

# Quality of Surface Waters of the United States 1960

Parts 1 and 2. North Atlantic Slope Basins  
and South Atlantic Slope and Eastern Gulf of  
Mexico Basins

*Prepared under the direction of S. K. LOVE, Chief, Quality of Water Branch*

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GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1741

*Prepared in cooperation with the States  
of Alabama, Connecticut, Delaware,  
Florida, Georgia, Maryland, Mississippi,  
New Jersey, New York, North Carolina,  
Pennsylvania, South Carolina, and with  
other agencies*



**UNITED STATES DEPARTMENT OF THE INTERIOR**

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## PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Alabama, Connecticut, Delaware, Florida, Georgia, Maryland, Mississippi, New Jersey, New York, North Carolina, Pennsylvania, South Carolina, and with other agencies by personnel of the Water Resources Division under the direction of L. B. Leopold, chief hydrologist, and S. K. Love, chief, Quality of Water Branch. The data were collected and prepared for publication under the supervision of the following:

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*[Symbols after station name designate type of data: c, chemical;  
t, water temperature; s, sediment]*

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# QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1960

## PARTS 1 and 2

### 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 for surface waters given in this volume serve as a basis for determining the suitability of the waters examined for all uses. The discharge of a stream and (to a lesser extent) the chemical quality are related to variations in rainfall and other forms of precipitation. In general, lower concentrations of dissolved solids may be expected during the periods of high flow than during periods of low flow. The concentration in some streams may change materially with relatively small variations in flow, whereas for other streams the quality may remain relatively uniform throughout large ranges in discharge. The quantities of suspended sediment carried by streams are also related to discharge, and during flood periods the sediment content in streams may vary over wide ranges.

In 1941, the Geological Survey began publishing annual records of chemical quality, suspended sediment, and water temperature. The records prior to 1948 were published each year in a single volume for the entire country, and in two volumes in 1948 and 1949. Beginning in 1950, the records were published in four volumes and beginning in 1959 in five volumes. The drainage basins covered in the five volumes are shown in Figure 1. The data given in this volume were collected during the water year October 1, 1959, to September 30, 1960. The records are arranged by drainage basins in downstream order according to the Geological Survey method of reporting streamflow. Stations on tributary streams are listed between stations on the main stem in the order in which those tributaries enter the main stem.

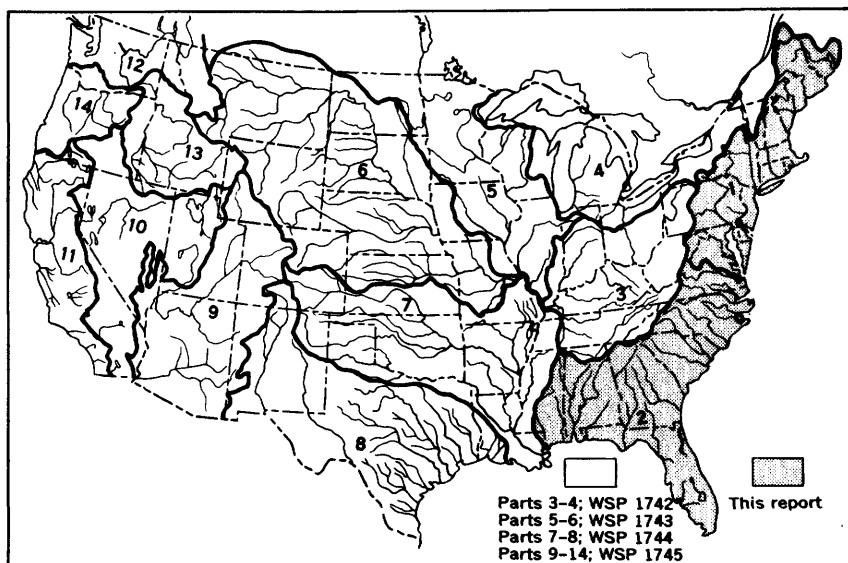


Figure 1.--Map of the conterminous United States showing basins covered by the five water-supply papers on quality of surface waters in 1960. The shaded portion represents the section of the country covered by this volume; the unshaded portion represents the section of the country covered by other water-supply 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 two digits followed by a hyphen and a six 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 position of the location in the standard downstream order listing measuring stations within each of the 14 parts. 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 4-100 for a station whose complete identification 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 the 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, 1960, the Geological Survey maintained 175 stations on 118 streams for the study of chemical and physical characteristics of surface water. Samples were collected daily and monthly at 116 of these locations for chemical-quality studies. Samples were also collected less frequently at many other points. Water temperatures were measured daily at 112 stations. Not all analyses of samples of surface water collected during the year have been included. Single analyses of an incomplete nature generally have been omitted. Also, analyses made of the daily samples before compositing have not been reported. The specific conductance of almost all daily samples was determined, and as noted in the table headings this information is available for reference at the district offices listed under Division of Work, on page 30.

Quantities of suspended sediment are reported for 38 stations during the year ending September 30, 1960. 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 35 of the stations.

## COLLECTION AND EXAMINATION OF SAMPLES

Samples for analyses are usually collected at or near points on streams where gaging stations are maintained by Surface Water Branch of U. S. Geological Survey for measurement of water discharge. 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 con-

centration for the section in contrast to the average concentration that existed without regard to the variable velocities of the individual fluid elements.

