 | 44 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 56 | 56 | 56 | 55 | 51 | 54 | 56 | 57 | 49 | 50 | 49 | 48 | 47 | 46 | 52 | 56 | 58 | 59 | 60 | 54 | 53 | 59 | 60 | 64 | 63 | 59 | 61 | 55 | 55 | 52 | 55 |
| Minimum .... | 43 | 44 | 45 | 45 | 46 | 47 | 44 | 45 | 47 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 44 | 44 | 45 | 47 | 48 | 45 | 44 | 46 | 48 | 50 | 51 | 49 | 50 | 50 | 49 | 46 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 55 | 51 | 55 | 62 | 59 | 63 | 65 | 58 | 56 | 53 | 61 | 64 | 64 | 68 | 68 | 66 | 69 | 63 | 65 | 59 | 66 | 60 | 57 | 67 | 68 | 70 | 66 | 66 | 67 | -- | 62 |
| Minimum .... | 46 | 48 | 47 | 47 | 46 | 48 | 51 | 52 | 53 | 51 | 49 | 49 | 50 | 52 | 52 | 53 | 55 | 54 | 55 | 54 | 53 | 51 | 53 | 51 | 49 | 53 | 54 | 56 | 55 | 53 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 59 | 58 | 70 | 72 | 67 | 71 | 70 | 68 | 71 | 71 | 68 | 71 | 71 | 72 | 72 | 72 | 73 | 71 | 70 | 71 | 72 | 72 | 69 | 70 | 70 | 71 | 72 | 73 | 71 | 72 | 70 |
| Minimum .... | 56 | 55 | 55 | 54 | 55 | 56 | 55 | 57 | 57 | 57 | 56 | 57 | 56 | 57 | 57 | 58 | 58 | 58 | 58 | 56 | 55 | 56 | 57 | 57 | 55 | 55 | 56 | 56 | 56 | 58 | 58 | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 73 | 72 | 71 | 71 | 71 | 72 | 69 | 71 | 70 | 69 | 69 | 64 | 70 | 70 | 69 | 68 | 69 | 67 | 67 | 68 | 65 | 67 | 69 | 66 | 63 | 63 | 65 | 62 | 64 | 64 | 68 |
| Minimum .... | 57 | 58 | 59 | 58 | 58 | 57 | 58 | 58 | 58 | 58 | 58 | 55 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 57 | 57 | 59 | 57 | 57 | 56 | 57 | 55 | 53 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 65 | 66 | 67 | 67 | 66 | 63 | 65 | 65 | 64 | 60 | 61 | 58 | 61 | 63 | 62 | 64 | 61 | 61 | 62 | 63 | 64 | 62 | 59 | 60 | 58 | 59 | 59 | 60 | 57 | -- | 62 |
| Minimum .... | 53 | 54 | 55 | 56 | 56 | 58 | 55 | 56 | 55 | 55 | 56 | 54 | 53 | 55 | 56 | 55 | 55 | 57 | 55 | 53 | 55 | 55 | 55 | 54 | 53 | 55 | 53 | 52 | 53 | 50 | -- | 55 |

UMATILLA RIVER BASIN--Continued

14-0200. UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OREG.--Continued

Periodic determinations of suspended-sediment discharge, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Oct. 27, 1965..... | 0740 | 44 | | 54 | 3 | T | | | | | | | | | | | |
| Dec. 28..... | 1400 | 43 | | 45 | 3 | T | | | | | | | | | | | |
| Jan. 26, 1966..... | 1625 | 38 | | 72 | 6 | 1 | | | | | | | | | | | |
| Feb. 26..... | 1125 | -- | | 203 | 10 | 5 | | | | | | | | | | | |
| Mar. 10..... | 2335 | 39 | | 515 | 10 | 14 | | | | | | | | | | | |
| Mar. 11..... | 0640 | 37 | | 472 | 7 | 9 | | | | | | | | | | | |
| Mar. 23..... | 1130 | 40 | | 244 | 2 | 1 | | | | | | | | | | | |
| Apr. 4..... | 1440 | 49 | | 448 | 14 | 17 | | | | | | | | | | | |
| Apr. 27..... | 1105 | 47 | | 226 | 3 | 2 | | | | | | | | | | | |
| May 11..... | 0810 | 49 | | 253 | 6 | 4 | | | | | | | | | | | |
| May 25..... | 1500 | 65 | | 120 | 4 | 1 | | | | | | | | | | | |
| June 23..... | 0940 | 54 | | 68 | 3 | 1 | | | | | | | | | | | |
| Aug. 18..... | 0625 | 53 | | 45 | 2 | T | | | | | | | | | | | |

T Less than 0.50 ton.

UMATILLA RIVER BASIN--Continued

14-0335. UMATILLA RIVER NEAR UMATILLA, OREG.

LOCATION.--45°54'20", 119°19'40", at gaging station, 1.5 miles downstream from West Division main canal of Umatilla project, 1.8 miles southeast of Umatilla, Umatilla County, and at mile 2.1.
DRAINAGE AREA.--2,290 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1911 to August 1912, August 1960 to July 1962.
Water temperatures: October 1962 to September 1965.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Sediment concentrations: Maximum daily 2,100 ppm Jan. 7; minimum daily, 7 ppm Apr. 19.
Sediment loads: Maximum daily, (estimated) 2,400 tons Mar. 15; minimum daily, less than 0.05 ton Oct. 6, Aug. 2.
EXTREMES, 1962-66.--Water temperatures (1962-65): Minimum, freezing point Jan. 29, 1963, Dec. 16-20, 1964.
Sediment concentrations: Maximum daily, 39,000 ppm July 27, 1965; minimum daily, 2 ppm Aug. 16, Dec. 17, 1963.
Sediment loads: Maximum daily, 438,000 tons Jan. 30, 1965, minimum daily, less than 0.05 ton on several days in 1964-66.

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 1.3 | C 17 | 0.1 | 118 | C 27 | 8.6 | 106 | C 12 | 3.4 |
| 2.. | 1.2 | C 17 | .1 | 118 | C 27 | 8.6 | 106 | C 12 | 3.4 |
| 3.. | 1.2 | C 17 | .1 | 118 | C 27 | 8.6 | 106 | C 12 | 3.4 |
| 4.. | 1.1 | C 17 | .1 | 121 | C 27 | 8.8 | 106 | C 12 | 3.4 |
| 5.. | 1.1 | C 17 | .1 | 118 | C 27 | 8.6 | 106 | C 12 | 3.4 |
| 6.. | 1.0 | C 17 | T | 115 | C 27 | 8.4 | 106 | C 12 | 3.4 |
| 7.. | 20 | -- | E 5.0 | 115 | C 27 | 8.4 | 106 | C 12 | 3.4 |
| 8.. | 127 | 75 | B 26 | 55 | -- | E 3.3 | 106 | C 12 | 3.4 |
| 9.. | 124 | 40 | A 13 | 24 | C 17 | 1.1 | 106 | C 12 | 3.4 |
| 10.. | 80 | 18 | B 3.9 | 32 | C 17 | 1.5 | 106 | C 12 | 3.4 |
| 11.. | 43 | C 16 | 1.9 | 32 | C 17 | 1.5 | 106 | C 12 | 3.4 |
| 12.. | 53 | C 16 | 2.3 | 32 | C 17 | 1.5 | 106 | C 12 | 3.4 |
| 13.. | 56 | C 16 | 2.4 | 32 | C 17 | 1.5 | 106 | C 12 | 3.4 |
| 14.. | 58 | C 16 | 2.5 | 37 | C 17 | 1.7 | 103 | C 12 | 3.3 |
| 15.. | 59 | C 16 | 2.5 | 34 | C 17 | 1.6 | 100 | C 12 | 3.2 |
| 16.. | 58 | C 16 | 2.5 | 30 | C 17 | 1.4 | 100 | C 12 | 3.2 |
| 17.. | 61 | C 16 | 2.6 | 58 | 36 | J 8.3 | 112 | C 12 | 3.6 |
| 18.. | 77 | C 16 | 3.3 | 115 | 44 | B 14 | 121 | C 12 | 3.9 |
| 19.. | 77 | C 16 | 3.3 | 115 | C 23 | 7.1 | 115 | C 12 | 3.7 |
| 20.. | 77 | C 16 | 3.3 | 115 | C 23 | 7.1 | 127 | C 19 | 6.5 |
| 21.. | 75 | C 16 | 3.2 | 112 | C 23 | 7.0 | 140 | C 19 | 7.2 |
| 22.. | 73 | C 16 | 3.2 | 112 | C 23 | 7.0 | 121 | C 19 | 6.2 |
| 23.. | 66 | C 16 | 2.9 | 112 | C 23 | 7.0 | 127 | C 19 | 6.5 |
| 24.. | 70 | C 16 | 3.0 | 115 | C 23 | 7.1 | 124 | C 19 | 6.4 |
| 25.. | 70 | C 16 | 3.0 | 112 | C 23 | 7.0 | 134 | C 19 | 6.9 |
| 26.. | 50 | C 16 | 2.2 | 112 | C 23 | 7.0 | 130 | C 19 | 6.7 |
| 27.. | 37 | C 16 | 1.6 | 109 | C 12 | 3.5 | 137 | C 19 | 7.0 |
| 28.. | 32 | C 16 | 1.4 | 109 | C 12 | 3.5 | 124 | C 12 | 4.0 |
| 29.. | 30 | C 16 | 1.3 | 109 | C 12 | 3.5 | 115 | C 12 | 3.7 |
| 30.. | 28 | C 16 | 1.2 | 106 | C 12 | 3.4 | 100 | C 12 | 3.2 |
| 31.. | 51 | 33 | J 7.9 | -- | -- | -- | 103 | C 12 | 3.3 |
| Total | 1558.9 | -- | 105.9 | 2642 | -- | 167.6 | 3511 | -- | 132.7 |

E Estimated.
T Less than 0.05 ton.
A Computed from partly estimated-concentration.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

UMATILLA RIVER BASIN--Continued

14-0335. UMATILLA RIVER NEAR UMATILLA, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day |
| 1.. | 98 | C 12 | 3.2 | 98 | C 16 | 4.2 | 270 | -- E | 28 |
| 2.. | 98 | C 12 | 3.2 | 98 | C 16 | 4.2 | 235 | -- E | 22 |
| 3.. | 106 | C 12 | 3.4 | 98 | C 16 | 4.2 | 205 | 26 | 14 |
| 4.. | 109 | C 12 | 3.5 | 100 | C 16 | 4.3 | 180 | 22 | 11 |
| 5.. | 109 | C 12 | 3.5 | 100 | C 16 | 4.3 | 148 | C 17 | 6.8 |
| 6.. | 153 | 380 J | 530 | 98 | C 16 | 4.2 | 132 | C 17 | 6.1 |
| 7.. | 389 | 2100 J | 2300 | 98 | C 16 | 4.2 | 120 | C 17 | 5.5 |
| 8.. | 280 | 350 B | 260 | 95 | C 16 | 4.1 | 129 | C 17 | 5.9 |
| 9.. | 316 | 180 | 154 | 95 | C 16 | 4.1 | 148 | C 17 | 6.8 |
| 10.. | 265 | 75 | 54 | 95 | C 16 | 4.1 | 934 | 645 S | 2230 |
| 11.. | 195 | 66 | 35 | 95 | C 16 | 4.1 | 1190 | 640 S | 2010 |
| 12.. | 158 | C 39 | 17 | 95 | C 16 | 4.1 | 937 | 180 | 455 |
| 13.. | 135 | C 39 | 14 | 92 | C 16 | 4.0 | 860 | 110 | 255 |
| 14.. | 126 | C 39 | 13 | 95 | C 16 | 4.1 | 1330 | 557 S | 2140 |
| 15.. | 129 | C 39 | 14 | 95 | C 16 | 4.1 | 1320 | 660 B | 2400 |
| 16.. | 132 | C 39 | 14 | 95 | C 16 | 4.1 | 1130 | 310 | 946 |
| 17.. | 135 | C 39 | 14 | 92 | C 16 | 4.0 | 882 | 135 | 321 |
| 18.. | 126 | C 39 | 13 | 92 | C 16 | 4.0 | 680 | -- E | 130 |
| 19.. | 117 | C 39 | 12 | 95 | C 16 | 4.1 | 560 | 50 | 76 |
| 20.. | 105 | C 39 | 11 | 90 | C 16 | 3.9 | 512 | -- E | 69 |
| 21.. | 102 | C 39 | 11 | 108 | -- E | 18 | 466 | 50 | 63 |
| 22.. | 102 | C 39 | 11 | 334 | 118 S | 108 | 438 | -- E | 52 |
| 23.. | 102 | C 39 | 11 | 417 | 121 | 136 | 375 | -- E | 38 |
| 24.. | 100 | C 39 | 11 | 417 | 95 B | 110 | 382 | 27 | 28 |
| 25.. | 100 | C 39 | 11 | 354 | 68 A | 65 | 424 | -- E | 40 |
| 26.. | 98 | C 39 | 10 | 328 | 54 A | 48 | 512 | 60 | 83 |
| 27.. | 98 | C 39 | 10 | 310 | -- E | 41 | 720 | 160 B | 310 |
| 28.. | 98 | C 39 | 10 | 286 | -- E | 33 | 937 | 220 A | 560 |
| 29.. | 98 | C 39 | 10 | -- | -- | -- | 1050 | 340 A | 960 |
| 30.. | 98 | C 39 | 10 | -- | -- | -- | 1230 | 540 A | 1800 |
| 31.. | 98 | C 39 | 10 | -- | -- | -- | 1210 | 510 B | 1700 |
| Total | 4375 | -- | 3586.8 | 4465 | -- | 641.4 | 19646 | -- | 16772.1 |

| | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 1260 | 510 B | 1700 | 6.3 | 48 | 0.8 | 5.6 | 33 | 0.5 |
| 2.. | 1280 | 530 | 1830 | 6.3 | -- E | .7 | 5.6 | 33 | .5 |
| 3.. | 1100 | 420 | 1250 | 6.8 | 31 | .6 | 6.0 | 33 | .5 |
| 4.. | 720 | 150 | 292 | 6.3 | -- E | .6 | 5.8 | 33 | .5 |
| 5.. | 496 | 53 B | 71 | 6.3 | 64 B | 1.1 | 5.6 | 33 | .5 |
| 6.. | 438 | 53 A | 63 | 8.1 | 78 B | 1.7 | 5.6 | 33 | .5 |
| 7.. | 466 | 61 A | 77 | 6.5 | 47 B | .8 | 5.3 | 33 | .5 |
| 8.. | 504 | 61 A | 83 | 5.8 | -- E | .5 | 5.6 | 33 | .5 |
| 9.. | 520 | 49 B | 69 | 5.1 | 19 | .3 | 5.3 | 33 | .5 |
| 10.. | 466 | -- E | 53 | 4.8 | 59 | .8 | 5.8 | 33 | .5 |
| 11.. | 452 | 39 | 48 | 4.8 | 49 B | .6 | 5.8 | 33 | .5 |
| 12.. | 410 | 34 | 38 | 4.8 | 20 | .3 | 5.8 | 33 | .5 |
| 13.. | 298 | 22 | 18 | 6.5 | C 33 | .6 | 5.6 | 33 | .5 |
| 14.. | 98 | -- E | 4.5 | 6.3 | C 33 | .6 | 5.6 | 33 | .5 |
| 15.. | 28 | 10 | .8 | 5.3 | C 33 | .5 | 6.3 | 33 | .6 |
| 16.. | 4.6 | -- E | .1 | 5.3 | C 33 | .5 | 5.6 | 33 | .5 |
| 17.. | 14 | -- E | .3 | 5.6 | C 33 | .5 | 5.8 | 33 | .5 |
| 18.. | 42 | 8 | .9 | 5.8 | C 33 | .5 | 5.3 | 33 | .5 |
| 19.. | 7.7 | 7 | .1 | 5.3 | C 33 | .5 | 4.6 | 33 | .4 |
| 20.. | 5.1 | -- E | .1 | 5.8 | C 33 | .5 | 4.4 | 33 | .4 |
| 21.. | 4.1 | 8 | .1 | 6.0 | C 33 | .5 | 4.6 | 33 | .4 |
| 22.. | 3.9 | -- E | .1 | 5.6 | C 33 | .5 | 5.6 | 33 | .5 |
| 23.. | 5.1 | 54 B | .7 | 5.6 | C 33 | .5 | 5.3 | 33 | .5 |
| 24.. | 8.4 | 53 B | 1.2 | 5.3 | C 33 | .5 | 6.8 | 33 | .6 |
| 25.. | 8.8 | 35 | .8 | 5.3 | C 33 | .5 | 6.8 | 33 | .6 |
| 26.. | 9.1 | 30 B | .7 | 5.3 | C 33 | .5 | 6.5 | 33 | .6 |
| 27.. | 8.8 | 23 | .5 | 5.3 | C 33 | .5 | 6.5 | 33 | .6 |
| 28.. | 7.7 | -- E | .4 | 5.3 | C 33 | .5 | 6.5 | 33 | .6 |
| 29.. | 6.8 | -- E | .3 | 5.3 | C 33 | .5 | 6.3 | 33 | .6 |
| 30.. | 6.5 | -- E | .4 | 5.3 | C 33 | .5 | 6.3 | 33 | .6 |
| 31.. | -- | -- | -- | 5.3 | C 33 | .5 | -- | -- | -- |
| Total | 8678.6 | -- | 5604.0 | 177.7 | -- | 1--.5 | 172.2 | -- | 15.5 |

E Estimated.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

UMATILLA RIVER BASIN--Continued

14-0335. UMATILLA RIVER NEAR UMATILLA, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 6.0 | C 33 | 0.5 | 13 | 48 | 1.7 | 5.3 | C 23 | 0.3 |
| 2.. | 6.8 | C 33 | .6 | 1.0 | 15 | T | 5.3 | C 23 | .3 |
| 3.. | 8.8 | C 33 | .8 | 4.6 | 40 | .5 | 4.8 | C 23 | .3 |
| 4.. | 9.8 | C 33 | .9 | 6.0 | C 23 | .4 | 3.9 | C 23 | .2 |
| 5.. | 9.1 | C 33 | .8 | 5.8 | C 23 | .4 | 3.7 | C 23 | .2 |
| 6.. | 9.1 | C 33 | .8 | 5.8 | C 23 | .4 | 3.7 | C 23 | .2 |
| 7.. | 9.4 | C 33 | .8 | 5.8 | C 23 | .4 | 3.7 | C 23 | .2 |
| 8.. | 9.1 | C 33 | .8 | 6.0 | C 23 | .4 | 3.7 | C 23 | .2 |
| 9.. | 9.1 | C 33 | .8 | 5.6 | C 23 | .3 | 3.7 | C 23 | .2 |
| 10.. | 9.1 | C 33 | .8 | 5.8 | C 23 | .4 | 3.7 | C 23 | .2 |
| 11.. | 8.8 | C 33 | .8 | 5.8 | C 23 | .4 | 3.7 | C 23 | .2 |
| 12.. | 8.8 | C 33 | .8 | 5.6 | C 23 | .3 | 3.9 | C 23 | .2 |
| 13.. | 8.8 | C 33 | .8 | 5.6 | C 23 | .3 | 3.9 | C 23 | .2 |
| 14.. | 8.8 | C 33 | .8 | 5.6 | C 23 | .3 | 3.7 | C 23 | .2 |
| 15.. | 9.1 | C 33 | .8 | 5.6 | C 23 | .3 | 3.7 | C 23 | .2 |
| 16.. | 9.1 | C 33 | .8 | 5.3 | C 23 | .3 | 3.7 | C 23 | .2 |
| 17.. | 8.4 | C 33 | .7 | 6.0 | C 23 | .4 | 3.5 | C 23 | .2 |
| 18.. | 8.4 | C 33 | .7 | 5.8 | C 23 | .4 | 3.0 | C 23 | .2 |
| 19.. | 8.4 | C 33 | .7 | 5.6 | C 23 | .3 | 2.5 | C 23 | .2 |
| 20.. | 9.1 | C 33 | .8 | 5.6 | C 23 | .3 | 2.4 | C 23 | .1 |
| 21.. | 8.8 | C 33 | .8 | 5.6 | C 23 | .3 | 2.2 | C 23 | .1 |
| 22.. | 8.8 | C 33 | .8 | 5.6 | C 23 | .3 | 1.9 | C 23 | .1 |
| 23.. | 9.8 | C 33 | .9 | 5.6 | C 23 | .3 | 1.0 | C 23 | .1 |
| 24.. | 9.4 | C 33 | .8 | 5.6 | C 23 | .3 | 1.2 | C 23 | .1 |
| 25.. | 9.4 | C 33 | .8 | 5.6 | C 23 | .3 | 1.4 | C 23 | .1 |
| 26.. | 9.1 | C 33 | .8 | 7.0 | C 23 | .4 | 2.0 | C 23 | .1 |
| 27.. | 10 | C 33 | .9 | 6.5 | C 23 | .4 | 1.9 | C 23 | .1 |
| 28.. | 12 | C 33 | 1.1 | 5.8 | C 23 | .4 | 1.6 | C 23 | .1 |
| 29.. | 17 | C 33 | 1.5 | 5.6 | C 23 | .3 | 1.6 | C 23 | .1 |
| 30.. | 17 | C 33 | 1.5 | 5.3 | C 23 | .3 | 1.3 | C 23 | .1 |
| 31.. | 16 | C 33 | 1.4 | 5.3 | C 23 | .3 | -- | -- | -- |
| Total | 301.3 | -- | 26.6 | 179.4 | -- | 11.8 | 91.6 | -- | 5.2 |

Total discharge for year (cfs-days)..... 45798.7
Total load for year (tons)..... 27088.1

T Less than 0.05 ton.
C Composite period.

14-0335. UMATILLA RIVER NEAR UMATILLA, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended Sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Feb. 23, 1966 | 1330 | 47 | | 417 | 114 | 128 | --- | 44 | -- | 92 | -- | 100 | -- | -- | | | | PWC |
| Mar. 10 | 1330 | 50 | | 1130 | 619 | 1890 | 26 | 38 | 60 | 89 | 99 | 99 | 100 | -- | | | | VPWC |
| Mar. 10 | 1955 | 45 | | 1370 | 1700 | 6290 | 28 | 40 | 62 | 88 | 99 | 100 | -- | -- | | | | PWC |
| Mar. 14 | 1445 | 51 | | 1470 | 650 | 2580 | 17 | 21 | 38 | 68 | 96 | 99 | 99 | 100 | | | | VPWC |
| Apr. 4 | 1925 | 55 | | 660 | 112 | 200 | 14 | 23 | 35 | 60 | 87 | 98 | 98 | 98 | 100 | | | VPWC |

ALDER CREEK BASIN

14-0343.5. ALDER CREEK AT ALDERDALE, WASH.

LOCATION.--Lat 45°51'27", long 119°55'15", at county road bridge 1 mile upstream from gaging station, 1.8 miles north of Alderdale, Klickitat County, and 0.8 mile downstream from Six Prong Creek.
DRAINAGE AREA.--196 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, freezing point Dec. 23.
Sediment concentrations: Maximum daily, 19,000 ppm July 15; minimum daily, 2 ppm on many days in November, December, and April.
Sediment loads: Maximum daily, 5,280 tons Jan. 6; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1962-66.--Water temperatures: Minimum, freezing point on several days during January and December 1963, Dec. 23, 1965.
Sediment concentrations: Maximum daily, 19,000 ppm July 5, 1966; minimum daily, 0 ppm on many days.
Sediment loads: Maximum daily, (estimated) 180,000 tons Dec. 22, 1965; minimum daily, less than 0.05 ton on many days.
REMARKS.--Maximum observed during water year: Sediment concentration, 20,300 ppm Jan. 2.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 67 | 49 | 67 | 64 | 63 | 68 | 70 | 66 | -- | 53 | -- | 58 | -- | 56 | -- | 56 | 49 | 56 | -- | 60 | -- | 60 | -- | 58 | 57 | -- | 55 | 56 | 58 | -- | -- | -- |
| November | -- | 58 | 54 | 58 | 56 | 43 | 51 | 52 | 52 | 46 | 49 | 48 | 46 | 51 | 54 | 52 | 51 | 52 | 51 | 44 | 48 | 43 | 45 | 43 | 42 | 40 | 42 | 43 | 40 | 40 | -- | 48 |
| December | 45 | 48 | 45 | 48 | 48 | 48 | 48 | 47 | 48 | 46 | 41 | 42 | 40 | 40 | 34 | 34 | 37 | 34 | 34 | 38 | 40 | 38 | 32 | 37 | 36 | 36 | 40 | 42 | 38 | 36 | 37 | 41 |
| January | 39 | 35 | 37 | -- | -- | 40 | 42 | -- | 41 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | -- | 42 | -- | -- | -- | -- | -- | -- | -- | 48 | -- |
| February | -- | 44 | -- | 50 | -- | -- | 48 | -- | 48 | -- | 46 | -- | -- | 46 | -- | 46 | -- | 44 | -- | -- | -- | 46 | 46 | 50 | 48 | -- | -- | 45 | -- | -- | -- | -- |
| March | -- | 45 | -- | 44 | -- | -- | -- | 46 | 53 | 42 | 42 | 58 | 48 | 52 | -- | 44 | -- | 54 | -- | -- | 46 | -- | 47 | -- | -- | 63 | -- | -- | -- | -- | 54 | -- |
| April | -- | -- | -- | -- | -- | -- | -- | 72 | -- | -- | 60 | -- | 68 | -- | -- | -- | -- | -- | -- | 48 | -- | 59 | -- | -- | 64 | 61 | 57 | -- | -- | -- | -- | -- |
| May | 72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 68 | -- | -- | 60 | -- | 78 | -- | 59 | -- | -- | -- | -- | 65 | -- | 72 | -- | -- | -- | -- |
| June | -- | 68 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | -- | -- | -- | -- | -- | 66 | 68 | -- | -- | -- | 63 | -- | -- | -- | 74 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 64 | -- | 77 | -- | 60 | -- | -- |
| August | -- | -- | -- | -- | 57 | -- | 75 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 70 | -- | -- |
| September | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

ALDER CREEK BASIN--Continued

14-0343.5. ALDER CREEK AT ALDERDALE, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no daily concentrations are reported, loads are estimated)

| Day | OCTOBER | | | | NOVEMBER | | | | DECEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1 | 1.0 | C 8 | | T | 0.90 | C 5 | | T | 1.2 | C 2 | | T |
| 2 | 1.0 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 3 | 1.0 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 4 | 1.0 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 5 | 1.0 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 6 | 1.0 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 7 | .90 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 8 | .90 | C 8 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 9 | .90 | C 5 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 10 | .90 | C 5 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 11 | .90 | C 5 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 12 | .90 | C 5 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 13 | .90 | C 5 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 14 | .90 | C 5 | | T | .90 | C 5 | | T | 1.2 | C 2 | | T |
| 15 | .90 | C 5 | | T | .90 | C 5 | | T | .70 | C 2 | | T |
| 16 | .90 | C 5 | | T | .90 | C 5 | | T | .60 | C 2 | | T |
| 17 | .90 | C 5 | | T | .90 | C 5 | | T | .60 | C 2 | | T |
| 18 | .90 | C 5 | | T | .90 | C 2 | | T | .60 | C 2 | | T |
| 19 | .90 | C 5 | | T | .90 | C 2 | | T | .80 | C 2 | | T |
| 20 | .90 | C 5 | | T | .90 | C 2 | | T | 1.0 | C 2 | | T |
| 21 | .90 | C 5 | | T | .90 | C 2 | | T | 1.0 | C 2 | | T |
| 22 | .90 | C 5 | | T | .90 | C 2 | | T | 1.0 | C 2 | | T |
| 23 | .90 | C 5 | | T | .90 | C 2 | | T | 1.0 | C 2 | | T |
| 24 | .90 | C 5 | | T | 1.0 | C 2 | | T | 1.0 | C 2 | | T |
| 25 | .90 | C 5 | | T | 1.2 | C 2 | | T | 1.0 | C 2 | | T |
| 26 | .90 | C 5 | | T | 1.2 | C 2 | | T | 1.0 | C 2 | | T |
| 27 | .90 | C 5 | | T | 1.2 | C 2 | | T | 1.1 | C 2 | | T |
| 28 | .90 | C 5 | | T | 1.2 | C 2 | | T | 1.3 | C 2 | | T |
| 29 | .90 | C 5 | | T | 1.2 | C 2 | | T | 1.5 | C 2 | | T |
| 30 | .90 | C 5 | | T | 1.2 | C 2 | | T | 1.2 | C 2 | | T |
| 31 | .90 | C 5 | | T | -- | -- | | -- | 1.0 | C 2 | | T |
| Total | 28.40 | | | 0.4 | 28.90 | -- | | 0.3 | 33.30 | -- | | 0.2 |

| Day | JANUARY | | | | FEBRUARY | | | | MARCH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1 | 1.0 | 11 | | T | 3.0 | C 5 | | T | 22 | 7 | | 0.4 |
| 2 | 18 | 4700 | J | 1000 | 3.0 | C 5 | | T | 18 | C 6 | | .3 |
| 3 | 3.7 | 335 | | 3.3 | 3.4 | C 5 | | T | 15 | C 6 | | .2 |
| 4 | 3.0 | 20 | B | .2 | 3.7 | C 5 | | T | 14 | C 6 | | .2 |
| 5 | 2.5 | 10 | B | .1 | 4.0 | C 5 | | .1 | 13 | C 6 | | .2 |
| 6 | 197 | 4880 | S | 5280 | 4.0 | C 5 | | .1 | 13 | C 6 | | .2 |
| 7 | 128 | 1250 | S | 611 | 4.0 | C 5 | | .1 | 13 | C 6 | | .2 |
| 8 | 114 | 700 | J | 260 | 4.8 | C 5 | | .1 | 15 | C 6 | | .2 |
| 9 | 57 | 190 | A | 29 | 5.2 | C 5 | | .1 | 213 | 1580 | S | 1160 |
| 10 | 37 | -- | | 4.0 | 5.2 | C 5 | | .1 | 106 | 508 | S | 262 |
| 11 | 28 | -- | | 1.5 | 5.2 | C 5 | | .1 | 35 | 60 | | 5.7 |
| 12 | 23 | -- | | .6 | 5.2 | C 5 | | .1 | 27 | 7 | | .5 |
| 13 | 45 | -- | | 90 | 5.2 | C 5 | | .1 | 28 | 40 | | 3.0 |
| 14 | 105 | 670 | A | 190 | 5.2 | C 5 | | .1 | 92 | 41 | | 3.5 |
| 15 | 52 | 50 | B | 7.0 | 5.2 | C 5 | | .1 | 27 | 22 | | 1.6 |
| 16 | 34 | -- | | 1.8 | 5.2 | C 5 | | .1 | 21 | 11 | | .6 |
| 17 | 23 | -- | | 1.2 | 5.2 | C 5 | | .1 | 15 | C 6 | | .2 |
| 18 | 20 | -- | | 1.1 | 5.2 | C 5 | | .1 | 13 | C 6 | | .2 |
| 19 | 14 | -- | | .6 | 5.2 | C 5 | | .1 | 11 | C 6 | | .2 |
| 20 | 9.6 | -- | | .4 | 5.2 | C 5 | | .1 | 11 | C 6 | | .2 |
| 21 | 7.0 | 12 | | .2 | 14 | -- | | 20 | 11 | C 6 | | .2 |
| 22 | 6.0 | -- | | .1 | 28 | 600 | A | 45 | 9.1 | C 6 | | .1 |
| 23 | 5.2 | 5 | | .1 | 25 | 80 | | 5.4 | 8.0 | C 6 | | .1 |
| 24 | 4.4 | -- | | .1 | 26 | 30 | A | 2.1 | 8.0 | C 6 | | .1 |
| 25 | 4.0 | -- | | .1 | 29 | 29 | | 2.3 | 8.5 | C 6 | | .1 |
| 26 | 3.7 | -- | | .1 | 33 | 23 | B | 2.0 | 9.1 | C 6 | | .1 |
| 27 | 3.7 | -- | | .1 | 29 | 16 | B | 1.3 | 9.1 | C 6 | | .1 |
| 28 | 3.4 | -- | | .1 | 25 | 8 | | .5 | 8.5 | C 6 | | .1 |
| 29 | 3.0 | -- | | T | -- | -- | | -- | 8.0 | -- | | T |
| 30 | 3.0 | -- | | T | -- | -- | | -- | 8.0 | -- | | T |
| 31 | 3.0 | 6 | | T | -- | -- | | -- | 8.0 | 2 | | T |
| Total | 961.2 | -- | | 7482.9 | 301.3 | -- | | 80.4 | 757.3 | -- | | 1440.6 |

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

ALDER CREEK BASIN--Continued

14-0343.5. ALDER CREEK AT ALDERDALE, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 7.4 | C 2 | T | 1.3 | C 9 | T | 0.90 | | T |
| 2 | 7.0 | C 2 | T | 1.3 | C 9 | T | .90 | 5 | T |
| 3 | 6.5 | C 2 | T | 1.2 | C 9 | T | 1.0 | | T |
| 4 | 6.0 | C 2 | T | 1.0 | C 9 | T | .90 | | T |
| 5 | 5.6 | C 2 | T | .90 | C 9 | T | .90 | | T |
| 6 | 4.8 | C 2 | T | ..90 | C 9 | T | .90 | | T |
| 7 | 4.4 | C 2 | T | 1.0 | C 9 | T | .90 | | T |
| 8 | 4.4 | C 2 | T | 1.0 | C 9 | T | .80 | | T |
| 9 | 4.4 | C 2 | T | 1.0 | C 9 | T | .80 | | T |
| 10 | 4.4 | C 2 | T | 1.0 | C 9 | T | .80 | | T |
| 11 | 4.0 | C 2 | T | 1.0 | C 9 | T | .90 | | T |
| 12 | 4.0 | C 2 | T | .90 | C 9 | T | .90 | | T |
| 13 | 3.7 | C 2 | T | .70 | C 9 | T | .90 | | T |
| 14 | 3.4 | C 2 | T | .80 | C 9 | T | .90 | | T |
| 15 | 3.4 | C 2 | T | .80 | C 9 | T | .80 | | T |
| 16 | 3.4 | C 2 | T | .80 | C 9 | T | .70 | | T |
| 17 | 3.4 | C 2 | T | .80 | C 9 | T | .70 | | T |
| 18 | 3.0 | C 2 | T | .80 | C 9 | T | .70 | | T |
| 19 | 3.0 | C 2 | T | .80 | C 9 | T | .70 | | T |
| 20 | 2.8 | C 2 | T | .70 | C 9 | T | .70 | | T |
| 21 | 2.8 | C 2 | T | .70 | C 9 | T | .70 | | T |
| 22 | 2.5 | C 2 | T | .80 | C 9 | T | .70 | | T |
| 23 | 2.3 | C 2 | T | .80 | C 9 | T | .80 | | T |
| 24 | 2.0 | C 4 | T | .80 | C 9 | T | .90 | | T |
| 25 | 2.0 | C 4 | T | .70 | C 9 | T | .90 | | T |
| 26 | 2.0 | C 4 | T | .70 | C 9 | T | .80 | | T |
| 27 | 2.0 | C 4 | T | .70 | C 9 | T | .70 | | T |
| 28 | 2.0 | C 4 | T | .70 | C 9 | T | .80 | | T |
| 29 | 1.8 | C 4 | T | .80 | C 9 | T | .80 | | T |
| 30 | 1.5 | C 4 | T | .80 | C 9 | T | .90 | | T |
| 31 | -- | -- | -- | .80 | C 9 | T | -- | | -- |
| Total | 109.9 | -- | 0.7 | 27.00 | -- | 0.6 | 24.70 | -- | 0.3 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 1.0 | C 6 | T | 0.70 | -- | T | 0.90 | | T |
| 2 | 1.8 | C 6 | T | .70 | -- | T | .90 | | T |
| 3 | 2.0 | C 6 | T | .70 | -- | T | .90 | | T |
| 4 | 1.3 | C 6 | T | .70 | -- | T | .90 | | T |
| 5 | .90 | C 6 | T | .70 | 4 | T | .80 | | T |
| 6 | .90 | C 6 | T | .70 | -- | T | .80 | | T |
| 7 | .80 | C 6 | T | .70 | -- | T | .70 | | T |
| 8 | .70 | C 6 | T | .70 | -- | T | .70 | | T |
| 9 | .50 | C 6 | T | .70 | -- | T | .80 | | T |
| 10 | .50 | C 6 | T | .70 | -- | T | .80 | | T |
| 11 | .50 | C 6 | T | .70 | -- | T | .80 | | T |
| 12 | .60 | C 6 | T | .70 | -- | T | .80 | | T |
| 13 | .50 | C 6 | T | .70 | -- | T | .80 | | T |
| 14 | .70 | C 6 | T | .70 | -- | T | .80 | | T |
| 15 | 9.3 | 19000 | J 870 | .80 | -- | T | .80 | | T |
| 16 | 3.0 | 2200 | B 18 | .90 | -- | T | .80 | | T |
| 17 | 2.0 | -- | 1.6 | .90 | -- | T | .80 | | T |
| 18 | 1.7 | -- | .5 | .90 | -- | T | .80 | | T |
| 19 | 1.2 | -- | .2 | .90 | -- | T | .70 | | T |
| 20 | 1.0 | -- | .1 | .90 | -- | T | .70 | | T |
| 21 | 1.0 | -- | T | .90 | -- | T | .70 | | T |
| 22 | .90 | C 9 | T | .90 | -- | T | .70 | | T |
| 23 | .80 | C 9 | T | 1.0 | -- | T | .80 | | T |
| 24 | .90 | C 9 | T | .90 | -- | T | .80 | | T |
| 25 | .80 | C 9 | T | .90 | -- | T | .80 | | T |
| 26 | .80 | C 9 | T | .90 | -- | T | .80 | | T |
| 27 | .60 | C 9 | T | .90 | -- | T | .80 | | T |
| 28 | .90 | C 9 | T | .90 | -- | T | .80 | | T |
| 29 | .80 | C 9 | T | .90 | -- | T | .80 | | T |
| 30 | .80 | C 9 | T | .90 | 7 | T | .70 | | T |
| 31 | .70 | C 9 | T | .90 | -- | T | -- | | -- |
| Total | 39.90 | -- | 890.8 | 25.20 | -- | 0.5 | 23.70 | -- | 0.3 |

Total discharge for year (cfs-days)..... 2360.80
Total load for year (tons)..... 9898.0

T Less than 0.05 ton.
B Computed from estimated concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

ALDER CREEK BASIN--Continued

14-0343.5. ALDER CREEK AT ALDERDALE, WASH.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Jan. 6, 1966..... | 0900 | 38 | | 157 | 3020 | 1280 | 27 | 39 | 56 | 73 | 84 | | | | | | | PWC |
| Jan. 6..... | 2105 | 42 | | 429 | 16300 | 18900 | 17 | 26 | 42 | 66 | 89 | | | | | | | PWC |
| Mar. 9..... | 0350 | 46 | | 263 | 2860 | 2030 | 21 | 32 | 47 | 68 | 88 | 98 | 99 | 100 | | | | VPWC |
| Mar. 10..... | 0245 | 42 | | 213 | 1110 | 638 | 33 | 41 | 56 | 75 | 91 | | | | | | | PWC |

WILLOW CREEK BASIN

14-0345. WILLOW CREEK AT HEPPNER, OREG.

LOCATION.--Lat 45°21'00", long 119°32'00", at Court Street bridge, 100 feet downstream from gaging station, 800 feet southeast of Morrow County Courthouse at Heppner, Morrow County, and 0.3 mile downstream from Balm Fork.
DRAINAGE AREA.--87 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: February 1963 to September 1966.
Sediment records: February 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 80°F Aug. 15; minimum, freezing point Apr. 18.
Sediment concentrations: Maximum daily, 8,200 ppm Aug. 27; minimum daily, no flow on many days.
Sediment loads: Maximum daily, 190 tons Aug. 27, Sept. 14; minimum daily, 0 tons on many days.
EXTREMES, 1963-66.--Water temperatures: Maximum, 80°F Aug. 15, 1966; minimum, freezing point on several days during most years.
Sediment concentrations: Maximum daily, 25,500 ppm Dec. 22, 1964; minimum daily, no flow on many days in 1966.
Sediment loads: Maximum daily, 28,400 tons Dec. 22, 1964; minimum daily, 0 tons on many days in 1966.
REMARKS.--Flow affected by ice Dec. 14-16, 23-26, Jan. 17-27, Feb. 4. No flow Aug. 20-22, 30, 31, Sept. 1-10, 18-30.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | 54 | 60 | 60 | 58 | 59 | 62 | 62 | 60 | 62 | 57 | 56 | 55 | 58 | 54 | 49 | 50 | 52 | 55 | 48 | -- | -- | 50 | 52 | 56 | 54 | 52 | 52 | 55 | 54 | 56 | 54 | 55 |
| November..... | 54 | 53 | 53 | 50 | 54 | 49 | 48 | 46 | 48 | 45 | 44 | 44 | 44 | 45 | 52 | 44 | 46 | 46 | 44 | 44 | 44 | 44 | 43 | 41 | 38 | 38 | 37 | 39 | 36 | 38 | -- | 45 |
| December..... | 42 | 44 | 46 | 44 | 44 | 45 | 43 | 43 | -- | 38 | 39 | 45 | 48 | 49 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 38 | -- | 36 | 34 | -- | -- |
| January..... | 35 | 35 | 39 | 37 | 38 | 44 | 43 | 43 | 37 | 43 | 40 | 38 | 43 | 38 | 38 | 34 | 36 | 33 | 34 | -- | -- | -- | -- | -- | -- | -- | 39 | 38 | 40 | 40 | 39 | -- |
| February..... | 39 | 40 | 38 | 40 | 38 | 38 | 42 | 39 | 38 | 39 | 37 | 37 | 35 | 36 | 37 | 36 | 38 | 37 | -- | 42 | 42 | 39 | 39 | 43 | 43 | 40 | 40 | 39 | -- | -- | -- | 39 |
| March..... | 42 | 39 | 38 | 41 | -- | 42 | 43 | 42 | 44 | 40 | 46 | -- | 46 | 45 | 42 | 39 | 36 | 40 | 43 | 38 | 36 | 44 | 38 | 43 | 43 | 45 | 46 | 45 | 45 | 46 | 45 | 42 |
| April..... | 45 | 45 | 43 | 42 | 42 | 46 | 48 | 43 | 42 | 40 | 36 | 35 | 33 | 36 | 36 | 39 | 35 | 32 | 52 | 43 | -- | 50 | 46 | 48 | 46 | 43 | 42 | 52 | 45 | 48 | -- | 43 |
| May..... | 49 | 46 | 54 | 54 | 55 | 57 | 52 | 53 | 67 | 50 | 48 | -- | 50 | 46 | 47 | 47 | 45 | 46 | 50 | 53 | 53 | 45 | 46 | 54 | 53 | 57 | -- | 55 | 60 | 54 | -- | 52 |
| June..... | 45 | 56 | -- | 65 | 65 | 64 | -- | 56 | 58 | 56 | 53 | 54 | 53 | 57 | 56 | 70 | -- | 60 | 60 | 56 | 55 | 68 | 56 | 49 | 52 | 58 | 57 | 66 | 54 | 53 | -- | 57 |
| July..... | 55 | 56 | 55 | 58 | 58 | 58 | 55 | 58 | 60 | 62 | 58 | 58 | 74 | -- | 70 | 65 | 75 | 75 | 74 | 72 | -- | 59 | 78 | 72 | -- | 68 | 73 | -- | 78 | 74 | 74 | 66 |
| August..... | -- | 72 | 73 | -- | 74 | -- | 77 | -- | 75 | -- | 74 | -- | 69 | -- | 80 | -- | 74 | -- | 69 | -- | -- | -- | 75 | -- | 70 | -- | 65 | 65 | -- | -- | -- | -- |
| September..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57 | -- | 55 | 54 | 62 | -- | 68 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

WILLOW CREEK BASIN--Continued

14-0345. WILLOW CREEK AT HEPPNER, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day |
| 1.. | 3.4 | 32 | 0.3 | 2.1 | C 10 | 0.1 | 4.6 | C 12 | 0.1 |
| 2.. | 3.0 | 18 | .1 | 2.1 | C 10 | .1 | 4.9 | C 12 | .2 |
| 3.. | 2.6 | 16 | .1 | 2.1 | C 10 | .1 | 4.9 | C 12 | .2 |
| 4.. | 2.6 | 18 | .1 | 3.0 | C 10 | .1 | 4.9 | C 12 | .2 |
| 5.. | 3.2 | 24 | .2 | 3.6 | C 10 | .1 | 4.6 | C 12 | .1 |
| 6.. | 3.4 | C 10 | .1 | 4.0 | C 10 | .1 | 4.6 | C 12 | .1 |
| 7.. | 3.2 | C 10 | .1 | 4.0 | 19 | .2 | 4.6 | C 12 | .1 |
| 8.. | 3.2 | C 10 | .1 | 4.0 | 34 | .4 | 5.2 | C 12 | .2 |
| 9.. | 3.2 | C 10 | .1 | 4.9 | 26 | .3 | 5.2 | C 12 | .2 |
| 10.. | 3.2 | C 10 | .1 | 4.6 | 20 | .2 | 5.2 | C 12 | .2 |
| 11.. | 3.2 | C 10 | .1 | 4.6 | 13 | .2 | 4.6 | C 12 | .1 |
| 12.. | 3.4 | C 10 | .1 | 4.9 | 263 S | 3.9 | 4.9 | C 12 | .2 |
| 13.. | 3.4 | C 10 | .1 | 5.2 | 132 | 1.9 | 4.6 | C 12 | .1 |
| 14.. | 3.4 | C 10 | .1 | 6.0 | 88 | 1.4 | 4.0 | C 12 | .1 |
| 15.. | 3.6 | C 10 | .1 | 5.6 | 61 | .9 | 3.6 | C 12 | .1 |
| 16.. | 3.2 | C 10 | .1 | 4.9 | 61 A | .8 | 3.4 | C 12 | .1 |
| 17.. | 2.8 | C 10 | .1 | 5.2 | 82 | 1.2 | 3.0 | C 12 | .1 |
| 18.. | 3.2 | C 10 | .1 | 6.0 | 62 | 1.0 | 3.6 | C 12 | .1 |
| 19.. | 3.2 | C 10 | .1 | 5.6 | 36 | .5 | 4.2 | C 12 | .1 |
| 20.. | 3.2 | C 10 | .1 | 4.6 | 22 | .3 | 4.0 | C 12 | .1 |
| 21.. | 3.0 | C 10 | .1 | 4.6 | 14 | .2 | 4.2 | C 12 | .1 |
| 22.. | 3.2 | C 10 | .1 | 4.2 | 13 | .1 | 4.0 | C 12 | .1 |
| 23.. | 3.4 | C 10 | .1 | 4.6 | 21 | .3 | 3.4 | C 12 | .1 |
| 24.. | 3.2 | C 10 | .1 | 5.6 | 16 | .2 | 4.0 | C 12 | .1 |
| 25.. | 3.2 | C 10 | .1 | 6.3 | 27 | .5 | 4.2 | C 12 | .1 |
| 26.. | 3.2 | C 10 | .1 | 5.6 | 30 | .5 | 3.8 | C 12 | .1 |
| 27.. | 3.0 | C 10 | .1 | 4.9 | C 12 | .2 | 4.6 | C 12 | .1 |
| 28.. | 3.0 | C 10 | .1 | 5.2 | C 12 | .2 | 4.9 | C 12 | .2 |
| 29.. | 2.1 | C 10 | .1 | 4.6 | C 12 | .1 | 5.2 | C 12 | .2 |
| 30.. | 2.2 | C 10 | .1 | 5.0 | C 12 | .2 | 4.9 | C 12 | .2 |
| 31.. | 2.1 | C 10 | .1 | -- | -- | -- | 4.6 | C 12 | .1 |
| Total | 95.2 | -- | 3.4 | 137.6 | -- | 16.3 | 136.4 | -- | 4.1 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Tons per day |
| 1.. | 3.6 | C 12 | 0.1 | 4.6 | 80 J | 0.8 | 7.5 | C 12 | 0.2 |
| 2.. | 5.6 | C 12 | .2 | 5.2 | C 12 | .2 | 6.3 | C 12 | .2 |
| 3.. | 6.0 | C 12 | .2 | 5.6 | C 12 | .2 | 7.5 | C 12 | .2 |
| 4.. | 6.3 | C 12 | .2 | 5.0 | C 12 | .2 | 6.7 | C 12 | .2 |
| 5.. | 6.0 | C 12 | .2 | 6.3 | C 12 | .2 | 7.1 | C 12 | .2 |
| 6.. | 11 | 189 S | 6.1 | 6.3 | C 12 | .2 | 7.1 | C 12 | .2 |
| 7.. | 10 | 178 | 4.8 | 6.0 | C 12 | .2 | 7.5 | 24 | .5 |
| 8.. | 9.9 | 66 | 1.8 | 5.6 | C 12 | .2 | 7.9 | 43 A | .9 |
| 9.. | 8.3 | 33 | .7 | 6.0 | C 12 | .2 | 13 | 1200 J | 61 |
| 10.. | 7.9 | C 22 | .5 | 4.9 | C 12 | .2 | 17 | 750 S | 40 |
| 11.. | | | | | | | | | |
| 11.. | 7.5 | C 22 | .4 | 5.6 | C 12 | .2 | 14 | 120 | 4.5 |
| 12.. | 7.1 | C 22 | .4 | 5.6 | C 12 | .2 | 14 | 112 | 4.2 |
| 13.. | 7.5 | C 22 | .4 | 4.9 | C 12 | .2 | 22 | 590 J | 40 |
| 14.. | 7.5 | C 22 | .4 | 6.3 | C 12 | .2 | 26 | 710 J | 53 |
| 15.. | 7.5 | C 22 | .4 | 4.9 | C 12 | .2 | 22 | 218 | 13 |
| 16.. | 6.0 | C 18 | .3 | 6.3 | C 12 | .2 | 20 | 123 | 6.6 |
| 17.. | 5.0 | C 18 | .2 | 6.3 | C 12 | .2 | 17 | 79 | 3.6 |
| 18.. | 4.6 | C 18 | .2 | 6.0 | C 12 | .2 | 16 | 82 | 3.5 |
| 19.. | 4.0 | C 18 | .2 | 6.0 | C 12 | .2 | 16 | 75 | 3.2 |
| 20.. | 3.8 | C 18 | .2 | 7.5 | C 12 | .2 | 14 | 56 | 2.1 |
| 21.. | 4.0 | C 18 | .2 | 7.5 | C 12 | .2 | 14 | 46 | 1.7 |
| 22.. | 4.2 | C 18 | .2 | 7.5 | C 12 | .2 | 12 | 80 A | 2.6 |
| 23.. | 4.4 | C 18 | .2 | 7.1 | C 12 | .2 | 14 | 66 | 2.5 |
| 24.. | 4.6 | C 7 | .1 | 7.9 | C 12 | .3 | 13 | 52 | 1.8 |
| 25.. | 4.2 | C 7 | .1 | 8.3 | C 12 | .3 | 14 | 57 | 2.2 |
| 26.. | 4.0 | C 7 | .1 | 8.3 | C 12 | .3 | 14 | 81 | 3.1 |
| 27.. | 4.8 | C 7 | .1 | 7.9 | C 12 | .3 | 18 | 128 | 6.2 |
| 28.. | 6.3 | C 7 | .1 | 7.9 | C 12 | .3 | 22 | 197 | 12 |
| 29.. | 6.3 | C 7 | .1 | -- | -- | -- | 26 | 255 | 18 |
| 30.. | 6.3 | C 7 | .1 | -- | -- | -- | 31 | 373 | 31 |
| 31.. | 5.6 | C 7 | .1 | -- | -- | -- | 31 | 252 | 21 |
| Total | 189.8 | -- | 19.3 | 177.3 | -- | 6.7 | 477.6 | -- | 339.4 |

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

WILLOW CREEK BASIN--Continued

14-0345. WILLOW CREEK AT HEPPNER, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 32 | 240 | 21 | 11 | 18 | 0.5 | 1.2 | C 9 | T |
| 2.. | 34 | 340 | 31 | 11 | 19 | .6 | 1.2 | C 9 | T |
| 3.. | 27 | 150 | 11 | 11 | 28 | .8 | 1.2 | C 17 | 0.1 |
| 4.. | 23 | 112 | 7.0 | 12 | 39 | 1.3 | 1.3 | C 17 | .1 |
| 5.. | 20 | 90 | 4.9 | 14 | 48 | 1.8 | 1.4 | C 17 | .1 |
| 6.. | 17 | 89 | 4.1 | 14 | 56 | 2.1 | 1.4 | C 17 | .1 |
| 7.. | 12 | 84 | 2.7 | 14 | 39 | 1.5 | 1.4 | C 17 | .1 |
| 8.. | 17 | 110 | 5.0 | 14 | 39 | 1.5 | 1.4 | C 17 | .1 |
| 9.. | 17 | 82 | 3.8 | 12 | 33 | 1.1 | 1.9 | C 17 | .1 |
| 10.. | 22 | 116 | 6.9 | 10 | 28 | .8 | 2.4 | C 17 | .1 |
| 11.. | 25 | 122 | 8.2 | 7.5 | 13 | .3 | 2.1 | C 17 | .1 |
| 12.. | 22 | 85 | 5.0 | 4.2 | 13 | .1 | 1.8 | C 17 | .1 |
| 13.. | 18 | 59 | 2.9 | 3.6 | 13 | .1 | 2.1 | C 17 | .1 |
| 14.. | 12 | 56 | 1.8 | 5.2 | 13 | .2 | 1.9 | C 17 | .1 |
| 15.. | 14 | 55 | 2.1 | 4.0 | 13 | .1 | 1.7 | C 17 | .1 |
| 16.. | 14 | 55 | 2.1 | 2.6 | 9 | .1 | 1.6 | C 12 | .1 |
| 17.. | 12 | 34 | 1.1 | 2.8 | 9 | .1 | 1.6 | C 12 | .1 |
| 18.. | 12 | 29 | .9 | 2.4 | 9 | .1 | 1.4 | C 12 | T |
| 19.. | 9.1 | 22 | .5 | 2.2 | 9 | .1 | 1.6 | C 12 | .1 |
| 20.. | 9.5 | 23 | .6 | 1.6 | 9 | T | 1.7 | C 12 | .1 |
| 21.. | 9.9 | 29 | .8 | 1.8 | 9 | T | 1.5 | C 12 | T |
| 22.. | 9.5 | 42 | 1.1 | 1.8 | 9 | T | 1.5 | C 12 | T |
| 23.. | 9.5 | 22 | .6 | 2.2 | 52 | .3 | 1.6 | 37 | .2 |
| 24.. | 11 | 37 | 1.1 | 2.1 | 28 | .2 | 2.7 | 32 | .2 |
| 25.. | 12 | 35 | 1.1 | 2.0 | 11 | .1 | 2.6 | 24 A | .2 |
| 26.. | 11 | 26 | .8 | 1.6 | 9 | T | 1.6 | 22 | .1 |
| 27.. | 11 | 32 | 1.0 | 1.5 | 9 | T | 1.7 | 30 | .1 |
| 28.. | 12 | 25 | .8 | 1.4 | 9 | T | 1.9 | 24 | .1 |
| 29.. | 11 | 16 | .5 | 1.4 | 9 | T | 1.9 | 29 | .1 |
| 30.. | 12 | 12 | .4 | 1.4 | 9 | T | 1.5 | 33 | .1 |
| 31.. | -- | -- | -- | 1.4 | 9 | T | -- | -- | -- |
| Total | 477.5 | -- | 130.8 | 177.7 | -- | 14.1 | 50.8 | -- | 2.9 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 2.1 | 33 | 0.2 | 0.2 | C 19 | T | 0 | -- | 0 |
| 2.. | 3.3 | 23 | .2 | .2 | C 19 | T | 0 | -- | 0 |
| 3.. | 4.6 | 57 | .7 | .1 | C 19 | T | 0 | -- | 0 |
| 4.. | 4.4 | 52 | .6 | .2 | C 19 | T | 0 | -- | 0 |
| 5.. | 3.2 | 51 | .4 | .2 | C 19 | T | 0 | -- | 0 |
| 6.. | 3.1 | 46 | .4 | .1 | C 19 | T | 0 | -- | 0 |
| 7.. | 3.0 | 44 | .4 | .1 | C 19 | T | 0 | -- | 0 |
| 8.. | 2.3 | 54 | .3 | .1 | C 19 | T | 0 | -- | 0 |
| 9.. | 1.8 | 31 | .2 | .1 | C 19 | T | 0 | -- | 0 |
| 10.. | 2.0 | 48 | .3 | .1 | C 19 | T | 0 | -- | 0 |
| 11.. | 1.7 | 46 | .2 | .1 | C 19 | T | .1 | 34 | T |
| 12.. | 1.6 | 41 | .2 | .1 | C 19 | T | .1 | 27 | T |
| 13.. | 1.7 | 30 | .1 | .1 | C 19 | T | .1 | 20 | T |
| 14.. | 1.3 C | 27 | .1 | .1 | C 19 | T | 1.9 | 4600 J | 190 |
| 15.. | 1.2 C | 27 | .1 | .1 | C 19 | T | .1 | 750 | .2 |
| 16.. | .8 C | 27 | .1 | .1 | C 19 | T | .1 | 210 B | .1 |
| 17.. | .8 C | 27 | .1 | .1 | C 19 | T | .1 | 125 | T |
| 18.. | .8 C | 27 | .1 | .1 | C 19 | T | 0 | -- | 0 |
| 19.. | .5 C | 27 | T | .1 | C 19 | T | 0 | -- | 0 |
| 20.. | .5 C | 27 | T | 0 | -- | 0 | 0 | -- | 0 |
| 21.. | .5 C | 27 | T | 0 | -- | 0 | 0 | -- | 0 |
| 22.. | .3 C | 27 | T | 0 | -- | 0 | 0 | -- | 0 |
| 23.. | .3 C | 27 | T | .1 | C 21 | T | 0 | -- | 0 |
| 24.. | .2 C | 27 | T | .1 | C 21 | T | 0 | -- | 0 |
| 25.. | .3 C | 27 | T | .1 | C 21 | T | 0 | -- | 0 |
| 26.. | .3 C | 27 | T | .1 | C 21 | T | 0 | -- | 0 |
| 27.. | .2 C | 27 | T | .8 | 8200 J | 190 | 0 | -- | 0 |
| 28.. | .1 C | 27 | T | .1 | 2200 A | .6 | 0 | -- | 0 |
| 29.. | .2 | 56 | T | .1 | 250 B | .1 | | | |
| 30.. | .2 | 30 | T | 0 | -- | 0 | 0 C | -- | 0 |
| 31.. | .2 | 16 | T | 0 | -- | 0 | -- | -- | -- |
| Total | 43.5 | -- | 5.0 | 3.7 | -- | 190.8 | 2.5 | -- | 190.3 |

Total discharge for year (cfs-days)..... 1969.6
Total load for year (tons)..... 923.2

T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

## 14-0345. WILLOW CREEK AT HEPPNER, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended Sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Apr. 5, 1966..... | 0730 | 42 | | 24 | 90 | 5.8 | -- | 32 | -- | 71 | -- | 97 | 100 | | | | | VPWC |
| Aug. 27..... | 1620 | 65 | | 31 | 86100 | 7470 | 17 | 30 | 49 | 79 | 96 | 100 | | | | | | PWC |
| Aug. 28..... | 2000 | 65 | | .1 | 942 | .3 | 71 | 88 | 97 | 100 | -- | -- | | | | | | PWC |
| Sept.14..... | 1030 | 54 | | 5.2 | 10200 | 143 | 43 | 64 | 85 | 98 | 100 | -- | | | | | | PWC |

## 14-0360. WILLOW CREEK NEAR ARLINGTON, OREG.

LOCATION.--Lat 45°45'00", long 120°00'30", at footbridge 1.8 miles upstream from gaging station, 1.1 miles downstream from Eightmile Canyon, and 10 miles east of Arlington, Gilliam County.
DRAINAGE AREA.--850 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 80°F July 9; minimum, freezing point Dec. 16.
Sediment concentrations: Maximum daily, 30,000 ppm July 15; minimum daily, no flow on many days.
Sediment loads: Maximum daily, 7,500 tons July 15; minimum daily, 0 tons on many days.
EXTREMES, 1962-66.--Water temperatures: Maximum (1965-66), 80°F July 9, 1966; minimum (1962-64), freezing point on several days during winter months.
Sediment concentrations: Maximum daily, 67,000 ppm Aug. 23, 1965; minimum daily, no flow on many days.
Sediment loads: Maximum daily, (estimated) 980,000 tons Dec. 22, 1964; minimum daily, 0 tons on many days.
REMARKS.--Flow affected by ice Dec. 14-16, 24-28, 31, Jan. 15-23, 25. No flow Feb. 13-18, Mar. 5, Apr. 26-29, May 11-16, 22-30, June 4, 5, 9-11, 13-30, July 1, 4, Aug. 4 to Sept. 30.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | 63 | -- | 63 | -- | 58 | -- | 66 | -- | 65 | -- | 53 | -- | 60 | -- | 51 | -- | 55 | -- | 52 | -- | 52 | -- | 54 | -- | 55 | -- | 53 | 56 | -- | 55 | -- | -- |
| November..... | 51 | -- | 52 | -- | 52 | -- | 50 | -- | 48 | -- | 43 | -- | 45 | 47 | 47 | -- | 47 | -- | 47 | -- | 48 | -- | 46 | 44 | 41 | 40 | 40 | 40 | 36 | 42 | -- | -- |
| December..... | 38 | 44 | 42 | 44 | 43 | 43 | 44 | -- | 45 | 44 | 39 | -- | 38 | 38 | 35 | 32 | 35 | 35 | 34 | -- | 36 | 37 | 35 | 34 | -- | 34 | 35 | 36 | 37 | 37 | 35 | 38 |
| January..... | -- | -- | 39 | 37 | 36 | 40 | 44 | 43 | 43 | 42 | 41 | 42 | 44 | 43 | 42 | -- | 43 | 34 | 37 | 36 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 39 | 39 | 42 | 39 | 39 |
| February..... | 39 | 39 | 38 | 40 | 42 | 42 | 44 | 43 | 41 | 37 | 39 | 37 | -- | -- | -- | -- | -- | -- | 38 | 50 | 49 | 41 | 43 | 41 | 42 | 41 | 42 | 43 | -- | -- | -- | 41 |
| March..... | 39 | 39 | 40 | 49 | -- | 42 | 42 | 45 | 47 | 44 | 50 | 46 | 49 | 54 | 52 | 45 | 41 | 45 | 46 | 45 | 43 | 41 | 42 | 44 | 46 | 48 | -- | 52 | 52 | 55 | 54 | 46 |
| April..... | 55 | 51 | -- | 49 | 53 | 51 | 58 | 51 | 61 | -- | 51 | 56 | 60 | 61 | 67 | 63 | 59 | 55 | 57 | 50 | 50 | 60 | 63 | 65 | 60 | -- | -- | -- | -- | 63 | -- | 57 |
| May..... | 64 | 67 | 70 | 72 | 74 | 71 | 71 | 71 | 73 | 56 | -- | -- | -- | -- | -- | -- | 64 | 67 | 58 | 69 | 62 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 62 | -- |
| June..... | 57 | 64 | 57 | -- | -- | 70 | 73 | 68 | -- | -- | -- | 72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July..... | -- | 58 | 60 | -- | 76 | 74 | 78 | 79 | 80 | 72 | 79 | 73 | 76 | 76 | 64 | 72 | 73 | 71 | 68 | 69 | 63 | 65 | 67 | 67 | 63 | 67 | 74 | 77 | 76 | 78 | -- | 71 |
| August..... | 74 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

WILLOW CREEK BASIN--Continued

14-0360. WILLOW CREEK NEAR ARLINGTON, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | | NOVEMBER | | | | DECEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | | Suspended sediment: Tons per day |
| 1.. | 5.1 | C | 37 | 0.5 | 2.3 | C | 37 | 0.2 | 10 | 38 | | 1.0 |
| 2.. | 5.1 | C | 37 | .5 | 2.3 | C | 37 | .2 | 12 | 230 | A | 7.5 |
| 3.. | 5.1 | C | 37 | .5 | .7 | C | 37 | .1 | 13 | 180 | J | 7.4 |
| 4.. | 5.1 | C | 37 | .5 | 1.2 | C | 37 | .1 | 13 | 154 | | 5.4 |
| 5.. | 5.1 | C | 37 | .5 | .8 | C | 37 | .1 | 14 | 48 | | 1.8 |
| 6.. | 5.1 | C | 37 | .5 | 1.0 | C | 37 | .1 | 14 | 46 | | 1.7 |
| 7.. | 5.1 | C | 37 | .5 | 1.4 | C | 37 | .1 | 14 | C | 35 | 1.3 |
| 8.. | 5.1 | C | 37 | .5 | 1.4 | C | 37 | .1 | 15 | C | 35 | 1.4 |
| 9.. | 4.6 | C | 37 | .5 | 2.1 | C | 37 | .2 | 14 | C | 35 | 1.3 |
| 10.. | 4.6 | C | 37 | .5 | 2.1 | C | 37 | .2 | 13 | C | 35 | 1.2 |
| 11.. | 3.7 | C | 37 | .4 | 1.8 | C | 37 | .2 | 13 | C | 35 | 1.2 |
| 12.. | 1.8 | C | 37 | .2 | 2.1 | C | 37 | .2 | 13 | C | 35 | 1.2 |
| 13.. | 2.2 | C | 37 | .2 | 2.3 | C | 37 | .2 | 13 | C | 35 | 1.2 |
| 14.. | 1.8 | C | 37 | .2 | 8.5 | | 92 | J 3.4 | 10 | C | 35 | .9 |
| 15.. | 1.6 | C | 37 | .2 | 5.4 | | 63 | S 1.0 | 8.0 | C | 35 | .8 |
| 16.. | 1.5 | C | 37 | .1 | 3.7 | | 73 | B .7 | 9.0 | C | 35 | .9 |
| 17.. | 1.5 | C | 37 | .1 | 3.7 | | 174 | 1.7 | 9.7 | C | 35 | .9 |
| 18.. | 1.5 | C | 37 | .1 | 4.5 | | 140 | B 1.7 | 10 | C | 35 | .9 |
| 19.. | 1.4 | C | 37 | .1 | 5.4 | | 86 | 1.3 | 7.9 | C | 35 | .7 |
| 20.. | 1.5 | C | 37 | .1 | 5.4 | | 77 | B 1.1 | 9.7 | C | 35 | .9 |
| 21.. | 1.4 | C | 37 | .1 | 6.2 | | 88 | 1.5 | 13 | C | 35 | 1.2 |
| 22.. | 1.5 | C | 37 | .1 | 6.2 | | 33 | B .6 | 12 | C | 35 | 1.1 |
| 23.. | 1.2 | C | 37 | .1 | 7.3 | | 33 | .7 | 7.3 | C | 35 | .7 |
| 24.. | 1.2 | C | 37 | .1 | 7.9 | | 37 | .8 | 9.5 | C | 35 | .9 |
| 25.. | 1.2 | C | 37 | .1 | 9.1 | | 35 | .9 | 9.0 | C | 35 | .9 |
| 26.. | 1.6 | C | 37 | .2 | 8.5 | | 64 | 1.5 | 10 | C | 35 | .9 |
| 27.. | 1.7 | C | 37 | .2 | 9.7 | | 97 | 2.5 | 11 | C | 35 | 1.0 |
| 28.. | 1.5 | C | 37 | .1 | 9.1 | | 73 | 1.8 | 12 | C | 35 | 1.1 |
| 29.. | 1.5 | C | 37 | .1 | 9.1 | | 37 | .9 | 12 | C | 35 | 1.1 |
| 30.. | 2.4 | C | 37 | .2 | 9.7 | | 36 | .9 | 11 | C | 35 | 1.0 |
| 31.. | 2.1 | C | 37 | .2 | -- | | -- | -- | 10 | C | 35 | .9 |
| Total | 85.8 | | -- | 8.2 | 140.9 | | -- | 25.0 | 352.1 | | -- | 50.4 |

| Day | JANUARY | | | | FEBRUARY | | | | MARCH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | | Suspended sediment: Tons per day | Mean discharge (cfs) | Suspended sediment: Mean concentration (ppm) | | Suspended sediment: Tons per day |
| 1.. | 11 | C | 35 | 1.0 | 11 | | 40 | 1.2 | 2.6 | 25 | S | 0.3 |
| 2.. | 8.5 | C | 35 | .8 | 9.1 | | 39 | 1.0 | 3.4 | 31 | | .3 |
| 3.. | 11 | | 55 | S 1.8 | 8.5 | | 31 | .7 | 2.3 | 33 | | .2 |
| 4.. | 16 | | 102 | 4.4 | 8.5 | | 36 | .8 | .9 | 31 | S | .1 |
| 5.. | 15 | | 116 | 4.7 | 3.1 | C | 33 | .3 | 0 | -- | | 0 |
| 6.. | 17 | | 103 | 4.7 | 3.4 | C | 33 | .3 | .1 | 4 | | T |
| 7.. | 21 | | 121 | 6.9 | 4.1 | C | 33 | .4 | .7 | 24 | S | .1 |
| 8.. | 24 | | 160 | 10 | 4.1 | C | 33 | .4 | 1.4 | 25 | | .1 |
| 9.. | 23 | | 206 | 13 | 3.7 | C | 33 | .3 | 1.4 | 26 | | .1 |
| 10.. | 23 | | 240 | 15 | 3.4 | C | 33 | .3 | 6.7 | 92 | S | 6.4 |
| | | | | | 3.7 | | | | | | | |
| 11.. | 21 | | 216 | 12 | 2.3 | C | 33 | .3 | 7.9 | 229 | S | 5.0 |
| 12.. | 20 | | 218 | 12 | 0 | | 19 | S .2 | 5.8 | 184 | S | 3.0 |
| 13.. | 20 | | 238 | 13 | 0 | | -- | 0 | 2.6 | 97 | | .7 |
| 14.. | 19 | | 113 | 5.8 | 0 | | -- | 0 | 14 | 200 | J | 10 |
| 15.. | 18 | | 128 | 6.2 | | | -- | 0 | 24 | 324 | | 21 |
| | | | | | 0 | | | | | | | |
| 16.. | 17 | | 120 | B 5.5 | 0 | | -- | 0 | 20 | 208 | | 11 |
| 17.. | 16 | | 97 | 4.2 | 0 | | -- | 0 | 17 | 115 | | 5.3 |
| 18.. | 18 | | 97 | 4.7 | .1 | | -- | 0 | 12 | 68 | | 2.2 |
| 19.. | 18 | | 132 | 6.4 | .1 | | 12 | T | 12 | 47 | | 1.5 |
| 20.. | 17 | | 109 | 5.0 | | | 19 | T | 13 | 45 | | 1.6 |
| | | | | | .6 | | | | | | | |
| 21.. | 16 | | 164 | S 8.0 | .5 | | 28 | T | 10 | 46 | | 1.2 |
| 22.. | 17 | | 320 | A 15 | .9 | | 38 | .1 | 6.2 | 33 | | .6 |
| 23.. | 18 | | 132 | 6.4 | .5 | | 35 | .1 | 5.8 | 31 | | .5 |
| 24.. | 19 | | 65 | 3.3 | .2 | | 16 | T | 6.7 | 49 | | .9 |
| 25.. | 17 | | 108 | 5.0 | | | 9 | T | 7.3 | 43 | | .8 |
| | | | | | .5 | | | | | | | |
| 26.. | 19 | | 68 | 3.5 | .3 | | 25 | T | 6.2 | 34 | | .6 |
| 27.. | 19 | | 50 | 2.6 | .1 | | 31 | T | 3.1 | C | 27 | .2 |
| 28.. | 19 | | 62 | 3.2 | -- | | 26 | T | 2.8 | C | 27 | .2 |
| 29.. | 19 | | 64 | 3.3 | -- | | -- | -- | 2.8 | C | 27 | .2 |
| 30.. | 18 | | 47 | 2.3 | -- | | -- | -- | 5.8 | C | 27 | .4 |
| 31.. | 15 | | 42 | 1.7 | | | -- | -- | 3.1 | C | 27 | .2 |
| Total | 549.5 | | -- | 191.4 | 68.7 | | -- | 6.6 | 207.6 | | -- | 74.7 |

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

WILLOW CREEK BASIN--Continued

14-0360. WILLOW CREEK NEAR ARLINGTON, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 3.4 | C 27 | 0.2 | 0.9 | 42 | 0.1 | 0.4 | 39 S | 0.1 |
| 2.. | 5.8 | C 27 | .4 | .4 | 28 | T | 1.2 | 36 S | .1 |
| 3.. | 4.1 | C 27 | .3 | .6 | 39 | .1 | .4 | 18 | T |
| 4.. | 3.4 | C 27 | .2 | 1.0 | 27 S | .1 | 0 | -- | 0 |
| 5.. | 2.8 | C 27 | .2 | 2.3 | 25 | .2 | 0 | -- | 0 |
| 6.. | 3.4 | C 27 | .2 | 1.8 | 18 | .1 | .7 | 30 S | .1 |
| 7.. | 2.8 | C 27 | .2 | .9 | 18 | T | .6 | 40 S | .1 |
| 8.. | 1.2 | C 27 | .1 | .7 | 19 | T | .2 | 17 | T |
| 9.. | 3.4 | C 27 | .2 | 1.2 | 12 | T | 0 | -- | 0 |
| 10.. | 4.5 | C 27 | .3 | .4 | 24 | T | 0 | -- | 0 |
| 11.. | 2.6 | C 27 | .2 | 0 | -- | 0 | 0 | -- | 0 |
| 12.. | 1.4 | 60 | .3 | 0 | -- | 0 | .1 | 18 | T |
| 13.. | 1.2 | 69 | .2 | 0 | -- | 0 | 0 | -- | 0 |
| 14.. | 1.2 | 29 | .1 | 0 | -- | 0 | 0 | -- | 0 |
| 15.. | 1.4 | 18 | .1 | 0 | -- | 0 | 0 | -- | 0 |
| 16.. | 3.4 | 21 | .2 | 0 | -- | 0 | 0 | -- | 0 |
| 17.. | 3.7 | 22 | .2 | .2 | 7 | T | 0 | -- | 0 |
| 18.. | 2.1 | 19 | .1 | .5 | 22 | T | 0 | -- | 0 |
| 19.. | 1.6 | 28 | .1 | .6 | 20 | T | 0 | -- | 0 |
| 20.. | 1.2 | 32 | .1 | .5 | 50 | .1 | 0 | -- | 0 |
| 21.. | 2.1 | 30 | .2 | .1 | 25 | T | 0 | -- | 0 |
| 22.. | 1.6 | 45 | .2 | 0 | -- | 0 | 0 | -- | 0 |
| 23.. | .1 | 21 | T | 0 | -- | 0 | 0 | -- | 0 |
| 24.. | .1 | 36 | T | 0 | -- | 0 | 0 | -- | 0 |
| 25.. | 1.4 | 59 | .3 | 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.. | .6 | 49 | .1 | 0 | -- | 0 | 0 | -- | 0 |
| 31.. | -- | -- | -- | .2 | 15 S | .1 | -- | -- | -- |
| Total | 60.5 | -- | 4.7 | 12.3 | -- | 1.1 | 3.6 | -- | 0.5 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 0 | -- | 0 | 0.3 | 59 | T | | | |
| 2.. | .4 | 12 | T | .2 | 55 | T | | | |
| 3.. | .2 | 12 | T | .1 | 60 | T | | | |
| 4.. | 0 | -- | 0 | 0 | -- | 0 | | | |
| 5.. | .9 | 81 S | .2 | 0 | -- | 0 | | | |
| 6.. | 1.6 | 54 | .2 | 0 | -- | 0 | | | |
| 7.. | 2.8 | 32 | .2 | 0 | -- | 0 | | | |
| 8.. | 2.1 | 18 | .1 | 0 | -- | 0 | | | |
| 9.. | 1.6 | 30 | .1 | 0 | -- | 0 | | | |
| 10.. | 1.2 | 20 | .1 | 0 | -- | 0 | | | |
| 11.. | 1.8 | 10 | T | 0 | -- | 0 | | | |
| 12.. | 2.1 | 12 | .1 | 0 | -- | 0 | | | |
| 13.. | 1.6 | 20 | .1 | 0 | -- | 0 | | | |
| 14.. | 16 | 4600 J | 4880 | 0 | -- | 0 | | | |
| 15.. | 30 | 30000 J | 7500 | 0 | -- | 0 | | | |
| 16.. | 2.8 | 4500 | 34 | 0 | -- | 0 | | | |
| 17.. | 1.8 | 1850 | 9.0 | 0 | -- | 0 | | | |
| 18.. | 1.0 | 1300 | 3.5 | 0 | -- | 0 | | | |
| 19.. | .9 | 900 | 2.2 | 0 | -- | 0 | | | |
| 20.. | .7 | 580 | 1.1 | 0 | -- | 0 | | | |
| 21.. | .7 | 470 | .9 | 0 | -- | 0 | | | |
| 22.. | .7 | 396 | .7 | 0 | -- | 0 | | | |
| 23.. | .6 | 336 | .5 | 0 | -- | 0 | | | |
| 24.. | .6 | 320 | .5 | 0 | -- | 0 | | | |
| 25.. | .5 | 227 | .3 | 0 | -- | 0 | | | |
| 26.. | .6 | 150 | .2 | 0 | -- | 0 | | | |
| 27.. | .9 | 81 | .2 | 0 | -- | 0 | | | |
| 28.. | .7 | 63 | .1 | 0 | -- | 0 | | | |
| 29.. | .6 | 74 | .1 | 0 | -- | 0 | | | |
| 30.. | .5 | 92 | .1 | 0 | -- | 0 | | | |
| 31.. | .4 | 83 | .1 | 0 | -- | 0 | | | |
| Total | 76.3 | -- | 12434.7 | 0.6 | -- | 0.1 | 0 | -- | 0 |

Total discharge for year (cfs-day)..... 1557.9
Total load for year (tons)..... 12797.4

S Computed by subdividing day.
T Less than 0.05 ton.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

WILLOW CREEK BASIN--Continued

14-0360. WILLOW CREEK NEAR ARLINGTON, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| July 15, 1966..... | 0730 | 57 | | 22 | 31400 | 1870 | 42 | 69 | 93 | 100 | | | | | | | | PWC |
| July 15..... | 1930 | 66 | | 6.7 | 13100 | 237 | 73 | 100 | | | | | | | | | | PWC |

ROCK CREEK BASIN

14-0366. ROCK CREEK NEAR ROOSEVELT, WASH.

LOCATION.--Lat 45°44'55", long 120°26'04", at gaging station at bridge on State Highway 122, 3.8 miles downstream from Harrison Creek, 4.2 miles upstream from mouth, and 14 miles west of Roosevelt, Klickitat County.
DRAINAGE AREA.--213 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--water temperatures: Minimum, 38°F Jan. 20.
Sediment concentrations: Maximum daily, 406 ppm Mar. 9; minimum daily, no flow on many days during August and September.
Sediment loads: Maximum daily, 879 tons Mar. 9; minimum daily, 0 ton on many days during August and September.
EXTREMES, 1962-66.--Water temperatures (revised) (1962-64, 1965-66): Minimum, freezing point Jan. 19, 20, 23, 24, 1963.
Sediment concentrations: Maximum daily (revised), not determined; minimum daily, no flow on many days.
Sediment loads: Maximum daily, (estimated) 200,000 tons Dec. 22, 1964; minimum daily, 0 ton on many days.
REMARKS.--No flow Aug. 9 to Sept. 30.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | -- | -- | -- | -- | -- | -- | 71 | 68 | -- | -- | 53 | -- | -- | 61 | -- | -- | -- | 54 | -- | -- | 64 | -- | -- | -- | 54 | -- | -- | 62 | -- | 61 | -- | -- |
| November..... | 59 | 61 | 58 | 60 | 60 | 55 | 56 | 57 | 57 | 54 | 55 | 53 | 53 | 55 | 56 | 55 | 54 | 54 | 55 | 53 | 54 | 52 | 50 | 49 | 48 | 42 | 52 | 49 | 47 | 47 | -- | 54 |
| December..... | 48 | 52 | 49 | 51 | 51 | 52 | 51 | 49 | 49 | 48 | 47 | 49 | 44 | 44 | 41 | 41 | 41 | 44 | 45 | 44 | 45 | 44 | 39 | 44 | 42 | 42 | 43 | 45 | 44 | 43 | 43 | 46 |
| January..... | 43 | 41 | 40 | 43 | 42 | 45 | 43 | 43 | 44 | 42 | 45 | 44 | 44 | 43 | 44 | 41 | 39 | 40 | 40 | 38 | 39 | 41 | 44 | -- | 39 | 39 | -- | 40 | 42 | 41 | -- | 42 |
| February..... | 41 | -- | 40 | -- | 44 | 41 | -- | 45 | 43 | 45 | -- | 46 | 46 | -- | 44 | -- | 47 | 48 | 44 | 51 | 48 | 40 | 47 | 45 | 44 | 41 | 43 | 44 | -- | -- | -- | 44 |
| March..... | 43 | 44 | 45 | -- | 41 | 48 | 47 | 45 | 44 | 45 | 45 | 49 | 46 | 48 | 47 | 47 | 46 | 48 | 47 | 47 | 49 | 47 | 44 | 53 | 56 | 56 | 56 | 56 | 57 | 53 | 56 | 48 |
| April..... | 55 | 52 | 55 | 56 | 54 | 55 | 52 | 61 | 55 | 51 | 57 | 49 | 57 | 62 | 64 | 62 | 58 | 49 | 60 | 55 | 62 | 57 | 65 | 62 | 51 | -- | 64 | -- | 66 | -- | -- | 57 |
| May..... | 66 | -- | 74 | -- | -- | 66 | -- | 72 | -- | 67 | -- | 57 | -- | -- | 61 | -- | 69 | -- | 72 | -- | 65 | -- | 72 | -- | 79 | -- | -- | 71 | -- | 64 | -- | -- |
| June..... | 58 | -- | -- | -- | -- | 67 | -- | -- | 76 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 71 | -- | -- | 71 | -- | -- | -- | 80 | -- | -- | 70 | -- | -- |
| July..... | -- | -- | -- | 72 | -- | 77 | 82 | -- | -- | -- | 66 | -- | -- | -- | -- | -- | -- | 76 | -- | -- | -- | -- | -- | -- | 72 | -- | -- | 85 | -- | -- | -- | -- |
| August..... | 78 | -- | -- | -- | -- | -- | -- | -- | 70 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

ROCK CREEK BASIN--Continued

14-0366. ROCK CREEK NEAR ROOSEVELT, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | | NOVEMBER | | | | DECEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1 | 1.1 | C | 5 | T | 2.2 | C | 2 | T | 6.0 | C | 3 | T |
| 2 | 1.0 | C | 5 | T | 2.2 | C | 2 | T | 5.7 | C | 3 | T |
| 3 | 1.0 | C | 5 | T | 2.4 | C | 2 | T | 5.7 | C | 3 | T |
| 4 | 1.0 | C | 5 | T | 3.0 | C | 2 | T | 5.4 | C | 3 | T |
| 5 | .90 | C | 5 | T | 2.8 | C | 2 | T | 5.7 | C | 3 | T |
| 6 | 1.0 | C | 5 | T | 3.0 | C | 2 | T | 5.7 | C | 3 | T |
| 7 | 1.0 | C | 5 | T | 3.0 | C | 2 | T | 5.7 | C | 3 | T |
| 8 | 1.0 | C | 5 | T | 3.2 | C | 2 | T | 6.0 | C | 3 | T |
| 9 | 1.1 | C | 5 | T | 3.2 | C | 2 | T | 6.0 | C | 3 | T |
| 10 | 1.1 | C | 5 | T | 3.5 | C | 2 | T | 6.0 | C | 3 | T |
| 11 | 1.1 | C | 5 | T | 3.7 | C | 3 | T | 6.0 | C | 3 | T |
| 12 | 1.1 | C | 5 | T | 3.7 | C | 3 | T | 6.0 | C | 3 | T |
| 13 | 1.2 | C | 5 | T | 3.7 | C | 3 | T | 6.0 | C | 3 | T |
| 14 | 1.2 | C | 5 | T | 5.0 | C | 3 | T | 6.0 | C | 3 | T |
| 15 | 1.2 | C | 5 | T | 4.8 | C | 3 | T | 5.7 | C | 3 | T |
| 16 | 1.3 | C | 5 | T | 4.5 | C | 3 | T | 5.4 | C | 3 | T |
| 17 | 1.5 | C | 5 | T | 4.2 | C | 3 | T | 5.0 | C | 3 | T |
| 18 | 1.5 | C | 5 | T | 4.5 | C | 3 | T | 5.4 | C | 3 | T |
| 19 | 1.5 | C | 5 | T | 4.2 | C | 3 | T | 5.4 | C | 3 | T |
| 20 | 1.6 | C | 5 | T | 4.2 | C | 3 | T | 5.4 | C | 3 | T |
| 21 | 1.6 | C | 5 | T | 4.5 | C | 3 | T | 5.4 | C | 3 | T |
| 22 | 1.8 | C | 5 | T | 4.5 | C | 3 | T | 5.7 | C | 3 | T |
| 23 | 1.8 | C | 5 | T | 4.8 | C | 3 | T | 6.0 | C | 3 | T |
| 24 | 1.9 | C | 5 | T | 5.7 | C | 3 | T | 5.7 | C | 3 | T |
| 25 | 1.8 | C | 5 | T | 6.3 | C | 3 | .1 | 6.0 | | 18 | A .3 |
| 26 | 1.9 | C | 5 | T | 7.0 | C | 3 | .1 | 6.0 | | 6 | .1 |
| 27 | 2.1 | C | 5 | T | 7.0 | C | 3 | .1 | 8.1 | C | 3 | .1 |
| 28 | 2.1 | C | 5 | T | 7.0 | C | 3 | .1 | 8.8 | C | 3 | .1 |
| 29 | 2.1 | C | 5 | T | 6.6 | C | 3 | .1 | 9.6 | C | 3 | .1 |
| 30 | 2.1 | C | 5 | T | 6.0 | C | 3 | T | 9.2 | C | 3 | .1 |
| 31 | 2.2 | C | 5 | T | --- | --- | | --- | 8.8 | C | 3 | .1 |
| Total | 44.80 | | --- | 0.6 | 130.4 | | --- | 1.2 | 193.5 | | --- | 2.0 |

| Day | JANUARY | | | | FEBRUARY | | | | MARCH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1 | 8.4 | 4 | | 0.1 | 38 | C | 4 | 0.4 | 91 | 7 | | 1.7 |
| 2 | 18 | 16 | A | .8 | 34 | C | 4 | .4 | 72 | 6 | | 1.2 |
| 3 | 25 | 6 | | .4 | 32 | C | 4 | .3 | 59 | 4 | | .6 |
| 4 | 33 | 10 | | .9 | 32 | C | 4 | .3 | 51 | 2 | B | .3 |
| 5 | 40 | 11 | | 1.2 | 32 | C | 4 | .3 | 51 | 3 | | .4 |
| 6 | 178 | 153 | S | 84 | 38 | C | 4 | .4 | 58 | 6 | | .9 |
| 7 | 241 | 43 | | 28 | 41 | C | 4 | .4 | 86 | 13 | A | 3.0 |
| 8 | 210 | 23 | | 13 | 38 | C | 4 | .4 | 193 | 134 | S | 160 |
| 9 | 171 | 20 | | 9.2 | 38 | C | 4 | .4 | 656 | 406 | S | 879 |
| 10 | 126 | 12 | | 4.1 | 38 | C | 4 | .4 | 394 | 59 | S | 76 |
| 11 | 116 | 16 | | 5.0 | 34 | C | 4 | .4 | 259 | 22 | | 15 |
| 12 | 159 | 29 | | 12 | 37 | C | 4 | .4 | 268 | 24 | | 17 |
| 13 | 294 | 150 | S | 132 | 32 | C | 4 | .3 | 360 | 50 | S | 61 |
| 14 | 410 | 292 | S | 362 | 33 | C | 4 | .4 | 434 | 64 | | 75 |
| 15 | 232 | 24 | | 15 | 30 | C | 4 | .3 | 364 | 30 | | 29 |
| 16 | 147 | 21 | | 8.3 | 30 | C | 4 | .3 | 268 | 15 | | 11 |
| 17 | 105 | 11 | | 3.1 | 30 | C | 4 | .3 | 210 | 8 | | 4.5 |
| 18 | 83 | 6 | | 1.3 | 42 | C | 4 | .5 | 188 | 6 | | 3.0 |
| 19 | 65 | C | 3 | .5 | 49 | C | 4 | .5 | 173 | 6 | | 2.8 |
| 20 | 51 | C | 3 | .4 | 72 | | 9 | J 2.9 | 154 | 5 | | 2.1 |
| 21 | 46 | C | 3 | .4 | 126 | | 19 | J 7.1 | 147 | 6 | | 2.4 |
| 22 | 42 | C | 3 | .3 | 118 | | 16 | S 5.5 | 130 | 4 | | 1.4 |
| 23 | 38 | C | 3 | .3 | 105 | | 8 | 2.3 | 118 | 4 | | 1.3 |
| 24 | 37 | C | 3 | .3 | 128 | | 11 | 3.8 | 112 | 6 | | 1.8 |
| 25 | 32 | C | 3 | .3 | 124 | | 7 | 2.3 | 132 | 13 | | 4.6 |
| 26 | 30 | C | 3 | .2 | 134 | | 8 | 2.9 | 173 | 30 | | 14 |
| 27 | 29 | C | 3 | .2 | 124 | | 6 | 2.0 | 235 | 31 | | 20 |
| 28 | 28 | C | 3 | .2 | 116 | | 8 | 2.5 | 288 | 46 | | 36 |
| 29 | 29 | C | 3 | .2 | --- | --- | | --- | 304 | 50 | S | 44 |
| 30 | 35 | C | 3 | .3 | --- | --- | | --- | 318 | 58 | | 50 |
| 31 | 38 | C | 3 | .3 | --- | --- | | --- | 301 | 41 | | 33 |
| Total | 3096.4 | | --- | 684.3 | 1725 | | --- | 38.4 | 6647 | --- | | 1552.0 |

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

ROCK CREEK BASIN--Continued

14-0366. ROCK CREEK NEAR ROOSEVELT, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 281 | 32 | 24 | 24 | C 4 | 0.3 | 6.7 | C 5 | 0.1 |
| 2 | 262 | 26 | 18 | 22 | C 4 | .2 | 6.7 | C 5 | .1 |
| 3 | 210 | 13 | 7.4 | 22 | C 4 | .2 | 6.7 | C 5 | .1 |
| 4 | 183 | 10 | 4.9 | 20 | C 4 | .2 | 6.3 | C 5 | .1 |
| 5 | 166 | C 7 | 3.1 | 19 | C 4 | .2 | 6.0 | C 5 | .1 |
| 6 | 159 | C 7 | 3.0 | 18 | C 4 | .2 | 5.4 | C 5 | .1 |
| 7 | 154 | C 7 | 2.9 | 18 | C 4 | .2 | 5.1 | C 5 | .1 |
| 8 | 145 | C 7 | 2.7 | 17 | C 4 | .2 | 4.8 | C 5 | .1 |
| 9 | 132 | C 7 | 2.5 | 16 | C 4 | .2 | 4.3 | C 5 | .1 |
| 10 | 118 | C 7 | 2.2 | 16 | C 4 | .2 | 4.3 | C 5 | .1 |
| 11 | 101 | C 7 | 1.9 | 16 | C 4 | .2 | 4.5 | C 5 | .1 |
| 12 | 91 | C 7 | 1.7 | 15 | C 4 | .2 | 4.3 | C 5 | .1 |
| 13 | 77 | C 7 | 1.5 | 15 | C 4 | .2 | 3.8 | C 5 | .1 |
| 14 | 68 | C 7 | 1.3 | 15 | C 4 | .2 | 3.5 | C 5 | T |
| 15 | 63 | C 7 | 1.2 | 14 | C 4 | .2 | 3.3 | C 5 | T |
| 16 | 59 | C 7 | 1.1 | 14 | C 4 | .2 | 3.1 | C 5 | T |
| 17 | 53 | C 7 | 1.0 | 13 | C 4 | .1 | 2.9 | C 5 | T |
| 18 | 48 | C 7 | .9 | 12 | C 4 | .1 | 2.5 | C 5 | T |
| 19 | 44 | C 7 | .8 | 11 | C 4 | .1 | 2.3 | C 5 | T |
| 20 | 42 | C 7 | .8 | 10 | C 4 | .1 | 2.3 | C 5 | T |
| 21 | 38 | C 4 | .4 | 10 | C 4 | .1 | 2.3 | C 5 | T |
| 22 | 36 | C 4 | .4 | 10 | C 4 | .1 | 2.5 | C 5 | T |
| 23 | 34 | C 4 | .4 | 9.7 | C 4 | .1 | 2.2 | C 5 | T |
| 24 | 32 | C 4 | .3 | 9.3 | C 4 | .1 | 2.2 | C 5 | T |
| 25 | 30 | C 4 | .3 | 8.1 | C 4 | .1 | 2.2 | C 5 | T |
| 26 | 30 | C 4 | .3 | 7.4 | C 4 | .1 | 2.0 | C 5 | T |
| 27 | 28 | C 4 | .3 | 7.0 | C 4 | .1 | 1.7 | C 5 | T |
| 28 | 27 | C 4 | .3 | 7.0 | C 4 | .1 | 1.6 | C 5 | T |
| 29 | 26 | C 4 | .3 | 7.0 | C 4 | .1 | 1.5 | C 5 | T |
| 30 | 25 | C 4 | .3 | 7.0 | C 4 | .1 | 1.3 | C 5 | T |
| 31 | -- | -- | -- | 6.3 | C 4 | .1 | -- | -- | |
| Total | 2762 | -- | 86.2 | 415.8 | -- | 4.8 | 108.3 | -- | 1.8 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | C 6 | T | 0.20 | C 3 | T | | | |
| 2 | 4.3 | C 6 | 0.1 | .20 | C 3 | T | | | |
| 3 | 5.4 | C 6 | .1 | .10 | C 3 | T | | | |
| 4 | 5.1 | C 6 | .1 | .10 | C 3 | T | | | |
| 5 | 4.3 | C 6 | .1 | .10 | C 3 | T | | | |
| 6 | 3.8 | C 6 | .1 | .10 | C 3 | T | | | |
| 7 | 3.3 | C 6 | .1 | .10 | C 3 | T | | | |
| 8 | 2.7 | C 6 | T | .10 | C 3 | T | | | |
| 9 | 2.2 | C 6 | T | 0 | 0 | 0 | | | |
| 10 | 2.0 | C 6 | T | 0 | 0 | 0 | | | |
| 11 | 1.7 | C 6 | T | 0 | 0 | 0 | | | |
| 12 | 1.6 | C 6 | T | 0 | 0 | 0 | | | |
| 13 | 1.6 | C 6 | T | 0 | 0 | 0 | | | |
| 14 | 1.3 | C 6 | T | 0 | 0 | 0 | | | |
| 15 | 1.3 | C 6 | T | 0 | 0 | 0 | | | |
| 16 | 1.3 | C 6 | T | 0 | 0 | 0 | | | |
| 17 | 1.1 | C 6 | T | 0 | 0 | 0 | | | |
| 18 | 1.0 | C 6 | T | 0 | 0 | 0 | | | |
| 19 | .90 | C 6 | T | 0 | 0 | 0 | | | |
| 20 | .90 | C 6 | T | 0 | 0 | 0 | | | |
| 21 | .90 | C 6 | T | 0 | 0 | 0 | | | |
| 22 | .80 | C 6 | T | 0 | 0 | 0 | | | |
| 23 | .60 | C 6 | T | 0 | 0 | 0 | | | |
| 24 | .60 | C 6 | T | 0 | 0 | 0 | | | |
| 25 | .50 | C 6 | T | 0 | 0 | 0 | | | |
| 26 | .50 | C 6 | T | 0 | 0 | 0 | | | |
| 27 | .40 | C 6 | T | 0 | 0 | 0 | | | |
| 28 | .40 | C 6 | T | 0 | 0 | 0 | | | |
| 29 | .30 | C 6 | T | 0 | 0 | 0 | | | |
| 30 | .30 | C 6 | T | 0 | 0 | 0 | | | |
| 31 | .20 | C 6 | T | 0 | 0 | 0 | | | |
| Total | 52.90 | -- | 1.0 | 1.00 | -- | T | 0 | -- | 0 |

Total discharge for year (cfs-days)..... 15177.10
Total load for year (tons)..... 2372.3

T Less than 0.05 ton.
C Composite period.

ROCK CREEK BASIN--Continued

14-0366. ROCK CREEK NEAR ROOSEVELT, WASH.--Continued

Particle-size analyses of suspended sediment, October 1964 to September 1966

(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Jan. 27, 1965..... | 1130 | 40 | | 1640 | 993 | 4400 | 11 | 14 | 14 | 24 | 30 | 45 | 52 | 70 | 81 | 91 | 100 | VPWC |
| Mar. 9..... | 0030 | 44 | | 539 | 337 | 495 | 28 | 30 | 36 | 42 | 49 | 55 | 59 | 69 | 92 | 99 | 100 | VPWC |
| Mar. 9..... | 1400 | 40 | | 820 | 1320 | 2920 | 13 | 19 | 20 | 33 | 42 | 53 | 62 | 80 | 95 | 99 | 100 | VPWC |

JOHN DAY RIVER BASIN

14-0440. MIDDLE FORK JOHN DAY RIVER AT RITTER, OREG.

LOCATION.--Lat 44°53'20", 118°08'25", temperature recorder at gaging station, 0.8 mile downstream from Twelvemile Creek, 0.2 mile south of Ritter, Grant County, and at mile 14.9.
DRAINAGE AREA.--515 square miles.
RECORDS AVAILABLE.--Water temperatures: July to September 1966.

Temperature (°F) of water, July to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | - | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 80 | 80 | 81 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 80 | 80 | 79 | 81 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 69 | 70 | 70 | 67 | 65 | 67 | 68 | 69 | 67 | 67 | 68 | 68 | 69 | 70 | 69 | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 81 | 79 | 79 | 80 | 80 | 79 | 79 | 77 | 80 | 79 | 79 | 76 | 74 | 76 | 77 | 77 | 73 | 75 | 74 | 74 | 74 | 70 | 69 | 73 | 68 | 76 | 71 | 70 | 68 | 70 | 69 | 75 |
| Minimum .... | 70 | 69 | 70 | 70 | 68 | 67 | 68 | 69 | 67 | 68 | 67 | 64 | 65 | 64 | 66 | 67 | 65 | 65 | 65 | 62 | 62 | 64 | 64 | 64 | 64 | 62 | 64 | 64 | 64 | 61 | 60 | 65 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 71 | 72 | 72 | 72 | 72 | 68 | 69 | 69 | 68 | 65 | 66 | 60 | 60 | 64 | 65 | 67 | 66 | 66 | 66 | 67 | 68 | 68 | 65 | 64 | 64 | 64 | 63 | 65 | 60 | -- | 66 |
| Minimum .... | 60 | 61 | 63 | 64 | 64 | 66 | 64 | 63 | 62 | 62 | 60 | 58 | 58 | 58 | 58 | 61 | 62 | 64 | 61 | 60 | 62 | 63 | 63 | 61 | 59 | 61 | 59 | 58 | 59 | 56 | -- | 61 |

JOHN DAY RIVER BASIN--Continued

14-0440. MIDDLE FORK JOHN DAY RIVER AT RITTER, OREG.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Oct. 26, 1965 | 1715 | 50 | | 53 | 6 | 1 | | | | | | | | | | | | |
| Dec. 29 | 1100 | 32 | | D 65 | 11 | 2 | | | | | | | | | | | | |
| Jan. 26, 1966 | 1600 | 33 | | 83 | 4 | 1 | | | | | | | | | | | | |
| Feb. 22 | 1031 | 36 | | 77 | 16 | 3 | | | | | | | | | | | | |
| Mar. 11 | 1900 | 42 | | 168 | 54 | 24 | | | | | | | | | | | | |
| Mar. 22 | 1430 | 42 | | 109 | 12 | 4 | | | | | | | | | | | | |
| Apr. 4 | 0930 | 45 | | 674 | 60 | 109 | 20 | 32 | 45 | 59 | 75 | 90 | 98 | 99 | 100 | | | VPWC |
| Apr. 19 | 1130 | 42 | | 310 | 18 | 15 | | | | | | | | | | | | |
| May 11 | 1200 | 52 | | 346 | 16 | 15 | | | | | | | | | | | | |
| May 26 | 1245 | 68 | | 129 | 11 | 4 | | | | | | | | | | | | |
| June 25 | 1730 | 71 | | 76 | 6 | 1 | | | | | | | | | | | | |
| Aug. 16 | 1410 | 80 | | 3.5 | 4 | T | | | | | | | | | | | | |

T Less than 0.50 ton.
D Daily mean discharge.

JOHN DAY RIVER BASIN--Continued

14-0460. NORTH FORK JOHN DAY RIVER AT MONUMENT, OREG.

LOCATION.--Lat 44°48'50", long 119°25'50", temperature recorder at gaging station 0.7 mile downstream from Cottonwood Creek, 0.8 mile west of Monument, Grant County, and at mile 15.3.
DRAINAGE AREA.--2,520 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July to September 1966

Temperature (°F) of water, July to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 77 | 78 | 78 | 79 | 81 | 82 | 81 | 79 | 78 | 79 | 81 | 80 | 78 | 79 | 79 | 80 | 82 | 83 | 83 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 66 | 70 | 70 | 70 | 71 | 72 | 72 | 69 | 67 | 69 | 70 | 70 | 67 | 67 | 68 | 68 | 69 | 70 | 70 | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 83 | 84 | 83 | 82 | 82 | 82 | 82 | 78 | 80 | 78 | 77 | 77 | 76 | 77 | 79 | 78 | 75 | 77 | 76 | 75 | 76 | 71 | 71 | 74 | 71 | 65 | 70 | 70 | 69 | 72 | 73 | 76 |
| Minimum .... | 69 | 70 | 71 | 70 | 68 | 67 | 67 | 68 | 66 | 67 | 65 | 63 | 63 | 64 | 64 | 65 | 64 | 64 | 64 | 62 | 62 | 63 | 63 | 63 | 64 | 63 | 62 | 62 | 63 | 60 | 59 | 65 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 72 | 74 | 76 | 78 | 77 | 78 | 73 | 75 | 75 | 74 | 68 | 68 | 60 | 60 | 64 | 67 | 71 | 66 | 70 | 71 | 75 | 75 | 75 | 69 | 70 | 66 | 68 | 69 | 69 | 67 | -- | 71 |
| Minimum .... | 60 | 61 | 62 | 64 | 65 | 66 | 64 | 63 | 63 | 62 | 62 | 57 | 57 | 57 | 56 | 60 | 62 | 63 | 61 | 60 | 62 | 65 | 65 | 64 | 61 | 62 | 58 | 58 | 62 | 60 | -- | 61 |

Periodic determinations of suspended-sediment discharge, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
| Oct. 26, 1965..... | 0900 | 47 | | 154 | 8 | 3 | | | | | | | | | | | |
| Dec. 29..... | 1545 | 32 | | D 220 | 9 | 6 | | | | | | | | | | | |
| Jan. 26, 1966..... | 1330 | 35 | | 187 | 1 | 1 | | | | | | | | | | | |
| Feb. 22..... | 1210 | 36 | | 272 | 6 | 4 | | | | | | | | | | | |
| Mar. 12..... | 1220 | 44 | | 1280 | 36 | 124 | | | | | | | | | | | |
| Mar. 22..... | 1215 | 40 | | 762 | 7 | 14 | | | | | | | | | | | |
| Apr. 4..... | 0720 | 41 | | 2870 | 42 | 325 | | | | | | | | | | | |
| Apr. 19..... | 0930 | 41 | | 1740 | 12 | 56 | | | | | | | | | | | |
| May 11..... | 1405 | 54 | | 1760 | 14 | 67 | | | | | | | | | | | |
| May 26..... | 1330 | 67 | | 706 | 8 | 15 | | | | | | | | | | | |
| June 26..... | 1750 | 71 | | 360 | 2 | 2 | | | | | | | | | | | |
| Aug. 16..... | 0750 | 67 | | 60 | 6 | 1 | | | | | | | | | | | |

D Daily mean discharge.