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 in a manual 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 generally holding to the principle of 10 day periods or equivalent to three composite samples per month modifications are usually 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 for an individual station in order that the data would be relatively unaffected by diurnal variations in temperature. Most large, swiftly flowing streams probably have a small diurnal variation in water temperature, whereas sluggish or shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. The thermometers used for determining water temperature were accurate to plus or minus 0.5° F.

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

## SEDIMENT

In general, suspended-sediment samples were collected daily with U. S. depth-integrating cable-suspended samplers (U.S. Interagency, 1963, p. 56-77 and U. S. Interagency, 1952, p. 86-90) from a fixed sampling point at one vertical in the cross section. The US DH-48 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 were taken two or more times throughout the day at most sampling stations.

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 preceding and following 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 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. Interagency, 1957). The fine fractions were classified by the pipet method (Kilmer and Alexander, 1949) or the bottom withdrawal tube method (U. S. Interagency, 1943, p. 82-90).

## EXPRESSION OF RESULTS

Quantities of water for analysis are most conveniently measured in the laboratory by use of volumetric glassware. The analytical results thus obtained in this report are expressed in weights of solute in a given volume of water. To express the results in parts of solute per million (ppm) of water the data must be converted. For most waters this conversion is made by assuming that the liter of water sample weighs 1 kilogram; and thus milligrams per liter are equal to parts per million.

Equivalents per million are not reported, although the expression of analyses in equivalents per million is sometimes preferred. 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 reciprocal of the combining weights. The following table 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).

Conversion factors: Parts per million to equivalents per million

Ion	Multiply by	Ion	Multiply by
Aluminum ( $\text{Al}^{+3}$ ).....	0.11119	Hydroxide ( $\text{OH}^{-1}$ )...	0.05880
Arsenic ( $\text{As}^{+3}$ ) .....	.04004	Iodide ( $\text{I}^{-1}$ ).....	.00788
Barium ( $\text{Ba}^{+2}$ ).....	.01456	Iron ( $\text{Fe}^{+3}$ ).....	.05372
Beryllium ( $\text{Be}^{+2}$ ) .....	.22192	Lead ( $\text{Pb}^{+2}$ ) .....	.00965
Bicarbonate ( $\text{HCO}_3^{-1}$ )..	.01639	Lithium ( $\text{Li}^{+1}$ ).....	.14411
Bromide ( $\text{Br}^{-1}$ ).....	.01251	Magnesium ( $\text{Mg}^{+2}$ )..	.08226
Cadmium ( $\text{Cd}^{+2}$ ) .....	.01779	Manganese ( $\text{Mn}^{+2}$ ) ..	.03640
Calcium ( $\text{Ca}^{+2}$ ).....	.04990	Nickel ( $\text{Ni}^{+2}$ ).....	.03406
Carbonate ( $\text{CO}_3^{-2}$ ) ....	.03333	Nitrate ( $\text{NO}_3^{-1}$ ).....	.01613
Chloride ( $\text{Cl}^{-1}$ ).....	.02821	Phosphate ( $\text{PO}_4^{-3}$ )..	.03159
Chromium ( $\text{Cr}^{+6}$ ).....	.11539	Potassium ( $\text{K}^{+1}$ )....	.02557
Cobalt ( $\text{Co}^{+2}$ ).....	.03394	Sodium ( $\text{Na}^{+1}$ ).....	.04350
Copper ( $\text{Cu}^{+2}$ ).....	.03148	Strontium ( $\text{Sr}^{+2}$ )....	.02283
Fluoride ( $\text{F}^{-1}$ ).....	.05264	Sulfate ( $\text{SO}_4^{-2}$ ) .....	.02083
Hydrogen ( $\text{H}^{+1}$ ).....	.99209	Zinc ( $\text{Zn}^{+2}$ ) .....	.03060

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 quantity 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  $180^{\circ}\text{C}$  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. 24) and the temperature in degrees Fahrenheit. Color is expressed in units of the platinum-cobalt scale proposed by Hazen (1892, p. 427-428). 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. However, the pH meter that is generally used in Survey laboratories determines the activity of the hydrogen ions as distinguished from concentration.

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 after thorough mixing in the reservoir. 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. Discharge-weighted averages are usually lower than arithmetical averages for most streams because at times of high discharge the rivers generally have lower concentrations of dissolved solids.

A program for computing these averages on an 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 concentration in parts per million by the daily mean discharge, and the appropriate conversion factor, normally 0.0027.

Particle-size analyses are expressed in percentages of material finer than indicated sizes in millimeters. The size classification used in this report is that recommended by the American Geophysical Union Subcommittee on Terminology (Lane and others, 1947, p. 937). Other data included as pertinent to the size analyses for many streams are the date of collection, the stream discharge, sediment concentration when sample was collected, and the method of analysis.