## 14-0480. JOHN DAY RIVER AT McDONALD FERRY, OREG.

LOCATION.--Lat 45°35'16", long 120°24'30", at gaging station, 0.8 mile downstream from Rock Creek, 10 miles east of Klondike, Sherman County, and at mile 20.9.
DRAINAGE AREA.--7,580 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1911 to August 1912 (unpublished), August 1960 to July 1962.
Water temperatures: October 1962 to September 1966.
Sediment records: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 85°F Sept. 4; minimum, freezing point Dec. 23.
Sediment concentrations: Maximum daily, 2,800 ppm Jan. 6; minimum daily, 9 ppm June 19 to July 13.
Sediment loads: Maximum daily, 11,000 tons Jan. 6; minimum daily, less than 0.50 ton Aug. 28, Sept. 1, 2.
EXTREMES, 1962-66.--Water temperatures: Maximum (1963-66), 85°F Sept. 4, 1966; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 66,500 ppm Dec. 22, 1964; minimum daily, 2 ppm Oct. 11, 1962.
Sediment loads: Maximum daily, 3,800,000 tons Dec. 22, 1964; minimum daily, less than 0.50 ton Aug. 28, Sept. 1, 2, 1966.
REMARKS.--Records of chemical data for August 1911 to August 1912 are available at district office in Portland, Oreg.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 62 | 62 | -- | 57 | 60 | 58 | 60 | 58 | 62 | 64 | 53 | 53 | 63 | 53 | 51 | 50 | 50 | 51 | 50 | 48 | 48 | 49 | 50 | 56 | 53 | 49 | 49 | 49 | 50 | 52 | 50 | 54 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | 49 | 51 | 51 | -- | 50 | 46 | 47 | 47 | 45 | 44 | 45 | 43 | 45 | 45 | 44 | 45 | 46 | 47 | 46 | 45 | 46 | 46 | -- | 43 | 43 | 41 | 39 | 39 | 36 | 36 | -- | 45 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | 37 | 40 | 40 | 41 | 43 | 41 | 43 | 43 | 43 | 41 | 38 | 39 | 37 | 36 | 36 | 33 | 33 | 34 | 35 | 34 | 36 | 34 | 32 | 33 | -- | 34 | 35 | 35 | 38 | 35 | 36 | 37 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | 39 | 34 | 39 | 43 | 40 | 43 | 45 | 43 | 45 | 42 | 43 | 46 | 44 | 42 | -- | 37 | 40 | 41 | 39 | 38 | 37 | -- | -- | 36 | 38 | 37 | 38 | 40 | 44 | 39 | 39 | 40 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | 37 | 37 | 39 | 40 | 38 | 39 | 39 | -- | 38 | 37 | 40 | 41 | 44 | -- | 40 | 43 | 45 | 46 | 44 | 45 | 44 | 41 | 42 | 42 | 42 | 42 | 43 | 45 | -- | -- | -- | 41 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | 43 | 38 | 37 | 38 | 39 | 41 | 40 | 44 | 46 | 48 | 46 | 50 | 50 | 49 | 50 | 48 | 47 | 47 | 50 | 48 | 44 | 48 | 50 | 50 | 50 | 54 | 57 | 58 | 59 | 58 | 58 | 48 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | 57 | 53 | 53 | 52 | 53 | 58 | 58 | 57 | 55 | 58 | 56 | 54 | 54 | 51 | 58 | 60 | 56 | 54 | 56 | 52 | 55 | 57 | 55 | 62 | 58 | 56 | 57 | 58 | 54 | 58 | -- | 56 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | 57 | 57 | 60 | 64 | 64 | 68 | 61 | 68 | 66 | 58 | 57 | 60 | 58 | 58 | 52 | 55 | 54 | 56 | 59 | 63 | 60 | 54 | 66 | 60 | 63 | 62 | 57 | 61 | 61 | 62 | 62 | 60 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | 50 | 57 | 56 | 55 | 58 | 62 | 70 | 63 | 65 | 66 | 62 | 65 | 69 | 67 | 67 | 69 | 69 | 68 | 65 | 61 | 63 | 67 | 62 | 60 | 60 | 67 | 66 | 68 | 61 | 63 | -- | 63 |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | 63 | 58 | 59 | 61 | 66 | 67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Maximum .... | -- | -- | -- | -- | -- | -- | 77 | 77 | 79 | 76 | 77 | 72 | 77 | 76 | 77 | 77 | 78 | 79 | 76 | 74 | 78 | 78 | 77 | 74 | 74 | 77 | 81 | 82 | 84 | 79 | 78 | 77 |
| Minimum .... | -- | -- | -- | -- | -- | -- | 67 | 68 | 70 | 69 | 66 | 69 | 66 | 68 | 68 | 68 | 69 | 70 | 67 | 63 | 68 | 70 | 69 | 66 | 63 | 66 | 68 | 72 | 71 | 70 | 68 | 68 |
| August | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Maximum .... | 79 | 81 | 80 | 80 | 80 | 80 | 82 | 76 | 78 | 75 | 79 | 80 | 79 | 84 | 82 | 79 | 84 | 84 | 82 | 80 | 82 | 78 | 79 | 83 | 74 | 66 | 69 | 77 | 70 | 76 | 77 | 79 |
| Minimum .... | 66 | 68 | 69 | 70 | 67 | 65 | 66 | 67 | 66 | 65 | 63 | 63 | 66 | 64 | 65 | 63 | 62 | 64 | 65 | 63 | 60 | 62 | 63 | 63 | 61 | 58 | 58 | 57 | 58 | 55 | 57 | 63 |
| September | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Maximum .... | 80 | 81 | 84 | 65 | 84 | 77 | 78 | 81 | 78 | 76 | 66 | 70 | 61 | 59 | 65 | 67 | 71 | 69 | 67 | 69 | 71 | 73 | 69 | 66 | 67 | 67 | 67 | 68 | 71 | 66 | -- | 72 |
| Minimum .... | 58 | 56 | 62 | 64 | 65 | 64 | 61 | 64 | 63 | 62 | 59 | 58 | 57 | 57 | 55 | 58 | 61 | 61 | 60 | 61 | 63 | 65 | 64 | 62 | 61 | 61 | 61 | 61 | 65 | 61 | -- | 61 |

JOHN DAY RIVER BASIN--Continued

14-0480. JOHN DAY RIVER AT McDONALD FERRY, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 271 | C 22 | 16 | 418 | C 22 | 25 | 544 | 34 | 50 |
| 2.. | 271 | C 22 | 16 | 410 | C 22 | 24 | 499 | 30 | 40 |
| 3.. | 285 | C 22 | 17 | 410 | C 22 | 24 | 466 | C 18 | 23 |
| 4.. | 327 | C 22 | 19 | 426 | C 22 | 25 | 474 | C 18 | 23 |
| 5.. | 327 | C 22 | 19 | 426 | C 22 | 25 | 562 | C 18 | 27 |
| 6.. | 320 | C 22 | 19 | 416 | C 22 | 25 | 571 | C 18 | 28 |
| 7.. | 292 | C 22 | 17 | 418 | C 22 | 25 | 580 | C 18 | 28 |
| 8.. | 299 | C 22 | 18 | 434 | C 22 | 26 | 580 | C 18 | 28 |
| 9.. | 292 | C 22 | 17 | 442 | C 22 | 26 | 580 | C 18 | 28 |
| 10.. | 285 | C 22 | 17 | 466 | C 22 | 28 | 580 | C 18 | 28 |
| 11.. | 285 | C 22 | 17 | 458 | C 22 | 27 | 553 | C 18 | 27 |
| 12.. | 285 | C 22 | 17 | 474 | C 22 | 28 | 562 | C 18 | 27 |
| 13.. | 285 | C 22 | 17 | 490 | C 22 | 29 | 544 | C 18 | 26 |
| 14.. | 292 | C 22 | 17 | 562 | 32 | 49 | 544 | C 18 | 26 |
| 15.. | 299 | C 22 | 18 | 571 | 67 | A 100 | 517 | C 18 | 25 |
| 16.. | 306 | C 22 | 18 | 607 | 42 | 69 | 500 | C 18 | 24 |
| 17.. | 327 | C 22 | 19 | 652 | 45 | 79 | 460 | C 18 | 22 |
| 18.. | 334 | C 22 | 20 | 661 | 75 | A 130 | 400 | C 18 | 19 |
| 19.. | 342 | C 22 | 20 | 661 | 66 | A 120 | 340 | C 11 | 10 |
| 20.. | 356 | C 22 | 21 | 616 | 51 | 85 | 300 | C 11 | 9 |
| 21.. | 387 | C 22 | 23 | 589 | 62 | 99 | 280 | C 11 | 8 |
| 22.. | 410 | C 22 | 24 | 589 | 54 | 86 | 280 | C 11 | 8 |
| 23.. | 434 | C 22 | 26 | 589 | -- | E 76 | 320 | C 11 | 10 |
| 24.. | 442 | C 22 | 26 | 580 | 41 | 64 | 340 | C 11 | 10 |
| 25.. | 442 | C 22 | 26 | 571 | 50 | 77 | 340 | C 11 | 10 |
| 26.. | 426 | C 22 | 25 | 580 | 39 | 61 | 380 | C 18 | 18 |
| 27.. | 418 | C 22 | 25 | 589 | 51 | 81 | 410 | C 18 | 20 |
| 28.. | 418 | C 22 | 25 | 598 | 34 | 55 | 458 | C 18 | 22 |
| 29.. | 418 | C 22 | 25 | 589 | 31 | 49 | 442 | C 18 | 21 |
| 30.. | 410 | C 22 | 24 | 571 | 28 | 43 | 474 | C 18 | 23 |
| 31.. | 410 | C 22 | 24 | -- | -- | -- | 508 | C 18 | 25 |
| Total | 10695 | -- | 632 | 15865 | -- | 1660 | 14388 | -- | 693 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 508 | C 18 | 25 | 580 | C 14 | 22 | 880 | 28 | 67 |
| 2.. | 517 | C 18 | 25 | 589 | C 14 | 22 | 880 | 32 | 76 |
| 3.. | 517 | C 18 | 25 | 571 | C 14 | 22 | 841 | 36 | 82 |
| 4.. | 535 | C 18 | 26 | 508 | C 14 | 19 | 787 | 31 | 66 |
| 5.. | 553 | C 18 | 27 | 499 | C 14 | 19 | 715 | 22 | 42 |
| 6.. | 1100 | 2800 | J 11000 | 544 | C 14 | 21 | 679 | 18 | 33 |
| 7.. | 1250 | 1270 | S 4030 | 580 | C 14 | 22 | 661 | 16 | 29 |
| 8.. | 890 | 1450 | 3480 | 616 | C 14 | 23 | 715 | 16 | 31 |
| 9.. | 1120 | 497 | S 1500 | 598 | C 14 | 23 | 823 | 20 | 44 |
| 10.. | 1040 | 165 | 463 | 598 | C 14 | 23 | 1190 | 511 | S 1750 |
| 11.. | 930 | 141 | 354 | 580 | C 14 | 22 | 2930 | 941 | S 9160 |
| 12.. | 814 | 79 | 174 | 580 | C 14 | 22 | 3240 | 990 | 8660 |
| 13.. | 778 | 78 | 164 | 526 | C 14 | 20 | 2510 | 650 | 4410 |
| 14.. | 742 | 63 | 126 | 490 | C 14 | 19 | 2720 | 450 | 3300 |
| 15.. | 706 | 39 | 74 | 544 | C 14 | 21 | 4600 | 878 | 10900 |
| 16.. | 706 | 30 | 57 | 499 | C 14 | 19 | 3910 | 730 | 7710 |
| 17.. | 706 | 25 | 48 | 562 | C 14 | 21 | 3120 | 440 | 3710 |
| 18.. | 706 | 38 | 72 | 526 | C 14 | 20 | 2560 | 200 | 1380 |
| 19.. | 616 | 23 | 38 | 508 | C 14 | 19 | 2070 | 143 | 799 |
| 20.. | 490 | C 14 | 19 | 571 | C 14 | 22 | 1970 | 101 | 537 |
| 21.. | 474 | C 14 | 18 | 589 | C 14 | 22 | 1880 | 80 | 406 |
| 22.. | 426 | C 14 | 16 | 589 | C 14 | 22 | 1760 | 95 | 451 |
| 23.. | 442 | C 14 | 17 | 643 | C 14 | 24 | 1560 | 63 | 265 |
| 24.. | 562 | C 14 | 21 | 661 | C 14 | 25 | 1450 | 66 | 258 |
| 25.. | 589 | C 14 | 22 | 724 | C 14 | 27 | 1360 | 52 | 191 |
| 26.. | 634 | C 14 | 24 | 850 | 16 | 37 | 1450 | 43 | 168 |
| 27.. | 625 | C 14 | 24 | 890 | 31 | 74 | 1860 | 53 | 266 |
| 28.. | 616 | C 14 | 23 | 880 | 30 | 71 | 2740 | 105 | 777 |
| 29.. | 580 | C 14 | 22 | -- | -- | -- | 3600 | 215 | 2090 |
| 30.. | 580 | C 14 | 22 | -- | -- | -- | 4310 | 360 | 4190 |
| 31.. | 580 | C 14 | 22 | -- | -- | -- | 4980 | 530 | 7130 |
| Total | 21332 | -- | 21958 | 16895 | -- | 723 | 64751 | -- | 68978 |

E Estimated.
S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

JOHN DAY RIVER BASIN--Continued

14-0480. JOHN DAY RIVER AT McDONALD FERRY, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 5170 | 530 | 7400 | 1420 | 18 | 69 | 920 | C 13 | 32 |
| 2.. | 5220 | 452 | 6370 | 1360 | 22 | 81 | 1060 | C 13 | 37 |
| 3.. | 5640 | 476 | 7250 | 1310 | 15 | 53 | 1180 | C 13 | 41 |
| 4.. | 5270 | 416 | 5920 | 1330 | 50 | 180 | 1130 | C 13 | 40 |
| 5.. | 4400 | 267 | 3170 | 1450 | 28 | 110 | 1160 | C 13 | 41 |
| 6.. | 3890 | 151 | 1590 | 1790 | 41 | 198 | 1270 | C 13 | 45 |
| 7.. | 3640 | 120 | 1180 | 2150 | 44 | 255 | 1210 | C 13 | 42 |
| 8.. | 3730 | 124 | 1250 | 2520 | 57 | 388 | 1110 | C 13 | 39 |
| 9.. | 3840 | 116 | 1200 | 2470 | 62 | 413 | 1030 | C 13 | 36 |
| 10.. | 3820 | 99 | 1020 | 2280 | 60 | 369 | 980 | C 13 | 34 |
| 11.. | 3930 | 101 | 1070 | 2200 | 38 | 226 | 950 | C 13 | 33 |
| 12.. | 4430 | 130 | 1550 | 2150 | 31 | 180 | 980 | C 13 | 34 |
| 13.. | 4260 | 128 | 1470 | 1940 | 44 | 230 | 990 | C 13 | 35 |
| 14.. | 3710 | 81 | 811 | 1750 | 27 | 128 | 960 | C 13 | 34 |
| 15.. | 3200 | 72 | 622 | 1620 | 18 | 79 | 880 | C 12 | 29 |
| 16.. | 2880 | 56 | 435 | 1510 | 16 | 65 | 814 | C 12 | 26 |
| 17.. | 2810 | 54 | 410 | 1440 | 14 | 54 | 742 | C 12 | 24 |
| 18.. | 2940 | 53 | 421 | 1400 | 14 | 53 | 661 | C 12 | 21 |
| 19.. | 2850 | 48 | 369 | 1330 | 17 | 61 | 580 | C 9 | 14 |
| 20.. | 2520 | 52 | 354 | 1180 | 24 | 76 | 553 | C 9 | 13 |
| 21.. | 2260 | 39 | 238 | 1060 | 28 | 80 | 580 | C 9 | 14 |
| 22.. | 2130 | 31 | 178 | 1010 | 16 | 44 | 508 | C 9 | 12 |
| 23.. | 1990 | 32 | 172 | 960 | 13 | 34 | 466 | C 9 | 11 |
| 24.. | 1790 | 24 | 116 | 970 | 11 | 29 | 442 | C 9 | 11 |
| 25.. | 1680 | 26 | 118 | 950 | 11 | 28 | 418 | C 9 | 10 |
| 26.. | 1550 | 32 | 134 | 920 | 19 | 47 | 395 | C 9 | 10 |
| 27.. | 1580 | 16 | 68 | 850 | 18 | 41 | 387 | C 9 | 9 |
| 28.. | 1620 | 18 | 79 | 805 | 10 | 22 | 442 | C 9 | 11 |
| 29.. | 1590 | 22 | 94 | 823 | 11 | 24 | 402 | C 9 | 10 |
| 30.. | 1510 | 28 | 114 | 890 | 36 | 87 | 349 | C 9 | 8 |
| 31.. | -- | -- | -- | 880 | 32 | 76 | -- | -- | -- |
| Total | 95850 | -- | 45173 | 44718 | -- | 3780 | 23549 | -- | 756 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 342 | C 9 | 8 | 62 | 35 | 6 | 6.1 | C 19 | T |
| 2.. | 349 | C 9 | 8 | 62 | 31 | 5 | 5.2 | C 19 | T |
| 3.. | 349 | C 9 | 8 | 60 | 34 | 6 | 19 | C 19 | 1 |
| 4.. | 342 | C 9 | 8 | 55 | 33 | 5 | 14 | C 19 | 1 |
| 5.. | 342 | C 9 | 8 | 41 | C 22 | 2 | 20 | C 19 | 1 |
| 6.. | 387 | C 9 | 9 | 36 | C 22 | 2 | 35 | C 19 | 2 |
| 7.. | 442 | C 9 | 11 | 34 | C 22 | 2 | 24 | C 19 | 1 |
| 8.. | 418 | C 9 | 10 | 31 | C 22 | 2 | 17 | C 19 | 1 |
| 9.. | 387 | C 9 | 9 | 35 | C 22 | 2 | 20 | C 19 | 1 |
| 10.. | 342 | C 9 | 8 | 38 | C 22 | 2 | 38 | C 19 | 2 |
| 11.. | 299 | C 9 | 7 | 34 | C 22 | 2 | 43 | C 21 | 2 |
| 12.. | 258 | C 9 | 6 | 31 | C 22 | 2 | 43 | C 21 | 2 |
| 13.. | 234 | C 9 | 6 | 27 | C 22 | 2 | 43 | C 21 | 2 |
| 14.. | 234 | 25 | 16 | 19 | C 22 | 1 | 45 | C 21 | 3 |
| 15.. | 240 | 1750 | S 1090 | 19 | C 22 | 1 | 50 | C 21 | 3 |
| 16.. | 285 | 225 | 173 | 18 | C 22 | 1 | 50 | C 21 | 3 |
| 17.. | 246 | 45 | 30 | 17 | C 22 | 1 | 50 | C 21 | 3 |
| 18.. | 222 | 30 | 18 | 19 | C 22 | 1 | 64 | C 21 | 4 |
| 19.. | 204 | 40 | 22 | 21 | C 22 | 1 | 80 | C 21 | 5 |
| 20.. | 179 | 461 | S 224 | 18 | C 22 | 1 | 101 | C 21 | 6 |
| 21.. | 164 | 199 | 88 | 15 | C 22 | 1 | 111 | C 21 | 6 |
| 22.. | 150 | 150 | 61 | 14 | C 22 | 1 | 108 | C 21 | 6 |
| 23.. | 130 | 96 | 34 | 14 | C 22 | 1 | 95 | C 21 | 5 |
| 24.. | 118 | 64 | 20 | 13 | C 22 | 1 | 85 | C 21 | 5 |
| 25.. | 98 | 55 | 15 | 13 | C 22 | 1 | 85 | C 21 | 5 |
| 26.. | 92 | 38 | 9 | 13 | C 22 | 1 | 82 | C 21 | 5 |
| 27.. | 85 | 35 | 8 | 12 | C 22 | 1 | 80 | C 21 | 5 |
| 28.. | 85 | 31 | 7 | 8.4 | C 22 | T | 72 | C 21 | 4 |
| 29.. | 67 | 24 | 4 | 10 | C 22 | 1 | 77 | C 21 | 4 |
| 30.. | 62 | 41 | 7 | 17 | C 19 | 1 | 72 | C 21 | 4 |
| 31.. | 70 | 35 | 7 | 17 | C 19 | 1 | -- | -- | -- |
| Total | 7222 | -- | 1939 | 823.4 | -- | 57 | 1634.3 | -- | 92 |

Total discharge for year (cfs-days)..... 317722.7
Total load for year (tons)..... 146441

S Computed by subdividing day.
T Less than 0.50 ton.
C Composite period.

JOHN DAY RIVER BASIN--Continued

14-0480. JOHN DAY RIVER AT MCDONALD FERRY, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Mar. 10, 1966..... | 1700 | 48 | | 1210 | 1640 | 5360 | 17 | 27 | 50 | 83 | 99 | 99 | 100 | -- | -- | | | VPWC |
| Mar. 11..... | 1345 | 49 | | 3860 | 1660 | 17300 | 21 | 30 | 45 | 65 | 84 | 91 | 96 | 100 | -- | | | VPWC |
| Mar. 17..... | 0630 | 44 | | 3300 | 592 | 5270 | 36 | 47 | 65 | 85 | 99 | 99 | 99 | 99 | 100 | | | VPWC |
| Apr. 5..... | 1130 | 53 | | 4430 | 326 | 3900 | 26 | 34 | 48 | 67 | 81 | 87 | 90 | 98 | 100 | | | VPWC |

## 14-0765. DESCHUTES RIVER NEAR CULVER, OREG.

LOCATION.--Lat 44°29'56", long 121°19'12", temperature recorder at gaging station, 2.5 miles downstream from Squaw Creek, 6.0 miles southwest of Culver, Jefferson County, and at mile 120.6.
DRAINAGE AREA.--2,705 square miles.
RECORDS AVAILABLE.--Water temperatures: September 1952 to September 1957, January 1959 to August 1961, July 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 59°F June 16, 18, July 5; minimum, 38°F on many days during December and January.
EXTREMES, 1952-57, 1962-66.--Water temperatures: Maximum, 64°F July 13, 17, 1956; minimum, 35°F on several days during December 1964 and January 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 |
| Minimum .... | 52 | 52 | 52 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 49 | 49 | 49 | 49 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 42 | -- | 46 |
| Minimum .... | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 41 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 42 | 42 | 42 | 41 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 41 | 42 | 42 | 42 | 41 |
| Minimum .... | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 42 | 42 | 42 | 41 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 41 | 42 | 41 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 38 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 41 | 40 | 39 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 |
| Minimum .... | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 41 | 40 | 41 | 40 | 39 | 40 | 39 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 47 | 46 | 44 | 45 | 46 | 46 | 45 | 45 | 46 | 48 | 48 | 49 | 50 | 52 | 52 | 52 | 52 | 46 |
| Minimum .... | 42 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 45 | 45 | 44 | 45 | 46 | 46 | 46 | 44 | 43 | 44 | 45 | 45 | 44 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 50 | 51 | 50 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 51 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 54 | 53 | 53 | 52 | 52 | 51 | 51 | 53 | 52 | 54 | 53 | 53 | 53 | 52 | 53 | 53 | -- | 52 |
| Minimum .... | 51 | 51 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 51 | 51 | 49 | 51 | 51 | 51 | 51 | 49 | 49 | 50 | 50 | 50 | 50 | 51 | 52 | 51 | 50 | 50 | 50 | 51 | -- | 51 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 55 | 56 | 55 | 55 | 55 | 55 | 56 | 55 | 55 | 55 | 54 | 53 | 53 | 54 | 55 | 55 | 55 | 56 | 55 | 54 | 55 | 55 | 56 | 55 | 54 | 54 | 54 | 54 | 53 | 55 |
| Minimum .... | 51 | 52 | 53 | 53 | 54 | 54 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 53 | 53 | 52 | 53 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 56 | 58 | 58 | 57 | 56 | 56 | 55 | 55 | 56 | 56 | 56 | 57 | 59 | 58 | 59 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 57 | 57 | 57 | 56 | -- | 56 |
| Minimum .... | 52 | 52 | 53 | 53 | 55 | 57 | 56 | 55 | 55 | 54 | 53 | 52 | 53 | 54 | 53 | 55 | 55 | 55 | 55 | 54 | 54 | 53 | 54 | 53 | 53 | 54 | 54 | 55 | 54 | 54 | -- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 56 | 57 | 58 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 57 |
| Minimum .... | 56 | 55 | 55 | 55 | 55 | 56 | 56 | 55 | 55 | 55 | 55 | 56 | 55 | 55 | 55 | 55 | 55 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 53 | 54 | 53 | 54 | 54 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 55 | 54 | 54 | 54 | 53 | 54 | 54 | 56 |
| Minimum .... | 54 | 54 | 54 | 54 | 54 | 54 | 56 | 55 | 45 | 45 | 45 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | -- | 53 |
| Minimum .... | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 52 | 51 | 52 | 51 | 52 | 51 | 51 | 51 | 51 | -- | 52 |

DESCHUTES RIVER BASIN--Continued

## 14-0874. CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OREG.

LOCATION.--Lat 44°29'33", long 121°17'50", temperature recorder at gaging station, 800 feet below Opal Springs, 4.8 miles southwest of Culver, Jefferson County, and at mile 6.7.
DRAINAGE AREA.--4,300 square miles, approximately, of which 500 square miles is probably noncontributing.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 56°F on many days during June to September; minimum, 49°F Apr. 4-6.
EXTREMES, 1963-66.--Water temperatures: Maximum, 59°F on many days during June and July 1964; minimum, 39°F Dec. 29, 30, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| Minimum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | -- | 53 |
| Minimum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | -- | 53 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 52 | 51 | 51 | 51 |
| Minimum .... | 52 | 52 | 52 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| Minimum .... | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | -- | -- | -- | 52 |
| Minimum .... | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | -- | -- | -- | 52 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 |
| Minimum .... | 52 | 52 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 51 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 51 | 49 | 50 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | -- | 52 |
| Minimum .... | 52 | 52 | 51 | 49 | 49 | 49 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | -- | 51 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 |
| Minimum .... | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 |
| Minimum .... | 55 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 56 | 56 | 56 | 56 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 56 | 56 | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 56 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 56 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | -- | 55 |
| Minimum .... | 55 | 55 | 55 | 55 | 55 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | -- | 55 |

## 14-0915. METOLIUS RIVER NEAR GRANDVIEW, OREG.

LOCATION (revised).--Lat 44°37'33", long 121°28'55", temperature recorder at gaging station, 1.0 mile upstream from maximum controlled pool of Lake Billy Chinook, 9.0 miles northwest of Grandview, Jefferson County, 15.0 miles northwest of Culver, and at mile 13.6.
DRAINAGE AREA.--316 square miles, hydrologic drainage boundary uncertain owing to ground-water exchange.
RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 53°F May 25; minimum, 37°F Jan. 19-21.
EXTREMES, 1952-66.--Water temperatures: Maximum, 56°F July 5, 1957; minimum, 37°F Jan. 30, 31, 1963, Jan. 19-21, 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 45 |
| Minimum .... | 43 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 45 | 44 | 43 | 43 | 44 | 44 | 44 | 42 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 43 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | -- | 43 |
| Minimum .... | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 42 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 41 |
| Minimum .... | 41 | 42 | 42 | 43 | 43 | 42 | 43 | 42 | 41 | 42 | 41 | 42 | 41 | 41 | 39 | 39 | 38 | 39 | 39 | 39 | 41 | 39 | 39 | 41 | 40 | 40 | 40 | 41 | 40 | 39 | 39 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 39 | 39 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 |
| Minimum .... | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 41 | 41 | 42 | 42 | 41 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 39 | 40 | 39 | 38 | 40 | 38 | 40 | 40 | 40 | 41 | 42 | 41 | 41 | 42 | 42 | 42 | 41 | 42 | 42 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 45 | 46 | 43 |
| Minimum .... | 40 | 39 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 41 | 40 | 42 | 42 | 42 | 41 | 41 | 40 | 41 | 41 | 41 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 45 | 44 | 46 | 46 | 47 | 47 | 46 | 44 | 45 | 45 | 46 | 47 | 46 | 48 | 48 | 47 | 47 | 46 | 48 | 48 | -- | 46 |
| Minimum .... | 43 | 42 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | 42 | 43 | 43 | 42 | 41 | 41 | 42 | 43 | 43 | 43 | 44 | 44 | 43 | 42 | 43 | 42 | 44 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 50 | 49 | 48 | 49 | 48 | 50 | 48 | 48 | 48 | 46 | 47 | 47 | 49 | 50 | 50 | 51 | 52 | 50 | 49 | 50 | 52 | 53 | 51 | 51 | 51 | 50 | 51 | 49 | 49 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 45 | 43 | 44 | 45 | 44 | 43 | 45 | 44 | 43 | 44 | 45 | 44 | 44 | 45 | 46 | 47 | 45 | 44 | 46 | 47 | 47 | 46 | 46 | 47 | 47 | 45 | 45 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 49 | 51 | 51 | 49 | 49 | 49 | 50 | 50 | 49 | 50 | 52 | 52 | 52 | 52 | 51 | 52 | 51 | 51 | 49 | 49 | 50 | 50 | 51 | 52 | 52 | 51 | 50 | 50 | -- | 50 |
| Minimum .... | 45 | 45 | 45 | 45 | 44 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 46 | 46 | 46 | 47 | 46 | 46 | 47 | 45 | 46 | 45 | 46 | 45 | 45 | 46 | 46 | 47 | 44 | 44 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 47 | 49 | 51 | 51 | 51 | 51 | 51 | 50 | 52 | 51 | 50 | 50 | 49 | 49 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 52 | 52 | 51 | 52 | 51 |
| Minimum .... | 46 | 45 | 45 | 45 | 45 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 52 | 51 | 52 | 52 | 49 | 51 | 50 | 50 | 49 | 48 | 49 | 49 | 50 | 49 | 49 | 48 | 48 | 48 | 49 | 50 |
| Minimum .... | 46 | 46 | 47 | 47 | 46 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 46 | 45 | 46 | 45 | 45 | 45 | 45 | 44 | 45 | 46 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 50 | 50 | 50 | 50 | 48 | 49 | 49 | 49 | 48 | 47 | 46 | 47 | 47 | 49 | 48 | 47 | 48 | 49 | 49 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 47 | -- | 48 |
| Minimum .... | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 45 | 45 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | -- | 45 |

DESCHUTES RIVER BASIN--Continued

## 14-1030. DESCHUTES RIVER AT MOODY, NEAR BIGGS, OREG.

LOCATION.--Lat 45°37'20", long 120°54'05", temperature recorder at gaging station in Sherman County at Moody, Wasco County, 4 miles southwest of Biggs, and at mile 1.4.
DRAINAGE AREA.--10,500 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1911 to July 1912, December 1952 to February 1954.
Water temperatures: December 1952 to February 1954, November 1954 to September 1958, June 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F July 28, 29, Aug. 7; minimum, 42°F on several days during January and February.
EXTREMES, 1952-58, 1962-66.--Water temperatures: Maximum, 72°F July 12, 13, 1964; minimum, 33°F Dec. 30 1955.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 55 | 55 | 56 | 57 | 57 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 |
| Minimum .... | 55 | 54 | 55 | 55 | 54 | 55 | 56 | 56 | 55 | 55 | 54 | 54 | 54 | 55 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 52 | 53 | 53 | 52 | 51 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 48 | 48 | 48 | 47 | -- | 51 |
| Minimum .... | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 53 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 47 |
| Minimum .... | 47 | 47 | 48 | 48 | 48 | 49 | 49 | 50 | 50 | 50 | 49 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 43 | 44 | 43 | 44 | 44 | 46 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 |
| Minimum .... | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 43 | 43 | 43 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | -- | -- | -- | 44 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | -- | -- | 44 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 44 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 48 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 46 | 47 | 47 | 48 | 49 | 51 | 52 | 52 | 52 | 52 | 52 | 48 |
| Minimum .... | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 45 | 46 | 47 | 48 | 47 | 47 | 45 | 45 | 47 | 46 | 45 | 45 | 45 | 46 | 47 | 48 | 49 | 50 | 50 | 51 | 50 | 46 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 51 | 50 | 50 | 51 | 52 | 53 | 52 | 52 | 51 | 51 | 50 | 50 | 51 | 53 | 53 | 52 | 50 | 50 | 50 | 51 | 54 | 54 | 54 | 55 | 54 | 54 | 54 | 54 | 55 | -- | 52 |
| Minimum .... | 51 | 50 | 49 | 49 | 49 | 50 | 51 | 50 | 50 | 50 | 50 | 49 | 48 | 49 | 50 | 51 | 50 | 48 | 47 | 49 | 48 | 50 | 52 | 52 | 53 | 51 | 50 | 51 | 51 | 52 | -- | 50 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 58 | 59 | 59 | 59 | 57 | 57 | 58 | 57 | 55 | 55 | 54 | 53 | 52 | 52 | 55 | 56 | 56 | 57 | 57 | 56 | 57 | 58 | 60 | 60 | 60 | 59 | 59 | 58 | 57 | 57 |
| Minimum .... | 54 | 55 | 56 | 57 | 57 | 57 | 54 | 54 | 56 | 55 | 53 | 53 | 53 | 51 | 51 | 50 | 51 | 53 | 54 | 55 | 56 | 54 | 54 | 56 | 57 | 59 | 57 | 56 | 57 | 56 | 55 | 55 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 55 | 58 | 60 | 60 | 59 | 59 | 61 | 60 | 59 | 59 | 61 | 63 | 64 | 65 | 64 | 64 | 63 | 62 | 60 | 60 | 61 | 59 | 61 | 63 | 65 | 65 | 63 | 63 | -- | 61 |
| Minimum .... | 54 | 52 | 54 | 54 | 56 | 58 | 57 | 57 | 58 | 58 | 57 | 56 | 57 | 59 | 60 | 61 | 60 | 59 | 60 | 58 | 57 | 56 | 57 | 57 | 57 | 59 | 60 | 61 | 59 | 58 | -- | 58 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 59 | 59 | 63 | 64 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 64 | 65 | 64 | 65 | 67 | 67 | 66 | 66 | 67 | 67 | 67 | 66 | 66 | 66 | 67 | 68 | 68 | 67 | 66 | 65 |
| Minimum .... | 59 | 57 | 56 | 57 | 59 | 61 | 59 | 61 | 61 | 61 | 60 | 61 | 59 | 61 | 61 | 61 | 61 | 62 | 62 | 61 | 61 | 62 | 63 | 63 | 61 | 61 | 62 | 62 | 63 | 63 | 62 | 61 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 67 | 67 | 67 | 67 | 67 | 68 | 67 | 67 | 67 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 66 | 66 | 65 | 64 | 63 | 63 | 64 | 64 | 63 | 63 | 63 | 63 | 62 | 64 | 66 |
| Minimum .... | 61 | 62 | 62 | 63 | 63 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 62 | 62 | 62 | 63 | 62 | 61 | 62 | 61 | 60 | 60 | 60 | 60 | 61 | 60 | 60 | 60 | 60 | 59 | 59 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 65 | 66 | 67 | 67 | 66 | 65 | 65 | 65 | 65 | 63 | 62 | 60 | 58 | 59 | 62 | 63 | 63 | 61 | 62 | 63 | 64 | 64 | 62 | 62 | 62 | 62 | 62 | 63 | 61 | -- | 63 |
| Minimum .... | 60 | 61 | 62 | 62 | 63 | 63 | 62 | 61 | 61 | 61 | 61 | 58 | 58 | 57 | 57 | 58 | 60 | 60 | 58 | 58 | 59 | 61 | 61 | 60 | 59 | 59 | 59 | 58 | 59 | 59 | -- | 60 |

## 14-1057. COLUMBIA RIVER NEAR THE DALLES, OREG.
(International Hydrological Decade River station and Irrigation network station)

LOCATION.--Lat 45°36'10", long 121°10'40", at The Dalles Dam, 3.2 miles upstream from gaging station, and 2.6 miles northeast of The Dalles, Wasco County.
DRAINAGE AREA.--237,000 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to Septemher 1966.
Water temperatures: December 1950 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 143 ppm Jan. 9-27; minimum, 76 ppm May 11 to June 2, June 25 to July 14.
Hardness: Maximum, 96 ppm Jan. 9 to Feb. 21; minimum, 59 ppm May 11 to June 2.
Specific conductance: Maximum daily, 264 micromhos Jan. 17; minimum daily, 122 micromhos June 5, 6.
Water temperatures: Maximum, 69°F on several days during August and September; minimum, 39°F Jan. 28-30.
EXTREMES, 1950-66.--Dissolved solids: Maximum, 163 ppm Dec. 2-11, 14, 1955; minimum, 59 ppm May 27 to June 16, 1965.
Hardness: Maximum, 104 ppm Dec. 21-31, 1952; minimum, 38 ppm May 18-31, 1958.
Specific conductance: Maximum daily, 324 micromhos Dec. 7, 1955; minimum daily, 97 micromhos June 11, 1964.
Water temperatures: Maximum (1950-64, 1965-66), 81°F Aug. 12, 13, 1958; minimum, freezing point on several days during winter months.
REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-22, 1965.. | 109100 | 9.1 | | 21 | 6.9 | 9.6 | 1.3 | 94 | 0 | 19 | 4.0 | 0.3 | 1.0 | 0.00 | A 118 | 0.16 | 34760 | 81 | 3 | 0.5 | 205 | 7.6 |
| Oct. 23-Nov. 1... | 102700 | -- | | -- | -- | 13 | -- | 105 | 0 | -- | -- | -- | -- | -- | 138 | .19 | 38270 | 89 | 2 | .6 | 236 | 7.7 |
| Nov. 2-22..... | 106700 | -- | | -- | -- | 11 | -- | 99 | 0 | -- | -- | -- | -- | -- | 126 | .17 | 36300 | 85 | 3 | .5 | 218 | 7.7 |
| Nov. 23-Dec. 8... | 109200 | -- | | -- | -- | 11 | -- | 102 | 0 | -- | -- | -- | -- | -- | 129 | .18 | 38030 | 87 | 3 | .5 | 225 | 7.9 |
| Dec. 9-27..... | 115800 | -- | | -- | -- | 11 | -- | 104 | 0 | -- | -- | -- | -- | -- | 128 | .17 | 40020 | 90 | 4 | .5 | 228 | 7.9 |
| Dec. 28-Jan. 8, 1965..... | 118700 | -- | | -- | -- | 11 | -- | 110 | 0 | -- | -- | -- | -- | -- | 138 | .19 | 44230 | 93 | 2 | .5 | 230 | 7.7 |
| Jan. 9-27..... | 116300 | 13 | | 25 | 8.0 | 12 | 1.8 | 107 | 0 | 23 | 5.5 | .3 | 1.3 | .01 | 143 | .19 | 44900 | 96 | 8 | .5 | 240 | 7.8 |
| Jan. 28-Feh. 21.. | 120900 | -- | | -- | -- | 10 | -- | 106 | 0 | -- | -- | -- | -- | -- | 137 | .19 | 44720 | 96 | 9 | .4 | 235 | 7.7 |
| Feb. 22-Mar. 21.. | 137500 | -- | | -- | -- | 8.8 | -- | 105 | 0 | -- | -- | -- | -- | -- | 134 | .18 | 49750 | 93 | 6 | .4 | 223 | 7.9 |
| Mar. 22-25..... | 129000 | -- | | -- | -- | 8.2 | -- | 95 | 0 | -- | -- | -- | -- | -- | 129 | .18 | 44930 | 85 | 7 | .4 | 207 | 7.9 |
| Mar. 26-Apr. 9... | 148000 | -- | | -- | -- | 8.8 | -- | 90 | 0 | -- | -- | -- | -- | -- | 124 | .17 | 49550 | 81 | 7 | .4 | 198 | 7.5 |
| Apr. 10-29..... | 147400 | 12 | | 18 | 5.4 | 6.3 | 1.4 | 76 | 0 | 15 | 2.5 | .4 | .7 | .00 | A 99 | .13 | 39400 | 64 | 1 | .3 | 164 | 7.5 |
| Apr. 30-May 10... | 205700 | -- | | 20 | 5.2 | 5.8 | -- | 78 | 0 | -- | -- | -- | -- | -- | 97 | .13 | 53870 | 72 | 8 | .3 | 167 | 7.5 |
| May 11-June 2.... | 290100 | -- | | 17 | 4.0 | 3.6 | -- | 63 | 0 | -- | -- | -- | -- | -- | 76 | .10 | 59530 | 59 | 7 | .2 | 134 | 7.5 |
| June 3-24..... | 333300 | -- | | 19 | 4.4 | 3.5 | -- | 70 | 0 | -- | -- | -- | -- | -- | 97 | .13 | 87290 | 66 | 8 | .2 | 144 | 7.4 |
| June 25-July 14.. | 285400 | -- | | 18 | 4.0 | 3.5 | -- | 64 | 0 | -- | -- | -- | -- | -- | 76 | .10 | 58560 | 62 | 9 | .2 | 143 | 7.3 |
| July 15-Aug. 4... | 232100 | 6.4 | | 20 | 4.6 | 3.5 | .8 | 78 | 0 | 12 | 1.0 | .3 | .3 | .00 | 88 | .12 | 55150 | 69 | 5 | .2 | 143 | 7.5 |
| Aug. 5-31..... | 128700 | -- | | 20 | 5.0 | 5.0 | -- | 74 | 0 | -- | -- | -- | -- | -- | 90 | .12 | 31270 | 70 | 9 | .3 | 153 | 7.6 |
| Sept. 1-30..... | 98970 | 5.8 | | 20 | 5.9 | 7.8 | 1.3 | 84 | 0 | 17 | 4.0 | .3 | .6 | -- | 104 | .14 | 27790 | 74 | 5 | .4 | 180 | 7.4 |
| Weighted average | -- | -- | | -- | -- | 6.7 | -- | 83 | -- | -- | -- | -- | -- | -- | 105 | 0.14 | 46000 | 75 | 7 | 0.3 | 177 | 7.5 |
| Time-weighted average..... | 161900 | -- | | -- | -- | 7.8 | -- | 88 | -- | -- | -- | -- | -- | -- | 112 | -- | -- | 79 | 6 | 0.4 | 190 | 7.6 |
| Tons per day... | -- | -- | | -- | -- | 2910 | -- | 36400 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

A Calculated from determined constituents.

COLUMBIA RIVER MAIN STEM--Continued

14-1057. COLUMBIA RIVER NEAR THE DALLES, OREG.--Continued

Analyses of additional samples

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Feb. 21, 1966.... | 102000 | 11 | -- | 24 | 8.0 | 9.2 | 1.6 | 104 | 0 | 20 | 4.8 | 0.4 | 0.9 | | 130 | 0.18 | 35800 | 93 | 8 | | 223 | 7.8 |
| Mar. 25..... | 119000 | 12 | -- | 23 | 5.9 | 7.5 | 1.6 | 91 | 0 | 19 | 3.2 | .3 | 1.3 | | 117 | .16 | 37590 | 82 | 7 | | 193 | 7.7 |
| Apr. 29..... | 168000 | 8.9 | 0.16 | 19 | 5.0 | 5.9 | 1.1 | 78 | 0 | 15 | 2.0 | .3 | .3 | | 97 | .13 | 44000 | 68 | 4 | | 163 | 7.8 |
| May 23..... | 278000 | 7.8 | .24 | 17 | 4.0 | 3.2 | .7 | 65 | 0 | 13 | .5 | .2 | .0 | | 79 | .11 | 59300 | 59 | 6 | | 135 | 7.5 |
| June 22..... | 316000 | 5.2 | .21 | 18 | 4.0 | 3.2 | .8 | 66 | 0 | 12 | 1.5 | .3 | .3 | | 77 | .10 | 65700 | 61 | 7 | | 136 | 7.4 |

Chemical analyses, in parts per million

| Date of Collection | Aluminum (Al) | Manganese (Mn) | Nickel (Ni) | Chromium (Cr) | Copper (Cu) | Zinc (Zn) | Strontium (Sr) | Lithium (Li) |
|---|---|---|---|---|---|---|---|---|
| Apr. 29, 1966 | 0.2 | 0.03 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.00 |
| May 23..... | .2 | .06 | | .00 | .00 | .04 | .10 | .01 |
| June 22..... | .2 | .06 | | .01 | .00 | .03 | .12 | .01 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | -- | 253 | 217 | 229 | 238 | 224 | -- | 166 | 130 | 141 | 143 | 169 |
| 2..... | 188 | 235 | 220 | 230 | 240 | 219 | 205 | 172 | 128 | 142 | 142 | 167 |
| 3..... | 193 | 230 | 227 | 257 | 244 | 225 | 209 | 172 | 123 | 141 | 146 | 164 |
| 4..... | 197 | 223 | 224 | 246 | 242 | 226 | 212 | 172 | 123 | 142 | 148 | 167 |
| 5..... | 192 | 226 | 220 | 237 | 244 | 226 | 205 | 171 | 122 | 141 | 150 | 176 |
| 6..... | 187 | 226 | 221 | 238 | 255 | 227 | 205 | 166 | 122 | 143 | 154 | 178 |
| 7..... | 191 | 226 | 213 | 229 | 247 | 220 | 199 | 170 | 124 | 144 | 150 | 175 |
| 8..... | 195 | 234 | 221 | 236 | 240 | 222 | 191 | 167 | 129 | 146 | 150 | 174 |
| 9..... | 196 | 226 | 229 | 249 | 234 | 216 | 184 | 163 | 132 | 146 | 152 | 175 |
| 10..... | 201 | 222 | 230 | 251 | 234 | 217 | 176 | 156 | 134 | 148 | 150 | 172 |
| 11..... | 209 | 222 | 225 | 237 | 231 | 221 | 168 | 146 | 136 | 148 | 153 | 175 |
| 12..... | 210 | 217 | 236 | 235 | 235 | 220 | 165 | 136 | 138 | 145 | 156 | 182 |
| 13..... | 203 | 213 | 251 | 233 | 243 | 230 | 161 | 130 | 139 | 144 | 158 | 188 |
| 14..... | 204 | 216 | 235 | 236 | 240 | 226 | 170 | 129 | 139 | 145 | 157 | 184 |
| 15..... | 207 | 218 | 247 | 242 | 230 | 222 | 171 | 130 | 139 | 142 | 156 | 178 |
| 16..... | 205 | 207 | 229 | 252 | 224 | 218 | 166 | 126 | 138 | 142 | 156 | 177 |
| 17..... | 214 | 199 | 228 | 264 | 225 | 217 | 164 | 126 | 137 | 143 | 155 | 171 |
| 18..... | 216 | 196 | 231 | 252 | 222 | 223 | 161 | 125 | 136 | 142 | 158 | 174 |
| 19..... | 204 | 201 | 241 | 238 | 223 | 241 | 158 | 130 | 137 | 145 | 157 | 179 |
| 20..... | 203 | 203 | 229 | 237 | 228 | 239 | 156 | 133 | 135 | 140 | 156 | 184 |
| 21..... | 208 | 214 | 214 | 230 | 227 | 231 | 154 | 133 | 135 | 145 | 160 | 181 |
| 22..... | 212 | 224 | 217 | 230 | 217 | 222 | 154 | 135 | 136 | 145 | 159 | 178 |
| 23..... | 220 | 221 | 221 | 237 | 216 | 207 | 153 | 134 | 137 | 139 | 161 | 177 |
| 24..... | 233 | 220 | 219 | 240 | 214 | 201 | 161 | 135 | 139 | 138 | 164 | 179 |
| 25..... | 238 | 224 | 225 | 232 | 217 | 198 | 162 | 139 | 142 | 140 | 164 | 182 |
| 26..... | 230 | 227 | 232 | 232 | 219 | 197 | 162 | 138 | 140 | 140 | 163 | 183 |
| 27..... | 229 | 227 | 229 | 227 | 225 | 195 | 162 | 138 | 140 | 141 | 161 | 187 |
| 28..... | 232 | 233 | 214 | 233 | 230 | 191 | 162 | 138 | 140 | 143 | 165 | 188 |
| 29..... | 238 | 247 | 224 | 239 | -- | 189 | 162 | 140 | 139 | 145 | 168 | 192 |
| 30..... | 240 | 235 | 224 | 246 | -- | 191 | 167 | 135 | 140 | 144 | 167 | 193 |
| 31..... | 245 | -- | 220 | 245 | -- | 197 | -- | 133 | -- | 142 | 167 | -- |
| Average | 211 | 222 | 225 | 239 | 231 | 216 | 173 | 144 | 134 | 142 | 156 | 178 |

COLUMBIA RIVER MAIN STEM--Continued

14-1057. COLUMBIA RIVER NEAR THE DALLES, OREG.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | -- | 62 | 62 | 63 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | 62 | 62 | 62 | 61 | 60 | 59 | 58 | 60 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 60 |
| November | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 57 | 57 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 51 | 50 | 50 | 49 | 49 | 49 | -- | 54 |
| December | 49 | 48 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 45 |
| January | 42 | 42 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 39 | 39 | 39 | 40 | 42 |
| February | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | -- | -- | -- | 41 |
| March | 42 | 43 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 45 | 41 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 47 | 44 |
| April | -- | 48 | 48 | 49 | 49 | 50 | 51 | 52 | 52 | 53 | 53 | 52 | 51 | 51 | 52 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | -- | 51 | 53 | -- | 52 |
| May | 53 | 53 | 54 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 56 | 56 | 55 | 53 | 53 | 52 | -- | 52 | 53 | 54 | 55 | 55 | 54 | 55 | 55 | 56 | 57 | 57 | 58 | 58 | 58 | 55 |
| June | 56 | 56 | 56 | 54 | 54 | 57 | 57 | 57 | 57 | 58 | 58 | 58 | 57 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 59 | 60 | 60 | 60 | 60 | -- | 58 |
| July | 61 | 61 | 60 | 60 | 60 | 61 | 61 | 62 | 62 | 62 | 63 | 64 | 64 | 64 | 64 | 64 | 64 | 65 | 65 | 65 | 65 | 65 | 66 | 66 | 65 | 65 | 66 | 67 | 67 | 67 | 67 | 64 |
| August | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 69 | 68 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | -- | 66 | 66 | 68 |
| September | 66 | 66 | 67 | 67 | 68 | 69 | 69 | 69 | 68 | 68 | 67 | 68 | 67 | 66 | 66 | 65 | 66 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 66 | 66 | 67 | -- | 67 |

## KLICKITAT RIVER BASIN

### 14-1130. KLICKITAT RIVER NEAR PITT, WASH.

**LOCATION.**--Lat 45°45'30", long 121°12'30", temperature recorder at gaging station, 3.5 miles south of Pitt, Klickitat County, 5 miles upstream from Silvias Creek, and 7 miles upstream from mouth at Lyle.
**DRAINAGE AREA.**--1,297 square miles.
**RECORDS AVAILABLE.**--Chemical analyses: October 1958 to September 1959.
Water temperatures: August 1950 to September 1966.
**EXTREMES, 1965-66.**--Water temperatures: Maximum, 67°F Aug. 3; minimum, 34°F Dec. 15-17, 19, 20.
**EXTREMES, 1950-66.**--Water temperatures: Maximum, 69°F July 28, 29, 1958, July 18, 1960; minimum, freezing point Jan. 31 to Feb. 4, 1956, Jan. 3-7, 1959, Dec. 11, 12, 1961, Dec. 21, 22, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 52 | 52 | 53 | 54 | 54 | 54 | 54 | 54 | 52 | 50 | 51 | 51 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 46 | 46 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 50 |
| Minimum .... | 47 | 47 | 50 | 50 | 50 | 51 | 51 | 50 | 51 | 50 | 47 | 47 | 48 | 49 | 48 | 44 | 46 | 46 | 46 | 46 | 45 | 45 | 44 | 44 | 45 | 45 | 44 | 45 | 46 | 46 | 46 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | --- | 45 |
| Minimum .... | 46 | 46 | 47 | 47 | 46 | 45 | 45 | 46 | 46 | 43 | 43 | 44 | 44 | 44 | 45 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 39 | 39 | --- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 40 | 40 | 38 | 36 | 34 | 35 | 36 | 35 | 35 | 37 | 38 | 36 | 35 | 36 | 36 | 36 | 38 | 39 | 39 | 39 | 39 |
| Minimum .... | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 42 | 42 | 39 | 40 | 38 | 36 | 34 | 34 | 34 | 35 | 34 | 34 | 35 | 36 | 35 | 35 | 35 | 36 | 35 | 35 | 38 | 39 | 38 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 37 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 39 | 38 | 39 | 40 | 40 | 41 | 41 | 39 |
| Minimum .... | 38 | 37 | 35 | 35 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 39 | 38 | 38 | 38 | 39 | 40 | 40 | 39 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 41 | 41 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 45 | 45 | 43 | 42 | 42 | 42 | 43 | 43 | 42 | --- | --- | --- | 42 |
| Minimum .... | 38 | 39 | 40 | 40 | 40 | 41 | 41 | 40 | 41 | 40 | 40 | 40 | 39 | 40 | 39 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 40 | 41 | 41 | 42 | 41 | --- | --- | --- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 41 | 40 | 41 | 43 | 43 | 42 | 42 | 42 | 42 | 44 | 45 | 45 | 43 | 42 | 41 | 43 | 43 | 42 | 41 | 41 | 43 | 45 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 43 |
| Minimum .... | 39 | 38 | 39 | 38 | 40 | 41 | 42 | 42 | 42 | 40 | 39 | 42 | 43 | 43 | 41 | 40 | 39 | 41 | 41 | 39 | 38 | 38 | 39 | 40 | 41 | 43 | 43 | 43 | 43 | 44 | 44 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 46 | 47 | 47 | 48 | 48 | 47 | 47 | 46 | 46 | 46 | 46 | 48 | 50 | 49 | 48 | 46 | 47 | 47 | 48 | 49 | 48 | 49 | 49 | 47 | 48 | 49 | 48 | 51 | --- | 48 |
| Minimum .... | 44 | 43 | 43 | 43 | 44 | 45 | 45 | 46 | 46 | 45 | 45 | 44 | 43 | 45 | 47 | 46 | 46 | 44 | 44 | 45 | 44 | 45 | 46 | 46 | 47 | 44 | 44 | 45 | 44 | 46 | --- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 51 | 51 | 50 | 50 | 47 | 49 | 51 | 49 | 47 | 50 | 48 | 46 | 46 | 49 | 50 | 52 | 54 | 55 | 52 | 50 | 51 | 54 | 56 | 55 | 52 | 52 | 52 | 52 | 52 | 51 |
| Minimum .... | 46 | 47 | 48 | 48 | 49 | 47 | 45 | 46 | 48 | 46 | 45 | 45 | 44 | 44 | 44 | 45 | 44 | 46 | 47 | 49 | 49 | 46 | 45 | 48 | 50 | 51 | 49 | 47 | 49 | 49 | 47 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 50 | 53 | 56 | 54 | 55 | 57 | 57 | 56 | 54 | 55 | 57 | 57 | 60 | 60 | 58 | 59 | 58 | 56 | 55 | 55 | 56 | 57 | 58 | 60 | 62 | 62 | 60 | 58 | --- | 56 |
| Minimum .... | 45 | 44 | 46 | 46 | 48 | 50 | 52 | 51 | 52 | 52 | 51 | 49 | 51 | 52 | 54 | 55 | 55 | 52 | 54 | 52 | 52 | 50 | 51 | 50 | 50 | 53 | 56 | 57 | 54 | 53 | --- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 55 | 54 | 59 | 61 | 61 | 62 | 62 | 63 | 63 | 62 | 62 | 63 | 62 | 61 | 62 | 65 | 65 | 63 | 63 | 64 | 65 | 66 | 64 | 63 | 64 | 65 | 65 | 66 | 66 | 65 | 63 |
| Minimum .... | 55 | 52 | 51 | 51 | 55 | 56 | 55 | 57 | 58 | 58 | 57 | 58 | 57 | 58 | 58 | 58 | 58 | 59 | 59 | 57 | 58 | 59 | 59 | 60 | 57 | 57 | 59 | 59 | 60 | 61 | 61 | 57 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 66 | 67 | 66 | 65 | 65 | 65 | 65 | 66 | 64 | 64 | 63 | 65 | 64 | 65 | 65 | 63 | 64 | 63 | 62 | 62 | 61 | 60 | 62 | 62 | 62 | 62 | 61 | 59 | 60 | 59 | 63 |
| Minimum .... | 60 | 60 | 61 | 61 | 61 | 59 | 59 | 61 | 60 | 60 | 59 | 57 | 60 | 59 | 59 | 60 | 58 | 58 | 59 | 57 | 56 | 57 | 58 | 57 | 59 | 58 | 59 | 56 | 56 | 55 | 54 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 62 | 63 | 62 | 63 | 62 | 62 | 62 | 61 | 61 | 60 | 58 | 57 | 55 | 55 | 57 | 57 | 59 | 58 | 58 | 59 | 60 | 60 | 59 | 58 | 59 | 58 | 58 | 59 | 58 | --- | 59 |
| Minimum .... | 55 | 57 | 58 | 57 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 53 | 52 | 53 | 52 | 54 | 55 | 56 | 53 | 53 | 54 | 55 | 56 | 56 | 53 | 56 | 54 | 53 | 55 | 54 | --- | 55 |

## COLUMBIA RIVER MAIN STEM

### 14-1447. COLUMBIA RIVER AT VANCOUVER, WASH.

LOCATION.--Lat 45°37'15", long 122°40'20", temperature recorder at gaging station in control house at bridge of Interstate Highway 5 at south edge of Vancouver, 5.0 miles upstream from Willamette River, and at mile 106.5.
DRAINAGE AREA.--241,000 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: February 1964 to September 1965.
Sediment records: October 1963 to September 1966.
EXTREMES, 1965-66.--Sediment concentrations: Maximum daily, 151 ppm Jan. 12; minimum daily, 7 ppm on several days during February.
Sediment loads: Maximum daily, 148,000 tons May 11; mininum daily, 2,130 tons Dec. 26.
EXTREMES, 1963-66.--Sediment concentrations: Maximum daily, 2,660 ppm Dec. 25, 1964; minimum daily, 5 ppm on several days during October 1963.
Sediment loads: Maximum daily, 3,510,000 tons Oct. 20, 1963.

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (K cfs) | Suspended sediment | | Mean discharge (K cfs) | Suspended sediment | | Mean discharge (K cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 114 | 13 | 4000 | 96.9 | C 13 | 3400 | 132 | C 29 | 10300 |
| 2.. | 115 | 12 | 3730 | 109 | C 13 | 3830 | 139 | C 29 | 10900 |
| 3.. | 110 | C 10 | 2970 | 102 | C 13 | 3580 | 118 | C 29 | 9240 |
| 4.. | 110 | C 10 | 2970 | 110 | C 13 | 3860 | 109 | C 29 | 8530 |
| 5.. | 117 | C 10 | 3160 | 109 | C 13 | 3830 | 104 | C 10 | 2810 |
| 6.. | 116 | C 10 | 3130 | 102 | C 13 | 3580 | 97.9 | C 10 | 2640 |
| 7.. | 119 | C 10 | 3210 | 105 | C 12 | 3400 | 107 | C 10 | 2890 |
| 8.. | 102 | C 10 | 2750 | 97.8 | C 12 | 3170 | 114 | C 10 | 3080 |
| 9.. | 111 | C 10 | 3000 | 111 | C 12 | 3600 | 116 | C 10 | 3130 |
| 10.. | 113 | C 10 | 3050 | 116 | C 12 | 3760 | 116 | C 10 | 3130 |
| 11.. | 112 | C 10 | 3020 | 119 | C 12 | 3860 | 113 | C 10 | 3050 |
| 12.. | 111 | C 10 | 3000 | 126 | C 12 | 4080 | 115 | C 15 | 4660 |
| 13.. | 120 | C 10 | 3240 | 127 | C 12 | 4110 | 108 | C 15 | 4370 |
| 14.. | 125 | C 10 | 3370 | 119 | C 18 | 5780 | 116 | C 15 | 4700 |
| 15.. | 136 | C 10 | 3670 | 113 | C 18 | 5490 | 130 | C 15 | 5260 |
| 16.. | 129 | C 10 | 3480 | 115 | C 18 | 5590 | 132 | C 15 | 5350 |
| 17.. | 120 | C 10 | 3240 | 119 | C 18 | 5780 | 137 | C 15 | 5550 |
| 18.. | 117 | C 10 | 3160 | 122 | C 18 | 5930 | 124 | C 15 | 5020 |
| 19.. | 121 | C 10 | 3270 | 116 | C 18 | 5640 | 122 | C 10 | 3290 |
| 20.. | 121 | C 10 | 3270 | 110 | C 18 | 5350 | 122 | C 10 | 3290 |
| 21.. | 124 | C 10 | 3350 | 108 | C 32 | 9330 | 110 | C 10 | 2970 |
| 22.. | 119 | C 10 | 3210 | 109 | C 32 | 9420 | 127 | C 10 | 3430 |
| 23.. | 110 | C 10 | 2970 | 118 | C 32 | 10200 | 121 | C 10 | 3270 |
| 24.. | 108 | C 15 | 4370 | 118 | C 32 | 10200 | 123 | C 10 | 3320 |
| 25.. | 111 | C 15 | 4500 | 134 | C 32 | 11600 | 103 | C 10 | 2780 |
| 26.. | 112 | C 15 | 4540 | 127 | C 32 | 11000 | | | |
| 27.. | 110 | C 15 | 4450 | 119 | C 32 | 10300 | 98.7 | C 8 | 2130 |
| 28.. | 109 | C 15 | 4410 | 105 | C 29 | 8220 | 105 | C 8 | 2270 |
| 29.. | 105 | C 15 | 4250 | 109 | C 29 | 8530 | 130 | C 8 | 2810 |
| 30.. | 93.9 | C 15 | 3800 | 120 | C 29 | 9400 | 132 | C 8 | 2850 |
| 31.. | 97.2 | C 13 | 3410 | -- | -- | -- | 130 | C 8 | 2810 |
| Total | 3538.1 | -- | 107950 | 3411.7 | -- | 185820 | 3646.3 | -- | 131880 |

COLUMBIA RIVER MAIN STEM--Continued

14-1447. COLUMBIA RIVER AT VANCOUVER, WASH.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 128 | C 8 | 2760 | 118 | C 14 | 4460 | 152 | C 15 | 6160 |
| 2 | 126 | C 10 | 3400 | 113 | C 14 | 4270 | 175 | C 15 | 7090 |
| 3 | 124 | C 10 | 3350 | 120 | C 14 | 4540 | 142 | C 15 | 5750 |
| 4 | 128 | C 10 | 3460 | 128 | C 14 | 4840 | 120 | C 15 | 4860 |
| 5 | 129 | C 10 | 3480 | 130 | C 14 | 4910 | 136 | C 15 | 5510 |
| 6 | 152 | 24 | 9850 | 133 | C 10 | 3590 | 150 | C 8 | 3240 |
| 7 | 166 | 50 | 22400 | 130 | C 10 | 3510 | 100 | C 8 | 2160 |
| 8 | 153 | 75 | 31000 | 127 | C 10 | 3430 | 93.0 | C 8 | 2010 |
| 9 | 158 | 100 | 42700 | 134 | C 10 | 3620 | 133 | C 8 | 2870 |
| 10 | 140 | 120 | 45400 | 138 | C 10 | 3730 | 160 | C 8 | 3460 |
| 11 | 137 | 135 | 49900 | 138 | C 10 | 3730 | 153 | C 8 | 3300 |
| 12 | 143 | 151 | 58300 | 138 | C 10 | 3730 | 165 | C 8 | 3560 |
| 13 | 145 | 75 | 29400 | 134 | C 8 | 2890 | 150 | C 12 | 4860 |
| 14 | 150 | 28 | 11300 | 128 | C 8 | 2760 | 140 | C 12 | 4540 |
| 15 | 151 | 26 | 10600 | 126 | C 8 | 2720 | 151 | C 12 | 4890 |
| 16 | 145 | 24 | 9400 | 128 | C 8 | 2760 | 169 | C 12 | 5480 |
| 17 | 126 | 22 | 7480 | 131 | C 8 | 2830 | 166 | C 12 | 5380 |
| 18 | 129 | 19 | 6620 | 130 | C 8 | 2810 | 162 | C 12 | 5250 |
| 19 | 131 | 16 | 5660 | 129 | C 8 | 2790 | 163 | C 12 | 5280 |
| 20 | 135 | 15 | 5470 | 132 | C 7 | 2490 | 145 | C 12 | 4700 |
| 21 | 132 | 13 | 4630 | 115 | C 7 | 2170 | 144 | C 12 | 4670 |
| 22 | 131 | 13 | 4600 | 113 | C 7 | 2140 | 159 | C 12 | 5150 |
| 23 | 121 | 13 | 4250 | 118 | C 7 | 2230 | 158 | C 12 | 5120 |
| 24 | 121 | 13 | 4250 | 127 | C 7 | 2400 | 145 | C 12 | 4700 |
| 25 | 120 | 17 | 5510 | 132 | C 7 | 2490 | 140 | C 12 | 4540 |
| 26 | 120 | 22 | 7130 | 94.7 | C 8 | 2050 | 143 | C 12 | 4630 |
| 27 | 122 | 17 | 5600 | 148 | C 15 | 5990 | 134 | C 18 | 6510 |
| 28 | 125 | 12 | 4050 | 144 | C 15 | 5830 | 130 | C 18 | 6320 |
| 29 | 127 | 12 | 4110 | --- | --- | --- | 141 | C 18 | 6850 |
| 30 | 132 | C 14 | 4990 | --- | --- | --- | 157 | C 18 | 7630 |
| 31 | 114 | C 14 | 4310 | --- | --- | --- | 179 | C 18 | 8700 |
| Total | 4161 | --- | 415360 | 3616 | --- | 96190 | 4555.0 | --- | 155170 |

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 184 | C 18 | 8940 | 158 | C 18 | 7680 | 344 | 79 | 73400 |
| 2 | 200 | C 18 | 9720 | 152 | C 18 | 7390 | 347 | 78 | 73100 |
| 3 | 190 | C 17 | 8720 | 166 | C 18 | 8070 | 338 | 78 | 71200 |
| 4 | 155 | C 17 | 7110 | 158 | C 18 | 7680 | 349 | 75 | 70700 |
| 5 | 162 | C 17 | 7440 | 169 | C 18 | 8210 | 359 | 72 | 69800 |
| 6 | 170 | C 17 | 7800 | 186 | C 18 | 9040 | 363 | 68 | 66600 |
| 7 | 163 | C 17 | 7480 | 227 | 30 | 18400 | 369 | 71 | 70700 |
| 8 | 164 | C 17 | 7530 | 263 | 50 | 35500 | 373 | 74 | 74500 |
| 9 | 161 | C 17 | 7390 | 300 | 75 | 60700 | 377 | 76 | 77400 |
| 10 | 167 | C 24 | 10800 | 330 | 100 | 89100 | 383 | 78 | 80700 |
| 11 | 155 | C 24 | 10000 | 377 | 145 | 148000 | 387 | 79 | 82500 |
| 12 | 181 | C 24 | 11700 | 325 | 100 | 87700 | 407 | 80 | 87900 |
| 13 | 208 | C 24 | 13500 | 297 | 62 | 49700 | 415 | 75 | 84000 |
| 14 | 201 | C 24 | 13000 | 350 | 61 | 57600 | 407 | 70 | 76900 |
| 15 | 172 | C 24 | 11100 | 342 | 60 | 55400 | 394 | 66 | 70200 |
| 16 | 170 | C 24 | 11000 | 297 | 59 | 47300 | 378 | 59 | 60200 |
| 17 | 144 | C 15 | 5830 | 287 | 51 | 39500 | 351 | 54 | 51200 |
| 18 | 134 | C 15 | 5430 | 279 | 43 | 32400 | 336 | 50 | 45400 |
| 19 | 147 | C 15 | 5950 | 260 | 36 | 25300 | 330 | 46 | 41000 |
| 20 | 163 | C 15 | 6600 | 252 | 29 | 19700 | 328 | 43 | 38100 |
| 21 | 166 | C 15 | 6720 | 247 | 30 | 20000 | 314 | 40 | 33900 |
| 22 | 162 | C 15 | 6560 | 266 | 31 | 22300 | 328 | 37 | 32800 |
| 23 | 177 | C 15 | 7170 | 281 | 32 | 24300 | 330 | 40 | 35600 |
| 24 | 162 | C 17 | 7440 | 284 | 36 | 27600 | 326 | 44 | 38700 |
| 25 | 139 | C 17 | 6380 | 294 | 40 | 31800 | 303 | 43 | 35200 |
| 26 | 162 | C 17 | 7440 | 278 | 38 | 28500 | 310 | 42 | 35200 |
| 27 | 156 | C 17 | 7160 | 269 | 35 | 25400 | 323 | 41 | 35800 |
| 28 | 165 | C 17 | 7570 | 265 | 40 | 28600 | 311 | 40 | 33600 |
| 29 | 173 | C 17 | 7940 | 287 | 48 | 37200 | 306 | 40 | 33000 |
| 30 | 172 | C 17 | 7890 | 297 | 56 | 44900 | 288 | 37 | 28800 |
| 31 | --- | --- | --- | 327 | 64 | 56500 | --- | --- | --- |
| Total | 5025 | --- | 249310 | 8270 | --- | 1161470 | 10474 | --- | 1708100 |

C Composite period.

COLUMBIA RIVER MAIN STEM--Continued

14-1447. COLUMBIA RIVER AT VANCOUVER, WASH--Continued

Suspended sediment, water year October 1963 to September 1964--Continued

| | JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 288 | | 34 | 26400 | 226 | C | 24 | 14600 | 120 | C | 18 | 5830 |
| 2 | 289 | | 31 | 24200 | 222 | C | 24 | 14400 | 124 | C | 18 | 6030 |
| 3 | 284 | | 28 | 21500 | 199 | C | 24 | 12900 | 108 | C | 18 | 5250 |
| 4 | 292 | | 25 | 19700 | 212 | C | 24 | 13700 | 101 | C | 9 | 2450 |
| 5 | 298 | | 23 | 18500 | 188 | C | 24 | 12200 | 103 | C | 9 | 2500 |
| 6 | 305 | | 27 | 22200 | 164 | C | 24 | 10600 | 107 | C | 9 | 2600 |
| 7 | 294 | | 31 | 24600 | 163 | C | 16 | 7040 | 106 | C | 9 | 2580 |
| 8 | 294 | | 36 | 28600 | 157 | C | 16 | 6780 | 101 | C | 9 | 2450 |
| 9 | 294 | | 33 | 26200 | 185 | C | 16 | 7990 | 110 | C | 9 | 2670 |
| 10 | 292 | | 30 | 23700 | 170 | C | 16 | 7340 | 109 | C | 9 | 2650 |
| 11 | 299 | | 26 | 21000 | 185 | C | 16 | 7990 | 120 | C | 19 | 6160 |
| 12 | 298 | | 28 | 22500 | 183 | C | 16 | 7910 | 110 | C | 19 | 5640 |
| 13 | 306 | | 30 | 24800 | 160 | C | 16 | 6910 | 102 | C | 19 | 5230 |
| 14 | 297 | | 30 | 24100 | 150 | C | 12 | 4860 | 110 | C | 19 | 5640 |
| 15 | 302 | | 30 | 24500 | 158 | C | 12 | 5120 | 116 | C | 19 | 5950 |
| 16 | 295 | | 30 | 23900 | 165 | C | 12 | 5350 | 113 | C | 19 | 5800 |
| 17 | 283 | C | 31 | 23700 | 157 | C | 12 | 5090 | 105 | C | 19 | 5390 |
| 18 | 276 | C | 31 | 23100 | 149 | C | 12 | 4830 | 105 | C | 22 | 6240 |
| 19 | 275 | C | 31 | 23000 | 144 | C | 12 | 4670 | 114 | C | 22 | 6770 |
| 20 | 279 | C | 31 | 23400 | 145 | C | 12 | 4700 | 110 | C | 22 | 6530 |
| 21 | 279 | C | 31 | 23400 | 114 | C | 15 | 4620 | 108 | C | 22 | 6420 |
| 22 | 272 | C | 31 | 22800 | 106 | C | 15 | 4290 | 105 | C | 22 | 6240 |
| 23 | 262 | C | 31 | 21900 | 130 | C | 15 | 5260 | 100 | C | 22 | 5940 |
| 24 | 254 | C | 46 | 31500 | 128 | C | 15 | 5180 | 97.7 | C | 22 | 5800 |
| 25 | 261 | C | 46 | 32400 | 129 | C | 15 | 5220 | 98.3 | C | 18 | 4780 |
| 26 | 245 | C | 46 | 30400 | 116 | C | 15 | 4700 | 99.6 | C | 18 | 4840 |
| 27 | 240 | C | 46 | 29800 | 114 | C | 15 | 4620 | 94.8 | C | 18 | 4610 |
| 28 | 255 | C | 46 | 31700 | 101 | C | 18 | 4910 | 107 | C | 18 | 5200 |
| 29 | 259 | C | 46 | 32200 | 99.8 | C | 18 | 4850 | 107 | C | 18 | 5200 |
| 30 | 228 | C | 46 | 28300 | 97.7 | | 18 | 4750 | 109 | C | 18 | 5300 |
| 31 | 221 | C | 24 | 14300 | 106 | C | 18 | 5150 | --- | | --- | --- |
| Total | 8616 | | --- | 768300 | 4723.5 | | --- | 218530 | 3220.4 | | --- | 148690 |

Total discharge for year (K cfs-days)..... 63257.0
Total load for year (tons)..... 5346770

C Composite period.

## 14-1448. MIDDLE FORK WILLAMETTE RIVER NEAR OAKRIDGE, OREG.

LOCATION.--Lat 43°35'35", long 122°27'10", temperature recorder at gaging station, 0.2 mile downstream from Cone Creek, 6.8 miles upstream from Hills Creek Dam, 10 miles south of Oakridge, Lane County, and at mile 241.3.
DRAINAGE AREA.--258 square miles, including those of Gold and Buck Creeks.
RECORDS AVAILABLE.--Water temperatures: October 1958 to January 1959, September 1959 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F Aug. 1-3; minimum, freezing point Dec. 15-19.
EXTREMES, 1958-64, 1965-66.--Water temperatures: Maximum, 70°F Aug. 1-3, 1966; minimum, freezing point on several days during January and February 1962, Jan. 12, 1963, Dec. 15-19, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | 56 | 56 | 56 | 55 | 56 | 51 | 55 | 50 | 48 | 50 | 50 | 49 | 52 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 48 | 51 | 51 | 51 | 49 | 52 |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 46 | 47 | 46 | 46 | 44 | 47 | 48 | 44 | 44 | 46 | 46 | 47 | 45 | 44 | 45 | 45 | 44 | 45 | 45 | 45 | 48 | 47 | 46 | 45 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 50 | 51 | 49 | 47 | 47 | 49 | 49 | 46 | 46 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 46 | 47 | 45 | 45 | 44 | 43 | 41 | 42 | 41 | 40 | 42 | -- | 46 |
| Minimum .... | 43 | 44 | 46 | 48 | 46 | 45 | 46 | 46 | 47 | 44 | 45 | 46 | 47 | 44 | 45 | 44 | 45 | 44 | 44 | 45 | 45 | 43 | 42 | 42 | 40 | 40 | 40 | 38 | 36 | 38 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 44 | 43 | 44 | 45 | 46 | 46 | 45 | 42 | 44 | 41 | 41 | 40 | 39 | 36 | 35 | 34 | 35 | 35 | 35 | 36 | 37 | 36 | 36 | 37 | 37 | 37 | 38 | 38 | 40 | 36 | 39 |
| Minimum .... | 38 | 42 | 40 | 42 | 43 | 42 | 43 | 41 | 40 | 40 | 39 | 39 | 37 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 34 | 34 | 36 | 36 | 37 | 37 | 36 | 36 | 36 | 34 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 37 | 39 | 40 | 40 | -- | -- | 42 | 40 | 40 | 41 | 40 | 40 | 41 | 42 | 40 | 40 | 40 | 38 | 38 | 38 | 39 | 38 | 40 | 40 | 40 | 40 | 38 | 40 | 40 | -- | 40 |
| Minimum .... | 35 | 36 | 37 | 39 | 39 | -- | -- | 40 | 39 | 38 | 38 | 38 | 37 | 40 | 39 | 38 | 37 | 34 | 34 | 36 | 36 | 38 | 37 | 37 | 37 | 36 | 36 | 37 | 38 | 37 | -- | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 42 | 42 | 44 | 42 | 44 | 41 | 40 | 42 | 41 | 42 | 40 | 40 | 43 | 43 | 43 | 40 | 41 | 45 | 44 | 45 | 46 | 44 | 43 | 42 | 44 | 43 | -- | -- | -- | 42 |
| Minimum .... | 37 | 37 | 39 | 39 | 41 | 40 | 40 | 38 | 38 | 38 | 37 | 38 | 36 | 37 | 38 | 35 | 36 | 35 | 38 | 39 | 37 | 40 | 40 | 39 | 40 | 40 | 41 | 39 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 40 | 43 | 44 | 45 | 42 | 43 | 44 | 44 | 46 | 45 | 47 | 47 | 46 | 44 | 41 | 43 | 46 | 43 | 41 | 43 | 46 | 48 | 49 | 50 | 50 | 50 | 50 | 50 | 48 | 50 | 45 |
| Minimum .... | 38 | 36 | 36 | 35 | 39 | 40 | 39 | 41 | 43 | 42 | 41 | 44 | 44 | 43 | 41 | 39 | 37 | 40 | 40 | 40 | 38 | 36 | 38 | 39 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 52 | 52 | 52 | 48 | 47 | 46 | 46 | 45 | 49 | 52 | 54 | 52 | 50 | 48 | 49 | 45 | 49 | 53 | 54 | 55 | 55 | 49 | 51 | 50 | 51 | 53 | -- | 50 |
| Minimum .... | 43 | 44 | 42 | 42 | 42 | 43 | 44 | 43 | 44 | 44 | 42 | 42 | 41 | 41 | 44 | 43 | 42 | 40 | 38 | 40 | 42 | 41 | 42 | 43 | 45 | 43 | 40 | 40 | 38 | 41 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 54 | 54 | 52 | 50 | 54 | 54 | 54 | 53 | 54 | 51 | 49 | 52 | 46 | 50 | 55 | 57 | 57 | 58 | 51 | 53 | 55 | 59 | 60 | 54 | 55 | 56 | 57 | 48 | 49 | 54 |
| Minimum .... | 42 | 43 | 44 | 44 | 45 | 45 | 43 | 45 | 47 | 45 | 43 | 43 | 44 | 42 | 42 | 41 | 41 | 42 | 44 | 45 | 46 | 43 | 41 | 45 | 46 | 48 | 46 | 44 | 46 | 44 | 43 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 49 | 52 | 58 | 59 | 55 | 57 | 59 | 60 | 57 | 54 | 61 | 63 | 64 | 63 | 64 | 62 | 63 | 61 | 61 | 57 | 60 | 56 | 62 | 64 | 65 | 67 | 64 | 64 | 63 | -- | 60 |
| Minimum .... | 42 | 43 | 43 | 43 | 44 | 49 | 49 | 49 | 50 | 50 | 47 | 47 | 48 | 50 | 51 | 52 | 52 | 50 | 53 | 51 | 50 | 49 | 50 | 48 | 47 | 49 | 52 | 53 | 51 | 48 | -- | 49 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 61 | 66 | 67 | 62 | 60 | 65 | 61 | 64 | 63 | 60 | 60 | 64 | 65 | 65 | 67 | 68 | 67 | 65 | 63 | 59 | 58 | 61 | 65 | 66 | 67 | 69 | 69 | 65 | 69 | 63 |
| Minimum .... | 49 | 49 | 46 | 49 | 51 | 52 | 52 | 52 | 53 | 54 | 53 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 52 | 51 | 51 | 52 | 51 | 51 | 51 | 50 | 52 | 53 | 54 | 54 | 52 | 52 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 70 | 70 | 69 | 69 | 66 | 68 | 67 | 68 | 68 | 67 | 67 | 67 | 68 | 69 | 68 | 68 | 68 | 67 | 67 | 67 | 68 | 67 | 64 | 59 | 56 | 59 | 59 | 58 | 61 | 59 | 66 |
| Minimum .... | 53 | 54 | 55 | 55 | 53 | 53 | 53 | 53 | 54 | 53 | 54 | 52 | 52 | 53 | 53 | 54 | 54 | 54 | 55 | 52 | 52 | 52 | 52 | 55 | 50 | 52 | 52 | 53 | 48 | 49 | 48 | 53 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 64 | 66 | 66 | 66 | 64 | 59 | 64 | 63 | 62 | 56 | 58 | 56 | 51 | 58 | 61 | 58 | 54 | 60 | 62 | 64 | 61 | 62 | 58 | 56 | 59 | 60 | 60 | 61 | 61 | -- | 60 |
| Minimum .... | 51 | 49 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 50 | 50 | 48 | 48 | 49 | 47 | 50 | 50 | 51 | 50 | 49 | 50 | 52 | 50 | 52 | 51 | 51 | 47 | 47 | 48 | 49 | -- | 50 |

WILLAMETTE RIVER BASIN--Continued

14-1449. HILLS CREEK ABOVE HILLS CREEK RESERVOIR, NEAR OAKRIDGE, OREG.

LOCATION.--43°40'50", long 122°22'10", temperature recorder at gaging station, 0.2 mile downstream from Tufti Creek, 0.7 mile upstream from Hills Creek Reservoir, 6.5 miles southeast of Oakridge, Lane County, and at mile 4.1.
DRAINAGE AREA.--52.7 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1958 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F Aug. 2; minimum, 33°F Dec. 17.
EXTREMES, 1958-66.--Water temperatures: Maximum, 69°F July 28, 1960, July 30, 1965; minimum (1958-64, 1965-66), freezing point Jan. 19-25, 1962.
REMARKS.--Recorder stopped May 17-24; temperature range, 45°F to 55°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 53 | 54 | 53 | 53 | 54 | 53 | 53 | 53 | 52 | 53 | 53 | 50 | 49 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 49 | 49 | 51 |
| Minimum .... | 49 | 50 | 50 | 51 | 52 | 50 | 49 | 50 | 51 | 50 | 51 | 48 | 51 | 50 | 47 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 49 | 48 | 47 | 47 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 51 | 51 | 49 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 45 | 45 | 45 | 44 | 43 | 43 | 41 | 41 | 41 | 40 | 41 | 41 | -- | 45 |
| Minimum .... | 46 | 49 | 48 | 49 | 47 | 44 | 45 | 46 | 45 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 40 | 40 | 40 | 39 | 39 | 40 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 42 | 42 | 41 | 41 | 40 | 39 | 37 | 35 | 34 | 36 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 38 | 37 | 36 | 39 |
| Minimum .... | 40 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 39 | 37 | 35 | 34 | 33 | 34 | 34 | 34 | 35 | 35 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 37 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 38 | 37 | 37 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 |
| Minimum .... | 35 | 36 | 37 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 38 | 39 | 38 | 39 | 39 | 39 | 38 | 38 | 37 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 39 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | -- | -- | -- | 39 |
| Minimum .... | 38 | 37 | 38 | 38 | 39 | 39 | 38 | 37 | 35 | 35 | 36 | 36 | 35 | 37 | 37 | 36 | 37 | 37 | 38 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 40 | 39 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 40 | 39 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 44 | 43 | 41 | 42 | 41 | 42 | 44 | 43 | 42 | 42 | 42 | 45 | 44 | 45 | 46 | 46 | 46 | 46 | 45 | 46 | 43 |
| Minimum .... | 38 | 38 | 38 | 37 | 39 | 39 | 39 | 40 | 41 | 41 | 40 | 41 | 42 | 40 | 40 | 40 | 39 | 41 | 41 | 41 | 40 | 39 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 46 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 47 | 48 | 49 | 49 | 47 | 45 | 46 | 44 | 45 | 49 | 50 | 51 | 50 | 46 | 49 | 47 | 49 | 50 | -- | 47 |
| Minimum .... | 43 | 43 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 45 | 43 | 44 | 45 | 44 | 43 | 41 | 42 | 43 | 43 | 44 | 44 | 46 | 44 | 44 | 43 | 42 | 44 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 53 | 51 | 51 | 49 | 48 | 51 | 50 | 48 | 49 | 51 | 50 | 49 | 49 | 46 | 49 | -- | -- | -- | -- | -- | -- | -- | 55 | 57 | 52 | 50 | 53 | 54 | 49 | 49 | -- |
| Minimum .... | 45 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 47 | 46 | 45 | 46 | 46 | 45 | 45 | 46 | -- | -- | -- | -- | -- | -- | -- | 50 | 48 | 49 | 47 | 46 | 47 | 46 | 46 | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 50 | 54 | 57 | 53 | 55 | 57 | 56 | 53 | 53 | 57 | 60 | 62 | 63 | 62 | 61 | 63 | 60 | 60 | 57 | 60 | 55 | 59 | 61 | 62 | 64 | 59 | 61 | 61 | -- | 58 |
| Minimum .... | 45 | 45 | 45 | 45 | 46 | 50 | 50 | 50 | 51 | 49 | 49 | 48 | 49 | 51 | 53 | 55 | 53 | 53 | 54 | 53 | 52 | 52 | 52 | 51 | 50 | 52 | 55 | 54 | 54 | 52 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 52 | 60 | 64 | 64 | 59 | 60 | 64 | 61 | 64 | 63 | 60 | 61 | 61 | 64 | 64 | 66 | 66 | 64 | 64 | 66 | 66 | 66 | 61 | 64 | 65 | 65 | 67 | 67 | 65 | 66 | 63 |
| Minimum .... | 52 | 51 | 51 | 51 | 53 | 55 | 55 | 54 | 55 | 56 | 55 | 56 | 56 | 56 | 55 | 56 | 57 | 57 | 58 | 55 | 55 | 56 | 57 | 59 | 55 | 55 | 56 | 58 | 58 | 59 | 57 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 68 | 67 | 67 | 66 | 66 | 66 | 65 | 66 | 66 | 65 | 65 | 65 | 65 | 66 | 66 | 65 | 65 | 65 | 65 | 63 | 61 | 60 | 62 | 60 | 59 | 62 | 61 | 58 | 60 | 61 | 64 |
| Minimum .... | 58 | 59 | 60 | 60 | 59 | 58 | 58 | 59 | 60 | 59 | 60 | 57 | 57 | 58 | 58 | 59 | 59 | 59 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 56 | 54 | 54 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 62 | 64 | 64 | 64 | 63 | 62 | 62 | 62 | 61 | 59 | 57 | 56 | 55 | 57 | 59 | 59 | 57 | 57 | 57 | 60 | 59 | 59 | 58 | 58 | 57 | 56 | 57 | 58 | 57 | -- | 59 |
| Minimum .... | 55 | 55 | 57 | 58 | 58 | 58 | 57 | 57 | 57 | 56 | 56 | 53 | 53 | 54 | 53 | 54 | 54 | 54 | 54 | 52 | 54 | 56 | 55 | 55 | 55 | 56 | 52 | 52 | 53 | 54 | -- | 55 |

WILLAMETTE RIVER BASIN--Continued

## 14-1455. MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OREG.

LOCATION.--Lat 43°43'20", long 122°26'15", temperature recorder at gaging station, 90 feet upstream from highway bridge, 0.4 mile upstream from Salt Creek, 1.1 miles downstream from Hills Creek Dam, 2.3 miles southeast of Oakridge, Lane County, and at mile 231.4.
DRAINAGE AREA.--392 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1960 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 62°F Sept. 20; minimum, 40°F Feb. 9, 10.
EXTREMES, 1960-66.--Water temperatures: Maximum, 77°F Sept. 4, 1960; minimum (1960-61, 1962-66), 35°F Jan. 4, 1961.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 54 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | -- |
| Minimum .... | 53 | 53 | 54 | 54 | 54 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 53 | 53 | 52 | 52 | 51 | 51 | 51 | -- | 50 |
| Minimum .... | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 53 | 53 | 52 | 52 | 51 | 51 | 51 | 50 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 46 |
| Minimum .... | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 46 |
| Minimum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 45 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 42 | 42 | 41 | 42 | 42 | 43 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | 45 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 45 | 44 | 45 | 46 | 45 | 44 | 45 | 46 | 46 | 46 | 45 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 47 |
| Minimum .... | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 44 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 48 | 47 | 46 | 47 | -- | 52 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 43 | 44 | 44 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 48 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 55 |
| Minimum .... | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 48 | 49 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 49 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | -- | 59 |
| Minimum .... | 46 | 47 | 47 | 47 | 46 | 46 | 47 | 47 | 46 | 46 | 47 | 47 | 47 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 50 | 50 | 51 | 50 | 49 | 51 | 50 | 51 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 51 | 51 | 50 | 51 | 60 |
| Minimum .... | 46 | 47 | 48 | 48 | 47 | 48 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 47 | 47 | 48 | 48 | 48 | 47 | 48 | 57 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 51 | 52 | 51 | 52 | 53 | 53 | 53 | 53 | 52 | 51 | 51 | 50 | 50 | 51 | 51 | 50 | 51 | 51 | 50 | 52 | 51 | 60 |
| Minimum .... | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 52 | 53 | 54 | 55 | 56 | 57 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 60 | 60 | 62 | 56 | 57 | 57 | 52 | 53 | 56 | 58 | 58 | 58 | 58 | -- | 59 |
| Minimum .... | 51 | 51 | 51 | 51 | 50 | 51 | 53 | 54 | 55 | 55 | 56 | 57 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 54 | 53 | 56 | 51 | 51 | 51 | 51 | 56 | 56 | 56 | 57 | -- | 57 |

WILLAMETTE RIVER BASIN--Continued

## 14-1480. MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK, NEAR OAKRIDGE, OREG.

LOCATION.--Lat 43°48'05", long 122°33'35", temperature recorder at gaging station, 0.5 mile downstream from Whitehead Creek, 4.2 miles downstream from North Fork of Middle Fork Willamette River, 7 miles northwest of Oakridge, Lane County, and at mile 220.2.
DRAINAGE AREA.--924 square miles.
RECORDS AVAILABLE.--Water temperatures: September 1950 to October 1960, June 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F July 28, 29, Aug. 2-4; minimum, 35°F Dec. 17-20.
EXTREMES, 1950-60, 1961-66.--Water temperatures: Maximum, 74°F Aug. 3, 1961; minimum, freezing point Jan. 20-22, 1962.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 56 | 57 | 58 | 59 | 59 | 59 | 59 | 59 | 58 | 59 | 58 | 56 | 57 | 56 | 56 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 55 | 54 | 55 | 56 | 55 | 55 | 57 |
| Minimum .... | 53 | 53 | 53 | 54 | 54 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 53 | 52 | 52 | 53 | 54 | 53 | 53 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 55 | 54 | 54 | 54 | 53 | 54 | 54 | 53 | 53 | 52 | 53 | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 52 | 52 | 50 | 50 | 49 | 49 | 48 | 48 | 47 | 47 | -- | 52 |
| Minimum .... | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 51 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 52 | 50 | 50 | 49 | 49 | 48 | 48 | 47 | 46 | 46 | -- | 51 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 43 | 42 | 42 | 40 | 38 | 37 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 41 |
| Minimum .... | 45 | 45 | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 43 | 42 | 41 | 40 | 38 | 37 | 35 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 40 | 39 | 40 | 40 |
| Minimum .... | 39 | 39 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 38 | 37 | 36 | 37 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 41 | 41 | 42 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 42 | 41 | 41 | 43 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 43 | -- | -- | -- | 42 |
| Minimum .... | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 39 | 40 | 40 | 41 | 42 | 41 | 42 | 42 | 42 | 42 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 45 | 44 | 45 | 46 | 45 | 46 | 44 | 45 | 46 | 45 | 45 | 45 | 46 | 47 | 47 | 48 | 48 | 48 | 48 | 49 | 47 | 49 | 45 |
| Minimum .... | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 49 | 50 | 52 | 51 | 49 | 48 | 48 | 46 | 48 | 50 | 51 | 51 | 51 | 49 | 50 | 48 | 50 | 51 | -- | 49 |
| Minimum .... | 45 | 45 | 44 | 45 | 45 | 46 | 46 | 47 | 47 | 47 | 46 | 46 | 45 | 46 | 47 | 48 | 45 | 45 | 44 | 44 | 45 | 45 | 46 | 46 | 47 | 46 | 45 | 46 | 45 | 46 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 54 | 54 | 53 | 52 | 50 | 52 | 52 | 51 | 51 | 51 | 51 | 49 | 50 | 46 | 50 | 52 | 54 | 54 | 55 | 52 | 51 | 52 | 55 | 56 | 53 | 53 | 53 | 53 | 51 | 50 | 52 |
| Minimum .... | 47 | 48 | 49 | 48 | 48 | 48 | 47 | 47 | 48 | 47 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 48 | 48 | 48 | 46 | 46 | 47 | 49 | 50 | 48 | 47 | 49 | 48 | 47 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 50 | 51 | 54 | 56 | 54 | 56 | 57 | 57 | 55 | 54 | 56 | 58 | 60 | 60 | 60 | 59 | 60 | 59 | 58 | 56 | 58 | 55 | 59 | 59 | 60 | 62 | 59 | 60 | 60 | -- | 57 |
| Minimum .... | 47 | 47 | 47 | 47 | 48 | 51 | 51 | 51 | 52 | 52 | 50 | 49 | 50 | 52 | 53 | 54 | 54 | 52 | 54 | 52 | 52 | 51 | 52 | 50 | 50 | 52 | 54 | 55 | 52 | 52 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 52 | 57 | 59 | 62 | 60 | 58 | 60 | 60 | 62 | 63 | 59 | 60 | 60 | 62 | 63 | 64 | 64 | 63 | 63 | 64 | 64 | 64 | 61 | 63 | 64 | 64 | 66 | 66 | 63 | 65 | 62 |
| Minimum .... | 52 | 51 | 50 | 51 | 53 | 54 | 53 | 52 | 53 | 55 | 55 | 55 | 55 | 54 | 54 | 55 | 55 | 56 | 56 | 54 | 54 | 55 | 55 | 56 | 53 | 54 | 55 | 56 | 57 | 57 | 55 | 54 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 66 | 66 | 66 | 65 | 64 | 64 | 64 | 65 | 65 | 64 | 64 | 64 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 60 | 57 | 57 | 58 | 57 | 56 | 58 | 58 | 58 | 61 | 58 | 62 |
| Minimum .... | 56 | 57 | 57 | 58 | 56 | 55 | 56 | 56 | 57 | 56 | 57 | 56 | 55 | 56 | 55 | 56 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 53 | 54 | 54 | 55 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 59 | 59 | 59 | 58 | 56 | 58 | 58 | 58 | 57 | 58 | 59 | 58 | 60 | 61 | 61 | 60 | 61 | 62 | 63 | 60 | 60 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | -- | 59 |
| Minimum .... | 52 | 52 | 53 | 53 | 53 | 54 | 54 | 55 | 56 | 56 | 56 | 56 | 57 | 57 | 58 | 59 | 59 | 59 | 59 | 59 | 57 | 56 | 56 | 55 | 55 | 55 | 56 | 56 | 56 | 57 | -- | 56 |

## 14-1500. MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OREG.

LOCATION.--Lat 43°56'45", long 122°50'10", temperature recorder at gaging station, 0.6 mile upstream from Lost Creek, 2 miles northwest of Dexter, Lane County, 2.6 miles downstream from Dexter Dam, and at mile 201.2.
DRAINAGE AREA.--1,001 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1955 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 62°F Sept. 28, 30; minimum, 40°F Jan. 22-24.
EXTREMES, 1955-66.--Water temperatures: Maximum, 65°F on several days during September 1961; minimum, 38°F on several days during January and February 1957.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 60 | 60 | 60 | 60 | 59 | 59 | 60 | 59 | 59 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 59 |
| Minimum .... | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 58 | 58 | 58 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 51 | 50 | -- | 55 |
| Minimum .... | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 51 | 50 | 49 | -- | 55 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 42 | 42 | 45 |
| Minimum .... | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 46 | 46 | 46 | 45 | 44 | 44 | 43 | 43 | 42 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 43 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 42 | 42 | 44 | 43 | 42 | 44 | 44 | 43 | 44 | 43 | 43 | -- | -- | -- | 43 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 45 | 44 | 43 | 41 | 43 | 43 | 44 | 46 | 45 | 46 | 47 | 48 | 47 | 46 | 47 | 47 | 47 | 46 | 47 | 48 | 48 | 48 | 49 | 50 | 50 | 50 | 51 | 51 | 52 | 47 |
| Minimum .... | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 47 | 48 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 51 | 52 | 52 | 52 | 51 | 50 | 51 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 53 | 51 | 51 | 51 | 53 | 52 | 51 | 51 | 52 | 51 | 53 | 53 | -- | 51 |
| Minimum .... | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 53 | 53 | 53 | 53 | 52 | 54 | 54 | 53 | 53 | 54 | 52 | 52 | 53 | 51 | 53 | 53 | 54 | 54 | 55 | 52 | 54 | 53 | 54 | 55 | 51 | 53 | 53 | 54 | 51 | 52 | 53 |
| Minimum .... | 50 | 50 | 49 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 53 | 54 | 54 | 54 | 54 | 55 | 53 | 53 | 55 | 55 | 56 | 56 | 55 | 56 | 57 | 55 | 56 | 55 | 56 | 54 | 56 | 56 | 57 | 57 | 55 | 57 | 56 | -- | 55 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 53 | 57 | 57 | 57 | 56 | 57 | 57 | 57 | 56 | 57 | 56 | 56 | 55 | 57 | 57 | 58 | 58 | 57 | 58 | 59 | 59 | 59 | 57 | 59 | 59 | 59 | 59 | 59 | 59 | -- | 57 |
| Minimum .... | 53 | 53 | 53 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 54 | 53 | 54 | 54 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 55 | -- | 53 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 60 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | 59 |
| Minimum .... | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 57 | 58 | 57 | 57 | 58 | 58 | 59 | 58 | 59 | 59 | 60 | 60 | 61 | 60 | 61 | 61 | 61 | 62 | 61 | 62 | -- | 59 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 57 | 57 | 57 | 58 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 60 | -- | 57 |

WILLAMETTE RIVER BASIN--Continued

14-1503. FALL CREEK NEAR LOWELL, OREG.

LOCATION.--Lat 43°58'15", long 122°38'15", temperature recorder at gaging station, 280 feet downstream from North Fork, 8 miles northeast of Lowell, Lane County, and at mile 14.4.
DRAINAGE AREA.--118 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F July 29, Aug. 2-5; minimum, 33°F Dec. 17-21.
EXTREMES, 1963-66.--Water temperatures: Maximum, 71°F July 16, 17, 31, 1965; minimum, 33°F Dec. 17-21, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 54 | 53 | 52 | 52 | 52 | 50 | 48 | 49 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 50 | 50 | 50 | 50 |
| Minimum .... | 48 | 49 | 49 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 50 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 49 | 50 | 49 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 49 | 49 | 49 | 49 | 47 | 47 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 45 | 43 | 43 | 43 | 42 | 41 | -- | 47 |
| Minimum .... | 48 | 48 | 48 | 49 | 49 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 46 | 45 | 43 | 43 | 43 | 42 | 41 | 41 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 44 | 43 | 45 | 45 | 45 | 45 | 45 | 44 | 42 | 42 | 42 | 42 | 41 | 38 | 35 | 34 | 33 | 33 | 33 | 35 | 36 | 36 | 36 | 36 | 37 | 38 | 41 | 41 | 41 | 41 | 40 |
| Minimum .... | 41 | 42 | 43 | 43 | 45 | 45 | 45 | 44 | 42 | 42 | 42 | 42 | 41 | 38 | 35 | 34 | 33 | 33 | 33 | 33 | 33 | 35 | 36 | 35 | 35 | 36 | 37 | 38 | 41 | 41 | 39 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 42 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 39 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 |
| Minimum .... | 39 | 39 | 40 | 42 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 41 | 40 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | -- | 41 |
| Minimum .... | 40 | 40 | 40 | 41 | 41 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 48 | 44 |
| Minimum .... | 40 | 40 | 40 | 39 | 39 | 41 | 41 | 41 | 42 | 44 | 43 | 43 | 44 | 45 | 44 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 47 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 46 | 48 | 51 | 51 | 51 | 48 | 46 | 45 | 46 | 49 | 50 | 51 | 51 | 50 | 48 | 48 | 48 | 50 | -- | 48 |
| Minimum .... | 47 | 47 | 45 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 47 | 46 | 44 | 46 | 48 | 50 | 47 | 46 | 44 | 44 | 45 | 46 | 47 | 48 | 50 | 48 | 46 | 47 | 45 | 47 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 54 | 55 | 56 | 56 | 56 | 55 | 55 | 55 | 54 | 53 | 53 | 52 | 51 | 50 | 50 | 52 | 55 | 57 | 58 | 57 | 52 | 52 | 56 | 59 | 58 | 56 | 55 | 56 | 55 | 55 | 54 |
| Minimum .... | 49 | 50 | 52 | 54 | 55 | 53 | 52 | 54 | 54 | 52 | 50 | 52 | 51 | 50 | 49 | 48 | 48 | 51 | 53 | 54 | 52 | 51 | 50 | 51 | 54 | 56 | 53 | 52 | 53 | 52 | 51 | 52 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 55 | 58 | 58 | 60 | 62 | 63 | 62 | 58 | 59 | 61 | 63 | 66 | 66 | 64 | 64 | 63 | 60 | 60 | 60 | 60 | 59 | 60 | 62 | 65 | 64 | 61 | 60 | -- | 60 |
| Minimum .... | 50 | 51 | 51 | 51 | 52 | 56 | 56 | 56 | 58 | 58 | 56 | 54 | 56 | 58 | 60 | 62 | 61 | 59 | 60 | 57 | 57 | 56 | 57 | 56 | 55 | 57 | 60 | 60 | 58 | 56 | -- | 56 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 56 | 58 | 60 | 63 | 62 | 60 | 62 | 62 | 61 | 63 | 63 | 62 | 62 | 63 | 64 | 66 | 66 | 66 | 65 | 66 | 66 | 66 | 66 | 64 | 64 | 65 | 67 | 68 | 66 | 67 | 64 |
| Minimum .... | 56 | 55 | 54 | 56 | 58 | 60 | 58 | 57 | 59 | 59 | 59 | 60 | 60 | 60 | 59 | 61 | 61 | 62 | 63 | 60 | 60 | 61 | 61 | 62 | 59 | 59 | 60 | 62 | 62 | 63 | 62 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 68 | 68 | 68 | 68 | 66 | 66 | 66 | 67 | 67 | 65 | 65 | 64 | 66 | 65 | 66 | 64 | 65 | 64 | 65 | 62 | 61 | 59 | 59 | 59 | 58 | 58 | 59 | 59 | 58 | 59 | 64 |
| Minimum .... | 62 | 62 | 63 | 64 | 63 | 62 | 61 | 62 | 62 | 62 | 62 | 61 | 60 | 61 | 61 | 61 | 61 | 60 | 60 | 59 | 60 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 55 | 55 | 60 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 61 | 63 | 63 | 62 | 60 | 61 | 60 | 59 | 59 | 57 | 56 | 55 | 55 | 57 | 57 | 57 | 57 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 55 | 56 | 55 | -- | 58 |
| Minimum .... | 55 | 56 | 57 | 59 | 59 | 59 | 58 | 59 | 57 | 57 | 57 | 56 | 55 | 55 | 54 | 54 | 56 | 57 | 56 | 54 | 55 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | -- | 56 |

WILLAMETTE RIVER BASIN--Continued

## 14-1508. WINBERRY CREEK NEAR LOWELL, OREG.

LOCATION.--Lat 43°54'50", long 122°41'15", temperature recorder at gaging station, 0.9 mile upstream from Nelson Creek, 4.6 miles east of Lowell, Lane County, and at mile 4.4.
DRAINAGE AREA.--43.9 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F June 15; minimum, freezing point on several days during December.
EXTREMES, 1963-66.--Water temperatures: Maximum, 77°F June 15, 1966; minimum, freezing point on several days during December 1965.
REMARKS.--Recorder stopped Aug. 28 to Sept. 2; temperature range, 55°F to 65°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 56 | 56 | 56 | 57 | 57 | 58 | 58 | 58 | 56 | 59 | 56 | 58 | 57 | 54 | 51 | 52 | 53 | 54 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 54 | 55 | 55 | 53 | 55 |
| Minimum .... | 50 | 50 | 51 | 52 | 54 | 52 | 52 | 52 | 53 | 54 | 56 | 53 | 54 | 54 | 50 | 49 | 50 | 51 | 52 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 51 | 54 | 53 | 50 | 51 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 53 | 52 | 50 | 50 | 52 | 51 | 50 | 49 | 51 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 48 | 49 | 48 | 46 | 45 | 44 | 42 | 42 | 42 | 42 | 41 | -- | 49 |
| Minimum .... | 48 | 49 | 51 | 52 | 50 | 48 | 49 | 50 | 50 | 48 | 49 | 49 | 51 | 50 | 50 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 43 | 42 | 42 | 42 | 41 | 40 | 41 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 45 | 45 | 46 | 46 | 45 | 46 | 46 | 43 | 42 | 42 | 41 | 41 | 40 | 37 | 34 | 33 | 32 | 32 | 32 | 32 | 34 | 35 | 35 | 36 | 37 | 39 | 40 | 40 | 40 | 40 | 39 |
| Minimum .... | 41 | 43 | 43 | 44 | 45 | 45 | 45 | 43 | 41 | 41 | 41 | 41 | 40 | 37 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 34 | 36 | 37 | 39 | 40 | 40 | 38 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 40 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 40 | 39 | 37 | 36 | 38 | 38 | 39 | 40 | 41 | 41 | 40 | 42 | 42 | 41 | 41 |
| Minimum .... | 38 | 38 | 40 | 42 | 43 | 43 | 43 | 42 | 41 | 40 | 41 | 41 | 40 | 42 | 42 | 41 | 40 | 39 | 37 | 36 | 35 | 36 | 38 | 38 | 39 | 40 | 40 | 39 | 40 | 41 | 39 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 42 | 43 | 43 | 43 | 41 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 38 | 38 | 39 | 42 | 42 | 41 | 40 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 41 | 43 | 41 | 43 | 42 | 42 | 43 | 42 | 43 | 41 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 40 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 47 | 47 | 46 | 45 | 44 | 43 | 46 | 45 | 44 | 44 | 44 | 46 | 47 | 48 | 48 | 48 | 49 | 50 | 48 | 50 | 45 |
| Minimum .... | 39 | 39 | 39 | 39 | 40 | 42 | 41 | 43 | 44 | 44 | 43 | 45 | 46 | 45 | 43 | 42 | 41 | 43 | 43 | 43 | 42 | 42 | 42 | 43 | 44 | 44 | 46 | 46 | 46 | 45 | 46 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 48 | 50 | 51 | 52 | 52 | 52 | 50 | 50 | 49 | 48 | 47 | 49 | 52 | 55 | 54 | 52 | 48 | 49 | 46 | 49 | 53 | 54 | 55 | 52 | 50 | 52 | 50 | 53 | 55 | -- | 51 |
| Minimum .... | 47 | 46 | 44 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 47 | 46 | 43 | 46 | 48 | 50 | 46 | 44 | 43 | 44 | 45 | 46 | 46 | 47 | 50 | 47 | 44 | 46 | 44 | 47 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 59 | 59 | 60 | 60 | 56 | 60 | 59 | 58 | 56 | 58 | 54 | 52 | 54 | 50 | 54 | 58 | 62 | 63 | 64 | 59 | 58 | 58 | 64 | 68 | 62 | 62 | 62 | 62 | 58 | 58 | 59 |
| Minimum .... | 48 | 50 | 52 | 54 | 54 | 53 | 52 | 54 | 54 | 51 | 48 | 51 | 51 | 49 | 48 | 48 | 48 | 50 | 52 | 54 | 52 | 50 | 49 | 52 | 55 | 58 | 53 | 52 | 54 | 54 | 51 | 52 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 58 | 63 | 66 | 64 | 68 | 70 | 71 | 65 | 60 | 67 | 71 | 74 | 77 | 74 | 70 | 72 | 68 | 67 | 63 | 70 | 65 | 67 | 69 | 70 | 74 | 68 | 68 | 68 | -- | 67 |
| Minimum .... | 50 | 51 | 51 | 51 | 52 | 58 | 58 | 58 | 61 | 58 | 56 | 56 | 57 | 60 | 62 | 66 | 64 | 60 | 62 | 59 | 58 | 58 | 60 | 56 | 56 | 58 | 62 | 62 | 59 | 57 | -- | 58 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 57 | 62 | 66 | 70 | 64 | 65 | 68 | 67 | 64 | 70 | 66 | 64 | 63 | 69 | 67 | 72 | 72 | 70 | 70 | 71 | 72 | 72 | 70 | 70 | 70 | 72 | 74 | 74 | 71 | 73 | 68 |
| Minimum .... | 57 | 54 | 54 | 55 | 58 | 60 | 60 | 58 | 60 | 60 | 59 | 60 | 61 | 60 | 59 | 61 | 61 | 61 | 63 | 59 | 60 | 60 | 62 | 64 | 58 | 59 | 60 | 62 | 64 | 64 | 62 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 74 | 74 | 74 | 73 | 71 | 70 | 69 | 69 | 70 | 69 | 69 | 69 | 70 | 70 | 69 | 67 | 69 | 68 | 69 | 68 | 63 | 62 | 62 | 62 | 62 | 61 | 61 | -- | -- | -- | 68 |
| Minimum .... | 62 | 63 | 64 | 66 | 64 | 62 | 59 | 61 | 62 | 61 | 61 | 59 | 59 | 61 | 61 | 61 | 60 | 60 | 59 | 59 | 60 | 58 | 57 | 58 | 57 | 59 | 59 | 59 | -- | -- | -- | 60 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 65 | 66 | 67 | 67 | 66 | 63 | 65 | 64 | 64 | 62 | 59 | 58 | 58 | 60 | 62 | 62 | 60 | 59 | 60 | 62 | 61 | 60 | 60 | 59 | 60 | 59 | 58 | 60 | 60 | -- | 62 |
| Minimum .... | -- | -- | 59 | 59 | 60 | 60 | 59 | 60 | 59 | 58 | 59 | 55 | 54 | 56 | 54 | 58 | 58 | 55 | 55 | 54 | 56 | 57 | 56 | 57 | 56 | 57 | 54 | 53 | 55 | 56 | -- | 57 |

WILLAMETTE RIVER BASIN--Continued

14-1510. FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OREG.

LOCATION.--Lat 43°56'40", long 122°46'25", temperature recorder at gaging station, 10 feet upstream from highway bridge, 1.1 mile downstream from Fall Creek Dam, 2.3 miles southeast of town of Fall Creek, Lane County, and at mile 6.1.
DRAINAGE AREA.--186 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F Sept. 1, 2, 10; minimum, 33°F on several days during December.
EXTREMES, 1950-66.--Water temperatures: Maximum, 79°F July 28, 1958; minimum, 33°F Jan. 23, 24, 1962, and on several days during December 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 8 | 59 | 58 | 59 | 61 | 67 | 66 | 62 | 61 | 60 | 59 | 58 | 58 | 58 | 55 | 52 | 52 | 51 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 56 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 57 | 57 | 55 | 50 | 48 | 50 | 51 | 51 | 51 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 51 | 53 | 54 | 53 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 53 | 53 | 52 | 50 | 50 | 50 | 52 | 51 | 49 | 50 | 50 | 51 | 51 | 49 | 51 | 50 | 50 | 50 | 49 | 49 | 47 | 46 | 45 | 43 | 43 | 43 | 42 | 44 | -- | 49 |
| Minimum .... | 52 | 51 | 52 | 51 | 50 | 48 | 49 | 49 | 50 | 49 | 48 | 48 | 50 | 50 | 49 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 46 | 45 | 43 | 42 | 42 | 42 | 41 | 42 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 46 | 46 | 46 | 48 | 48 | 48 | 47 | 45 | 44 | 44 | 43 | 43 | 42 | -- | -- | 33 | 33 | 33 | 33 | 34 | 35 | 36 | 37 | 37 | 38 | 40 | 42 | 42 | 42 | 41 | 41 |
| Minimum .... | 42 | 44 | 45 | 45 | 46 | 47 | 47 | 45 | 43 | 43 | 43 | 43 | 42 | 40 | -- | -- | 33 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 35 | 37 | 38 | 40 | 42 | 41 | 39 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 41 | 42 | 43 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 43 |
| Minimum .... | 39 | 39 | 41 | 42 | 43 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 42 | 43 | 42 | 43 | 43 | 43 | 42 | 43 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 42 | 44 | 44 | 42 | 44 | 44 | 43 | 43 | 43 | 43 | -- | -- | -- | 43 |
| Minimum .... | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 43 | 42 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 44 | 43 | 43 | 43 | 44 | 43 | 45 | 44 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| Minimum .... | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 48 | 49 | 47 | 47 | 48 | 47 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 49 | 51 | 53 | 54 | 54 | 49 | 48 | 49 | 47 | 56 | 57 | -- | 49 |
| Minimum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 49 | 49 | 49 | 49 | 45 | 44 | 44 | 44 | 43 | 51 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 58 | 57 | 59 | 59 | 59 | 59 | 56 | 56 | 59 | 57 | 47 | 49 | 44 | 56 | 59 | 60 | 60 | 60 | 55 | 60 | 60 | 60 | 61 | 58 | 61 | 60 | 60 | 56 | 59 | 57 |
| Minimum .... | 51 | 51 | 52 | 53 | 52 | 51 | 51 | 53 | 53 | 52 | 52 | 45 | 45 | 44 | 44 | 44 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 53 | 53 | 54 | 54 | 54 | 54 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 60 | 60 | 62 | 62 | 61 | 61 | 61 | 62 | 59 | 59 | 62 | 63 | 62 | 62 | 60 | 61 | 61 | 60 | 61 | 61 | 62 | 61 | 62 | 62 | 62 | 63 | 61 | 62 | 62 | -- | 61 |
| Minimum .... | 53 | 54 | 55 | 55 | 54 | 55 | 55 | 55 | 56 | 56 | 55 | 55 | 55 | 55 | 57 | 56 | 57 | 57 | 57 | 58 | 58 | 57 | 57 | 58 | 57 | 58 | 58 | 59 | 59 | 59 | -- | 56 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 63 | 62 | 63 | 61 | 62 | 60 | 61 | 61 | 60 | 57 | 54 | 54 | 55 | 55 | 56 | 54 | 53 | 54 | 53 | 48 | 47 | 47 | 51 | 52 | 52 | 52 | 52 | 51 | 51 | 56 |
| Minimum .... | 58 | 58 | 59 | 59 | 58 | 58 | 59 | 59 | 58 | 59 | 55 | 53 | 53 | 54 | 54 | 54 | 53 | 52 | 53 | 52 | 47 | 47 | 47 | 47 | 47 | 51 | 52 | 51 | 51 | 51 | 51 | 54 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 52 | 52 | 49 | 49 | 49 | 49 | 51 | 51 | 52 | 52 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 54 | 56 | 57 | 58 | 60 | 62 | 63 | 69 | 54 |
| Minimum .... | 51 | 51 | 51 | 49 | 49 | 49 | 49 | 49 | 49 | 51 | 51 | 52 | 52 | 52 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 55 | 53 | 53 | 54 | 56 | 57 | 59 | 60 | 62 | 63 | 53 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 70 | 69 | 69 | 69 | 69 | 68 | 60 | 65 | 70 | 68 | 69 | 69 | 66 | 68 | 68 | 67 | 66 | 67 | 68 | 68 | 67 | 67 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | -- | 67 |
| Minimum .... | 67 | 67 | 67 | 67 | 67 | 67 | 57 | 57 | 58 | 65 | 66 | 66 | 66 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | -- | 65 |

## 14-1520. MIDDLE FORK WILLAMETTE RIVER AT JASPER, OREG.

LOCATION.--Lat 43°59'55", long 122°54'20", temperature recorder at gaging station, 25 feet downstream from highway bridge at Jasper, Lane County, 650 feet downstream from Hills Creek, and at mile 195.0.
DRAINAGE AREA.--1,340 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1953 to December 1962, October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 65°F June 27, July 4, 5; minimum, 39°F Dec. 24-26.
EXTREMES, 1953-62, 1963-66.--Water temperatures: Maximum, 69°F July 27, 28, 1958; minimum, 36°F Feb. 1-3, 16, 1956.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 59 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 60 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 59 | 59 |
| Minimum .... | 57 | 58 | 58 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 57 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 56 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 51 | 50 | 49 | 49 | 48 | -- | 54 |
| Minimum .... | 58 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 54 | 53 | 53 | 54 | 54 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 51 | 50 | 49 | 49 | 47 | 47 | -- | 54 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 47 | 49 | 49 | 49 | 48 | 46 | 45 | 45 | 45 | 45 | 44 | 43 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 44 |
| Minimum .... | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 46 | 45 | 45 | 44 | 45 | 44 | 43 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 39 | 39 | 39 | 40 | 40 | 41 | 41 | 40 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 41 | 42 | 41 | 42 | 42 | 43 | 41 |
| Minimum .... | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 44 | 43 | 44 | 44 | 43 | 44 | 43 | 44 | 43 | 43 | 47 | 45 | 44 | 46 | 46 | 46 | 45 | 45 | 45 | -- | -- | -- | 44 |
| Minimum .... | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 41 | 41 | 41 | 42 | 43 | 43 | 44 | 44 | 43 | 45 | 44 | 45 | 44 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 45 | 43 | 44 | 44 | 44 | 44 | 45 | 47 | 46 | 48 | 49 | 48 | 47 | 46 | 47 | 48 | 47 | 46 | 47 | 49 | 49 | 51 | 51 | 52 | 50 | 52 | 52 | 50 | 52 | 47 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 44 | 44 | 45 | 44 | 46 | 47 | 47 | 46 | 45 | 44 | 46 | 46 | 47 | 45 | 44 | 45 | 45 | 46 | 47 | 48 | 49 | 46 | 46 | 47 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 54 | 55 | 57 | 54 | 52 | 54 | 52 | 51 | 51 | 54 | 55 | 56 | 56 | 56 | 54 | 55 | 50 | 52 | 53 | 57 | 56 | 53 | 55 | 57 | 53 | 57 | 57 | -- | 54 |
| Minimum .... | 47 | 47 | 46 | 47 | 48 | 50 | 51 | 51 | 50 | 50 | 49 | 48 | 46 | 49 | 50 | 50 | 49 | 48 | 47 | 48 | 49 | 49 | 49 | 50 | 51 | 49 | 48 | 49 | 48 | 50 | -- | 49 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 58 | 59 | 57 | 57 | 59 | 59 | 57 | 56 | 59 | 55 | 54 | 56 | 51 | 57 | 58 | 60 | 60 | 61 | 55 | 58 | 57 | 60 | 60 | 57 | 59 | 59 | 60 | 55 | 57 | 58 |
| Minimum .... | 50 | 51 | 51 | 52 | 53 | 53 | 52 | 52 | 53 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 50 | 51 | 52 | 53 | 52 | 51 | 51 | 51 | 52 | 53 | 51 | 51 | 53 | 52 | 51 | 52 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 57 | 60 | 62 | 62 | 62 | 62 | 62 | 59 | 59 | 62 | 63 | 63 | 64 | 63 | 62 | 63 | 60 | 62 | 60 | 62 | 59 | 62 | 64 | 64 | 65 | 61 | 63 | 63 | -- | 62 |
| Minimum .... | 52 | 52 | 52 | 52 | 55 | 55 | 55 | 55 | 55 | 56 | 55 | 54 | 54 | 55 | 55 | 56 | 57 | 56 | 57 | 56 | 56 | 56 | 57 | 55 | 56 | 57 | 58 | 59 | 56 | 56 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 58 | 64 | 65 | 65 | 61 | 62 | 62 | 62 | 61 | 63 | 61 | 60 | 59 | 62 | 61 | 63 | 63 | 61 | 63 | 62 | 60 | 59 | 56 | 59 | 61 | 61 | 62 | 61 | 59 | 60 | 61 |
| Minimum .... | 58 | 57 | 56 | 57 | 57 | 57 | 56 | 56 | 56 | 57 | 56 | 56 | 56 | 56 | 55 | 56 | 55 | 55 | 55 | 54 | 54 | 52 | 51 | 52 | 51 | 53 | 53 | 54 | 54 | 53 | 53 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 60 | 60 | 59 | 58 | 59 | 58 | 59 | 59 | 59 | 59 | 60 | 60 | 60 | 60 | 59 | 60 | 60 | 61 | 58 | 57 | 59 | 57 | 59 | 57 | 59 | 61 | 61 | 63 | 61 | 59 |
| Minimum .... | 53 | 54 | 54 | 54 | 52 | 52 | 51 | 52 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 54 | 55 | 57 | 57 | 58 | 58 | 59 | 60 | 54 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 58 | 59 | 59 | 59 | 58 | 59 | 60 | 61 | 61 | 62 | 61 | 61 | 62 | 62 | 62 | 62 | 62 | -- | 60 |
| Minimum .... | 57 | 58 | 58 | 58 | 58 | 57 | 58 | 58 | 57 | 57 | 58 | 57 | 57 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 60 | 59 | 60 | 60 | 60 | 59 | 59 | 60 | 60 | -- | 58 |

WILLAMETTE RIVER BASIN--Continued

14-1575. COAST FORK WILLAMETTE RIVER NEAR GOSHEN, OREG.

LOCATION.--Lat 43°58'50", long 122°57'55", temperature recorder at gaging station 2.5 miles southeast of Goshen, Lane County, and at mile 6.4.
DRAINAGE AREA.--642 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 72°F Aug. 4, 5; minimum, 38°F Dec. 20, 21.
EXTREMES, 1961-66.--Water temperatures: Maximum (1961-64, 1965-66), 80°F July 24, 1962; minimum, freezing point, Jan. 12, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 60 | 60 | 60 | 61 | 62 | 62 | 62 | 61 | 61 | 60 | 61 | 61 | 60 | 58 | 57 | 57 | 58 | 58 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 59 |
| Minimum .... | 58 | 58 | 58 | 59 | 59 | 59 | 60 | 61 | 61 | 60 | 60 | 59 | 59 | 60 | 58 | 56 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 57 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 47 | 45 | 45 | 45 | -- | 52 |
| Minimum .... | 55 | 55 | 55 | 55 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 47 | 46 | 45 | 44 | 44 | -- | 51 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 43 | 42 | 40 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 42 | 44 | 43 | 42 | 41 | 43 |
| Minimum .... | 45 | 45 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 43 | 42 | 40 | 40 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 41 | 42 | 41 | 41 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 43 |
| Minimum .... | 41 | 41 | 41 | 42 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | -- | -- | 44 |
| Minimum .... | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | -- | -- | -- | 44 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 44 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 48 | 48 | 47 | 47 | 48 | 48 | 49 | 46 |
| Minimum .... | 44 | 43 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 45 | 44 | 45 | 46 | 45 | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 47 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 48 | 49 | 50 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 55 | 55 | 55 | 54 | 53 | 53 | 53 | 53 | 56 | 57 | 57 | 55 | 56 | 56 | 56 | 58 | -- | 53 |
| Minimum .... | 47 | 47 | 46 | 47 | 48 | 50 | 51 | 50 | 51 | 51 | 50 | 49 | 49 | 51 | 52 | 54 | 53 | 52 | 51 | 52 | 51 | 52 | 53 | 55 | 55 | 53 | 53 | 54 | 53 | 55 | -- | 51 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 62 | 63 | 63 | 62 | 62 | 62 | 62 | 60 | 60 | 60 | 59 | 57 | 56 | 56 | 60 | 61 | 63 | 65 | 65 | 60 | 60 | 63 | 66 | 66 | 63 | 62 | 63 | 63 | 60 | 61 |
| Minimum .... | 56 | 58 | 59 | 60 | 60 | 60 | 59 | 60 | 60 | 58 | 56 | 58 | 57 | 55 | 55 | 54 | 55 | 57 | 60 | 62 | 60 | 57 | 57 | 59 | 61 | 64 | 59 | 58 | 60 | 60 | 57 | 58 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 60 | 63 | 65 | 65 | 66 | 66 | 66 | 66 | 65 | 63 | 66 | 68 | 70 | 71 | 70 | 68 | 68 | 66 | 65 | 65 | 65 | 65 | 65 | 67 | 69 | 69 | 67 | 64 | -- | 66 |
| Minimum .... | 57 | 59 | 58 | 59 | 59 | 63 | 63 | 63 | 64 | 64 | 61 | 60 | 61 | 64 | 65 | 68 | 67 | 65 | 66 | 63 | 63 | 63 | 64 | 61 | 62 | 62 | 65 | 67 | 62 | 62 | -- | 63 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 62 | 62 | 66 | 69 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 64 | 65 | 66 | 68 | 69 | 69 | 68 | 68 | 68 | 69 | 69 | 67 | 68 | 69 | 70 | 71 | 71 | 70 | 67 |
| Minimum .... | 62 | 59 | 58 | 62 | 65 | 67 | 65 | 64 | 65 | 64 | 62 | 64 | 63 | 63 | 62 | 64 | 64 | 65 | 66 | 64 | 64 | 65 | 66 | 66 | 63 | 64 | 65 | 66 | 67 | 67 | 66 | 64 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 71 | 71 | 72 | 72 | 70 | 70 | 70 | 70 | 70 | 70 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 70 | 70 | 68 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 65 | 69 |
| Minimum .... | 66 | 67 | 67 | 68 | 68 | 66 | 66 | 66 | 68 | 66 | 66 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 65 | 66 | 65 | 65 | 65 | 65 | 64 | 64 | 64 | 66 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 67 | 68 | 70 | 70 | 70 | 69 | 67 | 67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 67 | 67 | 66 | 66 | 65 | 65 | 65 | 65 | 66 | 66 | -- | -- |
| Minimum .... | 62 | 64 | 65 | 66 | 66 | 66 | 66 | 65 | 64 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 64 | 66 | 64 | 65 | 64 | 64 | 63 | 62 | 63 | 64 | -- | -- |

WILLAMETTE RIVER BASIN--Continued

14-1591. HORSE CREEK NEAR McKENZIE BRIDGE, OREG.

LOCATION.--Lat 44°09'45", long 122°09'05", temperature recorder at gaging station, 450 feet upstream from bridge on Horse Creek Road, 1 mile southeast of McKenzie Bridge, Lane County, and at mile 3.4.
DRAINAGE AREA.--149 square miles.
RECORDS AVAILABLE.--Water temperatures: February 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 58°F July 28, 29, Aug. 2-4; minimum, 36°F Jan. 3.
EXTREMES, 1963-66.--Water temperatures: Maximum, 58°F July 28, 29, Aug. 2-4, 1966; minimum, 36°F Jan. 3, 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 47 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 |
| Minimum .... | 45 | 46 | 46 | 46 | 47 | 47 | 46 | 47 | 47 | 47 | 47 | 46 | 46 | 48 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 47 | 47 | 47 | 46 | 45 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 40 | 39 | 39 | 39 | 39 | -- | 44 |
| Minimum .... | 46 | 46 | 46 | 47 | 46 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 40 | 39 | 39 | 39 | 39 | 39 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 39 |
| Minimum .... | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 37 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| Minimum .... | 37 | 37 | 36 | 37 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | -- | -- | -- | 39 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 37 | 37 | 37 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 37 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 39 | 39 | 38 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 41 | 42 | 40 |
| Minimum .... | 38 | 37 | 37 | 37 | 37 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 44 | 44 | 43 | 42 | 41 | 41 | 43 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 44 | 45 | -- | 43 |
| Minimum .... | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 41 | 40 | 41 | 42 | 42 | 42 | 40 | 40 | 40 | 40 | 43 | 43 | 43 | 44 | 42 | 42 | 42 | 41 | 43 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 46 | 46 | 46 | 46 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 49 | 50 | 50 | 49 | 48 | 46 | 47 | 50 | 81 | 50 | 49 | 49 | 49 | 48 | 46 | 48 |
| Minimum .... | 43 | 43 | 44 | 44 | 43 | 44 | 43 | 45 | 47 | 46 | 47 | 48 | 47 | 46 | 46 | 46 | 46 | 47 | 48 | 46 | 45 | 44 | 43 | 45 | 47 | 48 | 47 | 46 | 47 | 46 | 45 | 46 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 49 | 51 | 49 | 49 | 52 | 52 | 50 | 48 | 51 | 53 | 54 | 55 | 55 | 53 | 54 | 53 | 53 | 50 | 52 | 50 | 52 | 52 | 54 | 56 | 53 | 54 | 53 | -- | 51 |
| Minimum .... | 44 | 44 | 45 | 45 | 46 | 48 | 48 | 48 | 49 | 48 | 47 | 47 | 48 | 49 | 50 | 51 | 51 | 50 | 51 | 50 | 49 | 48 | 49 | 48 | 47 | 49 | 50 | 52 | 50 | 48 | -- | 48 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 49 | 52 | 54 | 55 | 55 | 53 | 55 | 54 | 55 | 56 | 53 | 54 | 54 | 55 | 55 | 57 | 57 | 56 | 56 | 56 | 57 | 57 | 54 | 55 | 56 | 57 | 58 | 58 | 56 | 57 | 55 |
| Minimum .... | 49 | 48 | 48 | 48 | 50 | 51 | 51 | 51 | 52 | 52 | 51 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 53 | 51 | 51 | 52 | 52 | 52 | 50 | 51 | 51 | 53 | 53 | 53 | 52 | 51 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 58 | 58 | 57 | 57 | 57 | 56 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 57 | 56 | 56 | 56 | 55 | 54 | 53 | 52 | 54 | 53 | 52 | 52 | 52 | 51 | 52 | 52 | 55 |
| Minimum .... | 53 | 53 | 54 | 54 | 53 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 54 | 54 | 55 | 54 | 52 | 53 | 53 | 53 | 52 | 50 | 49 | 48 | 50 | 51 | 51 | 51 | 50 | 50 | 52 | 53 | 52 | 51 | 50 | 51 | 50 | 50 | 51 | 51 | -- | 52 |
| Minimum .... | 50 | 50 | 51 | 52 | 52 | 51 | 51 | 50 | 51 | 51 | 50 | 49 | 48 | 48 | 48 | 50 | 50 | 50 | 49 | 48 | 50 | 51 | 51 | 50 | 70 | 50 | 48 | 49 | 50 | 50 | -- | 50 |

WILLAMETTE RIVER BASIN--Continued

## 14-1592. SOUTH FORK McKENZIE RIVER ABOVE COUGAR RESERVOIR, NEAR RAINBOW, OREG.

LOCATION.--Lat 44°02'50", long 122°13'00", temperature recorder at gaging station, 100 feet upstream from Tipsoo Creek, 8 miles south of Rainbow, Lane County, 9 miles southeast of town of Blue River, and at mile 10.4.
DRAINAGE AREA.--160 square miles at cableway 0.2 mile downstream, where all discharge measurements are made.
RECORDS AVAILABLE.--Water temperatures: November 1957 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 61°F July 29, Aug. 2; minimum, 36°F Dec. 16, 17, 20, 23.
EXTREMES, 1957-66.--Water temperatures: Maximum, 61°F July 29, Aug. 2, 1966; minimum, 33°F Mar. 1, 1962.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 50 | 48 | 47 | 48 | 48 | 47 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 49 | 47 | 47 | 47 | 48 |
| Minimum .... | 45 | 46 | 46 | 46 | 48 | 46 | 46 | 46 | 47 | 46 | 48 | 46 | 47 | 47 | 46 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 46 | 45 | 46 | 45 | 45 | 47 | 46 | 46 | 45 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 46 | 47 | 46 | 45 | 45 | 46 | 45 | 44 | 44 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 45 | 44 | 43 | 43 | 41 | 41 | 42 | 41 | 41 | 41 | -- | 44 |
| Minimum .... | 45 | 45 | 45 | 46 | 45 | 43 | 44 | 45 | 44 | 43 | 44 | 44 | 45 | 45 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 39 | 39 | 40 | 40 | 41 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 40 | 38 | 37 | 37 | 38 | 38 | 37 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 40 |
| Minimum .... | 40 | 41 | 41 | 42 | 42 | 42 | 43 | 41 | 41 | 41 | 41 | 41 | 40 | 38 | 37 | 36 | 36 | 37 | 37 | 36 | 37 | 37 | 36 | 37 | 38 | 37 | 38 | 38 | 39 | 37 | 37 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 39 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 |
| Minimum .... | 37 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 39 | 38 | 37 | 37 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 41 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 40 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | -- | -- | -- | 40 |
| Minimum .... | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 37 | 37 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 39 | 39 | 40 | 40 | 40 | 39 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 40 | 39 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 41 | 42 | 41 | 40 | 40 | 41 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 42 |
| Minimum .... | 38 | 37 | 38 | 37 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 39 | 38 | 40 | 39 | 39 | 38 | 38 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 44 | 42 | 44 | 45 | 46 | 46 | 45 | 43 | 44 | 42 | 44 | 47 | 47 | 48 | 47 | 44 | 46 | 44 | 47 | 47 | -- | 45 |
| Minimum .... | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 41 | 42 | 42 | 41 | 40 | 40 | 40 | 42 | 42 | 42 | 42 | 43 | 42 | 41 | 41 | 41 | 42 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 48 | 48 | 47 | 46 | 48 | 47 | 49 | 47 | 48 | 47 | 46 | 46 | 46 | 47 | 49 | 51 | 51 | 51 | 47 | 48 | 49 | 52 | 53 | 50 | 51 | 51 | 50 | 48 | 47 | 49 |
| Minimum .... | 42 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 44 | 44 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 45 | 45 | 44 | 43 | 42 | 45 | 46 | 47 | 46 | 45 | 46 | 46 | 45 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 52 | 53 | 50 | 52 | 53 | 53 | 50 | 50 | 54 | 55 | 57 | 57 | 58 | 56 | 57 | 55 | 55 | 53 | 53 | 51 | 54 | 55 | 56 | 57 | 54 | 56 | 55 | -- | 53 |
| Minimum .... | 44 | 44 | 44 | 44 | 45 | 47 | 47 | 47 | 48 | 48 | 47 | 47 | 47 | 48 | 49 | 50 | 50 | 49 | 51 | 49 | 48 | 48 | 49 | 47 | 47 | 48 | 50 | 50 | 49 | 48 | -- | 48 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 49 | 55 | 57 | 57 | 55 | 54 | 57 | 55 | 57 | 59 | 55 | 56 | 57 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 60 | 59 | 55 | 58 | 59 | 59 | 60 | 61 | 58 | 60 | 57 |
| Minimum .... | 49 | 48 | 48 | 48 | 49 | 50 | 50 | 49 | 50 | 50 | 49 | 52 | 52 | 52 | 51 | 50 | 51 | 51 | 52 | 50 | 51 | 51 | 51 | 53 | 50 | 50 | 51 | 52 | 52 | 52 | 51 | 50 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 60 | 59 | 59 | 59 | 59 | 58 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 57 | 58 | 57 | 57 | 57 | 54 | 53 | 55 | 54 | 51 | 53 | 53 | 51 | 53 | 53 | 57 |
| Minimum .... | 52 | 52 | 52 | 53 | 52 | 51 | 51 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | 52 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 47 | 47 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 54 | 54 | 55 | 54 | 52 | 54 | 54 | 53 | 49 | 50 | 49 | 48 | 50 | 51 | 51 | 49 | 50 | 51 | 51 | 51 | 51 | 49 | 48 | 49 | 49 | 49 | 50 | 49 | -- | 51 |
| Minimum .... | 47 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 46 | 47 | 46 | 47 | 47 | 48 | 46 | 45 | 47 | 47 | 47 | 47 | 46 | 46 | 44 | 45 | 45 | 45 | -- | 47 |

WILLAMETTE RIVER BASIN--Continued

14-1595. SOUTH FORK McKENZIE RIVER NEAR RAINBOW, OREG.

LOCATION.--Lat 44°08'10", long 122°14'50", temperature recorder at gaging station 0.2 mile upstream from Cougar Creek, 0.6 mile downstream from Cougar Dam, 2 miles south of Rainbow, Lane County, and at mile 3.9.
DRAINAGE AREA.--208 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1955 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 63°F July 12; minimum, 39°F on many days during January to March.
EXTREMES, 1955-66.--Water temperatures: Maximum, 68°F July 28, 1958; minimum, 33°F Jan. 20-23, 1962.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 48 | 49 | 49 | 50 | 51 | 52 | 53 | 54 | 54 | 55 | 55 | 54 | 49 | 47 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 48 |
| Minimum .... | 46 | 47 | 48 | 48 | 48 | 49 | 49 | 49 | 51 | 52 | 53 | 54 | 54 | 53 | 49 | 47 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | -- | 45 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 43 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | -- | -- | -- | 39 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 43 | 43 | 42 | 42 | 43 | 41 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 43 | 41 | 43 | 44 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 48 | 47 | 48 | 44 | 41 | 41 | 47 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | 43 |
| Minimum .... | 42 | 41 | 41 | 41 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 46 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 49 | 48 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 44 | 43 | 43 | 43 | 43 | 44 |
| Minimum .... | 42 | 42 | 44 | 46 | 47 | 47 | 46 | 46 | 46 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 52 | 55 | 56 | 55 | 55 | 59 | 56 | 57 | 55 | 54 | 55 | 55 | 56 | 55 | 54 | 57 | 55 | 55 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 43 | -- | 51 |
| Minimum .... | 43 | 43 | 43 | 52 | 54 | 44 | 53 | 55 | 54 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 43 | 43 | 43 | -- | 45 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 50 | 51 | 50 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 63 | 61 | 60 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 49 |
| Minimum .... | 43 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 47 | 48 | 50 | 50 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 46 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 51 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 53 | 52 | 52 | 51 | 51 | 51 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 48 |
| Minimum .... | 44 | 44 | 51 | 56 | 56 | 55 | 56 | 55 | 53 | 52 | 52 | 51 | 51 | 50 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 48 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 55 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 53 | 45 | -- | 45 |
| Minimum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | 44 |

WILLAMETTE RIVER BASIN--Continued

## 14-1611. BLUE RIVER BELOW TIDBITS CREEK, NEAR BLUE RIVER, OREG.

LOCATION.--Lat 44°13'05", long 122°15'50", temperature recorder at gaging station, 0.2 mile downstream from Tidbits Creek, 5.5 miles northeast of Blue River, Lane County, and at mile 8.5.
DRAINAGE AREA.--45.8 square miles.
RECORDS AVAILABLE.--Water temperatures: September 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69° F Aug. 4 to 7, 9, 10, 16; minimum, 34°F Dec. 26-28.
EXTREMES, 1963-66.--Water temperatures: Maximum (1963-65), 71°F Aug. 6, 1965; minimum, 34°F Jan. 19, 1964, Dec. 26-28, 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 51 | 51 | 51 | 50 | 50 | 51 | 50 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 44 | 42 | 41 | 41 | 40 | 40 | -- | 47 |
| Minimum .... | -- | 48 | 49 | 50 | 50 | 49 | 49 | 50 | 49 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 47 | 46 | 47 | 47 | 47 | 45 | 45 | 44 | 42 | 40 | 39 | 40 | 39 | 40 | -- | 46 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 43 | 43 | 44 | 45 | 46 | 46 | 46 | 45 | 44 | 44 | 43 | 42 | 40 | 38 | 37 | 36 | 37 | 36 | 36 | 38 | 38 | 38 | 36 | 36 | 36 | 35 | 40 | 40 | 41 | 37 | 40 |
| Minimum .... | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 45 | 43 | 43 | 42 | 42 | 40 | 38 | 36 | 36 | 35 | 35 | 36 | 35 | 36 | 38 | 35 | 35 | 35 | 34 | 34 | 34 | 40 | 37 | 36 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 38 | 40 | 42 | 42 | 43 | 43 | 44 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 40 | 39 | 40 | 41 | 41 | 40 | 41 | 41 | 41 | 40 | 40 | 41 | 40 | 41 |
| Minimum .... | 35 | 36 | 37 | 40 | 39 | 38 | 43 | 43 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 40 | 39 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 41 | 42 | 42 | 43 | 43 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 40 | 40 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 41 | -- | -- | -- | 41 |
| Minimum .... | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 40 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 42 | 41 | 39 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 41 | 42 | 41 | 40 | 41 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 |
| Minimum .... | 39 | 38 | 38 | 37 | 39 | 40 | 41 | 42 | 41 | 43 | 42 | 43 | 43 | 43 | 42 | 40 | 40 | 41 | 39 | 37 | 37 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 43 | 44 | 45 | 45 | 44 | 43 | 44 | 42 | 45 | 47 | 48 | 48 | 47 | 44 | 47 | 44 | 47 | 48 | -- | 44 |
| Minimum .... | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 41 | 42 | 42 | 41 | 40 | 40 | 41 | 43 | 43 | 43 | 43 | 44 | 43 | 42 | 42 | 42 | 43 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 49 | 48 | 47 | 49 | 50 | 51 | 48 | 50 | 49 | 48 | 47 | 46 | 49 | 51 | 53 | 53 | 54 | 50 | 50 | 52 | 55 | 56 | 54 | 53 | 54 | 54 | 51 | 50 | 51 |
| Minimum .... | 43 | 44 | 44 | 44 | 45 | 44 | 44 | 46 | 47 | 46 | 45 | 46 | 46 | 45 | 44 | 45 | 44 | 48 | 47 | 48 | 47 | 46 | 45 | 48 | 50 | 50 | 48 | 48 | 50 | 48 | 47 | 46 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 51 | 51 | 55 | 57 | 55 | 56 | 59 | 60 | 57 | 55 | 57 | 59 | 61 | 62 | 63 | 62 | 62 | 61 | 60 | 57 | 59 | 57 | 58 | 59 | 60 | 63 | 59 | 61 | 60 | -- | 58 |
| Minimum .... | 46 | 47 | 48 | 48 | 49 | 52 | 53 | 53 | 54 | 53 | 52 | 51 | 52 | 54 | 56 | 58 | 57 | 55 | 56 | 55 | 54 | 54 | 53 | 53 | 52 | 54 | 57 | 55 | 55 | 54 | -- | 53 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 57 | 60 | 62 | 63 | 60 | 63 | 63 | 64 | 65 | 62 | 65 | 63 | 66 | 65 | 67 | 67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 53 | 52 | 52 | 53 | 55 | 57 | 57 | 56 | 58 | 59 | 58 | 59 | 59 | 59 | 59 | 60 | 60 | 60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | 69 | 69 | 69 | 69 | 67 | 69 | 69 | 68 | 68 | 67 | 68 | 68 | 69 | 66 | 68 | 67 | 66 | 65 | 63 | 63 | 65 | 63 | 62 | 62 | 64 | 62 | 62 | 63 | 66 |
| Minimum .... | -- | -- | -- | 63 | 62 | 61 | 61 | 62 | 62 | 62 | 62 | 61 | 60 | 61 | 61 | 62 | 62 | 62 | 61 | 61 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 58 | 57 | 57 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 63 | 65 | 65 | 65 | 65 | 64 | 64 | 64 | 64 | 61 | 63 | 58 | 57 | 59 | 61 | 60 | 59 | 59 | 60 | 61 | 61 | 61 | 60 | 60 | 60 | 59 | 59 | 60 | 59 | -- | 61 |
| Minimum .... | 57 | 57 | 59 | 60 | 60 | 61 | 60 | 60 | 60 | 60 | 58 | 56 | 55 | 55 | 55 | 57 | 58 | 56 | 55 | 54 | 56 | 58 | 57 | 58 | 57 | 56 | 55 | 55 | 56 | 55 | -- | 57 |

## 14-1615. LOOKOUT CREEK NEAR BLUE RIVER, OREG.

LOCATION.--Lat 44°12'35", long 122°15'20", temperature recorder at gaging station, 6 miles northeast of Blue River, Lane County, and at mile 0.5.
DRAINAGE AREA.--24.1 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to September 1955, September 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, 35°F Dec. 16-18, 21.
EXTREMES, 1950-55, 1963-66.--Water temperatures: Maximum, (1950-55, 1963-65), 69°F July 16, 17, 24, 30, 1965; minimum, 33°F Mar. 3-6, 1951.
REMARKS.--Recorder stopped Apr. 4-7; temperature range, 41°F to 43°F. Recorder inoperative July 28 to Aug. 19.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 51 | 50 | 51 | 52 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 52 |
| Minimum .... | 50 | 50 | 50 | 51 | 52 | 51 | 51 | 51 | 52 | 51 | 52 | 51 | 52 | 52 | 51 | 50 | 50 | 50 | 51 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 49 | 49 | 49 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 50 | 50 | 50 | 49 | 47 | 48 | 48 | 47 | 46 | 46 | 47 | 47 | 47 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 41 | 40 | 39 | 39 | 39 | 39 | -- | 45 |
| Minimum .... | 48 | 48 | 49 | 50 | 49 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 47 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 41 | 40 | 39 | 38 | 39 | 39 | 39 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 39 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 38 | 37 | 37 | 36 | 36 | 35 | 36 | 36 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 38 |
| Minimum .... | 39 | 39 | 38 | 39 | 40 | 40 | 41 | 40 | 40 | 40 | 38 | 37 | 37 | 36 | 36 | 35 | 35 | 35 | 36 | 36 | 35 | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 40 | 40 | 39 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 39 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 38 | 38 | 40 | 39 | 39 | 39 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 39 | 38 | 37 | 37 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 40 |
| Minimum .... | 38 | 38 | 38 | 37 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | -- | -- | -- | -- | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 47 | 46 | 44 | 44 | 44 | 42 | 44 | 46 | 48 | 48 | 49 | 44 | 46 | 44 | 47 | 49 | -- | 45 |
| Minimum .... | 42 | 41 | 41 | -- | -- | -- | -- | 43 | 43 | 43 | 43 | 41 | 41 | 42 | 44 | 44 | 42 | 42 | 41 | 42 | 42 | 43 | 43 | 43 | 44 | 43 | 42 | 42 | 43 | 44 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 49 | 49 | 49 | 47 | 49 | 50 | 49 | 47 | 49 | 49 | 49 | 48 | 46 | 48 | 52 | 52 | 52 | 52 | 48 | 47 | 49 | 53 | 54 | 51 | 51 | 52 | 51 | 49 | 49 | 50 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 46 | 45 | 46 | 46 | 46 | 45 | 46 | 45 | 46 | 46 | 46 | 45 | 44 | 43 | 45 | 46 | 49 | 47 | 46 | 47 | 47 | 46 | 46 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 49 | 50 | 53 | 54 | 51 | 51 | 55 | 56 | 51 | 51 | 55 | 57 | 58 | 60 | 60 | 56 | 58 | 54 | 54 | 52 | 54 | 51 | 52 | 54 | 55 | 58 | 54 | 55 | 54 | -- | 54 |
| Minimum .... | 44 | 45 | 45 | 45 | 46 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 49 | 50 | 52 | 52 | 50 | 51 | 49 | 48 | 48 | 49 | 46 | 46 | 47 | 51 | 51 | 49 | 47 | -- | 48 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 49 | 53 | 56 | 57 | 52 | 52 | 56 | 55 | 55 | 57 | 53 | 55 | 56 | 58 | 56 | 58 | 58 | 57 | 56 | 56 | 56 | 56 | 53 | 53 | 55 | 55 | -- | -- | -- | -- | 55 |
| Minimum .... | 49 | 47 | 47 | 47 | 49 | 50 | 49 | 49 | 50 | 50 | 49 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 48 | 49 | 50 | 46 | 47 | 48 | -- | -- | -- | -- | 50 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 62 | 59 | 60 | 61 | 60 | 59 | 59 | 60 | 59 | 58 | 60 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57 | 58 | 57 | 58 | 58 | 58 | 58 | 58 | 57 | 54 | 55 | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 62 | 63 | 63 | 63 | 61 | 61 | 61 | 61 | 60 | 58 | 57 | 56 | 58 | 60 | 59 | 59 | 58 | 58 | 60 | 60 | 59 | 59 | 58 | 58 | 57 | 57 | 58 | 58 | -- | 59 |
| Minimum .... | 55 | 56 | 57 | 58 | 58 | 58 | 58 | 57 | 58 | 57 | 57 | 56 | 55 | 56 | 55 | 57 | 58 | 57 | 55 | 54 | 56 | 58 | 57 | 57 | 57 | 57 | 54 | 54 | 56 | 56 | -- | 56 |

WILLAMETTE RIVER BASIN--Continued

## 14-1625. McKENZIE RIVER NEAR VIDA, OREG.

LOCATION.--Lat 44°07'30", long 122°28'10", temperature recorder at gaging station, 1 mile upstream from head of Martin Rapids, 5 mile east of Vida, Lane County, and at mile 47.7.
DRAINAGE AREA.--930 square miles at cableway, 0.4 mile downstream, where all discharge measurements are made.
RECORDS AVAILABLE.--Water temperatures: June 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 59°F July 29, Aug. 4; minimum, 39°F on several days during December.
EXTREMES, 1961-66.--Water temperatures: Maximum, 59°F on several days during July and August in 1962, 1965 and 1966; minimum, 36°F Jan. 21-24, 1962.
REMARKS.--Recorder stopped Dec. 6-18; temperature range, 39°F to 40°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 51 | 51 | 51 | 52 | 52 | 53 | 54 | 54 | 55 | 54 | 55 | 54 | 54 | 51 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 51 |
| Minimum .... | 49 | 49 | 50 | 50 | 50 | 50 | 51 | 52 | 53 | 53 | 54 | 53 | 54 | 54 | 51 | 49 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 47 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 40 | -- | 45 |
| Minimum .... | 47 | 47 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 39 | 40 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- |
| Minimum .... | 40 | 39 | 39 | 39 | 39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | -- | -- | -- | 41 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 46 | 47 | 47 | 47 | 48 | 48 | 46 | 46 | 46 | 46 | 47 | 47 | 50 | 49 | 47 | 47 | 47 | 46 | 47 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 51 | -- | 48 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 46 | 46 | 47 | 46 | 46 | 45 | 45 | 45 | 46 | 47 | 47 | 48 | 48 | 47 | 47 | 47 | 48 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 53 | 53 | 53 | 52 | 51 | 52 | 52 | 52 | 51 | 53 | 51 | 51 | 51 | 50 | 51 | 53 | 53 | 53 | 53 | 52 | 50 | 50 | 53 | 54 | 53 | 52 | 52 | 52 | 51 | 50 | 52 |
| Minimum .... | 48 | 49 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 50 | 49 | 49 | 50 | 49 | 48 | 49 | 50 | 50 | 49 | 49 | 50 | 50 | 49 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 51 | 53 | 55 | 54 | 53 | 56 | 56 | 55 | 52 | 55 | 56 | 57 | 58 | 58 | 57 | 58 | 55 | 56 | 54 | 55 | 54 | 54 | 56 | 56 | 58 | 56 | 55 | 55 | -- | 55 |
| Minimum .... | 48 | 49 | 49 | 49 | 50 | 51 | 51 | 50 | 52 | 52 | 50 | 50 | 50 | 51 | 52 | 53 | 52 | 52 | 53 | 52 | 51 | 50 | 51 | 50 | 50 | 51 | 52 | 53 | 51 | 50 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 51 | 56 | 57 | 57 | 56 | 55 | 57 | 56 | 56 | 57 | 56 | 56 | 56 | 57 | 56 | 58 | 58 | 57 | 57 | 58 | 57 | 58 | 57 | 57 | 57 | 57 | 58 | 59 | 58 | 58 | 57 |
| Minimum .... | 51 | 51 | 51 | 51 | 52 | 53 | 52 | 52 | 53 | 53 | 52 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 52 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 58 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 56 | 57 | 57 | 57 | 56 | 56 | 56 | 55 | 54 | 53 | 52 | 53 | 52 | 52 | 52 | 53 | 52 | 53 | 53 | 56 |
| Minimum .... | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 55 | 55 | 55 | 54 | 53 | 54 | 54 | 54 | 53 | 53 | 51 | 51 | 52 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 52 | 51 | 52 | 52 | 52 | 52 | 51 | -- | 53 |
| Minimum .... | 50 | 50 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | -- | 51 |

WILLAMETTE RIVER BASIN--Continued

14-1650. MOHAWK RIVER NEAR SPRINGFIELD, OREG.

LOCATION.--Lat 44°05'35", long 122°57'20", temperature recorder at gaging station, on left bank 50 feet downstream from bridge, 4 miles northeast of Springfield, Lane County, and at mile 1.59.
DRAINAGE AREA.--177 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1963-66.--Water temperatures: Maximum, 76°F Aug. 2-5; minimum, 34°F Dec. 20, 21.
EXTREMES, 1963-66.--Water temperatures: Maximum, 76°F July 16, 1965, Aug. 2-5, 1966; minimum, 34°F Dec. 20, 21, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 58 | 59 | 59 | 60 | 61 | 61 | 61 | 60 | 60 | 59 | 59 | 59 | 56 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 57 |
| Minimum .... | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 59 | 60 | 60 | 60 | 58 | 58 | 59 | 56 | 54 | 54 | 53 | 53 | 53 | 54 | 55 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 56 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 49 | 48 | 48 | 46 | 46 | 46 | 44 | 44 | -- | 50 |
| Minimum .... | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 46 | 45 | 45 | 44 | 43 | 43 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 47 | 44 | 44 | 44 | 44 | 43 | 41 | 40 | 37 | 37 | 37 | 35 | 37 | 38 | 38 | 38 | 38 | 39 | 42 | 43 | 44 | 44 | 43 | 42 |
| Minimum .... | 44 | 45 | 47 | 47 | 47 | 47 | 48 | 47 | 44 | 44 | 44 | 44 | 43 | 41 | 40 | 37 | 37 | 36 | 35 | 34 | 34 | 36 | 37 | 36 | 37 | 38 | 39 | 42 | 44 | 43 | 42 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 44 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 45 | 44 | 43 | 42 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 |
| Minimum .... | 42 | 42 | 43 | 43 | 44 | 46 | 46 | 46 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 44 | 43 | 42 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 44 | 44 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | 43 |
| Minimum .... | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 41 | 42 | 40 | 40 | 40 | 40 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 45 | 44 | 45 | 46 | 45 | 46 | 46 | 47 | 48 | 49 | 49 | 50 | 50 | 50 | 51 | 52 | 46 |
| Minimum .... | 42 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 44 | 44 | 43 | 45 | 46 | 46 | 45 | 43 | 42 | 44 | 45 | 44 | 44 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 48 | 49 | 49 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 51 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 51 | 49 | 49 | 51 | 54 | 54 | 54 | 52 | 51 | 51 | 48 | 52 | 52 | 53 | 54 | 54 | 52 | 52 | 52 | 54 | -- | 52 |
| Minimum .... | 51 | 50 | 48 | 49 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | 48 | 46 | 49 | 51 | 53 | 51 | 49 | 48 | 48 | 48 | 48 | 50 | 52 | 53 | 51 | 50 | 51 | 48 | 52 | -- | 50 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 58 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 59 | 59 | 58 | 57 | 56 | 53 | 57 | 58 | 59 | 63 | 63 | 59 | 57 | 60 | 65 | 65 | 64 | 62 | 62 | 62 | 59 | 60 |
| Minimum .... | 53 | 54 | 56 | 57 | 60 | 59 | 57 | 59 | 59 | 57 | 55 | 57 | 55 | 54 | 53 | 51 | 53 | 55 | 57 | 60 | 59 | 55 | 55 | 56 | 60 | 63 | 61 | 59 | 61 | 59 | 57 | 57 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 59 | 61 | 63 | 66 | 69 | 70 | 70 | 69 | 67 | 64 | 67 | 71 | 72 | 75 | 73 | 74 | 73 | 70 | 69 | 69 | 69 | 67 | 68 | 70 | 74 | 73 | 70 | 69 | -- | 68 |
| Minimum .... | 56 | 57 | 57 | 58 | 60 | 63 | 65 | 67 | 68 | 67 | 64 | 62 | 64 | 66 | 69 | 72 | 71 | 70 | 70 | 68 | 66 | 65 | 66 | 64 | 64 | 66 | 69 | 70 | 68 | 66 | -- | 65 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 66 | 64 | 68 | 71 | 71 | 70 | 71 | 72 | 72 | 71 | 72 | 72 | 71 | 70 | 71 | 72 | 74 | 74 | 73 | 73 | 74 | 75 | 75 | 72 | 72 | 72 | 74 | 74 | 74 | 74 | 72 |
| Minimum .... | 65 | 61 | 60 | 64 | 66 | 68 | 67 | 68 | 69 | 70 | 68 | 70 | 70 | 69 | 67 | 69 | 69 | 71 | 72 | 71 | 70 | 72 | 72 | 72 | 70 | 70 | 70 | 71 | 72 | 72 | 72 | 69 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 75 | 76 | 76 | 76 | 76 | 74 | 74 | 74 | 74 | 74 | 74 | 72 | 72 | 73 | 73 | 73 | 72 | 72 | 72 | 72 | 71 | 68 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 64 | 71 |
| Minimum .... | 72 | 72 | 72 | 73 | 72 | 71 | 70 | 70 | 71 | 71 | 71 | 70 | 69 | 70 | 70 | 71 | 70 | 70 | 69 | 69 | 68 | 65 | 63 | 64 | 64 | 64 | 64 | 64 | 64 | 62 | 62 | 68 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 67 | 68 | 70 | 71 | 70 | 70 | 68 | 68 | 68 | 67 | 64 | 64 | 63 | 61 | 62 | 63 | 63 | 61 | 62 | 63 | 64 | 64 | 63 | 63 | 63 | 63 | 61 | 62 | 62 | -- | 65 |
| Minimum .... | 63 | 64 | 66 | 67 | 68 | 68 | 68 | 68 | 66 | 66 | 65 | 63 | 62 | 61 | 59 | 60 | 62 | 61 | 59 | 59 | 61 | 63 | 63 | 63 | 63 | 63 | 60 | 59 | 60 | 62 | -- | 63 |

WILLAMETTE RIVER BASIN--Continued

14-1655. McKENZIE RIVER NEAR COBURG, OREG.

LOCATION.--Lat 44°06'45", long 123°02'45", temperature recorder on right bank 200 feet downstream from gaging station, 2 miles southeast of Coburg, Lane County, and at mile 7.1.
DRAINAGE AREA.--1,337 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to April 1966.
EXTREMES, October 1965 to April 1966.--Water temperatures: Maximum, 57°F Oct. 13, 14; minimum, 38°F Dec. 20.
EXTREMES, 1963 to April 1966.--Water temperatures: Maximum, 67°F July 13, 25, 27, 28, 1964, July 7, 8, 15, 1965; minimum, 35°F Dec. 17, 18, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 54 | 53 | 54 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 57 | 56 | 55 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 53 |
| Minimum .... | 51 | 52 | 52 | 52 | 52 | 55 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 55 | 53 | 52 | 52 | 52 | 51 | 51 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 52 | 52 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 45 | 45 | 45 | 45 | -- | 50 |
| Minimum .... | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 45 | 45 | 45 | 44 | 44 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 46 | 47 | 48 | 48 | 48 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 42 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 41 | 41 | 42 | 42 | 42 | 43 |
| Minimum .... | 45 | 45 | 46 | 46 | 46 | 47 | 48 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 42 | 39 | 39 | 39 | 39 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 41 | 41 | 42 | 41 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 44 |
| Minimum .... | 41 | 41 | 41 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 45 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 45 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | -- | -- | 45 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | -- | -- | -- | 45 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 47 | 49 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 45 | 46 | 46 | 47 | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 47 |
| Minimum .... | 46 | 45 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 47 | 49 | 48 | 47 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 48 | 49 | 49 | 50 | 50 | 50 | 47 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 51 | 52 | 53 | 52 | 52 | 51 | 51 | 50 | 49 | 49 | 51 | 53 | 53 | 52 | 51 | 49 | 49 | 50 | 52 | 53 | 54 | 54 | 54 | 53 | 52 | 52 | -- | 51 |
| Minimum .... | 50 | 50 | 49 | 49 | 50 | 51 | 52 | 51 | 51 | 51 | 50 | 49 | 48 | 48 | 49 | 51 | 52 | 51 | 49 | 49 | 48 | 48 | 50 | 52 | 53 | 53 | 53 | 52 | 52 | 52 | -- | 50 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

## 14-1660. WILLAMETTE RIVER AT HARRISBURG, OREG.

LOCATION.--Lat 44°16'05", long 123°10'20", temperature recorder 600 feet downstream from gaging station at bridge on U.S. Highway 99 at Harrisburg, Linn County, and at mile 161.2.
DRAINAGE AREA.--3,420 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: June 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F on several days during July; minimum, 40°F sometime during period Dec. 15-29.
EXTREMES, 1961-66.--Water temperatures: Maximum, 69°F July 12, 13, 1961, July 16, 17, 1965; minimum, 36°F Jan. 21-24, 1962, Jan. 12, 13, 1963.
REMARKS.--Recorder stopped Dec. 15-29; temperature range, 40°F to 45°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | 58 | 56 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 56 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 56 | 54 | 54 | 53 | 53 | 55 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 50 | 50 | 50 | 49 | 49 | -- | 53 |
| Minimum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 50 | 50 | 50 | 49 | 49 | 48 | -- | 52 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 46 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 41 | 41 | -- |
| Minimum .... | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 48 | 48 | 47 | 47 | 46 | 45 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 41 | 41 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 |
| Minimum .... | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 44 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 44 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 49 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 47 | 48 | 50 | 50 | 50 | 50 | 48 | 48 | 47 | 48 | 50 | 51 | 51 | 50 | 49 | 49 | 49 | 51 | -- | 49 |
| Minimum .... | 47 | 48 | 47 | 47 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 47 | 45 | 46 | 48 | 50 | 49 | 48 | 47 | 47 | 46 | 47 | 48 | 50 | 50 | 49 | 48 | 48 | 48 | 49 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 54 | 55 | 55 | 55 | 54 | 54 | 55 | 55 | 55 | 53 | 53 | 53 | 51 | 51 | 50 | 52 | 55 | 57 | 57 | 57 | 55 | 54 | 57 | 60 | 60 | 59 | 56 | 58 | 58 | 56 | 55 |
| Minimum .... | 51 | 52 | 54 | 54 | 53 | 52 | 52 | 53 | 54 | 53 | 51 | 53 | 51 | 50 | 50 | 49 | 50 | 52 | 55 | 56 | 55 | 51 | 53 | 54 | 57 | 59 | 56 | 55 | 56 | 56 | 54 | 53 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 56 | 57 | 59 | 61 | 61 | 63 | 63 | 63 | 63 | 60 | 63 | 64 | 66 | 66 | 66 | 64 | 64 | 64 | 62 | 62 | 62 | 61 | 61 | 64 | 66 | 66 | 65 | 63 | -- | 62 |
| Minimum .... | 54 | 55 | 54 | 55 | 57 | 59 | 61 | 61 | 63 | 63 | 60 | 58 | 59 | 62 | 63 | 65 | 64 | 63 | 64 | 62 | 61 | 60 | 61 | 60 | 60 | 61 | 64 | 65 | 63 | 62 | -- | 61 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 61 | 60 | 63 | 66 | 66 | 65 | 65 | 65 | 65 | 65 | 66 | 66 | 65 | 64 | 64 | 65 | 67 | 68 | 68 | 67 | 68 | 68 | 68 | 66 | 66 | 67 | 68 | 68 | 68 | 67 | 66 |
| Minimum .... | 61 | 59 | 58 | 60 | 63 | 65 | 63 | 64 | 65 | 65 | 63 | 65 | 65 | 64 | 63 | 63 | 63 | 65 | 66 | 65 | 65 | 66 | 66 | 66 | 63 | 64 | 65 | 66 | 66 | 66 | 66 | 64 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 67 | 67 | 67 | 67 | 67 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 63 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 62 | 64 |
| Minimum .... | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 65 | 65 | 64 | 64 | 64 | 64 | 63 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 64 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 60 | 60 | 60 | 60 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | -- | 60 |
| Minimum .... | 62 | 62 | 61 | 62 | 62 | 61 | 60 | 59 | 59 | 60 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | -- | 60 |

WILLAMETTE RIVER BASIN--Continued

## 14-1717.5. WILLAMETTE RIVER ABOVE CALAPOOIA RIVER, AT ALBANY, OREG.

LOCATION.--Lat 44°38'30", long 123°07'00", temperature recorder at site on left bank in Benton County, 0.4 mile upstream from Calapooia River, 0.6 mile upstream from gaging station at Albany, Linn County, and at mile 119.9.
DRAINAGE AREA.--4,460 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F on several days during July and August; minimum, 40°F Dec. 20, 21.
EXTREMES, 1963-66.--Water temperatures: Maximum, 71°F July 13, 1964, July 30 to Aug. 1, 1965; minimum, 39°F Dec. 18, 19, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 57 | 57 | 56 | 57 | 58 | 58 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 60 | 57 | 58 | 57 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 58 |
| Minimum .... | 58 | 57 | 57 | 56 | 56 | 56 | 57 | 57 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 56 | 56 | 56 | 57 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 57 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 56 | 56 | 57 | 55 | 55 | 56 | 56 | 55 | 55 | 54 | 54 | 55 | 54 | 54 | 55 | 54 | 54 | 54 | 56 | 56 | 56 | 56 | 53 | 54 | 54 | 52 | 49 | -- | 55 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 54 | 54 | 54 | 54 | 53 | 54 | 54 | 54 | 52 | 53 | 51 | 52 | 50 | 49 | 49 | 49 | -- | 54 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 50 | 50 | 50 | 51 | 50 | 50 | 49 | 48 | 48 | 49 | 48 | 47 | 44 | 43 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 42 | 45 |
| Minimum .... | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 49 | 51 | 48 | 47 | 47 | 48 | 45 | 43 | 43 | 43 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 42 | 41 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 43 | 43 | 44 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 |
| Minimum .... | 41 | 41 | 42 | 43 | 43 | 44 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | -- | -- | -- | 44 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | -- | -- | -- | 44 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 44 | 44 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 49 | 49 | 49 | 49 | 47 | 47 | 47 | 47 | 46 | 46 | 47 | 48 | 49 | 50 | 50 | 51 | 51 | 51 | 51 | 47 |
| Minimum .... | 45 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 49 | 49 | 47 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 47 | 47 | 48 | 50 | 50 | 51 | 51 | 51 | 46 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 53 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 54 | 56 | 58 | 58 | 58 | 58 | 57 | 56 | 56 | 58 | 60 | 60 | 59 | 59 | 59 | 59 | 60 | -- | 56 |
| Minimum .... | 51 | 52 | 49 | 48 | 50 | 51 | 54 | 54 | 53 | 54 | 53 | 53 | 53 | 53 | 54 | 56 | 56 | 57 | 57 | 56 | 55 | 55 | 56 | 58 | 59 | 58 | 57 | 58 | 57 | 58 | -- | 54 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 61 | 63 | 63 | 62 | 61 | 62 | 63 | 63 | 62 | 61 | 61 | 59 | 58 | 57 | 59 | 61 | 64 | 66 | 66 | 65 | 63 | 64 | 65 | 65 | 65 | 62 | 63 | 63 | 62 | 62 |
| Minimum .... | 57 | 57 | 57 | 58 | 60 | 61 | 59 | 61 | 61 | 62 | 59 | 60 | 59 | 58 | 57 | 56 | 56 | 58 | 61 | 64 | 65 | 63 | 60 | 62 | 62 | 64 | 62 | 60 | 61 | 62 | 60 | 60 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 61 | 62 | 64 | 66 | 67 | 68 | 68 | 68 | 68 | 66 | 66 | 68 | 68 | 68 | 68 | 67 | 66 | 66 | 64 | 63 | 64 | 63 | 63 | 65 | 67 | 68 | 67 | 67 | -- | 66 |
| Minimum .... | 59 | 60 | 60 | 60 | 62 | 64 | 66 | 66 | 66 | 68 | 66 | 64 | 64 | 65 | 64 | 67 | 66 | 65 | 65 | 64 | 62 | 62 | 63 | 62 | 62 | 62 | 65 | 67 | 66 | 64 | -- | 64 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 63 | 60 | 63 | 66 | 67 | 66 | 67 | 68 | 68 | 68 | 68 | 68 | 67 | 66 | 66 | 68 | 69 | 70 | 70 | 69 | 69 | 70 | 70 | 69 | 68 | 68 | 69 | 70 | 70 | 70 | 68 |
| Minimum .... | 63 | 60 | 59 | 60 | 63 | 66 | 65 | 66 | 67 | 67 | 66 | 66 | 67 | 66 | 65 | 65 | 65 | 67 | 69 | 68 | 67 | 68 | 69 | 69 | 67 | 67 | 66 | 67 | 67 | 69 | 68 | 66 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 70 | 70 | 70 | 70 | 70 | 69 | 69 | 70 | 69 | 68 | 68 | 67 | 69 | 69 | 69 | 68 | 68 | 68 | 68 | 68 | 66 | 64 | 64 | 64 | 64 | 63 | 63 | 63 | 63 | 64 | 67 |
| Minimum .... | 68 | 68 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 67 | 67 | 66 | 66 | 66 | 67 | 67 | 67 | 66 | 66 | 66 | 66 | 63 | 62 | 62 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 66 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 65 | 65 | 65 | 66 | 66 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 61 | 61 | 61 | 61 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 64 | 63 | -- | 63 |
| Minimum .... | 63 | 64 | 64 | 64 | 65 | 64 | 63 | 63 | 62 | 62 | 62 | 61 | 61 | 61 | 60 | 60 | 61 | 61 | 61 | 60 | 62 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 62 | -- | 62 |

## 14-1720. CALAPOOIA RIVER AT HOLLEY, OREG.

LOCATION.--Lat 44°21'05", long 122°47'10", temperature recorder at gaging station 200 feet downstream from bridge on State Highway 228, 0.3 mile southwest of Holley, Linn County, 5.0 miles upstream from Brush Creek, and at mile 45.4.
DRAINAGE AREA.--105 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 80°F Aug. 2-4; minimum, freezing point Dec. 19, 20.
EXTREMES, 1963-66.--Water temperatures: Maximum, 80°F Aug. 2-4, 1966; minimum, freezing point Dec. 19, 20, 1965.
REMARKS.--Recorder stopped June 9 to July 18; temperature range, 54°F to 78°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 59 | 58 | 59 | 61 | 62 | 62 | 61 | 59 | 59 | 60 | 62 | 60 | 54 | 53 | 54 | 56 | 58 | 58 | 57 | 56 | 55 | 55 | 56 | 55 | 52 | 57 | 55 | 53 | 55 | 57 |
| Minimum .... | 53 | 53 | 53 | 55 | 56 | 55 | 56 | 56 | 56 | 54 | 57 | 56 | 58 | 54 | 50 | 49 | 51 | 52 | 53 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 52 | 53 | 52 | 51 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 55 | 54 | 53 | 51 | 52 | 54 | 53 | 51 | 50 | 52 | 51 | 51 | 50 | 49 | 50 | 49 | 50 | 50 | 50 | 49 | 46 | 47 | 44 | 44 | 44 | 43 | 43 | 43 | -- | 50 |
| Minimum .... | 50 | 50 | 52 | 52 | 51 | 48 | 50 | 51 | 51 | 49 | 49 | 49 | 50 | 49 | 48 | 47 | 48 | 47 | 48 | 48 | 48 | 46 | 46 | 44 | 43 | 42 | 43 | 42 | 40 | 42 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 48 | 46 | 48 | 48 | 49 | 50 | 48 | 45 | 45 | 44 | 44 | 43 | 42 | 38 | 35 | 34 | 34 | 33 | 35 | 38 | 38 | 40 | 41 | 41 | 43 | -- | -- | -- | -- | -- | 42 |
| Minimum .... | 43 | 46 | 44 | 46 | 46 | 47 | 48 | 45 | 43 | 43 | 42 | 43 | 41 | 38 | 35 | 33 | 33 | 33 | 32 | 32 | 35 | 37 | 38 | 40 | 41 | 41 | -- | -- | -- | -- | -- | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | 44 | 46 | 45 | 45 | 45 | 45 | 45 | 46 | 45 | 46 | 46 | 44 | 44 | 44 | 43 | 40 | 38 | 40 | 40 | 41 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 45 | 43 | 43 | 43 | 40 | 38 | 38 | 37 | 39 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 42 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 42 | 41 | 43 | 45 | 43 | 44 | 45 | 44 | 45 | 44 | 44 | 44 | 42 | -- | -- | -- | 43 |
| Minimum .... | -- | -- | 41 | 43 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 41 | 40 | 38 | 38 | 38 | 39 | 39 | 41 | 40 | 42 | 42 | 41 | 43 | 43 | 43 | 42 | 39 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 41 | 42 | 43 | 43 | 43 | 45 | 45 | 45 | 46 | 48 | 47 | 47 | 45 | 43 | 44 | 45 | 44 | 43 | 45 | 47 | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 48 | 50 | 46 |
| Minimum .... | 38 | 38 | 37 | 40 | 41 | 40 | 42 | 44 | 43 | 43 | 43 | 45 | 46 | 45 | 43 | 41 | 40 | 43 | 43 | 41 | 42 | 41 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 49 | 49 | 50 | 51 | 51 | 49 | 49 | 49 | 47 | 47 | 48 | 49 | 53 | 52 | 51 | 49 | 49 | 46 | 49 | 54 | 55 | 55 | 53 | 52 | 54 | 50 | 53 | 56 | -- | 51 |
| Minimum .... | 45 | 45 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 47 | 45 | 44 | 41 | 44 | 46 | 47 | 44 | 43 | 42 | 43 | 45 | 45 | 46 | 47 | 49 | 47 | 45 | 47 | 43 | 47 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 59 | 59 | 58 | 55 | 60 | 59 | 59 | 55 | 60 | 58 | 53 | 54 | 50 | 55 | 60 | 63 | 65 | 66 | 60 | 61 | 61 | 66 | 70 | 66 | 64 | 64 | 66 | 60 | 57 | 60 |
| Minimum .... | 48 | 49 | 51 | 52 | 53 | 52 | 50 | 53 | 54 | 51 | 49 | 52 | 50 | 48 | 47 | 47 | 47 | 50 | 54 | 55 | 52 | 50 | 50 | 53 | 56 | 60 | 53 | 53 | 55 | 54 | 52 | 52 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 58 | 58 | 66 | 70 | 70 | 73 | 73 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 50 | 52 | 52 | 51 | 55 | 61 | 61 | 61 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 75 | 76 | 77 | 78 | 79 | 71 | 75 | 76 | 78 | 79 | 79 | 77 | 79 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 62 | 62 | 62 | 64 | 64 | 67 | 60 | 61 | 62 | 65 | 65 | 65 | 64 | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 79 | 80 | 80 | 80 | 79 | 78 | 78 | 76 | 78 | 78 | 77 | 76 | 74 | 77 | 78 | 77 | 75 | 76 | 75 | 76 | 67 | 66 | 71 | 69 | 69 | 65 | 69 | 68 | 65 | 69 | 70 | 74 |
| Minimum .... | 64 | 65 | 66 | 68 | 66 | 64 | 64 | 64 | 67 | 65 | 66 | 63 | 63 | 64 | 64 | 65 | 63 | 62 | 66 | 62 | 61 | 58 | 58 | 62 | 60 | 62 | 61 | 61 | 60 | 56 | 58 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 73 | 74 | 76 | 75 | 74 | 70 | 72 | 70 | 68 | 66 | 66 | 64 | 61 | 64 | 67 | 67 | 63 | 66 | 67 | 70 | 68 | 69 | 65 | 65 | 65 | 66 | 67 | 63 | 66 | -- | 68 |
| Minimum .... | 58 | 60 | 61 | 63 | 64 | 63 | 62 | 62 | 61 | 62 | 60 | 57 | 56 | 57 | 55 | 59 | 61 | 58 | 57 | 56 | 59 | 62 | 60 | 61 | 60 | 62 | 58 | 56 | 60 | 57 | -- | 60 |

WILLAMETTE RIVER BASIN--Continued

14-1735. CALAPOOIA RIVER AT ALBANY, OREG.

LOCATION.--Lat 44°37'15", long 123°07'40", temperature recorder at gaging station on downstream side of bridge on Riverside Drive in Albany, Linn County, 0.6 mile downstream from Oak Creek, and at mile 3.0.
DRAINAGE AREA.--372 square miles.
RECORDS AVAILABLE.--Water temperatures: January 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 81°F Aug. 2-4; minimum, 34°F Dec. 20, 21.
EXTREMES, 1964-66.--Water temperatures: Maximum, 81°F Aug. 2-4, 1966; minimum, 34°F Dec. 20, 21, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 61 | 60 | 60 | 62 | 63 | 63 | 64 | 63 | 62 | 61 | 60 | 60 | 59 | 57 | 55 | 55 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 58 |
| Minimum .... | 58 | 58 | 58 | 59 | 58 | 59 | 61 | 61 | 62 | 61 | 61 | 59 | 58 | 59 | 57 | 55 | 55 | 54 | 53 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 56 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 52 | 52 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 46 | 45 | 44 | 43 | 43 | 42 | -- | 50 |
| Minimum .... | 53 | 53 | 52 | 54 | 54 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 46 | 45 | 44 | 43 | 42 | 42 | 42 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 44 | 45 | 47 | 47 | 47 | 48 | 48 | 47 | 45 | 44 | 44 | 43 | 41 | 41 | 38 | 37 | 36 | 35 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 40 | 41 | 41 | 41 | 38 | 41 |
| Minimum .... | 42 | 42 | 44 | 45 | 47 | 47 | 47 | 47 | 45 | 44 | 44 | 43 | 41 | 41 | 38 | 37 | 36 | 35 | 35 | 34 | 34 | 35 | 35 | 36 | 37 | 37 | 37 | 39 | 41 | 38 | 36 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 39 | 40 | 41 | 43 | 44 | 44 | 44 | 44 | 41 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 40 | 39 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 43 | 43 | 42 |
| Minimum .... | 36 | 36 | 39 | 40 | 41 | 43 | 44 | 44 | 41 | 41 | 41 | 42 | 42 | 43 | 44 | 44 | 43 | 42 | 40 | 39 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 40 | 40 | 40 | 41 | 42 | 42 | 41 | 41 | 41 | 42 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 45 | -- | -- | -- | 42 |
| Minimum .... | 42 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 44 | 44 | 45 | 45 | 44 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 42 | 41 | 41 | 41 | 43 | 43 | 43 | 45 | 45 | 46 | 45 | 47 | 48 | 48 | 47 | 44 | 43 | 44 | 44 | 42 | 44 | 46 | 47 | 48 | 49 | 49 | 48 | 48 | 49 | 50 | 45 |
| Minimum .... | 42 | 41 | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 45 | 45 | 45 | 45 | 47 | 47 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 43 | 45 | 47 | 48 | 48 | 47 | 47 | 48 | 49 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 52 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | 51 | 49 | 51 | 53 | 55 | 56 | 55 | 54 | 53 | 52 | 53 | 55 | 56 | 56 | 56 | 56 | 56 | 57 | 58 | -- | 54 |
| Minimum .... | 50 | 50 | 50 | 49 | 51 | 52 | 52 | 51 | 51 | 52 | 51 | 49 | 49 | 49 | 51 | 52 | 53 | 53 | 52 | 51 | 51 | 50 | 51 | 53 | 55 | 54 | 53 | 53 | 53 | 54 | -- | 52 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 62 | 64 | 66 | 66 | 65 | 64 | 63 | 65 | 64 | 63 | 63 | 61 | 59 | 59 | 57 | 60 | 66 | 65 | 67 | 65 | 64 | 64 | 66 | 69 | 68 | 67 | 67 | 67 | 66 | 63 | 64 |
| Minimum .... | 55 | 57 | 60 | 62 | 63 | 62 | 60 | 60 | 61 | 62 | 59 | 60 | 58 | 58 | 56 | 55 | 55 | 56 | 60 | 62 | 63 | 61 | 59 | 61 | 63 | 64 | 62 | 62 | 62 | 62 | 59 | 60 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 63 | 63 | 66 | 69 | 69 | 71 | 72 | 72 | 71 | 69 | 68 | 70 | 72 | 74 | 75 | 75 | 75 | 74 | 73 | 71 | 71 | 70 | 68 | 69 | 71 | 72 | 73 | 72 | 72 | -- | 70 |
| Minimum .... | 58 | 60 | 60 | 60 | 62 | 65 | 65 | 67 | 67 | 68 | 66 | 64 | 65 | 66 | 68 | 71 | 72 | 70 | 71 | 70 | 68 | 67 | 68 | 65 | 66 | 66 | 69 | 70 | 68 | 68 | -- | 66 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 71 | 67 | 66 | 70 | 71 | 69 | 71 | 73 | 75 | 74 | 74 | 74 | 74 | 73 | 73 | 72 | 74 | 76 | 75 | 76 | 76 | 76 | 78 | 76 | 76 | 76 | 78 | 79 | 80 | 80 | 80 | 74 |
| Minimum .... | 67 | 65 | 64 | 63 | 65 | 67 | 67 | 69 | 72 | 72 | 70 | 72 | 72 | 71 | 69 | 70 | 69 | 71 | 72 | 70 | 71 | 72 | 72 | 73 | 70 | 71 | 73 | 73 | 75 | 75 | 75 | 70 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 79 | 81 | 81 | 81 | 80 | 79 | 79 | 79 | 77 | 77 | 76 | 75 | 75 | 73 | 74 | 74 | 75 | 74 | 74 | 74 | 74 | 72 | 70 | 69 | 69 | 68 | 67 | 67 | 67 | 66 | 68 | 74 |
| Minimum .... | 75 | 77 | 77 | 77 | 76 | 75 | 75 | 75 | 72 | 73 | 71 | 71 | 71 | 70 | 71 | 72 | 71 | 70 | 70 | 71 | 71 | 69 | 67 | 67 | 67 | 67 | 66 | 65 | 65 | 64 | 65 | 71 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 70 | 71 | 73 | 73 | 72 | 70 | 70 | 70 | 70 | 68 | 67 | 65 | 64 | 64 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 65 | 65 | 66 | 66 | 67 | 67 | -- | 68 |
| Minimum .... | 65 | 67 | 68 | 69 | 70 | 70 | 70 | 69 | 68 | 68 | 66 | 64 | 64 | 64 | 62 | 63 | 65 | 64 | 63 | 63 | 65 | 66 | 64 | 65 | 64 | 64 | 63 | 63 | 65 | 65 | -- | 66 |

## 14-1780. NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OREG.

LOCATION.--Lat 44°42'25", long 122°06'00", temperature recorder at gaging station, 0.5 mile downstream from Boulder Creek, 3.0 miles southeast of Detroit, Marion County, and at mile 70.7.
DRAINAGE AREA.--216 square miles.
RECORDS AVAILABLE.--Water temperatures: April 1951 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, 34°F on several days during December and January.
EXTREMES, 1951-66.--Water temperatures: Maximum (1951-65), 64°F July 28, 1958; minimum, freezing point Dec. 1, 1954, Mar. 5, 1955, Feb. 16, 17, 1956.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 49 | 50 | 50 | 47 | 46 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 47 | 47 | 46 | 48 | 47 | 46 | 46 | 48 |
| Minimum .... | 45 | 47 | 47 | 47 | 49 | 48 | 47 | 47 | 48 | 47 | 48 | 46 | 48 | 47 | 46 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 45 | 45 | 45 | 46 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 47 | 47 | 46 | 45 | 46 | 46 | 45 | 43 | 43 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 41 | 40 | 39 | 39 | 38 | 39 | -- | 44 |
| Minimum .... | 44 | 45 | 46 | 47 | 46 | 44 | 44 | 45 | 45 | 43 | 42 | 43 | 43 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 40 | 38 | 38 | 38 | 38 | 38 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 38 | 36 | 35 | 36 | 36 | 35 | 38 | 38 | 37 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 35 | 38 |
| Minimum .... | 39 | 39 | 39 | 40 | 41 | 41 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 38 | 36 | 35 | 34 | 35 | 35 | 34 | 35 | 37 | 36 | 35 | 36 | 37 | 36 | 36 | 36 | 35 | 35 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 34 | 36 | 37 | 37 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 37 | 36 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 39 | 38 | 38 | 37 |
| Minimum .... | 35 | 34 | 34 | 34 | 36 | 36 | 37 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 35 | 34 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 37 | 38 | 37 | 38 | 37 | 38 | 37 | 37 | 38 | 37 | 38 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | -- | -- | -- | 38 |
| Minimum .... | 36 | 37 | 38 | 38 | 38 | 38 | 38 | 37 | 36 | 36 | 37 | 36 | 37 | 37 | 37 | 35 | 37 | 36 | 37 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | -- | -- | -- | 37 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 38 | 38 | 38 | 39 | 40 | 40 | 39 | 39 | 40 | 40 | 42 | 41 | 40 | 40 | 39 | 40 | 41 | 40 | 38 | 39 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 42 | 40 |
| Minimum .... | 37 | 36 | 37 | 36 | 38 | 39 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 38 | 38 | 39 | 38 | 36 | 36 | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 38 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 42 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 40 | 42 | 42 | 45 | 44 | 43 | 41 | 43 | 40 | 42 | 45 | 45 | 46 | 45 | 41 | 45 | 43 | 45 | 46 | -- | 43 |
| Minimum .... | 39 | 39 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 38 | 39 | 39 | 40 | 39 | 38 | 37 | 38 | 39 | 40 | 39 | 39 | 41 | 39 | 39 | 39 | 39 | 40 | -- | 39 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 48 | 46 | 46 | 45 | 42 | 45 | 45 | 46 | 42 | 44 | 43 | 42 | 42 | 41 | 43 | 47 | 48 | 48 | 49 | 45 | 45 | 48 | 50 | 51 | 47 | 47 | 49 | 48 | 46 | 44 | 46 |
| Minimum .... | 40 | 40 | 41 | 40 | 41 | 41 | 40 | 40 | 41 | 40 | 40 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 40 | 42 | 43 | 44 | 42 | 42 | 44 | 43 | 42 | 41 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 46 | 45 | 49 | 51 | 47 | 48 | 52 | 51 | 49 | 46 | 51 | 53 | 54 | 55 | 55 | 53 | 55 | 53 | 52 | 49 | 50 | 51 | 51 | 52 | 55 | 56 | 53 | 54 | 53 | -- | 51 |
| Minimum .... | 41 | 42 | 43 | 43 | 43 | 45 | 46 | 45 | 46 | 46 | 44 | 44 | 45 | 46 | 47 | 48 | 47 | 47 | 49 | 47 | 46 | 46 | 47 | 45 | 44 | 47 | 49 | 49 | 46 | 46 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 48 | 52 | 55 | 57 | 55 | 53 | 57 | 55 | 53 | 57 | 54 | 55 | 55 | 57 | 55 | 58 | 58 | 57 | 58 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 48 | 47 | 46 | 46 | 48 | 49 | 49 | 48 | 49 | 50 | 49 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 51 | 49 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 53 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 48 | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 56 | 57 | 56 | 56 | 53 | 55 | 54 | 53 | 53 | 50 | 49 | 48 | 49 | 51 | 51 | 51 | 51 | 51 | 52 | 53 | 52 | 51 | 50 | 51 | 51 | 51 | 52 | 51 | -- | 52 |
| Minimum .... | 48 | 48 | 49 | 51 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 47 | 46 | 47 | 47 | 48 | 48 | 49 | 47 | 47 | 48 | 49 | 49 | 49 | 48 | 49 | 48 | 47 | 48 | 48 | -- | 48 |

WILLAMETTE RIVER BASIN--Continued

14-1790. BREITENBUSH RIVER ABOVE CANYON CREEK, NEAR DETROIT, OREG.

LOCATION.--Lat 44°45'10", long 122°07'40", temperature recorder at gaging station, 600 feet upstream from Canyon Creek, 1.5 miles northeast of Detroit, Marion County, and at mile 2.0.
DRAINAGE AREA.--106 square miles.
RECORDS AVAILABLE.--Water temperatures: December 1950 to July 1961, January 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 60°F Aug. 3, 4; minimum, 34°F on several days during December and January.
EXTREMES, 1950-61, 1962-66.--Water temperatures: Maximum, 60°F July 25, 1962, July 30, 1965, Aug. 3, 4, 1966; minimum, 33°F Mar. 3-7, 1951, Feb. 17, 1956, on several days during January 1963, Dec. 16-20, 1964.
REMARKS.--Recorder stopped May 9 to June 1; temperature range, 41°F to 52°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 49 | 50 | 51 | 50 | 50 | 51 | 50 | 49 | 49 | 50 | 49 | 48 | 47 | 47 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 48 | 48 | 47 | 47 | 48 |
| Minimum .... | 45 | 47 | 47 | 47 | 49 | 49 | 49 | 48 | 49 | 48 | 47 | 48 | 48 | 48 | 47 | 45 | 46 | 47 | 47 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 47 | 47 | 47 | 45 | 46 | 46 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 40 | 40 | 40 | 40 | -- | 44 |
| Minimum .... | 45 | 45 | 47 | 47 | 47 | 44 | 45 | 45 | 45 | 44 | 43 | 43 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 38 | 38 | 40 | 39 | 39 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 41 | 41 | 40 | 40 | 39 | 38 | 36 | 35 | 36 | 36 | 35 | 37 | 37 | 37 | 35 | 36 | 36 | 36 | 35 | 37 | 37 | 35 | 38 |
| Minimum .... | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 42 | 41 | 41 | 40 | 40 | 39 | 38 | 36 | 35 | 34 | 35 | 35 | 34 | 35 | 37 | 34 | 34 | 36 | 36 | 35 | 37 | 37 | 35 | 35 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 36 | 37 | 38 | 40 | 40 | 39 | 39 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 37 | 37 | 38 | 38 | 37 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 38 |
| Minimum .... | 34 | 34 | 34 | 34 | 36 | 36 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 37 | 36 | 36 | 37 | 36 | 36 | 37 | 38 | 38 | 38 | 38 | 39 | 39 | 37 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 40 | 39 | 39 | 39 | -- | -- | -- | 39 |
| Minimum .... | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 36 | 36 | 37 | 36 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 39 | 38 | 38 | 37 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 38 | 40 | 41 | 40 | 38 | 39 | 39 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 40 |
| Minimum .... | 36 | 36 | 36 | 35 | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 38 | 38 | 38 | 39 | 38 | 36 | 36 | 37 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 38 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 43 | 43 | 45 | 44 | 43 | 42 | 43 | 41 | 43 | 45 | 46 | 46 | 45 | 42 | 45 | 44 | 45 | 47 | -- | 43 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 40 | 39 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 40 | 40 | 40 | 40 | 41 | -- | 40 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 47 | 47 | 46 | 44 | 47 | 47 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 41 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 47 | 47 | 50 | 52 | 48 | 48 | 51 | 50 | 48 | 45 | 50 | 52 | 53 | 54 | 54 | 52 | 54 | 51 | 51 | 49 | 51 | 49 | 50 | 52 | 54 | 56 | 52 | 53 | 53 | -- | 51 |
| Minimum .... | -- | 43 | 44 | 44 | 44 | 46 | 46 | 45 | 46 | 45 | 44 | 44 | 45 | 45 | 46 | 47 | 47 | 47 | 48 | 47 | 46 | 46 | 47 | 46 | 45 | 47 | 49 | 49 | 46 | 46 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 48 | 51 | 55 | 56 | 55 | 53 | 56 | 54 | 53 | 56 | 54 | 55 | 54 | 57 | 55 | 58 | 58 | 57 | 57 | 58 | 58 | 58 | 57 | 56 | 57 | 58 | 59 | 59 | 58 | 59 | 56 |
| Minimum .... | 48 | 47 | 47 | 47 | 48 | 49 | 49 | 49 | 49 | 50 | 49 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 52 | 49 | 50 | 51 | 52 | 52 | 52 | 52 | 50 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 60 | 60 | 59 | 58 | 59 | 59 | 59 | 59 | 58 | 58 | 57 | 58 | 58 | 59 | 57 | 58 | 57 | 58 | 56 | 53 | 55 | 56 | 56 | 55 | 53 | 54 | 54 | 54 | 54 | 57 |
| Minimum .... | 52 | 53 | 53 | 54 | 53 | 52 | 53 | 54 | 54 | 53 | 53 | 52 | 52 | 52 | 53 | 53 | 52 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 51 | 50 | 49 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 56 | 57 | 56 | 56 | 55 | 55 | 55 | 55 | 54 | 54 | 51 | 49 | 52 | 53 | 52 | 52 | 52 | 52 | 53 | 54 | 54 | 52 | 51 | 52 | 52 | 52 | 53 | 52 | -- | 53 |
| Minimum .... | 49 | 50 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | 50 | 48 | 49 | 49 | 51 | 51 | 51 | 49 | 48 | 50 | 51 | 52 | 51 | 50 | 51 | 50 | 48 | 50 | 50 | -- | 50 |

## 14-1815. NORTH SANTIAM RIVER AT NIAGARA, OREG.

LOCATION.--Lat 44°45'10", long 122°17'50", temperature recorder at gaging station in Linn County, 2.1 miles east of Niagara, Marion County, and at mile 57.3.
DRAINAGE AREA.--453 square miles.
RECORDS AVAILABLE.--Water temperatures: January 1953 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 55°F on several days during October and November; minimum, 39°F on many days during January and February.
EXTREMES, 1953-66.--Water temperatures: Maximum, 62°F July 28, 29, 1958; minimum, 35°F Jan. 30 to Feb. 16, 1957.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 |
| Minimum .... | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 52 | 53 | 53 | 53 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | -- | 53 |
| Minimum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 50 | 51 | 51 | 50 | 49 | 49 | 48 | -- | 52 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 42 | 46 |
| Minimum .... | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 46 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 42 | 42 | 41 | 41 | -- | 42 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 43 |
| Minimum .... | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 48 | 48 | 49 | 49 | 47 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 49 | 49 | -- | 47 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 47 | 48 | 49 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 50 | 50 | 49 | 49 | 49 | 49 | 49 |
| Minimum .... | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 48 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Minimum .... | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | -- | 51 |
| Minimum .... | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | -- | 51 |

WILLAMETTE RIVER BASIN--Continued

14-1850. SOUTH SANTIAM RIVER BELOW CASCADIA, OREG.

LOCATION.--Lat 44°23'35", long 122°30'35", temperature recorder at gaging station 100 feet downstream from bridge at Cascadia ranger station, 0.5 mile upstream from Deer Creek, 1.5 miles southwest of Cascadia, Linn County, and at mile 48.5.
DRAINAGE AREA.--174 square miles at gaging cable, 0.7 mile upstream above Mouse Creek.
RECORDS AVAILABLE.--Water temperatures: June 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F Aug. 2-4; minimum, 34°F Dec. 17-21.
EXTREMES, 1962-66.--Water temperatures: Maximum, 77°F July 30, Aug. 7, 1965; minimum, 33°F sometime during period Jan. 11-24, 1962.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 54 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 54 | 54 | 53 | 50 | 48 | 50 | 50 | 50 | 50 | 50 | 48 | 48 | 48 | 48 | 47 | 49 | 50 | 49 | 50 | 51 |
| Minimum .... | 50 | 50 | 50 | 52 | 51 | 53 | 52 | 52 | 53 | 50 | 52 | 51 | 52 | 53 | 50 | 48 | 48 | 48 | 50 | 50 | 49 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 49 | 49 | 47 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 50 | 49 | 49 | 49 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 44 | 44 | 41 | 41 | 41 | 40 | 41 | -- | 46 |
| Minimum .... | 46 | 46 | 47 | 49 | 49 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 47 | 47 | 47 | 46 | 46 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 41 | 41 | 41 | 40 | 40 | 40 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 41 | 39 | 36 | 35 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 38 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 41 | 41 | 41 | 41 | 41 | 39 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 36 | 37 | 36 | 36 | 37 | 37 | 38 | 40 | 40 | 39 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 40 | 41 | 43 | 44 | 43 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 39 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 39 | 39 | 39 | 40 | 41 | 42 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 39 | 37 | 36 | 36 | 37 | 37 | 37 | 38 | 39 | 39 | 39 | 40 | 40 | 38 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 68 | 66 | 67 | 68 | 67 | 64 | 66 | 66 | 68 | 69 | 68 | 68 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 64 | 62 | 64 | 64 | 64 | 61 | 62 | 62 | 64 | 65 | 66 | 65 | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 70 | 70 | 70 | 69 | 68 | 68 | 68 | 69 | 69 | 68 | 68 | 66 | 68 | 68 | 68 | 67 | 67 | 67 | 67 | 66 | 63 | 62 | 62 | 63 | 63 | 62 | 61 | 61 | 62 | 62 | 66 |
| Minimum .... | 64 | 65 | 66 | 67 | 66 | 64 | 64 | 64 | 66 | 65 | 66 | 64 | 64 | 64 | 64 | 65 | 64 | 63 | 63 | 63 | 62 | 61 | 60 | 61 | 61 | 62 | 60 | 60 | 60 | 58 | 58 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 63 | 65 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 58 | 56 | 55 | 56 | 58 | 57 | 57 | 55 | 54 | 56 | 58 | 57 | 57 | 55 | 56 | 55 | 54 | 54 | 54 | -- | 58 |
| Minimum .... | 58 | 59 | 60 | 60 | 61 | 61 | 31 | 61 | 60 | 59 | 53 | 56 | 55 | 55 | 54 | 53 | 57 | 55 | 54 | 53 | 54 | 56 | 56 | 55 | 55 | 55 | 54 | 53 | 53 | 53 | -- | 57 |

## 14-1858. MIDDLE SANTIAM RIVER NEAR CASCADIA, OREG.

LOCATION.--Lat 44°30'55", long 122°22'15", temperature recorder at gaging station, 5.6 miles downstream from Bear Creek, 10 miles northeast of Cascadia, Linn County, and at mile 17.5
DRAINAGE AREA.--104 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F on several days during July and August; minimum, 33°F Dec. 23, 24.
EXTREMES, 1963-66.--Water temperatures: Maximum, 70°F July 30, 1965; minimum, 33°F Dec. 23, 24, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 50 | 52 | 52 | 52 | 52 | 51 | 52 | 52 | 52 | 52 | 49 | 46 | 47 | 48 | 49 | 48 | 47 | 48 | 48 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 48 | 50 |
| Minimum .... | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 46 | 45 | 46 | 47 | 48 | 47 | 46 | 47 | 47 | 48 | 48 | 47 | 47 | 48 | 49 | 47 | 47 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 47 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 42 | 41 | 41 | 41 | 41 | -- | 46 |
| Minimum .... | 47 | 47 | 48 | 49 | 49 | 47 | 47 | 47 | 47 | 47 | 44 | 45 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 42 | 41 | 40 | 41 | 41 | 41 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 41 | 38 | 37 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 34 | 35 | 35 | 36 | 37 | 38 | 38 | 37 | 39 |
| Minimum .... | 41 | 42 | 42 | 42 | 43 | 43 | 44 | 43 | 42 | 42 | 41 | 42 | 41 | 38 | 37 | 36 | 36 | 36 | 36 | 34 | 35 | 36 | 33 | 33 | 34 | 34 | 35 | 35 | 37 | 37 | 35 | 38 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 36 | 37 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 38 | 38 | 39 | 39 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 35 | 35 | 36 | 37 | 39 | 38 | 40 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | 40 | 38 | 37 | 37 | 38 | 37 | 37 | 38 | 39 | 39 | 39 | 40 | 40 | 39 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 40 | -- | -- | -- | 39 |
| Minimum .... | 39 | 39 | 40 | 40 | 40 | 39 | 39 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 39 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 39 | 40 | 40 | 40 | 39 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 41 | 41 | 40 | 40 | 40 | 41 | 40 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 40 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 40 | 39 | 40 | 40 | 41 | 41 | 40 | 40 | 39 | 39 | 40 | 39 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 43 | 42 | 42 | 42 | 43 | 44 | 45 | 46 | 45 | 43 | 44 | 43 | 45 | 46 | -- | 43 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 41 | 42 | 41 | 40 | 39 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 42 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 47 | 48 | 47 | 46 | 48 | 47 | 48 | 45 | 47 | 46 | 45 | 44 | 43 | 44 | 47 | 49 | 49 | 50 | 49 | 46 | 48 | 51 | 52 | 51 | 49 | 50 | 51 | 51 | 46 | 48 |
| Minimum .... | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 45 | 43 | 43 | 44 | 43 | 42 | 42 | 43 | 41 | 43 | 44 | 45 | 45 | 43 | 42 | 45 | 47 | 48 | 45 | 45 | 47 | 46 | 45 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 48 | 51 | 53 | 52 | 52 | 55 | 56 | 55 | 50 | 52 | 55 | 56 | 59 | 59 | 58 | 58 | 58 | 54 | 54 | 55 | 54 | 51 | 55 | 58 | 60 | 60 | 57 | 57 | -- | 54 |
| Minimum .... | 44 | 44 | 45 | 46 | 47 | 49 | 49 | 50 | 51 | 50 | 48 | 47 | 49 | 50 | 52 | 54 | 54 | 53 | 54 | 52 | 52 | 51 | 52 | 50 | 50 | 52 | 55 | 56 | 53 | 52 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 52 | 52 | 56 | 59 | 59 | 58 | 60 | 59 | 58 | 61 | 60 | 60 | 59 | 62 | 62 | 64 | 64 | 64 | 62 | 64 | 64 | 64 | 63 | 62 | 63 | 64 | 66 | 66 | 64 | 65 | 61 |
| Minimum .... | 52 | 50 | 50 | 50 | 53 | 55 | 54 | 54 | 56 | 55 | 54 | 57 | 56 | 57 | 58 | 58 | 58 | 58 | 59 | 57 | 58 | 58 | 59 | 58 | 55 | 57 | 58 | 59 | 60 | 60 | 59 | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 65 | 65 | 64 | 64 | 62 | 64 | 65 | 66 | 63 | 64 | 64 | 63 | 61 | 58 | 59 | 60 | 60 | 59 | 57 | 58 | 58 | 58 | 59 | 63 |
| Minimum .... | 59 | 60 | 60 | 62 | 60 | 59 | 59 | 60 | 60 | 60 | 60 | 59 | 59 | 58 | 59 | 60 | 59 | 59 | 58 | 58 | 57 | 56 | 56 | 57 | 58 | 57 | 56 | 56 | 56 | 54 | 54 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 62 | 63 | 64 | 64 | 62 | 61 | 61 | 61 | 59 | 58 | 57 | 55 | 53 | 54 | 56 | 56 | 56 | 55 | 55 | 56 | 57 | 55 | 54 | 54 | 54 | 54 | 53 | 54 | 54 | -- | 57 |
| Minimum .... | 54 | 55 | 58 | 59 | 59 | 59 | 57 | 57 | 57 | 57 | 56 | 53 | 53 | 53 | 51 | 53 | 55 | 54 | 52 | 52 | 53 | 55 | 54 | 53 | 53 | 53 | 50 | 51 | 52 | 52 | -- | 54 |

WILLAMETTE RIVER BASIN--Continued

## 14-1859. QUARTZVILLE CREEK NEAR CASCADIA, OREG.

LOCATION.--Lat 44°32'25", long 122°26'05", temperature recorder at gaging station, 80 feet downstream from Panther Creek, 10 miles north of Cascadia, Linn County, and at mile 6.6.
DRAINAGE AREA.--99.2 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1963 to November 1964, October 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F Aug. 2-4; minimum, 33°F Dec. 17, 18, 20.
EXTREMES, 1963-64, 1965-66.--Water temperatures: Maximum, 69°F Aug. 2-4, 1966; minimum, 33°F Dec. 17, 18, 20, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 | 50 | -- | -- | -- | -- | -- | -- | -- | 52 | 52 | 52 | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 51 | 48 | 47 | -- | -- | -- | -- | -- | -- | -- | 49 | 49 | 48 | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | 51 | 49 | 49 | 51 | -- | -- | -- | -- | 48 | 48 | 47 | 47 | 47 | 46 | 47 | 46 | 46 | 46 | 44 | 44 | 42 | 42 | 42 | 41 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | 49 | 47 | 48 | 48 | -- | -- | -- | -- | 47 | 47 | 45 | 46 | 46 | 45 | 46 | 46 | 46 | 44 | 43 | 42 | 40 | 41 | 41 | 40 | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | 46 | 44 | 44 | 43 | 43 | 43 | 41 | 38 | 36 | 34 | 35 | -- | 36 | 37 | 38 | 38 | 36 | 36 | 36 | 35 | 40 | 40 | 40 | 38 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 44 | 42 | 42 | 42 | 42 | 41 | 38 | 36 | 34 | 33 | 33 | -- | 33 | 36 | 37 | 35 | 35 | 36 | 35 | 35 | 35 | 40 | 38 | 38 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 39 | 41 | 42 | 42 | 43 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 41 | 39 | 37 | 38 | 39 | 39 | 38 | 39 | 40 | 40 | 39 | 40 | 39 | 41 | 40 |
| Minimum .... | 37 | 37 | 38 | 39 | 41 | 41 | 42 | 42 | 41 | 39 | 39 | 40 | 40 | 41 | 41 | 40 | 39 | 39 | 37 | 36 | 36 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 39 | 39 | 39 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 40 | 42 | 41 | 42 | 41 | 40 | 41 | 41 | 41 | 39 | 40 | 43 | 42 | 42 | 43 | 43 | 42 | 43 | 42 | 42 | -- | -- | -- | 41 |
| Minimum .... | 39 | 39 | 40 | 39 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 39 | 39 | 39 | 38 | 37 | 38 | 37 | 38 | 39 | 39 | 41 | 41 | 40 | 41 | 41 | 41 | 40 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 39 | 39 | 39 | 40 | 40 | 41 | 42 | 42 | 43 | 44 | 44 | 43 | 42 | 40 | 42 | 43 | 42 | 39 | 41 | 42 | 44 | 45 | 46 | 46 | 45 | 45 | 45 | 44 | 45 | 42 |
| Minimum .... | 38 | 37 | 37 | 36 | 38 | 38 | 38 | 40 | 41 | 40 | 40 | 42 | 43 | 42 | 40 | 39 | 39 | 41 | 39 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 44 | 43 | 42 | 43 | 44 | 46 | 45 | 44 | 42 | 42 | 41 | 42 | 45 | 45 | 47 | 46 | 44 | 43 | 42 | 44 | 45 | -- | 44 |
| Minimum .... | 41 | 41 | 40 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 41 | 39 | 42 | 43 | 41 | 40 | 40 | 38 | 40 | 40 | 41 | 42 | 42 | 44 | 41 | 40 | 41 | 39 | 42 | -- | 41 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 47 | 46 | 46 | 45 | 47 | 46 | 46 | 44 | 47 | 46 | 44 | 44 | 43 | 44 | 46 | 49 | 50 | 50 | 49 | 46 | 47 | 51 | 53 | 52 | 50 | 49 | 51 | 50 | 46 | 47 |
| Minimum .... | 43 | 43 | 43 | 42 | 41 | 43 | 42 | 43 | 43 | 42 | 43 | 44 | 43 | 42 | 42 | 42 | 41 | 44 | 46 | 46 | 45 | 44 | 43 | 46 | 48 | 50 | 46 | 46 | 48 | 46 | 45 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 49 | 52 | 53 | 54 | 58 | 59 | 56 | 50 | 55 | 58 | 60 | 62 | 62 | 61 | 63 | 61 | 58 | 57 | 59 | 57 | 56 | 59 | 61 | 64 | 63 | 60 | 61 | -- | 57 |
| Minimum .... | 44 | 45 | 46 | 46 | 48 | 52 | 51 | 51 | 53 | 50 | 48 | 46 | 49 | 52 | 54 | 57 | 57 | 56 | 56 | 54 | 54 | 53 | 54 | 52 | 51 | 55 | 59 | 58 | 55 | 53 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 52 | 53 | 60 | 62 | 62 | 63 | 65 | 64 | 62 | 65 | 63 | 63 | 63 | 65 | 66 | 67 | 67 | 65 | 65 | 66 | 67 | 67 | 65 | 64 | 65 | 66 | 68 | 68 | 67 | 68 | 64 |
| Minimum .... | 54 | 54 | 51 | 51 | 56 | 58 | 58 | 58 | 61 | 60 | 58 | 61 | 60 | 60 | 60 | 61 | 60 | 61 | 62 | 59 | 60 | 61 | 62 | 61 | 58 | 59 | 60 | 61 | 62 | 63 | 62 | 59 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 68 | 67 | 67 | 67 | 65 | 66 | 67 | 67 | 66 | 66 | 66 | 65 | 63 | 60 | 62 | 62 | 62 | 61 | 60 | 60 | 59 | 60 | 60 | 65 |
| Minimum .... | 62 | 63 | 63 | 65 | 64 | 62 | 62 | 63 | 63 | 62 | 62 | 62 | 62 | 61 | 61 | 62 | 61 | 62 | 61 | 61 | 60 | 58 | 58 | 59 | 60 | 59 | 58 | 58 | 57 | 54 | 55 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 64 | 65 | 67 | 67 | 66 | 65 | 64 | 64 | 63 | 61 | 59 | 58 | 56 | 57 | 60 | 60 | 58 | 58 | 58 | 60 | 60 | 60 | 58 | 58 | 58 | 57 | 58 | 59 | 59 | -- | 61 |
| Minimum .... | 55 | 57 | 59 | 60 | 61 | 61 | 60 | 60 | 59 | 60 | 58 | 56 | 54 | 55 | 53 | 56 | 58 | 57 | 54 | 54 | 56 | 58 | 56 | 57 | 56 | 56 | 54 | 54 | 56 | 56 | -- | 57 |

## 14-1865. MIDDLE SANTIAM RIVER AT MOUTH, NEAR FOSTER, OREG.

LOCATION.--Lat 44°25'25", long 122°37'25", temperature recorder at gaging station, 2.7 miles northeast of Foster, Linn County, and at mile 0.7.
DRAINAGE AREA.--287 square miles.
RECORDS AVAILABLE.--Water temperatures: September 1953 to September 1966 (discontinued).
EXTREMES, 1965-66 --Water temperatures: Maximum, 76°F Aug. 4; minimum, freezing point Dec. 17-20.
EXTREMES, 1953-64, 1965-66.--Water temperatures: Maximum, 77°F July 28, 1958; minimum, freezing point Dec. 17-20, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 57 | 57 | 57 | 59 | 61 | 61 | 60 | 58 | 58 | 60 | 60 | 55 | 50 | 50 | 52 | 54 | 53 | 54 | 55 | 54 | 53 | 54 | 55 | 53 | 53 | 53 | 53 | 53 | 56 |
| Minimum .... | 53 | 53 | 53 | 54 | 54 | 54 | 56 | 57 | 57 | 57 | 56 | 55 | 56 | 55 | 48 | 47 | 49 | 50 | 52 | 51 | 52 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 50 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 53 | 54 | 54 | 52 | 52 | 51 | 52 | 52 | 52 | 49 | 49 | 50 | 49 | 49 | 49 | 50 | 48 | 49 | 48 | 47 | 46 | 45 | 44 | 43 | 43 | 42 | 42 | 43 | 43 | -- | 48 |
| Minimum .... | 50 | 50 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 49 | 48 | 47 | 49 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 45 | 45 | 44 | 43 | 42 | 41 | 41 | 39 | 41 | 41 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 46 | 46 | 47 | 47 | 46 | 44 | 44 | 44 | 43 | 42 | 41 | 38 | 35 | 33 | 34 | 34 | 35 | 38 | 37 | 38 | 36 | 37 | 37 | 37 | 41 | 41 | 40 | 37 | 40 |
| Minimum .... | 41 | 43 | 43 | 44 | 45 | 46 | 46 | 44 | 43 | 43 | 42 | 42 | 41 | 38 | 34 | 33 | 32 | 32 | 32 | 32 | 35 | 36 | 35 | 34 | 36 | 36 | 36 | 37 | 40 | 37 | 37 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 40 | 41 | 43 | 43 | 43 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 41 | 41 | 39 | 38 | 39 | 40 | 40 | 40 | 42 | 41 | 41 | 41 | 42 | 41 | 41 | 41 |
| Minimum .... | 37 | 37 | 40 | 41 | 41 | 41 | 43 | 43 | 42 | 41 | 41 | 41 | 41 | 42 | 42 | 40 | 40 | 39 | 38 | 37 | 37 | 38 | 38 | 38 | 40 | 39 | 39 | 39 | 40 | 40 | 39 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 40 | 42 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 40 | 40 | 44 | 43 | 42 | 44 | 45 | 44 | 44 | 43 | 42 | -- | -- | -- | 41 |
| Minimum .... | 38 | 38 | 39 | 41 | 41 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 38 | 39 | 38 | 36 | 37 | 37 | 38 | 40 | 39 | 41 | 41 | 41 | 43 | 42 | 42 | 40 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 42 | 40 | 41 | 42 | 42 | 43 | 43 | 45 | 45 | 46 | 45 | 44 | 43 | 42 | 44 | 44 | 43 | 41 | 44 | 46 | 48 | 48 | 49 | 48 | 46 | 47 | 46 | 44 | 46 | 44 |
| Minimum .... | 38 | 38 | 37 | 37 | 40 | 40 | 40 | 42 | 42 | 42 | 42 | 44 | 44 | 43 | 42 | 40 | 40 | 42 | 41 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 46 | 47 | 47 | 48 | 48 | 46 | 46 | 44 | 43 | 43 | 46 | 46 | 49 | 48 | 45 | 44 | 45 | 42 | 45 | 49 | 50 | 50 | 48 | 48 | 49 | 46 | 49 | 51 | -- | 47 |
| Minimum .... | 41 | 41 | 40 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 41 | 40 | 42 | 43 | 43 | 41 | 40 | 39 | 40 | 41 | 43 | 44 | 44 | 45 | 43 | 43 | 43 | 42 | 45 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 53 | 52 | 52 | 50 | 48 | 52 | 52 | 51 | 50 | 53 | 51 | 48 | 48 | 46 | 50 | 53 | 56 | 56 | 57 | 53 | 50 | 54 | 58 | 60 | 57 | 55 | 56 | 57 | 55 | 51 | 53 |
| Minimum .... | 46 | 47 | 46 | 46 | 46 | 46 | 45 | 47 | 48 | 46 | 45 | 48 | 46 | 45 | 44 | 44 | 45 | 48 | 50 | 51 | 47 | 46 | 46 | 50 | 53 | 52 | 50 | 49 | 51 | 50 | 47 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 54 | 58 | 61 | 61 | 61 | 63 | 64 | 64 | 56 | 60 | 63 | 65 | 69 | 68 | 66 | 67 | 67 | 62 | 62 | 63 | 63 | 60 | 62 | 65 | 69 | 69 | 64 | 64 | -- | 62 |
| Minimum .... | 48 | 48 | 50 | 50 | 54 | 57 | 57 | 56 | 59 | 56 | 53 | 51 | 55 | 58 | 60 | 64 | 62 | 62 | 62 | 59 | 60 | 59 | 60 | 57 | 58 | 61 | 64 | 64 | 61 | 61 | -- | 58 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 60 | 60 | 65 | 67 | 67 | 66 | 68 | 68 | 68 | 68 | 69 | 67 | 66 | 67 | 69 | 70 | 72 | 71 | 70 | 71 | 72 | 73 | 70 | 68 | 70 | 71 | 73 | 74 | 74 | 73 | 69 |
| Minimum .... | 60 | 57 | 54 | 56 | 62 | 64 | 64 | 64 | 66 | 64 | 63 | 67 | 65 | 64 | 64 | 67 | 66 | 69 | 69 | 68 | 68 | 69 | 70 | 66 | 64 | 66 | 68 | 69 | 70 | 70 | 69 | 65 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 74 | 75 | 76 | 75 | 74 | 73 | 73 | 74 | 74 | 73 | 73 | 71 | 72 | 73 | 73 | 72 | 72 | 72 | 72 | 67 | 64 | 66 | 67 | 68 | 65 | 63 | 65 | 65 | 65 | 67 | 71 |
| Minimum .... | 69 | 70 | 71 | 72 | 71 | 70 | 69 | 69 | 70 | 70 | 70 | 68 | 68 | 67 | 68 | 69 | 68 | 67 | 67 | 67 | 63 | 62 | 61 | 63 | 64 | 63 | 62 | 61 | 62 | 61 | 62 | 67 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 69 | 71 | 73 | 73 | 73 | 71 | 70 | 70 | 69 | 67 | 65 | 63 | 60 | 61 | 65 | 66 | 63 | 62 | 64 | 66 | 68 | 66 | 65 | 63 | 63 | 62 | 64 | 64 | 66 | -- | 66 |
| Minimum .... | 62 | 63 | 65 | 67 | 68 | 67 | 66 | 65 | 65 | 65 | 62 | 61 | 60 | 59 | 57 | 59 | 63 | 61 | 59 | 61 | 61 | 64 | 63 | 62 | 61 | 60 | 59 | 60 | 62 | 62 | -- | 62 |

WILLAMETTE RIVER BASIN--Continued

## 14-1875. SOUTH SANTIAM RIVER AT WATERLOO, OREG.

LOCATION.--Lat 44°29'55", long 122°49'20", temperature recorder at gaging station, 600 feet downstream from highway bridge at Waterloo, Linn County, 2 miles upstream from Hamilton Creek, and at mile 23.3.
DRAINAGE AREA.--640 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 79°F Aug. 4; minimum, 35°F Dec. 18-20.
EXTREMES, 1963-66.--Water temperatures: Maximum, 79°F Aug. 4, 1966; minimum, 35°F Dec. 18-20, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 60 | 59 | 59 | 59 | 59 | 62 | 62 | 61 | 60 | 60 | 61 | 61 | 58 | 54 | 52 | 54 | 54 | 55 | 55 | 54 | 54 | 54 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 57 |
| Minimum .... | 57 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 58 | 60 | 58 | 59 | 58 | 54 | 52 | 52 | 52 | 53 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 53 | 56 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 52 | 52 | 51 | 51 | 52 | 51 | 50 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 48 | 47 | 46 | 46 | 44 | 44 | 44 | 43 | 44 | -- | 49 |
| Minimum .... | 54 | 54 | 54 | 52 | 52 | 50 | 51 | 51 | 50 | 50 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 46 | 46 | 44 | 44 | 43 | 43 | 42 | 42 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 45 | 45 | 46 | 46 | 46 | 47 | 47 | 45 | 44 | 44 | 44 | 44 | 43 | 41 | 38 | 36 | 36 | 36 | 36 | 37 | 38 | 38 | 38 | 38 | 39 | 40 | 42 | 42 | 42 | 41 | 42 |
| Minimum .... | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 43 | 41 | 38 | 36 | 36 | 35 | 35 | 35 | 36 | 37 | 38 | 37 | 37 | 38 | 39 | 40 | 42 | 41 | 40 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 42 | 42 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 43 | 43 | 43 | 42 |
| Minimum .... | 40 | 40 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 42 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 43 | 42 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 41 | 41 | 41 | 42 | 43 | 43 | 42 | 42 | 42 | 41 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 43 | 43 | 43 | 42 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 43 |
| Minimum .... | 40 | 40 | 39 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 41 | 43 | 44 | 42 | 43 | 42 | 40 | 42 | 43 | 42 | 41 | 41 | 42 | 43 | 44 | 44 | 43 | 44 | 43 | 43 | 44 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 45 | 46 | 47 | 47 | 46 | 45 | 45 | 45 | 44 | 45 | 45 | 48 | 48 | 47 | 46 | 45 | 45 | 45 | 47 | 49 | 50 | 49 | 47 | 48 | 48 | 48 | 52 | -- | 47 |
| Minimum .... | 44 | 44 | 42 | 43 | 44 | 45 | 44 | 45 | 45 | 45 | 43 | 43 | 42 | 44 | 45 | 46 | 45 | 44 | 42 | 42 | 42 | 44 | 46 | 47 | 49 | 46 | 45 | 47 | 45 | 48 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 53 | 53 | 52 | 52 | 50 | 52 | 52 | 51 | 51 | 52 | 50 | 49 | 49 | 48 | 52 | 55 | 57 | 57 | 56 | 51 | 52 | 56 | 60 | 58 | 56 | 56 | 58 | 57 | 53 | 53 |
| Minimum .... | 50 | 51 | 52 | 52 | 52 | 50 | 48 | 50 | 51 | 48 | 48 | 51 | 49 | 48 | 47 | 46 | 48 | 50 | 53 | 54 | 52 | 48 | 48 | 51 | 55 | 56 | 52 | 52 | 53 | 54 | 51 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 58 | 61 | 64 | 65 | 66 | 67 | 66 | 62 | 60 | 64 | 67 | 70 | 71 | 70 | 70 | 68 | 66 | 64 | 64 | 64 | 63 | 64 | 68 | 71 | 71 | 70 | 69 | -- | 65 |
| Minimum .... | 49 | 52 | 51 | 52 | 54 | 58 | 61 | 62 | 62 | 62 | 56 | 54 | 58 | 61 | 63 | 67 | 66 | 64 | 66 | 63 | 62 | 60 | 62 | 60 | 59 | 60 | 65 | 69 | 65 | 64 | -- | 60 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 65 | 63 | 67 | 71 | 72 | 70 | 73 | 73 | 72 | 71 | 72 | 71 | 70 | 71 | 71 | 75 | 75 | 74 | 73 | 74 | 74 | 74 | 74 | 71 | 72 | 73 | 76 | 76 | 76 | 76 | 72 |
| Minimum .... | 65 | 61 | 60 | 60 | 63 | 67 | 66 | 66 | 68 | 68 | 65 | 67 | 68 | 67 | 66 | 68 | 69 | 71 | 73 | 70 | 70 | 72 | 72 | 70 | 68 | 69 | 70 | 72 | 72 | 73 | 73 | 68 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 77 | 78 | 78 | 79 | 78 | 76 | 76 | 76 | 76 | 75 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 74 | 74 | 74 | 74 | 68 | 70 | 70 | 70 | 69 | 69 | 68 | 67 | 67 | 68 | 73 |
| Minimum .... | 73 | 73 | 74 | 75 | 74 | 72 | 71 | 72 | 72 | 71 | 70 | 69 | 70 | 70 | 70 | 71 | 69 | 70 | 70 | 70 | 68 | 66 | 65 | 68 | 67 | 67 | 66 | 66 | 65 | 63 | 64 | 69 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 70 | 71 | 74 | 74 | 73 | 72 | 70 | 70 | 69 | 68 | 66 | 65 | 64 | 63 | 65 | 66 | 65 | 65 | 65 | 67 | 68 | 66 | 66 | 65 | 64 | 64 | 64 | 64 | 64 | -- | 67 |
| Minimum .... | 64 | 66 | 67 | 69 | 70 | 70 | 69 | 67 | 67 | 66 | 66 | 64 | 62 | 62 | 60 | 62 | 64 | 64 | 62 | 62 | 64 | 65 | 64 | 64 | 63 | 63 | 61 | 61 | 62 | 61 | -- | 64 |

WILLAMETTE RIVER BASIN--Continued

14-1888. THOMAS CREEK NEAR SCIO, OREG.

LOCATION.--Lat 44°42'40", long 122°45'45", temperature recorder at gaging station, 4.2 miles east of Scio, Linn County, and at mile 14.6.
DRAINAGE AREA.--109 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 79°F Aug. 3, 4; minimum, 34°F Dec. 20.
EXTREMES, 1962-66.--Water temperatures: Maximum, 80°F July 30, 1965; minimum, 33°F Jan. 11-14, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 56 | 55 | 56 | 58 | 59 | 60 | 60 | 58 | 59 | 58 | 58 | 58 | 56 | 51 | 50 | 52 | 54 | 54 | 54 | 53 | 52 | 52 | 53 | 53 | 52 | 54 | 54 | 53 | 52 | 55 |
| Minimum .... | 51 | 52 | 52 | 54 | 55 | 55 | 55 | 56 | 57 | 55 | 57 | 56 | 57 | 56 | 51 | 48 | 50 | 50 | 52 | 52 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 53 | 52 | 50 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 54 | 54 | 53 | 52 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 46 | 45 | 44 | 43 | 44 | 44 | 43 | 45 | -- | 49 |
| Minimum .... | 50 | 50 | 52 | 53 | 52 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 50 | 49 | 49 | 49 | 48 | 48 | 47 | 48 | 46 | 45 | 44 | 42 | 42 | 43 | 42 | 42 | 42 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 47 | 47 | 48 | 48 | 45 | 45 | 45 | 44 | 44 | 42 | 40 | 37 | 35 | 35 | 35 | 36 | 39 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 39 | 42 |
| Minimum .... | 44 | 46 | 44 | 45 | 46 | 47 | 47 | 45 | 43 | 43 | 44 | 44 | 42 | 40 | 37 | 35 | 35 | 35 | 35 | 34 | 36 | 39 | 38 | 39 | 40 | 40 | 40 | 41 | 42 | 39 | 39 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 38 | 38 | 39 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 |
| Minimum .... | 39 | 40 | 41 | 42 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 38 | 38 | 37 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 40 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 42 | 42 | 42 | 42 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | -- | -- | -- | 41 |
| Minimum .... | 39 | 39 | 40 | 40 | 42 | 42 | 40 | 40 | 40 | 39 | 40 | 39 | 39 | 40 | 38 | 38 | 38 | 38 | 38 | 40 | 39 | 41 | 41 | 40 | 42 | 42 | 41 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 41 | 40 | 40 | 42 | 42 | 42 | 42 | 43 | 42 | 45 | 45 | 44 | 43 | 42 | 42 | 43 | 43 | 42 | 42 | 43 | 44 | 45 | 46 | 46 | 45 | 45 | 46 | 45 | 46 | 43 |
| Minimum .... | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 41 | 42 | 42 | 40 | 42 | 44 | 43 | 42 | 40 | 40 | 42 | 42 | 40 | 40 | 40 | 39 | 40 | 40 | 41 | 42 | 42 | 41 | 42 | 42 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 44 | 46 | 48 | 47 | 48 | 46 | 45 | 47 | 46 | 44 | 43 | 47 | 47 | 49 | 49 | 48 | 48 | 48 | 47 | 46 | 51 | 52 | 52 | 51 | 47 | 51 | 50 | 51 | 54 | -- | 48 |
| Minimum .... | 42 | 41 | 40 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 42 | 42 | 41 | 44 | 46 | 45 | 43 | 43 | 42 | 43 | 43 | 44 | 45 | 46 | 48 | 44 | 44 | 45 | 43 | 47 | -- | 43 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 57 | 57 | 56 | 54 | 57 | 56 | 57 | 56 | 56 | 53 | 52 | 51 | 50 | 52 | 56 | 58 | 60 | 61 | 61 | 55 | 57 | 60 | 64 | 64 | 59 | 59 | 61 | 61 | 56 | 57 |
| Minimum .... | 47 | 48 | 50 | 52 | 52 | 51 | 49 | 52 | 53 | 50 | 48 | 51 | 50 | 48 | 48 | 48 | 46 | 50 | 52 | 54 | 53 | 49 | 49 | 52 | 55 | 58 | 52 | 52 | 54 | 55 | 52 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 55 | 60 | 63 | 63 | 64 | 66 | 68 | 68 | 62 | 62 | 66 | 68 | 70 | 72 | 70 | 69 | 68 | 65 | 64 | 66 | 64 | 62 | 64 | 68 | 71 | 69 | 66 | 66 | -- | 65 |
| Minimum .... | 52 | 53 | 50 | 52 | 54 | 60 | 59 | 59 | 62 | 62 | 56 | 54 | 57 | 61 | 63 | 68 | 66 | 63 | 65 | 62 | 61 | 60 | 61 | 57 | 58 | 60 | 65 | 65 | 60 | 61 | -- | 60 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 59 | 59 | 64 | 68 | 68 | 66 | 68 | 71 | 68 | 68 | 68 | 67 | 65 | 64 | 64 | 72 | 73 | 72 | 72 | 74 | 75 | 76 | 70 | 71 | 74 | 76 | 78 | 78 | 77 | 77 | 70 |
| Minimum .... | 59 | 57 | 55 | 56 | 60 | 63 | 60 | 62 | 65 | 64 | 60 | 65 | 65 | 59 | 58 | 60 | 64 | 66 | 67 | 63 | 64 | 65 | 65 | 66 | 62 | 63 | 65 | 67 | 67 | 67 | 67 | 63 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 77 | 78 | 79 | 79 | 78 | 77 | 77 | 75 | 77 | 76 | 75 | 75 | 73 | 75 | 76 | 75 | 76 | 76 | 75 | 76 | 72 | 68 | 70 | 70 | 70 | 68 | 68 | 68 | 66 | 68 | 70 | 74 |
| Minimum .... | 66 | 66 | 69 | 70 | 68 | 67 | 66 | 67 | 68 | 67 | 66 | 65 | 66 | 65 | 65 | 67 | 66 | 66 | 66 | 66 | 66 | 64 | 63 | 65 | 64 | 65 | 64 | 64 | 63 | 60 | 62 | 66 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 71 | 73 | 74 | 75 | 75 | 72 | 68 | 69 | 68 | 66 | 64 | 62 | 60 | 60 | 60 | 64 | 64 | 63 | 60 | 61 | 64 | 63 | 62 | 61 | 60 | 61 | 61 | 61 | 62 | 63 | -- | 65 |
| Minimum .... | 63 | 64 | 65 | 67 | 68 | 67 | 63 | 63 | 62 | 62 | 61 | 59 | 57 | 58 | 56 | 59 | 62 | 60 | 56 | 57 | 59 | 61 | 59 | 59 | 59 | 59 | 57 | 56 | 59 | 59 | -- | 61 |

WILLAMETTE RIVER BASIN--Continued

14-1890. SANTIAM RIVER AT JEFFERSON, OREG.

LOCATION.--Lat 44°42'55", long 123°00'40", temperature recorder at gaging station, 350 feet upstream from Southern Pacific railroad bridge at Jefferson, Marion County, 2.1 miles downstream from confluence of North and South Santiam Rivers, and at mile 9.62.
DRAINAGE AREA.--1,790 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Minimum, 38°F Dec. 20.
EXTREMES, 1963-66.--Water temperatures: Maximum (1963-64), 70°F July 12, 13, 27, Aug. 23, 24, 1964; minimum, 38°F Dec. 20, 1965.
REMARKS.--Recorder stopped Dec. 26 to Feb. 10; temperature range, 40°F to 46°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 58 | 57 | 57 | 57 | 57 | 56 | 54 | 54 | 54 | 55 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 56 | 57 | 56 | 56 | 56 | 54 | 53 | 54 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 53 | 54 | 53 | 52 | 50 | 50 | 51 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 48 | -- | 51 |
| Minimum .... | 54 | 54 | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 47 | 46 | 46 | 47 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 47 | 46 | 46 | 46 | 45 | 44 | 43 | 41 | 40 | 40 | 39 | 39 | 41 | 41 | 41 | 41 | 41 | -- | -- | -- | -- | -- | -- | 44 |
| Minimum .... | 48 | 48 | 47 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 45 | 44 | 43 | 41 | 40 | 40 | 39 | 39 | 38 | 39 | 41 | 41 | 41 | 41 | -- | -- | -- | -- | -- | -- | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 56 | 58 | 58 | 55 | 55 | 56 | 56 | 53 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 51 | 52 | 53 | 50 | 50 | 51 | 52 | 50 | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 56 | 60 | 64 | 63 | 65 | 66 | 67 | 67 | 63 | 63 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 50 | 53 | 52 | 53 | 56 | 60 | 59 | 60 | 62 | 62 | 59 | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | 72 | 71 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 69 | 68 | 69 | 70 | 69 | 68 | 68 | 68 | 68 | 67 | 64 | 63 | 64 | 62 | 62 | 62 | 63 | 60 | 63 | 64 | 67 |
| Minimum .... | -- | -- | 63 | 64 | 63 | 62 | 62 | 62 | 63 | 62 | 61 | 61 | 62 | 51 | 62 | 62 | 61 | 61 | 61 | 61 | 60 | 60 | 58 | 60 | 59 | 58 | 58 | 58 | 58 | 56 | 58 | 60 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 66 | 67 | 68 | 68 | 66 | 64 | 64 | 64 | 62 | 61 | 61 | 59 | 58 | 58 | 62 | 61 | 60 | 58 | 58 | 60 | 60 | 58 | 58 | 57 | 58 | 58 | 58 | 58 | 58 | -- | 61 |
| Minimum .... | 58 | 60 | 61 | 61 | 62 | 61 | 60 | 59 | 58 | 59 | 58 | 56 | 56 | 56 | 54 | 57 | 59 | 57 | 56 | 56 | 57 | 58 | 56 | 57 | 56 | 56 | 56 | 56 | 58 | 57 | -- | 58 |

## 14-1900. LUCKIAMUTE RIVER AT PEDEE, OREG.

LOCATION.--Lat 44°44'35", long 123°25'25", temperature recorder at gaging station, 0.5 mile downstream from Pedee Creek, 1.0 mile southwest of Pedee, Polk County, and at mile 29.7.
DRAINAGE AREA.--115 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 73°F July 29, Aug. 1-3; minimum, 36°F Dec. 20, 21.
EXTREMES, 1964-66.--Water temperatures: Maximum, 73°F July 29, Aug. 1-3, 1966; minimum, 36°F Dec. 20, 21, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 44 | 44 | 42 | 41 | 39 | 38 | 38 | 37 | 37 | 38 | 38 | 39 | 40 | 40 | 40 | 42 | 44 | 44 | 44 | 45 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 44 | 42 | 40 | 39 | 38 | 38 | 37 | 37 | 36 | 36 | 38 | 38 | 39 | 40 | 40 | 40 | 42 | 44 | 44 | 44 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 4[1] | 4[1] | 41 | 4[1] | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 44 |
| Minimum .... | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 44 | 44 | 42 | 41 | 41 | 41 | 40 | 40 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | -- | -- | -- | 42 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 4[1] | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 47 | 47 | 48 | 45 |
| Minimum .... | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 47 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 47 | 48 | 49 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 47 | 47 | 49 | 50 | 50 | 50 | 48 | 48 | 48 | 49 | 50 | 50 | 50 | 50 | 48 | 48 | 50 | 5[1] | -- | 49 |
| Minimum .... | 48 | 47 | 46 | 47 | 48 | 49 | 50 | 50 | 50 | 50 | 49 | 47 | 46 | 46 | 47 | 49 | 49 | 48 | 47 | 47 | 47 | 48 | 48 | 49 | 50 | 48 | 47 | 48 | 48 | 50 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 56 | 57 | 57 | 57 | 56 | 57 | 57 | 57 | 55 | 55 | 54 | 53 | 51 | 52 | 54 | 56 | 57 | 58 | 58 | 54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 50 | 52 | 54 | 55 | 57 | 56 | 54 | 55 | 56 | 55 | 53 | 54 | 53 | 5[1] | 51 | 51 | 49 | 50 | 53 | 54 | 54 | 52 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 67 | 67 | 66 | 63 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 66 | 66 | 62 | 60 | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 61 | 59 | 64 | 66 | 66 | 63 | 68 | 70 | 69 | 67 | 67 | 67 | 66 | 66 | 66 | 69 | 70 | 69 | 68 | 69 | 71 | 71 | 70 | 68 | 70 | 71 | 71 | 73 | 72 | 72 | 68 |
| Minimum .... | 61 | 59 | 58 | 58 | 62 | 63 | 62 | 63 | 66 | 65 | 63 | 65 | 66 | 65 | 64 | 64 | 63 | 65 | 67 | 63 | 63 | 65 | 65 | 67 | 62 | 63 | 65 | 66 | 68 | 68 | 66 | 64 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 73 | 73 | 71 | 72 | 72 | 72 | 71 | 70 | 70 | 70 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 68 | 67 | 66 | 66 | 64 | 66 | 65 | 63 | 63 | 63 | 69 |
| Minimum .... | 67 | 68 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 64 | 64 | 61 | 64 | 62 | 63 | 63 | 62 | 62 | 61 | 62 | 60 | 62 | 58 | 61 | 61 | 62 | 62 | 61 | 60 | 59 | 58 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 65 | 66 | 66 | 69 | 70 | 67 | 68 | 67 | 64 | 62 | 61 | 60 | 58 | 59 | 61 | 61 | 61 | 60 | 59 | 61 | 61 | 60 | 60 | 59 | 59 | 60 | 60 | 61 | 62 | -- | 62 |
| Minimum .... | 58 | 61 | 62 | 61 | 63 | 62 | 62 | 62 | 60 | 61 | 61 | 59 | 57 | 58 | 58 | 59 | 59 | 59 | 57 | 57 | 57 | 60 | 57 | 59 | 58 | 58 | 58 | 58 | 59 | 61 | -- | 59 |

WILLAMETTE RIVER BASIN--Continued

14-1910. WILLAMETTE RIVER AT SALEM, OREG.
(International Hydrological Decade station and Irrigation network station)

LOCATION.--Lat 44°56'40", long 123°02'30", at bridge on State Highway 22, 300 feet downstream from gaging station at Salem, Marion County.
DRAINAGE AREA.--7,280 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August to December 1910, August 1911 to August 1912, February 1951 to September 1966.
Water temperatures: February 1951 to September 1966.
EXTREMES, 1965-66.--Dissolved solids: Maximum, 124 ppm Dec. 10; minimum, 36 ppm Sept. 15.
Hardness: Maximum, 38 ppm Dec. 10; minimum, 16 ppm Jan. 8-19, Mar. 9-15.
Specific conductance: Maximum daily, 141 micromhos Sept. 17; minimum daily, 42 micromhos Mar. 10.
Water temperatures: Maximum, 76°F July 30; minimum, 40°F Dec. 18-22.
EXTREMES, 1951-66.--Dissolved solids: Maximum, 124 ppm Dec. 10, 1965; minimum, 36 ppm Sept. 15, 1966.
Hardness: Maximum, 38 ppm Dec. 10, 1965; minimum, 12 ppm Dec. 24-28, 1964.
Specific conductance: Maximum daily, 141 micromhos Sept. 17, 1966; minimum daily, 30 micromhos Jan. 29, 1965.
Water temperatures: Maximum, 78°F July 22, 1959; minimum, freezing point on several days during February 1956.