## COMPOSITION OF SURFACE WATERS

All natural waters contain dissolved mineral matter. Water in contact with soils or rock, even for only a few hours, will dissolve some 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. Some streams are fed by both surface runoff and ground water from spring 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. Ground water is generally more highly mineralized than surface runoff because it remains in contact with the rocks and soils for much longer periods. 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 the value of the waters for most purposes. The analyses generally include results for silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together calculated as sodium), alkalinity as carbonate and bicarbonate, sulfate, chloride, fluoride, nitrate, boron, pH, dissolved solids and specific conductance. Aluminum, manganese, color, acidity, oxygen consumed, 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, arsenic, cadmium, and others are occasionally determined for a few streams in connection with specific

problems in local areas and the results are reported when appropriate. 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 on standard analytical statement cards which are used to process the chemical quality data in this report.

## MINERAL CONSTITUENTS IN SOLUTION

### Silica ( $\text{SiO}_2$ )

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 white 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. Waters impounded in large reservoirs may contain manganese that has been dissolved from the mud on the bottom of the reservoir by action of carbon dioxide produced by anaerobic fermentation of organic matter. 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 or 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.

## 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 ( $\text{HCO}_3$ ,  $\text{CO}_3$ , 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, moderate amounts of alkalinity 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 ( $\text{SO}_4$ )

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 may affect the industrial use of water by increasing the corrosiveness of waters that contain large quantities of calcium and magnesium.

### 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, p. 20, 1964). 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 concentrations 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 ( $\text{NO}_3$ )

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  $\text{NO}_3$ ) 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 in Illinois indicate that nitrates in excess of 70 parts per million (as  $\text{NO}_3$ ) may contribute to methemoglobinemia ("blue babies") (Faucett and Miller, 1946, p. 593), and more recent investigations conducted in Ohio show that drinking water containing nitrates in the range of 44 to 88 ppm (as  $\text{NO}_3$ ) may cause methemoglobinemia (Waring, 1949). In a report published by the National Research Council, Maxcy (1950, p. 271) concludes that a nitrate content in excess of 44 parts per million (as  $\text{NO}_3$ ) should be regarded as unsafe for infant feeding. U.S. Public Health Service (1962) sets 45 ppm as the upper limit.

#### Phosphate ( $\text{PO}_4$ )

Phosphorus is an essential element in the growth of plants and animals, and some sources that contribute nitrate, such as organic wastes and leaching of soils, may be important as sources for phosphate in water and its occurrence may add to the apparent alkalinity. 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 may therefore 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 in 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, p. 1409) 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, p. 767) 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) equal 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

For public use, water with hardness above 200 parts per million generally requires softening treatment (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. 8). 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. 8). 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. 8).

## 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 impart 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).

## 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.

**Detergents (ABS).** --The chief surfactant in commercial detergents is anionic alkylbenzenesulfonate (ABS). ABS and other anionic surfactants 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 (Wyman, Robertson, and Page, 1962). Although the physiological implications of ABS 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 ABS 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 or from the bottom. 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 bottom. 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 results 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 resources.



## 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 higher (Rainwater, Thatcher, 1960, p. 289). Although turbidity does not directly measure the safety of drinking water, it is related to the consumers 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 of it 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 sand size (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 Geological Survey State reports on the surface-water supply of the United States. 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 for the time at which samples were collected, 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 1941-60, are listed below.

Numbers of water-supply papers containing records for  
Parts 1 and 2, 1941-60

Year	WSP	Year	WSP	Year	WSP	Year	WSP
1941	942	1947	1102	1953	1290	1959	1641
1942	950	1948	1132	1954	1350	1960	1741
1943	970	1949	1162	1955	1400		
1944	1022	1950	1186	1956	1450		
1945	1030	1951	1197	1957	1520		
1946	1050	1952	1250	1958	1571		

Geological Survey reports containing chemical quality, temperature, and sediment data obtained before 1941 are listed below. 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 the 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. In addition to the cooperative programs, many stations were operated from funds appropriated directly to the Geological Survey.

The table on p. 27 lists State and local agencies that cooperated in quality-of-water investigations in the drainage basins included in this volume, and the locations of quality-of-water district offices responsible for the data collected.

State	Cooperating agency	Drainage basin	District office
Alabama	Alabama Geological Survey State Geologist, W. B. Jones.	South Atlantic slope and eastern Gulf of Mexico	Room 244, Federal Bldg. Ocala, Fla. 32670
Connecticut	State Water Resources Commission, William S. Wise, director.	North Atlantic slope	Room 348, Federal Bldg. P. O. Box 948 Albany, N. Y. 12201
Delaware	Delaware Geological Survey, J. J. Groot, State Geologist.		Room 1302 U. S. Custom House 2nd and Chestnut Streets Philadelphia, Pa. 19106
Florida	Florida Geological Survey, Dr. R. O. Vernon, director. Central and Southern Florida Flood Control District, G. E. Dail, Jr., executive director. Dade County, E. A. Anderson, County Engineer. Hillsborough County, County Commission, E. G. Simmons, chairman. Orange County, Board of County Commissioners, J. T. Cooper, <sup>a</sup> chairman.	South Atlantic and eastern Gulf of Mexico	Room 244, Federal Bldg. Ocala, Fla. 32670

<sup>a</sup> Succeeded by J. W. McDowell.