Chemical analyses, in parts per million, water year October 1965 to September 1965

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 1-31, 1965.. | 10760 | 17 | | 5.2 | 2.1 | 4.3 | 0.7 | 30 | 0 | 3.4 | 3.0 | 0.1 | 1.1 | 0.00 | 60 | 0.08 | 1740 | 22 | 0 | 0.4 | 66 | 7.0 |
| Nov. 1-11..... | 10230 | -- | | -- | -- | 4.5 | -- | 30 | 0 | -- | -- | -- | -- | -- | 64 | .09 | 1770 | 24 | 0 | .4 | 70 | 7.0 |
| Nov. 12-18..... | 22790 | -- | | -- | -- | 4.0 | -- | 28 | 0 | -- | -- | -- | -- | -- | 57 | .08 | 3510 | 20 | 0 | .4 | 60 | 7.0 |
| Nov. 19-30..... | 21710 | -- | | -- | -- | 3.9 | -- | 21 | 0 | -- | -- | -- | -- | -- | 67 | .09 | 3930 | 21 | 3 | .4 | 64 | 6.7 |
| Dec. 1-2..... | 13800 | -- | | -- | -- | 4.2 | -- | 33 | 0 | -- | -- | -- | -- | -- | 92 | .13 | 3430 | 36 | 9 | .3 | 88 | 6.8 |
| Dec. 3-9..... | 14310 | -- | | -- | -- | 4.0 | -- | 18 | 0 | -- | -- | -- | -- | -- | 67 | .09 | 2590 | 22 | 7 | .4 | 68 | 6.6 |
| Dec. 10..... | 14300 | -- | | -- | -- | 4.0 | -- | 51 | 0 | -- | -- | -- | -- | -- | 124 | .17 | 4790 | 38 | 0 | .3 | 118 | 6.3 |
| Dec. 11-15..... | 10990 | -- | | -- | -- | 4.3 | -- | 22 | 0 | -- | -- | -- | -- | -- | 66 | .09 | 1960 | 26 | 8 | .4 | 82 | 6.7 |
| Dec. 16-17..... | 8250 | -- | | -- | -- | 4.8 | -- | 40 | 0 | -- | -- | -- | -- | -- | 96 | .13 | 2140 | 30 | 0 | .4 | 99 | 6.8 |
| Dec. 18-25..... | 9039 | -- | | -- | -- | 4.6 | -- | 29 | 0 | -- | -- | -- | -- | -- | 73 | .10 | 1780 | 30 | 6 | .4 | 81 | 6.8 |
| Dec. 26-31..... | 55750 | -- | | -- | -- | 3.4 | -- | 20 | 0 | -- | -- | -- | -- | -- | 56 | .08 | 8430 | 19 | 2 | .3 | 58 | 6.9 |
| Jan. 1-6, 1966... | 97480 | -- | | -- | -- | 3.4 | -- | 14 | 0 | -- | -- | -- | -- | -- | 44 | .06 | 11580 | 19 | 7 | .3 | 54 | 6.4 |
| Jan. 7..... | 155000 | -- | | -- | -- | 4.0 | -- | 21 | 0 | -- | -- | -- | -- | -- | 50 | .07 | 20920 | 17 | 0 | .4 | 112 | 5.5 |
| Jan. 8-19..... | 89830 | 14 | | 5.2 | .7 | 2.9 | 1.1 | 22 | 0 | 3.0 | 1.5 | .1 | .9 | .00 | 48 | .07 | 11640 | 16 | 0 | .3 | 47 | 6.8 |
| Jan. 20-Feb. 2... | 27310 | -- | | -- | -- | 4.4 | -- | 22 | 0 | -- | -- | -- | -- | -- | 40 | .05 | 2950 | 19 | 1 | .4 | 63 | 6.3 |
| Feb. 3-28..... | 18080 | -- | | -- | -- | 3.8 | -- | 29 | 0 | -- | -- | -- | -- | -- | 66 | .09 | 3220 | 22 | 0 | .4 | 69 | 6.5 |
| Mar. 1-8..... | 19990 | -- | | -- | -- | 3.7 | -- | 26 | 0 | -- | -- | -- | -- | -- | 45 | .06 | 2430 | 20 | 0 | .4 | 62 | 7.1 |
| Mar. 9-15..... | 66710 | -- | | -- | -- | 2.8 | -- | 20 | 0 | -- | -- | -- | -- | -- | 45 | .06 | 8110 | 16 | 0 | .3 | 49 | 7.0 |
| Mar. 16-31..... | 35110 | -- | | -- | -- | 3.2 | -- | 20 | 0 | -- | -- | -- | -- | -- | 52 | .07 | 4930 | 19 | 2 | .3 | 58 | 6.7 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apr. 1-19, 1966.. | 24600 | 12 | | 4.8 | 1.3 | 3.4 | .7 | 18 | 0 | 4.4 | 3.0 | .0 | 1.3 | .00 | 39 | .05 | 2590 | 17 | 2 | .4 | 55 | 6.5 |
| Apr. 20-May 4.... | 14290 | -- | | 4.8 | 2.0 | 3.8 | -- | 18 | 0 | -- | -- | -- | -- | -- | 45 | .06 | 1740 | 20 | 5 | .4 | 64 | 6.2 |
| May 5-31..... | 13380 | -- | | 4.8 | 1.5 | 3.4 | -- | 22 | 0 | -- | -- | -- | -- | -- | 47 | .06 | 1700 | 18 | 0 | .3 | 56 | 6.8 |
| June 1-30..... | 6849 | -- | | 5.6 | 2.0 | 4.5 | -- | 28 | 0 | -- | -- | -- | -- | -- | 40 | .05 | 740 | 22 | 0 | .4 | 66 | 6.7 |
| July 1-19..... | 5393 | -- | | -- | -- | 4.5 | -- | 28 | 0 | -- | -- | -- | -- | -- | 53 | .07 | 772 | 21 | 0 | .4 | 69 | 6.7 |
| July 20-31..... | 5449 | 12 | | 6.0 | 1.9 | 4.9 | .8 | 26 | 0 | 4.8 | 4.5 | .1 | 2.0 | .00 | 55 | .07 | 809 | 23 | 1 | .4 | 74 | 6.6 |
| Aug. 1-23..... | 5293 | -- | | 5.9 | 1.9 | 4.5 | -- | 28 | 0 | -- | -- | -- | -- | -- | 41 | .06 | 586 | 22 | 0 | .4 | 69 | 6.8 |
| Aug. 24..... | 5270 | -- | | 6.0 | 2.0 | 8.6 | 1.5 | 27 | 0 | -- | -- | -- | -- | -- | 59 | .08 | 840 | 23 | 0 | .8 | 97 | 6.1 |
| Aug. 25-Sept. 14. | 6546 | -- | | 5.7 | 1.9 | 4.5 | -- | 29 | 0 | -- | -- | -- | -- | -- | 49 | .07 | 866 | 22 | 0 | .4 | 67 | 6.8 |
| Sept. 15..... | 7710 | -- | | 5.7 | 1.9 | 5.4 | -- | 34 | 0 | -- | -- | -- | -- | -- | 36 | .05 | 749 | 22 | 0 | .5 | 78 | 6.4 |
| Sept. 16..... | 7750 | -- | | 5.8 | 2.0 | 7.9 | 2.3 | 28 | 0 | -- | -- | -- | -- | -- | 67 | .09 | 1400 | 22 | 0 | .7 | 101 | 5.5 |
| Sept. 17..... | 7720 | -- | | 6.5 | 2.3 | 11 | 4.6 | 20 | 0 | -- | -- | -- | -- | -- | 84 | .11 | 1750 | 26 | 9 | .9 | 141 | 4.8 |
| Sept. 18-20..... | 9307 | -- | | 5.7 | 1.9 | 5.5 | -- | 33 | 0 | -- | -- | -- | -- | -- | 52 | .07 | 1310 | 22 | 0 | .5 | 75 | 6.5 |
| Sept. 21-30..... | 8086 | -- | | 5.7 | 1.9 | 4.2 | -- | 29 | 0 | -- | -- | -- | -- | -- | 50 | .07 | 1090 | 22 | 0 | .4 | 65 | 7.0 |
| Weighted average | -- | -- | | -- | -- | 3.6 | -- | 22 | -- | -- | -- | -- | -- | -- | 51 | 0.07 | 2690 | 19 | 2 | 0.4 | 60 | 6.5 |
| Time-weighted average..... | 19610 | -- | | -- | -- | 4.1 | -- | 24 | -- | -- | -- | -- | -- | -- | 52 | -- | -- | 21 | 2 | 0.4 | 65 | 6.5 |
| Tons per day... | -- | -- | | -- | -- | 193 | -- | 1170 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Chemical analyses, in parts per million

| Date of Collection | Aluminum (Al) | Manganese (Mn) | Nickel (Ni) | Chromium (Cr) | Copper (Cu) | Zinc (Zn) | Strontium (Sr) | Lithium (Li) |
|---|---|---|---|---|---|---|---|---|
| Apr. 15, 1966 | 0.3 | 0.06 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 |
| May 16..... | .2 | .05 | | .00 | .00 | .01 | .09 | .01 |
| June 15..... | .2 | .05 | | .01 | .11 | .01 | .06 | .01 |

WILLAMETTE RIVER BASIN--Continued

14-1910. WILLAMETTE RIVER AT SALEM, OREG.--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 66 | 69 | 91 | 59 | 67 | 57 | 51 | 64 | 60 | 67 | 67 | 70 |
| 2..... | 66 | 70 | 88 | 62 | 69 | 60 | 50 | 62 | 64 | 68 | 68 | 70 |
| 3..... | 62 | 73 | 64 | 54 | 74 | 60 | 53 | 64 | 63 | 68 | 67 | 69 |
| 4..... | 60 | 74 | 70 | 49 | 75 | 62 | 58 | 61 | 65 | 62 | 67 | 64 |
| 5..... | 61 | 68 | 67 | 50 | 74 | 61 | 61 | 56 | 68 | 60 | 69 | 62 |
| 6..... | 62 | 68 | 70 | 46 | 72 | -- | 58 | 54 | 70 | 63 | 69 | 62 |
| 7..... | 61 | 69 | 71 | 112 | 70 | 61 | 54 | 51 | 73 | 74 | 69 | 61 |
| 8..... | 66 | 72 | 71 | 46 | 68 | 58 | 55 | 54 | 71 | 74 | 68 | 62 |
| 9..... | 61 | 66 | 68 | 47 | 68 | 50 | 58 | 53 | 66 | 76 | 68 | 62 |
| 10..... | 62 | 65 | 118 | 49 | 68 | 42 | 49 | 56 | 66 | 75 | 67 | 62 |
| 11..... | 62 | 70 | 68 | 53 | 66 | 47 | 50 | 51 | 66 | 73 | 66 | 63 |
| 12..... | 64 | 59 | 73 | 51 | 66 | 50 | 47 | 51 | 68 | 66 | 69 | 65 |
| 13..... | 63 | 55 | 117 | 52 | 65 | 52 | 47 | 51 | 62 | 66 | 68 | 68 |
| 14..... | 62 | 56 | 81 | 48 | 70 | 51 | 58 | 53 | 63 | 69 | 68 | 72 |
| 15..... | 64 | 58 | 79 | 47 | 68 | 51 | 58 | 54 | 64 | 69 | 68 | 79 |
| 16..... | 63 | 62 | 104 | 44 | 70 | 55 | 60 | 55 | 64 | 69 | 70 | 101 |
| 17..... | 63 | 63 | 98 | 50 | 71 | 56 | 57 | 55 | 66 | 70 | 68 | 141 |
| 18..... | 64 | 61 | 73 | 52 | 71 | 60 | 57 | 55 | 65 | 68 | 71 | 87 |
| 19..... | 67 | 71 | 73 | 53 | 73 | 56 | 59 | 58 | 68 | 68 | 69 | 75 |
| 20..... | 67 | 64 | 73 | 58 | 73 | 56 | 70 | 58 | 68 | 73 | 69 | 85 |
| 21..... | 70 | 71 | 93 | 61 | 66 | 57 | 61 | 57 | 66 | 73 | 68 | 66 |
| 22..... | 68 | 66 | 81 | 60 | 65 | 57 | 62 | 58 | 66 | 74 | 69 | 65 |
| 23..... | 69 | 60 | 73 | 63 | 64 | 60 | 63 | 58 | 66 | 74 | 69 | 61 |
| 24..... | 70 | 56 | 106 | 67 | 61 | 62 | 62 | 54 | 66 | 74 | 100 | 62 |
| 25..... | 67 | 64 | -- | 64 | 65 | 63 | 63 | 58 | 64 | 73 | 70 | 65 |
| 26..... | 68 | 59 | 66 | 61 | 65 | 62 | 62 | 61 | 69 | 76 | 68 | 65 |
| 27..... | 69 | 64 | 68 | 62 | 65 | 60 | 61 | 54 | 64 | 73 | 69 | 65 |
| 28..... | 70 | 68 | 63 | 64 | 65 | 59 | 63 | 55 | 66 | 73 | 66 | 65 |
| 29..... | 70 | 66 | 50 | 61 | -- | 58 | 62 | 56 | 66 | 73 | 71 | 67 |
| 30..... | 68 | 65 | 51 | 67 | -- | 55 | 63 | 61 | 68 | 76 | 70 | 67 |
| 31..... | 69 | -- | 53 | 71 | -- | 51 | -- | 66 | -- | 73 | 72 | -- |
| Average | 65 | 65 | 77 | 57 | 68 | 56 | 57 | 58 | 66 | 70 | 69 | 70 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 57 | 57 | 58 | 59 | 60 | 61 | 61 | 61 | 60 | 60 | 60 | 60 | 59 | 57 | 57 | 57 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 57 | 58 | 59 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 57 | 57 | 56 | 56 | 57 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 58 | 58 | 58 | 57 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 52 | 51 | 50 | 50 | 49 | 49 | 48 | 47 | 47 | -- | 54 |
| Minimum .... | 57 | 57 | 58 | 58 | 57 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 52 | 52 | 52 | 51 | 50 | 50 | 49 | 49 | 48 | 47 | 47 | 47 | -- | 53 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 42 | 44 |
| Minimum .... | 47 | 47 | 48 | 48 | 48 | 49 | 49 | 48 | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 42 | 41 | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 43 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 |
| Minimum .... | 41 | 41 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | -- | -- | -- | 43 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 48 | 48 | 48 | 48 | 46 | 45 | 46 | 46 | 45 | 45 | 47 | 48 | 49 | 50 | 50 | 49 | 49 | 49 | 50 | 46 |
| Minimum .... | 43 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 48 | 48 | 46 | 45 | 45 | 45 | 45 | 44 | 44 | 45 | 47 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 46 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 49 | 49 | 50 | 51 | 53 | 53 | 53 | 52 | 52 | 51 | 52 | 53 | 54 | 55 | 55 | 53 | 53 | 54 | 55 | -- | 52 |
| Minimum .... | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 51 | 50 | 50 | 49 | 48 | 49 | 49 | 50 | 51 | 53 | 52 | 52 | 51 | 51 | 51 | 52 | 53 | 54 | 53 | 53 | 53 | 53 | 53 | -- | 51 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 59 | 60 | 59 | 58 | 56 | 57 | 57 | 57 | 56 | 55 | 56 | 55 | 54 | 53 | 55 | 57 | 60 | 61 | 61 | 59 | 58 | 59 | 61 | 62 | 61 | 59 | 59 | 59 | 58 | 58 |
| Minimum .... | 54 | 56 | 58 | 58 | 58 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 55 | 54 | 53 | 53 | 53 | 54 | 57 | 59 | 59 | 58 | 57 | 57 | 59 | 61 | 59 | 58 | 58 | 58 | 57 | 57 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 59 | 60 | 63 | 64 | 66 | 68 | 69 | 68 | 68 | 66 | 66 | 68 | 70 | 71 | 71 | 71 | 70 | 71 | 70 | 68 | 67 | 67 | 67 | 67 | 69 | 70 | 69 | 70 | -- | 67 |
| Minimum .... | 56 | 56 | 57 | 57 | 60 | 63 | 64 | 66 | 67 | 68 | 66 | 65 | 65 | 66 | 68 | 69 | 70 | 70 | 69 | 69 | 68 | 67 | 67 | 66 | 65 | 66 | 67 | 69 | 69 | 69 | -- | 65 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 68 | 66 | 66 | 68 | 69 | 70 | 70 | 72 | 73 | 72 | 72 | 71 | 71 | 71 | 71 | 71 | 72 | 72 | 71 | 72 | 72 | 72 | 72 | 72 | 71 | 72 | 74 | 75 | 76 | 74 | 71 |
| Minimum .... | 68 | 66 | 64 | 64 | 66 | 68 | 68 | 69 | 70 | 72 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 72 | 72 | 72 | 70 | 70 | 70 | 72 | 73 | 74 | 73 | 70 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 73 | 73 | 71 | 71 | 70 | 71 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 67 | 66 | 66 | 64 | 64 | 64 | 64 | 64 | 70 |
| Minimum .... | 73 | 73 | 73 | 74 | 73 | 73 | 73 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 70 | 71 | 70 | 70 | 70 | 69 | 69 | 69 | 67 | 65 | 65 | 64 | 63 | 63 | 63 | 63 | 63 | 69 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 66 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 63 | 62 | 62 | 60 | 60 | 60 | 61 | 62 | 62 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 63 | 63 | -- | 63 |
| Minimum .... | 63 | 64 | 66 | 66 | 65 | 65 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 60 | 60 | 60 | 60 | 61 | 60 | 60 | 61 | 62 | 62 | 62 | 61 | 61 | 61 | 61 | 62 | 62 | -- | 62 |

WILLAMETTE RIVER BASIN--Continued

14-1930. WILLAMINA CREEK NEAR WILLAMINA, OREG.

LOCATION.--Lat 45°08'35", long 123°29'35", temperature recorder at gaging station, 4.5 miles north of Willamina, Yamhill County, and at mile 6.2.
DRAINAGE AREA.--64.7 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 71°F July 29, Aug. 2; minimum, 36°F Dec. 20.
EXTREMES, 1963-66.--Water temperatures: Maximum, 73°F July 30, 1965; minimum, 33°F Nov. 21, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 54 | 54 | 56 | 57 | 59 | 58 | 58 | 56 | 54 | 54 | 54 | 55 | 54 | 51 | 52 | 52 | 52 | 53 | 53 | 52 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 52 | 52 | 54 |
| Minimum .... | 51 | 52 | 53 | 54 | 54 | 55 | 56 | 56 | 55 | 52 | 53 | 52 | 53 | 54 | 52 | 49 | 50 | 50 | 50 | 51 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 52 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 53 | 51 | 52 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 48 | 46 | 45 | 45 | 45 | 44 | 45 | -- | 50 |
| Minimum .... | 52 | 52 | 53 | 53 | 52 | 50 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 50 | 50 | 48 | 47 | 46 | 45 | 45 | 43 | 43 | 43 | 43 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 47 | 47 | 48 | 48 | 47 | 45 | 45 | 45 | 45 | 44 | 41 | 41 | 39 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 40 | 40 | 40 | 41 | 43 | 43 | 41 | 41 | 42 |
| Minimum .... | 45 | 45 | 46 | 46 | 46 | 47 | 47 | 45 | 45 | 45 | 45 | 44 | 41 | 41 | 39 | 38 | 37 | 37 | 37 | 36 | 37 | 37 | 37 | 37 | 40 | 39 | 40 | 41 | 41 | 41 | 41 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 43 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 |
| Minimum .... | 41 | 41 | 41 | 43 | 43 | 43 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 44 | 44 | 42 | 43 | 44 | 44 | 45 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 43 | -- | -- | -- | 44 |
| Minimum .... | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 42 | 43 | 42 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 42 | 44 | 44 | 43 | 42 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 41 | 43 | 43 | 42 | 44 | 44 | 44 | 44 | 45 | 46 | 46 | 45 | 44 | 43 | 44 | 44 | 42 | 43 | 44 | 45 | 46 | 47 | 47 | 47 | 47 | 48 | 48 | 50 | 45 |
| Minimum .... | 39 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 44 | 43 | 42 | 44 | 45 | 45 | 44 | 43 | 42 | 43 | 42 | 40 | 41 | 42 | 42 | 42 | 43 | 44 | 45 | 45 | 44 | 46 | 46 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 47 | 49 | 50 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 47 | 48 | 48 | 50 | 51 | 50 | 48 | 49 | 49 | 51 | 53 | 54 | 54 | 51 | 51 | 52 | 52 | 53 | 53 | -- | 50 |
| Minimum .... | 46 | 43 | 44 | 45 | 45 | 46 | 47 | 47 | 48 | 48 | 47 | 45 | 43 | 46 | 48 | 45 | 45 | 45 | 44 | 46 | 47 | 48 | 49 | 49 | 51 | 48 | 47 | 47 | 47 | 49 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 57 | 58 | 59 | 59 | 58 | 58 | 58 | 59 | 57 | 56 | 54 | 52 | 51 | 50 | 53 | 54 | 56 | 58 | 59 | 57 | 55 | 56 | 59 | 62 | 60 | 56 | 57 | 58 | 56 | 53 | 56 |
| Minimum .... | 49 | 50 | 52 | 53 | 56 | 54 | 51 | 53 | 56 | 53 | 50 | 51 | 50 | 48 | 49 | 48 | 47 | 48 | 51 | 52 | 53 | 50 | 49 | 51 | 54 | 54 | 49 | 49 | 51 | 51 | 50 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 53 | 52 | 54 | 58 | 58 | 62 | 62 | 62 | 61 | 57 | 57 | 62 | 64 | 67 | 67 | 64 | 63 | 62 | 62 | 58 | 58 | 60 | 60 | 60 | 62 | 63 | 62 | 62 | 60 | -- | 60 |
| Minimum .... | 49 | 50 | 48 | 48 | 50 | 54 | 56 | 56 | 57 | 57 | 55 | 52 | 54 | 56 | 58 | 62 | 60 | 57 | 58 | 56 | 55 | 54 | 56 | 54 | 53 | 55 | 58 | 59 | 56 | 56 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 58 | 57 | 62 | 65 | 62 | 62 | 65 | 66 | 65 | 62 | 63 | 61 | 62 | 63 | 62 | 66 | 66 | 66 | 65 | 66 | 67 | 67 | 65 | 63 | 65 | 66 | 70 | 71 | 70 | 69 | 64 |
| Minimum .... | 57 | 55 | 54 | 53 | 58 | 58 | 57 | 56 | 58 | 61 | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 59 | 61 | 57 | 58 | 59 | 60 | 61 | 57 | 58 | 58 | 58 | 62 | 61 | 60 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 71 | 70 | 70 | 69 | 69 | 69 | 67 | 69 | 68 | 66 | 66 | 66 | 68 | 68 | 67 | 66 | 66 | 66 | 67 | 66 | 64 | 64 | 64 | 64 | 62 | 62 | 60 | 58 | 60 | 61 | 66 |
| Minimum .... | 60 | 62 | 62 | 62 | 60 | 60 | 60 | 61 | 61 | 60 | 58 | 57 | 60 | 58 | 59 | 59 | 57 | 58 | 57 | 58 | 57 | 60 | 58 | 60 | 60 | 58 | 58 | 56 | 55 | 55 | 54 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 64 | 65 | 66 | 64 | 62 | 64 | 62 | 60 | 59 | 57 | 56 | 56 | 55 | 58 | 58 | 59 | 58 | 58 | 61 | 60 | 59 | 58 | 57 | 58 | 58 | 58 | 61 | 59 | -- | 60 |
| Minimum .... | 54 | 57 | 57 | 58 | 59 | 58 | 58 | 58 | 57 | 58 | 56 | 54 | 52 | 55 | 53 | 55 | 56 | 56 | 54 | 53 | 55 | 58 | 55 | 57 | 55 | 56 | 54 | 54 | 56 | 55 | -- | 56 |

WILLAMETTE RIVER BASIN--Continued

14-1940. SOUTH YAMHILL RIVER NEAR WHITESON, OREG.

LOCATION.--Lat 45°10'08", long 123°12'25", temperature recorder at gaging station on downstream side of Whiteson Bridge on U.S. Highway 99 W, 1.3 miles northwest of Whiteson, Yamhill County, 1.4 miles downstream from Salt Creek, and at mile 16.71.
DRAINAGE AREA.--502 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F Aug. 3; minimum, 37°F on several days during December.
EXTREMES, 1963-66.--Water temperatures: Maximum, 77°F July 6, 7, 1965, Aug. 3, 1966; minimum, 33°F Dec. 17-20, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 57 | 56 | 57 | 58 | 61 | 61 | 61 | 60 | 58 | 58 | 58 | 58 | 58 | 56 | 55 | 55 | 55 | 55 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 54 | 54 | 56 |
| Minimum .... | 56 | 56 | 56 | 56 | 56 | 57 | 58 | 58 | 59 | 58 | 57 | 57 | 57 | 57 | 56 | 55 | 55 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 55 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 52 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 48 | 48 | 49 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 46 | 45 | 45 | 44 | 44 | 44 | 43 | -- | 49 |
| Minimum .... | 54 | 53 | 54 | 54 | 52 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 43 | 42 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 46 | 46 | 46 | 47 | 47 | 45 | 44 | 44 | 44 | 44 | 42 | 41 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 42 |
| Minimum .... | 42 | 44 | 45 | 45 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 42 | 40 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 44 | 45 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 |
| Minimum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 42 | 42 | 43 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | -- | -- | -- | 43 |
| Minimum .... | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 43 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 41 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 45 | 45 | 44 | 43 | 43 | 43 | 42 | 41 | 41 | 42 | 43 | 45 | 45 | 46 | 46 | 47 | 48 | 49 | 43 |
| Minimum .... | 41 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 42 | 41 | 40 | 40 | 41 | 42 | 43 | 45 | 45 | 46 | 46 | 47 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 52 | 54 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 50 | 50 | 52 | 53 | 54 | 54 | 53 | 53 | 53 | 54 | 56 | 57 | 57 | 56 | 55 | 54 | 55 | 57 | -- | 54 |
| Minimum .... | 49 | 49 | 49 | 50 | 52 | 53 | 55 | 54 | 54 | 54 | 53 | 50 | 49 | 49 | 50 | 52 | 53 | 53 | 52 | 52 | 52 | 53 | 54 | 56 | 56 | 54 | 53 | 54 | 54 | 55 | -- | 52 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 60 | 62 | 63 | 63 | 63 | 61 | 60 | 61 | 61 | 60 | 59 | 59 | 57 | 56 | 55 | 56 | 58 | 61 | 62 | 62 | 61 | 60 | 62 | 64 | 64 | 63 | 62 | 62 | 62 | 59 | 61 |
| Minimum .... | 56 | 58 | 59 | 61 | 62 | 61 | 58 | 59 | 60 | 59 | 58 | 58 | 57 | 56 | 55 | 54 | 54 | 55 | 58 | 60 | 61 | 59 | 58 | 59 | 61 | 63 | 60 | 60 | 61 | 59 | 58 | 59 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 60 | 62 | 63 | 65 | 66 | 67 | 67 | 66 | 65 | 65 | 67 | 70 | 71 | 70 | 70 | 70 | 68 | 67 | 66 | 66 | 66 | 65 | 66 | 69 | 70 | 70 | 68 | -- | 66 |
| Minimum .... | 57 | 59 | 58 | 58 | 59 | 62 | 63 | 64 | 65 | 66 | 65 | 63 | 63 | 65 | 67 | 69 | 69 | 68 | 68 | 66 | 66 | 64 | 65 | 64 | 63 | 64 | 66 | 67 | 67 | 66 | -- | 64 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 66 | 64 | 66 | 68 | 68 | 67 | 71 | 73 | 72 | 71 | 71 | 71 | 69 | 70 | 71 | 71 | 72 | 72 | 71 | 72 | 74 | 74 | 74 | 72 | 73 | 74 | 76 | 76 | 76 | 76 | 71 |
| Minimum .... | 66 | 64 | 63 | 62 | 66 | 66 | 65 | 67 | 69 | 70 | 68 | 69 | 68 | 67 | 67 | 69 | 69 | 70 | 71 | 69 | 69 | 72 | 72 | 72 | 71 | 71 | 72 | 72 | 73 | 74 | 73 | 69 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 76 | 76 | 77 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 73 | 72 | 72 | 72 | 73 | 73 | 74 | 73 | 73 | 73 | 74 | 72 | 71 | 70 | 70 | 69 | 68 | 66 | 66 | 65 | 66 | 72 |
| Minimum .... | 73 | 74 | 74 | 75 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 70 | 71 | 70 | 70 | 71 | 70 | 69 | 69 | 70 | 70 | 69 | 68 | 67 | 67 | 66 | 65 | 65 | 65 | 64 | 64 | 70 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 68 | 69 | 69 | 70 | 70 | 69 | 70 | 69 | 67 | 67 | 65 | 62 | 62 | 62 | 63 | 62 | 63 | 63 | 64 | 66 | 66 | 66 | 65 | 64 | 64 | 64 | 64 | 65 | 65 | -- | 66 |
| Minimum .... | 65 | 66 | 67 | 67 | 69 | 68 | 68 | 67 | 67 | 67 | 65 | 64 | 61 | 62 | 60 | 62 | 62 | 62 | 61 | 61 | 62 | 65 | 64 | 64 | 63 | 62 | 62 | 62 | 62 | 63 | -- | 64 |

WILLAMETTE RIVER BASIN--Continued

14-1970. NORTH YAMHILL RIVER AT PIKE, OREG.

LOCATION.--Lat 45°22'10", long 123°15'15", temperature recorder at gaging station, 500 feet downstream from Turner Creek, 0.5 mile southeast of Pike, Yamhill County, and at mile 20.5.
DRAINAGE AREA.--66.8 square miles.
RECORDS AVAILABLE.--Water temperatures: February 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 74°F Aug. 2; minimum, 36°F Dec. 17, 21.
EXTREMES, 1964-66.--Water temperatures: Maximum, 77°F July 30, 31, 1965; minimum, 33°F Dec. 17-20, 1964.
REMARKS.--Recorder stopped Aug. 31 to Sept. 14; temperature range, 54°F to 69°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 57 | 57 | 55 | 57 | 59 | 62 | 60 | 60 | 58 | 56 | 55 | 56 | 56 | 55 | 51 | 50 | 50 | 51 | 53 | 53 | 53 | 53 | 52 | 53 | 53 | 52 | 52 | 52 | 53 | 53 | 55 |
| Minimum .... | 52 | 53 | 54 | 54 | 54 | 56 | 58 | 57 | 58 | 53 | 54 | 53 | 54 | 54 | 51 | 48 | 48 | 49 | 49 | 51 | 50 | 50 | 49 | 49 | 50 | 50 | 49 | 50 | 49 | 50 | 52 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 53 | 52 | 52 | 51 | 52 | 52 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 49 | 48 | 49 | 50 | 49 | 49 | 47 | 46 | 46 | 44 | 44 | 44 | 44 | 45 | -- | 49 |
| Minimum .... | 52 | 51 | 52 | 52 | 51 | 49 | 49 | 50 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 49 | 48 | 47 | 46 | 46 | 43 | 43 | 44 | 43 | 43 | 44 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 48 | 48 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 45 | 42 | 41 | 39 | 38 | 37 | 38 | 38 | 39 | 39 | 38 | 39 | 40 | 40 | 40 | 42 | 42 | 41 | 40 | 43 |
| Minimum .... | 45 | 46 | 47 | 47 | 47 | 48 | 48 | 47 | 45 | 46 | 46 | 45 | 42 | 40 | 38 | 38 | 36 | 37 | 37 | 37 | 36 | 38 | 38 | 37 | 39 | 39 | 39 | 40 | 41 | 40 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 |
| Minimum .... | 40 | 40 | 39 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 40 | 40 | 41 | 42 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 43 | 43 | 45 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 43 | -- | -- | -- | 43 |
| Minimum .... | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 41 | 40 | 40 | 41 | 39 | 38 | 39 | 41 | 41 | 42 | 41 | 43 | 43 | 41 | 43 | 43 | 43 | 41 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 40 | 40 | 43 | 43 | 42 | 43 | 43 | 44 | 44 | 45 | 46 | 46 | 45 | 44 | 43 | 44 | 43 | 42 | 44 | 45 | 46 | 47 | 48 | 49 | 48 | 48 | 50 | 49 | 51 | 45 |
| Minimum .... | 38 | 39 | 39 | 39 | 40 | 42 | 41 | 42 | 43 | 42 | 42 | 44 | 45 | 45 | 44 | 43 | 42 | 43 | 42 | 40 | 40 | 40 | 41 | 42 | 43 | 44 | 45 | 45 | 47 | 46 | 46 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 51 | 52 | 53 | 54 | 53 | 52 | 51 | 51 | 50 | 49 | 50 | 49 | 51 | 52 | 52 | 50 | 50 | 49 | 52 | 52 | 53 | 54 | 53 | 50 | 51 | 51 | 53 | 53 | -- | 51 |
| Minimum .... | 46 | 44 | 46 | 45 | 46 | 47 | 47 | 48 | 48 | 48 | 48 | 45 | 44 | 47 | 48 | 45 | 46 | 45 | 44 | 45 | 47 | 47 | 48 | 48 | 48 | 45 | 45 | 46 | 46 | 49 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 57 | 59 | 61 | 61 | 59 | 58 | 59 | 61 | 57 | 56 | 56 | 53 | 51 | 50 | 54 | 55 | 58 | 60 | 60 | 58 | 53 | 57 | 61 | 65 | 62 | 58 | 59 | 61 | 58 | 53 | 58 |
| Minimum .... | 48 | 50 | 53 | 54 | 57 | 54 | 51 | 53 | 56 | 52 | 49 | 52 | 51 | 48 | 49 | 48 | 48 | 50 | 53 | 54 | 52 | 49 | 49 | 53 | 57 | 55 | 50 | 51 | 53 | 52 | 50 | 52 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 53 | 52 | 55 | 60 | 58 | 62 | 65 | 63 | 62 | 58 | 57 | 63 | 67 | 69 | 69 | 65 | 66 | 63 | 62 | 61 | 59 | 63 | 59 | 63 | 65 | 65 | 67 | 63 | 63 | -- | 62 |
| Minimum .... | 49 | 50 | 48 | 48 | 50 | 55 | 56 | 57 | 58 | 58 | 55 | 52 | 54 | 57 | 59 | 63 | 63 | 58 | 59 | 57 | 56 | 55 | 57 | 55 | 54 | 57 | 60 | 61 | 58 | 55 | -- | 56 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 58 | 57 | 65 | 66 | 63 | 63 | 68 | 71 | 68 | 67 | 66 | 64 | 64 | 66 | 66 | 69 | 70 | 66 | 67 | 70 | 71 | 68 | 66 | 67 | 69 | 71 | 72 | 73 | 72 | 71 | 67 |
| Minimum .... | 57 | 55 | 55 | 54 | 59 | 59 | 57 | 58 | 61 | 63 | 60 | 60 | 59 | 60 | 60 | 60 | 60 | 61 | 63 | 57 | 59 | 61 | 62 | 63 | 58 | 59 | 61 | 63 | 64 | 63 | 62 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 74 | 73 | 71 | 71 | 71 | 72 | 70 | 69 | 68 | 67 | 69 | 68 | 69 | 70 | 69 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 67 | 67 | 65 | 64 | 63 | 62 | 63 | -- | 68 |
| Minimum .... | 63 | 64 | 65 | 65 | 62 | 62 | 64 | 64 | 64 | 63 | 59 | 60 | 62 | 60 | 62 | 62 | 60 | 61 | 61 | 62 | 60 | 61 | 59 | 61 | 62 | 59 | 59 | 57 | 58 | 57 | -- | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57 | 60 | 60 | 61 | 61 | 62 | 64 | 64 | 62 | 61 | 59 | 60 | 61 | 63 | 63 | 62 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 54 | 57 | 57 | 58 | 56 | 55 | 58 | 60 | 58 | 59 | 57 | 58 | 57 | 57 | 59 | 59 | -- | -- |

WILLAMETTE RIVER BASIN--Continued

14-1985. MOLALLA RIVER ABOVE PINE CREEK, NEAR WILHOIT, OREG.

LOCATION.--Lat 45°00'35", long 122°28'45", temperature recorder at gaging station, 0.5 mile upstream from Pine Creek, 5 miles southeast of Wilhoit, Clackamas County, and at mile 32.5. Prior to July 22, 1966, at site 0.2 mile downstream.
DRAINAGE AREA.--97.0 square miles, at gaging cable 0.2 mile downstream.
RECORDS AVAILABLE.--Water temperatures: January 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 71°F Aug. 3, 4; minimum, 34°F Dec. 17, 18.
EXTREMES, 1964-66.--Water temperatures: Maximum, 75°F July 30, 1965; minimum (1965-66), 34°F Dec. 17, 18, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 53 | 53 | 54 | 56 | 57 | 57 | 57 | 56 | 56 | 54 | 54 | 54 | 52 | 49 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 53 | 51 | 50 | 50 | 53 |
| Minimum .... | 49 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 54 | 52 | 52 | 53 | 54 | 52 | 49 | 48 | 49 | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 50 | 50 | 49 | 50 | 50 | 48 | 48 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 52 | 52 | 50 | 49 | 48 | 50 | 50 | 48 | 47 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 43 | -- | 47 |
| Minimum .... | 48 | 49 | 50 | 50 | 49 | 47 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 48 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 44 | 43 | 41 | 41 | 41 | 41 | 40 | 42 | -- | 46 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 45 | 46 | 46 | 45 | 43 | 42 | 42 | 42 | 42 | 40 | 38 | 36 | 35 | 36 | 36 | 36 | 38 | 38 | 38 | 38 | 39 | 38 | 40 | 41 | 41 | 40 | 39 | 41 |
| Minimum .... | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 43 | 41 | 41 | 41 | 42 | 40 | 38 | 36 | 35 | 34 | 34 | 35 | 35 | 36 | 38 | 37 | 38 | 38 | 38 | 38 | 40 | 40 | 39 | 37 | 39 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 40 | 40 | 41 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 40 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | -- | -- | 40 | 41 |
| Minimum .... | 37 | 38 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 38 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 40 | 39 | -- | -- | 40 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 41 | 41 | 41 | 41 | 41 | -- | -- | -- | 40 |
| Minimum .... | 38 | 39 | 39 | 40 | 40 | 40 | 39 | 40 | 39 | 38 | 39 | 38 | 38 | 39 | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 41 | 41 | 40 | 41 | 41 | 41 | 38 | -- | -- | -- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 39 | 38 | 40 | 41 | 40 | 41 | 41 | 42 | 42 | 43 | 43 | 42 | 42 | 41 | 41 | 42 | 42 | 40 | 39 | 40 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 43 | 41 |
| Minimum .... | 37 | 38 | 38 | 37 | 38 | 40 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 39 | 40 | 41 | 40 | 39 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 44 | 44 | 47 | 46 | 45 | 44 | 44 | 44 | 43 | 44 | 47 | 48 | 48 | 44 | 46 | 46 | 49 | 49 | -- | 45 |
| Minimum .... | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 40 | 40 | 42 | 44 | 43 | 41 | 41 | 40 | 41 | 41 | 43 | 42 | 43 | 44 | 42 | 42 | 43 | 43 | 45 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 51 | 50 | 48 | 46 | 49 | 50 | 48 | 46 | 48 | 48 | 46 | 45 | 45 | 45 | 49 | 51 | 51 | 52 | 52 | 46 | 50 | 53 | 55 | 55 | 50 | 50 | 51 | 51 | 49 | 49 |
| Minimum .... | 45 | 45 | 46 | 44 | 44 | 44 | 42 | 44 | 45 | 43 | 42 | 44 | 43 | 43 | 43 | 43 | 43 | 45 | 46 | 47 | 46 | 44 | 43 | 46 | 48 | 49 | 45 | 45 | 47 | 47 | 46 | 45 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 53 | 56 | 56 | 54 | 56 | 58 | 57 | 53 | 54 | 56 | 59 | 61 | 63 | 61 | 62 | 61 | 57 | 56 | 55 | 55 | 54 | 58 | 62 | 65 | 62 | 61 | 63 | -- | 57 |
| Minimum .... | 45 | 46 | 47 | 47 | 49 | 52 | 52 | 52 | 54 | 53 | 50 | 49 | 51 | 53 | 55 | 58 | 56 | 56 | 56 | 54 | 54 | 52 | 53 | 52 | 51 | 55 | 59 | 58 | 55 | 56 | -- | 53 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 56 | 54 | 60 | 63 | 62 | 62 | 65 | 65 | 63 | 66 | 63 | 62 | 61 | 64 | 64 | 67 | 68 | 65 | 66 | -- | -- | 70 | 65 | 67 | 68 | 69 | 70 | 70 | 70 | 70 | 65 |
| Minimum .... | 56 | 54 | 52 | 54 | 56 | 58 | 57 | 58 | 60 | 60 | 58 | 60 | 60 | 60 | 58 | 60 | 60 | 60 | 62 | 59 | -- | -- | 61 | 61 | 58 | 59 | 59 | 61 | 61 | 62 | 62 | 59 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 70 | 71 | 71 | 70 | 70 | 70 | 70 | 69 | 69 | 67 | 67 | 63 | 68 | 68 | 67 | 66 | 66 | 66 | 65 | 65 | 63 | 64 | 65 | 63 | 62 | 61 | 61 | 60 | 62 | 62 | 66 |
| Minimum .... | 61 | 61 | 62 | 63 | 62 | 60 | 59 | 62 | 62 | 61 | 61 | 58 | 59 | 60 | 59 | 61 | 58 | 58 | 57 | 58 | 58 | 59 | 58 | 59 | 60 | 59 | 58 | 57 | 57 | 56 | 55 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 64 | 64 | 64 | 64 | 61 | 62 | 61 | 60 | 59 | 58 | 55 | 55 | 58 | 59 | 59 | 59 | 60 | 60 | 62 | 61 | 61 | 60 | 58 | 58 | 60 | 60 | 60 | 60 | -- | 60 |
| Minimum .... | 55 | 56 | 56 | 57 | 58 | 59 | 57 | 58 | 56 | 56 | 56 | 53 | 52 | 54 | 53 | 56 | 58 | 57 | 54 | 54 | 55 | 58 | 57 | 57 | 56 | 57 | 54 | 53 | 54 | 56 | -- | 56 |

WILLAMETTE RIVER BASIN--Continued

14-2000. MOLALLA RIVER NEAR CANBY, OREG.

LOCATION.--Lat 45°14'40", long 122°41'10", temperature recorder at gaging station at upstream side of Good's Bridge, 1.5 miles south of Canby, Clackamas County, and at mile 6.01.
DRAINAGE AREA.--323 square miles.
RECORDS AVAILABLE.--Water temperatures: January 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 80°F Aug 3; minimum, 38°F Dec. 18-22.
EXTREMES, 1964-66.--Water temperatures: Maximum, 80°F July 6, 30, 31, 1965, Aug. 3, 1966; minimum, 34°F Dec. 17-19, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 62 | 62 | 61 | 60 | 60 | 62 | 62 | 63 | 63 | 62 | 62 | 60 | 60 | 60 | 58 | 54 | 54 | 56 | 57 | 57 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | |
| Minimum .... | 58 | 58 | 58 | 58 | 58 | 58 | 60 | 61 | 62 | 59 | 59 | 59 | 59 | 60 | 58 | 54 | 54 | 54 | 54 | 56 | 54 | 54 | 54 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 55 | 55 | 55 | 54 | 52 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 48 | 47 | 47 | 45 | 45 | 44 | 44 | 44 | -- | |
| Minimum .... | 54 | 54 | 55 | 55 | 54 | 52 | 52 | 52 | 53 | 52 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 50 | 50 | 51 | 50 | 48 | 47 | 47 | 45 | 45 | 44 | 44 | 43 | 43 | -- | |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 47 | 47 | 47 | 48 | 48 | 47 | 45 | 45 | 44 | 44 | 44 | 43 | 41 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 41 | 43 | 43 | 42 | 42 | |
| Minimum .... | 44 | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 45 | 45 | 44 | 44 | 44 | 43 | 41 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 40 | 41 | 42 | 42 | 41 | |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | |
| Minimum .... | 41 | 41 | 41 | 42 | 43 | 42 | 43 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 43 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | |
| Minimum .... | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 41 | 41 | 40 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 43 | 42 | 44 | 44 | 44 | 43 | -- | -- | -- | |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 43 | 42 | 43 | 44 | 43 | 44 | 44 | 44 | 44 | 46 | 47 | 47 | 46 | 45 | 43 | 44 | 45 | 44 | 44 | 44 | 45 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 48 | |
| Minimum .... | 41 | 40 | 41 | 40 | 42 | 43 | 42 | 42 | 43 | 43 | 42 | 44 | 46 | 46 | 44 | 43 | 42 | 43 | 44 | 43 | 42 | 42 | 42 | 44 | 45 | 46 | 46 | 46 | 45 | 46 | 46 | |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 47 | 48 | 49 | 49 | 50 | 50 | 49 | 48 | 48 | 48 | 46 | 46 | 47 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 49 | 50 | 51 | 51 | 50 | 50 | 50 | 52 | 54 | -- | |
| Minimum .... | 47 | 45 | 44 | 46 | 47 | 48 | 47 | 47 | 47 | 47 | 46 | 44 | 43 | 46 | 47 | 48 | 46 | 46 | 45 | 46 | 45 | 47 | 47 | 49 | 50 | 47 | 47 | 49 | 48 | 50 | -- | |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 56 | 56 | 56 | 56 | 54 | 54 | 55 | 55 | 56 | 55 | 55 | 55 | 53 | 53 | 52 | 55 | 58 | 61 | 61 | 60 | 57 | 58 | 62 | 65 | 65 | 62 | 60 | 62 | 62 | 59 | |
| Minimum .... | 51 | 52 | 53 | 53 | 54 | 52 | 50 | 53 | 54 | 53 | 51 | 54 | 53 | 51 | 51 | 50 | 51 | 53 | 56 | 57 | 56 | 54 | 54 | 56 | 60 | 62 | 58 | 56 | 58 | 59 | 56 | |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 61 | 65 | 65 | 63 | 67 | 69 | 69 | 67 | 65 | 68 | 71 | 74 | 76 | 74 | 75 | 73 | 71 | 70 | 70 | 70 | 67 | 68 | 71 | 72 | 72 | 72 | 71 | -- | |
| Minimum .... | 56 | 57 | 57 | 57 | 58 | 63 | 62 | 62 | 65 | 67 | 63 | 62 | 63 | 66 | 68 | 72 | 70 | 69 | 70 | 68 | 67 | 66 | 67 | 64 | 64 | 66 | 69 | 70 | 68 | 67 | -- | |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 71 | 68 | 64 | 69 | 70 | 70 | 70 | 72 | 74 | 74 | 73 | 73 | 73 | 71 | 72 | 72 | 75 | 76 | 75 | 74 | 76 | 77 | 77 | 76 | 75 | 76 | 77 | 78 | 78 | 78 | 78 | |
| Minimum .... | 68 | 64 | 62 | 63 | 66 | 67 | 66 | 68 | 70 | 70 | 68 | 70 | 70 | 68 | 68 | 70 | 70 | 72 | 72 | 69 | 70 | 72 | 72 | 73 | 70 | 71 | 71 | 73 | 74 | 74 | 73 | |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 78 | 79 | 80 | 79 | 78 | 78 | 79 | 78 | 78 | 77 | 76 | 77 | 76 | 76 | 77 | 76 | 76 | 76 | 76 | 76 | 77 | 77 | 74 | 74 | 74 | 74 | 70 | 71 | 71 | 70 | 72 | |
| Minimum .... | 74 | 74 | 74 | 75 | 74 | 73 | 73 | 74 | 74 | 72 | 70 | 70 | 72 | 70 | 71 | 71 | 70 | 70 | 70 | 71 | 70 | 71 | 70 | 70 | 70 | 70 | 68 | 68 | 68 | 66 | 66 | |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 73 | 74 | 76 | 76 | 76 | 73 | 73 | 73 | 71 | 69 | 68 | 68 | 65 | 64 | 67 | 67 | 67 | 67 | 67 | 70 | 70 | 68 | 68 | 66 | 66 | 66 | 67 | 68 | 68 | -- | |
| Minimum .... | 67 | 70 | 69 | 70 | 71 | 70 | 70 | 70 | 69 | 68 | 66 | 65 | 64 | 64 | 62 | 64 | 66 | 65 | 63 | 64 | 66 | 67 | 65 | 66 | 64 | 64 | 63 | 63 | 66 | 64 | -- | |

## 14-2003. SILVER CREEK AT SILVERTON, OREG.

LOCATION.--Lat 45°00'34", long 122°47'15", temperature recorder at gaging station 300 feet downstream from railroad bridge in Silverton, Marion County, 2.5 miles upstream from Brush Creek, and at mile 3.4.
DRAINAGE AREA.--47.9 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F July 29, Aug. 4; minimum, 33°F on several days during December.
EXTREMES, 1963-66.--Water temperatures: Maximum, 79°F July 6, 1965; minimum, 35°F Dec. 17, 18, 1964, and on several days during December 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 60 | 59 | 57 | 58 | 60 | 60 | 61 | 62 | 59 | 59 | 57 | 58 | 57 | 55 | 53 | 53 | 53 | 55 | 55 | 54 | 54 | 53 | 53 | 54 | 54 | 53 | 53 | 53 | 53 | 52 | 52 |
| Minimum .... | 53 | 54 | 54 | 55 | 55 | 56 | 57 | 57 | 58 | 55 | 57 | 55 | 56 | 55 | 53 | 48 | 51 | 50 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 51 | |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 55 | 55 | 54 | 53 | 51 | 51 | 52 | 52 | 50 | 49 | 49 | 50 | 51 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 45 | 45 | 44 | 43 | 43 | 42 | 41 | 44 | -- | |
| Minimum .... | 52 | 52 | 53 | 52 | 51 | 49 | 50 | 51 | 49 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 45 | 44 | 44 | 40 | 41 | 41 | 40 | 40 | 41 | -- | |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 46 | 47 | 47 | 48 | 48 | 47 | 43 | 43 | 43 | 42 | 41 | 39 | 37 | 35 | 34 | 34 | 33 | 33 | 36 | 37 | 39 | 39 | 39 | 39 | 42 | 43 | 42 | 42 | 40 | |
| Minimum .... | 43 | 46 | 45 | 46 | 46 | 47 | 47 | 43 | 41 | 41 | 41 | 41 | 39 | 37 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 36 | 37 | 38 | 38 | 39 | 39 | 42 | 40 | 40 | 38 | |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 42 | 43 | 45 | 44 | 45 | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 45 | 45 | 43 | 43 | 41 | 38 | 37 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 44 | 43 | 42 | |
| Minimum .... | 38 | 40 | 40 | 41 | 43 | 42 | 44 | 43 | 42 | 44 | 44 | 45 | 45 | 45 | 44 | 43 | 42 | 41 | 38 | 37 | 36 | 37 | 39 | 40 | 40 | 39 | 40 | 40 | 41 | 42 | 40 | |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 41 | 44 | 43 | 43 | 42 | 40 | 40 | 40 | 40 | 40 | 39 | 40 | 39 | 39 | 40 | 39 | 40 | 45 | 43 | 44 | 46 | 47 | 48 | 48 | 48 | 49 | 49 | 48 | 50 | |
| Minimum .... | 38 | 39 | 40 | 41 | 42 | 41 | 40 | 40 | 40 | 38 | 39 | 38 | 38 | 39 | 37 | 36 | 37 | 37 | 37 | 40 | 42 | 40 | 41 | 42 | 43 | 45 | 45 | 46 | 44 | 46 | 45 | |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 49 | 52 | 51 | 53 | 50 | 49 | 51 | 49 | 47 | 45 | 48 | 49 | 53 | 53 | 51 | 51 | 51 | 46 | 49 | 53 | 54 | 55 | 52 | 50 | 53 | 51 | 55 | 58 | -- | |
| Minimum .... | 47 | 44 | 43 | 45 | 46 | 47 | 47 | 47 | 47 | 47 | 45 | 43 | 42 | 46 | 49 | 48 | 45 | 45 | 43 | 44 | 44 | 46 | 45 | 47 | 49 | 45 | 45 | 46 | 45 | 47 | -- | |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 51 | 52 | 54 | 49 | 51 | 48 | 47 | 48 | 48 | 44 | 42 | 45 | 46 | 50 | 49 | 47 | 47 | 47 | 42 | 45 | 48 | 49 | 50 | 47 | 45 | 48 | 46 | 49 | 52 | -- | |
| Minimum .... | 48 | 49 | 51 | 54 | 44 | 45 | 45 | 45 | 44 | 44 | 42 | 40 | 39 | 43 | 46 | 44 | 41 | 41 | 39 | 40 | 40 | 41 | 40 | 42 | 44 | 40 | 40 | 41 | 39 | 41 | -- | |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 55 | 56 | 58 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| Minimum .... | 42 | 43 | 45 | 48 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 72 | 74 | 71 | 68 | 65 | 69 | 67 | 64 | 67 | 70 | 74 | 71 | 68 | 69 | -- | |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 65 | 62 | 65 | 62 | 60 | 58 | 61 | 56 | 56 | 59 | 64 | 66 | 59 | 59 | -- | |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 60 | 59 | 67 | 69 | 66 | 66 | 71 | 73 | 66 | 70 | 69 | 66 | 65 | 68 | 69 | 73 | 74 | 72 | 71 | 73 | 75 | 76 | 70 | 71 | 73 | 75 | 73 | 77 | 76 | 75 | |
| Minimum .... | 59 | 57 | 54 | 53 | 57 | 61 | 58 | 59 | 63 | 62 | 58 | 62 | 62 | 61 | 61 | 62 | 62 | 64 | 65 | 61 | 62 | 64 | 64 | 66 | 60 | 62 | 63 | 65 | 70 | 66 | 65 | |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 75 | -- | -- | 77 | 75 | 75 | 76 | 74 | 75 | 75 | 73 | 74 | 71 | 74 | 75 | 74 | 73 | 74 | 74 | 73 | 74 | 69 | 71 | 71 | 71 | 65 | 66 | 67 | 63 | 67 | 67 | |
| Minimum .... | 66 | -- | -- | 68 | 66 | 65 | 65 | 65 | 66 | 66 | 63 | 62 | 64 | 63 | 64 | 65 | 63 | 63 | 62 | 63 | 61 | 63 | 60 | 62 | 63 | 61 | 61 | 59 | 59 | 58 | 58 | |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | -- | -- | 73 | 73 | 72 | 70 | 70 | 69 | 65 | 64 | 63 | 59 | 57 | 60 | 63 | 63 | 63 | 61 | 63 | 66 | 65 | 65 | 63 | 61 | 64 | 66 | 62 | 65 | 65 | -- | |
| Minimum .... | 59 | -- | -- | 63 | 64 | 63 | 62 | 62 | 60 | 61 | 59 | 57 | 55 | 55 | 54 | 58 | 61 | 59 | 55 | 56 | 59 | 62 | 58 | 59 | 58 | 59 | 56 | 55 | 61 | 58 | -- | |

WILLAMETTE RIVER BASIN--Continued

14-2035. TUALATIN RIVER NEAR DILLEY, OREG.

LOCATION.--Lat 45°28'30", long 123°07'23", temperature recorder at gaging station, 5 feet upstream from highway bridge, 1.0 mile south of Dilley, Washington County, and at mile 58.81.
DRAINAGE AREA (revised).--125 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 79°F Aug. 20; minimum, 37°F on several days during December.
EXTREMES, 1963-66.--Water temperatures: Maximum, 83°F July 30, 1965; minimum, 36°F Nov. 21, 22, Dec. 21, 22, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 58 | 57 | 60 | 62 | 65 | 64 | 63 | 62 | 57 | 52 | 53 | 53 | 50 | 47 | 49 | 48 | 50 | 54 | 54 | 54 | 54 | 53 | 54 | 53 | 48 | 49 | 48 | 52 | 48 | 55 |
| Minimum .... | 52 | 52 | 53 | 55 | 57 | 58 | 59 | 56 | 58 | 51 | 51 | 50 | 52 | 50 | 46 | 44 | 46 | 46 | 48 | 48 | 47 | 45 | 44 | 46 | 46 | 45 | 46 | 48 | 46 | 47 | 48 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 49 | 48 | 45 | 46 | 48 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | -- | 45 |
| Minimum .... | 47 | 47 | 48 | 48 | 45 | 44 | 45 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | -- | 44 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | 40 | 40 | 39 | 39 | 39 | 38 | 38 | 38 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 40 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 40 | 40 | 39 | 39 | 39 | 38 | 38 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | -- | -- | -- | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 40 | 40 | 41 | 42 | 43 | 43 | 43 | 43 | 45 | 45 | 46 | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 40 | 40 | 40 | 40 | 41 | 42 | 43 | 43 | 43 | 43 | 45 | 45 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 51 | 51 | 52 | 56 | -- | 49 |
| Minimum .... | 45 | 46 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 48 | 49 | 50 | 50 | 49 | 49 | 49 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 52 | -- | 49 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 63 | 66 | 71 | 68 | 60 | 60 | 63 | 64 | 58 | 64 | 62 | 55 | 57 | 54 | 59 | 62 | 67 | 70 | 69 | 66 | 61 | 66 | 70 | 74 | 62 | 62 | 65 | 66 | 56 | 57 | 63 |
| Minimum .... | 53 | 55 | 55 | 57 | 60 | 58 | 59 | 60 | 57 | 55 | 53 | 54 | 53 | 51 | 53 | 62 | 50 | 52 | 54 | 56 | 54 | 52 | 50 | 53 | 56 | 52 | 49 | 50 | 50 | 50 | 50 | 54 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 55 | 56 | 61 | 68 | 63 | 67 | 70 | 72 | 69 | 60 | 62 | 69 | 72 | 76 | 75 | 66 | 71 | 68 | 64 | 63 | 66 | 65 | 63 | 66 | 69 | 70 | 68 | 64 | 65 | -- | 66 |
| Minimum .... | 50 | 52 | 50 | 50 | 51 | 57 | 60 | 58 | 60 | 59 | 57 | 54 | 56 | 57 | 59 | 65 | 62 | 59 | 61 | 58 | 57 | 56 | 60 | 56 | 55 | 58 | 64 | 63 | 58 | 57 | -- | 57 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 60 | 60 | 65 | 66 | 64 | 64 | 66 | 68 | 68 | 67 | 66 | 64 | 65 | 67 | 66 | 69 | 69 | 66 | 66 | -- | -- | 70 | 69 | 68 | 68 | 71 | 73 | -- | 70 | -- | 67 |
| Minimum .... | 59 | 58 | 59 | 57 | 60 | 61 | 60 | 58 | 60 | 63 | 60 | 60 | 60 | 63 | 62 | 62 | 61 | 61 | 62 | 55 | -- | -- | 59 | 61 | 56 | 58 | 58 | 59 | -- | 59 | -- | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 72 | 72 | 68 | 69 | 70 | 72 | 65 | 70 | 68 | 68 | 71 | 66 | 70 | 73 | 70 | 73 | 72 | 73 | 79 | 76 | 66 | 69 | 69 | 67 | 60 | 64 | 65 | 62 | 63 | 65 | 69 |
| Minimum .... | 59 | 58 | 60 | 62 | 58 | 58 | 59 | 59 | 62 | 59 | 55 | 56 | 61 | 57 | 58 | 58 | 58 | 58 | 57 | 59 | 58 | 60 | 57 | 58 | 57 | 57 | 57 | 54 | 56 | 56 | 54 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 67 | 70 | 72 | 72 | 72 | 66 | 67 | 67 | 63 | 60 | 60 | 58 | 57 | 58 | 61 | 61 | 62 | 64 | 68 | 70 | 65 | 65 | 60 | 60 | 62 | 64 | 66 | 68 | 68 | -- | 65 |
| Minimum .... | 54 | 57 | 55 | 56 | 59 | 57 | 56 | 56 | 54 | 58 | 55 | 54 | 52 | 56 | 54 | 58 | 58 | 58 | 54 | 56 | 58 | 60 | 57 | 59 | 58 | 58 | 54 | 55 | 58 | 58 | -- | 56 |

WILLAMETTE RIVER BASIN--Continued

## 14-2040. GALES CREEK NEAR GALES CREEK, OREG.

LOCATION.--Lat 45°38'30", long 123°15'55", temperature recorder at gaging station, 0.5 mile downstream from Beaver Creek, 4.6 miles northwest of town of Gales Creek, Washington County, and at mile 17.5.
DRAINAGE AREA (revised).--33.2 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F July 29; minimum 36°F Dec. 17, 23, 24.
EXTREMES, 1963-66.--Water temperatures: Maximum, 68°F July 30, 31, 1965; minimum, 36°F Nov. 20, 21, Dec. 17, 19, 20, 1964, Dec. 17, 23, 24, 1965.
REMARKS.--Recorder stopped Aug. 30 to Sept. 8; temperature range, 53°F to 62°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 51 | 52 | 53 | 54 | 54 | 53 | 51 | 51 | 51 | 51 | 51 | 49 | 47 | 48 | 48 | 50 | 50 | 50 | 49 | 49 | 49 | 50 | 49 | 48 | 49 | 49 | 49 | 49 | 50 |
| Minimum .... | 49 | 49 | 50 | 50 | 50 | 52 | 52 | 52 | 51 | 48 | 49 | 50 | 50 | 49 | 47 | 44 | 46 | 47 | 49 | 48 | 47 | 47 | 46 | 47 | 48 | 47 | 47 | 48 | 46 | 47 | 48 | 48 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 50 | 50 | 50 | 49 | 48 | 49 | 48 | 48 | 46 | 46 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 43 | 44 | 43 | 44 | -- | 47 |
| Minimum .... | 48 | 48 | 49 | 49 | 49 | 46 | 47 | 48 | 48 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 42 | 43 | 42 | 43 | 42 | 43 | -- | 46 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 43 | 41 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 37 | 39 | 39 | 39 | 41 | 41 | 41 | 40 | 42 |
| Minimum .... | 44 | 44 | 45 | 45 | 45 | 46 | 45 | 45 | 44 | 44 | 44 | 43 | 41 | 39 | 38 | 38 | 36 | 37 | 38 | 37 | 37 | 37 | 36 | 36 | 37 | 38 | 38 | 39 | 41 | 40 | 40 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 |
| Minimum .... | 39 | 38 | 39 | 39 | 39 | 39 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | -- | -- | -- | 42 |
| Minimum .... | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 42 | 41 | 42 | 42 | 40 | 42 | 42 | 41 | 39 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 41 | 41 | 40 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 45 | 44 | 44 | 43 | 42 | 42 | 42 | 41 | 42 | 42 | 43 | 44 | 45 | 46 | 46 | 45 | 47 | 46 | 47 | 43 |
| Minimum .... | 39 | 39 | 39 | 39 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 43 | 42 | 42 | 42 | 41 | 39 | 39 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 45 | 44 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 47 | 48 | 49 | 50 | 50 | 47 | 50 | 48 | 47 | 44 | 47 | 47 | 50 | 50 | 50 | 48 | 48 | 47 | 48 | 50 | 50 | 50 | 48 | 47 | 48 | 46 | 50 | 49 | -- | 48 |
| Minimum .... | 44 | 42 | 42 | 42 | 43 | 44 | 44 | 46 | 45 | 46 | 44 | 43 | 42 | 45 | 45 | 43 | 44 | 42 | 42 | 43 | 45 | 46 | 45 | 44 | 46 | 44 | 44 | 44 | 42 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 54 | 56 | 56 | 53 | 54 | 54 | 54 | 51 | 53 | 53 | 51 | 49 | 47 | 50 | 51 | 54 | 55 | 55 | 53 | 50 | 53 | 55 | 59 | 56 | 53 | 54 | 55 | 52 | 50 | 53 |
| Minimum .... | 44 | 46 | 47 | 49 | 51 | 50 | 46 | 49 | 50 | 49 | 46 | 49 | 48 | 45 | 47 | 46 | 44 | 46 | 48 | 49 | 49 | 46 | 45 | 47 | 51 | 50 | 47 | 47 | 47 | 48 | 47 | 48 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 51 | 49 | 52 | 55 | 53 | 56 | 58 | 57 | 57 | 56 | 54 | 58 | 60 | 62 | 63 | 58 | 58 | 56 | 55 | 54 | 53 | 54 | 54 | 56 | 57 | 59 | 58 | 55 | 55 | -- | 56 |
| Minimum .... | 47 | 48 | 45 | 45 | 46 | 50 | 52 | 52 | 52 | 53 | 51 | 49 | 51 | 53 | 54 | 57 | 55 | 53 | 54 | 52 | 51 | 50 | 52 | 49 | 49 | 52 | 55 | 55 | 52 | 50 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 58 | 59 | 57 | 57 | 60 | 62 | 60 | 61 | 61 | 59 | 58 | 60 | 59 | 61 | 62 | 61 | 61 | 63 | 64 | 60 | 60 | 58 | 62 | 64 | 65 | 66 | 64 | 63 | 60 |
| Minimum .... | 53 | 52 | 52 | 52 | 54 | 55 | 54 | 53 | 55 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 58 | 58 | 55 | 56 | 57 | 57 | 54 | 54 | 56 | 58 | 58 | 58 | 56 | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 65 | 65 | 64 | 64 | 63 | 64 | 62 | 62 | 62 | 61 | 62 | 62 | 62 | 64 | 62 | 63 | 63 | 63 | 63 | 63 | 61 | 62 | 62 | 60 | 59 | 60 | 62 | 56 | -- | -- | 62 |
| Minimum .... | 57 | 58 | 59 | 60 | 58 | 56 | 58 | 58 | 57 | 57 | 54 | 55 | 59 | 56 | 58 | 58 | 57 | 57 | 56 | 56 | 55 | 58 | 56 | 58 | 57 | 56 | 56 | 54 | 54 | -- | -- | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | 60 | 58 | 57 | 56 | 56 | 56 | 54 | 56 | 56 | 57 | 55 | 56 | 58 | 58 | 57 | 56 | 55 | 55 | 56 | 57 | 58 | 57 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | 56 | 56 | 54 | 54 | 52 | 54 | 54 | 54 | 54 | 54 | 52 | 52 | 54 | 56 | 54 | 55 | 54 | 54 | 53 | 53 | 54 | 54 | -- | -- |

WILLAMETTE RIVER BASIN--Continued

## 14-2075. TUALATIN RIVER AT WEST LINN, OREG.

LOCATION.--Lat 45°21'03", long 122°40'30", temperature recorder at gaging station 300 feet upstream from bridge on State Highway 212, 0.4 mile west of West Linn, Clackamas County, and at mile 1.8.
DRAINAGE AREA (revised).--706 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 84°F Aug. 3; minimum, 37°F Dec. 22-26.
EXTREMES, 1963-66.--Water temperatures: Maximum, 84°F Aug. 3, 1966; minimum, 34°F Dec. 20, 21, 1964.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 62 | 61 | 60 | 59 | 59 | 62 | 61 | 62 | 60 | 59 | 59 | 58 | 58 | 58 | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 58 |
| Minimum .... | 58 | 58 | 58 | 58 | 58 | 58 | 59 | 59 | 60 | 58 | 59 | 58 | 58 | 58 | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 57 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 47 | 46 | 45 | -- | 51 |
| Minimum .... | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 47 | 46 | 45 | 45 | -- | 51 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 44 | 44 | 45 | 45 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 39 | 38 | 37 | 37 | 37 | 38 | 39 | 41 | 41 | 41 | 41 | 42 |
| Minimum .... | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 39 | 41 | 41 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 39 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 41 | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 44 | 42 |
| Minimum .... | 40 | 39 | 39 | 39 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 42 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 45 | -- | -- | -- | 44 |
| Minimum .... | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 46 | 46 | 45 | 45 | -- | -- | -- | 44 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 44 | 43 | 42 | 43 | 43 | 45 | 46 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 44 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 49 | 46 |
| Minimum .... | 45 | 44 | 43 | 42 | 42 | 42 | 43 | 43 | 45 | 46 | 46 | 46 | 47 | 47 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 50 | 51 | 51 | 52 | 52 | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 54 | 54 | 53 | 54 | 54 | 54 | 54 | 54 | 55 | 55 | 54 | 54 | 54 | 56 | 56 | 57 | -- | 53 |
| Minimum .... | 48 | 49 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 55 | 55 | -- | 52 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 59 | 60 | 61 | 61 | 62 | 63 | 64 | 64 | 63 | 62 | 62 | 62 | 61 | 60 | 60 | 60 | 61 | 62 | 62 | 60 | 61 | 62 | 64 | 62 | 63 | 63 | 63 | 63 | 61 | 62 |
| Minimum .... | 56 | 57 | 58 | 58 | 60 | 61 | 60 | 61 | 62 | 62 | 62 | 62 | 62 | 61 | 60 | 59 | 59 | 59 | 60 | 61 | 60 | 60 | 60 | 60 | 62 | 62 | 61 | 61 | 61 | 61 | 61 | 60 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 61 | 61 | 61 | 61 | 63 | 66 | 68 | 67 | 66 | 65 | 66 | 67 | 70 | 70 | 70 | 70 | 71 | 71 | 70 | 70 | 70 | 68 | 68 | 70 | 69 | 69 | 70 | 70 | 70 | -- | 67 |
| Minimum .... | 61 | 61 | 61 | 60 | 60 | 61 | 63 | 63 | 65 | 65 | 64 | 63 | 64 | 66 | 67 | 69 | 69 | 68 | 70 | 68 | 68 | 66 | 67 | 65 | 65 | 67 | 68 | 68 | 68 | 67 | -- | 65 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 70 | 67 | 65 | 68 | 67 | 67 | 67 | 71 | 74 | 70 | 74 | 72 | 70 | 70 | 74 | 72 | 76 | 74 | 74 | 75 | 76 | 78 | 78 | 73 | 75 | 77 | 80 | 79 | 79 | 81 | 79 | 73 |
| Minimum .... | 67 | 65 | 64 | 64 | 66 | 66 | 65 | 66 | 68 | 69 | 69 | 68 | 69 | 68 | 68 | 69 | 69 | 70 | 70 | 69 | 68 | 69 | 70 | 70 | 68 | 69 | 69 | 70 | 70 | 70 | 70 | 68 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 80 | 82 | 84 | 79 | 82 | 82 | 82 | 77 | 79 | 78 | 79 | 80 | 74 | 78 | 78 | 76 | 77 | 79 | 77 | 76 | 79 | 75 | 79 | 75 | 75 | 70 | 71 | 71 | 71 | 71 | 72 | 77 |
| Minimum .... | 70 | 70 | 71 | 73 | 71 | 70 | 70 | 71 | 72 | 71 | 69 | 69 | 71 | 68 | 70 | 71 | 70 | 69 | 69 | 69 | 68 | 69 | 67 | 68 | 68 | 67 | 67 | 66 | 68 | 67 | 66 | 69 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 73 | 74 | 78 | 80 | 78 | 74 | 73 | 71 | 70 | 68 | 67 | 69 | 66 | 65 | 65 | 66 | 66 | 66 | 67 | 68 | 72 | 67 | 69 | 66 | 65 | 65 | 68 | 68 | 68 | 67 | -- | 69 |
| Minimum .... | 67 | 68 | 68 | 68 | 69 | 69 | 68 | 67 | 65 | 66 | 65 | 64 | 63 | 63 | 62 | 63 | 64 | 63 | 62 | 62 | 64 | 64 | 63 | 64 | 63 | 62 | 62 | 62 | 65 | 63 | -- | 65 |

## 14-2077. WILLAMETTE RIVER AT OREGON CITY, OREG.

LOCATION.--Lat 45°20'25", long 122°38'15", temperature recorder on right bank at Oregon City Marina, 0.6 mile downstream from Tualatin River, 10.7 miles downstream from gaging station at Wilsonville, Clackamas County, and at mile 27.8.
DRAINAGE AREA.--10,000 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: March 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F Aug. 3, 7; minimum, 37°F Dec. 21-23.
EXTREMES, 1963-66.--Water temperatures: Maximum, 77°F July 31, 1965, Aug. 3, 7, 1966; minimum, 35°F Dec. 19, 20, 1964.
REMARKS.--Records furnished by Federal Water Pollution Control Administration.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 60 | 61 | 61 | 60 | 60 | 60 | 58 | 58 | 58 | 57 | 56 | 56 | 56 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 55 | 55 |
| Minimum | 59 | 59 | 59 | 60 | 59 | 59 | 58 | 58 | 59 | 60 | 60 | 60 | 59 | 58 | 58 | 57 | 57 | 56 | 55 | 55 | 55 | 55 | 56 | 57 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 56 | 56 | 56 | 55 | 56 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 53 | 52 | 52 | 52 | -- | 52 | 53 | 53 | 52 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum | 55 | 55 | 55 | 55 | 55 | 56 | 55 | 55 | 54 | 54 | 54 | 53 | 52 | 51 | 51 | 52 | -- | 51 | 51 | 52 | 51 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | -- | -- | -- | -- | -- | -- | -- | -- | 49 | 48 | 47 | 46 | 46 | 45 | 44 | 42 | 42 | 40 | 40 | 39 | 38 | 37 | 39 | 40 | 40 | 41 | 41 | 43 | 44 | 43 | 42 | |
| Minimum | -- | -- | -- | -- | -- | -- | -- | -- | 48 | 47 | 45 | 45 | 45 | 44 | 42 | 42 | 40 | 40 | 38 | 38 | 37 | 37 | 37 | 38 | 40 | 40 | 41 | 41 | 43 | 42 | 40 | |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 41 | 40 | 42 | 43 | 44 | 45 | 46 | 46 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 42 | 41 | 40 | 40 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | |
| Minimum | 40 | 40 | 40 | 42 | 43 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 43 | 42 | 41 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 43 | 43 | 44 | |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | -- | -- | -- | |
| Minimum | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | -- | -- | -- | |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 46 | 44 | 43 | 43 | 43 | 43 | 44 | 44 | 46 | 46 | 46 | 47 | 48 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 46 | 44 | 46 | 48 | 50 | 52 | 52 | 52 | 51 | 52 | 52 | |
| Minimum | 44 | 43 | 43 | 42 | 43 | 43 | 43 | 44 | 44 | 46 | 45 | 47 | 47 | 48 | 48 | 47 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 46 | 48 | 49 | 50 | 51 | 50 | 50 | 50 | |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 52 | 52 | 52 | 53 | 54 | 55 | 55 | 55 | 53 | 52 | 72 | 51 | 50 | 50 | 51 | 53 | 55 | 55 | 54 | 53 | 53 | 72 | 52 | 53 | 55 | 55 | 56 | 55 | 56 | 56 | -- | |
| Minimum | 50 | 50 | 50 | 51 | 51 | 52 | 53 | 53 | 52 | 51 | 51 | 49 | 48 | 48 | 49 | 50 | 51 | 53 | 52 | 52 | 52 | 51 | 51 | 52 | 53 | 54 | 55 | 54 | 54 | 55 | -- | |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 58 | 59 | 60 | 62 | 62 | 62 | 61 | 60 | 60 | -- | -- | 59 | 58 | 57 | 56 | 56 | 56 | 57 | 58 | 60 | 61 | 62 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 61 | 62 | |
| Minimum | 56 | 56 | 58 | 60 | 61 | 61 | 60 | 59 | 59 | -- | -- | 58 | 56 | 56 | 56 | 55 | 54 | 54 | 55 | 57 | 59 | 60 | 60 | 60 | 60 | 62 | 61 | 62 | 61 | 60 | 60 | |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 61 | 61 | 60 | 60 | 62 | 62 | 63 | 65 | 67 | 68 | 68 | 69 | 69 | 69 | 70 | 71 | 72 | 74 | 74 | 73 | 73 | 72 | 72 | 70 | 70 | 71 | 70 | 70 | 70 | 71 | -- | |
| Minimum | 60 | 59 | 59 | 58 | 59 | 61 | 62 | 63 | 64 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 69 | 70 | 72 | 72 | 72 | 72 | 70 | 69 | 68 | 68 | 68 | 68 | 68 | 69 | -- | |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 70 | 70 | 69 | 69 | 68 | 68 | 68 | 70 | -- | -- | 72 | 73 | 72 | 72 | 72 | 72 | 73 | 73 | 73 | 73 | 74 | 75 | 76 | 74 | 75 | 75 | 76 | 75 | 74 | 74 | 75 | |
| Minimum | 70 | 69 | 68 | 68 | 67 | 66 | 66 | 67 | -- | -- | 69 | 70 | 71 | 71 | 70 | 71 | 70 | 70 | 71 | 70 | 70 | 72 | 72 | 72 | 72 | 72 | 73 | 73 | 72 | 73 | 73 | |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 76 | 76 | 77 | 76 | 76 | 76 | 77 | 76 | 76 | 75 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 75 | 74 | 74 | 75 | 74 | 74 | 73 | 72 | 71 | 70 | 70 | 68 | 67 | 67 | |
| Minimum | 73 | 74 | 74 | 75 | 74 | 74 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 72 | 72 | 71 | 72 | 72 | 72 | 72 | 71 | 71 | 70 | 69 | 68 | 68 | 67 | 66 | 65 | |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 67 | 67 | 67 | 69 | 70 | 70 | 70 | 70 | 71 | 69 | 68 | 67 | 66 | 66 | 64 | 64 | 63 | 63 | 64 | 64 | 65 | 64 | 64 | 65 | 64 | 64 | 64 | 64 | 64 | 64 | -- | |
| Minimum | 65 | 66 | 66 | 66 | 67 | 68 | 68 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 64 | 63 | 62 | 62 | 62 | 62 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 63 | 63 | 63 | -- | |

WILLAMETTE RIVER BASIN--Continued

## 14-2110. CLACKAMAS RIVER NEAR CLACKAMAS, OREG.

LOCATION.--Lat 45°23'36", long 122°31'54", temperature recorder at gaging station, 0.8 mile upstream from Johnson Creek, 2.1 miles southeast of Clackamas, Clackamas County, and at mile 4.8.
DRAINAGE AREA.---936 square miles at Gladstone Bridge 3.6 miles downstream.
RECORDS AVAILABLE.--Water temperatures: May 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 71°F July 31; minimum, 37°F Dec. 19-21, 23.
EXTREMES, 1963-66.--Water temperatures: Maximum, 71°F July 31, 1966; minimum, 37°F Dec. 19-21, 23, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 56 | 56 | 57 | 59 | 59 | 60 | 59 | 58 | 57 | 56 | 56 | 54 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 53 | 54 | 54 | 53 | 54 | 53 | 53 | 52 | 55 |
| Minimum .... | 54 | 54 | 56 | 55 | 55 | 54 | 56 | 58 | 58 | 56 | 56 | 55 | 55 | 54 | 52 | 52 | 53 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 53 | 52 | 52 | 52 | 52 | 52 | 51 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 53 | 52 | 51 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 51 | 51 | 50 | 49 | 48 | 48 | 47 | 46 | 46 | 45 | 44 | 45 | -- | 50 |
| Minimum .... | 51 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 50 | 49 | 48 | 47 | 47 | 46 | 46 | 45 | 44 | 43 | 44 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 46 | 46 | 47 | 47 | 46 | 45 | 45 | 45 | 44 | 43 | 43 | 41 | 40 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 45 | 44 | 44 | 44 | 43 | 42 | 41 | 39 | 39 | 38 | 38 | 37 | 37 | 37 | 38 | 37 | 38 | 39 | 40 | 40 | 41 | 41 | 41 | 40 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| Minimum .... | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 41 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 39 | 39 | 41 | 41 | 41 | 42 | 42 | 43 | 42 | 42 | 43 | -- | -- | -- | 42 |
| Minimum .... | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 40 | 39 | 39 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 45 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | 44 | 45 | 47 | 46 | 45 | 46 | 47 | 45 | 46 | 45 |
| Minimum .... | 41 | 41 | 41 | 41 | 42 | 43 | 42 | 43 | 43 | 43 | 42 | 44 | 44 | 44 | 44 | 43 | 42 | 43 | 43 | 43 | 43 | 41 | 42 | 42 | 43 | 43 | 43 | 44 | 43 | 44 | 44 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 48 | 48 | 48 | 48 | 46 | 47 | 47 | 46 | 45 | 46 | 44 | 46 | 47 | 48 | 48 | 48 | 46 | 47 | 46 | 49 | 50 | 48 | 48 | 49 | 48 | 50 | 51 | -- | 47 |
| Minimum .... | 44 | 43 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 43 | 44 | 43 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 46 | 45 | 46 | 46 | 45 | 46 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 54 | 51 | 50 | 51 | 51 | 51 | 49 | 51 | 49 | 49 | 50 | 47 | 49 | 51 | 52 | 52 | 52 | 51 | 52 | 53 | 55 | 55 | 54 | 55 | 56 | 56 | 52 | 53 | 52 |
| Minimum .... | 46 | 47 | 48 | 48 | 49 | 48 | 47 | 47 | 48 | 48 | 48 | 47 | 47 | 46 | 46 | 46 | 45 | 46 | 48 | 49 | 49 | 49 | 48 | 49 | 49 | 51 | 50 | 50 | 50 | 50 | 49 | 48 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 51 | 54 | 57 | 53 | 52 | 53 | 55 | 55 | 54 | 55 | 55 | 56 | 57 | 58 | 58 | 58 | 58 | 59 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 58 | 59 | -- | 56 |
| Minimum .... | 49 | 49 | 49 | 48 | 49 | 51 | 51 | 51 | 53 | 54 | 53 | 54 | 52 | 54 | 55 | 56 | 56 | 57 | 58 | 56 | 58 | 58 | 58 | 56 | 56 | 57 | 58 | 58 | 57 | 58 | -- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 58 | 59 | 59 | 59 | 60 | 64 | 64 | 62 | 64 | 63 | 62 | 61 | 63 | 64 | 67 | 68 | 65 | 66 | 67 | 67 | 68 | 68 | 67 | 67 | 68 | 68 | 68 | 68 | 71 | 64 |
| Minimum .... | 58 | 57 | 57 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 59 | 59 | 60 | 59 | 59 | 60 | 61 | 64 | 62 | 80 | 61 | 61 | 64 | 64 | 62 | 81 | 61 | 62 | 63 | 63 | 65 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 69 | 69 | 68 | 68 | 69 | 69 | 68 | 68 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 66 | 67 | 68 | 68 | 68 | 67 | 67 | 67 | 67 | 65 | 64 | 65 | 64 | 64 | 63 | 67 |
| Minimum .... | 66 | 65 | 64 | 65 | 65 | 64 | 64 | 65 | 65 | 63 | 63 | 62 | 64 | 62 | 63 | 64 | 62 | 63 | 64 | 64 | 63 | 64 | 63 | 64 | 64 | 61 | 61 | 61 | 62 | 60 | 60 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 66 | 66 | 67 | 65 | 66 | 65 | 65 | 65 | 63 | 63 | 62 | 60 | 61 | 62 | 60 | 61 | 30 | 61 | 32 | 62 | 61 | 60 | 59 | 60 | 60 | 60 | 59 | 59 | -- | 62 |
| Minimum .... | 61 | 62 | 62 | 62 | 63 | 64 | 62 | 63 | 62 | 63 | 61 | 60 | 59 | 59 | 58 | 59 | 59 | 56 | 57 | 57 | 59 | 60 | 58 | 59 | 58 | 58 | 57 | 57 | 58 | 56 | -- | 60 |

## LEWIS RIVER BASIN

### 14-2217. LEWIS RIVER AT WOODLAND, WASH.

LOCATION.--Lat 45°53'25", long 122°44'00", at bridge on U.S. Highway 99, 1 mile southeast of Woodland, Cowlitz County, and 2 miles upstream from East Fork.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | | 14 | | | | 4.0 | 1.3 | 3.1 | 0.6 | | 22 | 0 | 1.4 | 2.0 | 0.1 | 0.2 | | 40 | 15 | 0 | | 47 | 6.9 | 5 | 9.1 | 91 |
| Nov. 2..... | | 14 | | | | 4.0 | 1.4 | 3.1 | .7 | | 23 | 0 | .8 | 2.0 | .1 | .2 | | 36 | 16 | 0 | | 48 | 7.1 | 5 | -- | -- |
| Dec. 7..... | | 13 | | | | 4.0 | .8 | 2.8 | .7 | | 20 | 0 | 1.2 | 1.0 | .1 | .1 | | A 34 | 13 | 0 | | 42 | 7.0 | 0 | 10.4 | 430 |
| Jan. 5, 1966. | | 14 | | | | 4.0 | .7 | 2.8 | .5 | | 20 | 0 | 1.6 | 1.5 | .0 | .9 | | 38 | 13 | 0 | | 41 | 7.0 | 5 | 11.5 | 230 |
| Feb. 9..... | | 13 | | | | 3.2 | 1.1 | 2.8 | .5 | | 19 | 0 | 1.6 | 1.8 | .0 | .3 | | 34 | 12 | 0 | | 40 | 6.9 | 5 | 12.0 | 91 |
| Mar. 8..... | | 13 | | | | 3.2 | 1.1 | 2.8 | .7 | | 20 | 0 | 1.2 | 1.5 | .1 | .3 | | 36 | 12 | 0 | | 40 | 7.0 | 5 | 11.9 | 230 |
| Apr. 20..... | | 13 | | | | 4.0 | .5 | 2.5 | .7 | | 20 | 0 | 1.2 | 1.2 | .0 | .1 | | 35 | 12 | 0 | | 40 | 7.0 | 5 | 11.9 | 0 |
| May 3..... | | 13 | | | | 4.0 | .7 | 2.9 | .5 | | 20 | 0 | 1.6 | 1.8 | .2 | .2 | | A 35 | 13 | 0 | | 42 | 7.0 | 0 | 11.0 | 0 |
| June 6..... | | 12 | | | | 3.5 | .9 | 2.7 | .4 | | 20 | 0 | 1.2 | 1.2 | .1 | .1 | | 35 | 12 | 0 | | 39 | 7.1 | 0 | 11.9 | 91 |
| July 5..... | | 13 | | | | 3.9 | 1.0 | 3.0 | .5 | | 21 | 0 | 1.0 | 2.0 | .0 | .1 | | A 34 | 14 | 0 | | 43 | 7.0 | 0 | 10.9 | 36 |
| Aug. 8..... | | 13 | | | | 4.0 | 1.2 | 2.9 | .7 | | 23 | 0 | .2 | 2.0 | .1 | .1 | | A 35 | 15 | 0 | | 43 | 6.7 | 5 | 10.1 | 73 |
| Sept. 28..... | | 14 | | | | 4.0 | 1.2 | 2.8 | .4 | | 23 | 0 | .0 | 2.0 | .1 | .1 | | 38 | 15 | 0 | | 43 | 7.5 | 5 | 9.9 | 91 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 0930 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.02 |
| July 5..... | 1400 | .01 | .01 | .01 | .01 | .00 | .00 |

LEWIS RIVER BASIN--Continued

14-2225. *EAST FORK LEWIS RIVER NEAR HEISSON, WASH.*

LOCATION.--Lat 45°50'10", long 122°27'50", temperature recorder at gaging station, 60 feet downstream from Basket Creek, 1.5 miles northeast of Heisson, Clark County, and 20 miles upstream from mouth.
DRAINAGE AREA.--125 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F July 29, 30, Aug. 2-4; minimum, 34°F Dec. 16, 17, 20.
EXTREMES, 1950-66.--Water temperatures: Maximum (1950-60, 1962-66), 74°F Aug. 4, 1952, July 31, 1965; minimum, freezing point Jan. 24 to Feb. 1, 1957, Jan. 11-14, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 52 | 53 | 54 | 56 | 56 | 56 | 55 | 53 | 51 | 51 | 52 | 52 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 51 |
| Minimum .... | 49 | 50 | 50 | 52 | 52 | 53 | 54 | 55 | 54 | 52 | 50 | 50 | 50 | 51 | 49 | 47 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 50 | 50 | 49 | 49 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 43 | 43 | 42 | 42 | 43 | 43 | 42 | 43 | -- | 46 |
| Minimum .... | 48 | 48 | 49 | 49 | 49 | 47 | 47 | 48 | 47 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 43 | 42 | 42 | 40 | 41 | 42 | 41 | 41 | 42 | -- | 45 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 45 | 43 | 43 | 43 | 42 | 42 | 40 | 37 | 36 | 35 | 35 | 35 | 35 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 42 | 42 | 42 | 40 | 41 |
| Minimum .... | 43 | 44 | 43 | 44 | 44 | 45 | 45 | 43 | 42 | 43 | 41 | 42 | 40 | 37 | 36 | 34 | 34 | 35 | 35 | 34 | 35 | 38 | 36 | 37 | 39 | 39 | 39 | 40 | 42 | 40 | 40 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 41 | 40 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 |
| Minimum .... | 40 | 40 | 39 | 40 | 41 | 40 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 39 | 38 | 39 | 39 | 40 | 39 | 40 | 39 | 40 | 41 | 42 | 41 | 41 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 41 | 41 | 40 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | -- | -- | -- | 42 |
| Minimum .... | 39 | 39 | 40 | 40 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 38 | 39 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 40 | 43 | 42 | 42 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 42 | 42 | 41 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 43 | 42 | 43 | 43 | 43 | 41 | 41 | 43 | 44 | 45 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 43 |
| Minimum .... | 39 | 38 | 40 | 38 | 39 | 41 | 40 | 41 | 42 | 42 | 40 | 43 | 44 | 43 | 42 | 41 | 41 | 42 | 41 | 40 | 40 | 39 | 41 | 41 | 43 | 42 | 42 | 43 | 42 | 44 | 43 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 46 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 45 | 43 | 46 | 46 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 48 | 49 | 49 | 46 | 48 | 48 | 49 | 50 | -- | 47 |
| Minimum .... | 44 | 41 | 42 | 43 | 43 | 44 | 43 | 45 | 44 | 44 | 43 | 41 | 41 | 43 | 45 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 44 | 45 | 46 | 44 | 44 | 46 | 45 | 47 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 53 | 54 | 53 | 52 | 53 | 55 | 55 | 52 | 52 | 52 | 51 | 49 | 48 | 49 | 52 | 54 | 55 | 55 | 53 | 49 | 52 | 56 | 58 | 58 | 54 | 54 | 56 | 56 | 52 | 53 |
| Minimum .... | 46 | 48 | 47 | 48 | 49 | 49 | 47 | 50 | 51 | 49 | 48 | 50 | 49 | 47 | 47 | 47 | 46 | 49 | 51 | 52 | 49 | 48 | 47 | 51 | 54 | 54 | 50 | 50 | 52 | 51 | 49 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 50 | 50 | 51 | 55 | 56 | 56 | 57 | 59 | 59 | 55 | 54 | 56 | 59 | 62 | 63 | 63 | 61 | 61 | 60 | 58 | 57 | 57 | 55 | 57 | 60 | 60 | 60 | 58 | 57 | -- | 57 |
| Minimum .... | 49 | 48 | 49 | 49 | 49 | 54 | 54 | 53 | 56 | 55 | 52 | 51 | 52 | 55 | 58 | 61 | 59 | 57 | 60 | 57 | 55 | 55 | 55 | 53 | 52 | 56 | 60 | 58 | 55 | 56 | -- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 52 | 55 | 56 | 56 | 57 | 59 | 61 | 61 | 60 | 59 | 60 | 60 | 59 | 60 | 64 | 64 | 64 | 62 | 64 | 65 | 66 | 65 | 62 | 64 | 66 | 67 | 68 | 68 | 67 | 61 |
| Minimum .... | 55 | 52 | 50 | 49 | 51 | 53 | 52 | 55 | 56 | 57 | 55 | 57 | 57 | 57 | 56 | 59 | 60 | 62 | 62 | 59 | 60 | 62 | 63 | 62 | 59 | 61 | 62 | 63 | 65 | 65 | 64 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 68 | 68 | 68 | 66 | 66 | 67 | 66 | 64 | 64 | 63 | 64 | 63 | 63 | 65 | 65 | 64 | 65 | 65 | 65 | 66 | 65 | 63 | 64 | 64 | 63 | 59 | 60 | 60 | 60 | 61 | 64 |
| Minimum .... | 64 | 64 | 65 | 66 | 63 | 63 | 64 | 64 | 63 | 62 | 59 | 60 | 62 | 60 | 61 | 62 | 61 | 61 | 61 | 61 | 61 | 63 | 61 | 61 | 62 | 59 | 58 | 57 | 58 | 57 | 58 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 63 | 65 | 66 | 66 | 64 | 65 | 64 | 62 | 61 | 60 | 59 | 57 | 57 | 59 | 59 | 60 | 59 | 58 | 60 | 61 | 61 | 60 | 58 | 57 | 57 | 56 | 58 | 58 | -- | 60 |
| Minimum .... | 58 | 59 | 60 | 61 | 62 | 63 | 61 | 61 | 60 | 60 | 60 | 58 | 56 | 57 | 56 | 57 | 58 | 59 | 57 | 56 | 56 | 58 | 58 | 58 | 57 | 57 | 55 | 55 | 55 | 56 | -- | 58 |

## KALAMA RIVER BASIN

### 14-2235. KALAMA RIVER BELOW ITALIAN CREEK, NEAR KALAMA, WASH.

LOCATION.--Lat 46°02'40", long 122°48'50", temperature recorder at gaging station, 2.5 miles northeast of Kalama, Cowlitz County, 3 miles upstream from mouth, and 5 miles downstream from Italian Creek.
DRAINAGE AREA.--198 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 65°F July 29; minimum, 38°F Dec. 16-18, 20.
EXTREMES, 1954-66.--Water temperatures: Maximum, 69°F July 28, 1958; minimum, freezing point Nov. 19, 20, 1958.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | 417 | 15 | | | | 4.8 | 1.4 | 3.7 | 0.6 | | 24 | 0 | 0.4 | 3.8 | 0.1 | 0.4 | | 44 | 18 | 0 | | 54 | 7.0 | 5 | 11.1 | 930 |
| Nov. 2..... | 273 | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | 9.0 | 930 |
| Jan. 5, 1966. | 2370 | 14 | | | | 4.8 | .8 | 2.7 | .4 | | 18 | 0 | 1.6 | 2.5 | .0 | 2.3 | | 43 | 16 | 0 | | 47 | 7.0 | 10 | 12.2 | 36 |
| Apr. 20..... | 1040 | 12 | | | | 3.6 | .7 | 2.3 | .3 | | 19 | 0 | .4 | 1.2 | .0 | .2 | | 31 | 12 | 0 | | 39 | 7.0 | 5 | 11.7 | 62 |
| July 5..... | 751 | 12 | | | | 3.7 | .8 | 2.8 | .5 | | 20 | 0 | .2 | 2.0 | .0 | .2 | | 35 | 12 | 0 | | 41 | 6.9 | 0 | 11.2 | 0 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 0850 | 0.00 | 0.00 | 0.05 | .0.05 | 0.00 | 0.03 |
| July 5..... | 1325 | .00 | .01 | .02 | .00 | .00 | .02 |

KALAMA RIVER BASIN--Continued

14-2235. KALAMA RIVER BELOW ITALIAN CREEK, NEAR KALAMA, WASH.--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 52 | 53 | 53 | 54 | 55 | 55 | 53 | 53 | 52 | 52 | 52 | 52 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 51 | 51 | 52 |
| Minimum .... | 50 | 51 | 51 | 51 | 51 | 52 | 53 | 53 | 53 | 52 | 52 | 51 | 51 | 52 | 50 | 48 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 50 | 50 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 48 | 48 | 47 | 47 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | -- | 48 |
| Minimum .... | 51 | 51 | 51 | 51 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 44 | 44 | 43 | 43 | 44 | 43 | 43 | 43 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 46 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 43 | 41 | 40 | 39 | 38 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 42 | 43 | 43 | 43 | 41 | 42 |
| Minimum .... | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 45 | 44 | 44 | 44 | 43 | 41 | 40 | 39 | 38 | 38 | 38 | 39 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 42 | 43 | 41 | 41 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 |
| Minimum .... | 41 | 40 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 40 | 40 | 40 | 40 | 41 | 40 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | -- | -- | -- | 42 |
| Minimum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 41 | 42 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 42 | 41 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 40 | 40 | 41 | 41 | 41 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 43 |
| Minimum .... | 39 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 42 | 43 | 44 | 45 | 44 | 44 | 43 | 42 | 43 | 43 | 41 | 40 | 42 | 42 | 43 | 44 | 44 | 45 | 44 | 44 | 45 | 44 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 46 | 46 | 47 | 48 | -- | 46 |
| Minimum .... | 44 | 43 | 43 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 42 | 42 | 44 | 44 | 45 | 44 | 45 | 44 | 43 | 43 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 45 | 47 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 46 | 46 | 46 | 49 | 51 | 52 | 51 | 49 | 48 | 50 | 53 | 54 | 53 | 50 | 51 | 53 | 51 | 50 | 50 |
| Minimum .... | 46 | 48 | 48 | 47 | 47 | 46 | 45 | 47 | 48 | 46 | 45 | 48 | 46 | 45 | 45 | 45 | 45 | 47 | 49 | 49 | 47 | 46 | 45 | 48 | 50 | 49 | 48 | 48 | 48 | 48 | 47 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 48 | 50 | 54 | 57 | 56 | 57 | 58 | 56 | 53 | 54 | 55 | 59 | 61 | 61 | 59 | 59 | 60 | 57 | 55 | 57 | 56 | 54 | 56 | 59 | 59 | 57 | 58 | 58 | -- | 56 |
| Minimum .... | 47 | 46 | 47 | 46 | 47 | 52 | 53 | 52 | 53 | 53 | 52 | 51 | 51 | 53 | 55 | 57 | 56 | 54 | 56 | 54 | 53 | 52 | 54 | 52 | 51 | 54 | 56 | 55 | 54 | 53 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 53 | 52 | 55 | 55 | 54 | 57 | 60 | 62 | 60 | 61 | 61 | 60 | 59 | 60 | 60 | 62 | 62 | 61 | 62 | 62 | 63 | 63 | 62 | 61 | 62 | 63 | 64 | 65 | 64 | 64 | 60 |
| Minimum .... | 53 | 52 | 51 | 50 | 54 | 53 | 52 | 55 | 56 | 57 | 55 | 56 | 57 | 57 | 55 | 57 | 57 | 58 | 58 | 56 | 57 | 58 | 59 | 59 | 57 | 57 | 58 | 59 | 60 | 61 | 60 | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 63 | 62 | 63 | 64 | 63 | 62 | 61 | 61 | 60 | 60 | 59 | 61 | 62 | 61 | 62 | 61 | 61 | 62 | 62 | 60 | 61 | 62 | 60 | 59 | 58 | 59 | 58 | 58 | 57 | 61 |
| Minimum .... | 60 | 60 | 61 | 61 | 60 | 61 | 60 | 60 | 60 | 59 | 57 | 57 | 58 | 57 | 58 | 60 | 58 | 59 | 58 | 58 | 58 | 59 | 58 | 59 | 59 | 56 | 56 | 55 | 56 | 55 | 54 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 60 | 61 | 61 | 60 | 60 | 60 | 60 | 59 | 57 | 57 | 56 | 56 | 55 | 55 | 55 | 57 | 56 | 56 | 57 | 58 | 58 | 57 | 55 | 56 | 56 | 57 | 57 | 58 | -- | 58 |
| Minimum .... | 55 | 57 | 57 | 57 | 58 | 58 | 57 | 57 | 57 | 56 | 56 | 55 | 55 | 54 | 53 | 54 | 54 | 55 | 54 | 54 | 54 | 56 | 56 | 55 | 54 | 54 | 55 | 55 | 55 | 55 | -- | 55 |

## COWLITZ RIVER BASIN

### 14-2325. CISPUS RIVER NEAR RANDLE, WASH.

LOCATION.--Lat 46°26'50", long 121°51'35", temperature recorder at gaging station, 60 feet upstream from bridge to Tower Rock ranger station, 4 miles downstream from North Fork, and 8 miles southeast of Randle, Lewis County.
DRAINAGE AREA.--321 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 58°F Aug. 2, 3, 7, 20, 21; minimum, 35°F Jan. 2-5.
EXTREMES, 1950-66.--Water temperatures: Maximum, 62°F July 27-29, 1958; minimum, freezing point Jan. 20, 1954, on several days during January and Feb. 1-3, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 49 | 49 | 49 | 48 | 50 | 50 | 51 | 50 | 48 | 47 | 49 | 48 | 47 | 46 | 46 | 47 | 48 | 49 | 49 | 50 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 49 | 49 | 49 |
| Minimum .... | 46 | 47 | 47 | 48 | 48 | 48 | 48 | 47 | 48 | 46 | 46 | 46 | 47 | 47 | 46 | 45 | 46 | 46 | 47 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | --- | 46 |
| Minimum .... | 47 | 48 | 48 | 48 | 47 | 47 | 47 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | --- | 46 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 40 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 40 |
| Minimum .... | 43 | 43 | 43 | 44 | 43 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 40 | 39 | 38 | 38 | 38 | 39 | 38 | 39 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 35 | 35 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 39 | 40 | 39 | 38 | 38 | 39 | 39 | 38 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 |
| Minimum .... | 37 | 35 | 35 | 35 | 35 | 36 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 39 | 40 | 40 | 41 | 40 | 41 | 41 | 41 | 42 | 40 | 41 | 41 | 41 | 40 | --- | --- | --- | 40 |
| Minimum .... | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 39 | 39 | 37 | 38 | 39 | 39 | 39 | 40 | 39 | 40 | 40 | 39 | 40 | 40 | 40 | 38 | --- | --- | --- | 39 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 40 | 38 | 41 | 40 | 42 | 41 | 40 | 40 | 41 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 40 | 38 | 40 | 40 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 41 | 42 | 41 |
| Minimum .... | 38 | 37 | 38 | 37 | 38 | 40 | 39 | 40 | 40 | 40 | 39 | 41 | 41 | 41 | 40 | 40 | 39 | 39 | 38 | 37 | 36 | 37 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 41 | 41 | 39 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 43 | 43 | 43 | 43 | 42 | 40 | 40 | 40 | 40 | 39 | 41 | 42 | 42 | 44 | 42 | 41 | 43 | 41 | 42 | 42 | 44 | 45 | 43 | 41 | 45 | 45 | 46 | 45 | --- | 42 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 39 | 39 | 38 | 38 | 40 | 41 | 41 | 40 | 40 | 39 | 40 | 40 | 41 | 41 | 42 | 41 | 40 | 41 | 42 | 42 | 43 | --- | 40 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | 47 | 46 | 45 | 44 | 44 | 45 | 46 | 44 | 45 | 45 | 45 | 43 | 43 | 44 | 47 | 48 | 49 | 48 | 47 | 43 | 47 | 48 | 49 | 47 | 45 | 46 | 47 | 46 | 46 | 46 |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 43 | 42 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | 45 | 43 | 42 | 42 | 44 | 45 | 45 | 43 | 42 | 44 | 44 | 44 | 43 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 44 | 45 | 51 | 49 | 49 | 48 | 48 | 47 | 46 | 48 | 48 | 50 | 51 | 52 | 50 | 50 | 49 | 48 | 47 | 50 | 48 | 47 | 51 | 52 | 50 | 51 | 50 | 51 | --- | 49 |
| Minimum .... | 43 | 44 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 48 | 47 | 46 | 46 | 47 | 46 | 46 | 48 | 50 | 49 | 47 | 48 | --- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 48 | 47 | 53 | 53 | 52 | 53 | 54 | 54 | 54 | 55 | 53 | 54 | 55 | 55 | 54 | 56 | 54 | 55 | 56 | 57 | 57 | 57 | 54 | 55 | 56 | 57 | 56 | 57 | 57 | 57 | 54 |
| Minimum .... | 48 | 47 | 46 | 46 | 49 | 50 | 49 | 50 | 50 | 51 | 51 | 51 | 51 | 52 | 51 | 52 | 51 | 51 | 52 | 52 | 51 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 53 | 54 | 54 | 51 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 58 | 56 | 57 | 57 | 58 | 56 | 56 | 56 | 56 | 55 | 54 | 56 | 57 | 57 | 56 | 57 | 57 | 58 | 58 | 55 | 55 | 56 | 54 | 53 | 53 | 54 | 52 | 54 | 53 | 56 |
| Minimum .... | 53 | 54 | 54 | 55 | 54 | 53 | 53 | 54 | 55 | 54 | 53 | 52 | 53 | 53 | 53 | 54 | 53 | 53 | 53 | 53 | 52 | 53 | 52 | 52 | 53 | 51 | 51 | 50 | 50 | 50 | 49 | 53 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 55 | 56 | 56 | 56 | 55 | 55 | 55 | 54 | 53 | 52 | 52 | 50 | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 54 | 55 | 54 | 52 | 51 | 51 | 52 | 52 | 54 | 52 | --- | 53 |
| Minimum .... | 49 | 50 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 51 | 51 | 49 | 48 | 49 | 49 | 50 | 50 | 50 | 48 | 48 | 49 | 50 | 52 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | --- | 50 |

COWLITZ RIVER BASIN--Continued

14-2335. COWLITZ RIVER NEAR KOSMOS, WASH.
(Formerly reported as Cowlitz River below Kosmos, Wash.)

LOCATION.-- Lat 46°28'00", long 122°07'20", temperature recorder at gaging station, 0.5 mile downstream from Tumwater Creek, 1.5 miles downstream from Cispus River, 4 miles southeast of Kosmos, Lewis County, and at mile 87.9.
DRAINAGE AREA.--1,042 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1959 to July 1960.
Water temperatures: November 1952 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 61°F on several days during July to September; minimum, 38°F Jan. 6-10.
EXTREMES, 1952-66.--Water temperatures: Maximum (1952-61, 1962-66), 65°F July 11, 12, 1958; minimum, freezing point Jan. 20, 1962.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (calculated) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | 1240 | 15 | | | | 7.6 | 1.6 | 3.9 | 0.8 | | 34 | 0 | 3.6 | 1.8 | 0.1 | 0.1 | | 52 | 26 | 0 | | 70 | 7.6 | 0 | 11.3 | 150 |
| Jan. 5, 1966. | 1730 | 15 | | | | 8.0 | 1.0 | 4.7 | .5 | | 34 | 0 | 3.4 | 1.8 | .0 | .3 | | 52 | 24 | 0 | | 65 | 7.2 | 5 | 13.3 | 150 |
| Apr. 13..... | 8720 | 12 | | | | 5.6 | .8 | 2.7 | .4 | | 24 | 0 | 1.6 | .5 | .1 | .2 | | 36 | 17 | 0 | | 46 | 7.0 | 5 | 12.1 | 36 |
| July 14..... | 4230 | 11 | | | | 5.2 | 1.1 | 2.5 | .4 | | 24 | 0 | 2.2 | .8 | .1 | .1 | | 35 | 18 | 0 | | 46 | 6.9 | 0 | 10.1 | 23 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 1325 | 0.00 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 |
| July 14..... | 1140 | .00 | .00 | .01 | .00 | .00 | .03 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 53 | 53 | 53 | 52 | 53 | 53 | 54 | 54 | 53 | 52 | 52 | 52 | 51 | 49 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 50 | 50 | 50 |
| Minimum .... | 53 | 53 | 52 | 53 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 51 | 51 | 49 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 48 | 47 | 48 | 48 | 47 | 48 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 49 | 49 | 49 | 48 | 47 | 46 | 47 | 47 | 47 | 46 | 45 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | --- | 46 |
| Minimum .... | 49 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 47 | 46 | 45 | 45 | 45 | 46 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | --- | 46 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 41 |
| Minimum .... | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 43 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | --- | --- | --- | 42 |
| Minimum .... | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 40 | --- | --- | --- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 |
| Minimum .... | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 41 | 42 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 44 | 43 | 44 | 44 | 43 | 43 | 43 | 45 | 46 | 46 | 45 | 45 | 45 | 46 | 45 | --- | 44 |
| Minimum .... | 44 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | 44 | 44 | 45 | 45 | 45 | --- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 47 | 47 | 46 | 45 | 45 | 43 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 46 | 48 | 49 | 49 | 49 | 46 | 46 | 48 | 49 | 49 | 48 | 46 | 47 | 47 | 47 | 46 |
| Minimum .... | 45 | 45 | 46 | 45 | 44 | 43 | 42 | 43 | 45 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 46 | 48 | 49 | 46 | 45 | 45 | 46 | 48 | 48 | 46 | 46 | 46 | 47 | 46 | 45 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 48 | 48 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 49 | 49 | 49 | 50 | 53 | 53 | 53 | 52 | 51 | --- | 50 |
| Minimum .... | 46 | 46 | 46 | 46 | 46 | 50 | 50 | 50 | 50 | 48 | 47 | 47 | 48 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 48 | 50 | 53 | 52 | 51 | 51 | --- | 49 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 49 | 52 | 53 | 53 | 54 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 58 | 58 | 58 | 58 | 59 | 60 | 60 | 60 | 58 | 59 | 60 | 60 | 61 | 61 | 60 | 57 |
| Minimum .... | 51 | 49 | 49 | 49 | 52 | 53 | 53 | 54 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 58 | 57 | 56 | 56 | 57 | 58 | 58 | 57 | 56 | 57 | 58 | 59 | 59 | 58 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 61 | 61 | 60 | 59 | 60 | 60 | 59 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 58 |
| Minimum .... | 58 | 58 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 56 | 57 | 58 | 57 | 58 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 56 | 55 | 55 | 56 | 56 | 55 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 58 | 59 | 60 | 61 | 61 | 60 | 60 | 59 | 59 | 59 | 59 | 57 | 57 | 56 | 56 | 56 | 57 | 57 | 56 | 57 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 59 | 59 | --- | 58 |
| Minimum .... | 56 | 56 | 58 | 59 | 60 | 60 | 60 | 59 | 59 | 59 | 59 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 57 | 59 | 57 | 58 | 58 | 58 | 58 | 58 | 59 | --- | 58 |

COWLITZ RIVER BASIN--Continued

## 14-2355. WEST FORK TILTON RIVER NEAR MORTON, WASH.

LOCATION.--Lat 46°36'45", long 122°14'45", temperature recorder at gaging station, 0.9 (revised) mile upstream from mouth, and 4 miles northeast of Morton, Lewis County.
DRAINAGE AREA.--16.4 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1950 to May 1956, July 1957 to September 1959, October 1960 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F July 29, Aug. 3, 7; minimum, 34°F Jan. 1, 2.
EXTREMES, 1950-59, 1960-66.--Water temperatures: Maximum (1950-59, 1960-62, 1963-66), 73°F July 26, 30, 31, Aug. 7, 8, 1965; minimum (1950-59, 1960-63, 1964-66), freezing point on several days during February and March 1962, Jan. 27 to Feb. 1, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 54 | 53 | 53 | 54 | 54 | 55 | 55 | 53 | 52 | 52 | 54 | 52 | 51 | 49 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 52 |
| Minimum .... | 50 | 50 | 50 | 52 | 52 | 53 | 52 | 52 | 52 | 50 | 50 | 51 | 52 | 50 | 49 | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | -- | 48 |
| Minimum .... | 50 | 51 | 50 | 50 | 50 | 49 | 49 | 50 | 49 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 47 | 47 | 48 | 47 | 47 | 45 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 44 | 44 | 43 | 42 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 38 | 36 | 37 | 37 | 36 | 38 | 39 | 39 | 37 | 41 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 44 | 44 | 44 | 44 | 43 | 42 | 40 | 39 | 38 | 38 | 39 | 39 | 39 | 39 | 38 | 36 | 35 | 36 | 36 | 35 | 35 | 38 | 37 | 37 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 35 | 35 | 36 | 36 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 39 | 39 | 40 | 39 |
| Minimum .... | 34 | 34 | 35 | 35 | 35 | 35 | 39 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 38 | 37 | 38 | 38 | 37 | 37 | 38 | 37 | 38 | 39 | 39 | 39 | 39 | 38 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 38 | -- | -- | -- | 40 |
| Minimum .... | 39 | 39 | 39 | 40 | 40 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 39 | 39 | 40 | 40 | 39 | 40 | 40 | 38 | 38 | -- | -- | -- | 38 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 40 | 39 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 38 | 39 | 40 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 43 | 44 | 41 |
| Minimum .... | 38 | 38 | 38 | 37 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 41 | 38 | 37 | 37 | 38 | 39 | 39 | 40 | 41 | 41 | 41 | 42 | 42 | 42 | 40 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 45 | 45 | 46 | 46 | 44 | 43 | 43 | 42 | 41 | 43 | 43 | 43 | 45 | 45 | 44 | 44 | 42 | 43 | 44 | 45 | 46 | 45 | 44 | 45 | 43 | 47 | 46 | -- | 44 |
| Minimum .... | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 42 | 42 | 41 | 40 | 40 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | -- | 42 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 51 | 51 | 51 | 51 | 48 | 50 | 51 | 48 | 46 | 50 | 49 | 46 | 45 | 45 | 45 | 49 | 51 | 52 | 52 | 50 | 48 | 50 | 53 | 55 | 52 | 51 | 52 | 53 | 49 | 48 | 50 |
| Minimum .... | 43 | 45 | 45 | 45 | 46 | 45 | 44 | 46 | 46 | 45 | 45 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 46 | 48 | 47 | 45 | 45 | 46 | 48 | 48 | 46 | 44 | 46 | 47 | 46 | 45 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 47 | 47 | 47 | 56 | 56 | 55 | 55 | 56 | 54 | 51 | 52 | 52 | 60 | 63 | 61 | 57 | 64 | 59 | 58 | 57 | 57 | 55 | 54 | 60 | 60 | 57 | 57 | 53 | 55 | -- | 55 |
| Minimum .... | 45 | 46 | 45 | 46 | 45 | 48 | 51 | 50 | 50 | 51 | 49 | 48 | 49 | 50 | 51 | 55 | 55 | 54 | 55 | 52 | 52 | 51 | 52 | 51 | 49 | 53 | 55 | 53 | 50 | 51 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 51 | 51 | 56 | 57 | 55 | 58 | 61 | 62 | 58 | 62 | 61 | 61 | 61 | 61 | 62 | 64 | 66 | 61 | 64 | 64 | 65 | 62 | 59 | 59 | 63 | 66 | 66 | 68 | 67 | 66 | 61 |
| Minimum .... | 51 | 51 | 50 | 50 | 51 | 51 | 51 | 53 | 53 | 54 | 54 | 53 | 55 | 56 | 55 | 56 | 57 | 56 | 57 | 54 | 53 | 54 | 55 | 55 | 53 | 52 | 54 | 55 | 56 | 57 | 56 | 54 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 67 | 68 | 62 | 65 | 66 | 68 | 62 | 63 | 61 | 65 | 65 | 64 | 65 | 66 | 64 | 64 | 64 | 64 | 65 | 65 | 60 | 60 | 63 | 58 | 56 | 57 | 58 | 56 | 56 | 58 | 63 |
| Minimum .... | 55 | 56 | 57 | 59 | 57 | 55 | 56 | 58 | 58 | 58 | 55 | 54 | 58 | 56 | 56 | 57 | 54 | 54 | 54 | 54 | 54 | 56 | 54 | 56 | 56 | 55 | 54 | 51 | 51 | 52 | 50 | 55 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 61 | 63 | 64 | 67 | 65 | 63 | 64 | 63 | 59 | 57 | 59 | 58 | 55 | 57 | 57 | 57 | 58 | 56 | 60 | 62 | 63 | 61 | 57 | 59 | 59 | 59 | 60 | 61 | 61 | -- | 60 |
| Minimum .... | 51 | 54 | 53 | 53 | 56 | 57 | 56 | 55 | 55 | 55 | 55 | 52 | 51 | 54 | 53 | 54 | 54 | 53 | 50 | 52 | 53 | 56 | 57 | 56 | 56 | 56 | 54 | 54 | 56 | 54 | -- | 54 |

## 14-2362. TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WASH.

LOCATION.--Lat 46°35'40", long 122°27'30", temperature recorder at gaging station, 0.8 mile upstream from Bear Canyon Creek, 1 mile southeast of Cinebar, Lewis County, and at mile 7.1.
DRAINAGE AREA.--141 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F Aug. 2, 6, 7, 20; minimum, 39°F Jan. 14-17.
EXTREMES, May 1965 to September 1966.--Water temperatures: Maximum, 76°F July 30, 1965; minimum, 39°F Jan. 14-17, 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 58 | 55 | 54 | 54 | 54 | 55 | 54 | 56 | 54 | 54 | 54 | 54 | 54 | 52 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 53 | 52 | 51 | 51 | 51 | 52 | 52 | 53 |
| Minimum .... | 52 | 52 | 52 | 54 | 54 | 53 | 53 | 54 | 54 | 51 | 52 | 53 | 53 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 50 | 50 | 50 | 50 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | -- | 47 |
| Minimum .... | 51 | 50 | 50 | 50 | 50 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 21 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 11 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 45 | 45 | 46 | 45 | 45 | 45 | 44 | 44 | 44 | 54 | 45 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 49 | 49 | 48 | 49 | 50 | 50 | 50 | -- | 46 |
| Minimum .... | 43 | 43 | 44 | 44 | 44 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 46 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 47 | 48 | 46 | 46 | 48 | 47 | 49 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 54 | 52 | 52 | 51 | 51 | 51 | 52 | 52 | 50 | 54 | 53 | 51 | 50 | 49 | 50 | 53 | 54 | 54 | 54 | 53 | 49 | 53 | 56 | 58 | 56 | 53 | 54 | 56 | 54 | 52 | 53 |
| Minimum .... | 48 | 49 | 49 | 49 | 49 | 49 | 48 | 49 | 50 | 48 | 48 | 51 | 50 | 49 | 49 | 49 | 48 | 49 | 49 | 50 | 49 | 48 | 47 | 49 | 50 | 52 | 48 | 47 | 49 | 50 | 49 | 49 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 50 | 49 | 50 | 58 | 59 | 57 | 58 | 61 | 59 | 54 | 53 | 52 | 60 | 62 | 61 | 58 | 61 | 60 | 57 | 56 | 57 | 56 | 55 | 60 | 61 | 58 | 56 | 56 | 57 | -- | 57 |
| Minimum .... | 49 | 49 | 49 | 49 | 49 | 53 | 54 | 53 | 53 | 54 | 53 | 51 | 51 | 51 | 53 | 56 | 55 | 54 | 56 | 53 | 53 | 52 | 53 | 52 | 52 | 54 | 56 | 53 | 52 | 52 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 52 | 52 | 54 | 53 | 53 | 57 | 60 | 61 | 59 | 62 | 61 | 62 | 60 | 61 | 61 | 64 | 64 | 63 | 64 | 65 | 66 | 65 | 62 | 63 | 66 | 67 | 67 | 68 | 67 | 67 | 61 |
| Minimum .... | 52 | 52 | 50 | 50 | 51 | 52 | 52 | 53 | 55 | 56 | 55 | 55 | 56 | 56 | 56 | 57 | 57 | 58 | 58 | 56 | 56 | 57 | 57 | 58 | 57 | 57 | 57 | 58 | 59 | 59 | 57 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 69 | 68 | 65 | 68 | 69 | 69 | 65 | 65 | 62 | 67 | 67 | 64 | 67 | 68 | 64 | 68 | 68 | 68 | 69 | 68 | 63 | 62 | 64 | 62 | 59 | 59 | 64 | 60 | 62 | 63 | 65 |
| Minimum .... | 57 | 58 | 59 | 61 | 58 | 59 | 59 | 60 | 60 | 60 | 57 | 58 | 61 | 58 | 60 | 60 | 58 | 58 | 58 | 59 | 58 | 60 | 58 | 58 | 59 | 58 | 58 | 56 | 57 | 57 | 55 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 64 | 66 | 67 | 67 | 64 | 62 | 64 | 63 | 60 | 59 | 61 | 61 | 60 | 58 | 58 | 58 | 62 | 60 | 62 | 63 | 64 | 63 | 59 | 58 | 59 | 60 | 62 | 63 | 61 | -- | 62 |
| Minimum .... | 55 | 58 | 57 | 56 | 58 | 58 | 57 | 57 | 58 | 57 | 56 | 54 | 54 | 57 | 55 | 57 | 57 | 57 | 54 | 54 | 56 | 57 | 59 | 57 | 56 | 57 | 56 | 56 | 58 | 54 | -- | 56 |

COWLITZ RIVER BASIN--Continued

## 14-2375. WINSTON CREEK NEAR SILVER CREEK, WASH.

LOCATION.--Lat 46°29'00", long 122°31'15", temperature recorder at gaging station, 100 feet downstream from bridge, 3.2 miles upstream from mouth, and 4.5 miles southeast of town of Silver Creek, Lewis County
DRAINAGE AREA.--37.8 square miles.
RECORDS AVAILABLE.--Water temperatures: April 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F July 29, Aug. 2, 3, 7; minimum, 36°F on several days during December and January.
EXTREMES, April 1965 to September 1966.--Water temperatures: Maximum, 72°F July 30, 1965; minimum, 36°F on several days during December 1965 and January 1966.
REMARKS.--Clock stopped Apr. 5-12 and July 1-7; temperature ranges, 44°F to 52°F and 54°F to 59°F, respectively.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 52 | 52 | 52 | 53 | 54 | 55 | 55 | 52 | 53 | 52 | 53 | 53 | 51 | 49 | 48 | 48 | 50 | 52 | 51 | 50 | 50 | 51 | 51 | 50 | 49 | 50 | 50 | 52 | 52 | 51 |
| Minimum .... | 49 | 49 | 49 | 51 | 50 | 52 | 51 | 51 | 52 | 49 | 51 | 52 | 52 | 51 | 49 | 47 | 47 | 48 | 48 | 50 | 49 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 50 | 50 | 49 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 50 | 50 | 51 | 49 | 50 | 50 | 50 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 44 | 44 | 43 | 43 | 43 | 43 | 44 | -- | 48 |
| Minimum .... | 49 | 50 | 50 | 50 | 49 | 48 | 49 | 50 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 48 | 48 | 47 | 48 | 48 | 48 | 46 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 46 | 46 | 46 | 47 | 46 | 44 | 43 | 43 | 42 | 42 | 41 | 39 | 37 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 38 | 39 | 39 | 39 | 39 | 41 |
| Minimum .... | 44 | 45 | 44 | 45 | 45 | 46 | 46 | 44 | 43 | 43 | 42 | 42 | 41 | 39 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 36 | 36 | 36 | 36 | 38 | 39 | 39 | 39 | 40 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 40 | 39 | 39 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 40 | 40 | 41 | 41 | 39 |
| Minimum .... | 39 | 39 | 38 | 38 | 39 | 39 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 | 39 | 39 | 37 | 36 | 36 | 37 | 38 | 38 | 38 | 37 | 37 | 38 | 40 | 40 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 39 | 41 | 41 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 40 | 41 | 41 | 42 | 43 | 43 | 44 | 44 | 42 | 43 | 43 | 43 | 42 | -- | -- | -- | 41 |
| Minimum .... | 38 | 38 | 39 | 39 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 39 | 40 | 39 | 40 | 41 | 41 | 42 | 42 | 40 | 42 | 42 | 42 | 40 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 39 | 40 | 39 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 45 | 45 | 44 | 43 | 42 | 42 | 42 | 40 | 41 | 42 | 44 | 45 | 46 | 47 | 47 | 48 | 48 | 47 | 49 | 43 |
| Minimum .... | 39 | 38 | 39 | 38 | 38 | 41 | 40 | 41 | 42 | 41 | 41 | 42 | 43 | 44 | 43 | 42 | 41 | 42 | 40 | 39 | 39 | 36 | 40 | 41 | 42 | 43 | 44 | 43 | 44 | 46 | 45 | 41 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 48 | 50 | -- | -- | -- | -- | -- | -- | -- | -- | 48 | 48 | 52 | 52 | 50 | 50 | 50 | 48 | 47 | 49 | 50 | 51 | 51 | 49 | 51 | 49 | 53 | 51 | -- | -- |
| Minimum .... | 45 | 43 | 43 | 44 | -- | -- | -- | -- | -- | -- | -- | -- | 45 | 47 | 48 | 48 | 46 | 45 | 45 | 46 | 46 | 47 | 47 | 48 | 48 | 46 | 47 | 48 | 47 | 49 | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 56 | 58 | 59 | 60 | 58 | 57 | 58 | 58 | 55 | 56 | 55 | 52 | 51 | 50 | 51 | 54 | 56 | 57 | 56 | 56 | 54 | 56 | 59 | 62 | 59 | 57 | 57 | 58 | 56 | 53 | 56 |
| Minimum .... | 47 | 49 | 51 | 53 | 55 | 54 | 52 | 53 | 55 | 52 | 51 | 52 | 51 | 50 | 49 | 48 | 47 | 48 | 51 | 54 | 52 | 51 | 50 | 52 | 54 | 55 | 52 | 50 | 52 | 52 | 52 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 50 | 53 | 58 | 59 | 58 | 59 | 62 | 60 | 57 | 57 | 57 | 63 | 66 | 66 | 63 | 64 | 62 | 60 | 59 | 60 | 59 | 57 | 60 | 62 | 62 | 60 | 59 | 61 | -- | 59 |
| Minimum .... | 50 | 50 | 50 | 50 | 50 | 54 | 56 | 55 | 56 | 57 | 55 | 54 | 54 | 56 | 57 | 60 | 60 | 58 | 60 | 57 | 57 | 55 | 57 | 55 | 54 | 56 | 59 | 58 | 55 | 56 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | 61 | 61 | 59 | 63 | 62 | 62 | 60 | 62 | 62 | 65 | 64 | 63 | 64 | 65 | 66 | 64 | 62 | 63 | 64 | 66 | 67 | 68 | 66 | 66 | 63 |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 56 | 57 | 58 | 57 | 57 | 59 | 59 | 58 | 59 | 59 | 59 | 60 | 58 | 57 | 58 | 59 | 60 | 58 | 58 | 58 | 59 | 60 | 60 | 59 | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 68 | 68 | 66 | 67 | 67 | 68 | 64 | 65 | 62 | 64 | 64 | 63 | 64 | 65 | 62 | 64 | 64 | 65 | 66 | 66 | 62 | 62 | 61 | 60 | 59 | 61 | 61 | 58 | 60 | 60 | 64 |
| Minimum .... | 59 | 60 | 61 | 62 | 60 | 60 | 60 | 61 | 61 | 60 | 58 | 58 | 60 | 59 | 60 | 60 | 57 | 58 | 58 | 59 | 59 | 60 | 59 | 58 | 59 | 58 | 58 | 56 | 56 | 56 | 55 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 62 | 63 | 64 | 64 | 61 | 62 | 63 | 61 | 60 | 60 | 59 | 58 | 58 | 57 | 59 | 59 | 59 | 57 | 58 | 60 | 61 | 61 | 59 | 59 | 59 | 59 | 59 | 61 | 59 | -- | 60 |
| Minimum .... | 55 | 58 | 56 | 57 | 58 | 57 | 57 | 57 | 57 | 58 | 57 | 56 | 54 | 57 | 55 | 57 | 57 | 57 | 54 | 54 | 55 | 57 | 59 | 58 | 58 | 58 | 57 | 56 | 58 | 56 | -- | 57 |

COWLITZ RIVER BASIN--Continued

14-2380. COWLITZ RIVER BELOW MAYFIELD DAM, WASH.

LOCATION.--Lat 46°30'40", long 122°36'50", temperature recorder at gaging station, 1 mile upstream from Mill Creek, 1.5 miles downstream from Mayfield Dam, Lewis County, 2 miles downstream from Winston Creek, and at mile 50.6.
DRAINAGE AREA.--1,400 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 65°F Aug. 20, 21; minimum, 39°F on several days during January.
EXTREMES, 1950-66.--Water temperatures: Maximum, 70°F July 28, 29, 1958; minimum, 33°F Jan. 28 to Feb. 2, 1956.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 55 |
| Minimum .... | 58 | 57 | 57 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 55 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 53 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | -- | 50 |
| Minimum .... | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 43 |
| Minimum .... | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 43 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | -- | -- | -- | 40 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 45 | 46 | 42 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 43 | 44 | 45 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 49 | 49 | 49 | 49 | -- | 46 |
| Minimum .... | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 46 | 46 | 46 | 48 | 48 | 49 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 49 | 50 | 51 | 51 | 50 | 50 | 48 | 47 | 48 | 47 | 47 | 47 | 47 | 47 | 48 | 49 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 52 | 52 | 51 | 50 | 49 | 49 |
| Minimum .... | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 50 | 48 | 48 | 50 | 50 | 50 | 49 | 48 | 48 | 48 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 52 | 53 | 53 | 54 | 54 | 54 | 55 | 55 | 56 | 55 | 53 | 54 | 54 | 54 | 54 | 55 | 55 | -- | 52 |
| Minimum .... | 49 | 48 | 48 | 48 | 48 | 48 | 49 | 50 | 51 | 50 | 50 | 52 | 51 | 51 | 51 | 52 | 52 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 54 | 53 | 53 | 54 | 55 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 54 | 54 | 54 | 53 | 54 | 54 | 54 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 62 | 58 |
| Minimum .... | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | 58 | 59 | 59 | 60 | 60 | 60 | 61 | 61 | 61 | 60 | 60 | 61 | 57 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 62 | 62 | 63 | 63 | 64 | 64 | 64 | 63 | 64 | 64 | 64 | 64 | 64 | 63 | 63 | 64 | 64 | 65 | 65 | 64 | 64 | 64 | 64 | 63 | 63 | 62 | 62 | 62 | 62 | 63 |
| Minimum .... | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 62 | 63 | 64 | 64 | 64 | 63 | 63 | 64 | 63 | 63 | 62 | 62 | 62 | 61 | 61 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | -- | 62 |
| Minimum .... | 61 | 61 | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 60 | 60 | 61 | 62 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 60 | 61 | -- | 61 |

COWLITZ RIVER BASIN--Continued

14-2390.5. COWLITZ RIVER NEAR TOLEDO, WASH.

LOCATION.--Lat 46°24'55", long 122°53'20", at bridge on Highway 99, 2.0 miles upstream from Lacamas Creek, 2.4 miles downstream from Salmon Creek, and 2.5 miles southwest of Toledo, Lewis County.
RECORDS AVAILABLE.--Chemical analyses: October 1961 to September 1966.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | | 13 | | | | 8.4 | 1.6 | 4.6 | 0.6 | | 36 | 0 | 3.0 | 4.8 | 0.0 | 0.1 | | 54 | 28 | 0 | | 79 | 7.1 | 5 | 9.8 | 430 |
| Nov. 2..... | | 12 | | | | 7.6 | 1.9 | 4.3 | .7 | | 34 | 0 | 3.0 | 4.0 | .1 | .1 | | 50 | 27 | 0 | | 76 | 7.2 | 5 | 10.0 | 36 |
| Dec. 7..... | | 13 | | | | 6.4 | 1.4 | 3.4 | .6 | | 30 | 0 | 2.8 | 2.2 | .0 | .3 | | 47 | 22 | 0 | | 61 | 7.3 | 5 | 11.6 | 430 |
| Jan. 5, 1966. | | 13 | | | | 5.6 | .9 | 3.2 | .5 | | 24 | 0 | 1.6 | 2.2 | .0 | 1.1 | | 49 | 18 | 0 | | 52 | 7.0 | 20 | 12.4 | 150 |
| Feb. 9..... | | 14 | | | | 6.4 | 1.3 | 3.4 | .4 | | 29 | 0 | 2.0 | 2.0 | .0 | .5 | | 47 | 21 | 0 | | 60 | 7.3 | 10 | 12.3 | 91 |
| Mar. 8..... | | 14 | | | | 6.4 | 1.6 | 4.0 | .5 | | 31 | 0 | 2.4 | 3.2 | .1 | .3 | | 52 | 22 | 0 | | 66 | 7.3 | 10 | 11.7 | 430 |
| Apr. 20..... | | 12 | | | | 4.8 | 1.2 | 2.2 | .3 | | 24 | 0 | 1.6 | .5 | .1 | .2 | | 39 | 17 | 0 | | 47 | 7.2 | 5 | 11.5 | 91 |
| May 2..... | | 12 | | | | 5.6 | .9 | 2.9 | .4 | | 26 | 0 | 1.6 | 1.2 | .1 | .1 | | A 38 | 18 | 0 | | 51 | 7.3 | 5 | 11.8 | 230 |
| June 6..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | -- | -- | -- | -- | 0 |
| July 5..... | | 11 | | | | 5.2 | 1.0 | 3.1 | .4 | | 23 | 0 | 1.4 | 2.8 | .0 | .2 | | 40 | 17 | 0 | | 50 | 7.0 | 5 | 10.9 | ≤23 |
| Aug. 8..... | | 12 | | | | 6.4 | 1.3 | 3.6 | .6 | | 29 | 0 | 2.4 | 4.0 | .1 | .1 | | 45 | 22 | 0 | | 62 | 7.0 | 5 | 9.8 | 36 |
| Sept. 27..... | | 14 | | | | 8.0 | 1.5 | 5.2 | .6 | | 34 | 0 | 3.0 | 5.8 | .1 | .2 | | 60 | 26 | 0 | | 79 | 7.5 | 0 | 10.3 | 91 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 1210 | 0.00 | 0.00 | 0.10 | 0.05 | 0.00 | 0.02 |
| July 5..... | 1030 | .01 | .01 | .01 | .00 | .00 | .00 |

## 14-2425. TOUTLE RIVER NEAR SILVER LAKE, WASH.

LOCATION.--Lat 46°20'10", long 122°43'30", temperature recorder at gaging station just downstream from highway bridge, 0.5 mile downstream from confluence of North and South Forks, 5 miles northeast of Silver Lake, Cowlitz County, and at mile 16.4.
DRAINAGE AREA.--474 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 68°F Aug. 2, 3; minimum, 38°F on several days during January.
EXTREMES, 1950-62, 1963-66.--Water temperatures: Maximum, 72°F Aug. 4, 1952; minimum (1950-60, 1961-62, 1963-66), freezing point Jan. 4, 5, 1959.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 55 | 54 | 54 | 55 | 57 | 56 | 57 | 55 | 54 | 53 | 54 | 54 | 52 | 51 | 51 | 51 | 52 | 54 | 53 | 52 | 53 | 53 | 53 | 52 | 52 | 51 | 51 | 51 | 51 | 53 |
| Minimum .... | 53 | 53 | 52 | 53 | 53 | 54 | 53 | 53 | 54 | 52 | 52 | 53 | 53 | 52 | 51 | 49 | 49 | 50 | 50 | 52 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 51 | 49 | 51 | 51 | 51 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 51 | 51 | 51 | 50 | 49 | 50 | 50 | 49 | 49 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | -- | 48 |
| Minimum .... | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 47 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 45 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 42 |
| Minimum .... | 44 | 45 | 44 | 44 | 44 | 45 | 45 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 40 | 40 | 41 | 40 | 40 | 39 | 38 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 41 | 39 |
| Minimum .... | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 39 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 39 | 40 | 40 | 40 | 41 | 39 | 40 | 41 | 41 | 42 | 43 | 43 | 43 | 42 | 43 | 43 | 42 | 42 | -- | -- | -- | 41 |
| Minimum .... | 39 | 39 | 39 | 40 | 41 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 41 | -- | -- | -- | 40 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 40 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 46 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 44 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 42 | 41 | 42 | 42 | 42 | 41 | 43 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 43 | 44 | 45 | 45 | 45 | 45 | 46 | 45 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 47 | 47 | 48 | 49 | 49 | 49 | 48 | 47 | 47 | 46 | 45 | 47 | 46 | 48 | 49 | 48 | 47 | 47 | 47 | 46 | 46 | 47 | 48 | 48 | 46 | 46 | 46 | 48 | 48 | -- | 47 |
| Minimum .... | 45 | 45 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 45 | 46 | 46 | 45 | 45 | 44 | 44 | 44 | 46 | 46 | 47 | 46 | 45 | 45 | 45 | 45 | 46 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 51 | 51 | 51 | 50 | 49 | 49 | 50 | 50 | 48 | 49 | 49 | 46 | 46 | 45 | 46 | 50 | 51 | 53 | 52 | 50 | 47 | 51 | 53 | 55 | 54 | 51 | 51 | 53 | 53 | 50 | 50 |
| Minimum .... | 45 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 46 | 45 | 44 | 46 | 45 | 44 | 44 | 44 | 44 | 46 | 48 | 50 | 47 | 46 | 46 | 48 | 50 | 50 | 48 | 47 | 48 | 49 | 48 | 46 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 49 | 51 | 56 | 56 | 56 | 56 | 57 | 55 | 52 | 53 | 53 | 58 | 61 | 60 | 58 | 58 | 59 | 56 | 55 | 57 | 56 | 54 | 58 | 59 | 59 | 59 | 57 | 59 | -- | 56 |
| Minimum .... | 47 | 47 | 48 | 49 | 49 | 53 | 53 | 52 | 52 | 52 | 51 | 50 | 51 | 52 | 54 | 55 | 54 | 53 | 55 | 53 | 53 | 53 | 54 | 53 | 52 | 56 | 58 | 57 | 54 | 54 | -- | 52 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 54 | 54 | 58 | 59 | 57 | 60 | 62 | 63 | 62 | 63 | 62 | 61 | 60 | 62 | 61 | 63 | 63 | 62 | 62 | 63 | 64 | 62 | 62 | 62 | 63 | 65 | 66 | 66 | 66 | 66 | 62 |
| Minimum .... | 54 | 54 | 55 | 53 | 56 | 56 | 55 | 57 | 58 | 59 | 59 | 59 | 58 | 58 | 58 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 59 | 58 | 57 | 58 | 59 | 60 | 62 | 61 | 61 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 68 | 68 | 67 | 67 | 67 | 67 | 65 | 66 | 63 | 64 | 65 | 63 | 65 | 64 | 64 | 65 | 66 | 66 | 67 | 67 | 65 | 65 | 65 | 63 | 61 | 62 | 62 | 60 | 61 | 62 | 65 |
| Minimum .... | 61 | 62 | 63 | 64 | 61 | 61 | 61 | 63 | 62 | 61 | 59 | 59 | 62 | 59 | 61 | 62 | 59 | 60 | 60 | 61 | 61 | 63 | 61 | 61 | 61 | 60 | 59 | 58 | 58 | 58 | 57 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 63 | 64 | 65 | 66 | 64 | 62 | 63 | 63 | 61 | 60 | 59 | 58 | 58 | 57 | 58 | 58 | 59 | 58 | 58 | 60 | 60 | 60 | 57 | 56 | 57 | 56 | 57 | 59 | 58 | -- | 60 |
| Minimum .... | 57 | 60 | 60 | 59 | 60 | 61 | 58 | 58 | 59 | 59 | 58 | 57 | 56 | 57 | 56 | 57 | 57 | 57 | 55 | 54 | 54 | 56 | 57 | 56 | 55 | 55 | 54 | 54 | 56 | 56 | -- | 57 |

COWLITZ RIVER BASIN--Continued

## 14-2430. COWLITZ RIVER AT CASTLE ROCK, WASH.

LOCATION.--Lat 46°16'30", long 122°54'50", temperature recorder at gaging station, 15 feet downstream from highway bridge in Castle Rock, Cowlitz County, 2.5 miles downstream from Toutle River, and at mile 17.3
DRAINAGE AREA.--2,238 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1959.
Water temperatures: August 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F Aug. 21; minimum, 39°F on several days during December and January.
EXTREMES, 1950-66.--Water temperatures: Maximum (1950-62, 1963-66), 75°F July 28-30, 1958; minimum, freezing point Jan. 29, 30, 1951.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 58 | 58 | 57 | 57 | 58 | 59 | 59 | 58 | 57 | 58 | 58 | 58 | 57 | 56 | 55 | 55 | 54 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 57 |
| Minimum ... | 57 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 58 | 57 | 57 | 57 | 57 | 57 | 56 | 54 | 54 | 54 | 54 | 54 | 55 | 56 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 56 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 48 | 48 | 47 | 47 | 47 | 45 | 45 | --- | 51 |
| Minimum .... | 54 | 54 | 55 | 54 | 54 | 54 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 48 | 48 | 47 | 47 | 47 | 45 | 45 | 45 | --- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 42 |
| Minimum .... | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | --- | --- | --- | 41 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 42 | 41 | 41 | 42 | 42 | 41 | --- | --- | --- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 40 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 45 | 47 | 47 | 48 | 48 | 49 | 50 | 50 | 50 | 45 |
| Minimum .... | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 45 | 46 | 47 | 47 | 47 | 47 | 49 | 49 | 44 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 52 | 52 | 50 | 51 | 51 | 52 | 52 | 51 | 52 | 52 | 53 | 54 | --- | 51 |
| Minimum .... | 49 | 47 | 48 | 49 | 49 | 49 | 50 | 50 | 50 | 51 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 50 | 52 | 51 | 53 | --- | 50 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 56 | 57 | 57 | 55 | 55 | 54 | 53 | 53 | 54 | 54 | 53 | 52 | 52 | 53 | 54 | 55 | 56 | 56 | 55 | 55 | 57 | 57 | 58 | 58 | 57 | 58 | 58 | 58 | 57 | 55 |
| Minimum .... | 52 | 53 | 52 | 53 | 54 | 54 | 53 | 53 | 52 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 53 | 54 | 53 | 53 | 54 | 54 | 55 | 54 | 56 | 54 | 55 | 54 | 53 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 54 | 53 | 53 | 57 | 57 | 57 | 56 | 58 | 58 | 57 | 57 | 57 | 59 | 59 | 60 | 59 | 60 | 59 | 59 | 59 | 60 | 60 | 59 | 60 | 59 | 59 | 58 | 58 | 58 | --- | 58 |
| Minimum .... | 53 | 53 | 53 | 53 | 53 | 55 | 55 | 54 | 55 | 56 | 54 | 55 | 55 | 56 | 56 | 57 | 57 | 57 | 58 | 57 | 57 | 57 | 59 | 57 | 56 | 58 | 58 | 57 | 55 | 55 | --- | 56 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 56 | 55 | 57 | 57 | 56 | 58 | 58 | 58 | 58 | 60 | 61 | 61 | 61 | 61 | 61 | 62 | 62 | 62 | 62 | 63 | 64 | 64 | 63 | 63 | 64 | 65 | 66 | 67 | 66 | 66 | 61 |
| Minimum .... | 56 | 54 | 54 | 54 | 55 | 54 | 55 | 56 | 56 | 58 | 58 | 59 | 60 | 59 | 58 | 60 | 60 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 62 | 62 | 64 | 65 | 65 | 65 | 65 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 67 | 67 | 66 | 66 | 66 | 66 | 66 | 66 | 67 | 65 | 67 | 67 | 67 | 67 | 67 | 66 | 67 | 68 | 68 | 69 | 68 | 67 | 68 | 67 | 66 | 64 | 65 | 64 | 64 | 65 | 66 |
| Minimum .... | 65 | 66 | 66 | 65 | 65 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 66 | 65 | 65 | 66 | 65 | 65 | 65 | 66 | 67 | 67 | 66 | 66 | 66 | 64 | 63 | 64 | 63 | 63 | 63 | 65 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 65 | 65 | 66 | 67 | 68 | 68 | 66 | 66 | 66 | 65 | 64 | 63 | 63 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 64 | 64 | 64 | 64 | 62 | 63 | 63 | 64 | 64 | 64 | --- | 64 |
| Minimum .... | 64 | 64 | 64 | 64 | 66 | 66 | 64 | 64 | 64 | 64 | 63 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 61 | 61 | 62 | 63 | 63 | 62 | 61 | 61 | 62 | 62 | 63 | 62 | --- | 63 |

## 14-2442. COWLITZ RIVER AT KELSO, WASH.
(International Hydrological Decade River Station)

LOCATION.--Lat 46°08'40", long 122°54'45", at Allen Street bridge at Kelso, Cowlitz County, 3.2 miles upstream from Coweman River, 3.5 miles downstream from Ostrander Creek, and 12 miles downstream from gaging station.
DRAINAGE AREA.--2,238 square miles, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1960 to September 1966.
REMARKS.--Records of discharge given for 12-2430. Cowlitz River at Castle Rock. Minor inflow between gaging station and sampling point except during periods of heavy local runoff.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | 2540 | 15 | | | | 7.6 | 1.8 | 5.0 | 0.6 | | 35 | 0 | 3.0 | 4.8 | 0.1 | 0.2 | | 58 | 26 | 0 | | 78 | 7.1 | 5 | 9.9 | 91 |
| Nov. 2..... | 1790 | 14 | | | | 7.6 | 1.9 | 5.1 | .7 | | 35 | 0 | 2.8 | 5.0 | .1 | .1 | | A 54 | 27 | 0 | | 80 | 7.1 | 5 | 10.0 | 36 |
| Dec. 7..... | 8540 | 13 | | | | 5.6 | 1.4 | 3.5 | .7 | | 26 | 0 | 2.4 | 2.2 | .0 | .4 | | 47 | 20 | 0 | | 57 | 7.1 | 5 | 11.3 | 430 |
| Jan. 5, 1966. | 11200 | 13 | | | | 4.8 | .9 | 3.1 | .4 | | 20 | 0 | 2.4 | 1.8 | .0 | 1.0 | | 47 | 16 | 0 | | 48 | 6.9 | 20 | 12.3 | 430 |
| Feb. 9..... | 7960 | 14 | | | | 5.2 | 1.3 | 3.5 | .5 | | 26 | 0 | 2.2 | 2.2 | .2 | .6 | | 42 | 18 | 0 | | 55 | 7.2 | 10 | 12.2 | 36 |
| Mar. 8..... | 8300 | 14 | | | | 5.2 | 1.6 | 3.5 | .4 | | 28 | 0 | 2.4 | 1.8 | .1 | .5 | | 46 | 20 | 0 | | 57 | 7.1 | 10 | 11.4 | 430 |
| Apr. 20..... | 11600 | 12 | | | | 4.4 | 1.3 | 2.5 | .3 | | 24 | 0 | 1.6 | 1.0 | .1 | .1 | | 37 | 16 | 0 | | 48 | 7.2 | 5 | 11.2 | 36 |
| May 2..... | 8520 | 13 | | | | 5.6 | .9 | 3.3 | .5 | | 28 | 0 | 1.6 | 1.5 | .1 | .1 | | A 41 | 18 | 0 | | 53 | 7.1 | 5 | 11.5 | 150 |
| June 6..... | 6250 | 11 | | | | 4.8 | .8 | 2.9 | .4 | | 22 | 0 | 1.6 | 2.0 | .1 | .2 | | 38 | 15 | 0 | | 45 | 7.0 | 5 | 10.9 | 0 |
| July 5..... | 9000 | 11 | | | | 4.5 | 1.0 | 2.9 | .5 | | 23 | 0 | 1.2 | 1.5 | .1 | .2 | | 37 | 15 | 0 | | 45 | 7.0 | 5 | 11.4 | 230 |
| Aug. 8..... | 3280 | 13 | | | | 6.9 | 1.7 | 4.9 | .7 | | 30 | 0 | 2.4 | 6.0 | .1 | .1 | | A 51 | 24 | 0 | | 75 | 6.8 | 5 | 9.3 | 280 |
| Sept. 28..... | 1910 | 16 | | | | 7.5 | 1.6 | 5.6 | .7 | | 35 | 0 | 3.0 | 6.0 | .2 | .2 | | 58 | 25 | 0 | | 80 | 7.3 | 5 | 9.4 | 430 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 1040 | 0.00 | 0.00 | 0.12 | 0.05 | 0.00 | 0.00 |
| July 5..... | 1225 | .00 | .00 | .02 | .00 | .00 | .00 |

COWLITZ RIVER BASIN--Continued

## 14-2450. COWEMAN RIVER NEAR KELSO, WASH.

LOCATION.--Lat 46°08'15", long 122°53'45", at bridge on U.S. Highway 99, 0.3 mile east of Kelso, Cowlitz County, 2.6 miles upstream from mouth, and 4.6 miles downstream from gaging station.
DRAINAGE AREA.--119 square miles, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1961 to September 1966.
Water temperatures: July 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 73°F July 29; minimum, 35°F Dec. 17, 18.
EXTREMES, 1950-66.--Water temperatures: Maximum, 82°F July 27, 28, 1958; minimum, freezing point on several days during winter months.
REMARKS.--Temperature recorder located at gaging station. Bulb was partially exposed at times during the periods July 27 to Aug. 5, Aug. 19-26, Sept. 1-10.
Some inflow between gaging station and sampling point.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 18, 1965 | 84 | 14 | | | | 7.2 | 2.0 | 4.8 | 0.6 | | 30 | 0 | 0.2 | 6.8 | 0.1 | 1.8 | | 56 | 26 | 2 | | 78 | 7.5 | 15 | 9.7 | 11000 |
| Nov. 2..... | 46 | 14 | | | | 9.2 | 2.5 | 5.5 | .7 | | 39 | 0 | 1.2 | 9.0 | .1 | .9 | | 64 | 33 | 1 | | 98 | 7.4 | 15 | 9.1 | 290 |
| Dec. 7..... | 338 | 13 | | | | 5.2 | 1.4 | 3.4 | .4 | | 24 | 0 | 1.0 | 3.0 | .0 | 1.4 | | 45 | 18 | 0 | | 56 | 7.0 | 10 | 10.8 | 430 |
| Jan. 5, 1966. | 1660 | 14 | | | | 4.4 | 1.2 | 3.0 | .4 | | 18 | 0 | 2.2 | 2.0 | .0 | 2.1 | | 42 | 14 | 0 | | 46 | 6.9 | 15 | 12.0 | 91 |
| Feb. 9..... | 855 | 13 | | | | 4.8 | .6 | 2.5 | .9 | | 18 | 0 | 1.2 | 2.0 | .1 | 1.8 | | 42 | 14 | 0 | | 46 | 6.9 | 15 | 12.1 | 140 |
| Mar. 8..... | 1270 | 13 | | | | 4.0 | 1.4 | 3.2 | .3 | | 21 | 0 | 1.0 | 2.5 | .1 | 1.8 | | 42 | 16 | 0 | | 48 | 6.9 | 5 | 11.0 | 91 |
| Apr. 20..... | 257 | 14 | | | | 4.4 | 1.5 | 3.0 | .5 | | 24 | 0 | 1.0 | 2.5 | .0 | .9 | | 42 | 17 | 0 | | 52 | 7.1 | 5 | 10.5 | 36 |
| May 2..... | 165 | 14 | | | | 5.6 | 1.3 | 3.5 | .4 | | 28 | 0 | .0 | 3.5 | .1 | .6 | | A 43 | 20 | 0 | | 59 | 7.0 | 5 | 10.2 | 2400 |
| June 6..... | 88 | 14 | | | | 6.4 | 1.5 | 4.1 | .3 | | 30 | 0 | .0 | 4.5 | .1 | .3 | | 50 | 22 | 0 | | 65 | 7.0 | 5 | 10.8 | 430 |
| July 5..... | 278 | 13 | | | | 4.6 | 1.3 | 3.2 | .4 | | 24 | 0 | .0 | 2.2 | .1 | .7 | | 40 | 17 | 0 | | 49 | 7.0 | 0 | 10.5 | 930 |
| Aug. 8..... | 43 | 15 | | | | 7.6 | 2.2 | 5.1 | .6 | | 36 | 0 | .6 | 7.0 | .1 | .6 | | 56 | 28 | 0 | | 84 | 6.8 | 5 | 9.4 | 36 |
| Sept. 28..... | 43 | 15 | | | | 7.5 | 2.8 | 4.8 | .8 | | 38 | 0 | .2 | 7.0 | .1 | .1 | | 65 | 30 | 0 | | 83 | 7.2 | 10 | 9.4 | 11000 |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 1015 | 0.00 | 0.00 | 0.08 | 0.05 | 0.00 | 0.03 |
| July 5..... | 1250 | .01 | .01 | .00 | .00 | .00 | .02 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 56 | 55 | 56 | 57 | 58 | 58 | 58 | 57 | 56 | 55 | 56 | 56 | 55 | 51 | 51 | 51 | 51 | 53 | 53 | 51 | 50 | 50 | 51 | 51 | 50 | 52 | 52 | 52 | 52 | 54 |
| Minimum .... | 54 | 54 | 54 | 55 | 55 | 56 | 56 | 56 | 57 | 53 | 54 | 55 | 55 | 55 | 51 | 48 | 49 | 50 | 50 | 51 | 50 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 52 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 53 | 53 | 52 | 50 | 52 | 52 | 51 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | -- | 49 |
| Minimum .... | 52 | 52 | 53 | 53 | 52 | 50 | 50 | 50 | 51 | 49 | 49 | 49 | 49 | 50 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 44 | 44 | 43 | 43 | 43 | 44 | 43 | 43 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 43 | 43 | 41 | 40 | 38 | 36 | 36 | 37 | 37 | 38 | 38 | 38 | 39 | 40 | 40 | 42 | 43 | 43 | 43 | 42 | 42 |
| Minimum .... | 44 | 45 | 45 | 46 | 45 | 46 | 47 | 46 | 44 | 44 | 43 | 43 | 41 | 40 | 38 | 36 | 35 | 35 | 36 | 36 | 36 | 38 | 38 | 38 | 39 | 40 | 40 | 42 | 43 | 42 | 42 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 42 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 45 | 45 | 44 | 43 | 43 | 42 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 |
| Minimum .... | 41 | 41 | 41 | 41 | 42 | 43 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 41 | 40 | 40 | 40 | 41 | 40 | 40 | 41 | 41 | 42 | 41 | 42 | 42 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 41 | 43 | 43 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 46 | 45 | 45 | 45 | 44 | 45 | 44 | 44 | 43 | -- | -- | -- | 43 |
| Minimum .... | 40 | 40 | 41 | 41 | 43 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 40 | 40 | 42 | 41 | 41 | 42 | 42 | 43 | 44 | 42 | 43 | 44 | 43 | 42 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 46 | 47 | 46 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 49 | 49 | 49 | 50 | 45 |
| Minimum .... | 41 | 40 | 40 | 40 | 40 | 43 | 42 | 43 | 44 | 44 | 42 | 44 | 46 | 45 | 44 | 43 | 42 | 43 | 43 | 42 | 42 | 41 | 42 | 42 | 43 | 45 | 47 | 46 | 46 | 48 | 48 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 48 | 48 | 50 | 51 | 53 | 52 | 51 | 50 | 50 | 49 | 47 | 48 | 49 | 52 | 53 | 51 | 51 | 50 | 49 | 49 | 49 | 50 | 53 | 53 | 51 | 51 | 51 | 54 | 54 | -- | 51 |
| Minimum .... | 48 | 45 | 44 | 45 | 46 | 49 | 50 | 49 | 48 | 49 | 47 | 45 | 44 | 47 | 48 | 49 | 47 | 47 | 45 | 46 | 46 | 48 | 49 | 49 | 51 | 49 | 49 | 50 | 49 | 51 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 59 | 61 | 62 | 61 | 60 | 59 | 61 | 61 | 58 | 57 | 57 | 55 | 52 | 51 | 53 | 56 | 59 | 61 | 60 | 58 | 55 | 58 | 62 | 65 | 64 | 58 | 59 | 61 | 59 | 55 | 58 |
| Minimum .... | 50 | 52 | 55 | 56 | 57 | 55 | 52 | 54 | 56 | 54 | 50 | 54 | 51 | 50 | 49 | 48 | 48 | 50 | 54 | 57 | 55 | 51 | 50 | 53 | 57 | 57 | 52 | 52 | 54 | 55 | 52 | 53 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 53 | 52 | 55 | 62 | 64 | 64 | 64 | 67 | 66 | 60 | 61 | 63 | 68 | 72 | 71 | 69 | 68 | 69 | 66 | 63 | 65 | 64 | 59 | 63 | 67 | 67 | 67 | 63 | 64 | -- | 64 |
| Minimum .... | 52 | 51 | 50 | 52 | 52 | 58 | 60 | 58 | 61 | 60 | 58 | 56 | 57 | 60 | 63 | 67 | 65 | 62 | 65 | 61 | 59 | 58 | 59 | 56 | 55 | 61 | 64 | 62 | 59 | 59 | -- | 59 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 59 | 56 | 59 | 59 | 58 | 64 | 66 | 68 | 67 | 68 | 66 | 66 | 66 | 67 | 66 | 70 | 70 | 68 | 68 | 69 | 69 | 68 | 67 | 65 | 68 | 70 | 72 | 73 | 72 | 70 | 66 |
| Minimum .... | 59 | 56 | 54 | 54 | 57 | 57 | 56 | 59 | 62 | 63 | 61 | 61 | 63 | 63 | 60 | 63 | 63 | 65 | 64 | 60 | 61 | 62 | 64 | 64 | 59 | 60 | 62 | 65 | 66 | 65 | 63 | 61 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 71 | 72 | 70 | 69 | 71 | 72 | 72 | 68 | 70 | 67 | 67 | 68 | 67 | 67 | 67 | 66 | 68 | 69 | 68 | 69 | 69 | 66 | 68 | 69 | 65 | 62 | 62 | 62 | 59 | 61 | 61 | 67 |
| Minimum .... | 63 | 64 | 65 | 64 | 63 | 64 | 64 | 64 | 64 | 62 | 58 | 59 | 63 | 60 | 62 | 62 | 59 | 60 | 59 | 60 | 60 | 62 | 60 | 63 | 62 | 58 | 57 | 56 | 56 | 56 | 55 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 64 | 65 | 66 | 67 | 63 | 63 | 63 | 62 | 61 | 59 | 57 | 56 | 55 | 55 | 55 | 55 | 56 | 55 | 54 | 56 | 57 | 57 | 56 | 53 | 56 | 55 | 56 | 58 | 57 | -- | 58 |
| Minimum .... | 56 | 60 | 58 | 59 | 61 | 61 | 57 | 58 | 58 | 59 | 57 | 54 | 53 | 55 | 53 | 55 | 54 | 54 | 51 | 50 | 52 | 55 | 55 | 53 | 53 | 53 | 53 | 53 | 55 | 54 | -- | 55 |

## COLUMBIA RIVER MAIN STEM

### 14-2454. COLUMBIA RIVER AT FISHER ISLAND, NEAR LONGVIEW, WASH.

LOCATION.--Lat 46°09'20", long 123°03'20", midpoint at Fisher Channel, 0.5 mile south of Fisher Island, 3 miles west of Longview, Cowlitz County, and 3.5 miles upstream from Coal Creek.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1966.
REMARKS.--No discharge records available. Sampling point subject to tidal influence.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 20, 1965 | | 8.9 | | | | 22 | 5.2 | 9.0 | 1.6 | | 86 | 0 | 18 | 4.2 | 0.3 | 0.8 | 0.24 | 114 | 76 | 6 | | 192 | 7.2 | 5 | | 3900 |
| Nov. 17..... | | 15 | | | | 18 | 5.1 | 8.8 | 1.5 | | 75 | 0 | 17 | 4.2 | .2 | .6 | .28 | A 108 | 66 | 4 | | 172 | 7.2 | 5 | | -- |
| Dec. 16..... | | 12 | | | | 20 | 5.8 | 9.9 | 1.5 | | 84 | 0 | 18 | 5.8 | .3 | .6 | .16 | 122 | 74 | 4 | | 194 | 7.4 | 5 | | -- |
| Dec. 17..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | 24000 |
| Feb. 3, 1966. | | 13 | | | | 18 | 5.4 | 8.4 | 1.3 | | 76 | 0 | 15 | 5.5 | .2 | .9 | .15 | 109 | 67 | 4 | | 177 | 7.2 | 5 | | 15000 |
| Feb. 8..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | 15000 |
| Mar. 23..... | | 13 | | | | 18 | 5.2 | 7.2 | 1.4 | | 75 | 0 | 15 | 4.5 | .2 | .7 | .32 | 104 | 66 | 5 | | 167 | 7.6 | 10 | | 9300 |
| June 21..... | | -- | | | | -- | -- | -- | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | -- | -- | -- | | 100 |
| July 13..... | | 5.3 | | | | 19 | 4.2 | 3.3 | .9 | | 70 | 0 | 13 | 1.5 | .2 | .6 | .09 | A 82 | 65 | 8 | | 143 | 7.1 | 5 | | 2300 |
| Aug. 17..... | | 5.0 | | | | 20 | 4.6 | 4.0 | 1.0 | | 72 | 0 | 13 | 3.0 | .3 | .7 | .18 | A 87 | 72 | 12 | | 153 | 7.1 | 5 | | 100 |
| Sept. 29..... | | 8.0 | | | | 18 | 4.9 | 8.6 | 1.3 | | 75 | 0 | 15 | 6.0 | .4 | .7 | -- | 103 | 65 | 4 | | 171 | 7.5 | 10 | | -- |

A Calculated from determined constituents.

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Feb. 3, 1966..... | 1345 | 0.01 | 0.01 | 0.04 | 0.05 | 0.00 | 0.01 |

## ELOCHOMAN RIVER BASIN

### 14-2475. ELOCHOMAN RIVER NEAR CATHLAMET, WASH.

LOCATION.--Lat 46°13'10", long 123°20'30", temperature recorder at gaging station, 125 feet upstream from railroad bridge, 2.5 miles northeast of Cathlamet, Wahkiakum County, and 4.5 miles upstream from mouth.
DRAINAGE AREA.--65.8 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1950 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 70°F Aug. 2; minimum, 36°F Dec. 23, 24.
EXTREMES, 1950-66.--Water temperatures: Maximum, 75°F July 11, 12, 1961; minimum, freezing point Feb. 17, 1956.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 56 | 55 | 55 | 55 | 55 | 56 | 56 | 54 | 54 | 53 | 55 | 54 | 52 | 49 | 51 | 50 | 50 | 52 | 51 | 51 | 51 | 52 | 53 | 52 | 51 | 52 | 51 | 52 | 51 | 53 |
| Minimum .... | 54 | 54 | 54 | 54 | 53 | 55 | 53 | 54 | 54 | 51 | 52 | 52 | 53 | 52 | 49 | 48 | 48 | 49 | 49 | 50 | 50 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 50 | 50 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 45 | 45 | 44 | 44 | 44 | 44 | 45 | -- | 48 |
| Minimum .... | 50 | 50 | 51 | 50 | 49 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 46 | 45 | 45 | 42 | 44 | 44 | 44 | 43 | 44 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 46 | 46 | 46 | 47 | 47 | 46 | 45 | 45 | 45 | 44 | 44 | 41 | 39 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 39 | 37 | 39 | 39 | 40 | 41 | 41 | 41 | 39 | 42 |
| Minimum .... | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 41 | 39 | 38 | 37 | 37 | 38 | 40 | 39 | 39 | 39 | 36 | 36 | 37 | 39 | 38 | 40 | 41 | 39 | 39 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 40 | 40 | 40 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 43 | 42 | 42 | 41 | 40 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 |
| Minimum .... | 39 | 39 | 40 | 40 | 39 | 40 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 40 | 39 | 40 | 40 | 41 | 40 | 41 | 40 | 41 | 41 | 42 | 41 | 41 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 42 | 43 | 43 | 42 | 43 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 42 | -- | -- | -- | 43 |
| Minimum .... | 39 | 40 | 40 | 41 | 42 | 42 | 41 | 40 | 41 | 40 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 41 | 41 | 43 | 42 | 43 | 44 | 41 | 43 | 44 | 41 | 40 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 42 | 42 | 41 | 43 | 43 | 43 | 42 | 43 | 43 | 43 | 44 | 45 | 45 | 44 | 42 | 42 | 42 | 42 | 40 | 42 | 43 | 44 | 45 | 47 | 47 | 47 | 48 | 49 | 48 | 50 | 44 |
| Minimum .... | 39 | 40 | 41 | 40 | 41 | 43 | 42 | 42 | 42 | 42 | 41 | 43 | 44 | 44 | 42 | 41 | 41 | 42 | 40 | 38 | 38 | 39 | 40 | 40 | 43 | 44 | 45 | 44 | 44 | 47 | 46 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 49 | 50 | 50 | 52 | 51 | 50 | 51 | 50 | 49 | 45 | 47 | 47 | 50 | 49 | 49 | 49 | 48 | 47 | 48 | 49 | 48 | 49 | 49 | 47 | 48 | 48 | 50 | 52 | -- | 49 |
| Minimum .... | 47 | 44 | 45 | 45 | 46 | 48 | 48 | 48 | 47 | 48 | 45 | 43 | 43 | 46 | 46 | 45 | 45 | 44 | 44 | 46 | 46 | 47 | 46 | 46 | 47 | 46 | 46 | 46 | 45 | 48 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 58 | 60 | 60 | 56 | 58 | 58 | 59 | 54 | 56 | 53 | 52 | 49 | 48 | 52 | 53 | 57 | 58 | 55 | 54 | 53 | 56 | 59 | 62 | 57 | 56 | 57 | 58 | 53 | 53 | 56 |
| Minimum .... | 48 | 50 | 51 | 52 | 54 | 52 | 51 | 53 | 54 | 52 | 49 | 51 | 49 | 48 | 47 | 47 | 47 | 48 | 52 | 54 | 51 | 49 | 48 | 51 | 54 | 52 | 48 | 49 | 50 | 51 | 50 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 51 | 51 | 52 | 59 | 60 | 57 | 61 | 63 | 58 | 55 | 57 | 56 | 64 | 68 | 65 | 62 | 63 | 65 | 60 | 57 | 59 | 57 | 60 | 60 | 62 | 60 | 62 | 61 | 61 | -- | 59 |
| Minimum .... | 48 | 49 | 48 | 49 | 48 | 52 | 55 | 52 | 55 | 55 | 54 | 53 | 53 | 54 | 57 | 61 | 58 | 56 | 58 | 55 | 54 | 53 | 55 | 54 | 53 | 56 | 58 | 56 | 55 | 52 | -- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 53 | 60 | 58 | 57 | 63 | 65 | 66 | 62 | 65 | 65 | 64 | 64 | 67 | 64 | 66 | 66 | 67 | 66 | 67 | 69 | 65 | 64 | 66 | 67 | 69 | 69 | 69 | 68 | 68 | 64 |
| Minimum .... | 55 | 53 | 53 | 53 | 56 | 55 | 55 | 57 | 59 | 60 | 58 | 59 | 59 | 59 | 59 | 60 | 59 | 61 | 61 | 58 | 58 | 61 | 62 | 61 | 60 | 58 | 61 | 62 | 63 | 62 | 61 | 59 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 70 | 68 | 66 | 68 | 68 | 68 | 67 | 69 | 66 | 65 | 66 | 65 | 67 | 66 | 66 | 66 | 67 | 68 | 68 | 68 | 66 | 67 | 65 | 64 | 63 | 64 | 64 | 62 | 64 | 63 | 66 |
| Minimum .... | 61 | 62 | 64 | 62 | 61 | 61 | 61 | 63 | 63 | 62 | 58 | 58 | 62 | 60 | 61 | 60 | 59 | 61 | 61 | 61 | 61 | 62 | 61 | 62 | 61 | 60 | 59 | 58 | 58 | 57 | 57 | 61 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 63 | 67 | 66 | 66 | 66 | 64 | 64 | 62 | 62 | 59 | 60 | 59 | 59 | 58 | 59 | 58 | 60 | 59 | 60 | 62 | 61 | 61 | 60 | 59 | 59 | 59 | 60 | 62 | 61 | -- | 61 |
| Minimum .... | 57 | 60 | 61 | 60 | 62 | 62 | 59 | 60 | 58 | 59 | 56 | 55 | 55 | 57 | 55 | 57 | 57 | 56 | 55 | 55 | 57 | 59 | 58 | 58 | 58 | 57 | 56 | 56 | 59 | 58 | -- | 58 |

## BEAR CREEK BASIN

### 14-2487. BEAR CREEK NEAR SVENSEN, OREG.

LOCATION.--Lat 46°06'48", long 123°37'55", temperature recorder at gaging station, 0.5 mile upstream from Astoria Reservoir Dam, 3.8 miles southeast of Svensen, Clatsop County, and at mile 5.4.
DRAINAGE AREA.--3.33 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 58°F June 15, 16, Sept. 4; minimum, 37°F Dec. 17.
EXTREMES, August 1965 to September 1966.--Water temperatures: Maximum, 58°F Aug. 7, 16-18, 1965, June 15, 16, Sept. 4, 1966; minimum, 37°F Dec. 17, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 53 | 54 | 53 | 53 | 53 | 51 | 53 | 54 | 54 | 53 | 51 | 48 | 49 | 48 | 50 | 52 | 52 | 53 | 52 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 52 | 52 |
| Minimum .... | 49 | 50 | 52 | 52 | 52 | 53 | 51 | 52 | 50 | 48 | 51 | 53 | 53 | 51 | 48 | 46 | 48 | 48 | 48 | 50 | 50 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 50 | 51 | 51 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 52 | 51 | 50 | 50 | 50 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 47 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 45 | -- | 48 |
| Minimum .... | 50 | 51 | 52 | 51 | 50 | 49 | 50 | 49 | 48 | 48 | 47 | 48 | 48 | 49 | 48 | 49 | 49 | 48 | 48 | 46 | 47 | 44 | 43 | 43 | 41 | 43 | 43 | 44 | 43 | 44 | -- | 47 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 45 | 45 | 45 | 44 | 44 | 43 | 41 | 39 | 38 | 39 | 41 | 41 | 42 | 42 | 41 | 40 | 40 | 40 | 40 | 42 | 42 | 42 | 40 | 39 | 43 |
| Minimum .... | 45 | 46 | 45 | 45 | 45 | 46 | 45 | 45 | 45 | 44 | 44 | 43 | 41 | 39 | 38 | 38 | 37 | 39 | 41 | 41 | 41 | 39 | 39 | 40 | 40 | 40 | 40 | 42 | 40 | 39 | 39 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 41 | 41 | 41 | 42 | 44 | 44 | 42 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 |
| Minimum .... | 39 | 39 | 39 | 40 | 41 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 42 | 41 | 40 | 42 | 42 | 42 | 42 | 43 | 43 | 44 | 43 | 43 | 42 | 42 | 42 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 42 | 44 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 43 | 42 | 42 | 43 | 42 | 43 | 43 | 45 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | -- | -- | -- | 43 |
| Minimum .... | 41 | 42 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 42 | 41 | 40 | 42 | 41 | 41 | 42 | 43 | 42 | 43 | 43 | 43 | 41 | 43 | 43 | 42 | 39 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 40 | 43 | 42 | 42 | 43 | 43 | 43 | 45 | 46 | 46 | 45 | 44 | 44 | 43 | 44 | 43 | 42 | 44 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 49 | 48 | 50 | 45 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 41 | 40 | 41 | 43 | 41 | 42 | 44 | 45 | 44 | 42 | 42 | 42 | 42 | 39 | 38 | 40 | 42 | 42 | 42 | 44 | 44 | 44 | 43 | 44 | 46 | 46 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 50 | 50 | 51 | 49 | 51 | 49 | 50 | 49 | 48 | 45 | 48 | 47 | 50 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 45 | 47 | 48 | 47 | -- | 48 |
| Minimum .... | 45 | 44 | 45 | 45 | 46 | 47 | 47 | 47 | 47 | 47 | 45 | 43 | 44 | 45 | 46 | 43 | 43 | 43 | 44 | 46 | 45 | 46 | 45 | 45 | 45 | 43 | 44 | 44 | 45 | 44 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 52 | 54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 44 | 45 | 46 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 49 | 49 | 52 | 52 | 52 | 53 | 54 | 53 | 52 | 52 | 53 | 56 | 58 | 58 | 54 | 55 | 54 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 54 | 54 | 53 | 53 | -- | 53 |
| Minimum .... | 45 | 46 | 46 | 47 | 46 | 49 | 49 | 49 | 50 | 51 | 50 | 50 | 50 | 51 | 53 | 54 | 52 | 51 | 52 | 51 | 51 | 50 | 51 | 50 | 48 | 51 | 53 | 52 | 50 | 50 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 53 | 55 | 55 | 53 | 54 | 56 | 56 | 56 | 55 | 55 | 55 | 54 | 55 | 55 | 55 | 57 | 57 | 56 | 56 | 57 | 57 | 55 | 54 | 56 | 56 | 57 | 56 | 56 | 56 | 55 |
| Minimum .... | 51 | 50 | 52 | 52 | 53 | 52 | 52 | 52 | 54 | 54 | 53 | 53 | 54 | 53 | 53 | 54 | 53 | 55 | 55 | 53 | 52 | 53 | 55 | 53 | 52 | 51 | 53 | 54 | 54 | 54 | 54 | 53 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 55 | 56 | 56 | 56 | 56 | 57 | 57 | 55 | 55 | 56 | 56 | 56 | 56 | 55 | 54 | 55 | 57 | 56 | 56 | 54 | 54 | 54 | 54 | 55 | 54 | 53 | 56 | 56 | 55 |
| Minimum .... | 52 | 53 | 55 | 54 | 54 | 53 | 53 | 55 | 55 | 54 | 52 | 51 | 55 | 54 | 55 | 54 | 52 | 52 | 52 | 54 | 53 | 54 | 51 | 53 | 53 | 53 | 54 | 52 | 51 | 53 | 53 | 53 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 57 | 57 | 58 | 57 | 57 | 57 | 57 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 51 | 51 | 52 | 51 | 51 | 53 | 53 | 52 | 51 | 51 | 52 | 51 | 52 | 53 | 53 | -- | 54 |
| Minimum .... | 53 | 56 | 55 | 55 | 55 | 56 | 53 | 54 | 54 | 55 | 54 | 53 | 50 | 51 | 49 | 50 | 51 | 51 | 49 | 49 | 51 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 52 | 52 | -- | 52 |

## GRAYS RIVER BASIN

### 14-2505. WEST FORK GRAYS RIVER NEAR GRAYS RIVER, WASH.

LOCATION.--Lat 46°23'10", long 123°33'30", temperature recorder at gaging station 1.2 (revised) miles upstream from mouth, and 3.2 miles northeast of town of Grays River, Wahkiakum County.
DRAINAGE AREA.--15.2 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1950 to December 1958, August 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F July 28, 29, 31, Aug. 2; minimum, 39°F Mar. 20.
EXTREMES, 1950-58, 1961-66.--Water temperatures: Maximum (1950-58, 1962-66), 69°F July 27, 28, 1958, July 28, 29, 31, Aug. 2, 1966; minimum (1961-66), 33°F Jan. 30, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 55 | 55 | 54 | 53 | 53 | 54 | 53 | 53 | 55 | 53 | 55 | 53 | 51 | 50 | 51 | 50 | 50 | 52 | 51 | 52 | 52 | 53 | 53 | 53 | 52 | 53 | 53 | 52 | 52 | 53 |
| Minimum .... | 52 | 53 | 54 | 54 | 53 | 52 | 52 | 53 | 52 | 50 | 52 | 53 | 52 | 51 | 49 | 48 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 52 | 52 | 51 | 51 | 50 | 51 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 51 | 50 | 50 | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 48 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | -- | 49 |
| Minimum .... | 51 | 51 | 51 | 50 | 50 | 49 | 50 | 50 | 49 | 49 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 46 | 45 | 45 | 44 | 46 | 45 | 46 | 45 | 46 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 44 | 42 | 41 | 42 | 43 | 44 | 44 | 44 | 43 | 42 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 44 |
| Minimum .... | 47 | 47 | 47 | 47 | 47 | 48 | 47 | 47 | 47 | 46 | 46 | 45 | 44 | 42 | 41 | 41 | 40 | 42 | 43 | 43 | 43 | 42 | 40 | 40 | 40 | 41 | 41 | 42 | 42 | 41 | 41 | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 |
| Minimum .... | 40 | 41 | 42 | 42 | 41 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | 43 | 43 | 42 | 41 | 41 | 42 | 42 | 43 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 43 | 43 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 45 | 46 | 45 | 44 | 44 | -- | -- | -- | 44 |
| Minimum .... | 42 | 42 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 43 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 44 | 43 | 45 | 45 | 43 | 44 | 44 | 44 | 42 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 44 | 43 | 43 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 45 | 43 | 44 | 43 | 43 | 42 | 43 | 43 | 45 | 45 | 46 | 46 | 47 | 47 | 48 | 48 | 50 | 45 |
| Minimum .... | 40 | 41 | 41 | 41 | 42 | 43 | 42 | 43 | 44 | 44 | 43 | 45 | 46 | 45 | 43 | 43 | 43 | 43 | 42 | 39 | 40 | 41 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 46 | 46 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 50 | 51 | 52 | 52 | 52 | 49 | 50 | 48 | 47 | 44 | 46 | 46 | 49 | 49 | 49 | 49 | 49 | 46 | 47 | 46 | 47 | 48 | 49 | 48 | 47 | 47 | 50 | 47 | -- | 48 |
| Minimum .... | 45 | 44 | 44 | 45 | 46 | 48 | 48 | 48 | 47 | 47 | 43 | 42 | 43 | 44 | 45 | 43 | 43 | 43 | 42 | 44 | 44 | 45 | 45 | 44 | 45 | 44 | 45 | 43 | 43 | 44 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 55 | 65 | 58 | 57 | 51 | 57 | 57 | 57 | 52 | 57 | 52 | 51 | 49 | 47 | 49 | 52 | 55 | 57 | 53 | 52 | 52 | 55 | 58 | 60 | 52 | 55 | 56 | 57 | 53 | 54 | 54 |
| Minimum .... | 43 | 45 | 46 | 48 | 50 | 49 | 47 | 48 | 50 | 49 | 48 | 48 | 47 | 46 | 46 | 45 | 44 | 45 | 48 | 50 | 48 | 47 | 45 | 47 | 50 | 48 | 45 | 45 | 46 | 48 | 48 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 50 | 50 | 51 | 58 | 60 | 55 | 60 | 61 | 56 | 54 | 56 | 54 | 61 | 64 | 62 | 58 | 60 | 58 | 59 | 57 | 59 | 57 | 59 | 60 | 58 | 56 | 56 | 54 | 56 | -- | 57 |
| Minimum .... | 46 | 48 | 48 | 48 | 46 | 49 | 51 | 50 | 52 | 53 | 52 | 51 | 51 | 51 | 53 | 56 | 54 | 53 | 53 | 50 | 52 | 51 | 53 | 52 | 50 | 52 | 54 | 53 | 50 | 50 | -- | 51 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 53 | 53 | 56 | 54 | 56 | 57 | 62 | 63 | 60 | 63 | 65 | 61 | 60 | 64 | 62 | 64 | 64 | 63 | 65 | 67 | 68 | 66 | 64 | 65 | 68 | 68 | 69 | 69 | 68 | 69 | 63 |
| Minimum .... | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 54 | 56 | 57 | 57 | 57 | 59 | 58 | 57 | 59 | 58 | 60 | 59 | 55 | 58 | 60 | 61 | 60 | 59 | 58 | 60 | 62 | 61 | 60 | 58 | 57 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 69 | 66 | 65 | 67 | 68 | 68 | 65 | 68 | 64 | 65 | 66 | 65 | 66 | 65 | 66 | 66 | 67 | 66 | 67 | 68 | 65 | 66 | 63 | 63 | 62 | 61 | 63 | 61 | 63 | 62 | 65 |
| Minimum .... | 59 | 60 | 62 | 61 | 58 | 58 | 59 | 61 | 61 | 60 | 55 | 57 | 61 | 58 | 60 | 57 | 57 | 59 | 59 | 59 | 59 | 59 | 58 | 60 | 60 | 60 | 58 | 57 | 56 | 57 | 55 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 64 | 64 | 65 | 64 | 62 | 63 | 63 | 60 | 60 | 60 | 60 | 58 | 58 | 59 | 57 | 58 | 57 | 58 | 59 | 58 | 59 | 57 | 59 | 58 | 58 | 60 | 59 | 59 | -- | 60 |
| Minimum .... | 54 | 58 | 58 | 57 | 59 | 59 | 57 | 57 | 59 | 58 | 56 | 54 | 53 | 55 | 53 | 56 | 55 | 54 | 52 | 52 | 54 | 56 | 56 | 56 | 57 | 55 | 54 | 55 | 56 | 55 | -- | 56 |

## TRASK RIVER BASIN

### 14-3025. TRASK RIVER NEAR TILLAMOOK, OREG.

LOCATION.--Lat 45°26'25" long 123°43'00", temperature recorder at gaging station, 0.6 mile upstream from Gold Creek and 6.2 miles east of Tillamook, Tillamook County.
DRAINAGE AREA.--145 square miles.
RECORDS AVAILABLE.--Water temperatures: April 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F Aug. 5; minimum, 36°F Dec. 16, 17.
EXTREMES, 1962-66.--Water temperatures: Maximum (1962-64, 1965-66), 70°F July 26, 27, 1962; minimum, 33°F Jan. 11-13, 30, 31, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 57 | 56 | 58 | 59 | 60 | 62 | 62 | 60 | 57 | 57 | 56 | 57 | 54 | 52 | 53 | 52 | 53 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 52 | 53 | 53 | 54 | 54 | 55 |
| Minimum .... | 53 | 54 | 55 | 55 | 55 | 59 | 59 | 59 | 59 | 59 | 54 | 55 | 55 | 55 | 52 | 50 | 51 | 51 | 52 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 51 | 52 | 52 | 54 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 53 | 52 | 50 | 51 | 51 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 49 | 48 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | -- | 49 |
| Minimum .... | 52 | 53 | 54 | 53 | 52 | 49 | 49 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 48 | 49 | 48 | 46 | 44 | 44 | 42 | 43 | 43 | 43 | 42 | 45 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 46 | 48 | 48 | 47 | 44 | 44 | 43 | 43 | 43 | 40 | 39 | 37 | 36 | 39 | 39 | 39 | 40 | 40 | 39 | 39 | 40 | 40 | 42 | 43 | 43 | 42 | 42 | 42 |
| Minimum .... | 45 | 45 | 44 | 46 | 44 | 46 | 47 | 43 | 43 | 43 | 43 | 43 | 40 | 39 | 37 | 36 | 36 | 37 | 39 | 38 | 39 | 38 | 38 | 38 | 39 | 39 | 40 | 41 | 42 | 42 | 42 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 43 | 44 | 44 | 45 | 45 | 46 | 46 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 41 | 42 | 43 | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 44 |
| Minimum .... | 42 | 42 | 43 | 44 | 44 | 44 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | 43 | 41 | 40 | 41 | 42 | 44 | 44 | 44 | 43 | 45 | 45 | 46 | 45 | 44 | 44 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 43 | -- | -- | -- | 44 |
| Minimum .... | 42 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 43 | 42 | 43 | 42 | 43 | 43 | 42 | 41 | 42 | 43 | 43 | 44 | 43 | 44 | 44 | 42 | 44 | 44 | 43 | 41 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 43 | 45 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | 49 | 49 | 50 | 46 |
| Minimum .... | 40 | 40 | 40 | 40 | 42 | 42 | 42 | 43 | 44 | 44 | 42 | 45 | 46 | 45 | 44 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 46 | 46 | 45 | 47 | 47 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 48 | 47 | 48 | 49 | 50 | 50 | 50 | 49 | 49 | 47 | 45 | 45 | 46 | 49 | 48 | 48 | 47 | 45 | 45 | 45 | 47 | 49 | 49 | 49 | 47 | 49 | 48 | 49 | 51 | -- | 48 |
| Minimum .... | 46 | 44 | 43 | 43 | 45 | 46 | 47 | 47 | 47 | 47 | 45 | 43 | 41 | 43 | 46 | 44 | 44 | 42 | 41 | 43 | 43 | 44 | 46 | 46 | 47 | 44 | 44 | 45 | 44 | 47 | -- | 45 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 53 | 54 | 56 | 56 | 55 | 54 | 55 | 55 | 54 | 53 | 52 | 50 | 49 | 48 | 50 | 52 | 54 | 55 | 56 | 55 | 52 | 54 | 56 | 58 | 57 | 54 | 54 | 55 | 53 | 50 | 54 |
| Minimum .... | 48 | 48 | 50 | 52 | 53 | 51 | 49 | 51 | 52 | 50 | 48 | 50 | 48 | 47 | 47 | 46 | 46 | 48 | 51 | 53 | 50 | 48 | 48 | 51 | 53 | 52 | 48 | 49 | 50 | 50 | 49 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 49 | 54 | 57 | 55 | 55 | 60 | 61 | 58 | 54 | 54 | 58 | 63 | 65 | 63 | 59 | 60 | 62 | 59 | 57 | 57 | 56 | 60 | 61 | 64 | 61 | 63 | 62 | 61 | -- | 58 |
| Minimum .... | 48 | 47 | 46 | 47 | 50 | 53 | 53 | 54 | 56 | 53 | 52 | 51 | 52 | 57 | 59 | 59 | 57 | 56 | 58 | 57 | 55 | 54 | 55 | 55 | 55 | 58 | 60 | 59 | 59 | 58 | -- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 56 | 54 | 62 | 60 | 59 | 60 | 64 | 65 | 62 | 64 | 62 | 62 | 62 | 64 | 62 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 64 | 64 | 67 | 67 | 67 | 67 | 67 | 66 | 63 |
| Minimum .... | 56 | 54 | 53 | 54 | 59 | 57 | 56 | 57 | 60 | 58 | 58 | 60 | 60 | 60 | 60 | 60 | 60 | 62 | 60 | 59 | 60 | 60 | 61 | 68 | 68 | 60 | 61 | 62 | 61 | 62 | 60 | 60 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 66 | 68 | 68 | 69 | 67 | 66 | 66 | 67 | 67 | 65 | 65 | 64 | 66 | 66 | 66 | 64 | 64 | 65 | 64 | 63 | 63 | 62 | 62 | 62 | 62 | 62 | 62 | 58 | 60 | 62 | 64 |
| Minimum .... | 60 | 61 | 62 | 63 | 63 | 62 | 61 | 62 | 63 | 60 | 59 | 59 | 60 | 60 | 60 | 57 | 57 | 56 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 56 | 56 | 54 | 54 | 56 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 64 | 66 | 65 | 65 | 64 | 64 | 64 | 64 | 62 | 60 | 60 | 59 | 58 | 58 | 58 | 58 | 61 | 60 | 60 | 62 | 62 | 60 | 60 | 58 | 58 | 58 | 59 | 60 | 60 | -- | 61 |
| Minimum .... | 56 | 58 | 60 | 60 | 62 | 62 | 60 | 60 | 61 | 60 | 58 | 57 | 54 | 56 | 54 | 56 | 57 | 57 | 55 | 54 | 56 | 58 | 57 | 58 | 57 | 57 | 54 | 53 | 56 | 55 | -- | 57 |

## NESTUCCA RIVER BASIN

### 14-3036. NESTUCCA RIVER NEAR BEAVER, OREG.

LOCATION.--Lat 45°16'00" long 123°50'45", temperature recorder at gaging station, 150 feet upstream from Saling Creek and 1.2 miles southwest of Beaver, Tillamook County.
DRAINAGE AREA.--180 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum 73°F Aug. 5; minimum, 40°F on many days during December and January.
EXTREMES, 1964-66.--Water temperatures: Maximum 73°F Aug. 5, 1966; minimum, 37°F Dec. 17-19, 1964.
REMARKS.--Recorder stopped Apr. 23 to May 19; temperature range, 50°F to 60°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 56 | 57 | 58 | 60 | 61 | 62 | 62 | 58 | 58 | 58 | 58 | 58 | 55 | 54 | 53 | 53 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 55 |
| Minimum .... | 55 | 55 | 56 | 56 | 56 | 57 | 58 | 60 | 60 | 58 | 58 | 58 | 58 | 58 | 55 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 54 | 54 | 54 | 53 | 53 | 54 | 54 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 54 | 54 | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | -- | 49 |
| Minimum .... | 54 | 54 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- |
| Minimum .... | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 45 | 44 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- |
| Minimum .... | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 42 | 42 | 42 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | -- | -- | -- | -- |
| Minimum .... | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 42 | 41 | 41 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 40 | 40 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 47 | 47 | 47 | 49 | 48 |
| Minimum .... | 40 | 40 | 40 | 40 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 50 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | 50 | 48 | 47 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 |
| Minimum .... | 49 | 48 | 48 | 49 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 48 | 47 | 47 | 47 | 49 | 50 | 49 | 48 | 50 | 49 | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 57 | 57 | 54 | 57 | 60 | 61 | 59 | 56 | 57 | 58 | 56 | 54 | 57 |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 55 | 52 | 52 | 51 | 52 | 56 | 54 | 51 | 52 | 52 | 53 | 52 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 59 | 62 | 61 | 60 | 64 | 64 | 64 | 59 | 58 | 62 | 68 | 72 | 70 | 65 | 64 | 64 | 64 | 63 | 61 | 60 | 62 | 64 | 67 | 67 | 67 | 65 | 64 | -- | 64 |
| Minimum .... | 51 | 52 | 52 | 52 | 54 | 58 | 58 | 58 | 60 | 59 | 58 | 56 | 57 | 60 | 63 | 65 | 62 | 60 | 61 | 60 | 60 | 59 | 60 | 59 | 59 | 61 | 64 | 63 | 61 | 61 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 61 | 59 | 67 | 65 | 63 | 63 | 68 | 69 | 68 | 67 | 66 | 63 | 63 | 64 | 65 | 70 | 69 | 68 | 68 | 70 | 70 | 69 | 69 | 68 | 70 | 70 | 71 | 71 | 71 | 71 | 67 |
| Minimum .... | 61 | 59 | 59 | 59 | 63 | 62 | 61 | 61 | 63 | 64 | 61 | 63 | 62 | 62 | 62 | 64 | 63 | 67 | 65 | 63 | 64 | 64 | 65 | 66 | 63 | 64 | 66 | 66 | 65 | 65 | 65 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 71 | 71 | 71 | 72 | 73 | 72 | 71 | 70 | 72 | 69 | 69 | 69 | 68 | 70 | 71 | 69 | 69 | 69 | 69 | 68 | 68 | 67 | 65 | 64 | 66 | 65 | 64 | 63 | 62 | 64 | 66 | 68 |
| Minimum .... | 64 | 65 | 66 | 67 | 67 | 66 | 65 | 67 | 66 | 66 | 64 | 63 | 65 | 64 | 64 | 64 | 63 | 64 | 64 | 63 | 63 | 64 | 62 | 63 | 62 | 62 | 62 | 60 | 60 | 60 | 60 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 67 | 70 | 70 | 69 | 68 | 67 | 65 | 66 | 65 | 63 | 62 | 61 | 61 | 61 | 61 | 61 | 62 | 61 | 62 | 65 | 64 | 62 | 60 | 60 | 60 | 60 | 60 | 64 | 63 | -- | 63 |
| Minimum .... | 62 | 64 | 65 | 66 | 66 | 66 | 64 | 64 | 64 | 63 | 61 | 61 | 59 | 61 | 59 | 59 | 61 | 60 | 59 | 59 | 61 | 62 | 60 | 60 | 60 | 60 | 58 | 58 | 60 | 60 | -- | 57 |

## BEAVER CREEK BASIN

### 14-3060.4. NORTH FORK BEAVER CREEK NEAR SEAL ROCK, OREG.

LOCATION.--Lat 44°31'40", long 124°00'10", temperature recorder at gaging station at bridge 1,100 feet upstream from Peterson Creek, and 4.4 miles northeast of Seal Rock, Lincoln County.
DRAINAGE AREA.--10.0 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F June 15; minimum, 40°F Dec. 17-20, Mar. 2.
EXTREMES, July 1965 to September 1966.--Water temperatures: Maximum, 66°F June 15, 1966; maximum, 40°F Dec. 17-20, 1965, Mar. 2, 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 54 | 54 | 55 | 55 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 51 | -- |
| Minimum .... | 49 | 50 | 52 | 53 | 53 | 54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 49 | 49 | 49 | 50 | 51 | 50 | 51 | 51 | 49 | 49 | 49 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 53 | 53 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | 48 | -- | 50 |
| Minimum .... | 49 | 49 | 51 | 52 | 52 | 49 | 50 | 51 | 49 | 50 | 51 | 51 | 51 | 51 | 50 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 47 | 48 | 47 | 47 | 47 | 46 | 46 | 47 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 49 | 49 | 49 | 50 | 50 | 49 | 47 | 47 | 47 | 47 | 46 | 44 | 43 | 42 | 41 | 41 | 41 | 41 | 43 | 43 | 43 | 44 | 44 | 44 | 46 | 46 | 46 | 46 | 45 | 46 |
| Minimum .... | 48 | 49 | 48 | 49 | 48 | 49 | 49 | 47 | 47 | 47 | 47 | 46 | 44 | 43 | 42 | 41 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 43 | 43 | 43 | 44 | 46 | 46 | 45 | 44 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 47 | 47 | 48 | 48 | 49 | 49 | 47 | 46 | 47 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 45 | 44 | 43 | 43 | 45 | 46 | 46 | 46 | 47 | 45 | 46 | 46 | 44 | 46 |
| Minimum .... | 44 | 45 | 45 | 47 | 47 | 48 | 48 | 47 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 46 | 45 | 45 | 44 | 43 | 42 | 43 | 43 | 45 | 45 | 45 | 45 | 43 | 45 | 44 | 43 | 45 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 45 | 46 | 46 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | -- | -- | -- | 45 |
| Minimum .... | 43 | 43 | 44 | 45 | 44 | 44 | 43 | 43 | 44 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 42 | 42 | 44 | 44 | 44 | 44 | 45 | 44 | 45 | 45 | 44 | 43 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 43 | 42 | 44 | 44 | 44 | 47 | 47 | 48 | 48 | 48 | 49 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 48 | 49 | 50 | 50 | 49 | 48 | 51 | 51 | 51 | 54 | 47 |
| Minimum .... | 41 | 40 | 41 | 41 | 42 | 44 | 43 | 44 | 47 | 47 | 46 | 48 | 48 | 47 | 46 | 44 | 44 | 46 | 46 | 45 | 45 | 44 | 46 | 45 | 46 | 48 | 47 | 47 | 46 | 49 | 48 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 53 | 55 | 55 | 53 | 53 | 52 | 53 | 73 | 51 | 49 | 51 | 50 | 53 | 52 | 52 | 51 | 51 | 50 | 51 | 53 | 52 | 53 | 52 | 51 | 52 | 51 | 52 | 54 | -- | 52 |
| Minimum .... | 50 | 47 | 47 | 49 | 51 | 51 | 51 | 50 | 51 | 51 | 49 | 48 | 46 | 47 | 49 | 47 | 46 | 46 | 45 | 46 | 48 | 50 | 48 | 48 | 50 | 48 | 48 | 47 | 46 | 48 | -- | 48 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 56 | 56 | 56 | 54 | 57 | 56 | 56 | 56 | 56 | 55 | 53 | 53 | 53 | 54 | 55 | 56 | 55 | 57 | 56 | 53 | 54 | 56 | 57 | 56 | 53 | 53 | 54 | 53 | 52 | 55 |
| Minimum .... | 48 | 51 | 50 | 52 | 53 | 52 | 51 | 52 | 52 | 53 | 51 | 52 | 51 | 50 | 51 | 51 | 49 | 51 | 51 | 52 | 52 | 49 | 48 | 50 | 52 | 52 | 48 | 48 | 49 | 50 | 49 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 51 | 53 | 55 | 57 | 57 | 56 | 59 | 59 | 59 | 57 | 58 | 59 | 64 | 66 | 65 | 60 | 61 | 61 | 60 | 59 | 59 | 59 | 58 | 59 | 61 | 62 | 61 | 60 | 59 | -- | 59 |
| Minimum .... | 50 | 49 | 48 | 49 | 51 | 53 | 53 | 54 | 56 | 56 | 55 | 53 | 54 | 57 | 59 | 60 | 58 | 56 | 58 | 56 | 56 | 56 | 56 | 54 | 54 | 56 | 59 | 59 | 56 | 55 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 57 | 59 | 59 | 58 | 57 | 60 | 61 | 60 | 60 | 59 | 58 | 58 | 58 | 59 | 61 | 62 | 61 | 61 | 61 | 61 | 62 | 61 | 61 | 62 | 61 | 62 | 62 | 61 | 61 | 60 |
| Minimum .... | 56 | 55 | 54 | 54 | 57 | 56 | 55 | 56 | 57 | 57 | 55 | 57 | 57 | 56 | 56 | 57 | 57 | 59 | 59 | 56 | 57 | 57 | 59 | 59 | 57 | 57 | 59 | 59 | 58 | 57 | 56 | 57 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 61 | 62 | 63 | 62 | 61 | 63 | 64 | 63 | 62 | 61 | 61 | 61 | 61 | 61 | 60 | 59 | 59 | 61 | 60 | 60 | 59 | 58 | 58 | 58 | 59 | 59 | 58 | 58 | 59 | 60 |
| Minimum .... | 56 | 57 | 59 | 59 | 60 | 58 | 57 | 60 | 61 | 58 | 58 | 56 | 59 | 57 | 57 | 56 | 55 | 55 | 55 | 55 | 57 | 57 | 55 | 55 | 56 | 57 | 57 | 56 | 55 | 55 | 56 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 60 | 62 | 62 | 62 | 62 | 61 | 60 | 61 | 60 | 59 | 58 | 57 | 57 | 57 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 58 | -- | 59 |
| Minimum .... | 55 | 57 | 58 | 58 | 60 | 60 | 58 | 59 | 59 | 59 | 57 | 56 | 55 | 56 | 55 | 57 | 58 | 58 | 55 | 54 | 56 | 57 | 55 | 57 | 57 | 57 | 55 | 54 | 56 | 56 | -- | 57 |

## ALSEA RIVER BASIN

### 14-3061. NORTH FORK ALSEA RIVER AT ALSEA, OREG.

LOCATION.--Lat 44°22'45", long 123°35'40", temperature recorder at gaging station at Alsea, Benton County, 0.2 mile upstream from bridge on Lobster Valley Road, and 0.7 mile upstream from confluence with South Fork.
DRAINAGE AREA.--63.0 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1956 to September 1966 (discontinued).
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F July 29, Aug. 2, 3; minimum, 34°F Dec. 17, 20.
EXTREMES, 1958-66.--Water temperatures: Maximum (1958-64, 1965-66), 77°F July 29, Aug. 2, 3, 1966; minimum, 34°F Jan. 21, 1962, Dec. 17, 20, 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 44 | 44 | 44 | 44 | 40 | 38 | 38 | 36 | 36 | 36 | 36 | 39 | 39 | 40 | 41 | 41 | 41 | 43 | 45 | 44 | 45 | 45 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | 43 | 44 | 43 | 43 | 40 | 38 | 37 | 36 | 34 | 35 | 35 | 34 | 36 | 39 | 39 | 39 | 41 | 40 | 41 | 43 | 44 | 44 | 44 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 45 | 45 | 46 | 46 | 46 | 47 | 47 | 46 | 46 | 48 | 46 | 47 | 47 | 47 | 47 | 45 | 44 | 44 | 42 | 41 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 |
| Minimum .... | 43 | 43 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 47 | 43 | 44 | 42 | 41 | 40 | 41 | 42 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 43 | 42 | 43 | 43 | 42 | 42 | 43 | 43 | 45 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 43 | -- | -- | -- | 44 |
| Minimum .... | 43 | 43 | 43 | 44 | 44 | 44 | 43 | 43 | 44 | 42 | 42 | 42 | 41 | 42 | 42 | 40 | 41 | 42 | 42 | 43 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 40 | 42 | 41 | 42 | 42 | 42 | 43 | 43 | 44 | 45 | 45 | 46 | 46 | 45 | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 46 | 47 | 48 | 47 | 47 | 49 | 49 | 49 | 51 | 45 |
| Minimum .... | 40 | 39 | 40 | 39 | 41 | 42 | 41 | 42 | 43 | 43 | 43 | 44 | 45 | 45 | 44 | 43 | 42 | 43 | 42 | 40 | 41 | 42 | 42 | 43 | 43 | 45 | 45 | 46 | 45 | 47 | 47 | 43 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 51 | 52 | 54 | 55 | 52 | 50 | 52 | 51 | 49 | 47 | 49 | 49 | 51 | 54 | 52 | 51 | 51 | 48 | 51 | 55 | 56 | 56 | 52 | 51 | 54 | 50 | 54 | 56 | -- | 52 |
| Minimum .... | 47 | 45 | 45 | 46 | 48 | 49 | 49 | 49 | 49 | 49 | 47 | 45 | 43 | 46 | 49 | 48 | 47 | 46 | 45 | 45 | 46 | 48 | 49 | 49 | 49 | 47 | 46 | 46 | 45 | 48 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 59 | 60 | 62 | 58 | 55 | 60 | 56 | 61 | 56 | 59 | 55 | 52 | 53 | 51 | 57 | 58 | 60 | 61 | 63 | 58 | 57 | 59 | 63 | 66 | 61 | 59 | 60 | 62 | 57 | 55 | 58 |
| Minimum .... | 48 | 49 | 51 | 53 | 54 | 53 | 50 | 52 | 53 | 51 | 49 | 51 | 49 | 49 | 49 | 49 | 48 | 49 | 51 | 52 | 52 | 50 | 49 | 51 | 54 | 54 | 50 | 50 | 52 | 52 | 50 | 51 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 56 | 58 | 61 | 64 | 63 | 67 | 68 | 68 | 63 | 61 | 64 | 67 | 71 | 74 | 70 | 71 | 71 | 70 | 68 | 66 | 64 | 66 | 65 | 67 | 69 | 72 | 68 | 65 | 67 | -- | 66 |
| Minimum .... | 50 | 51 | 51 | 50 | 53 | 56 | 57 | 58 | 59 | 59 | 56 | 54 | 57 | 59 | 61 | 64 | 63 | 61 | 63 | 60 | 60 | 59 | 60 | 56 | 57 | 58 | 63 | 63 | 59 | 56 | -- | 58 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 63 | 59 | 56 | 70 | 70 | 65 | 68 | 71 | 71 | 65 | 71 | 68 | 63 | 64 | 67 | 67 | 71 | 72 | 71 | 71 | 73 | 74 | 74 | 70 | 71 | 73 | 74 | 76 | 77 | 75 | 75 | 70 |
| Minimum .... | 59 | 57 | 56 | 58 | 61 | 61 | 59 | 59 | 62 | 61 | 59 | 62 | 61 | 59 | 59 | 61 | 60 | 64 | 63 | 61 | 61 | 62 | 62 | 64 | 59 | 61 | 63 | 65 | 65 | 64 | 63 | 61 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 76 | 77 | 77 | 75 | 75 | 75 | 75 | 70 | 74 | 75 | 73 | 73 | 67 | 73 | 75 | 73 | 73 | 73 | 72 | 71 | 67 | 66 | 67 | 67 | 66 | 62 | 66 | 65 | 63 | 66 | 67 | 71 |
| Minimum .... | 63 | 65 | 65 | 65 | 67 | 65 | 64 | 64 | 64 | 64 | 64 | 63 | 62 | 62 | 61 | 63 | 63 | 62 | 62 | 61 | 61 | 61 | 61 | 58 | 59 | 59 | 59 | 59 | 57 | 57 | 57 | 62 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 67 | 69 | 71 | 73 | 71 | 72 | 70 | 69 | 69 | 65 | 64 | 62 | 63 | 61 | 63 | 64 | 62 | 61 | 63 | 65 | 67 | 64 | 64 | 62 | 60 | 62 | 64 | 66 | 67 | 66 | -- | 66 |
| Minimum .... | 57 | 59 | 62 | 61 | 63 | 63 | 62 | 63 | 62 | 62 | 59 | 57 | 56 | 58 | 56 | 60 | 60 | 59 | 56 | 56 | 58 | 60 | 57 | 59 | 58 | 59 | 57 | 59 | 60 | 59 | -- | 59 |

ALSEA RIVER BASIN--Continued

## 14-3066. DRIFT CREEK NEAR SALADO, OREG.

LOCATION.--Lat 44°30'50", long 123°50'50", temperature recorder at gaging station, 0.3 mile downstream from Cape Horn Creek, 4.1 miles southwest of Salado, Lincoln County, and 8.5 miles southeast of Toledo.
DRAINAGE AREA.--20.6 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1958 to September 1963, August 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 73°F July 18, 28, 29, Aug. 4, 5.
EXTREMES, 1958-63, August 1965 to September 1966.--Water temperatures: Maximum, 74°F July 12, 1961; minimum (1958-63), 34°F Jan. 21, 22, 1962, Jan. 11-13, 30, 1963.
REMARKS.--Recorder stopped Dec. 3 to Jan. 4; temperature range, 39°F to 49°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 57 | 58 | 60 | 61 | 60 | 60 | 60 | 57 | 57 | 57 | 57 | 54 | 50 | 51 | 51 | 54 | 55 | 54 | 54 | 53 | 54 | 54 | 54 | 53 | 54 | 53 | 53 | 53 | 55 |
| Minimum .... | 51 | 51 | 53 | 54 | 55 | 56 | 57 | 56 | 56 | 54 | 54 | 54 | 55 | 54 | 50 | 48 | 49 | 49 | 50 | 51 | 51 | 49 | 49 | 49 | 51 | 51 | 52 | 52 | 50 | 50 | 51 | 52 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 53 | 53 | 52 | 52 | 52 | 53 | 53 | 53 | 52 | 52 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 45 | 46 | 45 | 45 | -- | 49 |
| Minimum .... | 51 | 51 | 52 | 52 | 51 | 50 | 51 | 51 | 51 | 50 | 50 | 49 | 49 | 48 | 47 | 48 | 47 | 47 | 47 | 48 | 48 | 48 | 46 | 46 | 46 | 45 | 44 | 44 | 43 | 43 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 47 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 45 | 46 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | 45 | 46 | 47 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | 45 | 45 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 43 | 43 | 42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 46 | 46 | 45 | 44 | 44 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | 45 | 44 | 43 | 40 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | -- | -- | -- | -- | -- | -- | 47 | 48 | 47 | 50 | 50 | 48 | 47 | 45 | 45 | 45 | 45 | 44 | 47 | 47 | 48 | 49 | 50 | 49 | 49 | 51 | 52 | 51 | 53 | 48 |
| Minimum .... | 39 | 38 | -- | -- | -- | -- | -- | -- | 47 | 46 | 46 | 48 | 48 | 47 | 45 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 46 | 47 | 47 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 52 | 54 | 54 | 52 | 50 | 53 | 51 | 49 | 49 | 51 | 53 | 53 | 54 | 54 | 53 | 53 | 49 | 52 | 54 | 55 | 54 | 51 | 49 | 53 | 50 | 53 | 56 | -- | 52 |
| Minimum .... | 47 | 45 | 43 | 44 | 47 | 48 | 48 | 48 | 48 | 49 | 48 | 45 | 43 | 47 | 49 | 47 | 46 | 45 | 45 | 45 | 47 | 49 | 49 | 47 | 48 | 47 | 45 | 46 | 45 | 48 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 59 | 60 | 58 | 56 | 59 | 59 | 61 | 54 | 58 | 52 | 51 | 53 | 50 | 53 | 57 | 60 | 61 | 62 | 56 | 55 | 59 | 62 | 65 | 58 | 58 | 59 | 60 | 54 | 56 | 57 |
| Minimum .... | 49 | 48 | 50 | 53 | 53 | 51 | 50 | 53 | 53 | 50 | 49 | 49 | 48 | 47 | 48 | 47 | 46 | 49 | 52 | 53 | 51 | 49 | 49 | 52 | 54 | 52 | 48 | 48 | 50 | 51 | 48 | 50 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 54 | 55 | 60 | 63 | 60 | 64 | 67 | 67 | 60 | 58 | 61 | 66 | 69 | 72 | 64 | 66 | 68 | 65 | 65 | 64 | 63 | 61 | 63 | 65 | 68 | 69 | 68 | 65 | 65 | -- | 64 |
| Minimum .... | 49 | 48 | 48 | 48 | 51 | 55 | 55 | 55 | 57 | 56 | 54 | 53 | 53 | 57 | 59 | 59 | 57 | 56 | 58 | 56 | 55 | 55 | 57 | 54 | 53 | 56 | 59 | 61 | 56 | 55 | -- | 55 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 57 | 63 | 68 | 66 | 61 | 63 | 70 | 71 | 63 | 69 | 64 | 60 | 60 | 64 | 64 | 71 | 73 | 69 | 70 | 72 | 71 | 71 | 67 | 70 | 71 | 71 | 73 | 73 | 72 | 71 | 67 |
| Minimum .... | 57 | 55 | 55 | 56 | 59 | 59 | 57 | 57 | 60 | 60 | 56 | 60 | 59 | 56 | 55 | 58 | 57 | 61 | 62 | 57 | 59 | 58 | 59 | 61 | 57 | 58 | 59 | 61 | 61 | 60 | 59 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 72 | 72 | 71 | 73 | 73 | 72 | 72 | 70 | 72 | 72 | 71 | 70 | 67 | 71 | 71 | 70 | 69 | 69 | 69 | 69 | 70 | 66 | 65 | 65 | 63 | 61 | 64 | 64 | 61 | 64 | 65 | 68 |
| Minimum .... | 59 | 60 | 62 | 63 | 63 | 61 | 60 | 62 | 64 | 61 | 60 | 58 | 60 | 60 | 59 | 59 | 57 | 57 | 57 | 58 | 58 | 61 | 56 | 57 | 58 | 58 | 59 | 57 | 55 | 54 | 54 | 69 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 66 | 66 | 67 | 68 | 68 | 68 | 66 | 65 | 66 | 63 | 63 | 59 | 61 | 58 | 59 | 61 | 61 | 62 | 62 | 62 | 65 | 58 | 64 | 62 | 62 | 63 | 63 | 64 | 65 | 64 | -- | 63 |
| Minimum .... | 53 | 55 | 57 | 58 | 60 | 61 | 58 | 59 | 59 | 58 | 57 | 54 | 52 | 56 | 53 | 56 | 56 | 56 | 53 | 53 | 55 | 62 | 57 | 58 | 58 | 58 | 56 | 55 | 56 | 57 | -- | 57 |

## 14-3067. NEEDLE BRANCH NEAR SALADO, OREG.

LOCATION.--Lat 44°30'35", long 123°51'20", at gaging station 500 feet upstream from mouth, 4.6 miles southwest of Salado, Lincoln County, and 8.5 miles southeast of Toledo.
DRAINAGE AREA.--0.27 square mile (computed as 174.64 acres on basis of field survey by Oregon State University).
RECORDS AVAILABLE.--Water temperatures: October 1958 to September 1966.
Sediment records: November 1958 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 73°F Aug. 4, 5, 10; minimum, 39°F Dec. 20.
Sediment concentrations: Maximum daily, 477 ppm Dec. 27; minimum daily, 1 ppm Nov. 16, Feb. 16, Mar. 19.
Sediment loads: Maximum daily, 25 tons Dec. 27; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1958-66.--Water temperatures: Maximum, 73°F Aug. 4, 5, 10, 1966; minimum, 35°F Jan. 30. 1963.
Sediment concentrations: Maximum daily, 477 ppm Dec. 27, 1965; minimum daily, less than 1 ppm on many days during 1958-63, 1965.
Sediment loads: Maximum daily, 33 tons Jan. 28, 1965; minimum daily, less than 0.05 ton on many days during each year.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 53 | 53 | 53 | 53 | 52 | 52 | 52 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 50 | 51 | 51 | 51 | 50 | 50 | 51 |
| Minimum .... | 49 | 49 | 50 | 50 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 51 | 50 | 50 | 49 | 49 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 50 | 51 | 50 | 50 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 52 | 51 | 51 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 46 | 46 | 46 | 45 | 46 | -- | 49 |
| Minimum .... | 50 | 50 | 51 | 51 | 50 | 48 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 46 | 46 | 46 | 45 | 45 | 45 | -- | 48 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 46 | 46 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 40 | 40 | 40 | 40 | 42 | 44 | 44 | 44 | 46 | 46 | 45 | 45 | 44 | 45 |
| Minimum .... | 46 | 47 | 47 | 47 | 47 | 48 | 48 | 46 | 46 | 46 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 40 | 40 | 39 | 40 | 40 | 40 | 42 | 43 | 43 | 44 | 45 | 45 | 44 | 44 | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 46 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 |
| Minimum .... | 43 | 43 | 44 | 46 | 47 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 48 | 48 | 47 | 47 | 46 | 46 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 46 | 46 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | -- | -- | -- | 45 |
| Minimum .... | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 43 | 41 | -- | -- | -- | 44 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 42 | 43 | 42 | 44 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 49 | 48 | 51 | -- |
| Minimum .... | 40 | 40 | 41 | 41 | 42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 45 | 45 | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 50 | 51 | 51 | 49 | 49 | 49 | 49 | 48 | 47 | 49 | 48 | 50 | 49 | 49 | 49 | 48 | 46 | 48 | 49 | 49 | 48 | 49 | 47 | 48 | 47 | 47 | 49 | -- | 49 |
| Minimum .... | 45 | 43 | 44 | 45 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 45 | 44 | 45 | 47 | 46 | 45 | 44 | 44 | 45 | 46 | 47 | 47 | 46 | 47 | 46 | 45 | 45 | 44 | 46 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 50 | 51 | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 50 | 49 | 50 | 49 | 50 | 51 | 52 | 53 | 54 | 52 | 51 | 52 | 53 | 54 | 53 | 50 | 51 | 51 | 50 | 50 | 51 |
| Minimum .... | 46 | 47 | 48 | 49 | 50 | 50 | 48 | 50 | 50 | 50 | 48 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | 49 | 50 | 49 | 48 | 47 | 49 | 50 | 48 | 46 | 46 | 47 | 48 | 47 | 48 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 51 | 52 | 53 | 53 | 54 | 55 | 55 | 55 | 54 | 54 | 56 | 58 | 59 | 59 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 58 | 59 | 59 | 58 | 57 | -- | 56 |
| Minimum .... | 47 | 47 | 47 | 47 | 48 | 50 | 51 | 51 | 53 | 54 | 53 | 52 | 52 | 54 | 55 | 56 | 55 | 54 | 55 | 53 | 54 | 54 | 55 | 53 | 53 | 54 | 57 | 57 | 55 | 55 | -- | 53 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 56 | 57 | 58 | 58 | 57 | 57 | 59 | 60 | 59 | 59 | 59 | 58 | 57 | 57 | 58 | 59 | 60 | 60 | 61 | 62 | 60 | 61 | 60 | 60 | -- | -- | -- | -- | -- | -- | 59 |
| Minimum .... | 56 | 55 | 54 | 54 | 56 | 56 | 55 | 55 | 57 | 57 | 55 | 58 | 57 | 56 | 55 | 57 | 56 | 57 | 57 | 56 | 57 | 57 | 57 | 58 | 56 | -- | -- | -- | -- | -- | -- | 56 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | 73 | 73 | 72 | 71 | 69 | 71 | 73 | 71 | 71 | 68 | 72 | 72 | 71 | 70 | 70 | 70 | 70 | 70 | 65 | 66 | 68 | 64 | 60 | 65 | 64 | 63 | 66 | 68 | 69 |
| Minimum .... | -- | -- | -- | 60 | 61 | 57 | 57 | 60 | 61 | 60 | 58 | 57 | 60 | 58 | 57 | 56 | 55 | 55 | 54 | 55 | 55 | 57 | 54 | 55 | 57 | 57 | 59 | 56 | 54 | 54 | 52 | 57 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 70 | 72 | 72 | 71 | 71 | 68 | 69 | 69 | 65 | 66 | 61 | 65 | 60 | 65 | 64 | 63 | 65 | 66 | 66 | 69 | 62 | 65 | 62 | 63 | 69 | 66 | 67 | 68 | 66 | -- | 66 |
| Minimum .... | 52 | 56 | 57 | 56 | 59 | 60 | 58 | 59 | 59 | 58 | 57 | 55 | 54 | 57 | 54 | 58 | 57 | 58 | 53 | 53 | 55 | 56 | 55 | 58 | 57 | 57 | 56 | 55 | 57 | 56 | -- | 56 |

ALSEA RIVER BASIN--Continued

14-3067. NEEDLE BRANCH NEAR SALADO, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 0.01 | C 2 | T | 0.04 | C 2 | T | 1.2 | 8 | T |
| 2.. | .01 | C 2 | T | .10 | C 2 | T | 1.2 | 3 | T |
| 3.. | .01 | C 2 | T | .94 | 74 | S 0.5 | 1.4 | 7 | T |
| 4.. | .27 | 10 | T | .53 | C 2 | T | 3.2 | 16 | A 0.1 |
| 5.. | .11 | 4 | T | .34 | C 2 | T | 2.6 | C 7 | T |
| 6.. | .05 | C 2 | T | .27 | C 2 | T | 2.0 | C 7 | T |
| 7.. | .04 | C 2 | T | .42 | C 2 | T | 1.8 | C 7 | T |
| 8.. | .03 | C 2 | T | .45 | C 2 | T | 1.6 | C 7 | T |
| 9.. | .02 | C 2 | T | .37 | C 2 | T | 1.4 | C 7 | T |
| 10.. | .02 | C 2 | T | .69 | 5 | T | 1.2 | C 7 | T |
| 11.. | .02 | C 2 | T | 1.1 | 5 | T | 1.1 | C 7 | T |
| 12.. | .02 | C 2 | T | 3.4 | 34 | S .4 | .97 | C 3 | T |
| 13.. | .03 | C 2 | T | 2.8 | 4 | T | .89 | C 3 | T |
| 14.. | .22 | 7 | T | 1.9 | 9 | T | .81 | C 3 | T |
| 15.. | .40 | 7 | T | 1.3 | 2 | T | .73 | C 3 | T |
| 16.. | .14 | C 3 | T | .99 | 1 | T | .68 | C 3 | T |
| 17.. | .13 | C 3 | T | .81 | 2 | T | .63 | C 3 | T |
| 18.. | .08 | C 3 | T | .79 | 7 | T | .58 | C 3 | T |
| 19.. | .08 | C 3 | T | 1.5 | 7 | T | .55 | C 3 | T |
| 20.. | .06 | C 3 | T | 2.8 | 9 | A .1 | .52 | C 3 | T |
| 21.. | .05 | C 3 | T | 3.1 | 5 | T | .55 | C 3 | T |
| 22.. | .04 | C 3 | T | 3.5 | 13 | .1 | .48 | C 3 | T |
| 23.. | .04 | C 3 | T | 2.8 | 10 | .1 | 1.2 | 19 | S .2 |
| 24.. | .04 | C 3 | T | 2.1 | C 5 | T | 4.9 | 25 | .3 |
| 25.. | .04 | C 3 | T | 1.7 | C 5 | T | 3.1 | 7 | .1 |
| 26.. | .03 | C 3 | T | 1.8 | C 5 | T | 2.9 | 4 | T |
| 27.. | .19 | 7 | T | 2.1 | C 5 | T | 12 | 477 | S 25 |
| 28.. | .11 | C 2 | T | 1.7 | C 5 | T | 22 | 246 | S 16 |
| 29.. | .07 | C 2 | T | 1.4 | C 5 | T | 12 | 58 | 1.9 |
| 30.. | .06 | C 2 | T | 1.2 | C 5 | T | 8.2 | 24 | .5 |
| 31.. | .05 | C 2 | T | -- | -- | -- | 5.3 | 26 | .4 |
| Total | 2.47 | -- | T | 42.94 | -- | 1.5 | 97.69 | -- | 44.9 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 5.3 | 25 | 0.4 | 2.0 | C 5 | T | 1.5 | C 2 | T |
| 2.. | 12 | 111 | 3.6 | 1.6 | C 5 | T | 1.6 | C 2 | T |
| 3.. | 16 | 160 | J 7.7 | 1.5 | C 5 | T | 1.6 | C 2 | T |
| 4.. | 15 | 191 | S 8.6 | 1.4 | C 5 | T | 1.6 | C 2 | T |
| 5.. | 9.1 | 65 | A 1.6 | 1.8 | 8 | T | 1.9 | C 2 | T |
| 6.. | 8.9 | 37 | .9 | 2.3 | 4 | T | 2.6 | 11 | 0.1 |
| 7.. | 5.5 | 13 | .2 | 2.5 | 4 | T | 4.4 | 18 | .2 |
| 8.. | 5.2 | C 9 | .1 | 2.5 | 2 | T | 8.0 | 170 | S 4.8 |
| 9.. | 4.2 | C 9 | .1 | 2.9 | 10 | A 0.1 | 22 | 304 | 18 |
| 10.. | 3.3 | C 9 | .1 | 4.0 | 4 | T | 9.3 | 45 | 1.1 |
| 11.. | 3.5 | C 9 | .1 | 3.5 | 12 | A .1 | 4.9 | 27 | .4 |
| 12.. | 3.5 | C 9 | .1 | 3.9 | 13 | .1 | 3.2 | 8 | .1 |
| 13.. | 3.8 | C 9 | .1 | 3.4 | 6 | B .1 | 2.8 | -- | E .1 |
| 14.. | 6.5 | 30 | .5 | 2.9 | 4 | T | 3.8 | 14 | A .1 |
| 15.. | 7.6 | 28 | .6 | 2.3 | 2 | T | 4.8 | 7 | .1 |
| 16.. | 4.9 | 12 | B .2 | 1.8 | 1 | T | 4.5 | 4 | T |
| 17.. | 3.3 | 7 | .1 | 1.6 | 2 | T | 3.9 | 4 | T |
| 18.. | 2.3 | 8 | T | 1.4 | 2 | T | 3.5 | 2 | T |
| 19.. | 1.8 | C 5 | T | 1.6 | 10 | T | 4.4 | 1 | T |
| 20.. | 1.5 | C 5 | T | 2.0 | 6 | T | 5.3 | 13 | .2 |
| 21.. | 1.3 | C 5 | T | 2.0 | C 2 | T | 6.5 | 30 | A .5 |
| 22.. | 1.2 | C 5 | T | 1.7 | C 2 | T | 4.4 | 12 | .1 |
| 23.. | 1.3 | C 5 | T | 1.5 | C 2 | T | 3.1 | 7 | .1 |
| 24.. | 2.0 | C 5 | T | 1.3 | C 2 | T | 2.3 | C 2 | T |
| 25.. | 2.0 | C 5 | T | 1.2 | C 2 | T | 1.8 | C 2 | T |
| 26.. | 1.6 | C 5 | T | 1.2 | C 2 | T | 1.5 | C 2 | T |
| 27.. | 1.4 | C 5 | T | 1.2 | C 2 | T | 1.3 | C 2 | T |
| 28.. | 1.4 | C 5 | T | 1.4 | C 2 | T | 1.1 | C 2 | T |
| 29.. | 1.5 | C 5 | T | -- | -- | -- | 1.0 | C 2 | T |
| 30.. | 2.0 | C 5 | T | -- | -- | -- | .91 | C 2 | T |
| 31.. | 2.3 | C 5 | T | -- | -- | -- | .84 | C 2 | T |
| Total | 141.2 | -- | 25.3 | 58.4 | -- | 0.8 | 120.35 | -- | 26.1 |

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

ALSEA RIVER BASIN--Continued

14-3067. NEEDLE BRANCH NEAR SALADO, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 0.77 | C 2 | T | 0.29 | C 3 | T | 0.13 | C 3 | T |
| 2.. | .71 | C 2 | T | .29 | C 3 | T | .13 | C 3 | T |
| 3.. | .68 | C 2 | T | .27 | C 3 | T | .13 | C 3 | T |
| 4.. | .65 | C 2 | T | .25 | C 3 | T | .12 | C 3 | T |
| 5.. | .59 | C 2 | T | .27 | C 3 | T | .12 | C 3 | T |
| 6.. | .56 | C 2 | T | .29 | C 3 | T | .12 | C 3 | T |
| 7.. | .54 | C 2 | T | .25 | C 3 | T | .12 | C 3 | T |
| 8.. | .51 | C 2 | T | .23 | C 3 | T | .11 | C 3 | T |
| 9.. | .51 | C 2 | T | .22 | C 3 | T | .10 | C 3 | T |
| 10.. | .59 | C 2 | T | .20 | C 3 | T | .17 | C 3 | T |
| 11.. | .95 | 6 | T | .20 | C 3 | T | .19 | C 3 | T |
| 12.. | .98 | C 2 | T | .20 | C 3 | T | .14 | C 3 | T |
| 13.. | .80 | C 2 | T | .19 | C 3 | T | .12 | C 3 | T |
| 14.. | .74 | C 2 | T | .19 | C 3 | T | .11 | C 3 | T |
| 15.. | .68 | C 2 | T | .21 | C 3 | T | .10 | C 3 | T |
| 16.. | .65 | C 2 | T | .27 | C 3 | T | .10 | C 3 | T |
| 17.. | .59 | C 2 | T | .20 | C 3 | T | .10 | C 3 | T |
| 18.. | .56 | C 2 | T | .18 | C 3 | T | .10 | C 3 | T |
| 19.. | .54 | C 2 | T | .17 | C 3 | T | .10 | C 3 | T |
| 20.. | .51 | C 2 | T | .17 | C 3 | T | .09 | 6 | T |
| 21.. | .48 | C 2 | T | .18 | C 3 | T | .09 | 7 | T |
| 22.. | .46 | C 2 | T | .19 | C 3 | T | .09 | 10 | T |
| 23.. | .43 | C 2 | T | .17 | C 3 | T | .11 | 8 | T |
| 24.. | .41 | C 2 | T | .16 | C 3 | T | .10 | 7 | T |
| 25.. | .39 | C 2 | T | .16 | C 3 | T | .09 | C 6 | T |
| 26.. | .39 | C 2 | T | .15 | C 3 | T | .09 | C 6 | T |
| 27.. | .35 | C 2 | T | .14 | C 3 | T | .09 | C 6 | T |
| 28.. | .35 | C 2 | T | .14 | C 3 | T | .11 | C 6 | T |
| 29.. | .33 | C 2 | T | .14 | C 3 | T | .09 | C 6 | T |
| 30.. | .31 | C 2 | T | .13 | C 3 | T | .09 | C 6 | T |
| 31.. | -- | -- | -- | .13 | C 3 | T | -- | -- | -- |
| Total | 17.01 | -- | 0.1 | 6.23 | -- | 0.1 | 3.35 | -- | T |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 0.10 | C 6 | T | 0.06 | C 2 | T | 0.04 | C 2 | T |
| 2.. | .18 | 23 | T | .06 | C 2 | T | .04 | C 2 | T |
| 3.. | .15 | 7 | T | .06 | C 2 | T | .04 | C 2 | T |
| 4.. | .11 | C 3 | T | .06 | C 2 | T | .04 | C 2 | T |
| 5.. | .10 | C 3 | T | .06 | C 2 | T | .04 | C 2 | T |
| 6.. | .09 | C 3 | T | .06 | C 2 | T | .04 | C 2 | T |
| 7.. | .09 | C 3 | T | .05 | C 2 | T | .04 | C 2 | T |
| 8.. | .09 | C 3 | T | .05 | C 2 | T | .04 | C 2 | T |
| 9.. | .09 | C 3 | T | .06 | C 2 | T | .04 | C 2 | T |
| 10.. | .08 | C 3 | T | .05 | C 2 | T | .05 | C 2 | T |
| 11.. | .08 | C 3 | T | .05 | C 2 | T | .07 | C 2 | T |
| 12.. | .08 | C 3 | T | .05 | C 2 | T | .08 | C 2 | T |
| 13.. | .08 | C 3 | T | .05 | C 2 | T | .06 | C 2 | T |
| 14.. | .08 | C 3 | T | .05 | C 2 | T | .05 | C 2 | T |
| 15.. | .08 | C 3 | T | .05 | C 2 | T | .05 | C 2 | T |
| 16.. | .08 | C 3 | T | .05 | C 2 | T | .05 | C 2 | T |
| 17.. | .08 | C 3 | T | .04 | C 2 | T | .08 | C 2 | T |
| 18.. | .08 | 7 | T | .04 | C 2 | T | .14 | C 2 | T |
| 19.. | .08 | 7 | T | .04 | C 2 | T | .07 | C 2 | T |
| 20.. | .08 | C 3 | T | .04 | C 2 | T | .06 | C 2 | T |
| 21.. | .08 | C 3 | T | .04 | C 2 | T | .05 | C 2 | T |
| 22.. | .07 | C 3 | T | .04 | C 2 | T | .04 | C 2 | T |
| 23.. | .07 | C 3 | T | .04 | C 2 | T | .04 | C 2 | T |
| 24.. | .08 | C 3 | T | .04 | C 2 | T | .05 | C 2 | T |
| 25.. | .08 | C 3 | T | .04 | C 2 | T | .08 | C 2 | T |
| 26.. | .07 | C 3 | T | .04 | C 2 | T | .10 | C 2 | T |
| 27.. | .07 | C 3 | T | .07 | C 2 | T | .07 | C 2 | T |
| 28.. | .07 | C 3 | T | .06 | C 2 | T | .05 | C 2 | T |
| 29.. | .07 | 8 | T | .05 | C 2 | T | .05 | C 2 | T |
| 30.. | .07 | C 2 | T | .05 | C 2 | T | .04 | C 2 | T |
| 31.. | .06 | C 2 | T | .05 | C 2 | T | -- | -- | -- |
| Total | 2.67 | -- | T | 1.55 | -- | T | 1.69 | -- | T |

Total discharge for year (cfs-days)..... 495.55
Total load for year (tons)..... 98.8

T Less than 0.05 ton.
C Composite period.