State	Cooperating agency	Drainage basin	District office
Florida	City of Miami, Department of Water and Sewers, C. F. Wertz, director. City of Miami Beach, M. N. Lipp, city manager.	South Atlantic and eastern Gulf of Mexico	Room 244, Federal Bldg. Ocala, Fla. 32670
Georgia	Department of Mines, Mining and Geology, Garland Peyton, director.		
Maryland	Natural Resources Institute, University of Maryland, Dr. L. Eugene Cronin, director.	North Atlantic slope	724 York Road Towson, Md. 21204
Mississippi	Jackson County, Mississippi, Board of Supervisors, A. E. Head, chief engineer.	South Atlantic slope and eastern Gulf of Mexico.	Room 2301 Federal Bldg. 700 West Capitol Avenue Little Rock, Ark. 72201
New Jersey	Department of Conservation and Economic Development, Salvatore A. Bontempo, Commissioner. Division of Water Policy and Supply, George R. Shanklin, acting director and chief engineer.	North Atlantic slope	Room 1302 U. S. Custom House 2nd and Chestnut Streets Philadelphia, Pa. 19106
New York	New York State Department of Commerce, Bureau of Industrial Development, Henry Gallien, Jr., director.		Room 348, Federal Bldg. P. O. Box 948 Albany, N. Y. 12201

State	Cooperating agency	Drainage basin	District office
North Carolina	North Carolina Department of Water Resources, H. E. Brown, director.	South Atlantic slope and eastern Gulf of Mexico	P. O. Box 2857 Raleigh, N. C. 27602
Pennsylvania	Pennsylvania Department of Agriculture, Dr. William L. Henning, secretary. Pennsylvania Department of Forests and Waters, Maurice K. Goddard, secretary. Soil Conservation Commission, David Unger, director. City of Philadelphia, Richard Dilworth, Mayor. Department of Water, Samuel S. Baxter, Water Commissioner.	North Atlantic slope	Room 1302 U. S. Custom House 2nd and Chestnut Streets Philadelphia, Pa. 19106
South Carolina	South Carolina State Development Board, W. W. Harper, director.	South Atlantic slope and eastern Gulf of Mexico	P. O. Box 2857 Raleigh, N. C. 27602

## DIVISION OF WORK

The quality-of-water program was conducted by the Water Resources Division of the Geological Survey, L. B. Leopold, chief hydrologist, and S. K. Love, chief, Quality of Water Branch. The records were collected and prepared for publication under the supervision of district chemists or project chief as follows: In Delaware, New Jersey, and Pennsylvania, N. H. Beamer; North Carolina, South Carolina, and Virginia, G. A. Billingsley; in Alabama, Florida and Georgia, J. W. Guerin; New York and New England, F. H. Pauszek; in Mississippi, M. E. Schroeder; and in Maryland, and West Virginia, J. W. Wark. Any additional information on file can be obtained by writing the responsible Survey Quality of Water district office.

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## SHEEPSKOT RIVER BASIN

## 1-380. SHEEPSKOT RIVER AT NORTH WHITEFIELD, MAINE

LOCATION.--Temperature recorder at gaging station on left bank at North Whitefield, Lincoln County, just upstream from highway bridge. O. gauge located about 100 feet upstream from Pleasant Pond Brook.  
 DRAINAGE AREA.--148 square miles.  
 RECORDS AVAILABLE.--Water temperatures: October 1957 to September 1960.  
 EXTREMES, 1959-60.--Water temperatures: Maximum, 79°F Aug. 30; minimum, freezing point on many days during January and February.  
 EXTREMES, 1957-60.--Water temperatures: Maximum, 82°F July 23, 1959; minimum, freezing point on many days during winter months.  
 REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1701.