ALSEA RIVER BASIN--Continued

14-3067. NEEDLE BRANCH NEAR SALADO, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | 4.000 | 8.000 | |
| Jan. 4, 1966..... | 1350 | 48 | 13 | 163 | 5.7 | | 3 | | | | 16 | 18 | 25 | 33 | 62 | 62 | 89 | 100 | SVPWC |
| Mar. 9..... | 0950 | | 27 | 273 | 20 | 8 | 12 | 17 | 24 | 31 | 39 | 52 | 71 | 91 | 95 | 95 | 100 | | SVPWC |

## 14-3068. FLYNN CREEK NEAR SALADO, OREG.

LOCATION.--Lat 44°32'20", long 123°51'05", at gaging station 1,000 feet upstream from mouth, 3.4 miles west of Salado, Lincoln County, and 6.9 miles southeast of Toledo.
DRAINAGE AREA.---0.78 square mile (computed as 501.96 acres on basis of field survey by Oregon State University).
RECORDS AVAILABLE.---Water temperatures: September 1958 to September 1966.
Sediment records: November 1958 to September 1966.
EXTREMES, 1965-66.---Water temperatures: Maximum,58°F on several days during August and September; minimum, 40°F Dec. 20.
Sediment concentrations: Maximum daily, 390 ppm Dec. 27; minimum daily, 1 ppm on many days during October, July to September.
Sediment loads: Maximum daily, 46 tons Dec. 27; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1958-66.--Water temperatures: Maximum, 62°F Aug. 3, 20, 21, Sept. 4, 1961; minimum, 36°F Jan. 30, 1963.
Sediment concentrations: Maximum daily, 1,580 ppm Jan. 28, 1965; minimum daily, less than 1 ppm on many days during 1959-65.
Sediment loads: Maximum daily, 491 tons Jan. 28, 1965; minimum daily, less than 0.05 ton on many days each year.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 52 | 54 | 54 | 55 | 55 | 55 | 53 | 53 | 53 | 53 | 53 | 52 | 50 | 50 | 50 | 51 | 51 | 49 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 |
| Minimum .... | 49 | 49 | 51 | 51 | 52 | 53 | 53 | 53 | 54 | 52 | 52 | 52 | 52 | 52 | 50 | 48 | 49 | 48 | 49 | 50 | 48 | 48 | 48 | 49 | 50 | 49 | 51 | 51 | 49 | 50 | 50 | 50 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | 48 | -- | 50 |
| Minimum .... | 50 | 51 | 51 | 52 | 51 | 49 | 50 | 50 | 49 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 49 | 49 | 49 | 50 | 50 | 49 | 48 | 48 | 47 | 46 | 46 | 46 | 46 | 47 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 48 | 48 | 47 | 47 | 46 | 45 | 44 | 43 | 42 | 42 | 42 | 42 | 43 | 42 | 43 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 46 | 46 |
| Minimum .... | 48 | 49 | 48 | 49 | 48 | 49 | 48 | 47 | 47 | 47 | 47 | 46 | 44 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 41 | 41 | 41 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 44 | 45 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 47 | 47 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 48 | 47 | 47 | 45 | 45 | 44 | 44 | 45 | 46 | 47 | 46 | 47 | 47 | 47 | 46 | 46 | 47 |
| Minimum .... | 45 | 46 | 46 | 47 | 47 | 48 | 48 | 47 | 46 | 46 | 47 | 47 | 48 | 48 | 48 | 47 | 46 | 45 | 45 | 44 | 43 | 44 | 44 | 45 | 46 | 46 | 46 | 45 | 46 | 46 | 45 | 46 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | -- | -- | -- | 46 |
| Minimum .... | 45 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 46 | 45 | 45 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 45 | 46 | 45 | 46 | 46 | 45 | 45 | 45 | 44 | 41 | -- | -- | -- | 45 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 42 | 44 | 44 | 45 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 48 | 47 | 47 | 48 | 48 | 49 | 50 | 46 |
| Minimum .... | 41 | 41 | 41 | 42 | 42 | 43 | 43 | 44 | 46 | 46 | 45 | 46 | 47 | 46 | 45 | 44 | 44 | 45 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 46 | 45 | 47 | 47 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 49 | 49 | 50 | 49 | 49 | 48 | 49 | 49 | 48 | 46 | 47 | 48 | 49 | 48 | 48 | 47 | 47 | 46 | 47 | 48 | 48 | 48 | 47 | 46 | 47 | 46 | 47 | 47 | -- | 48 |
| Minimum .... | 47 | 45 | 46 | 46 | 47 | 48 | 47 | 47 | 48 | 48 | 46 | 45 | 43 | 46 | 48 | 45 | 45 | 45 | 44 | 44 | 46 | 46 | 46 | 45 | 46 | 45 | 44 | 44 | 43 | 45 | -- | 46 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 49 | 50 | 50 | 48 | 49 | 49 | 49 | 48 | 49 | 48 | 47 | 47 | 47 | 48 | 48 | 50 | 51 | 51 | 50 | 48 | 49 | 50 | 51 | 50 | 48 | 48 | 49 | 47 | 48 | 49 |
| Minimum .... | 45 | 45 | 46 | 48 | 48 | 48 | 46 | 47 | 48 | 47 | 46 | 47 | 47 | 46 | 46 | 47 | 45 | 47 | 48 | 49 | 48 | 47 | 46 | 47 | 48 | 48 | 45 | 45 | 46 | 46 | 46 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 49 | 51 | 50 | 52 | 52 | 53 | 52 | 51 | 51 | 52 | 54 | 55 | 55 | 53 | 54 | 53 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 54 | 54 | 53 | 53 | -- | 52 |
| Minimum .... | 46 | 46 | 45 | 45 | 47 | 49 | 50 | 50 | 51 | 51 | 50 | 49 | 49 | 51 | 52 | 53 | 52 | 51 | 52 | 50 | 50 | 50 | 51 | 50 | 49 | 51 | 52 | 53 | 51 | 51 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 52 | 53 | 54 | 54 | 53 | 53 | 55 | 55 | 54 | 55 | 54 | 54 | 54 | 54 | 54 | 55 | 57 | 56 | 55 | 55 | 56 | 56 | 55 | 55 | 55 | 56 | 56 | 57 | 56 | 56 | 55 |
| Minimum .... | 52 | 52 | 52 | 51 | 53 | 53 | 52 | 52 | 53 | 54 | 52 | 54 | 54 | 53 | 53 | 54 | 53 | 54 | 55 | 52 | 53 | 53 | 54 | 54 | 52 | 52 | 53 | 54 | 54 | 54 | 53 | 53 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 56 | 56 | 58 | 58 | 57 | 57 | 57 | 58 | 58 | 57 | 56 | 56 | 57 | 57 | 57 | 56 | 57 | 56 | 57 | 57 | 56 | 55 | 55 | 55 | 54 | 55 | 54 | 54 | 55 | 55 | 56 |
| Minimum .... | 53 | 54 | 55 | 55 | 55 | 54 | 54 | 55 | 56 | 55 | 54 | 53 | 54 | 54 | 54 | 53 | 53 | 53 | 52 | 53 | 53 | 54 | 52 | 53 | 53 | 54 | 54 | 53 | 52 | 51 | 51 | 54 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 56 | 57 | 58 | 58 | 56 | 57 | 56 | 56 | 55 | 53 | 53 | 53 | 54 | 54 | 54 | 54 | 53 | 55 | 55 | 54 | 54 | 54 | 54 | 55 | 54 | 55 | 56 | 56 | -- | 55 |
| Minimum .... | 51 | 53 | 53 | 54 | 55 | 55 | 54 | 55 | 55 | 54 | 53 | 52 | 51 | 53 | 51 | 53 | 53 | 53 | 51 | 52 | 53 | 54 | 52 | 53 | 53 | 54 | 52 | 52 | 54 | 54 | -- | 53 |

ALSEA RIVER BASIN--Continued

14-3068. FLYNN CREEK NEAR SALADO, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 0.13 | C 2 | T | 0.16 | C 2 | T | 3.5 | C 6 | 0.1 |
| 2.. | .12 | C 2 | T | .25 | C 2 | T | 3.3 | C 6 | .1 |
| 3.. | .12 | C 2 | T | 2.0 | 7 | T | 3.7 | C 6 | .1 |
| 4.. | .70 | 14 | T | 1.2 | C 2 | T | 7.2 | 11 | A .2 |
| 5.. | .39 | C 11 | T | .66 | C 2 | T | 6.6 | C 4 | .1 |
| 6.. | .23 | C 11 | T | .51 | C 2 | T | 5.7 | C 4 | .1 |
| 7.. | .20 | C 11 | T | .73 | C 2 | T | 5.4 | C 4 | .1 |
| 8.. | .16 | C 11 | T | .80 | C 2 | T | 4.7 | C 4 | .1 |
| 9.. | .14 | C 11 | T | .66 | C 2 | T | 4.2 | C 4 | T |
| 10.. | .13 | C 11 | T | 1.5 | 10 | T | 3.8 | C 4 | T |
| 11.. | .13 | C 11 | T | 2.3 | 7 | T | 3.4 | C 4 | T |
| 12.. | .13 | C 11 | T | 6.7 | 39 | S 0.9 | 3.2 | C 4 | T |
| 13.. | .15 | C 11 | T | 5.0 | 7 | .1 | 2.9 | C 4 | T |
| 14.. | .52 | 6 | T | 3.3 | 2 | T | 2.7 | C 4 | T |
| 15.. | .90 | 9 | T | 2.4 | 2 | T | 2.5 | C 4 | T |
| 16.. | .40 | C 1 | T | 2.0 | 10 | .1 | 2.3 | C 4 | T |
| 17.. | .38 | C 1 | T | 1.7 | -- | T | 2.2 | C 4 | T |
| 18.. | .27 | C 1 | T | 1.8 | 4 | T | 2.0 | C 4 | T |
| 19.. | .23 | C 1 | T | 2.6 | 5 | T | 1.9 | C 4 | T |
| 20.. | .21 | C 1 | T | 5.2 | 7 | A .1 | 1.8 | C 4 | T |
| 21.. | .16 | C 1 | T | 6.6 | 4 | .1 | 1.8 | C 4 | T |
| 22.. | .16 | C 1 | T | 7.6 | 13 | A .3 | 1.7 | C 4 | T |
| 23.. | .15 | C 1 | T | 6.6 | C 6 | .1 | 3.5 | 13 | J .3 |
| 24.. | .13 | C 1 | T | 5.1 | C 6 | .1 | 12 | 34 | S 1.2 |
| 25.. | .13 | C 1 | T | 3.9 | C 6 | .1 | 8.1 | 8 | .2 |
| 26.. | .13 | C 1 | T | 4.1 | C 6 | .1 | 7.4 | 6 | .1 |
| 27.. | .46 | 10 | T | 4.6 | C 6 | .1 | 24 | 390 | J 46 |
| 28.. | .29 | C 2 | T | 4.4 | C 6 | .1 | 46 | 210 | 26 |
| 29.. | .21 | C 2 | T | 3.8 | C 6 | .1 | 34 | 94 | 8.6 |
| 30.. | .20 | C 2 | T | 3.3 | C 6 | .1 | 24 | 38 | 2.5 |
| 31.. | .18 | C 2 | T | -- | -- | -- | 17 | 33 | 1.5 |
| Total | 7.84 | -- | 0.1 | 91.47 | -- | 2.6 | 252.5 | -- | 87.7 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 15 | 33 | 1.3 | 4.2 | C 4 | T | 3.7 | C 2 | T |
| 2.. | 27 | 93 | J 7.0 | 4.0 | C 4 | T | 3.8 | C 2 | T |
| 3.. | 40 | 200 | J 25 | 3.9 | C 4 | T | 3.9 | C 2 | T |
| 4.. | 46 | 108 | S 14 | 3.8 | C 4 | T | 4.0 | C 2 | T |
| 5.. | 32 | 100 | J 9.3 | 4.1 | 14 | A 0.2 | 4.4 | C 2 | T |
| 6.. | 34 | 86 | 7.9 | 4.5 | -- | E .1 | 5.7 | -- | E 0.1 |
| 7.. | 22 | 21 | 1.2 | 5.4 | 2 | T | 9.0 | 3 | .1 |
| 8.. | 19 | 18 | .9 | 5.8 | 2 | T | 18 | 83 | S 5.6 |
| 9.. | 16 | 9 | .4 | 6.7 | 8 | .1 | 60 | 280 | A 45 |
| 10.. | 13 | 11 | .4 | 8.1 | 5 | .1 | 33 | 56 | S 5.9 |
| 11.. | 11 | 6 | .2 | 8.6 | 10 | B .2 | 18 | -- | E .4 |
| 12.. | 10 | 10 | .3 | 9.7 | C 4 | .1 | 13 | C 8 | .3 |
| 13.. | 11 | 11 | .3 | 9.0 | C 4 | .1 | 11 | C 8 | .2 |
| 14.. | 16 | 34 | J 1.7 | 7.9 | C 4 | .1 | 11 | C 8 | .2 |
| 15.. | 22 | 42 | A 2.5 | 6.7 | C 4 | .1 | 13 | C 8 | .3 |
| 16.. | 17 | 13 | B .6 | 5.8 | C 4 | .1 | 13 | C 8 | .3 |
| 17.. | 12 | 4 | .1 | 5.1 | C 4 | .1 | 12 | C 8 | .3 |
| 18.. | 9.3 | 5 | .1 | 4.6 | C 2 | T | 11 | C 8 | .2 |
| 19.. | 7.4 | 4 | .1 | 4.6 | C 2 | T | 12 | C 8 | .3 |
| 20.. | 6.1 | C 4 | .1 | 4.7 | C 2 | T | 15 | 20 | A .8 |
| 21.. | 5.2 | C 4 | .1 | 4.6 | C 2 | T | 18 | 100 | A 4.9 |
| 22.. | 4.5 | C 4 | T | 4.4 | C 2 | T | 15 | 27 | 1.1 |
| 23.. | 4.6 | C 4 | T | 4.1 | C 2 | T | 11 | 6 | .2 |
| 24.. | 5.8 | C 4 | .1 | 3.8 | C 2 | T | 8.6 | C 4 | .1 |
| 25.. | 5.8 | C 4 | .1 | 3.6 | C 2 | T | 7.2 | C 4 | .1 |
| 26.. | 5.4 | C 4 | .1 | 3.4 | C 2 | T | 6.1 | C 4 | .1 |
| 27.. | 4.8 | C 4 | .1 | 3.5 | C 2 | T | 5.1 | C 4 | .1 |
| 28.. | 4.5 | C 4 | T | 3.6 | C 2 | T | 4.4 | C 4 | T |
| 29.. | 4.4 | C 4 | T | -- | -- | -- | 3.9 | C 4 | T |
| 30.. | 4.4 | C 4 | T | -- | -- | -- | 3.5 | C 4 | T |
| 31.. | 4.4 | C 4 | T | -- | -- | -- | 3.2 | C 4 | T |
| Total | 439.6 | -- | 74.2 | 148.2 | -- | 1.8 | 360.5 | -- | 66.9 |

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

ALSEA RIVER BASIN--Continued

14-3068. FLYNN CREEK NEAR SALADO, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1.. | 3.0 | C | 4 | T | 1.2 | C | 3 | T | 0.58 | C | 3 | T |
| 2.. | 2.7 | C | 4 | T | 1.2 | C | 3 | T | .58 | C | 3 | T |
| 3.. | 2.6 | C | 4 | T | 1.2 | C | 3 | T | .55 | C | 3 | T |
| 4.. | 2.3 | C | 4 | T | 1.1 | C | 3 | T | .55 | C | 3 | T |
| 5.. | 2.2 | C | 4 | T | 1.1 | C | 3 | T | .52 | C | 3 | T |
| 6.. | 2.1 | C | 4 | T | 1.2 | C | 3 | T | .52 | C | 3 | T |
| 7.. | 2.0 | C | 4 | T | 1.1 | C | 3 | T | .49 | C | 3 | T |
| 8.. | 1.9 | C | 4 | T | 1.0 | C | 3 | T | .49 | C | 3 | T |
| 9.. | 1.9 | C | 4 | T | .94 | C | 3 | T | .47 | C | 3 | T |
| 10.. | 2.0 | C | 4 | T | .90 | C | 3 | T | .64 | C | 3 | T |
| 11.. | 2.9 | | 10 | A 0.1 | .86 | C | 3 | T | .67 | C | 3 | T |
| 12.. | 2.9 | C | 3 | T | .86 | C | 3 | T | .52 | C | 3 | T |
| 13.. | 2.6 | C | 3 | T | .82 | C | 3 | T | .49 | C | 3 | T |
| 14.. | 2.4 | C | 3 | T | .82 | C | 3 | T | .47 | C | 3 | T |
| 15.. | 2.3 | C | 3 | T | .90 | C | 3 | T | .44 | C | 3 | T |
| 16.. | 2.2 | C | 3 | T | .98 | C | 3 | T | .44 | C | 3 | T |
| 17.. | 2.2 | C | 3 | T | .79 | C | 3 | T | .42 | C | 3 | T |
| 18.. | 2.1 | C | 3 | T | .76 | C | 3 | T | .42 | C | 3 | T |
| 19.. | 2.0 | C | 3 | T | .76 | C | 3 | T | .39 | C | 3 | T |
| 20.. | 2.0 | C | 3 | T | .73 | C | 3 | T | .39 | C | 3 | T |
| 21.. | 1.9 | C | 3 | T | .79 | C | 3 | T | .37 | C | 3 | T |
| 22.. | 1.8 | C | 3 | T | .79 | C | 3 | T | .37 | C | 3 | T |
| 23.. | 1.7 | C | 3 | T | .73 | C | 3 | T | .52 | C | 3 | T |
| 24.. | 1.6 | C | 3 | T | .70 | C | 3 | T | .42 | C | 3 | T |
| 25.. | 1.5 | C | 3 | T | .67 | C | 3 | T | .37 | C | 3 | T |
| 26.. | 1.5 | C | 3 | T | .67 | C | 3 | T | .37 | C | 3 | T |
| 27.. | 1.4 | C | 3 | T | .64 | C | 3 | T | .37 | C | 3 | T |
| 28.. | 1.4 | C | 3 | T | .61 | C | 3 | T | .44 | C | 3 | T |
| 29.. | 1.3 | C | 3 | T | .61 | C | 3 | T | .37 | C | 3 | T |
| 30.. | 1.3 | C | 3 | T | .58 | C | 3 | T | .35 | C | 3 | T |
| 31.. | -- | | -- | -- | .58 | C | 3 | T | -- | | -- | -- |
| Total | 61.7 | | -- | 0.6 | 26.59 | | -- | 0.2 | 13.99 | | -- | 0.1 |

| Day | JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1.. | 0.39 | | 7 | T | 0.18 | C | 1 | T | 0.11 | C | 1 | T |
| 2.. | .64 | | 21 | T | .18 | C | 1 | T | .12 | C | 1 | T |
| 3.. | .47 | | 5 | T | .18 | C | 1 | T | .11 | C | 1 | T |
| 4.. | .39 | C | 1 | T | .17 | C | 1 | T | .11 | C | 1 | T |
| 5.. | .37 | C | 1 | T | .17 | C | 1 | T | .11 | C | 1 | T |
| 6.. | .37 | C | 1 | T | .16 | C | 1 | T | .11 | C | 1 | T |
| 7.. | .35 | C | 1 | T | .15 | C | 1 | T | .11 | C | 1 | T |
| 8.. | .34 | C | 1 | T | .16 | C | 1 | T | .11 | C | 1 | T |
| 9.. | .32 | C | 1 | T | .15 | C | 1 | T | .11 | C | 1 | T |
| 10.. | .32 | C | 1 | T | .15 | C | 1 | T | .14 | C | 1 | T |
| 11.. | .30 | C | 1 | T | .14 | C | 1 | T | .15 | C | 1 | T |
| 12.. | .30 | C | 1 | T | .14 | C | 1 | T | .18 | C | 1 | T |
| 13.. | .30 | C | 1 | T | .16 | C | 1 | T | .13 | C | 1 | T |
| 14.. | .29 | C | 1 | T | .16 | C | 1 | T | .13 | C | 1 | T |
| 15.. | .28 | C | 1 | T | .14 | C | 1 | T | .12 | C | 1 | T |
| 16.. | .27 | C | 1 | T | .14 | C | 1 | T | .14 | C | 1 | T |
| 17.. | .26 | C | 1 | T | .13 | C | 1 | T | .26 | | 7 | T |
| 18.. | .26 | C | 1 | T | .13 | C | 1 | T | .33 | | 9 | T |
| 19.. | .28 | C | 1 | T | .13 | C | 1 | T | .17 | C | 6 | T |
| 20.. | .24 | C | 1 | T | .12 | C | 1 | T | .14 | C | 6 | T |
| 21.. | .24 | C | 1 | T | .11 | C | 1 | T | .13 | C | 6 | T |
| 22.. | .23 | C | 1 | T | .12 | C | 1 | T | .13 | C | 6 | T |
| 23.. | .22 | C | 1 | T | .12 | C | 1 | T | .13 | C | 6 | T |
| 24.. | .26 | C | 1 | T | .12 | C | 1 | T | .13 | C | 6 | T |
| 25.. | .22 | C | 1 | T | .12 | C | 1 | T | .34 | C | 6 | T |
| 26.. | .22 | C | 1 | T | .13 | C | 1 | T | .30 | C | 6 | T |
| 27.. | .21 | C | 1 | T | .18 | C | 1 | T | .19 | C | 6 | T |
| 28.. | .21 | C | 1 | T | .14 | C | 1 | T | .16 | C | 6 | T |
| 29.. | .20 | C | 1 | T | .14 | C | 1 | T | .15 | C | 6 | T |
| 30.. | .19 | C | 1 | T | .13 | C | 1 | T | .12 | C | 6 | T |
| 31.. | .19 | C | 1 | T | .12 | C | 1 | T | -- | | -- | -- |
| Total | 9.13 | | -- | 0.1 | 4.47 | | -- | T | 4.67 | | -- | 0.1 |

Total discharge for year (cfs-days)..... 1420.66
Total load for year (tons)..... 234.4

T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
C Composite period.

ALSEA RIVER BASIN--Continued

14-3068. FLYNN CREEK NEAR SALADO, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | 4.000 | |
| Nov. 12, 1965..... | 1545 | 52 | 9.6 | 52 | 1.3 | | 7 | | -- | | 22 | 30 | 44 | 81 | 92 | 92 | 100 | SVPWC |
| Jan. 4, 1966..... | 1455 | 47 | 44 | 76 | 9.0 | | 6 | | -- | | 36 | 47 | 65 | 84 | 94 | 94 | 100 | SVPWC |
| Mar. 8..... | 2230 | 47 | 32 | 169 | 15 | 7 | 11 | 16 | 20 | 26 | 34 | 49 | 78 | 97 | 98 | 98 | 100 | SVPWC |
| Mar. 9..... | 1230 | 46 | 69 | 206 | 38 | | 9 | | 23 | | 46 | 61 | 83 | 98 | 100 | -- | -- | VPWC |

## 14-3068.1. DEER CREEK NEAR SALADO, OREG.

LOCATION.--Lat 44°32'05", long 123°52'35", at gaging station 1,000 feet upstream from mouth, 4.6 miles west of Salado, Lincoln County, and 6.5 miles southeast of Toledo.
DRAINAGE AREA.--1.17 square miles (computed as 749.5 acres on basis of field survey by Oregon State University).
RECORDS AVAILABLE.--Water temperatures: September 1958 to September 1966.
Sediment records: November 1958 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 62°F on several days during June to August; minimum, 39°F Dec. 17, 20.
Sediment concentrations: Maximum daily, 1,010 ppm Dec. 27; minimum daily, 2 ppm on many days during October, November, February, May and September.
Sediment loads: Maximum daily, 196 tons Dec. 27; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1958-66.--Water temperatures: Maximum, 62°F on several days during June to August 1966; minimum, 34°F Jan. 30, 1963.
Sediment concentrations: Maximum daily, 1,220 ppm Jan. 28, 1965; minimum daily, less than 1 ppm on many days during 1959-62.
Sediment loads: Maximum daily, 583 tons Jan. 28, 1965; minimum daily, less than 0.05 ton on many days each year.
REMARKS.--Recorder stopped Oct. 1-13; temperature range, 48°F to 55°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 | 52 | 50 | 50 | 49 | 50 | 50 | 50 | 49 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 | 50 | 47 | 48 | 47 | 48 | 48 | 48 | 48 | 48 | 49 | 50 | 49 | 50 | 50 | 49 | 49 | 49 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 51 | 52 | 52 | 52 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 48 | -- | 49 |
| Minimum .... | 50 | 50 | 51 | 51 | 51 | 49 | 50 | 50 | 49 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 47 | 48 | 47 | 47 | 45 | 44 | 42 | 42 | 41 | 42 | 41 | 42 | 43 | 42 | 45 | 45 | 44 | 45 | 47 | 47 | 46 | 46 | 45 | 45 |
| Minimum .... | 48 | 48 | 48 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 46 | 45 | 43 | 42 | 41 | 40 | 39 | 40 | 40 | 39 | 42 | 40 | 42 | 44 | 43 | 44 | 45 | 46 | 45 | 45 | 43 | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 46 | 47 | 47 | 48 | 48 | 48 | 47 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 45 | 44 | 43 | 43 | 44 | 44 | 45 | 46 | 45 | 46 | 45 | 45 | 44 | 44 | 46 |
| Minimum .... | 44 | 45 | 46 | 46 | 47 | 48 | 47 | 46 | 45 | 45 | 46 | 46 | 47 | 47 | 46 | 45 | 44 | 44 | 42 | 42 | 42 | 42 | 43 | 44 | 43 | 43 | 44 | 43 | 44 | 43 | 42 | 45 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 43 | 44 | 44 | 45 | 45 | 46 | 46 | 45 | 47 | 46 | 45 | 44 | 44 | 43 | -- | -- | -- | 45 |
| Minimum .... | 42 | 42 | 43 | 44 | 43 | 43 | 42 | 42 | 43 | 42 | 42 | 41 | 42 | 43 | 41 | 41 | 41 | 42 | 43 | 44 | 43 | 44 | 44 | 43 | 43 | 43 | 42 | 38 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 42 | 41 | 43 | 42 | 42 | 45 | 45 | 45 | 46 | 46 | 46 | 45 | 44 | 43 | 43 | 43 | 42 | 42 | 44 | 46 | 47 | 48 | 50 | 46 | 46 | 50 | 50 | 48 | 52 | 45 |
| Minimum .... | 38 | 38 | 39 | 39 | 41 | 41 | 41 | 42 | 44 | 43 | 42 | 45 | 45 | 44 | 42 | 41 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 42 | 45 | 45 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 50 | 51 | 53 | 53 | 52 | 50 | 47 | 50 | 48 | 46 | 46 | 50 | 48 | 51 | 52 | 51 | 50 | 53 | 47 | 49 | 50 | 51 | 51 | 48 | 47 | 50 | 46 | 50 | 52 | -- | 50 |
| Minimum .... | 45 | 42 | 43 | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 43 | 42 | 44 | 47 | 43 | 44 | 43 | 42 | 44 | 46 | 46 | 46 | 44 | 46 | 44 | 42 | 42 | 42 | 44 | -- | 44 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 55 | 55 | 55 | 53 | 51 | 55 | 53 | 55 | 50 | 53 | 49 | 48 | 49 | 48 | 50 | 52 | 55 | 55 | 56 | 52 | 50 | 53 | 55 | 57 | 52 | 52 | 52 | 53 | 50 | 50 | 52 |
| Minimum .... | 44 | 46 | 47 | 49 | 49 | 48 | 47 | 49 | 49 | 48 | 46 | 48 | 47 | 46 | 47 | 47 | 44 | 47 | 48 | 49 | 48 | 46 | 45 | 46 | 48 | 48 | 45 | 45 | 46 | 47 | 46 | 47 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 50 | 50 | 53 | 56 | 53 | 56 | 58 | 56 | 54 | 52 | 54 | 57 | 60 | 62 | 59 | 57 | 58 | 58 | 56 | 56 | 57 | 54 | 56 | 56 | 58 | 60 | 58 | 56 | 56 | -- | 56 |
| Minimum .... | 46 | 46 | 45 | 45 | 47 | 50 | 50 | 50 | 52 | 52 | 50 | 48 | 49 | 52 | 54 | 54 | 53 | 50 | 53 | 51 | 51 | 51 | 52 | 50 | 49 | 51 | 54 | 54 | 50 | 50 | -- | 50 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 52 | 55 | 58 | 57 | 54 | 55 | 59 | 60 | 55 | 58 | 56 | 54 | 54 | 56 | 56 | 60 | 61 | 60 | 59 | 60 | 60 | 61 | 57 | 59 | 61 | 61 | 62 | 62 | 61 | 61 | 58 |
| Minimum .... | 52 | 51 | 51 | 50 | 53 | 53 | 52 | 52 | 54 | 54 | 50 | 54 | 54 | 53 | 51 | 53 | 52 | 54 | 54 | 50 | 52 | 52 | 54 | 54 | 51 | 52 | 53 | 54 | 54 | 54 | 53 | 53 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 61 | 61 | 60 | 59 | 59 | 57 | 59 | 59 | 58 | 58 | 58 | 58 | 59 | 59 | 58 | 55 | 55 | 54 | 52 | 55 | 54 | 54 | 55 | 56 | 58 |
| Minimum .... | 53 | 53 | 56 | 56 | 55 | 54 | 53 | 56 | 57 | 53 | 51 | 50 | 53 | 51 | 51 | 50 | 50 | 51 | 49 | 50 | 50 | 52 | 48 | 49 | 50 | 50 | 52 | 50 | 49 | 48 | 48 | 52 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 59 | 59 | 61 | 60 | 60 | 58 | 58 | 59 | 57 | 56 | 54 | 55 | 53 | 53 | 55 | 54 | 55 | 55 | 56 | 58 | 56 | 56 | 55 | 55 | 58 | 57 | 58 | 59 | 59 | -- | 57 |
| Minimum .... | 48 | 51 | 51 | 52 | 54 | 55 | 52 | 54 | 54 | 53 | 52 | 50 | 48 | 51 | 49 | 51 | 52 | 52 | 48 | 49 | 51 | 54 | 50 | 54 | 53 | 54 | 51 | 51 | 53 | 54 | -- | 52 |

ALSEA RIVER BASIN--Continued

14-3068.1. DEER CREEK NEAR SALADO, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | | NOVEMBER | | | | OCTOBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | | Mean discharge (cfs) | Suspended sediment | | |
| | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day | | Mean concentration (ppm) | | Tons per day |
| 1.. | 0.23 | C 16 | | T | 0.35 | C 2 | | T | 4.9 | 13 | | 0.2 |
| 2.. | .23 | C 16 | | T | .49 | C 2 | | T | 4.8 | 8 | | .1 |
| 3.. | .22 | C 16 | | T | 2.9 | 13 | | 0.1 | 5.7 | 8 | B | .1 |
| 4.. | .74 | 17 | | T | 2.1 | C 1 | | T | 12 | 12 | | .4 |
| 5.. | .60 | 5 | | T | 1.3 | C 1 | | T | 11 | 5 | | .1 |
| 6.. | .39 | C 2 | | T | .97 | C 1 | | T | 9.1 | C 6 | | .1 |
| 7.. | .34 | C 2 | | T | 1.2 | C 1 | | T | 9.0 | C 6 | | .1 |
| 8.. | .30 | C 2 | | T | 1.4 | C 1 | | T | 8.3 | C 6 | | .1 |
| 9.. | .28 | C 2 | | T | 1.2 | C 1 | | T | 7.1 | C 6 | | .1 |
| 10.. | .27 | C 2 | | T | 2.6 | 8 | A | .1 | 6.0 | C 6 | | .1 |
| 11.. | .27 | C 2 | | T | 4.2 | 7 | | .1 | 5.0 | C 6 | | .1 |
| 12.. | .27 | C 2 | | T | 13 | 43 | S | 1.9 | 4.4 | C 3 | | T |
| 13.. | .29 | C 2 | | T | 12 | 10 | | .3 | 3.9 | C 3 | | T |
| 14.. | .66 | 7 | | T | 7.9 | 5 | | .1 | 3.6 | C 3 | | T |
| 15.. | 1.2 | 9 | | T | 5.1 | 2 | | T | 3.2 | C 3 | | T |
| 16.. | .64 | C 2 | | T | 3.7 | 3 | | T | 3.0 | C 3 | | T |
| 17.. | .64 | C 2 | | T | 2.9 | 2 | | T | 2.8 | C 3 | | T |
| 18.. | .51 | C 2 | | T | 2.7 | 4 | | T | 2.6 | C 3 | | T |
| 19.. | .44 | C 2 | | T | 3.7 | 2 | | T | 2.4 | C 3 | | T |
| 20.. | .40 | C 2 | | T | 7.1 | 7 | | .1 | 2.3 | C 3 | | T |
| 21.. | .36 | C 2 | | T | 11 | 6 | | .2 | 2.5 | C 3 | | T |
| 22.. | .34 | C 2 | | T | 14 | 16 | A | .6 | 2.2 | C 3 | | T |
| 23.. | .33 | C 2 | | T | 12 | 7 | | .2 | 5.1 | 16 | | .2 |
| 24.. | .31 | C 2 | | T | 8.7 | C 4 | | .1 | 20 | 34 | | 1.8 |
| 25.. | .31 | C 2 | | T | 6.3 | C 4 | | .1 | 14 | 5 | | .2 |
| 26.. | .29 | C 2 | | T | 6.9 | C 4 | | .1 | 11 | 4 | | .1 |
| 27.. | .64 | 11 | | T | 7.9 | C 4 | | .1 | 36 | 1010 | S | 196 |
| 28.. | .57 | 3 | | T | 7.3 | C 4 | | .1 | 81 | 700 | | 153 |
| 29.. | .43 | C 2 | | T | 6.0 | C 4 | | .1 | 51 | 190 | | 26 |
| 30.. | .38 | C 2 | | T | 4.9 | C 4 | | .1 | 34 | 86 | | 7.9 |
| 31.. | .36 | C 2 | | T | -- | -- | | -- | 22 | 37 | | 2.2 |
| Total | 13.24 | -- | | 0.2 | 161.81 | -- | | 4.5 | 389.9 | -- | | 389.2 |

| Day | JANUARY | | | | FEBRUARY | | | | MARCH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.. | 20 | 44 | | 2.4 | 5.8 | 5 | | 0.1 | 5.3 | C 4 | | 0.1 |
| 2.. | 44 | 250 | J | 31 | 5.5 | 4 | | .1 | 5.5 | C 4 | | .1 |
| 3.. | 66 | 400 | J | 78 | 5.2 | 5 | | .1 | 5.5 | C 4 | | .1 |
| 4.. | 66 | 251 | S | 47 | 5.1 | 6 | | .1 | 5.7 | C 4 | | .1 |
| 5.. | 49 | 269 | S | 38 | 5.7 | 13 | A | .2 | 6.7 | C 4 | | .1 |
| 6.. | 50 | 114 | | 15 | 6.7 | -- | E | .1 | 9.3 | -- | E | .2 |
| 7.. | 34 | 49 | | 4.5 | 8.4 | 6 | | .1 | 15 | 47 | | 1.9 |
| 8.. | 28 | 40 | | 3.0 | 9.1 | 15 | | .4 | 29 | 203 | S | 21 |
| 9.. | 22 | 22 | | 1.3 | 9.9 | 17 | A | .5 | 92 | 699 | S | 177 |
| 10.. | 17 | 21 | | 1.0 | 11 | 24 | | .7 | 43 | 70 | | 8.1 |
| 11.. | 15 | 23 | | .9 | 12 | 24 | B | .8 | 24 | 30 | | 1.9 |
| 12.. | 15 | 16 | | .6 | 14 | 18 | | .7 | 17 | 17 | | .8 |
| 13.. | 16 | 28 | | 1.2 | 13 | 9 | B | .3 | 15 | 7 | | .3 |
| 14.. | 24 | 56 | S | 4.3 | 11 | 7 | | .2 | 16 | 19 | | .8 |
| 15.. | 35 | 38 | | 3.6 | 9.1 | 5 | | .1 | 18 | 19 | A | .9 |
| 16.. | 22 | 17 | | 1.0 | 7.8 | 5 | | .1 | 17 | 16 | | .7 |
| 17.. | 16 | 14 | | .6 | 6.8 | 4 | | .1 | 15 | 13 | | .5 |
| 18.. | 13 | 21 | | .7 | 6.1 | 2 | | T | 15 | 28 | A | 1.1 |
| 19.. | 10 | 18 | | .5 | 6.5 | 9 | A | .2 | 17 | 34 | | 1.6 |
| 20.. | 8.7 | 19 | | .4 | 7.0 | 7 | B | .1 | 21 | 33 | A | 1.9 |
| 21.. | 7.5 | 10 | B | .2 | 6.7 | C 4 | | .1 | 26 | 46 | | 3.2 |
| 22.. | 6.5 | 3 | | .1 | 6.4 | C 4 | | .1 | 19 | C 20 | | 1.0 |
| 23.. | 6.8 | 11 | B | .2 | 5.9 | C 4 | | .1 | 14 | C 20 | | .8 |
| 24.. | 9.3 | 33 | | .8 | 5.3 | C 4 | | .1 | 11 | C 20 | | .6 |
| 25.. | 9.6 | 21 | | .5 | 4.9 | C 4 | | .1 | 9.4 | C 3 | | .1 |
| 26.. | 8.6 | 10 | | .2 | 4.7 | C 4 | | .1 | 8.0 | C 3 | | .1 |
| 27.. | 7.4 | 5 | | .1 | 4.8 | C 4 | | .1 | 6.8 | C 3 | | .1 |
| 28.. | 6.7 | 9 | | .2 | 5.2 | C 4 | | .1 | 5.9 | C 3 | | T |
| 29.. | 6.2 | 9 | | .2 | -- | -- | | -- | 5.2 | C 3 | | T |
| 30.. | 6.3 | 9 | B | .2 | -- | -- | | -- | 4.7 | C 3 | | T |
| 31.. | 6.0 | 4 | | .1 | -- | -- | | -- | 4.2 | C 3 | | T |
| Total | 651.6 | -- | | 237.8 | 209.6 | -- | | 5.8 | 506.2 | -- | | 225.3 |

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.
C Composite period.
J Computed from partly estimated-concentration graph and subdividing day.

ALSEA RIVER BASIN--Continued

14-3068.1. DEER CREEK NEAR SALADO, OREG.--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 3.9 | C 7 | 0.1 | 1.7 | C 8 | T | 0.81 | C 5 | T |
| 2.. | 3.6 | C 7 | .1 | 1.6 | C 8 | T | .79 | C 5 | T |
| 3.. | 3.3 | C 7 | .1 | 1.5 | C 2 | T | .77 | C 5 | T |
| 4.. | 3.1 | C 7 | .1 | 1.5 | C 2 | T | .75 | C 5 | T |
| 5.. | 2.9 | C 7 | .1 | 1.6 | C 2 | T | .73 | C 5 | T |
| 6.. | 2.7 | C 7 | .1 | 1.6 | C 2 | T | .72 | C 5 | T |
| 7.. | 2.6 | C 7 | T | 1.4 | C 2 | T | .70 | C 5 | T |
| 8.. | 2.5 | C 7 | T | 1.4 | C 2 | T | .69 | C 5 | T |
| 9.. | 2.5 | C 7 | T | 1.3 | C 2 | T | .67 | C 5 | T |
| 10.. | 3.0 | C 7 | .1 | 1.3 | C 2 | T | .94 | C 5 | T |
| 11.. | 5.7 | 28 | .4 | 1.2 | C 2 | T | 1.0 | C 5 | T |
| 12.. | 7.3 | 8 | .2 | 1.2 | C 2 | T | .80 | C 5 | T |
| 13.. | 5.9 | C 3 | T | 1.2 | C 2 | T | .72 | C 5 | T |
| 14.. | 5.0 | C 3 | T | 1.2 | C 2 | T | .68 | C 5 | T |
| 15.. | 4.3 | C 3 | T | 1.3 | C 2 | T | .65 | C 5 | T |
| 16.. | 3.9 | C 3 | T | 1.4 | C 2 | T | .64 | C 5 | T |
| 17.. | 3.5 | C 3 | T | 1.2 | C 2 | T | .63 | C 5 | T |
| 18.. | 3.2 | C 3 | T | 1.1 | C 2 | T | .60 | C 5 | T |
| 19.. | 3.0 | C 3 | T | 1.1 | C 2 | T | .59 | C 5 | T |
| 20.. | 2.8 | C 3 | T | 1.0 | C 2 | T | .57 | C 5 | T |
| 21.. | 2.8 | C 3 | T | 1.2 | C 2 | T | .56 | C 5 | T |
| 22.. | 2.5 | C 3 | T | 1.2 | C 2 | T | .56 | C 5 | T |
| 23.. | 2.4 | C 3 | T | 1.0 | C 2 | T | .79 | C 5 | T |
| 24.. | 2.2 | C 8 | T | .98 | C 5 | T | .62 | C 5 | T |
| 25.. | 2.1 | C 8 | T | .94 | C 5 | T | .57 | C 5 | T |
| 26.. | 2.1 | C 8 | T | .95 | C 5 | T | .54 | C 5 | T |
| 27.. | 2.0 | C 8 | T | .89 | C 5 | T | .59 | C 5 | T |
| 28.. | 1.9 | C 8 | T | .86 | C 5 | T | .70 | C 5 | T |
| 29.. | 1.8 | C 8 | T | .84 | C 5 | T | .57 | C 5 | T |
| 30.. | 1.7 | C 8 | T | .82 | C 5 | T | .55 | C 5 | T |
| 31.. | -- | -- | -- | .80 | C 5 | T | -- | -- | -- |
| Total | 96.2 | -- | 2.1 | 37.28 | -- | 0.3 | 20.50 | -- | 0.3 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 0.62 | 6 | T | 0.32 | C 3 | T | 0.23 | C 3 | T |
| 2.. | .92 | 14 | T | .32 | C 3 | T | .23 | C 3 | T |
| 3.. | .77 | 5 | T | .32 | C 3 | T | .23 | C 3 | T |
| 4.. | .65 | C 3 | T | .32 | C 3 | T | .22 | C 3 | T |
| 5.. | .61 | C 3 | T | .30 | C 3 | T | .21 | C 3 | T |
| 6.. | .60 | C 3 | T | .30 | C 3 | T | .22 | C 3 | T |
| 7.. | .56 | C 3 | T | .30 | C 3 | T | .22 | C 3 | T |
| 8.. | .53 | C 3 | T | .30 | C 3 | T | .21 | C 3 | T |
| 9.. | .51 | C 3 | T | .29 | C 3 | T | .21 | C 3 | T |
| 10.. | .51 | C 3 | T | .28 | C 3 | T | .25 | C 3 | T |
| 11.. | .48 | C 3 | T | .27 | C 3 | T | .28 | C 3 | T |
| 12.. | .48 | C 3 | T | .26 | C 3 | T | .30 | C 3 | T |
| 13.. | .48 | C 3 | T | .28 | C 3 | T | .26 | C 3 | T |
| 14.. | .48 | C 3 | T | .27 | C 3 | T | .26 | C 3 | T |
| 15.. | .45 | C 3 | T | .26 | C 3 | T | .24 | C 3 | T |
| 16.. | .43 | C 3 | T | .25 | C 3 | T | .27 | C 3 | T |
| 17.. | .43 | C 3 | T | .25 | C 3 | T | .38 | 7 | T |
| 18.. | .40 | C 3 | T | .24 | C 3 | T | .60 | 10 | T |
| 19.. | .43 | C 3 | T | .24 | C 3 | T | .35 | C 2 | T |
| 20.. | .40 | C 3 | T | .23 | C 3 | T | .31 | C 2 | T |
| 21.. | .38 | C 3 | T | .22 | C 3 | T | .28 | C 2 | T |
| 22.. | .38 | C 3 | T | .23 | C 3 | T | .27 | C 2 | T |
| 23.. | .38 | C 3 | T | .23 | C 3 | T | .29 | C 2 | T |
| 24.. | .43 | C 3 | T | .24 | C 3 | T | .27 | C 2 | T |
| 25.. | .38 | C 3 | T | .24 | C 3 | T | .50 | C 2 | T |
| 26.. | .36 | C 3 | T | .25 | C 3 | T | .56 | C 2 | T |
| 27.. | .36 | C 3 | T | .32 | C 3 | T | .37 | C 2 | T |
| 28.. | .36 | C 3 | T | .28 | C 3 | T | .33 | C 2 | T |
| 29.. | .34 | C 3 | T | .28 | C 3 | T | .30 | C 2 | T |
| 30.. | .34 | C 3 | T | .25 | C 3 | T | .26 | C 2 | T |
| 31.. | .32 | C 3 | T | .24 | C 3 | T | -- | -- | -- |
| Total | 14.77 | -- | 0.2 | 8.38 | -- | 0.1 | 8.91 | -- | 0.1 |

Total discharge for year (cfs-days)..... 2118.39
Total load for year (tons)..... 865.9

T Less than 0.05 ton.
C Composite period.

ALSEA RIVER BASIN--Continued

14-3068.1. DEER CREEK NEAR SALADO, OREG.--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | 4.000 | 8.000 | |
| Nov. 12, 1965..... | 1445 | 52 | 17 | 37 | 1.7 | -- | 19 | -- | -- | -- | 59 | 71 | 93 | 100 | -- | -- | -- | | VPWC |
| Jan. 3, 1966..... | 2355 | 45 | 79 | 366 | 78 | -- | 12 | -- | 25 | -- | 47 | 64 | 84 | 94 | 97 | 97 | 99 | 100 | SVPWC |
| Jan. 4..... | 1625 | 45 | 57 | 182 | 28 | 11 | 14 | 22 | 29 | 40 | 53 | 70 | 88 | 95 | 95 | 95 | 100 | | SVPWC |
| Jan. 7..... | 1400 | 48 | 30 | 51 | 4.1 | -- | -- | -- | -- | -- | 34 | 59 | 96 | 100 | -- | -- | -- | | V |
| Mar. 9..... | 1041 | 46 | 119 | 707 | 227 | 11 | 17 | 24 | 32 | 41 | 51 | 67 | 87 | 96 | 98 | 98 | 100 | | SVPWC |

UMPQUA RIVER BASIN

14-3210. UMPQUA RIVER NEAR ELKTON, OREG.

LOCATION.--Lat 43°35'10", long 123°33'30", at gaging station, 3.5 miles south of Elkton, and 8 miles upstream from Elk Creek, Douglas County.
DRAINAGE AREA.--3,683 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1965 to September 1966.

Chemical analyses, in parts per million, December 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Dec. 29, 1965.... | 46100 | 12 | -- | 6.4 | 1.8 | 3.6 | 0.7 | 26 | 0 | 2.4 | 5.5 | 0.2 | 1.2 | | 41 | -- | 5100 | 23 | 2 | | 61 | 6.6 |
| Jan. 31, 1966.... | 11200 | 16 | -- | 6.0 | 3.0 | 4.3 | .6 | 36 | 0 | 3.2 | 3.0 | .1 | .3 | | 60 | -- | 1810 | 27 | 0 | | 74 | 7.4 |
| Feb. 28..... | 6250 | 16 | -- | 6.0 | 2.7 | 3.7 | 3.4 | 36 | 0 | 3.0 | 2.8 | .1 | .2 | | 53 | 0.07 | 894 | 26 | 0 | | 71 | 7.3 |
| Apr. 1..... | 15600 | 14 | -- | 5.2 | 1.7 | 3.7 | .6 | 28 | 0 | 2.0 | 1.2 | .1 | .1 | | 44 | .06 | 1850 | 20 | 0 | | 53 | 7.3 |
| Apr. 29..... | 4430 | 16 | -- | 6.4 | 2.0 | 3.5 | .8 | 34 | 0 | 2.6 | 1.8 | .1 | .1 | | 46 | .06 | 550 | 24 | 0 | | 66 | 7.2 |
| May 30..... | 2470 | 17 | 0.07 | 5.8 | 2.2 | 4.2 | .6 | 35 | 0 | 2.6 | 2.0 | .1 | .0 | | 52 | .07 | 347 | 24 | 0 | | 70 | 7.1 |
| June 30..... | 1330 | 11 | .04 | 7.2 | 1.8 | 5.0 | 1.0 | 34 | 2 | 2.4 | 3.5 | .1 | .0 | | 47 | .06 | 169 | 26 | 0 | | 77 | 8.6 |
| July 29..... | 1160 | 12 | -- | 5.6 | 2.5 | 5.4 | 1.2 | 38 | 0 | 2.4 | 3.0 | .1 | .3 | | 48 | .07 | 150 | 24 | 0 | | 76 | 7.1 |
| Sept. 1..... | 1030 | 17 | -- | 5.7 | 2.7 | 5.5 | 1.2 | 38 | 0 | 2.8 | 4.0 | .2 | .3 | | 64 | .09 | 178 | 25 | 0 | | 77 | 7.1 |
| Sept. 28..... | 1140 | 16 | -- | 7.6 | 3.3 | 6.1 | 1.3 | 44 | 0 | 4.4 | 6.0 | .2 | .1 | | 71 | .10 | 219 | 32 | 0 | | 96 | 7.0 |

Chemical analyses, in parts per million

| Date of Collection | Aluminum (Al) | Manganese (Mn) | Nickel (Ni) | Chromium (Cr) | Zinc (Zn) | Strontium (Sr) | Lithium (Li) |
|---|---|---|---|---|---|---|---|
| Apr. 29, 1966 | 0.1 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 |
| May 30..... | .1 | .02 | | .00 | .00 | .07 | .01 |
| June 30..... | .1 | .04 | | .00 | .00 | .09 | .02 |

COOS RIVER BASIN

14-3245. WEST FORK MILLICOMA RIVER NEAR ALLEGANY, OREG.

LOCATION.--Lat 43°28'35", long 125°03'20", at gaging station at highway bridge, 40 feet upstream from Daggett Creek, and 3.8 miles north of Allegany, Coos County.
DRAINAGE AREA.--46.5 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1963 to September 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Oct. 27, 1965..... | 8.8 | 4.9 | 0.07 | 4.0 | 1.3 | 4.8 | 0.8 | 20 | 0 | 1.2 | 5.5 | 0.1 | 0.8 | | 44 | 0.06 | 1.05 | 15 | 0 | | 56 | 7.0 |
| Nov. 17..... | 77 | 8.4 | .06 | 3.6 | .9 | 4.4 | .7 | 14 | 0 | 1.8 | 4.5 | .1 | 4.6 | | 37 | .05 | 7.69 | 13 | 2 | | 51 | 6.9 |
| Dec. 15..... | 76 | 7.8 | .07 | 2.8 | 1.0 | 4.1 | .6 | 12 | 0 | 1.6 | 4.2 | .0 | 2.9 | | 33 | .04 | 6.77 | 11 | 1 | | 46 | 6.9 |
| Jan. 19, 1966..... | 245 | 8.2 | -- | 2.4 | .8 | 3.5 | .4 | 10 | 0 | 1.4 | 4.0 | .0 | 2.3 | | 30 | .04 | 19.8 | 10 | 2 | | 42 | 7.0 |
| Feb. 23..... | 144 | 7.6 | -- | 2.0 | 1.0 | 3.6 | .6 | 12 | 0 | 1.6 | 3.8 | .0 | 1.7 | | 31 | .04 | 12.1 | 9 | 0 | | 40 | 7.0 |
| Mar. 16..... | 639 | 7.2 | -- | 1.6 | .8 | 3.1 | .7 | 10 | 0 | 1.2 | 3.0 | .1 | 1.6 | | 27 | .04 | 46.6 | 7 | 0 | | 35 | 6.5 |
| Apr. 20..... | 71 | 7.2 | -- | 2.4 | .7 | 3.6 | .5 | 14 | 0 | 1.8 | 3.2 | .0 | 1.3 | | 30 | .04 | 5.75 | 9 | 0 | | 41 | 6.8 |
| May 18..... | 25 | 7.2 | -- | 2.3 | .9 | 4.1 | .6 | 16 | 0 | 1.8 | 4.2 | .1 | .5 | | 32 | .04 | 2.16 | 9 | 0 | | 44 | 6.8 |
| June 15..... | 17 | 6.4 | -- | 2.6 | .9 | 4.7 | .8 | 18 | 0 | .8 | 4.5 | .1 | .2 | | 30 | .04 | 1.38 | 10 | 0 | | 48 | 6.8 |
| July 20..... | 8.0 | 5.8 | .00 | 3.4 | 1.2 | 5.0 | .8 | 20 | 0 | .2 | 4.8 | .0 | .3 | | 30 | .04 | .65 | 14 | 0 | | 52 | 6.6 |
| Aug. 17..... | 2.6 | 5.4 | -- | 3.5 | 1.5 | 5.9 | .9 | 23 | 0 | .0 | 6.0 | .1 | .6 | | 38 | .05 | .27 | 14 | 0 | | 59 | 6.9 |
| Sept. 14..... | 7.0 | 5.3 | .15 | 3.7 | 1.5 | 5.6 | 1.0 | 24 | 0 | .4 | 7.0 | .1 | .3 | | 40 | .05 | .76 | 15 | 0 | | 62 | 6.8 |

## COQUILLE RIVER BASIN

### 14-3249. SOUTH FORK COQUILLE RIVER NEAR POWERS, OREG.

LOCATION.--Lat 42°47'05", long 124°02'25", temperature recorder at gaging station, 0.8 mile upstream from Hall Creek, and 7 miles southeast of Powers, Coos County.
DRAINAGE AREA.--93.2 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1956 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 75°F on several days during July and August; minimum, 35°F Dec. 20.
EXTREMES, 1956-66.--Water temperatures: Maximum, 76°F July 30 to Aug. 1, 1958; minimum, 34°F Jan. 12, 13, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 60 | 59 | 57 | 60 | 60 | 61 | 61 | 60 | 59 | 60 | 58 | 61 | 57 | 55 | 55 | 56 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 57 | 55 | 56 | 56 | 56 | 55 | 58 |
| Minimum .... | 54 | 54 | 53 | 54 | 55 | 54 | 54 | 54 | 54 | 57 | 55 | 54 | 57 | 55 | 52 | 50 | 52 | 54 | 54 | 52 | 51 | 51 | 51 | 51 | 52 | 52 | 53 | 54 | 52 | 53 | 52 | 53 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 54 | 54 | 55 | 54 | 54 | 53 | 53 | 52 | 52 | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 47 | 47 | 46 | 46 | 46 | 45 | 46 | -- | 50 |
| Minimum .... | 51 | 51 | 54 | 53 | 52 | 50 | 52 | 51 | 51 | 50 | 50 | 51 | 52 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | -- | 49 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 47 | 46 | 46 | 45 | 45 | 45 | 43 | 41 | 39 | 38 | 37 | 37 | 36 | 38 | 38 | 39 | 39 | 39 | 40 | 42 | 42 | 42 | 41 | 41 | 43 |
| Minimum .... | 45 | 46 | 46 | 47 | 47 | 48 | 47 | 46 | 45 | 45 | 45 | 45 | 43 | 41 | 39 | 38 | 37 | 36 | 36 | 35 | 36 | 37 | 36 | 39 | 39 | 39 | 40 | 41 | 41 | 41 | 40 | 41 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 40 | 41 | 41 | 43 | 44 | 44 | 45 | 44 | 43 | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 |
| Minimum .... | 40 | 40 | 41 | 41 | 43 | 43 | 44 | 43 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 42 | 41 | 41 | 40 | 38 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 41 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 43 | 43 | 43 | 43 | 42 | 43 | 43 | -- | -- | -- | 42 |
| Minimum .... | 42 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 40 | 40 | 41 | 42 | 42 | 41 | 42 | 43 | 43 | 43 | 41 | 42 | 42 | -- | -- | -- | 42 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 39 | 40 | 40 | 41 | 42 | 42 | 42 | 44 | 44 | 44 | 45 | 45 | 45 | 44 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 48 | 44 |
| Minimum .... | 39 | 38 | 38 | 39 | 40 | 41 | 41 | 41 | 42 | 43 | 42 | 44 | 44 | 44 | 42 | 41 | 41 | 42 | 42 | 42 | 42 | 44 | 42 | 43 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 42 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 49 | 50 | 51 | 51 | 50 | 49 | 49 | 48 | 47 | 46 | 48 | 51 | 54 | 54 | 52 | 51 | 51 | 49 | 53 | 54 | 55 | 56 | 56 | 54 | 55 | 54 | 56 | 56 | -- | 52 |
| Minimum .... | 46 | 46 | 45 | 46 | 47 | 47 | 48 | 48 | 48 | 46 | 45 | 45 | 44 | 45 | 48 | 49 | 48 | 47 | 45 | 45 | 47 | 48 | 48 | 49 | 50 | 49 | 48 | 48 | 48 | 49 | -- | 47 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 59 | 60 | 61 | 58 | 57 | 61 | 57 | 53 | 59 | 60 | 56 | 54 | 57 | 51 | 58 | 60 | 63 | 64 | 66 | 59 | 61 | 63 | 65 | 66 | 61 | 62 | 62 | 63 | 58 | 59 | 80 |
| Minimum .... | 50 | 50 | 52 | 55 | 55 | 54 | 52 | 53 | 52 | 51 | 51 | 53 | 51 | 50 | 50 | 50 | 50 | 51 | 52 | 55 | 54 | 52 | 51 | 53 | 55 | 56 | 54 | 53 | 54 | 54 | 53 | 52 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 58 | 64 | 62 | 61 | 62 | 66 | 69 | 66 | 63 | 68 | 70 | 72 | 74 | 70 | 72 | 72 | 66 | 66 | 67 | 67 | 62 | 69 | 70 | 71 | 74 | 67 | 68 | 70 | -- | 67 |
| Minimum .... | 52 | 52 | 51 | 51 | 54 | 57 | 57 | 56 | 58 | 58 | 57 | 57 | 58 | 59 | 62 | 64 | 63 | 62 | 61 | 59 | 60 | 60 | 60 | 58 | 58 | 59 | 61 | 63 | 60 | 60 | -- | 58 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 64 | 61 | 68 | 71 | 71 | 68 | 65 | 72 | 67 | 70 | 73 | 67 | 63 | 66 | 69 | 68 | 72 | 73 | 70 | 72 | 73 | 73 | 73 | 72 | 72 | 73 | 73 | 75 | 74 | 73 | 75 | 70 |
| Minimum .... | 60 | 58 | 56 | 59 | 62 | 64 | 62 | 62 | 63 | 62 | 63 | 63 | 62 | 62 | 62 | 63 | 61 | 63 | 64 | 63 | 62 | 63 | 63 | 64 | 61 | 62 | 83 | 65 | 64 | 64 | 63 | 62 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 74 | 74 | 74 | 75 | 75 | 75 | 73 | 73 | 74 | 73 | 73 | 73 | 72 | 75 | 75 | 73 | 73 | 72 | 73 | 73 | 71 | 66 | 68 | 69 | 67 | 66 | 67 | 66 | 64 | 64 | 68 | 71 |
| Minimum .... | 64 | 64 | 65 | 65 | 65 | 64 | 63 | 64 | 65 | 63 | 65 | 62 | 62 | 66 | 65 | 65 | 64 | 64 | 64 | 63 | 64 | 63 | 60 | 60 | 62 | 60 | 61 | 62 | 58 | 59 | 60 | 63 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 68 | 70 | 71 | 72 | 69 | 69 | 67 | 68 | 67 | 65 | 63 | 63 | 62 | 64 | 64 | 65 | 64 | 60 | 63 | 65 | 67 | 64 | 65 | 65 | 62 | 65 | 65 | 65 | 66 | 66 | -- | 66 |
| Minimum .... | 59 | 61 | 62 | 63 | 63 | 62 | 62 | 61 | 60 | 60 | 60 | 58 | 57 | 58 | 59 | 61 | 60 | 58 | 57 | 57 | 58 | 60 | 57 | 59 | 59 | 59 | 57 | 56 | 58 | 59 | -- | 59 |

ROGUE RIVER BASIN

14-3723. ROGUE RIVER NEAR AGNESS, OREG.
(International Hydrological Decade River Station)

LOCATION.--(revised) Lat 42°34'50", long 124°03'30", temperature recorder at gaging station 0.8 mile upstream from Shasta Costa Creek, 1.5 miles north of Agness, Curry County, 2.6 miles upstream from Illinois River, and at mile 29.7.
DRAINAGE AREA.--3,939 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1960 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 78°F Aug. 2-4; minimum, 37°F on several days during December.
EXTREMES, 1960-66.--Water temperatures: Maximum, 80°F on several days during July 1962; minimum (1960-64, 1965-66), 34°F Jan. 22-25, 1962.

Chemical analyses, in parts per million, January to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| Jan. 20, 1966... | 7200 | 18 | 0.86 | 9.6 | 4.5 | 3.8 | 0.7 | 54 | 0 | 4.2 | 1.8 | 0.1 | 0.6 | | 70 | -- | 1360 | 42 | 0 | | 102 | 7.8 |
| Feb. 15..... | 5210 | 19 | .22 | 11 | 3.8 | 4.1 | .8 | 56 | 0 | 4.0 | 1.8 | .1 | .4 | | 78 | 0.11 | 1100 | 43 | 0 | | 103 | 7.4 |
| Mar. 15..... | 15200 | 17 | -- | 8.0 | 3.4 | 3.3 | .9 | 46 | 0 | 3.2 | 1.5 | .1 | .2 | | 61 | .08 | 2500 | 34 | 0 | | 83 | 7.6 |
| Apr. 15..... | 8500 | 17 | .28 | 8.8 | 3.1 | 3.1 | 1.0 | 45 | 0 | 2.6 | 1.0 | .0 | .2 | | 63 | .09 | 1450 | 33 | 0 | | 83 | 7.3 |
| May 15..... | 4610 | 18 | .27 | 7.3 | 3.5 | 3.3 | .9 | 46 | 0 | 2.4 | 1.2 | .1 | .2 | | 59 | .08 | 734 | 32 | 0 | | 81 | 7.6 |
| June 15..... | 2250 | 20 | .01 | 8.8 | 4.4 | 4.5 | 1.0 | 56 | 0 | 3.2 | 2.0 | .1 | .3 | | 69 | .09 | 419 | 40 | 0 | | 100 | 7.2 |

Chemical analyses, in parts per million

| Date of Collection | Aluminum (Al) | Manganese (Mn) | Nickel (Ni) | Chromium (Cr) | Copper (Cu) | Zinc (Zn) | Strontium (Sr) | Lithium (Li) |
|---|---|---|---|---|---|---|---|---|
| Apr. 15, 1966 | 0.2 | 0.03 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.00 |
| May 15..... | .3 | .03 | | .00 | .00 | .01 | .09 | -- |
| June 15..... | .1 | .01 | | .00 | .00 | .01 | .10 | .01 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 53 | 53 | 53 | 53 | 53 | -- |
| *Minimum* .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 | 52 | 52 | 53 | 53 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 53 | 53 | 53 | 53 | 53 | 53 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 48 | 48 | 47 | 46 | -- | 51 |
| *Minimum* .... | 53 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 48 | 48 | 48 | 46 | 46 | 46 | -- | 50 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 46 | 46 | 46 | 45 | 46 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 44 | 43 | 41 | 40 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 42 |
| *Minimum* .... | 46 | 46 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 44 | 43 | 41 | 40 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 39 | 39 | 39 | 39 | 42 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 39 | 39 | 39 | 39 | 41 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 39 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 40 |
| *Minimum* .... | 39 | 39 | 39 | 39 | 39 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 41 | 40 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | 42 |
| *Minimum* .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | -- | -- | -- | 41 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 46 | 46 | 45 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 48 | 45 |
| *Minimum* .... | 44 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 48 | 48 | 48 | 48 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 49 | 48 | 48 | 47 | 48 | 49 | 50 | 50 | 50 | 51 | 50 | 50 | 51 | 51 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | -- | 50 |
| *Minimum* .... | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 47 | 47 | 47 | 48 | 49 | 50 | 50 | 50 | 49 | 49 | 49 | 50 | 51 | 52 | 53 | 53 | 52 | 52 | 52 | -- | 49 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 54 | 55 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 56 | 57 | 58 | 59 | 59 | 59 | 59 | 59 | 62 | 62 | 62 | 62 | 62 | 62 | 61 | 58 |
| *Minimum* .... | 53 | 54 | 55 | 56 | 56 | 56 | 55 | 55 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 55 | 57 | 57 | 59 | 59 | 58 | 58 | 59 | 61 | 61 | 60 | 61 | 61 | 60 | 57 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 60 | 60 | 60 | 60 | 62 | 62 | 62 | 62 | 64 | 64 | 64 | 64 | 67 | 69 | 72 | 72 | 72 | 73 | 72 | 72 | 72 | 70 | 70 | 70 | 70 | 70 | 72 | 72 | 72 | 72 | -- | 67 |
| *Minimum* .... | 60 | 60 | 60 | 60 | 60 | 61 | 61 | 61 | 62 | 64 | 64 | 64 | 64 | 66 | 69 | 70 | 70 | 70 | 71 | 70 | 70 | 70 | 68 | 68 | 68 | 68 | 69 | 70 | 70 | 70 | -- | 66 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 71 | 70 | 68 | 69 | 70 | 70 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 71 | 72 | 72 | 72 | 72 | 72 | 73 | 74 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 76 | 76 | 77 | 72 |
| *Minimum* .... | 70 | 68 | 66 | 66 | 68 | 68 | 68 | 68 | 69 | 68 | 69 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 71 | 71 | 72 | 73 | 73 | 73 | 73 | 73 | 73 | 74 | 75 | 75 | 70 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 77 | 78 | 78 | 78 | 77 | 76 | 76 | 75 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 75 | 74 | 74 | 74 | 74 | 72 | 71 | 70 | 69 | 68 | 68 | 67 | 67 | 67 | 67 | 73 |
| *Minimum* .... | 75 | 75 | 76 | 75 | 74 | 73 | 73 | 72 | 71 | 72 | 72 | 71 | 71 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 71 | 69 | 68 | 68 | 67 | 67 | 67 | 67 | 66 | 66 | 71 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Maximum* .... | 67 | 68 | 69 | 69 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 67 | 66 | 64 | 64 | 66 | 64 | 64 | 64 | 64 | 66 | 64 | 65 | 65 | 64 | 66 | 66 | 65 | 66 | 66 | -- | 66 |
| *Minimum* .... | 66 | 66 | 66 | 67 | 67 | 68 | 68 | 67 | 67 | 67 | 67 | 66 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | -- | 65 |

ROGUE RIVER BASIN--Continued

14-3780. ILLINOIS RIVER NEAR SELMA, OREG.

LOCATION (revised).--Lat 42°22'45", long 123°48'40", temperature recorder at gaging station, 0.1 mile upstream from Panther Creek, 0.2 mile downstream from Briggs Creek, 12 miles northwest of Selma, Josephine County, and at mile 32.3.
DRAINAGE AREA.--665 square miles, including that of Panther Creek.
RECORDS AVAILABLE.--Water temperatures: October 1961 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 60°F Aug. 2, 3.
EXTREMES, 1961-64, 1965-66.--Water temperatures: Maximum, 80½F Aug. 2, 3, 1966; minimum (1961-64), 38°F Jan. 12-15, 1963.
REMARKS.--Recorder stopped Aug. 30, 31; temperature range, 63°F to 66°F.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 60 | 59 | 60 | 61 | 60 | 60 | 60 | 60 | 60 | 59 | 60 | 60 | 58 | 56 | 56 | 56 | 57 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 58 |
| Minimum .... | 58 | 58 | 57 | 57 | 58 | 58 | 58 | 59 | 59 | 60 | 58 | 58 | 59 | 58 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 55 | 55 | 56 | 56 | 56 | 57 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 55 | 56 | 56 | 56 | 55 | 54 | 54 | 53 | 53 | 53 | -- | -- | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 48 | 48 | 47 | 47 | -- | 52 |
| Minimum .... | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 53 | 53 | 53 | 52 | -- | -- | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 48 | 48 | 47 | 47 | 47 | -- | 51 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 48 | 48 | 48 | 48 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 45 | 44 | 42 | 41 | 40 | 40 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | -- | -- | -- | -- | 45 |
| Minimum .... | 47 | 47 | 48 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 47 | 45 | 44 | 42 | 41 | 40 | 40 | 39 | 39 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | -- | -- | -- | -- | 44 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | 42 | 42 | 42 | 42 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 42 | 42 | 42 | 42 | 42 | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | -- | -- | -- | 43 |
| Minimum .... | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | -- | -- | -- | 43 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 43 | 42 | 42 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 46 | 47 | 47 | 48 | 49 | 50 | 51 | 51 | 51 | 51 | 46 |
| Minimum .... | 43 | 42 | 42 | 42 | 42 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 46 | 46 | 46 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 46 | 49 | 49 | 49 | 49 | 50 | 45 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 50 | 50 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | 49 | 48 | 48 | 50 | 52 | 52 | 51 | 50 | 49 | 49 | 49 | 50 | 51 | 53 | 53 | 53 | 51 | 52 | 53 | 53 | -- | 51 |
| Minimum .... | 50 | 49 | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 49 | 48 | 47 | 46 | 47 | 50 | 51 | 49 | 49 | 48 | 48 | 48 | 49 | 50 | 51 | 53 | 51 | 50 | 50 | 51 | 51 | -- | 49 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 56 | 56 | 56 | 55 | 54 | 54 | 56 | 58 | 57 | 57 | 58 | 58 | 56 | 54 | 56 | 60 | 62 | 64 | 65 | 63 | 62 | 62 | 65 | 67 | 65 | 61 | 61 | 64 | 61 | 57 | 59 |
| Minimum .... | 53 | 54 | 54 | 55 | 54 | 53 | 53 | 54 | 56 | 55 | 55 | 55 | 55 | 54 | 53 | 53 | 55 | 57 | 59 | 60 | 61 | 59 | 57 | 59 | 61 | 60 | 57 | 58 | 59 | 57 | 56 | 56 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 57 | 58 | 61 | 62 | 61 | 61 | 64 | 67 | 65 | 66 | 67 | 70 | 73 | 73 | 73 | 72 | 73 | 69 | 69 | 68 | 67 | 66 | 68 | 69 | 70 | 73 | 74 | 73 | 73 | -- | 67 |
| Minimum .... | 56 | 55 | 54 | 55 | 58 | 61 | 60 | 59 | 61 | 64 | 61 | 61 | 63 | 65 | 67 | 69 | 67 | 66 | 67 | 65 | 64 | 64 | 64 | 62 | 62 | 64 | 65 | 68 | 67 | 66 | -- | 63 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 65 | 69 | 71 | 73 | 69 | 69 | 70 | 68 | 70 | 72 | 72 | 72 | 72 | 72 | 69 | 73 | 73 | 73 | 73 | 75 | 76 | 76 | 75 | 75 | 75 | 76 | 77 | 78 | 76 | 78 | 73 |
| Minimum .... | 65 | 63 | 61 | 63 | 65 | 66 | 65 | 65 | 65 | 64 | 65 | 68 | 68 | 67 | 66 | 66 | 65 | 66 | 67 | 67 | 67 | 68 | 69 | 69 | 68 | 68 | 69 | 70 | 71 | 72 | 70 | 67 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 79 | 80 | 80 | 79 | 78 | 78 | 78 | 76 | 76 | 77 | 76 | 76 | 76 | 79 | 79 | 79 | 79 | 78 | 77 | 76 | 76 | 72 | 71 | 71 | 68 | 68 | 68 | 68 | 65 | -- | -- | 75 |
| Minimum .... | 72 | 72 | 72 | 72 | 72 | 70 | 70 | 70 | 70 | 71 | 71 | 68 | 69 | 71 | 70 | 72 | 72 | 72 | 71 | 69 | 69 | 68 | 67 | 65 | 65 | 64 | 64 | 65 | 63 | -- | -- | 69 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 69 | 71 | 73 | 73 | 73 | 72 | 70 | 69 | 70 | 68 | 67 | 65 | 64 | 65 | 66 | 66 | 66 | 65 | 65 | 65 | 68 | 67 | 67 | 66 | 65 | 68 | 67 | 66 | 68 | 68 | -- | 66 |
| Minimum .... | 62 | 64 | 65 | 66 | 67 | 66 | 66 | 64 | 65 | 65 | 65 | 62 | 62 | 62 | 62 | 63 | 63 | 63 | 62 | 62 | 63 | 65 | 63 | 65 | 65 | 65 | 63 | 62 | 63 | 64 | -- | 64 |

## MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA RIVER BASIN

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Aluminum (Al) | Iron (Fe) | Manganese (Mn) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Lithium (Li) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Phosphate ($PO_4$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Total acidity as $H^{+1}$ | Specific conductance (micromhos at 25°C) | pH | Color | D.O. (dissolved oxygen ppm) | MPN (coliform colonies per 100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WHITE SALMON RIVER BASIN** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **14-1235. WHITE SALMON RIVER NEAR UNDERWOOD, WASH. (454500 1213130)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 30, 1965 | 610 | 26 | | | | 5.6 | 2.4 | 3.6 | 1.2 | | 36 | 0 | 4.0 | 0.2 | 0.0 | 0.4 | | 64 | 24 | 0 | | 68 | 7.1 | 5 | | |
| Feb. 17, 1966 | 735 | 27 | | | | 5.6 | 2.5 | 3.8 | 1.2 | | 38 | 0 | 2.8 | 1.0 | .1 | .2 | | 64 | 24 | 0 | | 69 | 7.3 | 5 | | |
| May 13..... | 1750 | 21 | | | | 4.0 | 1.8 | 3.0 | .9 | | 28 | 0 | 2.0 | .2 | .1 | .0 | | 47 | 18 | 0 | | 50 | 7.2 | 5 | | |
| Aug. 8..... | 716 | 25 | | | | 5.2 | 2.9 | 3.7 | 1.4 | | 35 | 0 | 3.6 | .5 | .1 | .3 | | 61 | 25 | 0 | | 62 | 7.5 | 0 | | |
| **WASHOUGAL RIVER BASIN** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **14-1435. WASHOUGAL RIVER NEAR WASHOUGAL, WASH. (453720 1221800)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov. 29, 1965 | 688 | 8.5 | | | | 2.8 | 0.0 | 1.5 | 0.2 | | 10 | 0 | 0.0 | 0.8 | 0.1 | 0.4 | | 20 | 7 | 0 | | 23 | 6.8 | 5 | | |
| Feb. 21, 1966 | 1450 | 7.5 | | | | 1.6 | .5 | 1.4 | .1 | | 9 | 0 | .4 | .8 | .1 | .3 | | 22 | 6 | 0 | | 20 | 6.7 | 0 | | |
| May 16..... | 465 | 7.8 | | | | 2.0 | .4 | 1.7 | .1 | | 11 | 0 | .0 | .5 | .1 | .1 | | 20 | 7 | 0 | | 22 | 6.8 | 5 | | |
| Aug. 11..... | 80 | 11 | | | | 3.1 | 1.0 | 2.3 | .4 | | 18 | 0 | .4 | 1.0 | .0 | .4 | | 27 | 12 | 0 | | 34 | 6.7 | 5 | | |
| **COWLITZ RIVER BASIN** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **14-2427. TOUTLE RIVER NEAR CASTLE ROCK, WASH. (461910 1225430)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct. 18, 1965 | | 18 | | | | 5.2 | 1.9 | 6.1 | 0.7 | | 31 | 0 | 2.6 | 5.0 | 0.1 | 0.2 | | 57 | 21 | 0 | | 72 | 7.1 | 5 | 10.5 | 750 |
| Jan. 5, 1966. | | 14 | | | | 3.6 | 1.1 | 3.5 | .5 | | 20 | 0 | 1.4 | 2.8 | .0 | .7 | | 46 | 14 | 0 | | 44 | 6.9 | 15 | 12.8 | 36 |
| Apr. 20..... | | 12 | | | | 3.2 | 1.2 | 3.4 | .6 | | 20 | 0 | 1.6 | 2.5 | .1 | .1 | | 35 | 13 | 5 | | 45 | 7.0 | 5 | 11.6 | 36 |
| July 5..... | | 12 | | | | 3.4 | 1.0 | 3.3 | .4 | | 20 | 0 | .6 | 2.2 | .1 | .0 | | 33 | 12 | 0 | | 42 | 6.9 | 5 | 11.2 | 30 |

Analyses, in parts per million, of trace elements

| Date of collection | Time (24 hr) | Chromium: Hexavalent ($Cr^{+6}$) | Chromium: Total (Cr) | Copper (Cu) | Zinc (Zn) | Arsenic (As) | Boron (B) |
|---|---|---|---|---|---|---|---|
| Jan. 5, 1966.... | 1140 | 0.00 | 0.00 | 0.10 | 0.05 | 0.00 | |
| July 5..... | 1100 | .00 | .01 | .01 | .01 | .00 | 0.00 |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1965 to September 1966--Continued

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (residue at 180°C) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| ROGUE RIVER BASIN | | | | | | | | | | | | | | | | | | | | | | |
| 14-3737. CAVE CREEK AT OREGON CAVES, OREG. (420540 1232455) | | | | | | | | | | | | | | | | | | | | | | |
| July 25, 1966.... | | 17 | 0.02 | 32 | 4.7 | 3.0 | 0.7 | 126 | 0 | 2.0 | 0.5 | 0.1 | 0.1 | | 119 | | | 99 | 0 | | 199 | 7.8 |
| 14-3737.5. STYX RIVER AT OREGON CAVES, OREG. (420555 1232425) | | | | | | | | | | | | | | | | | | | | | | |
| July 25, 1966.... | | 17 | 0.01 | 35 | 3.8 | 2.5 | 0.9 | 130 | 0 | 1.2 | 0.8 | 0.1 | 0.2 | | 124 | | | 104 | 0 | | 208 | 7.5 |
| 14-3738. LAKE CREEK NEAR OREGON CAVES NATIONAL MONUMENT, OREG. (420615 1232315) | | | | | | | | | | | | | | | | | | | | | | |
| July 25, 1966.... | | 12 | 0.03 | 5.6 | 1.4 | 2.0 | 0.3 | 30 | 0 | 0.0 | 0.0 | 0.0 | 0.4 | | 38 | | | 20 | 0 | | 50 | 7.1 |

Periodic determinations of suspended-sediment discharge and particle size, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| *JOHN DAY RIVER BASIN* | | | | | | | | | | | | | | | | | | |
| 14-0385. JOHN DAY RIVER AT PRAIRIE CITY, OREG. (442715 1184300) | | | | | | | | | | | | | | | | | | |
| Oct. 26, 1965 | 1445 | 53 | | 78 | 8 | 1.7 | | | | | | | | | | | | |
| Dec. 29 | 1310 | 36 | | 78 | 14 | 2.9 | | | | | | | | | | | | |
| Jan. 26, 1966 | 1050 | 36 | | 74 | 2 | .4 | | | | | | | | | | | | |
| Feb. 22 | 1610 | 42 | | 73 | 8 | 1.6 | | | | | | | | | | | | |
| Mar. 11 | 2100 | 41 | | 162 | 56 | 24 | | | | | | | | | | | | |
| Mar. 22 | 0930 | 36 | | 84 | 8 | 1.8 | | | | | | | | | | | | |
| Apr. 3 | 1730 | 51 | | 206 | 32 | 18 | | | | | | | | | | | | |
| Apr. 18 | 1800 | 42 | | 148 | 14 | 5.6 | | | | | | | | | | | | |
| May 11 | 2100 | 54 | | 78 | 12 | 2.5 | | | | | | | | | | | | |
| May 26 | 1700 | 66 | | 46 | 8 | 1.0 | | | | | | | | | | | | |
| June 26 | 0840 | 56 | | 49 | 12 | 1.6 | | | | | | | | | | | | |
| Aug. 16 | 1200 | 73 | | 20 | 10 | .5 | | | | | | | | | | | | |
| 14-0395. SOUTH FORK JOHN DAY RIVER NEAR DAYVILLE, OREG. (442540 1193220) | | | | | | | | | | | | | | | | | | |
| Oct. 26, 1965 | 1315 | 55 | | 39 | 4 | 0.4 | | | | | | | | | | | | |
| Dec. 29 | 1525 | 36 | | 42 | 14 | 1.6 | | | | | | | | | | | | |
| Jan. 25, 1966 | 1715 | 38 | | 43 | 2 | .2 | | | | | | | | | | | | |
| Feb. 22 | 1400 | 43 | | 57 | 13 | 2.0 | | | | | | | | | | | | |
| Mar. 12 | 1030 | 42 | | 234 | 118 | 75 | | | | | | | | | | | | |
| Mar. 21 | 1710 | 41 | | 89 | 29 | 7.0 | | | | | | | | | | | | |
| Apr. 3 | 1350 | 48 | | 445 | 230 | 276 | 35 | 57 | 72 | 84 | 94 | 95 | 97 | 99 | 100 | | | VPWC |
| Apr. 18 | 1445 | 47 | | 188 | 34 | 17 | | | | | | | | | | | | |
| May 11 | 1615 | 56 | | 63 | 10 | 1.7 | | | | | | | | | | | | |
| May 27 | 0720 | 55 | | 40 | 4 | 7.4 | | | | | | | | | | | | |
| June 26 | 1320 | 70 | | 31 | 6 | .5 | | | | | | | | | | | | |
| Aug. 16 | 0940 | 67 | | 13 | 12 | .4 | | | | | | | | | | | | |
| 14-0405. JOHN DAY RIVER AT PICTURE GORGE, NEAR DAYVILLE, OREG. (443115 1193730) | | | | | | | | | | | | | | | | | | |
| Oct. 26, 1965 | 1120 | 51 | | 190 | 22 | 11 | | | | | | | | | | | | |
| Dec. 29 | 1630 | 36 | | 220 | 60 | 36 | | | | | | | | | | | | |
| Jan. 25, 1966 | 1945 | 37 | | 218 | 7 | 4 | | | | | | | | | | | | |
| Feb. 22 | 1330 | 45 | | 238 | 18 | 12 | | | | | | | | | | | | |
| Mar. 12 | 1110 | 48 | | 702 | 160 | 303 | | | | | | | | | | | | |
| Mar. 21 | 1615 | 40 | | 466 | 32 | 40 | | | | | | | | | | | | |

MISCELLANEOUS ANALYSES OF STREAMS IN PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1965 to September 1966--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| **JOHN DAY RIVER BASIN--Continued** | | | | | | | | | | | | | | | | | | |
| **14-0405. JOHN DAY RIVER AT PICTURE GORGE, NEAR DAYVILLE, OREG. (443115 1193730)--Continued** | | | | | | | | | | | | | | | | | | |
| Apr. 3, 1966 | 1130 | 47 | | 1160 | 199 | 623 | 41 | 41 | 50 | 62 | 72 | 82 | 89 | 98 | 100 | | | VPWC |
| Apr. 18 | 1345 | 49 | | 585 | 35 | 55 | | | | | | | | | | | | |
| May 12 | 0650 | 51 | | 220 | 42 | 25 | | | | | | | | | | | | |
| May 27 | 0915 | 52 | | 112 | 14 | 4 | | | | | | | | | | | | |
| June 26 | 1650 | 76 | | 63 | 8 | 1 | | | | | | | | | | | | |
| Aug. 16 | 0900 | 64 | | 12 | 16 | 1 | | | | | | | | | | | | |
| **14-0425. CAMAS CREEK NEAR UKIAH, OREG. (450900 1184900)** | | | | | | | | | | | | | | | | | | |
| Oct. 26, 1965 | 2000 | 46 | | 5.4 | 2 | T | | | | | | | | | | | | |
| Dec. 29 | 0920 | 32 | | D 3.8 | 3 | T | | | | | | | | | | | | |
| Jan. 26, 1966 | 1740 | 32 | | D 7.5 | 1 | T | | | | | | | | | | | | |
| Feb. 22 | 0915 | 33 | | D 8.0 | 1 | T | | | | | | | | | | | | |
| Mar. 11 | 1740 | 35 | | D 30 | 26 | 2.1 | | | | | | | | | | | | |
| Mar. 22 | 1620 | 38 | | 64 | 6 | 1.0 | | | | | | | | | | | | |
| Apr. 4 | 1115 | 42 | | 261 | 8 | 5.6 | | | | | | | | | | | | |
| Apr. 19 | 1330 | 45 | | 122 | 4 | 1.3 | | | | | | | | | | | | |
| May 11 | 1000 | 46 | | 73 | 6 | 1.2 | | | | | | | | | | | | |
| May 26 | 1110 | 64 | | 26 | 4 | .3 | | | | | | | | | | | | |
| June 25 | 1520 | 73 | | 14 | 10 | .4 | | | | | | | | | | | | |
| Aug. 16 | 1520 | 73 | | 2.3 | 5 | T | | | | | | | | | | | | |

T Less than 0.05 ton.
D Daily mean discharge.

SOUTHEASTERN ALASKA

## 15-0538. LAKE CREEK AT AUKE BAY, ALASKA

LOCATION.--Lat 58°23'40", long 134°37'50", temperature recorder at gaging station, 15 feet upstream from bridge on Mendenhall Loop Road, 700 feet upstream from mouth at Auke Lake, and 0.8 mile northeast of Auke Bay.
DRAINAGE AREA.--2.50 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 60°F July 25; minimum, freezing point on many days during November to April.
EXTREMES, 1963-66.--Water temperatures: Maximum, 60°F Aug. 6-9, 1965, July 25, 1966; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 40 | 39 | 38 | 39 | 42 | 42 | 42 | 41 | 41 | 43 | 43 | 43 | 42 | 41 | 43 |
| Minimum .... | 44 | 44 | 44 | 45 | 45 | 46 | 46 | 46 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 40 | 39 | 38 | 38 | 38 | 39 | 42 | 41 | 40 | 40 | 41 | 43 | 42 | 41 | 41 | 42 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 41 | 41 | 41 | 39 | 38 | 36 | 35 | 35 | 34 | 34 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | 34 |
| Minimum .... | 41 | 41 | 39 | 38 | 36 | 35 | 35 | 34 | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | 34 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | --- | --- | 32 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | --- | --- | 32 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 35 | 34 | 34 | --- | 33 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | --- | 33 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 38 | 37 | 38 | 39 | 36 |
| Minimum .... | 34 | 34 | 34 | 34 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 36 | 36 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 35 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 42 | 42 | 44 | 41 | 43 | 42 | 43 | 41 | 42 | 41 | 40 | 41 | 43 | 42 | 41 | 43 | 43 | 43 | 45 | 46 | 47 | 47 | 46 | 48 | 48 | 49 | 49 | 49 | 49 | --- | 44 |
| Minimum .... | 37 | 37 | 38 | 39 | 39 | 40 | 38 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 41 | 41 | 43 | 42 | 43 | 43 | 45 | 46 | 46 | 46 | 47 | 48 | 47 | 48 | 48 | --- | 42 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 49 | 50 | 51 | 51 | 51 | 51 | 51 | 52 | 53 | 52 | 53 | 55 | 57 | 59 | 58 | 56 | 55 | 54 | 54 | 56 | 57 | 59 | 60 | 58 | 57 | 55 | 53 | 53 | 53 | 54 |
| Minimum .... | 48 | 49 | 49 | 49 | 49 | 51 | 50 | 50 | 50 | 49 | 50 | 51 | 51 | 51 | 53 | 55 | 56 | 55 | 54 | 53 | 53 | 54 | 54 | 55 | 56 | 57 | 55 | 53 | 52 | 52 | 52 | 52 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 52 | 53 | 54 | 54 | 54 | 53 | 53 | 53 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 51 | 51 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 51 | 53 | 52 | 52 | 50 | 49 | 52 |
| Minimum .... | 52 | 52 | 52 | 51 | 50 | 52 | 53 | 53 | 51 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 50 | 51 | 52 | 51 | 50 | 50 | 51 | 50 | 50 | 52 | 50 | 49 | 49 | 51 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 48 | 48 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 49 | 49 | 49 | 48 | 48 | 46 | --- | 48 |
| Minimum .... | 48 | 47 | 46 | 46 | 46 | 46 | 45 | 44 | 46 | 46 | 47 | 47 | 48 | 47 | 47 | 48 | 48 | 47 | 48 | 48 | 47 | 46 | 47 | 46 | 47 | 49 | 48 | 48 | 46 | 46 | --- | 47 |

SOUTHEASTERN ALASKA--Continued

15-0540. AUKE CREEK AT AUKE BAY, ALASKA

LOCATION.--Lat 58°23'05", long 134°38'00", temperature recorder at gaging station, 100 feet downstream from bridge on Glacier Highway, 200 feet downstream from Auke Lake, 0.3 mile upstream from mouth at Auke Bay, and 0.5 mile east of Auke Bay.
DRAINAGE AREA.--3.96 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 69°F July 25, 26; minimum, 33°F on many days during January to March.
EXTREMES, 1964-66.--Water temperatures: Maximum, 69°F July 25, 26, 1966; minimum, freezing point on many days during January 1965.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 47 |
| Minimum .... | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 48 | 49 | 49 | 48 | 47 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 37 | 36 | 35 | 36 | 36 | 36 | 36 | 36 | -- | 39 |
| Minimum .... | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 37 | 36 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | -- | 39 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 35 |
| Minimum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 35 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 34 | 34 | 34 | 34 | 34 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 34 | 34 | 34 | 34 | 34 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 34 |
| Minimum .... | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 34 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | -- | 36 |
| Minimum .... | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | -- | 36 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 41 | 44 | 44 | 42 | 42 | 43 | 43 | 44 | 44 | 46 | 47 | 47 | 40 |
| Minimum .... | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 40 | 41 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 44 | 46 | 46 | 40 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 48 | 49 | 52 | 55 | 55 | 54 | 55 | 57 | 58 | 57 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 54 | 53 | 53 | 53 | 54 | 55 | 55 | 55 | 55 | 55 | 56 | 57 | 56 | -- | 55 |
| Minimum .... | 47 | 48 | 49 | 52 | 51 | 51 | 52 | 55 | 55 | 56 | 53 | 52 | 53 | 53 | 53 | 55 | 53 | 53 | 53 | 52 | 52 | 53 | 55 | 55 | 55 | 55 | 55 | 55 | 56 | 56 | -- | 53 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 58 | 59 | 59 | 59 | 60 | 60 | 60 | 62 | 63 | 63 | 63 | 64 | 66 | 66 | 67 | 67 | 64 | 64 | 64 | 64 | 64 | 66 | 68 | 69 | 69 | 68 | 66 | 63 | 62 | 62 | 63 |
| Minimum .... | 57 | 57 | 58 | 59 | 59 | 59 | 60 | 60 | 60 | 60 | 62 | 63 | 62 | 62 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 66 | 68 | 68 | 66 | 63 | 62 | 62 | 60 | 62 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 60 | 60 | 60 | 62 | 64 | 64 | 64 | 61 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 58 | 58 | 59 | 59 | 59 | 59 | 58 | 57 | 56 | 56 | 57 | 57 | 57 | 56 | 56 | 59 |
| Minimum .... | 60 | 60 | 60 | 59 | 59 | 62 | 64 | 61 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 56 | 56 | 56 | 56 | 57 | 56 | 56 | 55 | 58 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 52 | 53 | 52 | 53 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | -- | 52 |
| Minimum .... | 54 | 54 | 54 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 50 | -- | 52 |

## 15-0564. CHILKAT RIVER AT GORGE, NEAR KLUKWAN, ALASKA

LOCATION.--Lat 59°37'40", long 135°55'55", temperature recorder at gaging station 1.2 miles downstream from unnamed tributary, 2.0 miles upstream from Tahini River, 8.1 miles upstream from Kelsall River, and 16 miles north of Klukwan.
DRAINAGE AREA.--190 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1962 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 49°F May 30, 31, June 2; minimum, freezing point on many days during winter months.
EXTREMES, 1962-66.--Water temperatures: Maximum, 53°F sometime during period June 5-22, 1965; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | -- | 38 | 38 | 38 | 38 | 38 | 38 | 36 | 37 | 37 | 37 | -- | 36 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | -- | -- | 37 |
| Minimum .... | 36 | 37 | 37 | 37 | 38 | -- | 38 | 37 | 37 | 37 | 38 | 36 | 36 | 36 | 36 | 36 | -- | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | -- | -- | 36 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 34 | 34 | -- | 34 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 33 | 33 | -- | -- | 33 | 33 | -- | -- | -- | 33 | 33 | 33 | 33 | -- | 33 | 33 | -- | -- |
| Minimum .... | 35 | 35 | 34 | 34 | 34 | -- | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | 33 | 33 | -- | -- | -- | 33 | 33 | 33 | 33 | -- | 33 | 33 | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 33 | 33 | 33 | 33 | 33 | -- | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 | 33 | -- | 33 | -- | -- |
| Minimum .... | -- | 33 | 33 | 33 | 33 | 33 | -- | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 | 33 | -- | 33 | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | -- | 33 | 33 | 33 | 33 | 33 | -- | 33 | 33 | 33 | 33 | -- | -- | -- | 34 | 34 | -- | 37 | 37 | -- | -- | 40 | 41 | -- | -- | 39 | 39 | 40 | 39 | -- | -- |
| Minimum .... | 33 | -- | 33 | 33 | 33 | 33 | 33 | -- | 33 | 33 | 33 | 33 | -- | -- | -- | 33 | 33 | -- | 36 | 36 | -- | -- | 39 | 40 | -- | -- | 39 | 39 | 39 | 37 | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | 38 | -- | 38 | 38 | 43 | 43 | 39 | 41 | 40 | 40 | 43 | 43 | 42 | 43 | 43 | 41 | 41 | 41 | 45 | 45 | 44 | 40 | 43 | 43 | 42 | 43 | 43 | 46 | 49 | 49 | 42 |
| Minimum .... | -- | 38 | -- | 38 | 38 | 38 | 37 | 37 | 34 | 35 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 37 | 38 | 37 | 38 | 39 | 37 | 37 | 37 | 39 | 39 | 39 | 40 | 39 | 39 | 38 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 49 | 48 | 44 | 42 | 44 | 45 | 44 | 43 | 44 | 42 | 41 | 44 | 45 | 43 | 41 | 42 | 43 | 43 | 42 | 44 | 44 | 44 | 42 | 44 | 44 | 42 | 46 | 47 | 45 | -- | 44 |
| Minimum .... | 40 | 40 | 39 | 38 | 39 | 38 | 39 | 38 | 39 | 38 | 39 | 38 | 38 | 38 | 38 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 40 | 40 | 40 | 39 | 39 | 39 | 40 | 41 | -- | 39 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 41 | 42 | 46 | 44 | 46 | 43 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 42 | 42 | 40 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 40 | 39 | 39 | 39 | 39 | 42 |
| Minimum .... | 41 | 41 | 40 | 40 | 41 | 41 | 40 | 40 | 39 | 38 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 42 | 43 | 43 | 42 | 40 | 40 | 39 | 39 | 39 | 44 | 44 | 43 | 42 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 42 | 42 | 42 | 39 | 39 | 39 | 40 |
| Minimum .... | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 40 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 39 | 39 | 39 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 42 | 42 | 42 | 40 | 40 | 42 | 42 | 41 | 39 | 39 | 38 | 38 | 38 | 38 | 40 | 40 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | 39 |
| Minimum .... | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 38 | 38 | 39 | 39 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | 38 |

SOUTHEASTERN ALASKA--Continued

15-0564. CHILKAT RIVER AT GORGE, NEAR KLUKWAN, ALASKA--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Oct. 1, 1965..... | 1200 | 37 | | 747 | 120 | 240 | | | | | | | | | | | | |
| July 7, 1966..... | 1650 | 42 | | 3700 | 500 | 5000 | | | | | | 76 | 92 | 100 | | | | V |

## 15-0780. GRACE CREEK NEAR KETCHIKAN, ALASKA

LOCATION.--Lat 55°39'28", long 130°58'14", temperature recorder at gaging station on Revillagigedo Island, 0.75 mile upstream from mouth at East Behm Canal, 1.8 miles downstream from Grace Lake, and 32 miles northeast of Ketchikan.
DRAINAGE AREA.--30.2 square miles.
RECORDS AVAILABLE.--Water temperatures: April 1965 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 64°F July 25.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 46 | 47 | 47 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 40 | 40 | -- | 44 |
| Minimum .... | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 43 | 43 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 39 | 39 | 40 | -- | 43 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 37 | 38 | 38 | 37 | 37 | 36 | 36 | 36 | 35 | 35 | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 37 | 37 | 38 | 37 | 37 | 36 | 36 | 36 | 35 | 35 | 35 | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 36 | 36 | 36 | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 36 | 37 | 37 | 37 | 36 | 36 | 36 | 36 | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 36 | 36 | 36 | 35 | 35 | 35 | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 34 | 34 | 34 | 33 | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 35 | 36 | 35 | 35 | 35 | 35 | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 36 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 35 |
| Minimum .... | 35 | 35 | 34 | 34 | 35 | 34 | 34 | 33 | 34 | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 35 | 36 | 36 | 35 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | -- | 36 |
| Minimum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | -- | 36 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 38 | 39 | 39 | 36 |
| Minimum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 38 | 39 | 36 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 41 | 41 | 41 | 41 | 43 | 45 | 47 | 47 | 47 | 45 | 47 | 47 | 51 | 50 | 50 | 49 | 48 | 49 | 49 | 50 | 50 | 50 | 50 | 51 | 51 | 53 | 52 | 52 | 52 | -- | 48 |
| Minimum .... | 39 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 43 | 45 | 45 | 45 | 43 | 43 | 49 | 45 | 46 | 45 | 47 | 47 | 49 | 49 | 49 | 49 | 49 | 50 | 51 | 51 | 51 | 51 | -- | 46 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 52 | 54 | 57 | 57 | 55 | 57 | 57 | 58 | 58 | 57 | 57 | 59 | 59 | 63 | 62 | 62 | 63 | 62 | 61 | 61 | 60 | 61 | 62 | 63 | 64 | 60 | 61 | 61 | 59 | 59 | 59 | 59 |
| Minimum .... | 51 | 51 | 54 | 54 | 54 | 55 | 56 | 57 | 56 | 54 | 55 | 56 | 59 | 59 | 60 | 60 | 61 | 59 | 59 | 59 | 59 | 60 | 61 | 61 | 59 | 59 | 60 | 59 | 59 | 59 | 57 | 57 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 57 | 57 | 58 | 60 | 61 | 60 | 59 | 56 | 56 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 55 | 57 | 57 | 58 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 57 | 57 |
| Minimum .... | 56 | 56 | 57 | 57 | 58 | 59 | 59 | 54 | 54 | 56 | 56 | 56 | 55 | 54 | 54 | 54 | 54 | 54 | 54 | 55 | 56 | 57 | 58 | 59 | 59 | 58 | 58 | 58 | 58 | 57 | 55 | 56 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 55 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 53 | 53 | 53 | 53 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 52 | 51 | 51 | 51 | 51 | -- | 52 |
| Minimum .... | 55 | 53 | 47 | 46 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 52 | 53 | 53 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 51 | 51 | 51 | -- | 51 |

SOUTHEASTERN ALASKA--Continued

## 15-0815. *LESTER RIVER NEAR CRAIG, ALASKA*

LOCATION.--Lat 55°48'57", long 133°07'58", temperature recorder at gaging station on Prince of Wales Island, on left bank 400 feet upstream from Staney Creek, 1.3 miles upstream from mouth at Tuxekan Passage, and 23 miles north of Craig.
DRAINAGE AREA.--51.6 square miles.
RECORDS AVAILABLE.--Water temperatures: April to September 1966.
EXTREMES, April to September 1966.--Water temperatures: Maximum, 72°F July 23, 24.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 41 | 41 | 39 | 39 | 38 | 38 | 39 | 40 | 42 | 41 | 42 | 43 | 43 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 37 | 39 | 38 | 38 | 36 | 36 | 38 | 38 | 37 | 38 | 39 | 40 | 41 | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 40 | 39 | 38 | 41 | 41 | 41 | 42 | 42 | 44 | 44 | 42 | 43 | 43 | 43 | 43 | 42 | 41 | 40 | 40 | 42 | 42 | 41 | 42 | 43 | 42 | 42 | 44 | 45 | 49 | 51 | 42 |
| Minimum .... | 40 | 39 | 38 | 38 | 38 | 40 | 40 | 40 | 40 | 40 | 42 | 40 | 40 | 42 | 41 | 40 | 41 | 40 | 40 | 39 | 39 | 41 | 39 | 40 | 41 | 40 | 40 | 41 | 41 | 41 | 43 | 40 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 51 | 51 | 51 | 49 | 51 | 51 | 55 | 55 | 53 | 52 | 52 | 51 | 56 | 54 | 53 | 52 | 52 | 52 | 51 | 52 | 52 | 54 | 58 | 58 | 57 | 57 | 57 | 57 | 55 | 55 | -- | 53 |
| Minimum .... | 45 | 46 | 46 | 47 | 47 | 48 | 48 | 49 | 50 | 49 | 48 | 48 | 48 | 48 | 50 | 49 | 49 | 50 | 49 | 49 | 49 | 49 | 51 | 53 | 51 | 54 | 53 | 53 | 53 | 50 | -- | 49 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 59 | 62 | 60 | 66 | 68 | 66 | 63 | 62 | 63 | 66 | 68 | 69 | 70 | 69 | 66 | 65 | 71 | 69 | 60 | 60 | 68 | 72 | 72 | 71 | 69 | 66 | 62 | 60 | 59 | 59 | 65 |
| Minimum .... | 51 | 54 | 54 | 54 | 55 | 57 | 58 | 57 | 57 | 54 | 53 | 57 | 58 | 61 | 62 | 62 | 61 | 62 | 60 | 59 | 58 | 59 | 60 | 63 | 64 | 63 | 62 | 60 | 57 | 57 | 57 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 57 | 55 | 59 | 63 | 63 | 65 | 63 | 59 | 57 | 53 | 53 | 53 | 53 | 53 | 51 | 50 | 51 | 54 | 56 | 55 | 59 | 57 | 60 | 60 | 59 | 58 | 58 | 59 | 59 | 55 | 55 | 57 |
| Minimum .... | 53 | 53 | 54 | 53 | 55 | 56 | 59 | 56 | 52 | 50 | 52 | 52 | 52 | 51 | 50 | 50 | 50 | 50 | 51 | 52 | 52 | 51 | 55 | 58 | 55 | 53 | 56 | 55 | 54 | 54 | 54 | 53 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 55 | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 50 | 49 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 49 | 50 | 51 | 51 | 51 | 51 | 50 | 50 | 48 | -- | 50 |
| Minimum .... | 52 | 50 | 50 | 50 | 50 | 50 | 50 | 48 | 48 | 48 | 48 | 47 | 48 | 47 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 48 | 49 | 50 | 51 | 51 | 50 | 50 | 48 | 48 | -- | 49 |

## 15-0851. OLD TOM CREEK NEAR KASAAN, ALASKA

LOCATION.--Lat 55°23'44", long 132°24'25", temperature recorder at gaging station on Prince of Wales Island, 1,000 feet upstream from mouth at McKenzie inlet of Kasaan Bay, 0.4 mile downstream from unnamed tributary, and 10 miles south of Kasaan.
DRAINAGE AREA.--5.90 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 61°F on several days during July and August; minimum, freezing point on several days during April.
EXTREMES, 1964-66.--Water temperatures: Maximum, 61°F on several days during July and August 1966; minimum (1965-66), freezing point on several days during April 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 |
| Minimum .... | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | -- | 40 |
| Minimum .... | 43 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | -- | 40 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 36 | 36 | 36 | 36 | 36 | 37 |
| Minimum .... | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 36 | 36 | 36 | 36 | 36 | 36 | 37 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 |
| Minimum .... | 36 | 36 | 36 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 35 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | -- | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | -- | 33 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 36 |
| Minimum .... | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 36 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 45 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 49 | -- | 44 |
| Minimum .... | 38 | 39 | 40 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 45 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | -- | 44 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 50 | 50 | 50 | 51 | 52 | 53 | 53 | 53 | 53 | 53 | 54 | 55 | 57 | 57 | 57 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 60 | 61 | 61 | 61 | 61 | 61 | 56 |
| Minimum .... | 49 | 49 | 49 | 50 | 50 | 50 | 50 | 52 | 53 | 53 | 53 | 53 | 53 | 54 | 55 | 57 | 57 | 57 | 58 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 60 | 61 | 61 | 61 | 61 | 55 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 61 | 61 | 61 | 60 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 59 |
| Minimum .... | 61 | 61 | 60 | 59 | 59 | 59 | 59 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 58 | 57 | 57 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 60 | 60 | 59 | 59 | 59 | 59 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 59 | 59 | 59 | 60 | 60 | 60 | 59 | 59 | 57 | 56 | 56 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 57 | 57 | 57 | 57 | 57 | 56 | 56 | 54 | -- | 57 |
| Minimum .... | 59 | 59 | 57 | 58 | 60 | 59 | 59 | 57 | 55 | 55 | 56 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 57 | 57 | 56 | 56 | 54 | 54 | -- | 56 |

SOUTHEASTERN ALASKA--Continued

15-0866. BIG CREEK NEAR POINT BAKER, ALASKA

LOCATION.--Lat 56°07'54", long 133°08'36", temperature recorder at gaging station on Prince of Wales Island, 1 mile upstream from mouth at Whale Passage, 2.5 miles downstream from small unnamed lake and 24 miles southeast of Point Baker.
DRAINAGE AREA.--11.2 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1963 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 66°F July 24, 25; minimum, freezing point on several days during January and February.
EXTREMES, 1963-66.--Water temperatures: Maximum, 66°F July 9, 10, 31, Aug. 1, 1965, July 24, 25, 1966; minimum, freezing point on several days during January and February 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 50 | 50 | 49 | 49 | 49 | 49 | 49 | 48 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 47 |
| Minimum .... | 48 | 49 | 49 | 50 | 50 | 48 | 48 | 49 | 49 | 48 | 47 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 47 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 45 | 45 | 45 | 45 | 44 | 43 | 42 | 42 | 41 | 41 | 40 | 39 | 38 | 38 | 37 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 36 | 36 | 35 | 35 | 36 | 36 | 37 | 37 | -- | 39 |
| Minimum .... | 45 | 45 | 45 | 44 | 43 | 42 | 42 | 41 | 41 | 40 | 39 | 38 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 35 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 36 | 37 | -- | 39 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 36 | 35 | 35 | 35 | 35 | 34 | 34 | 33 | 33 | 33 | 33 | 36 |
| Minimum .... | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 36 | 34 | 35 | 35 | 35 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 36 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 35 | 35 | 35 | 35 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 32 | 33 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | 40 | 40 | 38 | 40 | 40 | 40 | 40 | 40 | 41 | 42 | 42 | 42 | 43 | 42 | 41 | 42 | 43 | 43 | 44 | 44 | 44 | 45 | 43 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | 39 | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 39 | 40 | 40 | 41 | 41 | 40 | 40 | 41 | 42 | 41 | 41 | 42 | 42 | 43 | 43 | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 45 | 46 | 45 | 45 | 46 | 47 | 47 | 45 | 47 | 48 | 52 | 56 | 45 |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 44 | 44 | 43 | 44 | 44 | 44 | 44 | 43 | 44 | 44 | 45 | 45 | 45 | 45 | 46 | 45 | 45 | 45 | 47 | 47 | 48 | 44 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 56 | 59 | 61 | 58 | 55 | 56 | 61 | 59 | 57 | 57 | 57 | 56 | 60 | 61 | 59 | 56 | 56 | 54 | 55 | 57 | 59 | 57 | 57 | 57 | 59 | 58 | 58 | 57 | 56 | 55 | -- | 57 |
| Minimum .... | 51 | 52 | 54 | 55 | 54 | 54 | 54 | 56 | 56 | 56 | 55 | 54 | 54 | 55 | 56 | 56 | 54 | 53 | 54 | 54 | 55 | 56 | 55 | 55 | 53 | 55 | 54 | 56 | 54 | 54 | -- | 54 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 60 | 59 | 58 | 57 | 61 | 63 | 62 | 61 | 59 | 59 | 62 | 64 | 64 | 65 | 63 | 64 | 60 | 62 | 62 | 58 | 59 | 62 | 64 | 66 | 66 | 64 | 62 | 60 | 58 | 59 | 59 | 61 |
| Minimum .... | 55 | 57 | 57 | 55 | 55 | 57 | 58 | 57 | 55 | 53 | 56 | 58 | 58 | 59 | 60 | 59 | 59 | 58 | 58 | 58 | 58 | 58 | 58 | 60 | 61 | 60 | 60 | 58 | 57 | 58 | 55 | 58 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 58 | 58 | 60 | 60 | 62 | 63 | 62 | 59 | 55 | 56 | 57 | 57 | 56 | 56 | 54 | 53 | 55 | 56 | 57 | 57 | 58 | 57 | 57 | 58 | 57 | 57 | 56 | 56 | 56 | 55 | 55 | 57 |
| Minimum .... | 55 | 58 | 57 | 57 | 58 | 58 | 59 | 54 | 54 | 54 | 56 | 56 | 56 | 54 | 53 | 53 | 53 | 54 | 54 | 56 | 55 | 55 | 56 | 57 | 55 | 54 | 55 | 55 | 54 | 55 | 54 | 55 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 53 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 50 | 51 | 50 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 49 | 49 | -- | 50 |
| Minimum .... | 54 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 52 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 50 | 50 | 50 | 49 | -- | 51 |

## 15-0936. EAST BRANCH LOVERS COVE CREEK NEAR BIG PORT WALTER, ALASKA

LOCATION.--Lat 56°23'33", long 134°42'47", temperature recorder at gaging station on Baranof Island, on left bank, 300 feet upstream from mouth at Lovers Cove, and 1.2 miles northeast of Big Port Walter.
DRAINAGE AREA.--0.31 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1965 to September 1966.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 37 | -- | 36 | 36 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 36 | -- | 36 | 36 | 36 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | 38 |
| Minimum .... | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | 38 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | 44 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 43 | 43 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 43 | 43 | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

SOUTHEASTERN ALASKA--Continued

15-1070. KADASHAN RIVER NEAR TENAKEE, ALASKA

LOCATION.--Lat 57°41'43", long 135°12'59", temperature recorder at gaging station on Chichagof Island, on left bank, 700 feet downstream from junction of east and west fork, 0.5 mile upstream from mouth, and 7 miles south of Tenakee.
DRAINAGE AREA.--37.7 square miles.
RECORDS AVAILABLE.--Water temperatures: June to September 1966.
EXTREMES, June to September 1966.--Water temperatures: Maximum, 57°F July 24, 25.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 45 | 45 | 46 | 45 | 44 | 47 | 46 | 47 | 46 | 46 | 46 | -- | -- |
| Minimum .... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 44 | 42 | 42 | 42 | 44 | 43 | 42 | 44 | 44 | 43 | 45 | 45 | -- | -- |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 48 | 47 | 47 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 50 | 52 | 53 | 54 | 55 | 54 | 51 | 56 | 52 | 53 | 56 | 56 | 57 | 57 | 54 | 53 | 52 | 51 | 51 | 51 | 52 |
| Minimum .... | 45 | 46 | 46 | 46 | 46 | 47 | 48 | 47 | 47 | 46 | 47 | 48 | 49 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 52 | 52 | 53 | 53 | 52 | 51 | 50 | 50 | 50 | 49 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 50 | 50 | 50 | 52 | 53 | 53 | 52 | 51 | 50 | 49 | 48 | 50 | 49 | 49 | 49 | 49 | 49 | 50 | 50 | 50 | 49 | 49 | 50 | 50 | 49 | 50 | 50 | 50 | 50 | 49 | 49 | 50 |
| Minimum .... | 50 | 49 | 49 | 49 | 48 | 49 | 51 | 50 | 49 | 47 | 48 | 48 | 48 | 48 | 49 | 48 | 48 | 48 | 48 | 49 | 47 | 47 | 48 | 49 | 49 | 48 | 48 | 49 | 49 | 49 | 49 | 49 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 49 | 49 | 48 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 48 | 48 | 49 | 50 | 51 | 50 | 50 | 48 | 47 | 47 | 47 | 46 | 46 | 47 | 48 | 48 | 47 | 47 | 47 | -- | 48 |
| Minimum .... | 49 | 48 | 47 | 47 | 46 | 47 | 46 | 46 | 46 | 45 | 46 | 46 | 48 | 47 | 48 | 49 | 48 | 48 | 47 | 47 | 47 | 45 | 46 | 46 | 46 | 47 | 47 | 47 | 47 | 47 | -- | 47 |