Month		Day																															Average		
		Temperature (°F) of water, water year October 1959 to September 1960 [Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph.]																																	
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					
65	64	61	60	62	61	59	57	56	58	57	56	54	52	49	49	49	51	48	45	44	46	53	54	54	53	52	48	46	46	53					
64	61	58	57	59	59	57	56	56	56	55	54	52	49	47	46	46	48	45	44	42	41	42	46	53	53	52	48	46	45	46	51				
46	46	45	45	47	50	50	47	44	44	43	43	42	42	45	43	41	39	36	36	36	36	36	38	43	42	38	44	44	40	--	42				
46	45	44	44	45	47	47	44	44	44	43	42	42	42	43	41	39	36	36	36	36	36	36	36	38	38	38	40	39	--	--	41				
38	39	39	39	39	40	41	40	39	38	37	36	36	36	36	36	36	36	36	36	35	35	35	35	35	35	35	34	35	37	36	37				
38	39	39	39	39	39	40	40	39	38	37	36	36	35	35	35	36	36	36	36	36	35	35	35	34	35	34	34	34	34	36	36				
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	33	33	33	33	33	33				
34	34	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33			
33	33	33	33	33	33	33	33	33	33	33	33	32	32	33	33	33	33	33	32	33	33	33	33	33	33	33	33	33	33	33	33	33			
32	32	32	32	32	33	33	33	33	33	33	32	32	32	32	32	33	33	33	32	33	33	33	33	33	33	32	33	33	33	33	33	33	33		
34	34	33	34	34	34	34	34	34	34	34	34	34	35	35	35	35	35	35	35	36	35	36	36	36	36	36	37	36	35	35	35	35	35		
33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34	33	33	33	34	35	34	34	34	35	35	35	35	35	35		
34	35	35	35	35	35	36	35	35	37	38	39	40	39	41	44	43	42	43	43	44	44	43	43	44	47	47	48	52	53	--	41	41			
34	34	35	35	35	35	34	35	35	36	37	38	39	39	40	42	41	41	41	41	41	41	42	42	43	44	46	45	48	49	--	39	39			
52	50	53	55	58	60	61	59	59	61	59	58	58	58	58	58	58	61	61	66	66	65	65	62	58	62	66	66	67	68	65	61	61			
49	48	48	51	53	54	56	57	58	58	57	56	56	55	57	56	57	60	60	61	62	62	62	58	57	61	62	63	63	62	57	63	62	57		
62	63	65	65	69	71	70	69	67	69	70	72	70	69	64	62	60	71	71	72	73	72	73	72	70	72	70	75	78	77	--	70	70			
61	61	62	62	64	66	66	64	64	63	64	65	66	67	67	69	64	68	66	67	67	67	69	68	67	67	68	70	73	74	--	66	66			
78	76	75	75	73	72	72	73	74	73	76	76	74	72	73	74	73	72	72	72	72	73	72	74	75	74	75	76	78	77	73	74	74	74		
74	74	71	70	68	67	68	68	70	69	71	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73		
73	74	75	75	72	74	75	72	71	70	69	71	73	75	75	76	76	75	78	76	78	76	78	78	74	73	74	76	76	79	77	74	74	74		
68	70	72	71	70	69	70	68	67	66	65	68	69	71	72	72	70	72	74	73	74	74	74	71	68	67	69	69	70	73	72	70	70	70	70	
77	74	72	67	68	68	70	74	76	75	70	67	63	66	64	65	64	66	64	66	64	65	65	64	64	64	64	64	64	63	63	63	63	63	63	
70	69	66	64	61	62	61	65	68	70	67	64	62	63	62	61	61	61	61	61	61	61	60	59	58	58	58	61	62	--	67	67	67	67		

Temperature (°F) of water, water year October 1959 to September 1960  
 [Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph]

## THAMES RIVER BASIN

1-1240. QUINEAUG RIVER AT QUINEBAUG, CONN.

LOCATION ---at bridge on State Highway 197, 500 feet downstream from gaging station at Quinebaug, Windham County.

DRAINAGE AREA, 152

RECORDS AVAILABLE ---Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960.

EXTREMES, 1958-59.---Dissolved solids: Maximum, 84 ppm Sept. 1-10; minimum, 49 ppm Apr. 1-29.

Hardness: Maximum, 52 ppm Sept. 23; minimum, 17 ppm Jan. 1-11.

Specific conductance: Maximum daily, 157 micromhos Sept. 23; minimum, freezing point on many days during December to March.

Water temperatures: Maximum 82°F Aug. 23, 29; minimum, freezing point on many days during December to March. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed	
														Calcium	Non-carbonate				Filtered	Unfiltered
Oct. 1-10, 1959.	94	6.8	0.69	6.3	1.7	7.8	2.1	18	13	8.7	0.2	4.5	66	23	8	106	6.0	5	4	14
Oct. 11-20.	105	7.6	.51	6.4	1.4	6.4	1.9	12	18	7.7	.2	2.6	65	22	12	101	6.0	7	5	10
Oct. 21-30.	62	--	.57	--	--	13	--	31	24	8.8	--	3.0	--	36	11	144	6.2	--	--	--
Oct. 24-31.	499	8.1	.45	6.2	1.7	5.2	2.0	14	13	6.0	.2	1.7	64	23	11	89	6.1	27	7	15
Nov. 1-10.	371	16	.47	7.3	2.4	6.2	1.2	20	16	6.7	.1	1.1	74	28	12	102	5.6	23	--	--
Nov. 11-30.	459	9.2	.40	5.6	2.5	4.1	1.0	9	18	6.0	.1	1.7	53	25	17	75	5.2	16	5	6
Dec. 1-4.	553	--	.34	--	--	3.2	--	7	12	5.0	.1	1.6	--	20	15	68	5.9	18	--	--
Dec. 5-6.	400	--	.33	--	--	6.7	--	30	12	5.1	.2	1.8	--	31	7	102	6.7	18	--	--
Dec. 7-31.	561	11	.30	5.7	2.7	2.8	1.3	12	14	5.1	--	1.6	54	25	15	75	6.1	15	4	5
Jan. 1-11, 1960.	563	8.6	.27	4.6	1.2	3.7	1.1	9	9.2	5.0	.1	1.7	50	17	9	69	5.9	13	3	4
Jan. 14.	298	--	.31	--	--	7.8	--	25	11	7.8	--	.9	--	26	6	111	6.7	12	--	--
Jan. 15-22.	261	11	.31	5.3	1.1	5.0	1.0	4	11	6.8	.1	1.4	57	18	10	80	6.4	8	3	4
Jan. 23-31.	220	17	.32	6.7	1.3	7.1	1.1	20	13	8.0	.1	1.2	72	32	0	100	7.1	42	--	--
Feb. 1-6.	195	10	.27	6.2	3.3	6.8	1.1	15	17	8.8	--	1.6	64	29	17	93	6.9	7	--	--
Feb. 7.	385	--	--	--	--	12	--	44	13	7.8	--	1.2	--	36	0	129	7.2	--	--	--
Feb. 8-28.	531	12	.16	5.6	3.3	6.4	1.0	17	13	8.5	.1	1.2	62	28	14	88	6.6	5	2	6
Mar. 1-3, 9-31.	295	11	.25	7.6	1.8	6.4	1.3	17	13	9.4	.1	1.3	63	27	13	87	6.7	5	3	3
Apr. 1-29.	310	6.7	.27	5.0	1.8	4.3	1.0	11	12	6.7	.1	1.3	49	20	11	97	6.2	9	3	3
May 1-18, 20-31.	323	13.9	.29	3.0	1.6	6.8	1.3	10	10	7.5	.1	1.0	74	35	11	104	6.3	28	6	7
June 1-8.	323	13	.41	11	1.6	6.4	1.3	28	13	6.8	.1	1.6	75	34	11	102	6.6	28	--	--