## 15-2080. TONSINA RIVER AT TONSINA, ALASKA

LOCATION.--Lat 61°39'50", long 145°10'50", at gaging station near left bank on downstream side of bridge on Richardson Highway at Tonsina, 0.4 mile upstream from Bernard Creek, and 0.6 mile upstream from Squirrel Creek.
DRAINAGE AREA.--420 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: August 1950 to September 1954, May to August 1956, October 1957 to September 1966.
Water temperatures: June to October 1953, May 1959 to September 1966.
Sediment records: May 1953 to July 1963 (periodic).
EXTREMES, 1965-66.--Water temperatures: Maximum, 60°F July 24.
EXTREMES, 1959-66.--Water temperatures: Maximum, 66°F Aug. 18, 1961.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$ | | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Calcium, magnesium | Noncarbonate | | | |
| Oct. 1-9, 1965.... | 687 | 3.6 | 0.06 | 11 | 1.3 | 1.8 | 1.1 | 36 | 5.3 | 2.5 | 0.0 | 0.0 | 44 | 33 | 3 | 80 | 7.4 | 5 |
| Oct. 10-18..... | 549 | 4.4 | .08 | 10 | 3.4 | .7 | 1.1 | 39 | 7.7 | 2.1 | .0 | .6 | 48 | 39 | 7 | 92 | 7.1 | 5 |
| Oct. 19-25, 30, 31 | 375 | 4.7 | .10 | 11 | 3.5 | 1.4 | 1.1 | 44 | 4.8 | 2.8 | .0 | .4 | 51 | 42 | 6 | 94 | 7.8 | 5 |
| Nov. 1-8..... | 230 | 5.3 | .08 | 14 | 3.2 | .5 | 1.1 | 52 | 4.8 | 2.8 | .0 | .4 | 57 | 48 | 5 | 103 | 7.7 | 5 |
| Nov. 9-15..... | 230 | 5.7 | .08 | 14 | 3.2 | 3.7 | 1.1 | 56 | 7.7 | 2.8 | .0 | .6 | 65 | 48 | 2 | 110 | 7.8 | -- |
| May 1-26, 1966.... | 274 | 6.0 | .00 | 13 | 3.8 | 1.2 | .9 | 47 | 12 | .7 | .1 | .5 | 61 | 48 | 9 | 93 | 7.5 | 5 |
| June 1-15..... | 2630 | 4.9 | .00 | 9.2 | 1.9 | 1.3 | .5 | 30 | 7.2 | 1.1 | .1 | .5 | 42 | 31 | 6 | 72 | 7.4 | 5 |
| June 16-30..... | 2840 | 4.2 | .06 | 10 | 1.2 | 1.4 | .5 | 29 | 9.1 | 1.4 | .0 | .5 | 42 | 30 | 6 | 70 | 7.0 | 5 |
| July 1-15..... | 1960 | 4.2 | .08 | 10 | 1.5 | 1.1 | .5 | 28 | 9.6 | .7 | .1 | .5 | 42 | 31 | 8 | 71 | 7.1 | 5 |
| July 16-31..... | 2630 | 3.7 | .08 | 10 | 1.0 | 1.0 | .7 | 31 | 4.3 | 1.8 | .0 | .5 | 38 | 29 | 4 | 68 | 7.4 | 5 |
| Aug. 1-15..... | 1860 | 5.9 | .06 | 9.6 | 1.5 | .9 | .7 | 30 | 6.2 | 1.4 | .0 | .5 | 42 | 30 | 5 | 70 | 7.1 | 5 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2080. TONSINA RIVER AT TONSINA, ALASKA--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 73 | 94 | | | | | | 117 | 93 | 73 | 62 | |
| 2..... | 75 | 98 | | | | | | 113 | 87 | 70 | 62 | |
| 3..... | 75 | 99 | | | | | | 103 | 80 | 70 | 62 | |
| 4..... | 76 | 100 | | | | | | 99 | 62 | 71 | 62 | |
| 5..... | 78 | 100 | | | | | | 97 | 61 | 69 | 62 | |
| 6..... | 79 | 101 | | | | | | 76 | 60 | -- | 62 | |
| 7..... | 79 | 102 | | | | | | 74 | 60 | 70 | 62 | |
| 8..... | 81 | 105 | | | | | | 71 | 59 | 70 | 63 | |
| 9..... | 82 | 112 | | | | | | 73 | 59 | 70 | 62 | |
| 10..... | 76 | 108 | | | | | | -- | 58 | -- | 63 | |
| 11..... | 83 | 112 | | | | | | -- | 58 | 68 | 63 | |
| 12..... | 86 | 108 | | | | | | 85 | 6 | 69 | 63 | |
| 13..... | 85 | 109 | | | | | | 85 | 62 | 68 | 64 | |
| 14..... | 85 | 108 | | | | | | 85 | 62 | -- | 64 | |
| 15..... | 83 | 105 | | | | | | 87 | 72 | 69 | 61 | |
| 16..... | 88 | -- | | | | | | 91 | 66 | 71 | -- | |
| 17..... | 88 | -- | | | | | | 92 | 63 | 67 | -- | |
| 18..... | 89 | -- | | | | | | 93 | 62 | 68 | -- | |
| 19..... | 91 | -- | | | | | | 96 | 63 | 67 | -- | |
| 20..... | 93 | -- | | | | | | 96 | 73 | 68 | -- | |
| 21..... | 93 | -- | | | | | | 96 | 63 | 68 | -- | |
| 22..... | 94 | -- | | | | | | 97 | 63 | 69 | -- | |
| 23..... | 91 | -- | | | | | | 98 | 79 | 69 | -- | |
| 24..... | -- | -- | | | | | | 97 | 65 | 69 | -- | |
| 25..... | 93 | -- | | | | | | 97 | 64 | 69 | -- | |
| 26..... | -- | -- | | | | | | 97 | 64 | 67 | -- | |
| 27..... | -- | -- | | | | | | -- | 64 | 69 | -- | |
| 28..... | -- | -- | | | | | | -- | 64 | 68 | -- | |
| 29..... | -- | -- | | | | | | -- | 62 | 67 | -- | |
| 30..... | 94 | -- | | | | | | -- | 65 | 67 | -- | |
| 31..... | 93 | -- | | | | | | -- | -- | 69 | -- | |
| Average | 84 | -- | | | - | | | 92 | 65 | 68 | -- | |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 43 | 40 | 42 | 40 | 42 | 42 | 42 | 42 | 42 | 40 | 40 | 39 | 46 | -- | 36 | 36 | 34 | 33 | 33 | 33 | 33 | 33 | 34 | -- | 36 | -- | -- | -- | -- | -- | 34 | -- |
| November | 36 | 34 | 34 | 33 | 33 | 33 | 34 | 34 | 34 | 33 | 34 | 33 | 34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | 34 | 34 | 34 | 34 | 35 | 35 | 34 | 34 | 36 | -- | -- | 37 | 39 | 39 | 41 | 42 | 43 | 38 | 40 | -- | -- | -- | 47 | 47 | 46 | 47 | -- | -- | -- | -- | -- | -- |
| June | 45 | 48 | 52 | 43 | 43 | 47 | 47 | 47 | 47 | 47 | 47 | 46 | 46 | 46 | 49 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 47 | 39 | 47 | 46 | 47 | 47 | 48 | 50 | -- | 46 |
| July | 41 | 41 | 48 | 49 | 50 | -- | 50 | 52 | 51 | -- | 54 | 50 | 55 | -- | 55 | -- | 57 | 56 | 52 | 54 | -- | 58 | 58 | 60 | 55 | 55 | 54 | 54 | 53 | 53 | 55 | 53 |
| August | 53 | 54 | 53 | 53 | 55 | 57 | 57 | 59 | 52 | 54 | 57 | 52 | 51 | 52 | 53 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Periodic determinations of suspended-sediment discharge, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| Apr. 2, 1966 | 1600 | 33 | | 93.2 | 40 | 10 | | | | | | | | | | | | |
| May 20 | 1330 | -- | | 274 | 20 | 10 | | | | | | | | | | | | |
| June 30 | 1600 | 50 | | 2860 | 60 | 460 | | | | | | | | | | | | |
| Aug. 22 | 1600 | 51 | | 1380 | 60 | 220 | | | | | | | | | | | | |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2190. WEST FORK OLSON BAY CREEK NEAR CORDOVA, ALASKA

LOCATION.--Lat 60°45'40", long 146°10'20", temperature recorder at gaging station 600 feet upstream from confluence with East Fork, and 21 miles northwest of Cordova.
DRAINAGE AREA.--4.78 equare miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 47°F July 25; minimum, freezing point on many days during January to March.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 42 | 41 | 42 | 42 | 42 | 42 | 41 | 41 | 41 | 41 | 41 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 38 | 38 | 40 |
| Minimum .... | 41 | 40 | 41 | 40 | 41 | 42 | 42 | 41 | 41 | 41 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 39 |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 38 | 38 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | -- | 34 |
| Minimum .... | 37 | 38 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | 34 |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| Minimum .... | 33 | 33 | 33 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 |
| February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 34 | 34 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| Minimum .... | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | -- | -- | -- | 33 |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 37 | 36 | 36 | 36 | 37 | 37 | 37 | -- | 35 |
| Minimum .... | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | -- | 34 |
| May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 37 | 37 | 36 | 37 | 37 | 36 | 36 | 36 | 38 | 38 | 38 | 39 | 38 | 38 | 38 | 38 | 37 | 37 | 38 | 39 | 38 | 38 | 38 | 38 | 40 | 38 | 38 | 38 | 39 | 37 | 37 | 38 |
| Minimum .... | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 37 | 37 | 37 | 38 | 37 | 38 | 37 | 36 | 35 | 36 | 37 | 37 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| June | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 38 | 39 | 39 | 40 | 37 | 40 | 41 | 40 | 41 | 41 | 39 | 40 | 41 | 41 | 42 | 41 | 40 | 39 | 41 | 41 | 42 | 43 | 41 | 41 | 41 | 42 | 42 | 44 | 42 | 42 | -- | 41 |
| Minimum .... | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 40 | 40 | 39 | 41 | 40 | 41 | 41 | 41 | 41 | 41 | 41 | -- | 39 |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 42 | 42 | 41 | 41 | 41 | 43 | 42 | 43 | 45 | 43 | 42 | 42 | 44 | 43 | 44 | 46 | 45 | 44 | 46 | 45 | 45 | 45 | 46 | 46 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 44 |
| Minimum .... | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 44 | 44 | 44 | 45 | 44 | 44 | 45 | 45 | 46 | 46 | 45 | 46 | 45 | 45 | 43 |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 46 | 46 | 45 | 45 | 44 | 46 | 46 | 45 | 45 | 44 | 44 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | 45 | 44 | 44 | 44 | 44 | 44 | 45 |
| Minimum .... | 45 | 45 | 45 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 44 | 44 | 44 | 44 |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum .... | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 | 44 | 43 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 44 | 43 | 43 | 43 | 43 | 43 | -- | 44 |
| Minimum .... | 44 | 44 | 43 | 43 | 42 | 43 | 43 | 42 | 42 | 42 | 43 | 43 | 44 | 44 | 45 | 44 | 43 | 43 | 44 | 43 | 42 | 40 | 40 | 42 | 42 | 43 | 43 | 43 | 42 | 42 | -- | 43 |

## 15-2400. ANCHOR RIVER AT ANCHOR POINT, ALASKA

LOCATION.--Lat 59°46'10", long 151°50'00", at gaging station near right bank on downstream side of Sterling Highway bridge at Anchor Point, 0.1 mile downstream from North Fork, 1 mile upstream from mouth.
DRAINAGE AREA.--226 square miles.
RECORDS AVAILABLE.--Chemical analyses: May 1953 to September 1954, October 1957 to September 1966.
Water temperatures: May 1953 to September 1954, April 1959 to September 1966.
Sediment records: July 1953 to August 1954 (periodic).
EXTREMES, 1965-66.--Water temperatures: Maximum, 67°F July 27.
EXTREMES, 1959-66.--Water temperatures: Maximum, 69°F July 28, 1963.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$ | | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Calcium, magnesium | Noncarbonate | | | |
| May 24-31, 1966.. | 802 | 19 | 0.06 | 4.8 | 1.5 | 2.9 | 1.4 | 22 | 4.8 | 2.5 | 0.1 | 0.0 | 48 | 18 | 0 | 56 | 6.8 | 10 |
| June 1-9..... | 791 | 19 | .00 | 9.6 | -- | 2.9 | 1.2 | 24 | 2.4 | 2.8 | .3 | .3 | 51 | 19 | 0 | 57 | 6.8 | 10 |
| June 10-18..... | 494 | 25 | .02 | 8.0 | 1.9 | 4.0 | 1.4 | 32 | 6.7 | 2.1 | .2 | .5 | 65 | 28 | 2 | 81 | 7.0 | 10 |
| June 19-30..... | 251 | 28 | .04 | 6.8 | 1.9 | 4.7 | 1.8 | 40 | 4.3 | 3.9 | .1 | .5 | 73 | 30 | 0 | 63 | 7.1 | 10 |
| July 1-12..... | 301 | 28 | .12 | 9.6 | 2.2 | 5.1 | 2.0 | 41 | 9.6 | 1.4 | .1 | .0 | 79 | 33 | 0 | 86 | 7.0 | 10 |
| July 13-23..... | 289 | 29 | .10 | 9.6 | 2.0 | 5.4 | 1.7 | 35 | 9.1 | 3.5 | .1 | .1 | 79 | 32 | 3 | 95 | 7.0 | 10 |
| July 24-31..... | 166 | 31 | -- | 9.2 | 3.2 | 5.4 | .6 | 51 | .0 | 3.5 | 1.0 | .2 | 79 | 36 | 0 | 96 | 7.0 | 15 |
| Aug. 1-12..... | 409 | 27 | -- | 6.4 | 3.6 | 4.7 | 1.0 | 41 | 3.0 | 3.2 | .1 | .5 | 69 | 31 | 0 | 81 | 7.2 | 5 |
| Aug. 13-21..... | 275 | 23 | -- | 5.2 | 1.9 | 4.0 | 1.3 | 31 | 1.0 | 3.5 | .1 | .5 | 56 | 21 | 0 | 68 | 6.7 | 5 |
| Aug. 22-31..... | 382 | 27 | -- | 6.0 | 3.2 | 4.6 | .9 | 39 | 1.0 | 2.8 | .2 | .2 | 50 | 26 | 0 | 83 | 7.3 | 5 |
| Sept. 1-11..... | 362 | 29 | -- | 6.4 | 3.4 | 4.5 | .9 | 40 | 2.0 | 3.2 | .6 | .4 | 70 | 30 | 0 | 77 | 6.8 | 15 |
| Sept. 12-22..... | 535 | 28 | -- | 6.8 | 3.2 | 4.6 | .6 | 43 | .0 | 2.5 | .1 | .1 | 67 | 30 | 0 | 82 | 6.8 | 15 |
| Sept. 24-30..... | 362 | 26 | -- | 3.6 | 2.4 | 2.3 | .9 | 24 | .0 | 1.8 | .1 | .1 | 49 | 19 | 0 | 53 | 6.5 | 15 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | May | June | July | Aug. | Sept. | Day | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1... | -- | 51 | 90 | 75 | 82 | 17... | -- | 73 | 86 | 62 | 99 |
| 2... | -- | 49 | 87 | 76 | 86 | 18... | -- | 73 | 86 | 66 | 73 |
| 3... | -- | 48 | 86 | -- | 74 | 19... | -- | 74 | 93 | 51 | 69 |
| 4... | -- | 53 | 83 | 86 | 77 | 20... | -- | 75 | 93 | 56 | 79 |
| 5... | -- | 54 | 89 | 87 | 70 | 21... | -- | 79 | 95 | 67 | 68 |
| 6... | -- | 57 | 80 | 90 | 69 | 22... | -- | 81 | 96 | 67 | 81 |
| 7... | -- | 58 | 90 | -- | 73 | 23... | -- | -- | 99 | 80 | -- |
| 8... | -- | 61 | 90 | 75 | 79 | 24... | 56 | 83 | 96 | 83 | 62 |
| 9... | -- | 61 | 92 | 78 | 76 | 25... | 48 | 83 | 103 | 79 | 48 |
| 10... | -- | 63 | 93 | -- | 83 | 26... | 51 | 81 | 101 | 83 | 60 |
| 11... | -- | 66 | 63 | 85 | 87 | 27... | 52 | 85 | 102 | 85 | 43 |
| 12... | -- | 67 | 64 | 84 | 86 | 28... | 51 | 82 | 102 | 85 | 53 |
| 13... | -- | 68 | 71 | 84 | 88 | 29... | -- | 88 | 89 | 83 | -- |
| 14... | -- | 71 | 79 | 81 | 89 | 30... | -- | 86 | 90 | -- | 51 |
| 15... | -- | 72 | 79 | 69 | 94 | 31... | 53 | -- | 86 | 76 | -- |
| 16... | -- | 73 | 80 | 75 | 94 | | | | | | |
| Average | | | | | | | -- | 69 | 88 | 76 | 74 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 40 | 40 | 40 | 41 | -- | -- | 41 | -- |
| June | 40 | 42 | 41 | 41 | 42 | -- | 51 | 48 | 52 | 48 | 50 | 53 | 49 | 49 | 49 | 49 | 49 | 51 | 50 | 51 | 53 | 46 | -- | 46 | 41 | 58 | 59 | 57 | 62 | 50 | -- | 49 |
| July | 51 | 50 | 52 | 49 | 49 | 51 | 53 | 54 | 60 | 64 | 46 | 54 | 56 | 58 | 51 | 57 | 56 | 62 | 60 | 59 | 66 | 56 | 67 | 60 | 61 | 60 | 58 | 66 | 66 | 56 | 56 | 57 |
| August | 49 | 44 | -- | 45 | 47 | 50 | -- | 49 | 42 | -- | 45 | 48 | 48 | 45 | 47 | 46 | 45 | 45 | 46 | -- | 45 | 45 | 52 | 51 | 53 | 55 | 49 | 49 | 47 | -- | 48 | 48 |
| September | 60 | 54 | 52 | 51 | 50 | 64 | 58 | 54 | 48 | 51 | 54 | 50 | 53 | 54 | 54 | 54 | 52 | 51 | 51 | 50 | 50 | 51 | -- | 46 | 47 | 43 | 45 | 45 | -- | 45 | -- | 51 |

## 15-2480. TRAIL RIVER NEAR LAWING, ALASKA

LOCATION.--Lat 60°26'00", long 149°22'20", at gaging station near center of stream on downstream end of pier at bridge site on old Seward-Anchorage Highway, 0.2 mile upstream from Falls Creek, 0.2 mile downstream from Lower Trail Lake, 1.9 miles upstream from mouth, and 2.1 miles north of Lawing.
DRAINAGE AREA.--181 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1966.
Water temperatures: April 1959 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 55°F July 23-25.
EXTREMES, 1959-66.--Water temperatures: Maximum, 55°F July 22, 1965, July 23-25, 1966.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$ | | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Calcium, magnesium | Noncarbonate | | | |
| Oct. 5-12, 1965.. | 675 | 3.1 | 0.00 | 12 | 1.5 | 0.8 | 0.6 | 32 | 8.2 | 0.7 | 0.0 | 0.0 | 43 | 36 | 10 | 75 | 7.4 | 0 |
| Oct. 13-22..... | 511 | 3.3 | .00 | 12 | 1.0 | .6 | .4 | 34 | 9.1 | .7 | .0 | .0 | 44 | 34 | 6 | 78 | 7.4 | 0 |
| Oct. 23-31..... | 340 | 3.7 | .00 | 12 | 1.5 | .7 | .4 | 34 | 9.1 | .7 | .0 | .0 | 45 | 36 | 8 | 80 | 7.5 | 0 |
| Dec. 1-10..... | 169 | 3.8 | .00 | 15 | 1.1 | .9 | .4 | 42 | 10 | .1 | .0 | .0 | 52 | 42 | 8 | 96 | 7.8 | 0 |
| Dec. 11-20..... | 160 | 4.0 | .00 | 16 | 1.7 | 1.3 | .6 | 48 | 9.6 | .7 | .0 | .1 | 58 | 47 | 8 | 102 | 7.7 | 5 |
| Dec. 21-30..... | 137 | 4.5 | .00 | 17 | 1.0 | 1.5 | .6 | 49 | 9.6 | .7 | .0 | .1 | 59 | 46 | 6 | 105 | 7.6 | 5 |
| Jan. 1-9, 1966... | 129 | 4.8 | .00 | 18 | 1.2 | 1.5 | .0 | 50 | 10 | 1.0 | .0 | .0 | 62 | 50 | 9 | 109 | 7.8 | 0 |
| Jan. 10-19..... | 127 | 4.8 | .00 | 18 | 1.2 | 1.5 | .0 | 51 | 11 | .7 | .0 | .0 | 68 | 50 | 8 | 109 | 7.8 | 0 |
| Jan. 20-28..... | 115 | 4.5 | .00 | 18 | 1.2 | 1.4 | .0 | 50 | 11 | .7 | .0 | .0 | 62 | 50 | 9 | 108 | 7.8 | 0 |
| Feb. 12-29..... | -- | 4.4 | .00 | 18 | 1.0 | 1.0 | .4 | 50 | 8.2 | .3 | .4 | .5 | 59 | 49 | 8 | 110 | 7.6 | 10 |
| Mar. 1-10..... | -- | 4.7 | .00 | 18 | .7 | 1.2 | .8 | 46 | 12 | 1.8 | .0 | .0 | 62 | 48 | 10 | 120 | 7.6 | 5 |
| Mar. 11-19..... | -- | 4.6 | .00 | 18 | 1.3 | 1.2 | .9 | 47 | 11 | 1.4 | .1 | .1 | 62 | 50 | 11 | 115 | 7.4 | 5 |
| Mar. 20-31..... | -- | 5.1 | .02 | 15 | 2.1 | 1.2 | .9 | 44 | 13 | .4 | .0 | .0 | 60 | 46 | 10 | 115 | 7.5 | 5 |
| Apr. 1-10..... | 122 | 4.3 | .02 | 17 | 1.8 | 1.1 | .9 | 46 | 11 | 1.4 | .0 | .2 | 61 | 50 | 12 | 110 | 7.5 | 5 |
| Apr. 11-20..... | 127 | 4.6 | .04 | 18 | 1.7 | 1.2 | 1.0 | 46 | 11 | 1.1 | .0 | .1 | 62 | 52 | 14 | 115 | 7.4 | 5 |
| Apr. 21-30..... | 200 | 4.7 | .02 | 16 | 1.5 | 1.2 | .9 | 47 | 9.6 | .7 | .0 | .0 | 61 | 46 | 7 | 110 | 7.1 | 5 |
| May 2-10..... | 379 | 3.9 | .00 | 14 | 1.0 | 1.3 | .0 | 38 | 9.6 | .7 | .0 | .1 | 50 | 39 | 8 | 89 | 7.4 | 5 |
| May 11-20..... | 475 | 4.0 | .00 | 14 | 1.2 | 1.1 | .0 | 40 | 8.6 | .7 | .0 | .1 | 50 | 40 | 7 | 91 | 7.4 | 0 |
| May 21-30..... | 1085 | 3.7 | .00 | 14 | 1.2 | .9 | .0 | 39 | 9.1 | .7 | .0 | .0 | 49 | 40 | 8 | 90 | 7.4 | 0 |
| June 14-30..... | 2007 | 3.8 | .08 | 12 | 2.9 | .6 | .4 | 32 | 12 | 1.4 | .1 | .5 | 50 | 42 | 16 | 82 | 7.1 | 5 |
| July 1-31..... | 2025 | 2.8 | .02 | 8.4 | 2.9 | .6 | .0 | 30 | 9.6 | .0 | .0 | .0 | 39 | 33 | 8 | 100 | 7.9 | 0 |
| Aug. 1-13..... | 2683 | 3.1 | .00 | 10 | 1.2 | .6 | .4 | 28 | 7.7 | .0 | .3 | .5 | 38 | 30 | 7 | 69 | 7.0 | 10 |
| Aug. 14-22..... | 1756 | 3.2 | -- | 12 | .7 | .5 | .5 | 29 | 10 | .3 | .0 | .1 | 41 | 33 | 9 | 72 | 7.1 | 15 |
| Aug. 23-31..... | 1997 | 3.3 | -- | 10 | 1.5 | .3 | .3 | 28 | 11 | .4 | .1 | .1 | 41 | 31 | 8 | 81 | 7.2 | 15 |
| Sept. 1-10..... | 1012 | 2.9 | -- | 11 | 1.6 | .5 | 1.1 | 29 | 13 | .0 | .0 | .0 | 44 | 34 | 10 | 75 | 6.6 | 15 |
| Sept. 11-20..... | 3360 | 4.2 | -- | 12 | .5 | .5 | .2 | 28 | 12 | .0 | .0 | .1 | 44 | 32 | 9 | 73 | 6.9 | 15 |
| Sept. 21-30..... | 2749 | 3.7 | -- | 12 | 1.7 | .6 | .9 | 31 | 12 | .4 | .0 | .1 | 46 | 37 | 12 | 78 | 7.1 | 15 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2480. TRAIL RIVER NEAR LAWING, ALASKA--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | -- | | 95 | 109 | -- | 114 | 109 | 105 | 87 | 73 | 68 | 75 |
| 2..... | -- | | 96 | -- | -- | 112 | 109 | 106 | 87 | 82 | 67 | 72 |
| 3..... | -- | | 97 | 110 | -- | 111 | 108 | 106 | 84 | 80 | 67 | 72 |
| 4..... | -- | | 97 | 103 | -- | 111 | 108 | 107 | 84 | 80 | 68 | 81 |
| 5..... | 76 | | 99 | 108 | -- | 113 | 108 | 107 | 81 | 78 | 67 | 73 |
| 6..... | 77 | | 99 | 109 | -- | 112 | 108 | 107 | 84 | 77 | 66 | 73 |
| 7..... | 77 | | 98 | 110 | -- | 111 | 109 | 105 | 83 | 77 | 66 | 72 |
| 8..... | 77 | | 99 | 109 | -- | 112 | 109 | 106 | 82 | 77 | 66 | 73 |
| 9..... | 77 | | 100 | 112 | -- | -- | 109 | 107 | 82 | 79 | 68 | 73 |
| 10..... | 77 | | 101 | 111 | -- | 113 | 110 | 103 | 82 | 78 | 72 | 74 |
| 11..... | 78 | | 103 | 108 | -- | 113 | 109 | 104 | 83 | 76 | 72 | 73 |
| 12..... | 79 | | 105 | 110 | 113 | 112 | 110 | 101 | 80 | 76 | 76 | 72 |
| 13..... | 78 | | 103 | 109 | 112 | 113 | 109 | 99 | 82 | 76 | 76 | 72 |
| 14..... | 79 | | 103 | 110 | 110 | 114 | 109 | 99 | 80 | -- | 73 | 73 |
| 15..... | 79 | | 106 | 111 | 111 | 113 | 108 | 96 | 80 | 76 | 73 | 75 |
| 16..... | 78 | | 105 | 113 | 110 | 112 | -- | 95 | 80 | 76 | 73 | 76 |
| 17..... | 79 | | 106 | 110 | 111 | 112 | 110 | 94 | 81 | 75 | 73 | 71 |
| 18..... | 80 | | 106 | 110 | 111 | 112 | -- | 95 | -- | 74 | 73 | 70 |
| 19..... | 81 | | 106 | 111 | 111 | 112 | 109 | 94 | -- | 74 | 71 | 69 |
| 20..... | 80 | | 106 | 111 | 111 | 112 | 108 | 94 | -- | 74 | 70 | 73 |
| 21..... | 79 | | 106 | 110 | 111 | 111 | 108 | 91 | -- | 73 | 70 | 79 |
| 22..... | 82 | | 107 | 112 | 112 | 112 | 109 | 91 | -- | 72 | 70 | 75 |
| 23..... | 81 | | 107 | 111 | 111 | 112 | 108 | 91 | -- | 72 | 70 | 75 |
| 24..... | 82 | | 107 | 109 | 111 | -- | 108 | 91 | -- | 72 | 70 | 76 |
| 25..... | 82 | | 106 | 110 | 111 | -- | 107 | 90 | -- | 70 | 70 | 75 |
| 26..... | 82 | | 107 | 112 | 112 | -- | 108 | 90 | -- | 69 | 70 | 74 |
| 27..... | 81 | | 110 | -- | 112 | 111 | 108 | 90 | -- | 70 | 70 | 79 |
| 28..... | 81 | | 105 | -- | 113 | 110 | 107 | 91 | -- | 69 | 70 | 83 |
| 29..... | 81 | | 108 | -- | -- | 110 | 107 | 90 | -- | 66 | 71 | 78 |
| 30..... | 83 | | 109 | -- | -- | 110 | 106 | -- | -- | 68 | 71 | 79 |
| 31..... | 82 | | 109 | -- | -- | 109 | -- | 91 | -- | 67 | 71 | -- |
| Average | 79 | | 103 | 109 | -- | 111 | 108 | 97 | -- | 74 | 70 | 74 |

15-2480. TRAIL RIVER NEAR LAWING, ALASKA--Continued

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | --- | --- | --- | --- | 44 | 43 | 43 | 42 | 42 | 42 | 40 | 40 | 40 | 39 | 38 | 39 | 39 | 35 | 35 | 34 | 35 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 35 | 38 |
| November | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| December | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 33 | 33 | 34 | 33 | 34 | 34 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| January | 32 | --- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | --- | --- | --- | --- | 32 |
| February | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | --- | --- | --- |
| March | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | --- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | --- | --- | --- | 34 | 34 | 34 | 34 | 34 | 32 |
| April | 32 | 34 | 34 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 32 | 33 | 33 | 33 | 33 | --- | 34 | --- | 34 | 34 | 34 | 33 | 39 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | --- | 34 |
| May | 38 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 39 | 39 | 39 | 40 | 39 | --- | 39 | 39 | 39 | 40 | 40 | 40 | 44 | 43 | 44 | 44 | 45 | 43 | 44 | 45 | --- | 45 | 40 |
| June | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 48 | 48 | 49 | 49 | 48 | 49 | 49 | 47 | 47 | 48 | 48 | 47 | 47 | 48 | 48 | 47 | 48 | --- | --- |
| July | 48 | 48 | 47 | 48 | 48 | 48 | 48 | 49 | 50 | 50 | 50 | 50 | 51 | --- | 51 | 51 | 52 | 53 | 53 | 53 | 53 | 51 | 55 | 55 | 55 | 54 | 54 | 54 | 54 | 54 | 51 | 51 |
| August | 53 | 53 | 52 | 53 | 54 | 46 | 46 | 45 | 45 | 46 | 45 | 46 | 47 | 47 | 45 | 45 | 45 | 44 | 44 | 45 | 45 | 44 | 44 | 44 | 43 | 45 | 45 | 45 | 44 | 44 | 44 | 46 |
| September | 43 | 45 | 45 | 45 | 45 | 45 | 48 | 47 | 47 | 47 | 48 | 47 | 46 | 47 | 47 | 47 | 46 | 47 | 46 | 46 | 41 | 43 | 40 | 45 | 45 | 45 | 45 | 44 | 44 | 44 | --- | 45 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2810. KINK RIVER NEAR PALMER, ALASKA

LOCATION.--Lat 61°30'15", long 149°01'50", at gaging station near center of span on downstream side of bridge on Glenn Highway, and 7 miles south of Palmer.
DRAINAGE AREA.--1,180 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to August 1958, May to August 1964.
Water temperatures: May to September 1963, April to September 1965.
Sediment records: July 1953 to August 1956, July, August 1961, May 1962 to September 1966.
EXTREMES, 1965-66.--Sediment concentrations: Maximum daily, 4,600 ppm Aug. 7.
Sediment loads: Maximum daily, 570,000 tons Aug. 8.
EXTREMES, 1962-66.--Sediment concentrations: Maximum daily, 6,290 ppm June 27, 1962.
Sediment loads: Maximum daily, 2,000,000 tons July 10, 1965.

Suspended sediment, water year October 1965 to September 1966
(Where no concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 8120 | | 4400 | 2600 | | 700 | 760 | | 80 |
| 2 | 7600 | | 4100 | 2400 | | 650 | 720 | | 80 |
| 3 | 7200 | | 3900 | 2200 | | 600 | 680 | | 70 |
| 4 | 6680 | | 3600 | 2000 | | 540 | 640 | | 70 |
| 5 | 6400 | | 3500 | 1800 | | 490 | 600 | | 60 |
| 6 | 6100 | | 3300 | 1700 | | 460 | 600 | | 60 |
| 7 | 5800 | | 3100 | 1600 | | 430 | 600 | | 60 |
| 8 | 5520 | | 3000 | 1500 | | 410 | 620 | | 70 |
| 9 | 5500 | | 3000 | 1400 | | 380 | 640 | | 70 |
| 10 | 5500 | | 3000 | 1300 | | 350 | 640 | | 70 |
| 11 | 5400 | | 2900 | 1200 | | 320 | 620 | | 70 |
| 12 | 5300 | | 2900 | 1200 | | 320 | 600 | | 60 |
| 13 | 5200 | | 2800 | 1300 | | 350 | 580 | | 60 |
| 14 | 5000 | | 2700 | 1400 | | 380 | 540 | | 60 |
| 15 | 4900 | | 2600 | 1300 | | 350 | C 520 | | 40 |
| 16 | 4800 | | 1300 | 1200 | | 160 | C 570 | | 40 |
| 17 | 4700 | | 1300 | 1100 | | 150 | C 570 | | 40 |
| 18 | 4600 | | 1200 | 1000 | | 140 | C 570 | | 40 |
| 19 | 4500 | | 1200 | 900 | | 120 | C 570 | | 40 |
| 20 | 4500 | | 1200 | 800 | | 110 | C 570 | | 40 |
| 21 | 4500 | | 1200 | 700 | | 90 | C 570 | | 40 |
| 22 | 4500 | | 1200 | 620 | | 80 | C 570 | | 40 |
| 23 | 4400 | | 1200 | 640 | | 90 | C 570 | | 40 |
| 24 | 4300 | | 1200 | 680 | | 90 | C 570 | | 40 |
| 25 | 4200 | | 1100 | 720 | | 100 | C 570 | | 40 |
| 26 | 4100 | | 1100 | 740 | | 100 | C 570 | | 40 |
| 27 | 4000 | | 1100 | 760 | | 100 | C 570 | | 40 |
| 28 | 3500 | | 950 | 800 | | 110 | C 570 | | 40 |
| 29 | 3700 | | 1000 | 860 | | 120 | C 570 | | 40 |
| 30 | 3300 | | 890 | 800 | | 110 | C 570 | | 40 |
| 31 | 2800 | | 760 | -- | | -- | C 570 | | 40 |
| Total | 156620 | | 66700 | 37220 | | 8380 | 17680 | | 1620 |

C Composite period.

ALASKA WEST OF LONGITUDE 141°--Continued

15-2810. KINK RIVER NEAR PALMER, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 2 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 3 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 4 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 5 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 6 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 7 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 8 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 9 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 10 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 11 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 12 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 13 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 14 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 15 | C 500 | | 30 | C 450 | | 20 | C 450 | | 10 |
| 16 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 17 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 18 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 19 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 20 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 21 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 22 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 23 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 24 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 25 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 26 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 27 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 28 | C 450 | | 20 | C 450 | | 10 | C 450 | | 10 |
| 29 | C 450 | | 20 | -- | | -- | C 450 | | 10 |
| 30 | C 450 | | 20 | -- | | -- | C 450 | | 10 |
| 31 | C 450 | | 20 | -- | | -- | C 450 | | 10 |
| Total | 14700 | | 770 | 12600 | | 430 | C 13950 | | 310 |

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | C 450 | | 10 | 800 | -- | 60 | 1550 | 150 | 630 |
| 2 | C 450 | | 10 | 900 | -- | 70 | 1860 | 200 | 1000 |
| 3 | C 450 | | 10 | 1000 | -- | 80 | 1920 | 300 | 1600 |
| 4 | C 450 | | 10 | 1190 | -- | 100 | 2700 | 490 | 3600 |
| 5 | C 450 | | 10 | 1180 | -- | 100 | 2820 | 480 | 3700 |
| 6 | C 450 | | 10 | 960 | -- | 80 | 2960 | 460 | 3700 |
| 7 | C 450 | | 10 | 1100 | -- | 90 | 3680 | 1170 | 12000 |
| 8 | C 450 | | 10 | 1200 | -- | 100 | 4320 | 1100 | 13000 |
| 9 | C 450 | | 10 | 1400 | -- | 110 | 4320 | 1000 | 12000 |
| 10 | C 450 | | 10 | 1480 | -- | 120 | 4480 | 1000 | 12000 |
| 11 | C 450 | | 10 | 1350 | -- | 150 | 5000 | 1100 | 15000 |
| 12 | C 450 | | 10 | 1200 | -- | 130 | 4520 | 1300 | 16000 |
| 13 | C 450 | | 10 | 1000 | -- | 110 | 4720 | 1700 | 22000 |
| 14 | C 450 | | 10 | 910 | -- | 100 | 4960 | 1700 | 23000 |
| 15 | C 450 | | 10 | 910 | -- | 100 | 4880 | 1300 | 17000 |
| 16 | C 450 | | 20 | 980 | -- | 160 | 5200 | 1000 | 14000 |
| 17 | C 450 | | 20 | 960 | -- | 160 | 4880 | 1100 | 14000 |
| 18 | C 450 | | 20 | 1060 | -- | 170 | 5480 | 940 | 14000 |
| 19 | C 450 | | 20 | 960 | -- | 160 | 5600 | 830 | 13000 |
| 20 | C 450 | | 20 | 1100 | -- | 180 | 6320 | 1200 | 20000 |
| 21 | C 450 | | 20 | 1080 | -- | 170 | 8720 | 1600 | 38000 |
| 22 | C 450 | | 20 | 1080 | 60 | 170 | 24000 | 1900 | 12000 |
| 23 | C 450 | | 20 | 1410 | 130 | 490 | 91700 | 2200 | 540000 |
| 24 | C 450 | | 20 | 1160 | 120 | 380 | 104000 | 1200 | 340000 |
| 25 | C 450 | | 20 | 1100 | 120 | 360 | 45400 | 960 | 120000 |
| 26 | 460 | | 20 | 1220 | 130 | 430 | 26800 | 850 | 62000 |
| 27 | 460 | | 20 | 1290 | 120 | 420 | 21100 | 690 | 39000 |
| 28 | 500 | | 20 | 1410 | 120 | 460 | 18600 | 570 | 29000 |
| 29 | 600 | | 20 | 1530 | 160 | 660 | 18900 | 670 | 34000 |
| 30 | 700 | | 30 | 1620 | 280 | 1200 | 18200 | 650 | 32000 |
| 31 | -- | | -- | 1550 | 180 | 750 | -- | -- | -- |
| Total | 13970 | | 360 | 36080 | -- | 7820 | 459590 | -- | 1585230 |

C Composite period.

ALASKA WEST OF LONGITUDE 141°--Continued

15-2810. KINK RIVER NEAR PALMER, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 17600 | 850 | 40000 | 21300 | 900 | 52000 | 16000 | | 13000 |
| 2 | 16300 | 780 | 34000 | 21400 | 900 | 52000 | 15000 | | 12000 |
| 3 | 15800 | 600 | 26000 | 21300 | 870 | 50000 | 14000 | | 11000 |
| 4 | 15600 | 530 | 22000 | 22400 | 880 | 53000 | 14000 | | 11000 |
| 5 | 16800 | 710 | 32000 | 21900 | 1100 | 65000 | 12000 | | 10000 |
| 6 | 16400 | 690 | 31000 | 25300 | 2100 | 143000 | 11000 | | 8900 |
| 7 | 15500 | 540 | 23000 | 36100 | 4600 | 450000 | 10000 | | 8100 |
| 8 | 15500 | 570 | 24000 | 47600 | 4400 | 570000 | 9000 | | 7300 |
| 9 | 15600 | 640 | 27000 | 42800 | 3800 | 440000 | 9000 | | 7300 |
| 10 | 16200 | 970 | 42000 | 33800 | 3600 | 330000 | 10000 | | 8100 |
| 11 | 18500 | 1300 | 65000 | 29700 | 2000 | 160000 | 9000 | | 7300 |
| 12 | 21400 | 1400 | 81000 | 25800 | 1100 | 77000 | 10000 | | 1100 |
| 13 | 22200 | 1600 | 96000 | 23500 | 860 | 55000 | 12000 | | 16000 |
| 14 | 22400 | 1700 | 100000 | 23000 | 860 | 53000 | 14200 | | 27000 |
| 15 | 21900 | 1500 | 89000 | 22000 | 880 | 52000 | 20300 | | 55000 |
| 16 | 22800 | 1400 | 86000 | 21400 | 770 | 44000 | 28700 | | 85000 |
| 17 | 23200 | 1500 | 94000 | 19600 | 660 | 35000 | 27000 | | 80000 |
| 18 | 24700 | 1800 | 120000 | 20100 | 640 | 35000 | 22400 | | 60000 |
| 19 | 23600 | 1600 | 100000 | 21400 | 750 | 43000 | 23800 | | 64000 |
| 20 | 24700 | 1600 | 110000 | 20800 | 620 | 35000 | 21800 | | 47000 |
| 21 | 25700 | 1700 | 120000 | 21000 | 560 | 32000 | 16600 | | 22000 |
| 22 | 25400 | 1800 | 120000 | 21600 | 640 | 37000 | 12600 | | 17000 |
| 23 | 25300 | 1700 | 116000 | 22400 | 590 | 36000 | 11000 | | 12000 |
| 24 | 26800 | 2000 | 140000 | 22000 | 540 | 32000 | 9290 | | 10000 |
| 25 | 29000 | 2300 | 180000 | 21000 | 450 | 26000 | 9040 | | 7300 |
| 26 | 30600 | 3200 | 260000 | 20000 | 370 | 20000 | 9780 | | 5300 |
| 27 | 29000 | 2400 | 190000 | 19000 | -- | 15000 | 9000 | | 4900 |
| 28 | 26200 | 1700 | 120000 | 18000 | -- | 15000 | 8500 | | 4600 |
| 29 | 24100 | 1400 | 91000 | 17000 | -- | 14000 | 8000 | | 4300 |
| 30 | 23200 | 1400 | 88000 | 16000 | -- | 13000 | 7000 | | 3800 |
| 31 | 22800 | 1200 | 74000 | 15000 | -- | 12000 | -- | | -- |
| Total | 674800 | -- | 2741000 | 734200 | -- | 3046000 | 410010 | | 640200 |

Total discharge for year (cfs-days)..... 2581420
Total load for year (tons)..... 8098820

C Composite period.

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| June 23, 1966..... | 0900 | -- | | 69500 | 2110 | 395900 | 11 | 16 | 22 | 29 | 39 | 52 | 69 | 81 | 96 | 100 | | VBWC |
| June 23..... | 1530 | -- | | 106000 | 2300 | 658300 | 12 | 16 | 23 | 30 | 38 | 49 | 61 | 73 | 95 | 100 | | VBWC |
| June 24..... | 0615 | 39 | | 139000 | 1260 | 472900 | 15 | 21 | 27 | 35 | 42 | 49 | 58 | 68 | 88 | 100 | | VBWC |
| June 24..... | 2130 | 39 | | 73200 | 941 | 186000 | 22 | 30 | 43 | 56 | 66 | 72 | 82 | 90 | 96 | 98 | | VBWC |
| July 28..... | 1430 | 38 | | 25600 | 991 | 68500 | 29 | 45 | 59 | 74 | 84 | 90 | 94 | 97 | 100 | -- | | VBWC |

## 15-2840. MATANUSKA RIVER AT PALMER, ALASKA

LOCATION.--Lat 61°36'35", long 149°04'15", at gaging station on left bank, 100 feet downstream from bridge on Glenn Highway, and 1 mile east of Palmer.
DRAINAGE AREA.--2,070 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: May 1949 to October 1950, April 1951 to July 1953, October 1957 to September 1966.
Water temperatures: March to August 1952, April to September 1953, December 1958 to September 1966.
Sediment records: April 1953 to September 1954, April 1958 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 58°F July 17.
Sediment concentrations: Maximum daily, 4,000 ppm June 7.
Sediment loads: Maximum daily, 170,000 tons June 7.
EXTREMES, 1958-66.--Water temperatures: Maximum, 58°F Aug. 25, 1964, July 17, 1966.
Sediment concentrations: Maximum daily, 16,100 ppm Aug. 25, 1959.
Sediment loads: Maximum daily, 1,300,000 tons Aug. 25, 1959.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 13-31, 1966.. | 990 | 5.0 | 0.02 | 31 | 6.4 | 7.1 | 0.8 | 84 | 42 | 7.1 | 0.2 | 0.5 | 141 | 69 | 35 | 236 | 7.7 | 10 |
| June 1-11..... | 8620 | 5.4 | .00 | 21 | 7.2 | 3.6 | .7 | 78 | 24 | 2.8 | .2 | .5 | 103 | 82 | 18 | 192 | 7.6 | 10 |
| June 12-30..... | 9390 | 5.0 | .04 | 20 | 6.6 | 3.3 | .8 | 70 | 22 | 3.2 | .1 | .5 | 96 | 77 | 20 | 175 | 7.7 | 5 |
| July 1-11..... | 9310 | 4.4 | .00 | 25 | 3.5 | 3.0 | .8 | 70 | 22 | 2.1 | .1 | .5 | 95 | 77 | 20 | 173 | 7.8 | 5 |
| July 12-31..... | 15600 | 4.0 | .06 | 24 | 2.9 | 2.1 | .9 | 66 | 19 | 1.8 | .1 | .5 | 88 | 72 | 18 | 160 | 7.8 | 10 |
| Aug. 1-9..... | 8640 | 3.9 | .02 | 24 | 2.7 | 2.7 | .5 | 68 | 18 | 1.4 | .1 | .5 | 88 | 71 | 15 | 162 | 7.7 | 10 |
| Aug. 11-20..... | 8960 | 4.6 | -- | 31 | 1.8 | 3.6 | .8 | 70 | 28 | 1.4 | .1 | .2 | 106 | 80 | 23 | 183 | 7.5 | 15 |
| Aug. 21-31..... | 4990 | 4.5 | -- | 26 | 3.2 | 4.0 | .7 | 64 | 32 | 2.8 | .1 | .1 | 104 | 78 | 26 | 184 | 7.4 | 15 |
| Sept. 1-9..... | 4020 | 4.5 | -- | 29 | 3.3 | 4.7 | .5 | 70 | 37 | 3.2 | .1 | .0 | 116 | 86 | 29 | 205 | 7.4 | 15 |
| Sept. 11-21..... | 4330 | 5.7 | -- | 30 | 4.9 | 6.2 | .5 | 80 | 40 | 3.2 | .1 | .0 | 130 | 95 | 29 | 224 | 7.6 | 15 |
| Sept. 22-29..... | 3020 | 5.4 | -- | 35 | 4.5 | 7.3 | .5 | 86 | 47 | 5.3 | .1 | .4 | 148 | 106 | 35 | 237 | 7.2 | 15 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2840. MATANUSKA RIVER AT PALMER, ALASKA--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | May | June | July | Aug. | Sept. | Day | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1... | -- | 217 | 174 | 163 | 183 | 17... | 247 | 176 | 154 | 175 | -- |
| 2... | -- | 220 | 178 | 158 | 185 | 18... | 254 | 171 | 151 | 179 | 226 |
| 3... | -- | 198 | 179 | 160 | 184 | 19... | 255 | 176 | 153 | 180 | 229 |
| 4... | -- | 178 | 180 | 163 | 189 | 20... | 255 | 174 | 153 | 184 | 226 |
| 5... | -- | 170 | 177 | 164 | 199 | 21... | 258 | 170 | 150 | 186 | 229 |
| 6... | -- | 172 | 173 | 162 | 212 | 22... | 253 | 176 | 149 | -- | 240 |
| 7... | -- | 186 | 174 | 159 | 198 | 23... | 250 | 178 | 150 | -- | 242 |
| 8... | -- | 178 | 176 | 157 | 212 | 24... | 253 | 176 | 144 | 179 | 243 |
| 9... | -- | 177 | 172 | 176 | 211 | 25... | 243 | 171 | 143 | 179 | 245 |
| 10... | -- | 172 | 172 | -- | -- | 26... | 237 | 172 | 142 | 178 | 258 |
| 11... | -- | 166 | 166 | 185 | 219 | 27... | -- | 179 | 147 | 176 | 245 |
| 12... | -- | 171 | 156 | 188 | 213 | 28... | 233 | 178 | 157 | 174 | 242 |
| 13... | 247 | 179 | 158 | 184 | 214 | 29... | 230 | 175 | 159 | 177 | 249 |
| 14... | 247 | 180 | 157 | 181 | 214 | 30... | 216 | 174 | 159 | 176 | -- |
| 15... | 247 | 178 | 157 | 172 | -- | 31... | 217 | -- | 158 | 178 | -- |
| 16... | 247 | 175 | 157 | 179 | 222 | | | | | | |
| Average | | | | | | | -- | 178 | 160 | 174 | 220 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 40 | 44 | 42 | 48 | 44 | 43 | 45 | -- | 45 | 45 | 45 | -- | 45 | 44 | -- | 48 | 47 | 44 | 47 | -- |
| June | 50 | 45 | 55 | 50 | 50 | -- | 56 | 50 | 56 | 56 | 48 | 46 | 52 | 52 | 52 | 54 | 51 | 48 | 52 | 52 | 48 | 54 | 47 | 54 | 54 | 46 | 52 | 56 | 48 | 54 | -- | 51 |
| July | 47 | 47 | 47 | 47 | 57 | 46 | 49 | 48 | 54 | 48 | 43 | 49 | 54 | 52 | 54 | 54 | 58 | 53 | 56 | 51 | 55 | 55 | 52 | 57 | 56 | 54 | 47 | 48 | 49 | 49 | 49 | 51 |
| August | 49 | 49 | 48 | 47 | 47 | 48 | 48 | 40 | 48 | -- | 47 | 52 | 52 | 51 | 50 | 48 | 47 | 43 | 45 | 45 | 43 | -- | -- | 48 | 50 | 52 | 52 | 45 | 48 | 45 | 47 | 48 |
| September | 48 | 50 | -- | -- | 47 | 46 | 46 | 41 | 46 | -- | 43 | 46 | 45 | 44 | -- | 47 | -- | 41 | 42 | 43 | -- | 43 | 45 | 41 | 43 | 47 | -- | -- | -- | -- | -- | -- |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2840. MATANUSKA RIVER AT PALMER, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 4050 | 170 | 1900 | 1100 | | 100 | 1000 | | 50 |
| 2 | 3600 | -- | 1500 | 1050 | | 100 | 980 | | 50 |
| 3 | 3200 | -- | 1500 | 1000 | | 90 | 960 | | 50 |
| 4 | 3000 | 140 | 1000 | 950 | | 90 | 940 | | 50 |
| 5 | 2880 | -- | 900 | 900 | | 80 | 940 | | 50 |
| 6 | 2770 | -- | 800 | 900 | | 80 | 960 | | 50 |
| 7 | 2610 | -- | 700 | 900 | | 70 | 960 | | 50 |
| 8 | 2450 | 82 | 540 | 900 | | 70 | 960 | | 50 |
| 9 | 2290 | -- | 500 | 900 | | 60 | 1000 | | 50 |
| 10 | 2220 | -- | 500 | 900 | | 60 | 1020 | | 50 |
| 11 | 2180 | -- | 500 | 920 | | 60 | 1050 | | 40 |
| 12 | 2070 | -- | 500 | 940 | | 70 | 1050 | | 40 |
| 13 | 2060 | -- | 500 | 960 | | 80 | 1050 | | 40 |
| 14 | 1860 | -- | 500 | 1000 | | 80 | 1010 | | 40 |
| 15 | 1600 | -- | 500 | 1000 | | 80 | 1000 | | 40 |
| 16 | 1500 | -- | 400 | 980 | | 80 | 900 | | 40 |
| 17 | 1450 | -- | 400 | 960 | | 80 | 800 | | 40 |
| 18 | 1400 | -- | 400 | 940 | | 80 | 760 | | 40 |
| 19 | 1350 | -- | 400 | 920 | | 70 | 760 | | 40 |
| 20 | 1300 | -- | 400 | 900 | | 70 | 760 | | 40 |
| 21 | 1250 | -- | 300 | 850 | | 70 | 740 | | 30 |
| 22 | 1250 | -- | 300 | 800 | | 70 | 740 | | 30 |
| 23 | 1300 | -- | 300 | 800 | | 70 | 740 | | 30 |
| 24 | 1350 | -- | 300 | 820 | | 70 | 720 | | 30 |
| 25 | 1360 | -- | 300 | 900 | | 70 | 720 | | 30 |
| 26 | 1290 | -- | 200 | 950 | | 60 | 720 | | 30 |
| 27 | 1270 | -- | 200 | 1000 | | 60 | 700 | | 30 |
| 28 | 1340 | -- | 200 | 1050 | | 60 | 700 | | 30 |
| 29 | 1290 | -- | 200 | 1100 | | 60 | 700 | | 30 |
| 30 | 1210 | -- | 200 | 1100 | | 60 | 700 | | 30 |
| 31 | 1150 | -- | 100 | -- | | -- | 700 | | 30 |
| Total | 59900 | -- | 16940 | 28390 | | 2200 | 26740 | | 1230 |

| | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 680 | | 20 | 600 | | 15 | 490 | | 10 |
| 2 | 680 | | 20 | 600 | | 15 | 490 | | 10 |
| 3 | 680 | | 20 | 600 | | 15 | 490 | | 10 |
| 4 | 680 | | 20 | 600 | | 15 | 490 | | 10 |
| 5 | 680 | | 20 | 600 | | 15 | 490 | | 10 |
| 6 | 660 | | 20 | 580 | | 15 | 490 | | 10 |
| 7 | 660 | | 20 | 580 | | 15 | 490 | | 10 |
| 8 | 660 | | 20 | 580 | | 15 | 490 | | 10 |
| 9 | 660 | | 20 | 580 | | 15 | 490 | | 10 |
| 10 | 660 | | 20 | 580 | | 15 | 490 | | 10 |
| 11 | 660 | | 20 | 560 | | 15 | 490 | | 10 |
| 12 | 660 | | 20 | 560 | | 15 | 490 | | 10 |
| 13 | 660 | | 20 | 560 | | 15 | 490 | | 10 |
| 14 | 660 | | 20 | 560 | | 15 | 490 | | 10 |
| 15 | 660 | | 20 | 560 | | 15 | 490 | | 10 |
| 16 | 640 | | 20 | 540 | | 15 | 490 | | 10 |
| 17 | 640 | | 20 | 540 | | 15 | 490 | | 10 |
| 18 | 640 | | 20 | 540 | | 15 | 490 | | 10 |
| 19 | 640 | | 20 | 540 | | 15 | 490 | | 10 |
| 20 | 640 | | 20 | 540 | | 15 | 490 | | 10 |
| 21 | 640 | | 20 | 520 | | 15 | 490 | | 10 |
| 22 | 640 | | 20 | 520 | | 15 | 490 | | 10 |
| 23 | 640 | | 20 | 520 | | 15 | 490 | | 10 |
| 24 | 640 | | 20 | 520 | | 15 | 490 | | 10 |
| 25 | 640 | | 20 | 520 | | 15 | 490 | | 10 |
| 26 | 630 | | 20 | 500 | | 15 | 490 | | 10 |
| 27 | 630 | | 20 | 500 | | 15 | 490 | | 10 |
| 28 | 630 | | 20 | 500 | | 15 | 490 | | 10 |
| 29 | 630 | | 20 | -- | | -- | 490 | | 10 |
| 30 | 630 | | 20 | -- | | -- | 490 | | 10 |
| 31 | 630 | | 20 | -- | | -- | 490 | | 10 |
| Total | 20180 | | 620 | 15500 | | 420 | 15190 | | 310 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-2840. MATANUSKA RIVER AT PALMER, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 500 | | 15 | 1070 | -- | 700 | 1320 | 550 | 2000 |
| 2 | 500 | | 15 | 1050 | -- | 800 | 1550 | 920 | 3900 |
| 3 | 500 | | 15 | 1060 | -- | 900 | 2830 | 1900 | 15000 |
| 4 | 500 | | 15 | 981 | -- | 800 | 8010 | 2800 | 61000 |
| 5 | 500 | | 15 | 909 | -- | 900 | 11300 | 2900 | 88000 |
| 6 | 520 | | 20 | 981 | -- | 1000 | 13500 | 3400 | 120000 |
| 7 | 520 | | 20 | 1100 | -- | 1300 | 15500 | 4000 | 170000 |
| 8 | 520 | | 20 | 1200 | 540 | 1700 | 13200 | 3600 | 130000 |
| 9 | 540 | | 20 | 1150 | -- | 1200 | 9990 | 3000 | 81000 |
| 10 | 560 | | 20 | 1050 | -- | 1000 | 8560 | 2100 | 48000 |
| 11 | 580 | | 30 | 927 | 200 | 500 | 9060 | 2000 | 49000 |
| 12 | 600 | | 40 | 945 | -- | 800 | 11300 | 2200 | 67000 |
| 13 | 620 | | 50 | 945 | 370 | 940 | 8350 | 2000 | 45000 |
| 14 | 620 | | 60 | 927 | 270 | 680 | 6970 | 1500 | 28000 |
| 15 | 620 | | 70 | 927 | 220 | 550 | 6090 | 1200 | 20000 |
| 16 | 640 | | 80 | 942 | 410 | 1000 | 6250 | 1200 | 15000 |
| 17 | 640 | | 100 | 983 | 440 | 1200 | 6670 | 1200 | 22000 |
| 18 | 660 | | 120 | 908 | 310 | 760 | 7970 | 1300 | 28000 |
| 19 | 680 | | 140 | 793 | 200 | 430 | 7080 | 1200 | 23000 |
| 20 | 700 | | 160 | 756 | 180 | 370 | 7630 | 1100 | 23000 |
| 21 | 700 | | 180 | 796 | 220 | 470 | 9430 | 1100 | 28000 |
| 22 | 700 | | 200 | 820 | 240 | 530 | 8980 | 1200 | 29000 |
| 23 | 720 | | 250 | 843 | 240 | 540 | 11400 | 1500 | 46000 |
| 24 | 720 | | 300 | 844 | 250 | 570 | 12600 | 1800 | 61000 |
| 25 | 737 | | 350 | 1030 | 850 | 2400 | 11900 | 1800 | 58000 |
| 26 | 764 | | 400 | 1080 | 690 | 2000 | 11800 | 1500 | 48000 |
| 27 | 778 | | 450 | 1010 | 680 | 1900 | 10400 | 1300 | 36000 |
| 28 | 852 | | 500 | 1180 | 940 | 3000 | 10700 | 1200 | 35000 |
| 29 | 945 | | 550 | 1270 | 810 | 2800 | 11200 | 1100 | 33000 |
| 30 | 1040 | | 600 | 1410 | 790 | 3000 | 11600 | 1200 | 38000 |
| 31 | -- | | -- | 1340 | 620 | 2200 | -- | -- | -- |
| Total | 19476 | | 4805 | 31227 | -- | 37940 | 273150 | -- | 1450900 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11600 | 1300 | 41000 | 8900 | 1500 | 36000 | 4940 | 290 | 3900 |
| 2 | 9160 | 1100 | 27000 | 10300 | 1300 | 36000 | 4400 | 260 | 3100 |
| 3 | 7810 | 880 | 19000 | 7550 | 1200 | 24000 | 4370 | 220 | 2600 |
| 4 | 6920 | 800 | 15000 | 6300 | 1000 | 18000 | 4430 | 220 | 2600 |
| 5 | 7980 | 950 | 20000 | 6540 | 820 | 14000 | 3880 | 220 | 2300 |
| 6 | 9280 | 1100 | 28000 | 5940 | 970 | 16000 | 3920 | 220 | 2300 |
| 7 | 8950 | 1200 | 29000 | 6860 | 1300 | 24000 | 3550 | 190 | 1800 |
| 8 | 8900 | 1100 | 26000 | 11700 | 1800 | 57000 | 3350 | 180 | 1600 |
| 9 | 8560 | 1100 | 25000 | 13500 | B 2300 | 84000 | 3350 | 160 | 1400 |
| 10 | 9730 | 1300 | 34000 | 13600 | B 2400 | 88000 | 3880 | B 660 | 6900 |
| 11 | 13500 | 2200 | 80000 | 12100 | 2000 | 65000 | 2900 | 300 | 2300 |
| 12 | 15700 | 2200 | 93000 | 9600 | 2100 | 54000 | 3450 | 220 | 2000 |
| 13 | 14800 | 2000 | 80000 | 8950 | 1800 | 43000 | 5150 | 1100 | 15000 |
| 14 | 14200 | 2100 | 81000 | 8000 | 1500 | 32000 | 4940 | 900 | 12000 |
| 15 | 13800 | 2000 | 75000 | 11000 | 1400 | 42000 | 4950 | 470 | 6300 |
| 16 | 13500 | 2100 | 75000 | 9450 | 1300 | 33000 | 5000 | 590 | 8000 |
| 17 | 14300 | 2200 | 85000 | 8650 | 1100 | 26000 | 4660 | 390 | 4900 |
| 18 | 16100 | 2800 | 120000 | 8600 | 790 | 18000 | 4290 | 240 | 2800 |
| 19 | 16500 | 2500 | 110000 | 6900 | 630 | 12000 | 4220 | 240 | 2700 |
| 20 | 15300 | 2300 | 95000 | 6300 | 510 | 8700 | 4130 | 210 | 2300 |
| 21 | 15500 | 2400 | 100000 | 5500 | 440 | 6500 | 3910 | 180 | 1900 |
| 22 | 15300 | 2300 | 95000 | 5120 | 370 | 5100 | 3540 | 150 | 1400 |
| 23 | 16500 | 2300 | 100000 | 4600 | 360 | 4500 | 3270 | 140 | 1200 |
| 24 | 19400 | 2800 | 150000 | 4130 | 370 | 4100 | 3090 | 110 | 920 |
| 25 | 18300 | 3000 | 150000 | 5030 | 360 | 4900 | 2970 | 100 | 800 |
| 26 | 18200 | 3100 | 150000 | 5340 | 350 | 5000 | 2960 | 100 | 800 |
| 27 | 17200 | 2500 | 120000 | 5300 | 400 | 5700 | 2900 | 110 | 860 |
| 28 | 16600 | 3200 | 140000 | 6060 | 470 | 7700 | 2790 | 110 | 830 |
| 29 | 19800 | 3000 | 160000 | 4550 | 370 | 4500 | 2650 | 100 | 720 |
| 30 | 11600 | 2200 | 67000 | 4610 | 330 | 4100 | 2580 | 90 | 630 |
| 31 | 10300 | 1800 | 50000 | 4640 | 330 | 4100 | -- | -- | -- |
| Total | 415290 | -- | 2442000 | 235820 | -- | 786900 | 114420 | -- | 96860 |

Total discharge for year (cfs-days)..... 1254983
Total load for year (tons)..... 4841125

B Computed from estimated-concentration graph.

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| June 7, 1966..... | 1430 | | | 13800 | 3840 | 140000 | 19 | 35 | 48 | 58 | 69 | 76 | 84 | 94 | 99 | 99 | 100 | VBWC |
| July 27..... | 1500 | | | 15500 | 2310 | 96000 | 13 | 24 | 34 | 44 | 53 | 65 | 77 | 91 | 98 | 100 | | VBWC |

15-3040. KUSKOKWIM RIVER AT CROOKED CREEK, ALASKA

LOCATION.--Lat 61°52'10", long 158°06'40", at gaging station on right bank at village of Crooked Creek.
DRAINAGE AREA.--31,000 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: May 1957 to September 1966.
Water temperatures: May 1957 to September 1966.
Sediment records: June to September 1966 (periodic).
EXTREMES, 1965-66.--Water temperatures: Maximum, 63°F July 24, 25.
EXTREMES, 1957-66.--Water temperatures: Maximum, 68°F June 28, 1959, June 22, 1960, July 15, 1961.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 1-8, 1965... | 120000 | 8.0 | 0.04 | 23 | 4.7 | 1.0 | 2.7 | 82 | 13 | 0.7 | 0.1 | 0.1 | 93 | 77 | 10 | 160 | 7.6 | 10 |
| May 14-31, 1966.. | 78800 | 5.5 | .02 | 18 | 3.9 | .6 | 1.2 | 64 | 8.6 | 1.4 | .3 | .4 | 71 | 61 | 9 | 120 | 7.0 | 30 |
| June 1-10..... | 101000 | 5.7 | .04 | 18 | 3.2 | 1.4 | 1.2 | 64 | 7.2 | .7 | .3 | .4 | 69 | 58 | 6 | 124 | 7.2 | 30 |
| June 11-19..... | 105000 | 6.5 | .02 | 25 | 4.7 | 1.0 | 1.6 | 88 | 13 | .7 | .1 | .4 | 96 | 82 | 10 | 172 | 7.3 | 25 |
| June 20-30 | 78200 | 6.3 | .02 | 27 | 4.0 | 1.1 | 2.0 | 89 | 12 | 1.1 | .1 | .4 | 98 | 84 | 11 | 180 | 7.3 | 20 |
| July 2-9..... | 63000 | 6.7 | .02 | 28 | 4.9 | 1.2 | 1.9 | 94 | 17 | .7 | .1 | .5 | 108 | 90 | 13 | 186 | 7.5 | 20 |
| July 11-17..... | 86600 | 6.5 | .06 | 25 | 4.3 | 1.0 | 1.8 | 84 | 14 | .7 | .1 | .2 | 95 | 80 | 11 | 168 | 7.5 | 20 |
| July 18-31..... | 68500 | 8.5 | .02 | 32 | 2.9 | 1.2 | 1.0 | 94 | 21 | .0 | .2 | .5 | 113 | 92 | 15 | 191 | 7.0 | 20 |
| Aug. 1-18..... | 74300 | 7.5 | .29 | 37 | .1 | 1.2 | 1.1 | 93 | 22 | .4 | .2 | .0 | 115 | 93 | 17 | 185 | 7.7 | 20 |
| Aug. 19-30..... | 72900 | 7.4 | .00 | 28 | 4.6 | 1.2 | .7 | 91 | 17 | .0 | .1 | .0 | 104 | 89 | 14 | 180 | 7.7 | 10 |
| Sept. 1-10..... | 65500 | 8.0 | .02 | 30 | 4.4 | 1.2 | .7 | 96 | 19 | .0 | .3 | .1 | 111 | 97 | 18 | 188 | 7.3 | 10 |
| Sept. 11-20..... | 56400 | 7.6 | .00 | 31 | 4.0 | 1.4 | .7 | 99 | 18 | .0 | .3 | .1 | 112 | 94 | 13 | 185 | 7.8 | 10 |
| Sept. 21-30..... | 48300 | 8.0 | .02 | 31 | 4.7 | 1.6 | .7 | 103 | 17 | .0 | .1 | .0 | 114 | 97 | 13 | 195 | 7.6 | 10 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-3040. KUSKOKWIM RIVER AT CROOKED CREEK, ALASKA--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | October | November | December | January | February | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1..... | 154 | | | | | | | -- | 121 | -- | 194 | 176 |
| 2..... | 159 | | | | | | | -- | 113 | 191 | 191 | 175 |
| 3..... | 156 | | | | | | | -- | 111 | 189 | 191 | 177 |
| 4..... | 162 | | | | | | | -- | 116 | 189 | 190 | -- |
| 5..... | 173 | | | | | | | -- | 117 | 190 | 185 | 182 |
| 6..... | -- | | | | | | | -- | 120 | 192 | -- | 181 |
| 7..... | 174 | | | | | | | -- | 124 | 186 | 179 | -- |
| 8..... | 177 | | | | | | | -- | 124 | 181 | 182 | 187 |
| 9..... | -- | | | | | | | -- | 131 | 175 | 176 | 189 |
| 10..... | -- | | | | | | | -- | 142 | -- | 175 | 193 |
| 11..... | -- | | | | | | | -- | 146 | 182 | 172 | 192 |
| 12..... | -- | | | | | | | -- | 146 | 172 | 174 | 193 |
| 13..... | -- | | | | | | | -- | 172 | 156 | -- | 189 |
| 14..... | -- | | | | | | | 96 | 163 | 147 | 181 | -- |
| 15..... | -- | | | | | | | -- | 157 | 153 | 185 | 186 |
| 16..... | -- | | | | | | | 102 | 167 | 168 | 187 | 181 |
| 17..... | -- | | | | | | | 116 | 178 | 181 | 189 | 183 |
| 18..... | -- | | | | | | | -- | 186 | 194 | 191 | 187 |
| 19..... | -- | | | | | | | -- | 174 | 190 | 191 | 184 |
| 20..... | -- | | | | | | | 116 | 166 | 193 | 192 | 184 |
| 21..... | -- | | | | | | | 112 | -- | 188 | 188 | 186 |
| 22..... | -- | | | | | | | 110 | 165 | 187 | 176 | 189 |
| 23..... | -- | | | | | | | 112 | -- | 193 | 169 | 189 |
| 24..... | -- | | | | | | | 115 | 181 | 192 | 169 | 192 |
| 25..... | -- | | | | | | | 118 | 169 | 193 | 171 | 194 |
| 26..... | -- | | | | | | | 121 | 171 | 192 | 176 | 197 |
| 27..... | -- | | | | | | | 125 | 175 | 188 | 174 | 198 |
| 28..... | -- | | | | | | | 128 | 179 | 184 | 172 | 199 |
| 29..... | -- | | | | | | | 131 | 182 | 180 | 172 | 199 |
| 30..... | -- | | | | | | | 132 | 188 | 188 | 171 | 205 |
| 31..... | -- | | | | | | | 126 | -- | 198 | 169 | -- |
| Average | -- | | | | | | | -- | 153 | 183 | 180 | 188 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 37 | 36 | 36 | 36 | 34 | -- | 32 | 31 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | 46 | -- | 47 | 49 | 52 | 52 | 54 | 57 | 55 | 55 | 55 | 56 | 55 | 53 | 54 | 54 | 56 | 56 | 57 | 57 | -- | 58 | -- | 58 | 58 | 55 | 57 | 58 | 59 | 59 | -- | 55 |
| July | -- | 57 | 55 | 54 | 53 | 53 | 51 | 50 | 51 | -- | 53 | 52 | 52 | 51 | 52 | 53 | 53 | 55 | 57 | 58 | 59 | 61 | 62 | 63 | 63 | 61 | 60 | 60 | 58 | 59 | 60 | 56 |
| August | 58 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 52 | 50 | 49 | 50 | 50 | 50 | 51 | 51 | 51 | 50 | 50 | 50 | 49 | -- |
| September | 49 | 49 | 50 | -- | 49 | 48 | -- | 47 | 46 | 46 | 46 | 46 | 47 | -- | 48 | 47 | 46 | 45 | 45 | 44 | 44 | 44 | 45 | 44 | 43 | 43 | 42 | 42 | 43 | 43 | -- | 46 |

Periodic determinations of suspended-sediment discharge and particle size analyses, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.025 | 0.250 | 0.500 | 1.000 | 2.000 | |
| June 13, 1966 | 1330 | 55 | | 116000 | 316 | 99000 | 14 | 26 | 37 | 49 | 59 | 66 | 75 | 86 | 96 | 100 | | VPWC |
| July 26 | 1530 | 62 | | 60600 | 134 | 22000 | | | | | | | | | | | | |
| Aug. 29 | 1830 | 50 | | 72800 | 174 | 34000 | | | | | | | | | | | | |
| Sept. 26 | 1030 | 42 | | 51200 | 62 | 8600 | | | | | | | | | | | | |

ALASKA WEST OF LONGITUDE 141°--Continued

15-3560. YUKON RIVER AT EAGLE, ALASKA

LOCATION.--Lat 64°47'30", long 141°12'00", at gaging station at Eagle on left bank, 0.1 mile upstream from Mission Creek, 1.1 miles downstream from Castalia Creek, and 11 miles downstream from the International boundary.
DRAINAGE AREA.--113,500 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: April to October 1951, June to September 1952, July 1953 to November 1957, October 1961 to September 1962.
Water temperatures: May to October 1951, June to August 1952, October 1961 to September 1963, June 1965 to August 1966 (discontinued).
Sediment records: October 1961 to September 1966 (discontinued).
EXTREMES, 1965-66.--Water temperatures: Maximum, 63°F July 17, 18, 24, 25.
Sediment concentrations: Maximum daily, 2,000 ppm July 27.
Sediment loads: Maximum daily, 820,000 tons July 27.
EXTREMES, 1951-52, 1961-66.--Water temperatures (1951-52, 1961-63, June 1965 to August 1966): Maximum, 65°F Aug. 1, 2, 1962.
Sediment concentrations (1961-66): Maximum daily, 2,480 ppm July 15, 1963.
Sediment loads (1961-66): Maximum daily, 1,850,000 tons July 15, 1963.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 41 | 39 | 39 | -- | 48 | 38 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June | 47 | 47 | 48 | 50 | 52 | 52 | -- | -- | -- | -- | -- | -- | 54 | -- | 54 | 55 | -- | -- | 54 | 54 | -- | 53 | -- | 54 | 55 | 55 | 56 | 56 | -- | 56 | -- | -- |
| July | 57 | 57 | 57 | -- | 58 | 58 | 60 | 58 | 59 | 59 | 59 | 59 | 60 | -- | 62 | 62 | 63 | 63 | 60 | 63 | 62 | 62 | 62 | 63 | 63 | 62 | 61 | 61 | 59 | 59 | 58 | 60 |
| August | 58 | 58 | 57 | 58 | 58 | 59 | 59 | 59 | 59 | 57 | 56 | 55 | 55 | 55 | 55 | 55 | 54 | 54 | 54 | 55 | -- | 54 | -- | 54 | 54 | 54 | 53 | 53 | 52 | 53 | 53 | 56 |
| September | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

ALASKA WEST OF LONGITUDE 141°--Continued

15-3560. YUKON RIVER AT EAGLE, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 104000 | 80 | 22000 | 39000 | | 3100 | 24000 | | 1100 |
| 2 | 101000 | 70 | 19000 | 39000 | | 3100 | 24000 | | 1100 |
| 3 | 97600 | 60 | 16000 | 39000 | | 3100 | 24000 | | 1100 |
| 4 | 95200 | 40 | 10000 | 39000 | | 3100 | 24000 | | 1100 |
| 5 | 92900 | 40 | 10000 | 39000 | | 3100 | 24000 | | 1100 |
| 6 | 91800 | 40 | 9900 | 39000 | | 3100 | 24000 | | 1100 |
| 7 | 88500 | -- | 7200 | 39000 | | 3100 | 24000 | | 1100 |
| 8 | 87400 | -- | 7100 | 39000 | | 3100 | 24000 | | 1100 |
| 9 | 86300 | -- | 7000 | 39000 | | 3100 | 24000 | | 1100 |
| 10 | 85200 | -- | 6900 | 39000 | | 3100 | 24000 | | 1100 |
| 11 | 83000 | -- | 6700 | 32000 | | 2300 | 24000 | | 1100 |
| 12 | 82000 | -- | 6600 | 32000 | | 2300 | 24000 | | 1100 |
| 13 | 81000 | -- | 6600 | 32000 | | 2300 | 24000 | | 1100 |
| 14 | 80000 | -- | 6500 | 32000 | | 2300 | 24000 | | 1100 |
| 15 | 70000 | -- | 5700 | 32000 | | 2300 | 24000 | | 1100 |
| 16 | 70000 | -- | 5700 | 32000 | | 2300 | 24000 | | 1100 |
| 17 | 70000 | -- | 5700 | 32000 | | 2300 | 24000 | | 1100 |
| 18 | 70000 | -- | 5700 | 32000 | | 2300 | 24000 | | 1100 |
| 19 | 70000 | -- | 5700 | 32000 | | 2300 | 24000 | | 1100 |
| 20 | 70000 | -- | 5700 | 32000 | | 2300 | 24000 | | 1100 |
| 21 | 70000 | -- | 5700 | 28000 | | 2000 | 24000 | | 1100 |
| 22 | 70000 | -- | 5700 | 28000 | | 2000 | 24000 | | 1100 |
| 23 | 70000 | -- | 5700 | 28000 | | 2000 | 24000 | | 1100 |
| 24 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 25 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 26 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 27 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 28 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 29 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 30 | 55000 | -- | 4500 | 28000 | | 2000 | 24000 | | 1100 |
| 31 | 55000 | -- | 4500 | -- | | -- | 24000 | | 1100 |
| Total | 2325900 | -- | 228800 | 990000 | | 74000 | 744000 | | 34100 |

| | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 2 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 3 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 4 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 5 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 6 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 7 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 8 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 9 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 10 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 11 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 12 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 13 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 14 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 15 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 16 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 17 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 18 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 19 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 20 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 21 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 22 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 23 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 24 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 25 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 26 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 27 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 28 | 18000 | | 970 | 15000 | | 405 | 15000 | | 405 |
| 29 | 18000 | | 970 | -- | | -- | 15000 | | 405 |
| 30 | 18000 | | 970 | -- | | -- | 15000 | | 405 |
| 31 | 18000 | | 970 | -- | | -- | 15000 | | 405 |
| Total | 558000 | | 30070 | 420000 | -- | 11340 | 465000 | | 12555 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-3560. YUKON RIVER AT EAGLE, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 18000 | | 970 | 19000 | | 1000 | 151000 | 140 | 57000 |
| 2 | 18000 | | 970 | 20000 | | 1100 | 156000 | 130 | 55000 |
| 3 | 18000 | | 970 | 21000 | | 1100 | 154000 | 120 | 50000 |
| 4 | 18000 | | 970 | 22000 | | 1800 | 163000 | 150 | 66000 |
| 5 | 18000 | | 970 | 23000 | | 1900 | 189000 | 240 | 110000 |
| 6 | 18000 | | 970 | 24000 | | 1900 | 200000 | 370 | 200000 |
| 7 | 18000 | | 970 | 26000 | | 2100 | 224000 | 550 | 330000 |
| 8 | 18000 | | 970 | 29000 | | 2300 | 247000 | 620 | 410000 |
| 9 | 18000 | | 970 | 34000 | | 3700 | 263000 | 620 | 440000 |
| 10 | 18000 | | 970 | 40000 | | 6500 | 263000 | 590 | 420000 |
| 11 | 18000 | | 970 | 45000 | | 7300 | 263000 | 590 | 420000 |
| 12 | 18000 | | 970 | 60000 | | 11000 | 263000 | 600 | 430000 |
| 13 | 18000 | | 970 | 90000 | | 19000 | 269000 | 610 | 440000 |
| 14 | 18000 | | 970 | 150000 | | 49000 | 283000 | 650 | 500000 |
| 15 | 18000 | | 970 | 197000 | | 270000 | 285000 | 660 | 510000 |
| 16 | 18000 | | 970 | 217000 | | 530000 | 277000 | 550 | 400000 |
| 17 | 18000 | | 970 | 211000 | | 460000 | 269000 | 460 | 330000 |
| 18 | 18000 | | 970 | 204000 | | 390000 | 269000 | 430 | 310000 |
| 19 | 18000 | | 970 | 187000 | | 250000 | 281000 | 440 | 330000 |
| 20 | 18000 | | 970 | 168000 | | 136000 | 285000 | 520 | 400000 |
| 21 | 18000 | | 970 | 156000 | | 84000 | 295000 | 590 | 470000 |
| 22 | 18000 | | 970 | 150000 | | 73000 | 285000 | 570 | 440000 |
| 23 | 18000 | | 970 | 145000 | | 70000 | 277000 | 540 | 400000 |
| 24 | 18000 | | 970 | 138000 | | 67000 | 265000 | 540 | 390000 |
| 25 | 18000 | | 970 | 134000 | | 58000 | 247000 | 430 | 290000 |
| 26 | 18000 | | 970 | 132000 | | 57000 | 233000 | 330 | 210000 |
| 27 | 18000 | | 970 | 130000 | | 56000 | 217000 | 310 | 180000 |
| 28 | 18000 | | 970 | 136000 | | 59000 | 208000 | 340 | 190000 |
| 29 | 18000 | | 970 | 139000 | | 53000 | 200000 | 400 | 220000 |
| 30 | 18000 | | 970 | 139000 | | 53000 | 208000 | 600 | 340000 |
| 31 | -- | | -- | 145000 | | 55000 | -- | -- | -- |
| Total | 540000 | | 29100 | 3331000 | -- | 2830700 | 7199000 | -- | 9338000 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| 1 | 220000 | 840 | 500000 | 144000 | 1500 | 580000 | 94000 | | 28000 |
| 2 | 217000 | 1200 | 700000 | 140000 | 1000 | 380000 | 92900 | | 25000 |
| 3 | 217000 | 580 | 740000 | 134000 | 800 | 290000 | 92900 | | 25000 |
| 4 | 211000 | 490 | 280000 | 130000 | 660 | 230000 | 91800 | | 25000 |
| 5 | 197000 | 480 | 260000 | 130000 | 540 | 190000 | 87400 | | 21000 |
| 6 | 187000 | 450 | 230000 | 126000 | 510 | 170000 | 86300 | | 21000 |
| 7 | 179000 | 380 | 180000 | 122000 | 520 | 170000 | 87400 | | 21000 |
| 8 | 174000 | 390 | 180000 | 123000 | 460 | 150000 | 88500 | | 22000 |
| 9 | 174000 | 520 | 240000 | 123000 | 510 | 170000 | 88500 | | 22000 |
| 10 | 174000 | 700 | 330000 | 125000 | 710 | 240000 | 88500 | | 22000 |
| 11 | 173000 | 560 | 260000 | 127000 | 780 | 270000 | 89600 | | 22000 |
| 12 | 176000 | 550 | 260000 | 122000 | 740 | 240000 | 88500 | | 22000 |
| 13 | 174000 | 520 | 240000 | 116000 | 620 | 190000 | 87400 | | 21000 |
| 14 | 176000 | 510 | 240000 | 114000 | 460 | 140000 | 85200 | | 18000 |
| 15 | 176000 | 540 | 260000 | 116000 | 390 | 120000 | 85200 | | 18000 |
| 16 | 169000 | 630 | 290000 | 115000 | 320 | 99000 | 85200 | | 18000 |
| 17 | 168000 | 910 | 410000 | 114000 | 260 | 80000 | 84000 | | 18000 |
| 18 | 163000 | 1200 | 530000 | 114000 | 230 | 71000 | 84100 | | 18000 |
| 19 | 163000 | 1200 | 530000 | 110000 | 220 | 65000 | 84100 | | 18000 |
| 20 | 168000 | 1400 | 640000 | 104000 | 270 | 76000 | 83000 | | 16000 |
| 21 | 166000 | 1600 | 720000 | 104000 | 250 | 70000 | 83000 | | 16000 |
| 22 | 166000 | 1500 | 670000 | 102000 | 210 | 58000 | 83000 | | 16000 |
| 23 | 160000 | 1600 | 690000 | 101000 | 200 | 55000 | 83000 | | 16000 |
| 24 | 157000 | 1400 | 590000 | 96400 | 210 | 55000 | 83000 | | 16000 |
| 25 | 154000 | 1400 | 580000 | 96400 | 200 | 52000 | 81000 | | 15000 |
| 26 | 156000 | 1600 | 670000 | 98800 | 190 | 51000 | 79000 | | 13000 |
| 27 | 152000 | 2000 | 820000 | 98800 | 170 | 45000 | 78000 | | 13000 |
| 28 | 148000 | 1700 | 680000 | 97600 | 150 | 40000 | 78000 | | 13000 |
| 29 | 146000 | 1600 | 630000 | 97600 | 150 | 40000 | 77100 | | 12000 |
| 30 | 144000 | 1600 | 620000 | 96400 | 130 | 34000 | 76200 | | 12000 |
| 31 | 145000 | 1600 | 630000 | 95200 | 120 | 31000 | -- | | -- |
| Total | 5350000 | -- | 14200000 | 3533200 | -- | 4452000 | 2555900 | | 563000 |

Total discharge for year (cfs-days)..... 28012000
Total load for year (tons)..... 31803655

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| July 14, 1966..... | 1130 | 62 | | | 440 | | 36 | 46 | 60 | 71 | 79 | 83 | 90 | 100 | 100 | | | VBWC |
| Aug. 23..... | 1100 | 54 | | | 220 | | 29 | 41 | 56 | 67 | 78 | 86 | 94 | 100 | | | | VBWC |

15-4760. *TANANA RIVER NEAR TANACROSS, ALASKA*

LOCATION.--Lat 63°23'20", 143°44'45", at gaging station on right bank, 0.2 mile downstream from unnamed tributary, 0.2 mile north of Cathedral Rapids, 9 miles upstream from Robertson River, and 13 miles west of Tanacross.
DRAINAGE AREA.--8,550 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: December 1953 to October 1954, January to September 1955, May 1956, March 1957 to September 1966.
Water temperatures: June to September 1954, May 1957 to September 1966.
Sediment records: October 1953 to September 1956 (periodic), May 1957 to September 1966 (daily).
EXTREMES, 1965-66.--Water temperatures: Maximum, 63°F July 14.
Sediment concentrations: Maximum daily, 3,500 ppm July 21.
Sediment loads: Maximum daily, 250,000 tons July 21.
EXTREMES, 1956-66.--Water temperatures (1954, 1957-66): Maximum, 65°F June 2, 7, July 3, 1958.
Sediment concentrations: Maximum daily, 5,370 ppm June 17, 1961.
Sediment loads: Maximum daily, 340,000 tons Aug. 28, 1963.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 1-10, 1966... | 7700 | 12 | | 41 | 6.9 | 4.6 | 1.0 | 144 | 25 | 1.4 | 0.2 | 0.4 | 164 | 131 | 13 | 274 | 7.6 | |
| May 11-20..... | 9430 | 9.8 | | 32 | 5.8 | 3.9 | .7 | 117 | 19 | 1.1 | .2 | .4 | 131 | 104 | 8 | 215 | 7.8 | |
| May 21-31..... | 7820 | 10 | | 33 | 8.1 | 4.1 | .9 | 120 | -- | 1.4 | .2 | .4 | 136 | 116 | 17 | 215 | 7.2 | |
| June 1-10..... | 14200 | 9.6 | | 32 | 5.8 | 3.9 | 1.2 | 117 | 20 | 1.4 | .5 | .5 | 132 | 104 | 8 | 220 | 7.8 | |
| June 11-20..... | 19100 | 9.2 | | 32 | 6.1 | 5.3 | .9 | 116 | 20 | 4.6 | .2 | .4 | 136 | 105 | 10 | 222 | 7.9 | |
| June 21-30..... | 19800 | 9.4 | | 30 | 6.1 | 5.1 | .8 | 113 | 20 | 2.8 | .2 | .4 | 131 | 100 | 7 | 220 | 7.6 | |
| July 1-10..... | 17400 | 10 | | 28 | 6.3 | 5.3 | 1.4 | 108 | 18 | 2.8 | -- | .0 | 126 | 96 | 7 | 205 | 7.5 | |
| July 11-21..... | 19800 | 10 | | 27 | 6.9 | 5.3 | 1.2 | 104 | 16 | 3.5 | .0 | .2 | 121 | 96 | 11 | 194 | 7.5 | |
| July 22-31..... | 25800 | 10 | | 28 | 4.4 | 5.4 | 1.3 | 104 | 14 | 2.8 | .0 | .3 | 117 | 88 | 3 | 194 | 7.7 | |
| Aug. 1-12..... | 23100 | 9.7 | | 28 | 4.9 | 5.6 | .9 | 102 | 17 | 2.5 | .1 | .2 | 119 | 90 | 6 | 198 | 7.2 | |
| Aug. 13-31..... | 12400 | 10 | | 34 | 4.6 | 6.4 | 1.4 | 119 | 21 | 3.2 | .3 | .1 | 140 | 104 | 6 | 233 | 7.7 | |
| Sept. 1-10..... | 8780 | 11 | | 36 | 5.8 | 5.6 | 1.1 | 128 | 23 | 3.2 | .1 | .2 | 149 | 114 | 9 | 231 | 7.7 | |
| Sept. 11-20..... | 7100 | 12 | | 40 | 7.3 | 6.4 | 1.1 | 114 | 30 | 2.8 | .1 | .1 | 171 | 120 | 36 | 271 | 7.5 | |
| Sept. 21-30..... | 6360 | 12 | | 42 | 6.8 | 6.9 | 1.0 | 148 | 28 | 3.5 | .1 | .0 | 173 | 133 | 11 | 271 | 7.9 | |

ALASKA WEST OF LONGITUDE 141°--Continued

15-4760. TANANA RIVER NEAR TANACROSS, ALASKA--Continued

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | May | June | July | Aug. | Sept. | Day | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1... | 300 | 220 | 210 | 204 | 223 | 17... | 219 | 231 | 195 | 227 | 276 |
| 2... | 300 | 214 | 209 | 199 | 228 | 18... | 220 | 229 | -- | 230 | 271 |
| 3... | 285 | 216 | 207 | 190 | 240 | 19... | 215 | 230 | 196 | 231 | 263 |
| 4... | 280 | 233 | 198 | 192 | 242 | 20... | 213 | 215 | 188 | -- | 255 |
| 5... | 276 | 217 | 202 | 189 | 242 | 21... | 217 | 221 | 189 | 222 | 259 |
| 6... | 271 | 228 | 206 | 186 | 244 | 22... | 220 | 230 | 193 | 224 | 263 |
| 7... | 261 | 228 | 210 | 180 | 244 | 23... | 219 | 212 | 196 | 230 | 271 |
| 8... | 253 | -- | 207 | 188 | 257 | 24... | 226 | 227 | 194 | -- | 278 |
| 9... | 239 | 225 | 199 | 197 | 263 | 25... | 224 | 227 | 195 | 232 | 283 |
| 10... | 229 | 234 | 197 | 188 | 271 | 26... | 224 | 227 | 191 | 236 | 287 |
| 11... | 226 | 226 | 198 | 190 | 273 | 27... | 229 | 222 | 185 | 228 | 290 |
| 12... | 213 | 229 | 202 | 200 | 276 | 28... | 225 | 214 | 173 | -- | 303 |
| 13... | 212 | 226 | 198 | 230 | 283 | 29... | 217 | 209 | 194 | -- | 303 |
| 14... | 209 | 226 | 199 | 233 | 287 | 30... | 211 | 207 | 202 | 221 | 305 |
| 15... | 211 | 226 | 198 | 234 | 285 | 31... | 207 | -- | 202 | 224 | -- |
| 16... | 213 | 231 | 193 | 228 | 290 | | | | | | |
| Average | | | | | | | 234 | 223 | 197 | 212 | 268 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | 37 | 37 | 38 | 36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | 40 | 42 | 42 | 40 | 39 | 42 | 40 | 36 | 39 | -- | 37 | 41 | 40 | 39 | 34 | 40 | 40 | 38 | 40 | 38 | 41 | 37 | 40 | 40 | 40 | 42 | 41 | 41 | 43 | 42 | -- | 40 |
| June | 44 | 44 | 45 | 46 | 46 | 50 | 46 | -- | 47 | 46 | -- | 43 | 47 | 44 | -- | 46 | -- | 45 | 44 | 44 | 44 | 43 | 42 | -- | 46 | 44 | 45 | 46 | 45 | 44 | -- | 45 |
| July | 48 | 46 | 45 | -- | -- | 46 | 44 | -- | 45 | 47 | -- | 46 | 61 | 63 | 57 | 59 | 61 | -- | 57 | 56 | 56 | 57 | 56 | 57 | 57 | 57 | 55 | 54 | 52 | 54 | 54 | 53 |
| August | 52 | 53 | 53 | 52 | 55 | 55 | 55 | 50 | 52 | 50 | 49 | 49 | 49 | 49 | 49 | 46 | 43 | 40 | 39 | -- | 48 | 49 | 48 | -- | 51 | 49 | 52 | 52 | -- | 49 | 49 | 50 |
| September | 47 | 47 | 45 | 44 | 44 | 46 | 46 | 47 | 44 | 45 | 42 | 44 | 47 | 46 | 48 | 46 | 46 | 45 | 44 | 42 | 41 | 44 | 37 | 42 | 42 | 43 | 43 | 42 | 42 | 42 | -- | 44 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-4760. TANANA RIVER NEAR TANACROSS, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 8740 | 500 | 12000 | 2700 | | 700 | 2300 | | 100 |
| 2 | 8050 | 400 | 8700 | 2700 | | 700 | 2300 | | 100 |
| 3 | 7500 | 360 | 7200 | 2700 | | 700 | 2300 | | 100 |
| 4 | 7050 | 350 | 6700 | 2700 | | 700 | 2300 | | 100 |
| 5 | 6700 | -- | 6000 | 2700 | | 700 | 2300 | | 100 |
| 6 | 6500 | -- | 5200 | 2700 | | 700 | 2300 | | 100 |
| 7 | 6200 | -- | 4900 | 2700 | | 600 | 2300 | | 100 |
| 8 | 6000 | -- | 4600 | 2700 | | 600 | 2300 | | 100 |
| 9 | 5700 | -- | 4200 | 2700 | | 600 | 2300 | | 100 |
| 10 | 5400 | -- | 3800 | 2700 | | 600 | 2300 | | 100 |
| 11 | 5200 | -- | 3600 | 2700 | | 600 | 2300 | | 100 |
| 12 | 5000 | -- | 3200 | 2700 | | 500 | 2300 | | 100 |
| 13 | 4800 | -- | 3000 | 2700 | | 500 | 2300 | | 100 |
| 14 | 4700 | -- | 2800 | 2700 | | 400 | 2300 | | 100 |
| 15 | 4600 | -- | 2600 | 2700 | | 400 | 2300 | | 100 |
| 16 | 4400 | -- | 2400 | 2300 | | 400 | 2300 | | 100 |
| 17 | 4300 | -- | 2200 | 2300 | | 400 | 2300 | | 100 |
| 18 | 4200 | -- | 2000 | 2300 | | 300 | 2300 | | 100 |
| 19 | 4000 | -- | 1800 | 2300 | | 300 | 2300 | | 100 |
| 20 | 3900 | -- | 1700 | 2300 | | 300 | 2300 | | 100 |
| 21 | 3800 | -- | 1500 | 2300 | | 200 | 2300 | | 100 |
| 22 | 3700 | -- | 1200 | 2300 | | 200 | 2300 | | 100 |
| 23 | 3600 | -- | 1100 | 2300 | | 200 | 2300 | | 100 |
| 24 | 3500 | -- | 1000 | 2300 | | 200 | 2300 | | 100 |
| 25 | 3400 | -- | 1000 | 2300 | | 200 | 2300 | | 100 |
| 26 | 3300 | -- | 920 | 2300 | | 200 | 2300 | | 100 |
| 27 | 3200 | -- | 900 | 2300 | | 200 | 2300 | | 100 |
| 28 | 3100 | -- | 850 | 2300 | | 200 | 2300 | | 100 |
| 29 | 3100 | -- | 850 | 2300 | | 200 | 2300 | | 100 |
| 30 | 3000 | -- | 800 | 2300 | | 100 | 2300 | | 100 |
| 31 | 3000 | -- | 800 | -- | | -- | 2300 | | 100 |
| Total | 149640 | -- | 99520 | 75000 | | 12600 | 71300 | | 3100 |

| | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 2 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 3 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 4 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 5 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 6 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 7 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 8 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 9 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 10 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 11 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 12 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 13 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 14 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 15 | 2300 | | 90 | 2200 | | 60 | 2200 | | 60 |
| 16 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 17 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 18 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 19 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 20 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 21 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 22 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 23 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 24 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 25 | 2300 | | 80 | 2200 | | 60 | 2200 | | 60 |
| 26 | 2300 | | 70 | 2200 | | 60 | 2200 | | 60 |
| 27 | 2300 | | 70 | 2200 | | 60 | 2200 | | 60 |
| 28 | 2300 | | 70 | 2200 | | 60 | 2200 | | 60 |
| 29 | 2300 | | 70 | -- | | -- | 2200 | | 60 |
| 30 | 2300 | | 70 | -- | | -- | 2200 | | 60 |
| 31 | 2300 | | 70 | -- | | -- | 2200 | | 60 |
| Total | 71300 | | 2570 | 61600 | | 1680 | 68200 | | 1860 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-4760. TANANA RIVER NEAR TANACROSS, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 2200 | | 60 | 2900 | -- | 500 | 8500 | 380 | 8700 |
| 2 | 2200 | | 60 | 3200 | 70 | 600 | 8680 | 390 | 9100 |
| 3 | 2200 | | 60 | 4500 | 90 | 1100 | 8890 | 430 | 10000 |
| 4 | 2200 | | 60 | 6500 | 120 | 2100 | 10100 | 870 | 24000 |
| 5 | 2200 | | 60 | 8000 | 200 | 4300 | 12500 | 1400 | 47000 |
| 6 | 2200 | | 80 | 9300 | 530 | 13000 | 15300 | 1600 | 66000 |
| 7 | 2200 | | 80 | 10000 | 500 | 14000 | 18300 | 1700 | 84000 |
| 8 | 2200 | | 80 | 10500 | 830 | 24000 | 19800 | 1700 | 91000 |
| 9 | 2200 | | 80 | 11000 | 1000 | 30000 | 19800 | 1600 | 86000 |
| 10 | 2200 | | 80 | 11000 | 2200 | 65000 | 19800 | 1400 | 75000 |
| 11 | 2200 | | 100 | 10500 | 1100 | 31000 | 19600 | 1300 | 69000 |
| 12 | 2200 | | 100 | 10300 | 820 | 23000 | 19600 | 1200 | 64000 |
| 13 | 2200 | | 100 | 10100 | 760 | 21000 | 19500 | 1200 | 63000 |
| 14 | 2200 | | 100 | 9760 | 580 | 15000 | 19600 | 1200 | 64000 |
| 15 | 2200 | | 100 | 9550 | 560 | 14000 | 18900 | 1100 | 56000 |
| 16 | 2400 | | 100 | 9190 | 500 | 12000 | 17300 | 1100 | 51000 |
| 17 | 2400 | | 100 | 8920 | 450 | 11000 | 16700 | 950 | 43000 |
| 18 | 2400 | | 100 | 8830 | 400 | 9500 | 18300 | 1200 | 59000 |
| 19 | 2400 | | 200 | 8740 | 380 | 9000 | 20400 | 1300 | 72000 |
| 20 | 2400 | | 200 | 8440 | 350 | 8000 | 20800 | 1300 | 73000 |
| 21 | 2400 | | 200 | 7980 | 330 | 7100 | 19700 | 1300 | 69000 |
| 22 | 2400 | | 200 | 7840 | 320 | 6800 | 20000 | 1300 | 70000 |
| 23 | 2400 | | 200 | 7360 | 320 | 6400 | 19900 | 1300 | 70000 |
| 24 | 2400 | | 200 | 7160 | 320 | 6200 | 19400 | 1100 | 58000 |
| 25 | 2400 | | 200 | 7000 | 310 | 5900 | 20000 | 1100 | 59000 |
| 26 | 2400 | | 300 | 6970 | 300 | 5600 | 20800 | 1200 | 67000 |
| 27 | 2400 | | 300 | 7500 | 300 | 6100 | 20400 | 1200 | 66000 |
| 28 | 2400 | | 300 | 8030 | 350 | 7600 | 19800 | 1900 | 59000 |
| 29 | 2400 | | 300 | 8740 | 400 | 9400 | 19100 | 1000 | 52000 |
| 30 | 2400 | | 300 | 8860 | 380 | 9100 | 18400 | 960 | 48000 |
| 31 | -- | | -- | 8590 | 340 | 7900 | -- | -- | -- |
| Total | 69000 | | 4400 | 257260 | -- | 386200 | 529870 | -- | 1732800 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 17800 | 930 | 45000 | 25100 | 1800 | 120000 | 10100 | 880 | 24000 |
| 2 | 17600 | 930 | 44000 | 24700 | 1800 | 120000 | 9990 | 700 | 19000 |
| 3 | 18000 | 960 | 47000 | 24000 | 1600 | 100000 | 9160 | 510 | 13000 |
| 4 | 18200 | 1000 | 49000 | 23600 | 1500 | 96000 | 8710 | 500 | 12000 |
| 5 | 17400 | 1100 | 52000 | 23800 | 1600 | 100000 | 8770 | 480 | 11000 |
| 6 | 16100 | 1000 | 43000 | 24800 | 1800 | 120000 | 8740 | 450 | 11000 |
| 7 | 15700 | 980 | 42000 | 24300 | 1800 | 120000 | 8620 | 430 | 10000 |
| 8 | 17100 | 1100 | 51000 | 22900 | 1700 | 110000 | 8740 | 430 | 10000 |
| 9 | 18300 | 1400 | 69000 | 21800 | 1600 | 94000 | 7780 | 370 | 7800 |
| 10 | 17300 | 1500 | 70000 | 20800 | 1600 | 90000 | 7160 | 310 | 6000 |
| 11 | 16100 | 1400 | 61000 | 21400 | 1700 | 98000 | 6880 | 270 | 5000 |
| 12 | 15500 | 1200 | 50000 | 20100 | 1700 | 92000 | 6590 | 250 | 4400 |
| 13 | 15800 | 1200 | 51000 | 17900 | 1400 | 68000 | 6460 | 280 | 4900 |
| 14 | 17200 | 1300 | 60000 | 16200 | 1200 | 52000 | 6380 | 270 | 4700 |
| 15 | 18400 | 1700 | 84000 | 15500 | 1100 | 46000 | 6380 | 200 | 3400 |
| 16 | 19500 | 1900 | 100000 | 14800 | 1100 | 44000 | 6830 | 250 | 4600 |
| 17 | 20500 | 1900 | 110000 | 14200 | 1000 | 38000 | 7390 | 460 | 9200 |
| 18 | 21300 | 2300 | 130000 | 13500 | 940 | 34000 | 7920 | 590 | 13000 |
| 19 | 23000 | 2600 | 160000 | 13100 | 900 | 32000 | 8170 | 620 | 14000 |
| 20 | 24600 | 2900 | 190000 | 12500 | 900 | 30000 | 8000 | 660 | 14000 |
| 21 | 26300 | 3500 | 250000 | 12000 | 930 | 30000 | 7580 | 550 | 11000 |
| 22 | 25800 | 2900 | 200000 | 11500 | 900 | 28000 | 7220 | 430 | 8400 |
| 23 | 25100 | 2400 | 160000 | 11400 | 890 | 27000 | 6910 | 360 | 6700 |
| 24 | 24900 | 2300 | 150000 | 10800 | 940 | 27000 | 6620 | 280 | 5000 |
| 25 | 25800 | 2500 | 170000 | 10400 | 850 | 24000 | 6280 | 250 | 4200 |
| 26 | 26500 | 2600 | 190000 | 10300 | 830 | 23000 | 6100 | 250 | 4100 |
| 27 | 26400 | 2400 | 170000 | 10400 | 860 | 24000 | 5990 | 240 | 3900 |
| 28 | 26500 | 2300 | 160000 | 10400 | 1100 | 31000 | 5790 | 160 | 2500 |
| 29 | 26100 | 2300 | 160000 | 10100 | 1200 | 33000 | 5660 | 160 | 2400 |
| 30 | 25800 | 2000 | 140000 | 10500 | 1000 | 28000 | 5470 | 170 | 2500 |
| 31 | 25600 | 2000 | 140000 | 10400 | 870 | 24000 | -- | -- | -- |
| Total | 650200 | -- | 3398000 | 513200 | -- | 1903000 | 222390 | -- | 2517000 |

Total discharge for for year (cfs-days)..... 2738960
Total load for year (tons)..... 10062730

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| July 18, 1966..... | 1700 | 58 | | 21000 | 2000 | 110000 | 31 | 41 | 53 | 61 | 71 | 78 | 90 | 96 | 100 | | | VBWC |

15-5140. CHENA RIVER AT FAIRBANKS, ALASKA

LOCATION.--Lat 64°50'50", long 147°42'20", at gaging station near center on downstream side of bridge on Steese Highway (U.S. Highway 97) in Fairbanks, 0.15 mile upstream from Noyes Slough, 11 miles upstream from mouth, and 11 miles downstream from Chena Slough.
DRAINAGE AREA.--1,980 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: May to September 1953, January 1954 to September 1955, October 1957 to May 1958, June to September 1964.
Water temperatures: May to September 1953, May 1962 to September 1963, October 1964 to November 1965.
Sediment records; January 1954 to September 1955, May 1962 to September 1966.
EXTREMES, 1965-66.--Sediment concentrations: Maximum daily, 390 ppm May 12.
Sediment loads: Maximum daily, 12,000 tons May 10, 11.
EXTREMES, 1962-66.--Water temperatures (1962-63, 1964-65): Maximum, 66°F June 17, 1962.
Sediment concentrations: Maximum daily, 510 ppm May 17, 1962.
Sediment loads: Maximum daily, 14,600 tons May 18, 1962.

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | 36 | 36 | 36 | 35 | 35 | 35 | 34 | 33 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 32 | 33 | 32 | 32 | 32 | 32 | 33 |
| November..... | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 34 | 34 | 33 | 33 | 32 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | 32 | 33 | -- | 32 |
| December..... | 33 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| June..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| July..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| August..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| September..... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

ALASKA WEST OF LONGITUDE 141°--Continued

15-5140. CHENA RIVER AT FAIRBANKS, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 2830 | 110 | 860 | 800 | 12 | 26 | 590 | 14 | 22 |
| 2 | 2670 | 110 | 810 | 790 | 12 | 26 | 580 | 20 | 31 |
| 3 | 2470 | 73 | 490 | 780 | 13 | 27 | 580 | --- | 20 |
| 4 | 2350 | 18 | 120 | 770 | 12 | 25 | 570 | --- | 20 |
| 5 | 2300 | 15 | 94 | 760 | 14 | 28 | 570 | --- | 20 |
| 6 | 2230 | 36 | 220 | 750 | 15 | 31 | 560 | --- | 18 |
| 7 | 2160 | 36 | 210 | 740 | 15 | 30 | 560 | --- | 18 |
| 8 | 2050 | 16 | 89 | 730 | 10 | 20 | 550 | --- | 17 |
| 9 | 1980 | 56 | 300 | 720 | 11 | 22 | 550 | --- | 17 |
| 10 | 1900 | 38 | 200 | 720 | 13 | 25 | 540 | --- | 16 |
| 11 | 1800 | 14 | 70 | 716 | 14 | 26 | 530 | --- | 15 |
| 12 | 1700 | 17 | 77 | 710 | 14 | 26 | 530 | --- | 15 |
| 13 | 1600 | 23 | 100 | 700 | 13 | 24 | 520 | --- | 14 |
| 14 | 1500 | 96 | 390 | 690 | 10 | 18 | 520 | --- | 14 |
| 15 | 1400 | 190 | 730 | 680 | 10 | 19 | 510 | --- | 13 |
| 16 | 1200 | 80 | 260 | 670 | 12 | 22 | 510 | --- | 12 |
| 17 | 1000 | 24 | 65 | 670 | 12 | 22 | 500 | --- | 12 |
| 18 | 950 | 24 | 62 | 670 | 12 | 22 | 500 | --- | 12 |
| 19 | 930 | 30 | 76 | 660 | 11 | 20 | 500 | --- | 12 |
| 20 | 910 | 26 | 63 | 660 | 14 | 26 | 490 | --- | 11 |
| 21 | 900 | 17 | 41 | 650 | 16 | 28 | 480 | --- | 10 |
| 22 | 890 | 15 | 37 | 650 | 20 | 35 | 480 | --- | 10 |
| 23 | 880 | 15 | 36 | 640 | 18 | 30 | 470 | --- | 9 |
| 24 | 870 | 16 | 38 | 630 | 27 | 46 | 470 | --- | 9 |
| 25 | 860 | 16 | 37 | 620 | 14 | 23 | 460 | --- | 7 |
| 26 | 850 | 13 | 29 | 620 | 16 | 27 | 460 | --- | 7 |
| 27 | 840 | 10 | 24 | 610 | 19 | 31 | 460 | --- | 7 |
| 28 | 830 | 10 | 22 | 600 | --- | 30 | 450 | --- | 6 |
| 29 | 820 | 11 | 25 | 600 | 26 | 41 | 450 | --- | 6 |
| 30 | 810 | 12 | 26 | 600 | 16 | 26 | 450 | --- | 6 |
| 31 | 800 | 11 | 24 | --- | --- | --- | 440 | --- | 6 |
| Total | 45280 | --- | 2625 | 20606 | --- | 802 | 15830 | --- | 412 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 440 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 2 | 430 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 3 | 430 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 4 | 420 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 5 | 420 | | 6 | 329 | | 4 | 320 | --- | 3 |
| 6 | 410 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 7 | 410 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 8 | 410 | | 6 | 330 | | 4 | 320 | --- | 3 |
| 9 | 400 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 10 | 400 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 11 | 390 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 12 | 390 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 13 | 380 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 14 | 380 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 15 | 380 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 16 | 370 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 17 | 370 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 18 | 360 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 19 | 360 | | 5 | 330 | | 4 | 320 | --- | 3 |
| 20 | 360 | | 5 | 330 | | 4 | 323 | --- | 4 |
| 21 | 360 | | 5 | 330 | | 4 | 330 | --- | 5 |
| 22 | 350 | | 5 | 330 | | 4 | 330 | --- | 6 |
| 23 | 350 | | 5 | 330 | | 4 | 330 | --- | 8 |
| 24 | 350 | | 5 | 330 | | 4 | 330 | --- | 10 |
| 25 | 340 | | 4 | 330 | | 4 | 340 | --- | 15 |
| 26 | 340 | | 4 | 330 | | 4 | 340 | --- | 20 |
| 27 | 340 | | 4 | 330 | | 4 | 340 | 24 | 22 |
| 28 | 330 | | 4 | 330 | | 4 | 350 | 34 | 32 |
| 29 | 330 | | 4 | --- | | --- | 350 | 21 | 20 |
| 30 | 330 | | 4 | --- | | --- | 360 | 18 | 17 |
| 31 | 330 | | 4 | --- | | --- | 360 | 14 | 13 |
| Total | 11660 | --- | 156 | 9239 | --- | 112 | 10163 | --- | 229 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-5140. CHENA RIVER AT FAIRBANKS, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 360 | 17 | 16 | 590 | 18 | 28 | 5170 | 140 | 2000 |
| 2 | 370 | 18 | 18 | 672 | 14 | 26 | 5110 | 120 | 1700 |
| 3 | 370 | 14 | 14 | 868 | 18 | 41 | 4830 | 80 | 1000 |
| 4 | 370 | 16 | 16 | 1330 | 27 | 98 | 4650 | 73 | 910 |
| 5 | 370 | 16 | 16 | 1880 | 46 | 240 | 4670 | 79 | 1000 |
| 6 | 380 | 18 | 18 | 2560 | 88 | 610 | 4230 | 64 | 730 |
| 7 | 380 | 18 | 18 | 4530 | 150 | 1900 | 3970 | 41 | 440 |
| 8 | 380 | 17 | 17 | 6860 | 220 | 4100 | 3840 | 42 | 430 |
| 9 | 378 | 17 | 17 | 10200 | 300 | 8200 | 3570 | 38 | 370 |
| 10 | 385 | 18 | 18 | 12400 | 340 | 12000 | 3270 | 29 | 260 |
| 11 | 385 | 18 | 19 | 12700 | 350 | 12000 | 2910 | 33 | 260 |
| 12 | 372 | 18 | 18 | 9930 | 390 | 11000 | 2710 | 37 | 270 |
| 13 | 366 | 16 | 16 | 6900 | 260 | 4800 | 2760 | 34 | 250 |
| 14 | 372 | 14 | 14 | 5570 | 200 | 3000 | 2790 | 38 | 280 |
| 15 | 366 | 14 | 13 | 5510 | 180 | 2600 | 2640 | 34 | 240 |
| 16 | 378 | 14 | 15 | 6360 | 220 | 3800 | 2460 | 29 | 190 |
| 17 | 385 | 16 | 17 | 6110 | 250 | 4100 | 2240 | 22 | 130 |
| 18 | 398 | 26 | 28 | 5390 | 160 | 2300 | 2120 | 21 | 120 |
| 19 | 430 | 30 | 35 | 5400 | 120 | 1700 | 3060 | 120 | 990 |
| 20 | 430 | 32 | 37 | 5090 | 110 | 1500 | 6290 | 330 | 5600 |
| 21 | 430 | 32 | 37 | 4750 | 88 | 1100 | 5010 | 180 | 2400 |
| 22 | 430 | 30 | 35 | 4970 | 110 | 1500 | 3720 | 62 | 630 |
| 23 | 420 | 26 | 29 | 5250 | 190 | 2700 | 3130 | 38 | 320 |
| 24 | 420 | 20 | 23 | 5430 | 180 | 2700 | 2850 | 30 | 230 |
| 25 | 420 | 18 | 20 | 4890 | 104 | 1400 | 2530 | 28 | 190 |
| 26 | 420 | 17 | 19 | 4290 | 72 | 830 | 2340 | 30 | 190 |
| 27 | 420 | 16 | 18 | 3850 | 51 | 530 | 2230 | 28 | 170 |
| 28 | 450 | 14 | 17 | 3610 | 48 | 470 | 2410 | 22 | 150 |
| 29 | 478 | 17 | 22 | 3770 | 66 | 680 | 2410 | 21 | 140 |
| 30 | 520 | 19 | 27 | 4170 | 88 | 990 | 2200 | 22 | 130 |
| 31 | -- | -- | -- | 4670 | 110 | 1400 | -- | -- | -- |
| Total | 12033 | -- | 627 | 160500 | -- | 88343 | 102120 | -- | 21720 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1950 | 19 | 100 | 884 | 17 | 40 | 740 | 18 | 37 |
| 2 | 1710 | 15 | 70 | 876 | 27 | 64 | 725 | 17 | 33 |
| 3 | 1630 | 14 | 63 | 860 | 20 | 46 | 702 | 18 | 35 |
| 4 | 1550 | 14 | 59 | 860 | 14 | 33 | 702 | 22 | 42 |
| 5 | 1490 | 12 | 48 | 844 | 19 | 44 | 688 | 29 | 53 |
| 6 | 1440 | 11 | 44 | 836 | 15 | 34 | 680 | 22 | 40 |
| 7 | 1380 | 10 | 36 | 828 | 11 | 25 | 672 | 21 | 38 |
| 8 | 1350 | 10 | 36 | 812 | 17 | 37 | 665 | 18 | 33 |
| 9 | 1350 | 14 | 50 | 788 | 14 | 31 | 665 | 17 | 30 |
| 10 | 1340 | 11 | 40 | 764 | 12 | 25 | 665 | 18 | 33 |
| 11 | 1400 | 10 | 38 | 748 | 14 | 29 | 665 | 20 | 36 |
| 12 | 1460 | 10 | 41 | 740 | 16 | 32 | 665 | 20 | 36 |
| 13 | 1450 | 14 | 55 | 740 | 16 | 32 | 658 | 18 | 33 |
| 14 | 1360 | 16 | 59 | 740 | 15 | 30 | 650 | 13 | 22 |
| 15 | 1310 | 16 | 57 | 725 | 14 | 28 | 642 | 10 | 18 |
| 16 | 1260 | 17 | 57 | 710 | 14 | 27 | 642 | 10 | 18 |
| 17 | 1220 | 15 | 50 | 718 | 14 | 26 | 635 | 10 | 16 |
| 18 | 1200 | 14 | 44 | 710 | 13 | 25 | 628 | 13 | 22 |
| 19 | 1170 | 14 | 45 | 718 | 13 | 25 | 628 | 14 | 23 |
| 20 | 1170 | 15 | 48 | 718 | 16 | 31 | 628 | 18 | 30 |
| 21 | 1140 | 16 | 49 | 710 | 14 | 28 | 620 | 18 | 29 |
| 22 | 1100 | 14 | 43 | 710 | 18 | 34 | 620 | 14 | 23 |
| 23 | 1070 | 14 | 39 | 702 | 18 | 34 | 620 | 20 | 33 |
| 24 | 1050 | 13 | 36 | 695 | 16 | 30 | 628 | 21 | 35 |
| 25 | 1020 | 12 | 33 | 710 | 12 | 23 | 620 | 14 | 23 |
| 26 | 1010 | 12 | 33 | 740 | 14 | 27 | 620 | 11 | 19 |
| 27 | 964 | 14 | 35 | 780 | 16 | 34 | 620 | 10 | 17 |
| 28 | 948 | 18 | 45 | 796 | 14 | 31 | 612 | 12 | 20 |
| 29 | 924 | 17 | 42 | 788 | 14 | 30 | 605 | 23 | 38 |
| 30 | 916 | 14 | 34 | 764 | 14 | 29 | 598 | 21 | 34 |
| 31 | 892 | 12 | 29 | 756 | 18 | 38 | -- | -- | -- |
| Total | 39224 | -- | 1458 | 23770 | -- | 1002 | 19508 | -- | 899 |

Total discharge for year (cfs-days)..... 469993
Total load for year (tons)..... 118385

ALASKA WEST OF LONGITUDE 141°--Continued

15-5180. NENANA RIVER NEAR HEALY, ALASKA

LOCATION.--Lat 63°50'40", long 148°56'35", at gaging station on right bank 0.5 mile upstream from Healy Creek, 1.1 miles southeast of Healy, and 1.2 miles upstream from railroad bridge.
DRAINAGE AREA.--1,910 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: June to December 1949, October 1953 to October 1954, May to September 1955, May to October 1956, January 1957 to September 1966.
Water temperatures: June to October 1949, August 1957 to September 1966.
Sediment records: June 1953 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 55°F July 17, 25.
Sediment concentrations: Maximum daily, 1,900 ppm June 5.
Sediment loads: Maximum daily, 100,000 tons June 12.
EXTREMES, 1953-66.--Water temperatures (1957-66)): Maximum, 56°F Aug. 9, 1957.
Sediment concentrations: Maximum daily, 8,330 ppm July 11, 1963.
Sediment loads: Maximum daily, 585,000 tons June 25, 1953.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$ | | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Calcium, magnesium | Noncarbonate | | | |
| June 1-10, 1966.. | 13700 | 3.7 | 0.12 | 15 | 3.5 | 0.9 | 1.0 | 52 | 12 | 0.0 | 0.1 | 0.0 | 62 | 52 | 26 | 118 | 7.8 | 10 |
| June 11-20..... | 13900 | 4.1 | .02 | 18 | .4 | 1.1 | 1.0 | 56 | 18 | .0 | .1 | .0 | 71 | 62 | 34 | 135 | 7.9 | 5 |
| June 21-30..... | 9720 | 4.6 | .04 | 19 | 6.2 | 2.2 | 1.3 | 69 | 19 | .7 | .3 | .2 | 88 | 73 | 39 | 160 | 7.9 | 5 |
| July 1-5..... | 7670 | 4.4 | .10 | 22 | 6.6 | 1.4 | 1.7 | 66 | 31 | .0 | .2 | .5 | 101 | 82 | 28 | 170 | 7.6 | 5 |
| July 6-14..... | 6920 | 4.5 | .10 | 25 | 4.9 | 1.5 | 1.1 | 70 | 28 | 1.1 | .1 | .0 | 100 | 83 | | 210 | 8.0 | 5 |
| July 15-22..... | 7860 | 4.5 | .04 | 23 | 7.2 | 1.5 | 1.6 | 74 | 30 | 1.1 | .2 | .0 | 105 | 87 | 51 | 188 | 8.0 | 0 |
| July 23-31..... | 8050 | 4.5 | .35 | 23 | 5.7 | 1.7 | 2.1 | 70 | 31 | .7 | .1 | .2 | 103 | 81 | 47 | 183 | 7.8 | 10 |
| Aug. 1-5..... | 8490 | 4.7 | .06 | 18 | 9.0 | 1.4 | 1.7 | 68 | 32 | .7 | .2 | .5 | 102 | 82 | 26 | 173 | 7.8 | 10 |
| Aug. 6-17..... | 6380 | 5.1 | -- | 26 | 8.0 | 2.0 | 1.5 | 75 | 38 | .7 | .2 | .2 | 119 | 196 | 126 | 195 | 7.7 | 5 |
| Aug. 18-31..... | 9200 | 5.3 | -- | 24 | 8.0 | 1.8 | .8 | 70 | 35 | 1.4 | .3 | .1 | 111 | 93 | 36 | 192 | 7.8 | 5 |
| Sept. 1-11..... | 4830 | 5.7 | -- | 29 | 7.2 | 2.5 | .8 | 80 | 41 | 1.1 | .5 | .2 | 126 | 102 | 36 | 209 | 7.9 | 5 |

Specific conductance (micromhos at 25°C), water year October 1965 to September 1966

| Day | June | July | Aug. | Sept. | Day | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1... | 125 | 163 | 189 | 191 | 17... | 143 | 181 | 189 | -- |
| 2... | 122 | 167 | 186 | 196 | 18... | 144 | 182 | 186 | -- |
| 3... | 112 | 174 | 181 | 196 | 19... | 131 | 189 | 179 | -- |
| 4... | 108 | 182 | 181 | 196 | 20... | 142 | 186 | -- | -- |
| 5... | 107 | 181 | 190 | 204 | 21... | 136 | 181 | 176 | -- |
| 6... | 101 | 170 | 178 | 207 | 22... | -- | 197 | -- | -- |
| 7... | 102 | 180 | 175 | -- | 23... | 149 | 190 | 175 | -- |
| 8... | 106 | 183 | 187 | -- | 24... | 144 | 184 | 169 | -- |
| 9... | 109 | 184 | 183 | -- | 25... | 154 | 186 | 177 | -- |
| 10... | 116 | 191 | 189 | 220 | 26... | 156 | 188 | 182 | -- |
| 11... | 114 | 183 | 190 | 220 | 27... | 163 | 182 | 185 | -- |
| 12... | 117 | 172 | 193 | -- | 28... | 167 | 159 | -- | -- |
| 13... | 119 | -- | -- | -- | 29... | 170 | 167 | 183 | -- |
| 14... | 130 | 175 | -- | -- | 30... | 169 | 169 | 184 | -- |
| 15... | 130 | 174 | 195 | -- | 31... | -- | 171 | 186 | -- |
| 16... | 141 | 174 | 192 | -- | | | | | |
| Average | | | | | | 131 | 178 | 183 | -- |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October | -- | 34 | 34 | 32 | -- | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| December | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| January | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| February | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| March | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| April | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 34 | 33 | 33 | 36 | -- | -- | -- | -- | 35 | -- | 37 | 41 | 40 | 40 | 43 | -- |
| June | 45 | 41 | 45 | 44 | 45 | 41 | 47 | 47 | 47 | 47 | 47 | 46 | 44 | 46 | 47 | 47 | 46 | -- | 48 | 49 | 49 | -- | 50 | 50 | 53 | 49 | 47 | 50 | 50 | 52 | -- | 47 |
| July | 51 | 49 | 48 | 47 | 50 | 48 | 47 | 45 | 45 | 47 | 50 | 49 | -- | 51 | 52 | 50 | 55 | 47 | 51 | 53 | 52 | 54 | 52 | 54 | 55 | 51 | 46 | 47 | 50 | 52 | 52 | 50 |
| August | 46 | 47 | 46 | 47 | 51 | 53 | 52 | 52 | 51 | 51 | 50 | 50 | -- | -- | 48 | 46 | 45 | 45 | 46 | -- | -- | 46 | 45 | 46 | 45 | 47 | 51 | -- | 46 | 45 | 46 | 48 |
| September | 45 | 44 | 44 | 41 | 44 | 42 | 43 | -- | -- | 41 | 40 | 45 | 43 | 40 | 45 | 44 | 42 | -- | 41 | 41 | 41 | 42 | 40 | 40 | 44 | 44 | 42 | -- | 42 | 39 | -- | 42 |

ALASKA WEST OF LONGITUDE 141°--Continued

15-5180. NENANA RIVER NEAR HEALY, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966
(Where no concentrations are reported, loads are estimated)

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 5470 | 250 | B 3700 | C 1400 | | 60 | C 800 | | 20 |
| 2 | 5240 | 360 | 5100 | C 1400 | | 60 | C 800 | | 20 |
| 3 | 5200 | 170 | 2400 | C 1400 | | 60 | C 800 | | 20 |
| 4 | 4810 | 78 | 1000 | C 1400 | | 60 | C 800 | | 20 |
| 5 | 4480 | 100 | B 1200 | C 1400 | | 60 | C 800 | | 20 |
| 6 | 4280 | 190 | 2200 | C 1400 | | 60 | C 800 | | 20 |
| 7 | 4110 | 140 | 1600 | C 1400 | | 60 | C 800 | | 20 |
| 8 | 3980 | 62 | 670 | C 1400 | | 50 | C 800 | | 20 |
| 9 | 3800 | 50 | 510 | C 1400 | | 50 | C 800 | | 20 |
| 10 | 3600 | 80 | B 800 | C 1400 | | 50 | C 800 | | 20 |
| 11 | 3400 | 120 | 1100 | C 1400 | | 50 | C 800 | | 20 |
| 12 | 3200 | 78 | 670 | C 1400 | | 50 | C 800 | | 20 |
| 13 | 3000 | 30 | 240 | C 1400 | | 50 | C 800 | | 20 |
| 14 | 2800 | 20 | 150 | C 1400 | | 40 | C 800 | | 20 |
| 15 | 2600 | 18 | 130 | C 1400 | | 40 | C 800 | | 20 |
| 16 | 2500 | 30 | 200 | C 1000 | | 40 | C 600 | | 15 |
| 17 | 2400 | 26 | 170 | C 1000 | | 40 | C 600 | | 15 |
| 18 | 2300 | --- | 150 | C 1000 | | 40 | C 600 | | 15 |
| 19 | 2200 | --- | 130 | C 1000 | | 40 | C 600 | | 15 |
| 20 | 2100 | --- | 110 | C 1000 | | 40 | C 600 | | 15 |
| 21 | C 1800 | --- | 100 | C 1000 | | 40 | C 600 | | 15 |
| 22 | C 1800 | --- | 100 | C 1000 | | 40 | C 600 | | 15 |
| 23 | C 1800 | --- | 100 | C 1000 | | 40 | C 600 | | 15 |
| 24 | C 1800 | --- | 90 | C 1000 | | 40 | C 600 | | 15 |
| 25 | C 1800 | --- | 90 | C 1000 | | 30 | C 600 | | 15 |
| 26 | C 1800 | --- | 90 | C 1000 | | 30 | C 600 | | 15 |
| 27 | C 1800 | --- | 80 | C 1000 | | 30 | C 600 | | 15 |
| 28 | C 1800 | --- | 80 | C 1000 | | 30 | C 600 | | 15 |
| 29 | C 1800 | --- | 80 | C 1000 | | 30 | C 600 | | 15 |
| 30 | C 1800 | --- | 70 | C 1000 | | 30 | C 600 | | 15 |
| 31 | C 1800 | --- | 70 | --- | | --- | C 600 | | 15 |
| Total | 91270 | --- | 23180 | 36000 | | 1340 | 21600 | | 540 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 2 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 3 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 4 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 5 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 6 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 7 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 8 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 9 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 10 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 11 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 12 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 13 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 14 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 15 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 16 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 17 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 18 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 19 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 20 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 21 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 22 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 23 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 24 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 25 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 26 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 27 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 28 | C 500 | | 15 | C 500 | | 15 | C 500 | | 15 |
| 29 | C 500 | | 15 | --- | | --- | C 500 | | 15 |
| 30 | C 500 | | 15 | --- | | --- | C 500 | | 15 |
| 31 | C 500 | | 15 | --- | | --- | C 500 | | 15 |
| Total | 15500 | | 465 | 14000 | | 420 | 15500 | | 465 |

B Computed from estimated-concentration graph.
C Composite period.