## CONNECTICUT RIVER BASIN--Continued

## 1-1845. SCANTIC RIVER AT BROAD BROOK, CONN.--Continued

Suspended sediment, October 1959 to July 1960

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..	64	6	1.0	178	13	6.2	354	9	8.6
2..	65	7	1.2	191	9	4.6	288	8	6.2
3..	66	7	1.2	184	8	4.0	256	18	12
4..	62	6	1.0	160	9	3.9	236	8	5.1
5..	56	4	.6	139	7	2.6	224	6	3.6
6..	56	14	2.1	138	8	3.0	210	7	4.0
7..	75	24	4.9	321	66	57	329	50	49
8..	121	36	12	34	35	35	399	26	28
9..	195	62	S	386	20	21	386	12	13
10..	206	40	22	295	13	10	295	10	8.0
11..	175	34	16	230	9	5.6	243	8	5.2
12..	130	18	6.3	191	7	3.6	295	36	33
13..	105	12	3.4	172	6	2.8	627	109	183
14..	102	10	2.8	161	6	2.6	797	70	149
15..	108	6	1.7	256	32	22	556	24	35
16..	96	4	1.0	262	13	9.2	399	--	--
17..	86	4	.9	250	11	7.4	334	--	--
18..	86	9	2.1	236	9	5.7	295	--	--
19..	82	18	4.0	217	6	3.5	288	--	--
20..	75	4	.8	191	6	3.1	262	--	--
21..	72	6	1.2	172	3	1.4	230	--	--
22..	70	26	4.9	158	1	.4	217	--	--
23..	71	3	.6	151	4	1.6	184	--	--
24..	316	409	S	172	24	11	184	--	--
25..	706	280	S	549	438	S	105	184	--
26..	758	68	S	144	503	47	64	178	--
27..	408	41	45	503	48	S	63	178	--
28..	262	30	21	438	54	S	63	217	--
29..	204	16	8.8	451	24	29	314	--	--
30..	165	8	3.6	451	22	27	340	--	--
31..	147	7	2.8	--	--	--	288	--	--
Total	5190	--	1531.9	7981	--	578.2	9587	--	--
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..	224	--	--	155	11	4.6	262	23	16
2..	191	--	--	148	13	5.2	217	27	16
3..	661	--	--	140	12	4.5	204	16	8.8
4..	1220	--	--	140	13	4.9	165	46	20
5..	746	--	--	142	21	8.1	198	20	11
6..	451	22	27	250	70	E	47	204	19
7..	334	16	14	399	44	47	204	16	8.8
8..	288	14	11	373	34	34	204	14	7.7
9..	250	17	11	295	19	19	184	16	7.9
10..	191	24	12	276	46	35	178	25	12
11..	178	18	8.7	546	353	S	567	162	26
12..	190	10	5.1	741	105	210	158	10	4.3
13..	195	14	7.4	633	34	58	172	14	6.5
14..	191	7	3.6	399	24	26	172	17	7.9
15..	184	7	3.5	308	31	26	165	12	5.3
16..	198	14	7.5	282	40	30	165	14	6.2
17..	184	10	5.0	262	32	23	178	10	4.8
18..	178	12	5.8	256	24	17	198	26	14
19..	178	15	7.2	771	256	S	513	224	21
20..	172	11	5.1	723	51	100	236	16	10
21..	164	7	3.1	577	30	47	250	20	14
22..	157	10	4.2	373	20	20	230	19	12
23..	152	18	7.4	314	21	18	204	12	6.6
24..	143	8	3.1	276	18	13	191	26	13
25..	125	8	2.7	250	37	25	204	14	7.7
26..	130	8	2.8	412	85	J	100	178	13
27..	130	8	2.8	451	71	86	172	12	5.6
28..	164	26	12	425	37	42	204	30	17
29..	204	21	12	321	14	12	243	14	9.2
30..	204	10	5.5	--	--	--	288	34	26
31..	172	8	3.7	--	--	--	642	449	S
Total	8149	--	193.2	10638	--	2142.3	6656	--	1055.5

E Estimated.

S Computed by subdividing day.