ALASKA WEST OF LONGITUDE 141°--Continued

15-5180. NENANA RIVER NEAR HEALY, ALASKA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | C 500 | | 15 | C 780 | | 50 | 5760 | 400 | 6200 |
| 2 | C 500 | | 15 | C 780 | | 100 | 7460 | 700 | 14000 |
| 3 | C 500 | | 15 | C 780 | | 150 | 8660 | 890 | 21000 |
| 4 | C 500 | | 15 | C 780 | | 200 | 10600 | 1500 | 43000 |
| 5 | C 500 | | 15 | C 780 | | 250 | 14200 | 1900 | 73000 |
| 6 | C 500 | | 15 | C 780 | | 300 | 16500 | 1600 | 71000 |
| 7 | C 500 | | 15 | C 780 | | 350 | 18000 | 1500 | 73000 |
| 8 | C 500 | | 15 | C 780 | | 400 | 18900 | 1200 | 61000 |
| 9 | C 500 | | 15 | C 780 | | 450 | 18800 | 1000 | 51000 |
| 10 | C 500 | | 15 | C 780 | | 500 | 18300 | 1100 | 54000 |
| 11 | C 500 | | 15 | 1100 | | 700 | 16800 | 1400 B | 64000 |
| 12 | C 500 | | 15 | 1200 | | 1000 | 20900 | 1800 B | 100000 |
| 13 | C 500 | | 15 | 1300 | | 1300 | 16500 | 1400 B | 62000 |
| 14 | C 500 | | 15 | 1400 | | 1600 | 12600 | 1000 B | 34000 |
| 15 | C 500 | | 15 | 1500 | | 2000 | 10600 | 950 B | 27000 |
| 16 | C 580 | | 20 | 1600 | | 2500 | 9730 | 950 B | 25000 |
| 17 | C 580 | | 20 | 1700 | 900 | 4100 | 9630 | 1100 B | 29000 |
| 18 | C 580 | | 20 | 1900 | 1700 | 8700 | 14600 | 1600 B | 63000 |
| 19 | C 580 | | 20 | 2100 | 670 | 3800 | 14100 | 1400 B | 53000 |
| 20 | C 580 | | 20 | 2400 | 520 | 3400 | 13300 | 1300 B | 47000 |
| 21 | C 580 | | 20 | 2700 | 720 B | 5200 | 13000 | 1100 B | 39000 |
| 22 | C 580 | | 20 | 3450 | 970 B | 9000 | 12100 | 1000 B | 33000 |
| 23 | C 580 | | 30 | 4010 | 1000 B | 11000 | 10800 | 800 | 23000 |
| 24 | C 580 | | 30 | 4440 | 830 B | 10000 | 9210 | 670 | 17000 |
| 25 | C 580 | | 30 | 4800 | 520 | 6700 | 7490 | 970 | 20000 |
| 26 | C 580 | | 30 | 4670 | 300 | 3800 | 9800 | 930 | 25000 |
| 27 | C 580 | | 30 | 4550 | 220 | 2700 | 9860 | 380 | 10000 |
| 28 | C 580 | | 30 | 5110 | 340 | 4700 | 8720 | 270 | 6400 |
| 29 | C 580 | | 30 | 6430 | 810 | 14000 | 8220 | 240 | 5300 |
| 30 | C 580 | | 30 | 6430 | 520 | 9000 | 8000 | 200 | 4300 |
| 31 | -- | | -- | 5350 | 270 | 3900 | -- | -- | -- |
| Total | 16200 | | 605 | 75940 | -- | 111850 | 373140 | -- | 1154200 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 8420 | 300 | 6800 | 7490 | 650 | 13000 | 6450 | 100 | 1700 |
| 2 | 8600 | 430 | 10000 | 7840 | 650 | 14000 | 6020 | 84 | 1400 |
| 3 | 7490 | 450 | 9100 | 8780 | 830 | 20000 | 5650 | 59 | 900 |
| 4 | 6620 | 350 | 6300 | 9760 | 980 | 26000 | 5290 | 84 | 1200 |
| 5 | 7230 | 380 | 7400 | 8600 | 750 | 17000 | 4980 | 48 | 650 |
| 6 | 7360 | 420 | 8300 | 7920 | 650 | 14000 | 4620 | 43 | 540 |
| 7 | 6940 | 310 | 5800 | 8080 | 720 | 16000 | 4380 | 36 | 430 |
| 8 | 6430 | 300 | 5200 | 7760 | 720 | 15000 | 4240 | 30 B | 340 |
| 9 | 6590 | 310 | 5500 | 7680 | 710 | 15000 | 4060 | 25 B | 270 |
| 10 | 5910 | 230 | 3700 | 7150 | 640 | 12000 | 3830 | 20 | 210 |
| 11 | 6040 | 290 | 4700 | 6310 | 500 | 8500 | 3630 | 22 | 220 |
| 12 | 7680 | 760 | 16000 | 5720 | 370 | 5700 | 4200 | 60 | 680 |
| 13 | 8000 | 830 B | 18000 | 5370 | 280 B | 4100 | 8510 | 460 | 11000 |
| 14 | 7300 | 760 | 15000 | 4980 | 270 B | 3600 | 7360 | 230 | 4600 |
| 15 | 7170 | 840 | 16000 | 4710 | 250 | 3200 | 6360 | 110 | 1900 |
| 16 | 7730 | 1300 | 27000 | 4900 | 550 | 7300 | 6240 | 120 | 2000 |
| 17 | 10200 | 1400 B | 39000 | 5980 | 360 | 5800 | 6130 | 84 | 1400 |
| 18 | 8960 | 1200 | 29000 | 6720 | 670 | 12000 | 5780 | 75 B | 1200 |
| 19 | 7230 | 800 | 16000 | 8310 | 1000 | 22000 | 5490 | 66 | 980 |
| 20 | 6520 | 640 | 11000 | 9500 | 1300 B | 33000 | 5050 | 52 | 710 |
| 21 | 6550 | 860 | 15000 | 9500 | 1100 | 28000 | 4920 | 41 | 540 |
| 22 | 7860 | 1600 B | 34000 | 9630 | 900 | 23000 | 4600 | 33 | 410 |
| 23 | 7230 | 1200 | 23000 | 11200 | 770 | 23000 | 4170 | 27 | 300 |
| 24 | 6620 | 970 | 1700 | 11100 | 1200 | 36000 | 3950 | 28 | 300 |
| 25 | 6670 | 880 | 16000 | 10800 | 1100 | 32000 | 3860 | 21 | 220 |
| 26 | 6860 | 890 | 16000 | 9630 | 800 | 21000 | 3960 | 25 | 270 |
| 27 | 8400 | 1200 | 27000 | 8810 | 700 | 17000 | 3910 | 22 | 230 |
| 28 | 11800 | 1200 | 38000 | 8570 | 500 B | 12000 | 3800 | 35 | 360 |
| 29 | 9440 | 730 | 19000 | 8110 | 230 | 5000 | 3730 | 19 | 190 |
| 30 | 7890 | 550 | 12000 | 7430 | 210 | 4200 | 3730 | 17 | 170 |
| 31 | 7510 | 520 | 11000 | 6970 | 130 | 2400 | -- | -- | -- |
| Total | 235250 | -- | 487800 | 245310 | -- | 470800 | 148900 | -- | 35320 |

Total discharge for year (cfs-days)..... 1288610
Total load for year (tons)..... 2286985

B Computed from estimated-concentration graph.
C Composite period.

ALASKA WEST OF LONGITUDE 141°--Continued

15-5180. NENANA RIVER NEAR HEALY, ALASKA--Continued

Particle-size analyses of suspended sediment, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| July 7, 1966..... | 1130 | 44 | | 7010 | 320 | 6060 | 20 | 26 | 38 | 49 | 56 | 60 | 67 | 80 | 98 | 100 | | VBWC |
| Aug. 17..... | 1200 | 43 | | 6060 | 540 | 8840 | 7 | 10 | 14 | 18 | 21 | 28 | 38 | 59 | 79 | 86 | 93 | SBWC |
| Sept. 28..... | 1200 | 39 | | 3720 | 40 | 402 | -- | -- | -- | -- | -- | 38 | 41 | 53 | 92 | 100 | | V |

15-5648. YUKON RIVER AT RUBY, ALASKA

LOCATION.--Lat 64°44'25", long 155°29'55", at gaging station on left bank at Ruby, 300 feet downstream from Ruby Creek, 2 miles downstream from Melozitna River and 2.2 miles upstream from Ruby Slough.
DRAINAGE AREA.--259,000 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: June to September 1966.
Water temperatures: June to September 1966.
EXTREMES, June to September 1966.--Water temperatures: Maximum, 64°F July 24, 26.

Chemical analyses, in parts per million, June to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$: Calcium, magnesium | Hardness as $CaCO_3$: Noncarbonate | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June 8-17, 1966.. | 534000 | 5.8 | 0.08 | 24 | 5.6 | 1.2 | 1.1 | 85 | 12 | 0.7 | 0.3 | 0.5 | 93 | 83 | 41 | 165 | 7.6 | 5 |
| June 18-30..... | 511000 | 5.3 | .12 | 28 | 4.9 | 1.2 | 1.5 | 93 | 15 | .7 | .1 | .5 | 103 | 90 | 14 | 185 | 7.3 | 10 |
| July 1-9..... | 369000 | 6.1 | .06 | 31 | 5.5 | 1.6 | 1.3 | 106 | 16 | .7 | .1 | .0 | 114 | 100 | 13 | 210 | 7.6 | 10 |
| July 10-17..... | 323000 | 7.0 | .12 | 31 | 7.2 | 1.8 | 1.9 | 114 | 19 | .7 | .1 | .0 | 125 | 107 | 14 | 220 | 7.7 | 10 |
| July 18-31..... | 299000 | 7.3 | .21 | 41 | 3.8 | 2.2 | 2.0 | 125 | 24 | .0 | .2 | .8 | 144 | 118 | 15 | 232 | 7.2 | 20 |
| Aug. 1-16..... | 248000 | 7.6 | .14 | 43 | 3.3 | 2.9 | 2.2 | 128 | 24 | .0 | .2 | .3 | 146 | 121 | 16 | 251 | 7.5 | 20 |
| Aug. 17-31..... | 202000 | 7.7 | .04 | 44 | 4.6 | 2.7 | 1.7 | 139 | 24 | .7 | .1 | .0 | 154 | 129 | 15 | 262 | 7.6 | 10 |
| Sept. 1-15..... | 177000 | 7.6 | .02 | 44 | 3.9 | 2.6 | 1.5 | 134 | 23 | .4 | .1 | .0 | 149 | 126 | 16 | 252 | 7.6 | 10 |
| Sept. 16-30..... | 161000 | 8.3 | .00 | 39 | 7.9 | 2.6 | 1.1 | 142 | 27 | .7 | .2 | .2 | 157 | 130 | 14 | 269 | 7.6 | 15 |

Specific conductance (micromhos at 25°C), June to September 1966

| Day | June | July | Aug. | Sept. | Day | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1... | -- | -- | 255 | 251 | 17... | 153 | 210 | 247 | 252 |
| 2... | -- | 200 | 238 | 257 | 18... | 171 | 216 | 255 | -- |
| 3... | -- | 197 | 249 | 259 | 19... | 178 | 229 | 270 | 250 |
| 4... | -- | 198 | 240 | 255 | 20... | 173 | 226 | 258 | 260 |
| 5... | -- | 199 | 242 | 257 | 21... | 178 | 230 | 258 | 241 |
| 6... | -- | 201 | 240 | 263 | 22... | 191 | 238 | 274 | 238 |
| 7... | -- | 227 | 242 | 263 | 23... | 191 | 248 | 270 | 279 |
| 8... | 150 | 229 | 274 | 257 | 24... | 225 | 235 | 254 | 262 |
| 9... | 156 | 230 | 240 | 251 | 25... | 191 | 230 | 274 | 273 |
| 10... | 159 | 210 | 238 | 246 | 26... | 191 | 228 | 260 | 252 |
| 11... | 158 | 208 | 272 | 251 | 27... | 189 | 258 | 266 | 262 |
| 12... | 160 | 210 | 249 | 256 | 28... | 189 | 232 | 272 | 266 |
| 13... | 160 | 220 | 236 | 256 | 29... | 188 | 274 | 254 | 250 |
| 14... | 162 | 226 | 233 | 258 | 30... | 197 | 238 | 254 | 248 |
| 15... | 182 | 224 | 242 | 256 | 31... | -- | 241 | 258 | -- |
| 16... | 163 | 226 | 243 | 238 | | | | | |
| Average | | | | | | -- | 224 | 253 | 255 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| June | -- | -- | -- | -- | -- | -- | -- | 57 | 58 | 58 | 58 | 58 | 57 | 58 | 58 | 58 | 58 | 59 | 60 | 60 | 60 | 61 | 60 | 58 | 58 | 59 | 60 | 60 | 60 | 60 | -- | -- |
| July | 59 | 59 | 60 | 60 | 60 | 60 | 59 | 54 | 52 | 57 | 57 | 56 | 55 | 58 | 57 | 55 | 58 | 58 | 62 | 62 | 63 | 58 | 61 | 64 | 60 | 64 | 62 | 59 | 62 | 61 | 63 | 59 |
| August | 60 | 60 | 61 | 60 | 60 | 60 | 61 | 60 | 61 | 61 | 60 | 59 | 59 | 58 | 57 | 52 | 55 | 55 | 55 | 50 | 53 | 54 | 55 | 55 | 54 | 55 | 56 | 55 | 54 | 55 | 56 | 57 |
| September | 54 | 55 | 54 | 51 | 50 | 50 | 50 | 48 | 48 | 46 | 46 | 46 | 46 | 46 | 47 | 47 | 46 | -- | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 46 | 45 | 45 | 45 | 44 | -- | 47 |

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Dissolved solids (residue at 180°C) | Hardness as $CaCO_3$ | | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Calcium, magnesium | Noncarbonate | | | |
| **ALASKA WEST OF LONGITUDE 141°** | | | | | | | | | | | | | | | | | | |
| **MURCHISON FALLS CREEK NEAR CORDOVA (603250 1454240)** | | | | | | | | | | | | | | | | | | |
| Aug. 2, 1966..... | | 2.2 | 0.06 | 4.8 | 1.9 | 0.7 | 0.5 | 18 | 7.6 | 0.4 | 0.0 | 0.0 | 27 | 20 | 5 | 52 | 7.7 | 10 |
| **MEALS LAKE AT CORDOVA (603200 1454450)** | | | | | | | | | | | | | | | | | | |
| Aug. 3, 1966..... | | 1.2 | 0.07 | 1.6 | 1.2 | 0.5 | 0.4 | 8 | 2.4 | 0.7 | 0.0 | 0.0 | 12 | 9 | 2 | 29 | 7.3 | 10 |
| **UNNAMED STREAM AT ENGLISH BAY (592125 1555500)** | | | | | | | | | | | | | | | | | | |
| Sept. 22, 1966..... | | 11 | 0.34 | 4.4 | 4.1 | 9.2 | 0.0 | 26 | 2.4 | 19 | 0.2 | 2.3 | 66 | 28 | 7 | 114 | 8.0 | |
| **UNNAMED CREEK AT ZACHER BAY (573230 1504520)** | | | | | | | | | | | | | | | | | | |
| Aug. 26, 1966..... | | 10 | 0.71 | 22 | 7.8 | 6.8 | 1.6 | 98 | 9.6 | 7.8 | 0.2 | 3.2 | 118 | 87 | 7 | 206 | 7.5 | 0 |
| **UNNAMED CREEK AT UYUK BAY (572550 1535410)** | | | | | | | | | | | | | | | | | | |
| Aug. 26, 1966..... | | 6.7 | 2.3 | 12 | 6.6 | 3.0 | 1.3 | 64 | 7.7 | 3.9 | 0.1 | 0.4 | 64 | 57 | 5 | 133 | 7.5 | 0 |
| **UNNAMED CREEK AT OLD HARBOR (571215 1531830)** | | | | | | | | | | | | | | | | | | |
| Aug. 26, 1966..... | | 9 | 0.10 | 5.6 | 4.4 | 4.4 | 1.4 | 35 | 2.9 | 7.1 | 0.1 | 1.4 | 53 | 32 | 4 | 96 | 7.2 | 0 |
| **UNNAMED CREEK AT LARSON BAY (573155 1595905)** | | | | | | | | | | | | | | | | | | |
| Aug. 26, 1966..... | | 13 | 0.38 | 4.0 | 1.9 | 11 | 1.3 | 15 | 0.5 | 21 | 0.1 | 26 | 63 | 18 | 6 | 117 | 6.7 | 0 |
| **UNNAMED CREEK AT KARLUK (573435 1542610)** | | | | | | | | | | | | | | | | | | |
| Aug. 26, 1966..... | | 5.5 | 0.06 | 12 | 2.2 | 4.5 | 1.2 | 46 | 7.2 | 4.9 | 0.1 | 0.8 | 60 | 39 | 1 | 106 | 7.3 | 0 |
| **PILLAR CREEK (UPPER KODIAK RESERVOIR) (574750 1522430)** | | | | | | | | | | | | | | | | | | |
| Aug. 19, 1966..... | | 5.8 | 0.08 | 7.2 | 0.0 | 3.6 | 0.3 | 22 | 2.9 | 4.3 | 0.1 | 0.6 | 36 | 18 | 7 | 68 | 7.9 | 5 |
| **PILLAR CREEK (LOWER KODIAK RESERVOIR) (574745 1522420)** | | | | | | | | | | | | | | | | | | |
| Aug. 19, 1966..... | | 5.8 | 0.22 | 6.4 | 0.5 | 4.0 | 0.3 | 18 | 2.4 | 5.3 | 0.0 | 0.2 | 34 | 18 | 9 | 59 | 7.6 | 10 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNNAMED CREEK AT PORT LIONS (575225 1525325) | | | | | | | | | | | | | | | | | | |
| Aug. 22, 1966..... | | 7.3 | 0.04 | 14 | 1.7 | 4.5 | 0.6 | 45 | 9.6 | 6.4 | 0.0 | 1.1 | 67 | 41 | 4 | 112 | 7.7 | 5 |
| UNNAMED CREEK AT OUZINKIE (575505 1522825) | | | | | | | | | | | | | | | | | | |
| Aug. 22, 1966..... | | 7.0 | 0.28 | 9.6 | 1.0 | 6.3 | 0.6 | 30 | 7.2 | 7.4 | 0.0 | 0.2 | 55 | 28 | 3 | 92 | 7.4 | 5 |
| ISLAND LAKE ON SPRUCE ISLAND (575510 1522650) | | | | | | | | | | | | | | | | | | |
| Sept. 1, 1966..... | | 6.5 | 0.29 | 5.6 | 4.1 | 9.3 | 1.6 | 32 | 5.3 | 13 | 0.1 | 0.8 | 63 | 31 | 5 | 115 | 6.4 | 0 |

## MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA

Periodic determinations of suspended-sediment discharge and particle size, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| **SOUTHEASTERN ALASKA** | | | | | | | | | | | | | | | | | | |
| **15-0115. RED RIVER NEAR METLAKATLA (550829 1303150)** | | | | | | | | | | | | | | | | | | |
| Oct. 19, 1965 | 1300 | 40 | | 762 | 2 | 4 | | | | | | | | | | | | |
| Dec. 9 | 1120 | 34 | | 217 | 10 | 6 | | | | | | | | | | | | |
| Feb. 12, 1966 | 1130 | 35 | | 64 | 3 | .5 | | | | | | | | | | | | |
| Apr. 12 | -- | 33 | | 195 | 5 | 3 | | | | | | | | | | | | |
| Aug. 16 | 1130 | -- | | 1210 | 9 | 30 | | | | | | | | | | | | |
| **15-0220. HARDING RIVER NEAR WRANGELL (5613 13138)** | | | | | | | | | | | | | | | | | | |
| Oct. 11, 1965 | 1130 | 44 | | 807 | 9 | 20 | | | | | | | | | | | | |
| Dec. 2 | 1330 | 35 | | 289 | 6 | 5 | | | | | | | | | | | | |
| Apr. 9, 1966 | 1100 | -- | | 572 | 300 | 500 | | | | | | 16 | 32 | 46 | 98 | 100 | | V |
| June 10 | 1030 | -- | | 536 | 21 | 30 | | | | | | | | | | | | |
| Aug. 12 | 1030 | 41 | | 732 | 6 | 10 | | | | | | | | | | | | |
| **15-0335. LONG RIVER ABOVE LONG LAKE NEAR JUNEAU (581056 1335306)** | | | | | | | | | | | | | | | | | | |
| June 21, 1966 | 1100 | | | 140 | 30 | 10 | | | | | | | | | | | | |
| Aug. 22 | | 37 | | 135 | 40 | 15 | | | | | | | | | | | | |
| **15-0524. NUGGET CREEK NEAR AUKE BAY (582531 1343137)** | | | | | | | | | | | | | | | | | | |
| June 8, 1966 | | | | 307 | 40 | 30 | | 17 | 29 | 39 | 44 | 53 | 56 | 63 | 100 | | | V |
| **15-0528. MONTANA CREEK NEAR AUKE BAY (582353 1343634)** | | | | | | | | | | | | | | | | | | |
| June 8, 1966 | | 43 | | 223 | 90 | 50 | 2 | 4 | 5 | 7 | 8 | 9 | 10 | 14 | 33 | 60 | 91 | V |
| **15-0562. WEST CREEK NEAR SKAGWAY (593135 1352110)** | | | | | | | | | | | | | | | | | | |
| Nov. 4, 1965 | 1015 | 34 | | 174 | 30 | 10 | | | | | | | | | | | | |
| Jan. 11, 1966 | 1500 | 32 | | 11 | 6 | .2 | | | | | | | | | | | | |
| Mar. 20 | 1300 | 34 | | 17 | 3 | .1 | | | | | | | | | | | | |
| July 6 | 1300 | 42 | | 708 | 50 | 100 | | | | | | | | | | | | |
| **15-0640. KETCHIKAN CREEK AT KETCHIKAN (552040 1313805)** | | | | | | | | | | | | | | | | | | |
| Oct. 15, 1965 | 1640 | 46 | | 176 | 4 | 20 | | | | | | | | | | | | |
| **15-0780. GRACE LAKE OUTLET NEAR KETCHIKAN (553928 1305814)** | | | | | | | | | | | | | | | | | | |
| Nov. 10, 1965 | | 40 | | 31 | 4 | 0.3 | | | | | | | | | | | | |
| June 13, 1966 | 1200 | 41 | | 167 | 4 | 20 | | | | | | | | | | | | |
| **15-0870. MILL CREEK NEAR WRANGELL (562804 1322233)** | | | | | | | | | | | | | | | | | | |
| Oct. 12, 1965 | 0950 | 46 | | 2.5 | 8 | T | | | | | | | | | | | | |

T Less than 0.05 ton.

15-0872. HAMMER SLOUGH NEAR PETERSBURG (564827 1235710)

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oct. 10, 1965..... | 1530 | 45 | | 3.2 | 10 | 0.1 | | | | | | | | | | | | |

15-1000. TAKATZ LAKE INLET NEAR BARANOF (570835 1345150)

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 16, 1965..... | | 34 | | 3 | 2 | T | | | | | | | | | | | | |
| July 26, 1966..... | 1500 | 39 | | 217 | 380 | 2200 | | | | | | 27 | 47 | 77 | 98 | 100 | | V |

ALASKA WEST OF LONGITUDE 141°

15-2020. TAZLINA RIVER NEAR GLENNALLEN (620320 1452535)

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. 31, 1966..... | 1540 | 34 | | 240 | 30 | 20 | | | | | | -- | -- | -- | -- | | | |
| May 22..... | 1500 | -- | | 1740 | 80 | 380 | | | | | | -- | -- | -- | -- | | | |
| June 29..... | 1300 | 53 | | 9670 | 190 | 5000 | | | | | | 75 | 83 | 92 | 100 | | | V |
| Aug. 23..... | 1430 | 50 | | 9740 | 160 | 4200 | | | | | | 86 | 88 | 90 | 93 | 100 | | V |

15-2120. COPPER RIVER NEAR CHITINA (612800 1442720)

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 21, 1966..... | 1500 | -- | | 21900 | 490 | 29000 | 8 | 11 | 17 | 22 | 29 | 34 | 40 | 67 | 92 | 94 | 100 | VBWC |
| July 1..... | 1600 | 51 | | 101000 | 2800 | 760000 | 19 | 28 | 38 | 49 | 60 | 70 | 82 | 95 | 99 | 100 | | VBWC |
| Aug. 22..... | 1130 | 47 | | 65900 | 1000 | 180000 | 22 | 29 | 39 | 49 | 56 | 61 | 67 | 82 | 99 | 100 | | VBWC |

15-2383. RESURRECTION RIVER NEAR SEWARD (600830 1492500)

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 17, 1965..... | 1240 | 32 | | 114 | 50 | 20 | | | | | | | | | | | | |
| Apr. 5, 1966..... | 0930 | 37 | | 107 | 10 | 3 | | | | | | | | | | | | |
| June 10..... | 1900 | 48 | | 2312 | 240 | 1500 | | | | | | | | | | | | |
| July 16..... | 1100 | -- | | 2890 | 360 | 2800 | | | | | | | | | | | | |
| Aug. 20..... | 1400 | 48 | | 2250 | 170 | 1000 | | | | | | | | | | | | |
| Aug. 23..... | 1200 | 41 | | 7790 | 1100 | 230000 | 22 | 34 | 44 | 51 | 59 | 65 | 73 | 87 | 98 | 100 | | VBWC |

15-2415. DEEP CREEK NEAR NINILCHIK (600150 1514050)

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. 8, 1966..... | 1235 | 32 | | 57 | 30 | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | |
| Apr. 7..... | 1130 | 33 | | 140 | 40 | 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | |
| June 2..... | 1800 | 44 | | 975 | 240 | 620 | 7 | 15 | 22 | 33 | 44 | 53 | 67 | 87 | 100 | | | VBWC |
| July 13..... | 1645 | 55 | | 249 | 20 | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | |
| Aug. 17..... | 1655 | 55 | | 151 | 9 | 4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | |
| Sept. 20..... | 1830 | -- | | 630 | 110 | 190 | 2 | 6 | 12 | 22 | 35 | 48 | 65 | 87 | 98 | 100 | | VBWC |

T Less than 0.05 ton.

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1965 to September 1966--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Suspended sediment: Percent finer than size indicated, in millimeters | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.002 | 0.004 | 0.008 | 0.016 | 0.031 | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | |
| ALASKA WEST OF LONGITUDE 141°--Continued | | | | | | | | | | | | | | | | | |
| 15-2725.5. GLACIER CREEK NEAR GIRDWOOD (605629 1490944) | | | | | | | | | | | | | | | | | |
| June 8, 1966..... | 1650 | 44 | | 723 | 100 | 200 | -- | -- | -- | -- | -- | 48 | 59 | 73 | 86 | 100 | | V |
| July 19..... | 1030 | 47 | | 523 | 150 | 210 | 32 | 40 | 54 | 69 | 79 | 86 | 90 | 96 | 100 | -- | | VBWC |
| Aug. 11..... | 1230 | 43 | | 490 | 350 | 460 | 18 | 24 | 30 | 38 | 46 | 55 | 68 | 85 | 98 | 100 | | VBWC |
| Aug. 21..... | 2040 | 42 | | 2900 | 3800 | 30000 | 12 | 23 | 33 | 43 | 52 | 65 | 81 | 97 | 100 | -- | | VBWC |
| Aug 22..... | 1530 | 42 | | 1150 | 640 | 2000 | 12 | 17 | 22 | 28 | 36 | 45 | 56 | 78 | 95 | 100 | | VBWC |
| Sept. 26..... | 1130 | -- | | 190 | 900 | 2900 | 10 | 14 | 20 | 25 | 31 | 38 | 50 | 69 | 89 | 100 | | VBWC |
| 15-2771. EAGLE RIVER AT EAGLE RIVER (611830 1493335) | | | | | | | | | | | | | | | | | |
| Sept. 13, 1966.... | 1300 | 43 | | 1160 | 320 | 1000 | 30 | 40 | 52 | 62 | 96 | 75 | 84 | 94 | 99 | 100 | | VBWC |
| 15-2820. CARIBOU CREEK NEAR SUTTON (614810 1474100) | | | | | | | | | | | | | | | | | |
| Oct. 5, 1965..... | 1015 | 34 | | 222 | 90 | 50 | -- | -- | -- | -- | -- | 68 | 72 | 77 | 85 | 100 | | V |
| May 19..... | 1545 | -- | | 135 | 380 | 140 | 24 | 40 | 53 | 69 | 83 | 88 | 92 | 94 | 96 | 100 | | VBWC |
| June 28..... | 1700 | 53 | | 837 | 320 | 720 | -- | -- | -- | -- | -- | 80 | 84 | 90 | 96 | 100 | | V |
| Aug. 16..... | 1730 | -- | | 429 | 190 | 220 | 37 | 48 | 65 | 76 | 86 | 91 | 95 | 96 | 98 | 100 | | VBWC |
| Sept. 29..... | 1430 | 39 | | 219 | 110 | 70 | -- | -- | -- | -- | -- | 94 | 99 | 99 | 100 | -- | | V |
| 15-2910. SUSITNA RIVER NEAR DENALI (630614 1473057) | | | | | | | | | | | | | | | | | |
| Oct. 3, 1965..... | 1300 | 33 | | 2090 | 1400 | 7900 | 2 | 3 | 4 | 4 | 5 | 6 | 9 | 26 | 66 | 100 | | VBWC |
| May 24, 1966..... | 1600 | 35 | | 2810 | 1100 | 8300 | 2 | 3 | 6 | 14 | 28 | 33 | 70 | 92 | 99 | 100 | | VBWC |
| July 3..... | 1700 | 42 | | 6680 | 1700 | 31000 | 10 | 14 | 19 | 24 | 28 | 34 | 42 | 58 | 77 | 96 | 100 | VBWC |
| Aug. 24..... | 1700 | 43 | | 8210 | 890 | 20000 | 4 | 8 | 14 | 20 | 29 | 40 | 60 | 90 | 99 | 100 | | VBWC |
| 15-2912. MACLAREN RIVER NEAR PAXSEN (630710 1463145) | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | 1000 | 35 | | 724 | 100 | 200 | | | | | | 45 | 54 | 82 | 100 | -- | | V |
| July 3, 1966..... | 1200 | 42 | | 2160 | 550 | 3200 | 18 | 25 | 33 | 42 | 49 | 54 | 61 | 71 | 84 | 100 | | VBWC |
| Aug. 24..... | 1230 | 43 | | 2390 | 450 | 2900 | | | | | | 55 | 72 | 88 | 98 | 100 | | V |
| Sept. 30..... | 1200 | 38 | | 624 | 20 | 30 | | | | | | 46 | 52 | 88 | 100 | -- | | V |
| 15-2915. SUSITNA RIVER NEAR CANTWELL (624200 1473250) | | | | | | | | | | | | | | | | | |
| July 13, 1966..... | 1800 | 45 | | 12300 | 900 | 30000 | 15 | 22 | 31 | 39 | 51 | 57 | 64 | 82 | 94 | 99 | 100 | VBWC |
| Aug. 27..... | 1500 | 49 | | 10500 | 380 | 11000 | 9 | 12 | 17 | 22 | 29 | 38 | 52 | 75 | 97 | 100 | | VBWC |
| Sept. 29..... | 1420 | 42 | | 4700 | 70 | 890 | -- | -- | -- | -- | -- | 36 | 40 | 74 | 100 | -- | | V |
| 15-2927. TALKEETNA RIVER NEAR TALKEETNA (622050 1500045) | | | | | | | | | | | | | | | | | |
| July 13, 1966..... | 2010 | 49 | | 11300 | 310 | 9500 | 12 | 16 | 23 | 31 | 37 | 45 | 55 | 80 | 99 | 100 | | VBWC |
| Aug. 25..... | 1650 | 50 | | 9330 | 70 | 1800 | | | | | | 16 | 33 | 64 | 98 | 100 | | V |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **15-4680. YUKON RIVER AT RAMPART (653025 1501015)** | | | | | | | | | | | | | | | | | | |
| Nov. 24, 1965..... | 1230 | 33 | | 30100 | 80 | 6500 | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | |
| June 7, 1966..... | 1030 | 56 | | 340000 | 230 | 210000 | -- | 11 | 24 | 36 | 52 | 64 | 85 | 100 | -- | | | VBWC |
| July 21..... | 1300 | 63 | | 206000 | 450 | 250000 | 26 | 37 | 47 | 53 | 60 | 66 | 71 | 80 | 87 | 89 | 100 | VBWC |
| Aug. 25..... | 1900 | 54 | | 124000 | 160 | 54000 | 35 | 48 | 58 | 68 | 73 | 78 | 86 | 99 | 100 | | | VBWC |
| Sept. 21..... | 1220 | 46 | | 107000 | 90 | 26000 | -- | -- | -- | -- | -- | 53 | 60 | 99 | 100 | | | V |
| **15-4700. CHISANA RIVER AT NORTHWAY JUNCTION (630025 1414820)** | | | | | | | | | | | | | | | | | | |
| May 13, 1966..... | 1500 | | | 4510 | 870 | 11000 | 5 | 7 | 10 | 15 | 21 | 30 | 47 | 92 | 100 | | | VBWC |
| July 16..... | 1200 | | | 4900 | 3500 | 46000 | 21 | 31 | 41 | 50 | 57 | 61 | 63 | 75 | 99 | 100 | | VBWC |
| Aug. 21..... | 1830 | 48 | | 2830 | 470 | 3600 | 21 | 30 | 40 | 46 | 60 | 78 | 92 | 99 | 100 | | | VBWC |
| **15-5155. TANANA RIVER AT NENANA (643405 1490445)** | | | | | | | | | | | | | | | | | | |
| May 20, 1966..... | 1700 | 43 | | 42200 | 580 | 66000 | 3 | 7 | 12 | 16 | 26 | 39 | 67 | 97 | 100 | | | VBWC |
| July 9..... | 1130 | -- | | 45000 | 1200 | 150000 | 19 | 32 | 43 | 57 | 65 | 71 | 87 | 100 | -- | | | VBWC |
| Aug. 18..... | 1230 | 53 | | 35700 | 930 | 90000 | 22 | 28 | 38 | 48 | 57 | 66 | 80 | 99 | 100 | | | VBWC |
| **15-5160. NENANA RIVER NEAR WINDY (632715 1484810)** | | | | | | | | | | | | | | | | | | |
| Oct. 2, 1965..... | 1700 | 34 | | 1900 | 30 | 150 | | -- | -- | -- | -- | 37 | 37 | 50 | 100 | | | V |
| May 25, 1966..... | 1430 | 33 | | 2860 | 350 | 2700 | 4 | 8 | 12 | 20 | 33 | 51 | 66 | 89 | 100 | | | VBWC |
| July 4..... | 1500 | 45 | | 1980 | 90 | 480 | | -- | -- | -- | -- | 65 | 75 | 94 | 100 | | | V |
| Aug. 25..... | 1130 | 44 | | 3330 | 50 | 430 | | 6 | 13 | 19 | 34 | 42 | 49 | 70 | 94 | 100 | | VBWC |
| **15-5649. KOYUKUK RIVER AT HUGHES (660250 1541530)** | | | | | | | | | | | | | | | | | | |
| Aug. 27, 1966..... | 0930 | 49 | | 33000 | 160 | 14000 | 4 | 8 | 22 | 37 | 58 | 74 | 85 | 99 | 100 | | | VBWC |
| July 22..... | 1800 | 62 | | 19100 | 40 | 2100 | | | | | | | | | | | | |
| Sept. 22..... | 1430 | 44 | | 11300 | 20 | 610 | | | | | | | | | | | | |
| **15-6210. SNAKE RIVER NEAR NOME (643025 1652625)** | | | | | | | | | | | | | | | | | | |
| Oct. 1, 1965..... | 1000 | 33 | | 324 | 10 | 9 | | | | | | | | | | | | |
| June 11, 1966..... | 1930 | -- | | 980 | 50 | 130 | | | | | | | | | | | | |
| July 24..... | 1700 | -- | | 312 | 20 | 20 | | | | | | | | | | | | |
| Sept. 24..... | 1020 | 40 | | 297 | 10 | 8 | | | | | | | | | | | | |
| **15-7120. KUZITRIN RIVER NEAR NOME (651315 1643715)** | | | | | | | | | | | | | | | | | | |
| June 11, 1966..... | 1550 | -- | | 10000 | 170 | 4600 | | | | | | 52 | 92 | 96 | 100 | | | V |
| July 24..... | 1200 | -- | | 876 | 20 | 50 | | | | | | | | | | | | |
| Aug. 28..... | 1800 | 46 | | 369 | 20 | 20 | | | | | | | | | | | | |
| Sept. 24..... | 1200 | 45 | | 1210 | 30 | 100 | | | | | | | | | | | | |
| **15-7460. NOATAK RIVER NEAR NOATAK (673418 1625638)** | | | | | | | | | | | | | | | | | | |
| Sept. 23, 1966.... | 1630 | 42 | | 29300 | 160 | 13000 | | | | | | 50 | 61 | 89 | 100 | | | V |

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Particle-size analyses of bed material, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Bed material: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.000 | 4.000 | 8.000 | 16.000 | 32.000 | 64.000 | |
| SOUTHEASTERN ALASKA | | | | | | | | | | | | | | | | | | |
| 15-0335. LONG RIVER ABOVE LONG LAKE NEAR JUNEAU (581056 1335306) | | | | | | | | | | | | | | | | | | |
| Aug. 22, 1966..... | | | 1 | 135 | | | | | 1 | 4 | 10 | 13 | 17 | 23 | 35 | 42 | 54 | S |
| 15-0780. GRACE LAKE INLET NEAR KETCHIKAN (553928 1305814) | | | | | | | | | | | | | | | | | | |
| Nov. 10, 1965..... | | | 5 | 31 | | | | | 5 | 12 | 19 | 23 | 30 | 40 | 57 | 83 | 99 | S |
| 15-1000. TAKATZ LAKE INLET NEAR BARANOF (570835 1345150) | | | | | | | | | | | | | | | | | | |
| Nov. 16, 1965..... | | | 6 | 3 | | | | | 2 | 5 | 9 | 12 | 18 | 24 | 36 | 56 | 82 | S |

## ISLAND OF OKINAWA

### 16-8755. YONA-GAWA AT YONA, OKINAWA

LOCATION.--At gaging station, 0.9 mile southeast of Yona, and 2.7 miles east of Hentona School.
DRAINAGE AREA.--1.7 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1964 to Sept. 1966.
Sediment records: May 1964 to June 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 84°F July 30, Aug. 6, 11; minimum, 53°F Jan. 6.
Sediment concentrations: Maximum daily, 540 ppm May 12; minimum daily, 1 ppm Feb. 11, 12.
Sediment loads: Maximum daily, 1,500 tons May 12; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1964-66.--Water temperatures: Maximum, 83°F July 15, Aug. 10, 1964, Aug. 4, 1966; minimum, 51°F Jan. 16, 1965.
Sediment concentrations: Maximum daily, 540 ppm May 12, 1966; minimum daily, 1 ppm on many days each year.
Sediment loads: Maximum daily, 1,500 tons May 12, 1966; minimum daily, less than 0.05 ton on many days each year.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | | |
| June 1, 1966.... | 20 | 16 | 0.20 | 4.0 | 2.1 | 15 | 1.0 | 18 | 0 | 6.5 | 22 | 0.1 | 0.0 | | 71 | 0.10 | 3.83 | 15 | 3 | | 95 | 7.3 | 40 |
| June 8..... | 54 | 11 | .30 | 2.8 | 1.0 | 10 | 1.0 | 12 | 0 | 4.8 | 15 | .2 | .0 | | 50 | .07 | 7.29 | 10 | 1 | | 95 | 7.2 | 60 |
| June 24..... | 7.2 | 15 | .06 | 4.4 | 2.7 | 15 | .7 | 21 | 0 | 6.7 | 24 | .1 | .0 | | 86 | .12 | 1.67 | 17 | 5 | | 100 | 7.2 | 5 |
| Sept. 22..... | 28 | 13 | .50 | 2.8 | 1.6 | 11 | .0 | 13 | 0 | 5.0 | 16 | .0 | .0 | | 60 | .08 | 4.54 | 11 | 3 | | 65 | 6.9 | 40 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | -- | -- | -- | -- | -- | 72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| November..... | -- | -- | -- | -- | 69 | 69 | 70 | 70 | 71 | 67 | 69 | 67 | 66 | 69 | 67 | 71 | 68 | 67 | 68 | 68 | 68 | 66 | 67 | 69 | 69 | 63 | 63 | 65 | 64 | 64 | -- | 67 |
| December..... | 61 | 59 | 63 | 62 | 64 | 63 | 63 | 63 | 62 | 60 | 64 | 62 | 59 | 59 | 60 | 60 | 56 | 57 | 57 | 61 | 63 | 65 | 65 | 62 | 59 | 62 | 62 | 59 | 61 | 60 | 56 | 61 |
| January..... | 55 | 56 | 55 | 55 | 54 | 53 | 55 | 54 | 59 | 60 | 63 | 63 | 68 | 64 | 60 | 62 | 62 | 63 | 59 | 57 | 56 | 56 | 58 | 58 | 60 | 59 | 58 | 58 | 58 | 58 | 59 | 59 |
| February..... | 57 | 61 | 60 | 61 | 58 | 55 | 57 | 56 | 55 | 58 | 63 | 60 | 58 | 56 | 60 | 63 | 61 | 60 | 62 | 60 | 63 | 65 | 59 | 57 | 58 | 65 | 62 | 60 | -- | -- | -- | 60 |
| March..... | 63 | 63 | 65 | 67 | 65 | 69 | 68 | 65 | 61 | 62 | 64 | 64 | 66 | 64 | 65 | 65 | 64 | 67 | 59 | 58 | 60 | 69 | 66 | 65 | 64 | 60 | 61 | 62 | 61 | 60 | 61 | 64 |
| April..... | 63 | 62 | 62 | 67 | 64 | 63 | 66 | 65 | 73 | 68 | 69 | 67 | 69 | 68 | 71 | 65 | 63 | 64 | 63 | 68 | 67 | 69 | 68 | 71 | 72 | 73 | 73 | 67 | 72 | 70 | -- | 67 |
| May..... | 68 | 72 | 66 | 65 | 66 | 68 | 70 | 67 | 69 | 74 | 70 | 68 | 69 | 70 | 71 | 73 | 67 | 67 | 68 | 71 | 68 | 71 | 71 | 69 | 66 | 65 | 68 | 70 | 72 | 70 | 71 | 69 |
| June..... | 72 | 71 | 72 | 70 | 67 | 70 | 66 | 68 | 69 | 70 | 71 | 70 | 69 | 69 | 68 | 69 | 71 | 70 | 71 | 69 | 70 | 68 | 68 | 72 | 76 | 79 | 78 | 75 | 78 | 76 | -- | 71 |
| July..... | 75 | 73 | 73 | 73 | 74 | 74 | 74 | 78 | 78 | 77 | 82 | 81 | 80 | 81 | 76 | 81 | 77 | 78 | 80 | 81 | 81 | 82 | 78 | 81 | 81 | 80 | 81 | 79 | 81 | 84 | 82 | 78 |
| August..... | 82 | 81 | 82 | 83 | 82 | 84 | 82 | 82 | 82 | 80 | 84 | 78 | 79 | 79 | 82 | 82 | 81 | 79 | 75 | 75 | 79 | 76 | 77 | 78 | 79 | 78 | 77 | 79 | 76 | 78 | 76 | 79 |
| September.... | 75 | 76 | 80 | 79 | 77 | 77 | 77 | 77 | 79 | 81 | 80 | 77 | 77 | 78 | 75 | 77 | 76 | 81 | 78 | 76 | 78 | 74 | 74 | 72 | 73 | 70 | 70 | 70 | 72 | 69 | -- | 75 |

ISLAND OF OKINAWA--Continued

16-8755. YONA-GAWA AT YONA, OKINAWA--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 5.3 | 3 | T | 3.0 | 4 | T | 3.0 | 2 | T |
| 2.. | 4.7 | 3 | T | 2.8 | 3 | T | 3.0 | 2 | T |
| 3.. | 4.2 | 3 | T | 2.8 | 2 | T | 3.0 | 2 | T |
| 4.. | 4.0 | 3 | T | 2.7 | 2 | T | 2.8 | 2 | T |
| 5.. | 3.8 | 2 | T | 2.6 | 2 | T | 2.8 | 2 | T |
| 6.. | 3.8 | 2 | T | 2.7 | 3 | T | 3.0 | 7 | .1 |
| 7.. | 3.8 | 2 | T | 2.6 | 2 | T | 2.8 | 4 | T |
| 8.. | 3.4 | 2 | T | 2.6 | 2 | T | 3.2 | 3 | T |
| 9.. | 3.4 | 2 | T | 10 | 41 S | 1.9 | 3.0 | 3 | T |
| 10.. | 3.2 | 2 | T | 4.4 | 5 | .1 | 2.8 | 3 | T |
| 11.. | 3.0 | 2 | T | 3.4 | 4 | T | 3.5 | 3 | T |
| 12.. | 3.0 | 2 | T | 3.0 | 3 | T | 4.0 | 5 | .1 |
| 13.. | 11 | 14 S | .8 | 4.9 | 12 | .2 | 3.0 | 3 | T |
| 14.. | 5.0 | 9 | .1 | 89 | 96 S | 46 | 2.7 | 2 | T |
| 15.. | 3.6 | 5 | T | 13 | 6 | .2 | 3.0 | 3 | T |
| 16.. | 3.2 | 4 | T | 8.7 | 5 | .1 | 4.5 | 3 | T |
| 17.. | 3.0 | 3 | T | 6.8 | 4 | .1 | 3.0 | 2 | T |
| 18.. | 3.6 | 5 | T | 6.2 | 4 | .1 | 2.8 | 2 | T |
| 19.. | 3.0 | 3 | T | 5.6 | 3 | T | 2.7 | 2 | T |
| 20.. | 2.8 | 3 | T | 5.0 | 3 | T | 3.2 | 2 | T |
| 21.. | 2.8 | 2 | T | 4.7 | 3 | T | 3.5 | 2 | T |
| 22.. | 2.7 | 2 | T | 4.2 | 3 | T | 3.0 | 2 | T |
| 23.. | 2.7 | 2 | T | 4.0 | 3 | T | 6.0 | 6 | .1 |
| 24.. | 2.7 | 2 | T | 4.0 | 3 | T | 10 | 12 S | .3 |
| 25.. | 2.8 | 3 | T | 3.8 | 4 | T | 4.0 | 4 | T |
| 26.. | 4.2 | 5 | .1 | 3.6 | 3 | T | 3.0 | 3 | T |
| 27.. | 2.8 | 4 | T | 3.4 | 2 | T | 3.5 | 3 | T |
| 28.. | 3.3 | 7 | .1 | 3.4 | 2 | T | 3.0 | 3 | T |
| 29.. | 9.6 | 16 S | .6 | 3.4 | 2 | T | 2.9 | 3 | T |
| 30.. | 3.4 | 6 | .1 | 3.2 | 2 | T | 2.8 | 3 | T |
| 31.. | 3.6 | 6 | .1 | -- | -- | -- | 2.8 | 3 | T |
| Total | 121.4 | -- | 2.5 | 219.5 | -- | 49.3 | 106.3 | -- | 1.2 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 2.8 | 2 | T | 9.1 | 3 | 0.1 | 6.5 | 4 | 0.1 |
| 2.. | 2.7 | 2 | T | 8.3 | 2 | T | 6.2 | 5 | .1 |
| 3.. | 3.2 | 4 | T | 7.2 | 2 | T | 5.6 | 4 | .1 |
| 4.. | 3.2 | 3 | T | 11 | 7 | .2 | 9.4 | 9 S | .3 |
| 5.. | 2.7 | 2 | T | 10 | 4 | .1 | 6.8 | 4 | .1 |
| 6.. | 2.6 | 2 | T | 8.3 | 3 | .1 | 5.6 | 3 | T |
| 7.. | 2.6 | 2 | T | 6.8 | 2 | T | 5.3 | 3 | T |
| 8.. | 2.4 | 2 | T | 6.5 | 2 | T | 5.3 | 3 | T |
| 9.. | 2.4 | 2 | T | 5.9 | 2 | T | 4.7 | 2 | T |
| 10.. | 2.8 | 3 | T | 5.6 | 2 | T | 4.4 | 2 | T |
| 11.. | 3.0 | 3 | T | 5.9 | 1 | T | 5.6 | 7 | .1 |
| 12.. | 2.7 | 3 | T | 5.3 | 1 | T | 5.6 | 4 | .1 |
| 13.. | 2.4 | 3 | T | 6.6 | 7 | .1 | 13 | 10 S | .6 |
| 14.. | 2.4 | 2 | T | 7.9 | 6 | .1 | 7.2 | 4 | .1 |
| 15.. | 2.2 | 2 | T | 5.3 | 4 | .1 | 6.8 | 5 | .1 |
| 16.. | 27 | 114 S | 29 | 5.3 | 4 | .1 | 6.2 | 4 | .1 |
| 17.. | 6.5 | 6 | .1 | 6.2 | 4 | .1 | 5.9 | 4 | .1 |
| 18.. | 47 | 58 S | 21 | 4.7 | 3 | T | 6.8 | 5 | .1 |
| 19.. | 8.7 | 3 | .1 | 4.2 | 3 | T | 5.6 | 4 | .1 |
| 20.. | 6.2 | 2 | T | 4.0 | 2 | T | 5.3 | 3 | T |
| 21.. | 5.0 | 2 | T | 4.0 | 2 | T | 5.0 | 2 | T |
| 22.. | 4.4 | 2 | T | 4.2 | 3 | T | 5.0 | 3 | T |
| 23.. | 4.4 | 2 | T | 4.4 | 3 | T | 5.3 | 3 | T |
| 24.. | 4.2 | 2 | T | 3.8 | 3 | T | 4.4 | 3 | T |
| 25.. | 45 | 40 S | 6.7 | 3.8 | 3 | T | 4.2 | 3 | T |
| 26.. | 13 | 4 | .1 | 4.0 | 5 | .1 | 22 | 14 S | 1.1 |
| 27.. | 9.5 | 3 | .1 | 45 | 122 S | 72 | 9.5 | 3 | .1 |
| 28.. | 7.9 | 2 | T | 7.9 | 5 | .1 | 6.8 | 2 | T |
| 29.. | 10 | 5 | .1 | -- | -- | -- | 5.9 | 2 | T |
| 30.. | 14 | 8 S | .7 | -- | -- | -- | 5.6 | 2 | T |
| 31.. | 10 | 4 | .1 | -- | -- | -- | 5.6 | 2 | T |
| Total | 262.9 | -- | 58.4 | 211.2 | -- | 73.7 | 207.1 | -- | 3.8 |

S Computed subdividing day.
T Less than 0.05 ton.

ISLAND OF OKINAWA--Continued

16-8755. YONA-GAWA AT YONA, OKINAWA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1.. | 17 | 11 S | 0.9 | 117 | 140 K | 140 | 21 | 4 | 0.2 |
| 2.. | 7.9 | 3 | .1 | 34 | 4 | .4 | 17 | 5 | .2 |
| 3.. | 6.8 | 2 | T | 20 | 3 | .2 | 33 | 25 S | 6.0 |
| 4.. | 8.8 | 5 | .1 | 14 | 3 | .1 | 24 | 5 | .3 |
| 5.. | 7.5 | 2 | T | 11 | 3 | .1 | 20 | 4 | .2 |
| 6.. | 10 | 3 | .1 | 37 | 70 K | 50 | 17 | 3 | .1 |
| 7.. | 9.1 | 2 | T | 173 | 230 K | 290 | 15 | 3 | .1 |
| 8.. | 7.9 | 2 | T | 26 | 4 | .3 | 131 | 123 S | 120 |
| 9.. | 7.2 | 2 | T | 18 | 4 | .2 | 58 | 8 | 1.3 |
| 10.. | 6.5 | 2 | T | 14 | 3 | .1 | 30 | 3 | .2 |
| 11.. | 6.2 | 2 | T | 12 | 3 | .1 | 22 | 3 | .2 |
| 12.. | 5.9 | 2 | T | 221 | 540 K | 1500 | 156 | 136 S | 113 |
| 13.. | 5.6 | 2 | T | 33 | 6 | .5 | 48 | 8 S | 1.4 |
| 14.. | 6.9 | 7 S | .2 | 21 | 4 | .2 | 35 | 10 | .9 |
| 15.. | 5.3 | 3 | T | 20 | 12 S | .7 | 24 | 3 | .2 |
| 16.. | 5.0 | 2 | T | 15 | 3 | .1 | 20 | 3 | .2 |
| 17.. | 5.0 | 2 | T | 12 | 3 | .1 | 16 | 3 | .1 |
| 18.. | 4.7 | 2 | T | 11 | 3 | .1 | 14 | 3 | .1 |
| 19.. | 5.0 | 2 | T | 43 | 37 S | 6.8 | 13 | 2 | .1 |
| 20.. | 4.4 | 2 | T | 27 | 12 | .9 | 12 | 2 | .1 |
| 21.. | 9.0 | 22 S | 2.3 | 140 | 100 K | 50 | 10 | 2 | .1 |
| 22.. | 8.3 | 20 | .4 | 61 | 5 | .8 | 9.5 | 2 | .1 |
| 23.. | 16 | 37 S | 4.5 | 30 | 4 | .3 | 8.7 | 2 | T |
| 24.. | 7.5 | 5 | .1 | 21 | 3 | .2 | 7.9 | 2 | T |
| 25.. | 5.9 | 3 | T | 18 | 3 | .1 | 7.5 | 2 | T |
| 26.. | 5.6 | 3 | T | 16 | 2 | .1 | 7.2 | 2 | T |
| 27.. | 7.2 | 5 | .1 | 13 | 2 | .1 | 7.5 | 2 | T |
| 28.. | 35 | 44 S | 15 | 12 | 2 | .1 | 6.5 | 2 | T |
| 29.. | 12 | 3 | .1 | 19 | 34 S | 2.8 | 6.2 | 2 | T |
| 30.. | 36 | 38 S | 8.3 | 12 | 3 | .1 | 5.9 | 2 | T |
| 31.. | -- | -- | -- | 50 | 50 S | 27 | -- | -- | -- |
| Total | 285.2 | -- | 32.8 | 1271 | -- | 2072.5 | 802.9 | -- | 245.4 |

| | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.. | 8.5 | 10 S | 0.6 | 3.6 | C 3 | T | 6.1 | 5 | 0.1 |
| 2.. | 16 | 13 S | .7 | 3.4 | C 3 | T | 31 | 26 S | 3.8 |
| 3.. | 14 | 13 S | 1.1 | 3.4 | C 3 | T | 9.5 | 4 | .1 |
| 4.. | 20 | 10 | .5 | 3.2 | C 3 | T | 7.9 | C 3 | .1 |
| 5.. | 10 | 2 | .1 | 3.2 | C 3 | T | 7.2 | C 3 | .1 |
| 6.. | 26 | 13 S | 2.4 | 3.2 | C 2 | T | 6.8 | C 3 | .1 |
| 7.. | 19 | 5 | .3 | 3.0 | C 2 | T | 6.2 | C 3 | .1 |
| 8.. | 12 | 3 | .1 | 3.0 | C 2 | T | 5.9 | 2 | T |
| 9.. | 10 | C 3 | .1 | 2.8 | C 2 | T | 5.9 | 4 | .1 |
| 10.. | 9.1 | C 3 | .1 | 2.8 | C 2 | T | 6.5 | C 3 | .1 |
| 11.. | 8.3 | C 3 | .1 | 3.0 | C 2 | T | 5.6 | C 3 | T |
| 12.. | 7.9 | C 3 | .1 | 5.4 | 9 | .1 | 9.5 | 8 S | .4 |
| 13.. | 7.2 | C 3 | .1 | 6.2 | 6 | .1 | 6.5 | 4 | .1 |
| 14.. | 6.5 | C 3 | .1 | 7.9 | 7 | .1 | 5.6 | C 2 | T |
| 15.. | 6.2 | C 3 | .1 | 4.8 | C 2 | T | 5.4 | C 2 | T |
| 16.. | 5.9 | C 3 | T | 3.6 | C 2 | T | 5.1 | C 2 | T |
| 17.. | 5.6 | C 3 | T | 16 | 40 S | 3.8 | 5.6 | 3 | T |
| 18.. | 5.4 | C 3 | T | 7.9 | 6 | .1 | 4.8 | 2 | T |
| 19.. | 5.1 | C 3 | T | 50 | 90 S | 24 | 4.4 | C 1 | T |
| 20.. | 4.8 | C 3 | T | 24 | 36 S | 6.2 | 5.1 | C 1 | T |
| 21.. | 4.8 | C 3 | T | 25 | 18 | 1.2 | 6.0 | 3 | T |
| 22.. | 4.6 | C 3 | T | 103 | -- E | 220 | 138 | -- E | 340 |
| 23.. | 4.6 | C 2 | T | 20 | 4 | .2 | 170 | 330 B | 150 |
| 24.. | 4.4 | C 2 | T | 14 | C 3 | .1 | 54 | 6 | .9 |
| 25.. | 4.1 | C 2 | T | 11 | C 3 | .1 | 26 | 4 | .3 |
| 26.. | 4.1 | C 2 | T | 9.1 | C 3 | .1 | 18 | C 3 | .1 |
| 27.. | 4.1 | C 2 | T | 7.9 | C 3 | .1 | 14 | C 3 | .1 |
| 28.. | 6.2 | 12 | .2 | 8.7 | 6 | .1 | 12 | C 3 | .1 |
| 29.. | 4.4 | 6 | .1 | 6.8 | C 3 | .1 | 10 | C 3 | .1 |
| 30.. | 3.8 | 5 | .1 | 6.2 | C 3 | .1 | 9.1 | C 3 | .1 |
| 31.. | 3.6 | 4 | T | 5.9 | C 3 | T | -- | -- | -- |
| Total | 256.2 | -- | 7.3 | 378.0 | -- | 256.9 | 607.7 | -- | 497.1 |

Total discharge for year (cfs-days)..... 4729.4
Total load for year (tons)..... 3300.9

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
B Computed from estimated-concentration graph.
K Computed from estimated-concentration graph and subdividing day.

ISLAND OF OKINAWA--Continued

16-8755. YONA-GAWA AT YONA, OKINAWA--Continued

Particle-size analyses of bed material, water year October 1965 to September 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Bed material | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Percent finer than size indicated, in millimeters | | | | | | | | | | | |
| | | | | | | | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.00 | 4.00 | 8.00 | 16.0 | 32.0 | 64.0 | |
| Mar. 9, 1966..... | 1400 | | 3 | 4.7 | | | | 2 | 4 | 8 | 18 | 34 | 54 | 67 | 78 | 96 | 100 | S |

## 16-8775. GENKA-KAWA NEAR GENKA, OKINAWA

LOCATION.--At gaging station 1.2 miles south of Genka, and 2.1 miles southeast of Nakaoshi.
DRAINAGE AREA.--3.9 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1964 to June 1966 (discontinued).
Sediment records: May 1964 to June 1966 (discontinued).
EXTREMES, 1965-66.--Water temperatures: Maximum, 77°F June 21, 22, 26, 28- 30; minimum, 53°F Jan. 17.
Sediment concentrations: Maximum daily, 2,800 ppm Nov. 14; minimum daily, 1 ppm on many days.
Sediment loads: Maximum daily, 9,500 tons May 12; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1964-66.--Water temperatures: Maximum, 84°F Sept. 2, 9, 1964; minimum, 52°F Jan. 26, 27, 1965.
Sediment concentrations: Maximum daily, 3,180 ppm Feb. 20, 1965; minimum daily, 1 ppm on many days each year.
Sediment loads: Maximum daily, 13,000 tons Aug. 5, 1965; minimum daily, less than 0.05 ton on many days each year.

Chemical analyses, in parts per million, water year October 1965 to June 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | | |
| June 9, 1966..... | 50 | 9.8 | 0.70 | 3.0 | 1.7 | 15 | 1.0 | 12 | 0 | 4.8 | 22 | 0.2 | 0.0 | | 63 | 0.09 | 8.51 | 10 | 4 | | 100 | 7.0 | 40 |
| June 14..... | 45 | 9.6 | .02 | 3.2 | 2.2 | 12 | .7 | 12 | 0 | 5.7 | 20 | .2 | .0 | | 76 | .10 | 9.23 | 10 | 7 | | 80 | 6.5 | 25 |
| June 21..... | 22 | 11 | .03 | 3.6 | 2.3 | 16 | 1.2 | 13 | 0 | 6.0 | 27 | .1 | .0 | | 76 | .10 | 4.51 | 11 | 8 | | 95 | 7.4 | 10 |

Temperature (°F) of water, October 1965 to June 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | 74 | 74 | 75 | 72 | 71 | 73 | 73 | 72 | 73 | 72 | 72 | 72 | 73 | 73 | 71 | 71 | 70 | 69 | 68 | 69 | 69 | 72 | 69 | 68 | 69 | 68 | 68 | 70 | 69 | 72 | 70 | 71 |
| November..... | 70 | 71 | 71 | 74 | 72 | 74 | 71 | 74 | 73 | 71 | 72 | 70 | 70 | 71 | 73 | 70 | 71 | 70 | 71 | 70 | 67 | 67 | 71 | 70 | 69 | 67 | 69 | 69 | 65 | 65 | -- | 70 |
| December..... | 64 | 63 | 63 | 64 | 65 | 63 | 63 | 63 | 63 | 62 | 63 | 62 | 63 | 61 | 63 | 59 | 59 | 60 | 60 | 60 | 64 | 60 | 60 | 61 | 61 | 62 | 62 | 62 | 62 | 61 | 57 | 62 |
| January..... | 57 | 61 | 57 | 61 | 57 | 57 | 57 | 58 | 58 | 59 | 57 | 60 | 61 | 60 | 61 | 60 | 53 | 64 | 61 | 59 | 60 | 61 | 60 | 60 | 62 | 61 | 59 | 59 | 59 | 59 | 60 | 59 |
| February..... | 60 | 63 | 61 | 62 | 60 | 60 | 60 | 60 | 60 | 61 | 62 | 61 | 60 | 60 | 60 | 60 | 61 | 60 | 62 | 62 | 63 | 65 | 57 | 59 | 59 | 63 | 64 | 64 | -- | -- | -- | 61 |
| March..... | 64 | 64 | 64 | 67 | 67 | 66 | 65 | 64 | 63 | 64 | 65 | 65 | 66 | 64 | 67 | 67 | 67 | 69 | 69 | 64 | 63 | 66 | 66 | 67 | 65 | 61 | 63 | 63 | 64 | 63 | 64 | 65 |
| April..... | 63 | 67 | 64 | 64 | 64 | 64 | 69 | 71 | 71 | 69 | 69 | 69 | 71 | 74 | 74 | 66 | 66 | 64 | 64 | 70 | 70 | 70 | 69 | 70 | 72 | 70 | 73 | 69 | 68 | 69 | -- | 68 |
| May..... | 68 | 67 | 67 | -- | -- | 68 | 69 | 69 | 69 | 71 | 72 | 70 | 70 | 71 | 69 | 70 | 73 | 70 | 69 | 70 | 69 | 69 | 70 | -- | 68 | 67 | 69 | 69 | 72 | 71 | 72 | 70 |
| June..... | 71 | 72 | 69 | 70 | 70 | 71 | 70 | 71 | 71 | 70 | 71 | 70 | 70 | 71 | 76 | -- | -- | -- | -- | -- | 77 | 77 | 76 | 76 | 76 | 77 | 76 | 77 | 77 | 77 | -- | 73 |

ISLAND OF OKINAWA--Continued

16-8775. GENKA-KAWA NEAR GENKA, OKINAWA--Continued

Suspended sediment, October 1965 to June 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 4.8 | 2 | T | 3.8 | 2 | T | 4.8 | 3 | T |
| 2 | 4.8 | 2 | T | 3.8 | 2 | T | 4.8 | 2 | T |
| 3 | 4.8 | 1 | T | 3.4 | 2 | T | 4.2 | 2 | T |
| 4 | 4.2 | 1 | T | 3.4 | 1 | T | 4.2 | 2 | T |
| 5 | 4.2 | 1 | T | 3.4 | 1 | T | 4.8 | 2 | T |
| 6 | 4.2 | 1 | T | 3.0 | 1 | T | 5.7 | 2 | T |
| 7 | 7.0 | 4 | .1 | 3.0 | 1 | T | 4.8 | 2 | T |
| 8 | 4.2 | 2 | T | 3.0 | 1 | T | 4.8 | 2 | T |
| 9 | 3.8 | 2 | T | 15 | 17 | S 1.3 | 4.8 | 2 | T |
| 10 | 3.4 | 2 | T | 6.7 | 8 | .1 | 4.2 | 2 | T |
| 11 | 3.4 | 2 | T | 4.2 | 3 | T | 4.8 | 3 | T |
| 12 | 3.4 | 2 | T | 3.4 | 2 | T | 6.2 | 3 | .1 |
| 13 | 5.7 | 5 | .1 | 6.2 | 5 | .1 | 4.8 | 2 | T |
| 14 | 4.8 | 3 | T | 251 | 2000 | K 2800 | 4.2 | 2 | T |
| 15 | 3.8 | 2 | T | 19 | 4 | .2 | 4.8 | 3 | T |
| 16 | 3.8 | 2 | T | 12 | 3 | .1 | 6.2 | 3 | .1 |
| 17 | 3.4 | 2 | T | 9.7 | 2 | .1 | 4.8 | 2 | T |
| 18 | 3.4 | 2 | T | 9.0 | 2 | T | 4.2 | 2 | T |
| 19 | 3.0 | 1 | T | 7.8 | 2 | T | 3.8 | 2 | T |
| 20 | 3.0 | 1 | T | 13 | 8 | .3 | 5.7 | 3 | T |
| 21 | 3.0 | 2 | T | 12 | 4 | .1 | 6.2 | 3 | .1 |
| 22 | 3.0 | 2 | T | 9.0 | 3 | .1 | 4.8 | 2 | T |
| 23 | 3.0 | 2 | T | 8.4 | 3 | .1 | 7.3 | 5 | .1 |
| 24 | 3.0 | 2 | T | 6.7 | 3 | .1 | 15 | 9 | .4 |
| 25 | 3.8 | 2 | T | 6.7 | 3 | .1 | 6.7 | 3 | .1 |
| 26 | 5.2 | 3 | T | 6.2 | 3 | .1 | 5.7 | 2 | T |
| 27 | 3.8 | 2 | T | 5.7 | 3 | T | 12 | 9 | .3 |
| 28 | 7.7 | 4 | S .2 | 5.7 | 3 | T | 7.3 | 3 | .1 |
| 29 | 18 | 19 | S 1.6 | 5.2 | 3 | T | 6.2 | 2 | T |
| 30 | 5.2 | 3 | T | 4.8 | 3 | T | 5.7 | 2 | T |
| 31 | 4.2 | 2 | T | --- | --- | --- | 5.7 | 2 | T |
| Total | 143.0 | --- | 2.6 | 454.2 | --- | 2803.2 | 179.2 | --- | 2.0 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 4.8 | 2 | T | 14 | 2 | 0.1 | 12 | 2 | 0.1 |
| 2 | 4.8 | 2 | T | 13 | 2 | .1 | 12 | 2 | .1 |
| 3 | 5.7 | 3 | T | 12 | 2 | .1 | 11 | 2 | .1 |
| 4 | 6.7 | 3 | .1 | 13 | 2 | .1 | 24 | 29 | S 4.8 |
| 5 | 4.8 | 2 | T | 12 | 2 | .1 | 12 | 5 | .2 |
| 6 | 4.2 | 1 | T | 10 | 1 | T | 9.7 | 3 | .1 |
| 7 | 3.8 | 1 | T | 9.7 | 1 | T | 9.0 | 2 | T |
| 8 | 3.8 | 1 | T | 9.7 | 1 | T | 9.0 | 2 | T |
| 9 | 3.8 | 1 | T | 9.0 | 1 | T | 8.4 | 2 | T |
| 10 | 3.8 | 2 | T | 8.4 | 1 | T | 8.4 | 2 | T |
| 11 | 5.7 | 4 | .1 | 9.0 | 2 | T | 9.9 | 8 | .2 |
| 12 | 4.2 | 3 | T | 9.0 | 2 | T | 9.7 | 5 | .1 |
| 13 | 4.2 | 2 | T | 9.0 | 3 | .1 | 18 | 11 | S .9 |
| 14 | 3.8 | 2 | T | 9.7 | 2 | .1 | 10 | 3 | .1 |
| 15 | 3.8 | 2 | T | 8.4 | 2 | T | 17 | 8 | S .7 |
| 16 | 27 | 57 | S 16 | 8.4 | 2 | T | 13 | 5 | .2 |
| 17 | 15 | 9 | .4 | 11 | 4 | .1 | 10 | 3 | .1 |
| 18 | 198 | 1400 | K 2900 | 8.4 | 2 | T | 9.7 | 3 | .1 |
| 19 | 17 | 6 | .3 | 7.8 | 2 | T | 9.7 | 3 | .1 |
| 20 | 12 | 4 | .1 | 7.3 | 2 | T | 9.0 | 2 | T |
| 21 | 9.7 | 4 | .1 | 7.3 | 2 | T | 9.0 | 3 | .1 |
| 22 | 9.0 | 3 | .1 | 7.3 | 1 | T | 9.0 | 4 | .1 |
| 23 | 9.7 | 3 | .1 | 7.8 | 1 | T | 9.0 | 4 | .1 |
| 24 | 9.0 | 3 | .1 | 7.3 | 1 | T | 8.4 | 3 | .1 |
| 25 | 126 | 455 | S 313 | 6.7 | 1 | T | 7.8 | 3 | .1 |
| 26 | 33 | 6 | .5 | 7.8 | 1 | T | 31 | 17 | S 2.2 |
| 27 | 19 | 3 | .2 | 96 | 580 | S 644 | 15 | 4 | .2 |
| 28 | 15 | 3 | .1 | 14 | 2 | .1 | 10 | 3 | .1 |
| 29 | 16 | 3 | .1 | --- | --- | --- | 9.0 | 3 | .1 |
| 30 | 31 | 14 | 1.8 | --- | --- | --- | 8.4 | 3 | .1 |
| 31 | 18 | 4 | .2 | --- | --- | --- | 8.4 | 3 | .1 |
| Total | 632.3 | --- | 3233.6 | 353.0 | --- | 645.5 | 356.5 | --- | 11.4 |

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

*ISLAND OF OKINAWA--Continued*

16-8775. GENKA-KAWA NEAR GENKA, OKINAWA--Continued

Suspended sediment, October 1965 to June 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 23 | 13 | S 1.4 | 309 | 1000 | K 2600 | 50 | — | 1.0 |
| 2 | 12 | 4 | .1 | 65 | 15 | 2.6 | 45 | -- | 1.2 |
| 3 | 10 | 3 | .1 | 34 | 5 | .5 | 40 | 3 | .3 |
| 4 | 15 | 8 | .3 | 25 | 4 | .3 | 50 | 3 | .4 |
| 5 | 14 | 4 | .2 | 22 | 3 | .2 | 40 | 4 | .4 |
| 6 | 16 | 5 | .2 | 22 | 7 | .4 | 29 | 3 | .2 |
| 7 | 14 | 4 | .2 | 291 | 1500 | K 6500 | 26 | 3 | .2 |
| 8 | 12 | 3 | .1 | 47 | 4 | .5 | 200 | — | 1200 |
| 9 | 11 | 3 | .1 | 31 | 3 | .3 | 60 | -- | 2.0 |
| 10 | 11 | 2 | .1 | 25 | 3 | .2 | 45 | 4 | .5 |
| 11 | 10 | 2 | .1 | 21 | 3 | .2 | 36 | 3 | .3 |
| 12 | 9.7 | 2 | .1 | 450 | -- | 9500 | 260 | -- | 1500 |
| 13 | 9.0 | 2 | T | 70 | -- | 1.2 | 110 | -- | 400 |
| 14 | 9.0 | 2 | T | 44 | 4 | .5 | 80 | -- | 5.0 |
| 15 | 8.4 | 2 | T | 35 | 3 | .3 | 55 | 6 | .9 |
| 16 | 7.8 | 2 | T | 28 | 3 | .2 | 40 | 4 B | .4 |
| 17 | 7.8 | 2 | T | 23 | 3 | .2 | 35 | 4 B | .4 |
| 18 | 7.8 | 2 | T | 21 | 2 | .1 | 31 | 3 B | .3 |
| 19 | 8.4 | 2 | T | 80 | -- | 80 | 28 | 3 B | .2 |
| 20 | 7.8 | 2 | T | 45 | -- | 1.0 | 25 | 3 B | .2 |
| 21 | 9.9 | 8 | .2 | 300 | -- | 150 | 22 | 3 | .2 |
| 22 | 10 | 5 | .1 | 130 | -- | 2.1 | 19 | 3 | .2 |
| 23 | 10 | 37 | S 8.0 | 60 | 3 B | .5 | 17 | 3 | .1 |
| 24 | 11 | 4 | .1 | 44 | 3 B | .4 | 16 | 3 | .1 |
| 25 | 9.7 | 3 | .1 | 34 | 2 | .2 | 15 | 2 | .1 |
| 26 | 9.0 | 3 | .1 | 27 | 2 | .1 | 14 | 2 | .1 |
| 27 | 13 | 9 | .3 | 22 | 2 | .1 | 14 | 2 | .1 |
| 28 | 152 | 1150 | S 1930 | 20 | 2 | .1 | 13 | 2 | .1 |
| 29 | 33 | 10 | .9 | 40 | 5 | .5 | 12 | 2 | .1 |
| 30 | 141 | 185 | S 137 | 22 | 3 | .2 | 11 | 2 | .1 |
| 31 | -- | -- | -- | 140 | -- | 100 | -- | -- | -- |
| Total | 642.3 | -- | 2080.2 | 2527 | -- | 18942.9 | 1438 | — | 3115.1 |

Total discharge for year (cfs-days)..... 8,425.5
Total load for year (tons)..... 43,985.0

S Computed by subdividing day.
T Less than 0.05 ton.
B Computed from estimated-concentration graph.
K Computed from estimated-concentration graph and subdividing day.

ISLAND OF OKINAWA--Continued

16-8775. GENKA-KAWA NEAR GENKA, OKINAWA--Continued

Particle-size analyses of bed material, October 1965 to June 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

| Date of collection | Time (24 hour) | Water temperature (°F) | Sampling point | Discharge (cfs) | Sediment concentration (ppm) | Sediment discharge (tons per day) | Bed material: Percent finer than size indicated, in millimeters | | | | | | | | | | | Method of analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.062 | 0.125 | 0.250 | 0.500 | 1.000 | 2.00 | 4.00 | 8.00 | 16.0 | 32.0 | 64.0 | |
| Mar. 11, 1966..... | 1030 | | 3 | 7.8 | | | | 1 | 2 | 7 | 16 | 31 | 52 | 63 | 75 | 94 | 100 | S |

## 16-8842. FUKUJI-GAWA AT FUKUJI, OKINAWA

LOCATION.--At gaging station at Fukuji, 0.9 mile north of Kawata, and 1.3 miles northeast of Taira.
DRAINAGE AREA.--12 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1964 to September 1966.
Sediment records: May 1964 to September 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 83°F Sept. 12; minimum, 54°F Jan. 6, 8.
Sediment concentrations: Maximum daily, 1,300 ppm May 7, 12; minimum daily, 1 ppm on many days.
Sediment loads: Maximum daily, 18,000 tons Aug. 5; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1964-66.--Water temperatures: Maximum, 83°F July 13-16, 1964, July 28, 29, 1965, Sept. 12, 1966; minimum 51°F Jan. 16, 1965.
Sediment concentrations: Maximum daily, 4,500 ppm June 23, 1965; minimum daily, 1 ppm on many days each year.
Sediment loads: Maximum daily, 64,000 tons Aug. 5, 1965; minimum daily, less than 0.05 ton on many days each year.

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH | Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | | |
| June 17, 1966.... | 92 | 13 | 0.08 | 3.4 | 2.6 | 17 | 1.0 | 14 | 0 | 8.6 | 27 | 0.2 | 0.0 | | 100 | 0.14 | 24.8 | 11 | 7 | | 105 | 6.9 | 15 |
| June 27..... | 58 | 14 | .10 | 4.0 | 2.4 | 15 | 1.0 | 16 | 0 | 3.8 | 28 | .1 | .0 | | 84 | .11 | 13.2 | 14 | 6 | | 110 | 7.2 | 10 |
| June 30..... | 40 | 17 | .03 | 4.0 | 2.9 | 15 | 1.0 | 16 | 0 | 3.8 | 28 | .1 | .0 | | 90 | .12 | 9.72 | 13 | 9 | | 120 | 7.5 | 5 |

Temperature (°F) of water, water year October 1965 to September 1966

| Month | Day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| October..... | 72 | 71 | 73 | 72 | 74 | 75 | 73 | 73 | 72 | 70 | 71 | 71 | 72 | 71 | 69 | 70 | 69 | 69 | 67 | 67 | 68 | 67 | 68 | 68 | 68 | 68 | 68 | 69 | 70 | 70 | 75 | 70 |
| November..... | 70 | 69 | 69 | 69 | 71 | 71 | 73 | 72 | 74 | 70 | 69 | 69 | 69 | 70 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 69 | 69 | 70 | 71 | 66 | 66 | 63 | 64 | 65 | -- | 69 |
| December..... | 63 | 62 | 62 | 62 | 64 | 63 | 60 | 62 | 62 | 61 | 65 | 63 | 61 | 60 | 61 | 61 | 58 | 57 | 57 | 62 | 63 | 62 | 66 | 65 | 59 | 59 | 62 | 62 | 62 | 62 | 58 | 61 |
| January..... | 57 | 56 | 57 | 56 | 57 | 54 | 56 | 54 | 57 | 60 | 62 | 62 | 64 | 64 | 64 | 63 | 62 | 64 | 61 | 59 | 57 | 56 | 58 | 59 | 59 | 62 | 58 | 58 | 57 | 58 | 55 | 59 |
| February..... | 58 | 60 | 60 | 61 | 59 | 57 | 57 | 57 | 57 | 59 | 62 | 61 | 60 | 59 | 56 | 59 | 62 | 62 | 59 | 61 | 65 | 66 | 61 | 59 | 57 | 62 | 63 | 61 | -- | -- | -- | 60 |
| March..... | 61 | 65 | 66 | 68 | 66 | 66 | 69 | 68 | 65 | 63 | 63 | 64 | 68 | 64 | 67 | 65 | 64 | 69 | 61 | 60 | 61 | 67 | 66 | 61 | 60 | 61 | 60 | 61 | 61 | 60 | 61 | 64 |
| April..... | 63 | 60 | 64 | 66 | 65 | 67 | 65 | 65 | 70 | 70 | 69 | 68 | 69 | 72 | 72 | 69 | 67 | 64 | 65 | 65 | 68 | 69 | 70 | 68 | 70 | 74 | 74 | 70 | 68 | 69 | -- | 68 |
| May..... | 68 | 67 | 65 | 65 | 64 | 68 | 70 | 68 | 67 | 69 | 73 | 70 | 69 | 71 | 71 | 70 | 70 | 70 | 68 | 69 | 68 | 67 | 69 | 67 | 67 | 67 | 67 | 69 | 72 | 70 | 72 | 69 |
| June..... | 71 | 71 | 71 | 71 | 70 | 69 | 69 | 68 | 71 | 70 | 69 | 70 | 70 | 70 | 71 | 73 | 75 | 73 | 76 | 76 | 76 | 76 | 78 | 76 | 76 | 78 | 73 | 76 | 75 | 77 | -- | 73 |
| July..... | 79 | 77 | 74 | 75 | 75 | 74 | 73 | 76 | 77 | 78 | 78 | 79 | 79 | 79 | 79 | 79 | 79 | 80 | 80 | 81 | 81 | 80 | 80 | 80 | 81 | 81 | 78 | 81 | 81 | 81 | 81 | 78 |
| August..... | 82 | 81 | 82 | 82 | 81 | 81 | 82 | 82 | 82 | 80 | 80 | 82 | 80 | 79 | 80 | 81 | 78 | 78 | 78 | 78 | 77 | 77 | 76 | 77 | 77 | 77 | 78 | 77 | 77 | 77 | 77 | 79 |
| September... | 77 | 77 | 77 | 78 | 78 | 79 | 78 | 78 | 77 | 79 | 80 | 83 | 78 | 78 | 77 | 78 | 79 | 78 | 77 | 78 | 79 | 78 | 77 | 74 | 72 | 71 | 71 | 70 | 70 | 69 | -- | 76 |

ISLAND OF OKINAWA--Continued

16-8842. FUKUJI-GAWA AT FUKUJI, OKINAWA--Continued

Suspended sediment, water year October 1965 to September 1966

| Day | OCTOBER | | | NOVEMBER | | | DECEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 18 | 3 | 0.1 | 12 | 2 | 0.1 | 13 | 1 | T |
| 2 | 17 | 2 | .1 | 11 | 2 | .1 | 13 | 1 | T |
| 3 | 16 | 2 | .1 | 11 | 2 | .1 | 12 | 1 | T |
| 4 | 15 | 2 | .1 | 10 | 2 | .1 | 12 | 1 | T |
| 5 | 14 | 2 | .1 | 10 | 1 | T | 12 | 1 | T |
| 6 | 15 | 3 | .1 | 10 | 1 | T | 12 | 1 | T |
| 7 | 16 | 6 | .3 | 10 | 1 | T | 11 | 1 | T |
| 8 | 14 | 3 | .1 | 9.5 | 1 | T | 11 | 1 | T |
| 9 | 13 | 2 | .1 | 70 | 128 S | 48 | 11 | 1 | T |
| 10 | 12 | 2 | .1 | 20 | 7 | .4 | 11 | 1 | T |
| 11 | 12 | 2 | .1 | 14 | 4 | .2 | 11 | 3 | .1 |
| 12 | 11 | 2 | .1 | 11 | 3 | .1 | 13 | 2 | .1 |
| 13 | 36 | 29 S | 5.0 | 19 | 8 | .4 | 11 | 1 | T |
| 14 | 23 | 13 | .8 | 986 | 1000 K | 5800 | 11 | 1 | T |
| 15 | 14 | 5 | .2 | 57 | 7 | 1.1 | 12 | 2 | .1 |
| 16 | 12 | 4 | .1 | 88 | 42 S | 24 | 14 | 1 | T |
| 17 | 11 | 3 | .1 | 30 | 7 | .6 | 13 | 1 | T |
| 18 | 10 | 3 | .1 | 28 | 5 | .4 | 11 | 1 | T |
| 19 | 10 | 3 | .1 | 23 | 3 | .2 | 10 | 1 | T |
| 20 | 10 | 2 | .1 | 20 | 3 | .2 | 11 | 1 | T |
| 21 | 11 | 2 | .1 | 18 | 2 | .1 | 12 | 1 | T |
| 22 | 11 | 2 | .1 | 16 | 2 | .1 | 11 | 1 | T |
| 23 | 11 | 2 | .1 | 15 | 2 | .1 | 16 | 5 | .2 |
| 24 | 11 | 2 | .1 | 15 | 2 | .1 | 32 | 10 | .9 |
| 25 | 12 | 2 | .1 | 15 | 1 | T | 15 | 4 | .2 |
| 26 | 17 | 3 | .1 | 15 | 1 | T | 12 | 2 | .1 |
| 27 | 13 | 2 | .1 | 14 | 1 | T | 20 | 8 | .4 |
| 28 | 12 | 4 | .1 | 14 | 1 | T | 13 | 2 | .1 |
| 29 | 67 | 24 S | 6.9 | 15 | 2 | .1 | 11 | 2 | .1 |
| 30 | 17 | 4 | .2 | 14 | 1 | T | 10 | 1 | T |
| 31 | 14 | 2 | .1 | --- | --- | --- | 9.8 | 1 | T |
| Total | 495 | --- | 15.9 | 1600.5 | --- | 5876.8 | 396.8 | --- | 3.0 |

| Day | JANUARY | | | FEBRUARY | | | MARCH | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 9.5 | 1 | T | 38 | 3 | 0.3 | 24 | 6 | 0.4 |
| 2 | 9.1 | 1 | T | 35 | 2 | .2 | 52 | 19 S | 4.5 |
| 3 | 9.5 | 1 | T | 32 | 2 | .2 | 32 | 7 | .6 |
| 4 | 11 | 1 | T | 35 | 3 | .3 | 130 | 98 S | 105 |
| 5 | 9.1 | 1 | T | 34 | 2 | .2 | 61 | 18 | 3.0 |
| 6 | 9.1 | 1 | T | 28 | 2 | .2 | 34 | 5 | .5 |
| 7 | 9.1 | 1 | T | 26 | 2 | .1 | 30 | 3 | .2 |
| 8 | 9.1 | 1 | T | 24 | 2 | .1 | 28 | 3 | .2 |
| 9 | 9.1 | 1 | T | 23 | 2 | .1 | 28 | 2 | .2 |
| 10 | 10 | 1 | T | 22 | 2 | .1 | 26 | 2 | .1 |
| 11 | 12 | 1 | T | 23 | 2 | .1 | 26 | 4 | .3 |
| 12 | 10 | 1 | T | 21 | 2 | .1 | 30 | 5 | .4 |
| 13 | 9.5 | 1 | T | 21 | 2 | .1 | 127 | 130 S | 142 |
| 14 | 9.1 | 1 | T | 24 | 2 | .1 | 46 | 8 | 1.0 |
| 15 | 9.1 | 1 | T | 20 | 2 | .1 | 44 | 10 S | 1.7 |
| 16 | 207 | 548 S | 1630 | 19 | 2 | .1 | 47 | 8 | 1.0 |
| 17 | 52 | 21 S | 3.9 | 24 | 8 | .5 | 38 | 12 | 1.2 |
| 18 | 634 | 959 S | 4980 | 17 | 3 | .1 | 47 | 9 | 1.1 |
| 19 | 50 | 5 | .7 | 15 | 2 | .1 | 35 | 4 | .4 |
| 20 | 37 | 3 | .3 | 15 | 2 | .1 | 30 | 3 | .2 |
| 21 | 29 | 2 | .2 | 15 | 2 | .1 | 29 | 2 | .2 |
| 22 | 26 | 2 | .1 | 15 | 2 | .1 | 28 | 2 | .2 |
| 23 | 26 | 3 | .2 | 16 | 2 | .1 | 28 | 2 | .2 |
| 24 | 26 | 2 | .1 | 15 | 1 | T | 27 | 2 | .1 |
| 25 | 323 | 100 S | 185 | 14 | 1 | T | 26 | 2 | .1 |
| 26 | 72 | 6 | 1.2 | 13 | 2 | .1 | 151 | 90 S | 65 |
| 27 | 44 | 3 | .4 | 289 | 464 S | 1170 | 54 | 5 | .7 |
| 28 | 35 | 3 | .3 | 34 | 9 | .8 | 34 | 3 | .3 |
| 29 | 38 | 4 | .4 | --- | --- | --- | 30 | 2 | .2 |
| 30 | 82 | 9 S | 3.3 | --- | --- | --- | 27 | 2 | .1 |
| 31 | 57 | 6 | .9 | --- | --- | --- | 26 | 2 | .1 |
| Total | 1882.3 | --- | 6807.4 | 907 | --- | 1174.5 | 1375 | --- | 331.2 |

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

ISLAND OF OKINAWA--Continued

16-8842. FUKUJI-GAWA AT FUKUJI, OKINAWA--Continued

Suspended sediment, water year October 1965 to September 1966--Continued

| Day | APRIL | | | MAY | | | JUNE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | | Mean discharge (cfs) | Suspended sediment | |
| | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day | | Mean concentration (ppm) | Tons per day |
| 1 | 70 | 17 | S 5.0 | 667 | 403 | S 1750 | 195 | 20 | 11 |
| 2 | 36 | 5 | .5 | 165 | 9 | 4.0 | 126 | 20 | 6.8 |
| 3 | 29 | 3 | .2 | 98 | 4 | 1.1 | 102 | 14 | 3.9 |
| 4 | 36 | 6 | .6 | 78 | 3 | .6 | 108 | 12 | 3.5 |
| 5 | 35 | 4 | .4 | 67 | 2 | .4 | 106 | 11 | 3.1 |
| 6 | 37 | 5 | .5 | 62 | 4 | .7 | 87 | 5 | 1.2 |
| 7 | 38 | 4 | .4 | 963 | 1300 | K 8900 | 67 | 3 | .5 |
| 8 | 32 | 3 | .3 | 141 | 6 | 2.3 | 845 | 606 | S 2970 |
| 9 | 31 | 2 | .2 | 106 | 4 | 1.1 | 252 | 34 | S 32 |
| 10 | 29 | 2 | .2 | 95 | 2 | .5 | 108 | 5 | 1.5 |
| 11 | 28 | 1 | .1 | 89 | 2 | .5 | 88 | 3 | .7 |
| 12 | 27 | 1 | .1 | 2490 | 1300 | K 18000 | 1310 | 702 | S 6030 |
| 13 | 26 | 1 | .1 | 220 | 12 | 7.1 | 334 | 184 | S 701 |
| 14 | 29 | 2 | .2 | 121 | 4 | 1.3 | 287 | 67 | S 127 |
| 15 | 26 | 1 | .1 | 104 | 5 | 1.4 | 150 | 10 | 4.0 |
| 16 | 24 | 1 | .1 | 75 | 3 | .6 | 110 | 4 | 1.2 |
| 17 | 23 | 1 | .1 | 58 | 2 | .3 | 235 | 55 | S 96 |
| 18 | 23 | 1 | .1 | 53 | 2 | .3 | 126 | 6 | 2.0 |
| 19 | 26 | 2 | .1 | 499 | 203 | S 611 | 87 | 3 | .7 |
| 20 | 23 | 1 | .1 | 221 | 35 | 21 | 77 | 2 | .4 |
| 21 | 24 | 2 | .1 | 1010 | 620 | K 2800 | 67 | 2 | .4 |
| 22 | 31 | 3 | .3 | 396 | 58 | S 104 | 60 | 2 | .3 |
| 23 | 246 | 550 | S 1490 | 136 | 5 | 1.8 | 55 | 2 | .3 |
| 24 | 51 | 10 | 1.4 | 95 | 4 | 1.0 | 51 | 2 | .3 |
| 25 | 40 | 3 | .3 | 77 | 3 | .6 | 49 | 1 | .1 |
| 26 | 38 | 2 | .2 | 64 | 3 | .5 | 48 | 1 | .1 |
| 27 | 67 | 25 | S 13 | 51 | 2 | .3 | 55 | 1 | .1 |
| 28 | 227 | 155 | S 195 | 45 | 2 | .2 | 49 | 1 | .1 |
| 29 | 82 | 10 | 2.2 | 246 | 118 | S 157 | 45 | 1 | .1 |
| 30 | 434 | 419 | S 1050 | 92 | 9 | 2.2 | 40 | 1 | .1 |
| 31 | -- | -- | -- | 582 | 438 | S 2850 | -- | -- | -- |
| Total | 1868 | -- | 2761.9 | 9166 | -- | 35221.8 | 5313 | -- | 10000.0 |

| Day | JULY | | | AUGUST | | | SEPTEMBER | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 38 | 1 | 0.1 | 20 | C 2 | 0.1 | 32 | 5 | 0.4 |
| 2 | 68 | 12 | S 2.4 | 19 | C 2 | .1 | 195 | 22 | S 15 |
| 3 | 50 | 2 | .3 | 19 | C 2 | .1 | 57 | 5 | .8 |
| 4 | 100 | C 1 | .3 | 18 | C 2 | .1 | 43 | 3 | .3 |
| 5 | 60 | C 1 | .2 | 17 | C 2 | .1 | 38 | 3 | .3 |
| 6 | 536 | 532 | S 2820 | 17 | C 2 | .1 | 36 | C 3 | .3 |
| 7 | 153 | 24 | S 16 | 16 | C 2 | .1 | 32 | C 3 | .3 |
| 8 | 63 | 3 | .5 | 16 | C 2 | .1 | 30 | C 3 | .2 |
| 9 | 47 | C 2 | .3 | 20 | C 2 | .1 | 28 | C 3 | .2 |
| 10 | 42 | C 2 | .2 | 17 | C 2 | .1 | 39 | 8 | .8 |
| 11 | 39 | C 2 | .2 | 16 | C 2 | .1 | 31 | 4 | .3 |
| 12 | 37 | C 2 | .2 | 28 | 10 | .8 | 28 | 5 | .4 |
| 13 | 35 | C 1 | .1 | 30 | 5 | .4 | 26 | 3 | .2 |
| 14 | 34 | C 1 | .1 | 31 | 4 | .3 | 32 | 8 | .7 |
| 15 | 32 | C 1 | .1 | 30 | 5 | .4 | 25 | 3 | .2 |
| 16 | 31 | C 1 | .1 | 21 | 2 | .1 | 22 | C 2 | .1 |
| 17 | 31 | C 1 | .1 | 482 | 761 | S 3370 | 24 | C 2 | .1 |
| 18 | 31 | C 1 | .1 | 79 | 28 | S 7.2 | 19 | C 2 | .1 |
| 19 | 29 | C 1 | .1 | 199 | 55 | S 43 | 18 | 1 | T |
| 20 | 28 | C 1 | .1 | 250 | 155 | S 281 | 18 | 1 | T |
| 21 | 27 | C 1 | .1 | 382 | 330 | A 340 | 21 | 2 | .1 |
| 22 | 27 | C 2 | .1 | 802 | 815 | S 3900 | 618 | 778 | S 3200 |
| 23 | 26 | C 2 | .1 | 140 | 5 | 1.9 | 1070 | -- | E 3300 |
| 24 | 26 | C 2 | .1 | 92 | 3 | .7 | 330 | 15 | S 16 |
| 25 | 26 | C 2 | .1 | 90 | 5 | 1.2 | 126 | 4 | 1.4 |
| 26 | 25 | C 2 | .1 | 63 | C 3 | .5 | 79 | 2 | .4 |
| 27 | 24 | C 2 | .1 | 50 | C 3 | .4 | 63 | 1 | .2 |
| 28 | 28 | 5 | .4 | 44 | C 3 | .4 | 52 | C 1 | .1 |
| 29 | 23 | C 3 | .2 | 40 | C 3 | .3 | 44 | C 1 | .1 |
| 30 | 22 | C 3 | .2 | 35 | C 3 | .3 | 40 | C 1 | .1 |
| 31 | 21 | C 3 | .2 | 35 | 5 | .5 | -- | -- | -- |
| Total | 1759 | -- | 2843.2 | 3118 | -- | 7950.5 | 3216 | -- | 6539.2 |

Total discharge for year (cfs-days)..... 29,712.6
Total load for year (tons)..... 126,831.4

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
C Composite period.
K Composite from estimated-concentration graph and subdividing day.

## MISCELLANEOUS ANALYSES OF STREAMS IN OKINAWA

Chemical analyses, in parts per million, water year October 1965 to September 1966

| Date of collection | Mean discharge (cfs) | Silica ($SiO_2$) | Iron (Fe) | Calcium (Ca) | Magnesium (Mg) | Sodium (Na) | Potassium (K) | Bicarbonate ($HCO_3$) | Carbonate ($CO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids (calculated) | | | Hardness as $CaCO_3$ | | Sodium adsorption ratio | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | Parts per million | Tons per acre-foot | Tons per day | Calcium, Magnesium | Noncarbonate | | | |
| **16-8782. HANECHI-OKAWA AT KAWAKAMI** | | | | | | | | | | | | | | | | | | | | | | |
| June 8, 1966..... | 72 | 14 | 0.05 | 5.0 | 3.1 | 15 | 1.0 | 28 | 0 | 7.5 | 25 | 0.1 | 0.0 | | 70 | 0.10 | 13.6 | 11 | 7 | | 100 | 7.3 |
| June 27..... | 13 | 12 | .03 | 6.0 | 3.8 | 14 | .8 | 26 | 0 | 7.7 | 27 | .1 | .0 | | 80 | .11 | 2.81 | 21 | 9 | | 120 | 7.4 |
| June 30..... | 10 | 14 | .08 | 6.0 | 3.9 | 14 | 1.0 | 24 | 0 | 6.7 | 26 | .1 | .0 | | 80 | .11 | 2.16 | 20 | 11 | | 120 | 7.5 |
| **16-8835.5. OURA-GAWA AT OKAWA** | | | | | | | | | | | | | | | | | | | | | | |
| June 21, 1966.... | 8.0 | 11 | 0.00 | 3.6 | 2.7 | 15 | 1.0 | 13 | 0 | 5.0 | 27 | 0.0 | 0.0 | | 76 | 0.10 | 1.64 | 11 | 9 | | 100 | 7.0 |
| **16-8846. AHA-GAWA AT AHA** | | | | | | | | | | | | | | | | | | | | | | |
| June 24, 1966.... | 42 | 14 | 0.05 | 2.8 | 2.2 | 16 | 1.0 | 15 | 0 | 5.8 | 25 | 0.1 | 0.0 | | 72 | 0.10 | 8.16 | 12 | 4 | | 90 | 7.3 |

MISCELLANEOUS ANALYSES OF STREAMS IN OKINAWA--Continued

Periodic determinations of suspended-sediment discharge, water year October 1965 to September 1966

| Date | Time (24 hr) | Water temperature (°F) | Discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Discharge (tons per day) |
|---|---|---|---|---|---|
| **16-8752. BENOKI-GAWA AT BENOKI (264706N 1281459E)** | | | | | |
| May 19, 1966 | 1220 | 66 | 226 | 35 | 21 |
| May 19 | 1235 | 66 | 208 | 31 | 17 |
| May 19 | 1345 | 66 | 167 | 20 | 9.0 |
| June 8 | 1525 | 70 | 128 | 11 | 3.8 |
| June 8 | 1610 | 70 | 1580 | 521 | 2220 |
| June 8 | 1800 | 70 | 740 | 89 | 178 |
| **16-8770. RIGHT BRANCH OF SOUTH FORK HENAN-GAWA NEAR TSUHA (263742N 1280552E)** | | | | | |
| June 8, 1966 | 1155 | 70 | 15 | 12 | 0.5 |
| June 23 | 1500 | | 2.8 | 1 | T |
| **16-8782. HANECHI-OKAWA AT KAWAKAMI (263628N 1280116E)** | | | | | |
| Nov. 14, 1965 | 0440 | -- | 334 | 9000 | 8120 |
| Apr. 28, 1966 | 1430 | -- | 334 | 4630 | 4180 |
| May 1 | 1130 | -- | 334 | 5920 | 5340 |
| May 7 | 0630 | -- | 334 | 5800 | 5230 |
| May 12 | 1320 | 69 | 562 | 1060 | 1610 |
| May 12 | 1405 | 69 | 455 | 752 | 924 |
| May 12 | 1450 | 69 | 413 | 621 | 692 |
| May 12 | 1545 | 69 | 342 | 534 | 493 |
| May 12 | 1650 | 69 | 280 | 433 | 327 |
| May 12 | 1720 | 69 | 261 | 392 | 276 |
| June 13 | 1320 | 71 | 71 | 17 | 3.3 |
| **16-8809. MACHINATO-GAWA NEAR OJANA (261443N 1274416E)** | | | | | |
| Jan. 18, 1966 | 0930 | | 87 | 134 | 31 |
| Jan. 18 | 1020 | | 69 | 116 | 22 |
| Jan. 18 | 1120 | | 57 | 105 | 16 |
| Jan. 18 | 1240 | | 46 | 109 | 14 |
| Jan. 25 | 0930 | | 616 | 915 | 1520 |
| Jan. 25 | 1030 | | 396 | 572 | 612 |
| Jan. 25 | 1130 | | 396 | 565 | 604 |
| Jan. 25 | 1500 | | 152 | 298 | 122 |
| **16-8828. KANNA-GAWA NEAR KANNA (262920N 1275646E)** | | | | | |
| Apr. 30, 1966 | 0955 | 69 | 22 | 25 | 1.5 |
| May 21 | 1115 | 68 | 38 | 20 | 2.1 |
| June 4 | 1135 | 69 | 18 | 20 | 1.0 |
| **16-8830. UFU-KAWA NEAR GINOZA (262936N 1275808E)** | | | | | |
| Apr. 30, 1966 | 1220 | 72 | 11 | 49 | 1.5 |
| May 21 | 1400 | -- | 38 | 243 | 25 |
| June 4 | 1340 | -- | 18 | 85 | 4.1 |
| **16-8833. LEFT FORK O-KAWA NEAR KUSHI (263118N 1275950E)** | | | | | |
| Apr. 30, 1966 | 1450 | | 3.3 | 11 | 0.1 |
| May 21 | 1610 | | 22 | 27 | 1.6 |
| June 4 | 1510 | | 41 | 9 | 1.0 |
| **16-8841. FUKUJI-GAWA NEAR YUBARU (263832N 1281300E)** | | | | | |
| May 2, 1966 | 1225 | 71 | 56 | 4 | 0.6 |

T Less than 0.05 ton.

MISCELLANEOUS ANALYSES OF STREAMS IN OKINAWA--Continued

Periodic determinations of suspended-sediment discharge, water year October 1965 to September 1966--Continued

| Date | Time (24 hr) | Water temperature (°F) | Discharge (cfs) | Suspended sediment: Mean concentration (ppm) | Suspended sediment: Discharge (tons per day) |
|---|---|---|---|---|---|
| 16-8846. AHA-GAWA AT AHA (264241N 1281655E) | | | | | |
| Nov. 14, 1965 | 0300 | -- | 495 | 718 | 960 |
| Nov. 14 | 0400 | -- | 1440 | 922 | 3580 |
| Jan. 16, 1966 | 1520 | -- | 495 | 788 | 1050 |
| Jan. 16 | 1530 | -- | 1440 | 1720 | 6690 |
| Jan. 26 | 1320 | 61 | 62 | 5 | .8 |
| Feb. 27 | 0220 | -- | 495 | 1430 | 1910 |
| Feb. 27 | 0225 | -- | 1440 | 984 | 3830 |
| Mar. 13 | 1335 | -- | 495 | 125 | 167 |
| Apr. 13 | 1300 | 72 | 25 | 3 | .2 |
| Apr. 23 | 1005 | -- | 495 | 4070 | 5440 |
| Apr. 30 | 0610 | -- | 1440 | 535 | 2080 |
| May 1 | 1100 | -- | 2860 | 848 | 6550 |
| May 6 | 2300 | -- | 520 | 930 | 1310 |
| May 6 | 2355 | -- | 1440 | 1740 | 6770 |
| May 7 | 0005 | -- | 2860 | 2370 | 18300 |
| May 7 | 0640 | -- | 4700 | 3070 | 39000 |
| May 19 | 1740 | 69 | 890 | 65 | 156 |
| May 21 | 2000 | -- | 1440 | 294 | 1140 |
| May 21 | 2020 | -- | 2860 | 508 | 3920 |
| June 2 | 1105 | 71 | 105 | 3 | .9 |
| June 8 | 0945 | -- | 520 | 1580 | 2220 |
| June 8 | 1610 | -- | 1440 | 1600 | 6220 |
| June 8 | 1620 | -- | 2860 | 3910 | 30200 |
| June 8 | 1625 | -- | 4700 | 968 | 12300 |
| June 9 | 1220 | 69 | 226 | 8 | 4.9 |
| June 12 | 0425 | -- | 520 | 538 | 755 |
| June 12 | 0510 | -- | 1440 | 1180 | 4590 |
| June 12 | 0550 | -- | 2860 | 8760 | 67600 |
| June 12 | 0830 | -- | 4700 | 1110 | 14100 |
| Aug. 17 | 0740 | -- | 610 | 1080 | 1780 |
| Aug. 17 | 1135 | 79 | 158 | 142 | 61 |
| Aug. 17 | 1140 | 79 | 156 | 140 | 59 |
| Aug. 17 | 1220 | 79 | 125 | 108 | 36 |
| Aug. 17 | 1225 | 79 | 124 | 102 | 34 |
| Aug. 19 | 0525 | -- | 610 | 1360 | 2240 |
| Aug. 22 | 0030 | -- | 1600 | 1120 | 4840 |
| Aug. 22 | 0035 | -- | 3100 | 1310 | 11000 |
| Aug. 22 | 0040 | -- | 5100 | 1120 | 15400 |
| Sept. 21 | 1145 | 78 | 34 | 3 | .3 |
| Sept. 22 | 1400 | -- | 610 | 560 | 922 |
| Sept. 22 | 1405 | -- | 1600 | 420 | 1810 |
| Sept. 22 | 1440 | -- | 3100 | 420 | 3520 |
| Sept. 22 | 2140 | -- | 5100 | 508 | 7000 |
| 16-8848. FUN-GAWA NEAR AHA (264433N 1281653E) | | | | | |
| Apr. 13, 1966 | 1430 | 69 | 9.8 | 3 | 0.1 |

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