J Computed from estimated-concentration graph, and subdividing day.

## CONNECTICUT RIVER BASIN--Continued

1-1845. SCANTIC RIVER AT BROAD BROOK, CONN.--Continued

Suspended sediment, October 1959 to July 1960--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..	1310	88	311	196	27	B 14	144	17	6.6
2..	837	62	140	239	20	13	168	18	8.2
3..	547	41	61	226	23	14	180	29	14
4..	583	96	E 151	200	20	11	612	204	399
5..	864	90	S 216	174	15	7.0	708	146	J 294
6..	1160	74	S 231	161	12	5.2	560	68	103
7..	765	20	41	152	22	9.0	339	50	46
8..	581	20	31	147	21	B 8.3	212	56	32
9..	524	26	37	164	19	8.4	160	37	16
10..	488	96	126	194	12	6.3	142	24	9.2
11..	427	116	134	200	16	8.6	130	46	16
12..	388	55	58	187	12	6.1	124	49	16
13..	368	50	B 50	194	16	8.4	126	29	9.9
14..	342	43	40	194	17	8.9	118	15	4.8
15..	316	39	B 33	180	16	7.8	119	34	11
16..	302	33	27	162	14	6.1	137	46	17
17..	295	35	B 28	145	10	3.9	130	30	11
18..	295	36	B 29	168	20	9.1	116	38	12
19..	309	38	32	220	14	8.3	106	22	6.3
20..	302	47	A 38	200	14	7.6	98	20	5.3
21..	274	40	A 30	157	12	5.1	90	14	3.4
22..	253	38	A 26	134	13	4.7	83	13	2.9
23..	239	36	A 23	135	10	3.6	81	9	2.0
24..	292	48	A 38	138	12	4.5	80	16	3.5
25..	288	22	17	143	12	4.6	84	8	1.8
26..	267	14	10	130	12	4.2	82	10	2.2
27..	239	14	B 9.0	117	10	3.2	75	7	1.4
28..	226	12	7.3	106	10	2.9	69	6	1.1
29..	213	12	99	99	8	2.1	67	6	1.1
30..	194	32	17	96	8	2.1	94	11	2.8
31..	--	--	--	105	10	2.8	--	--	--
Total	13488	--	2003.3	5063	--	210.8	5234	--	1059.5
JULY			AUGUST			SEPTEMBER			
1..	87	11	2.6						
2..	110	28	8.3						
3..	106	21	6.0						
4..	95	16	4.1						
5..	86	10	2.3						
6..	73	14	2.8						
7..	69	8	1.5						
8..	64	6	1.0						
9..	60	6	1.0						
10..	59	10	1.6						
11..	57	6	.9						
12..	54	--	--						
13..	52	--	--						
14..	162	--	--						
15..	245	--	--						
16..	212	--	--						
17..	134	--	--						
18..	90	--	--						
19..	78	--	--						
20..	82	--	--						
21..	90	--	--						
22..	78	--	--						
23..	70	--	--						
24..	67	--	--						
25..	63	--	--						
26..	59	--	--						
27..	62	--	--						
28..	106	--	--						
29..	88	--	--						
30..	178	--	--						
31..	275	--	--						
Total	3111	--	--						

Total discharge for year (cfs-days).....75097  
 Total load for year (tons).....8774.7

E Estimated.

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

B Computed from estimated-concentration graph.

J Computed from estimated-concentration graph, and subdividing day.



## HOUSATONIC RIVER BASIN

1-1990. HOUSATONIC RIVER AT FALLS VILLAGE, CONN.

LOCATION.--At dam upstream from hydroelectric plant of Connecticut Light and Power Co., and about 1.1 miles upstream from gaging station at Falls Village, Litchfield County.

DRAINAGE AREA.--632 square miles upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1956.

Water Temperatures: October 1955 to September 1960.

EXTREMES, 1958-60.--Water temperatures: Maximum, 79°F July 10; minimum, freezing point on many days during December to April. Minimum, 81°F June 20 1957; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WGS 1701.

Temperature (°F) of water, water year October 1959 to September 1960																																		
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.....		70	68	67	66	66	66	65	65	64	63	61	58	58	55	56	55	55	52	48	47	47	47	48	48	46	48	50	48	46	45	45	56	
November.....		46	46	45	44	45	45	41	41	41	42	44	44	44	44	45	39	41	40	38	36	36	37	40	40	37	38	42	42	38	--	41	41	
December.....		36	36	36	37	38	40	38	37	36	35	36	42	37	35	36	36	36	34	32	32	32	32	32	32	32	32	33	33	33	32	35	32	
January.....		32	32	35	33	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.....		32	32	32	33	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	34	--	33	
March.....		35	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32	33	33	36	32	32	32	32	32	32	32	32	35	36	36	38	33	
April.....		36	37	37	38	41	38	38	38	39	40	41	42	46	44	45	32	31	49	49	48	49	53	57	58	58	54	54	50	--	--	44	44	
May.....		55	53	52	54	55	57	56	56	55	59	58	57	58	58	59	59	60	61	61	62	62	62	60	59	61	62	63	63	65	59	59	59	
June.....		65	65	66	67	66	67	68	67	66	65	64	66	66	65	65	66	68	68	68	68	68	68	68	68	69	65	65	70	77	71	--	67	
July.....		71	68	67	67	70	69	70	71	78	79	71	72	73	72	71	70	71	73	74	74	73	73	73	73	73	73	73	72	72	70	72	72	70
August.....		68	70	72	72	72	72	72	71	72	73	65	66	65	66	66	66	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
September.....		70	73	71	70	71	66	65	68	68	66	68	58	59	60	62	62	62	62	63	62	63	64	64	62	63	64	63	63	64	62	--	65	65

Temperature (°F) of water, water year October 1959 to September 1960

HOUSATONIC RIVER BASIN--Continued  
1-2000. TENMILE RIVER NEAR GAYLORDSVILLE, CONN.

LOCATION.--At bridge, approximately 0.2 mile upstream from gaging station, 1.4 miles upstream from New York-Connecticut State line, and 3 miles northwest of Gaylordsville, Litchfield County.

DRAINAGE AREA.--204 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 206 ppm Sept. 1-12; minimum, 129 ppm Apr. 2-9.

Hardness: Maximum, 267 ppm Oct. 24; minimum, 98 ppm Mar. 31.

Specific conductance: Maximum daily, 514 micromhos Oct. 24; minimum daily, 184 micromhos Apr. 4.

Water temperatures: Maximum, 73°F June 29, July 13; minimum, freezing point Jan. 12, Feb. 7.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 218 ppm Sept. 11-30, 1959; minimum, 129 ppm Apr. 2-9, 1959.

Hardness: Maximum, 267 ppm Oct. 24, 1959; minimum, 64 ppm Feb. 11-13, 1959.

Specific conductance: Maximum daily, 514 micromhos Oct. 24, 1959; minimum daily, 127 micromhos Feb. 11, 1959.

Water temperatures: Maximum, 73°F June 29, July 13, 1959; minimum, freezing point Jan. 12, Feb. 7, 1959.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N.Y. Records of discharge for water year October 1959 to September 1960 given in WSP 1701.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color	Oxygen consumed	
														Calcium	Non-magnesium				Filtered	Unfiltered
Oct. 1, 1959.....	43	--	0.05	--	--	1.8	--	264	28	6.0	--	6.7	--	256	39	505	7.2	--	--	--
Oct. 2-10.....	125	11	.08	39	16	6.0	3.9	179	21	8.5	0.2	3.4	204	164	17	358	7.3	9	4	8
Oct. 11-23.....	122	13	.11	40	16	5.7	2.8	181	20	7.5	.1	2.4	203	166	18	350	7.6	7	4	8
Oct. 24.....	205	--	.11	--	--	1.8	--	272	32	4.4	--	9.7	--	267	44	514	7.2	--	--	--
Oct. 25-31.....	232	12	.10	35	14	4.5	2.8	154	19	6.7	.2	1.4	180	145	19	312	7.6	9	5	9
Nov. 1-30.....	355	13	.11	34	14	4.4	6.0	148	21	6.0	.2	2.7	170	143	21	301	6.9	7	3	18
Dec. 1-31.....	515	13	.07	34	15	2.6	1.6	145	22	4.8	.2	2	170	147	28	284	6.9	4	2	2
Jan. 3-6, 1960.....	336	--	.08	--	--	2.7	--	161	18	5.2	--	4.2	151	122	21	257	7.4	4	--	--
Jan. 7-9.....	976	13	.11	29	12	3.4	1.5	123	17	4.0	.3	4.2	151	122	21	257	7.4	4	2	6
Jan. 10-31.....	314	13	.08	35	16	4.3	1.5	163	19	5.6	.1	5.0	184	154	20	324	7.7	3	2	3
Feb. 1-28.....	567	12	.04	33	15	4.2	1.4	144	28	5.0	.1	3.0	181	144	26	288	7.6	3	2	5
Mar. 1-30.....	286	13	.06	38	15	4.9	1.8	168	19	7.0	.1	4.0	193	157	19	322	7.9	4	3	4
Mar. 31.....	1440	--	.07	--	--	3.9	--	95	16	6.0	--	4.4	--	98	20	203	7.2	--	--	--
Apr. 2-9.....	1781	7.6	.08	24	11	2.7	1.3	104	17	4.8	.1	3.1	129	107	20	215	7.4	4	2	4
Apr. 10-30.....	520	12	.12	34	15	4.0	1.5	150	20	6.0	.1	3.2	172	149	24	280	7.9	2	2	3
May 1-31.....	540	6.1	.10	35	14	3.6	1.7	154	17	6.5	.1	3.4	163	145	19	300	7.3	7	4	4
June 1-24.....	246	15	.10	35	16	5.4	1.8	172	15	6.1	.1	3.1	195	154	13	312	7.9	5	3	5
July 1-30.....	120	8.7	.12	40	17	5.3	2.0	186	17	7.4	.2	3.3	199	170	18	343	7.8	4	2	4



July 31, 1960....	724	--	.19	--	--	3.0	--	147	12	2.6	--	1.5	--	131	11	257	7.8	--	--
Aug. 1-31.....	227	.10	4.0	16	4.8	4.8	2.0	180	19	6.8	.2	2.5	.187	186	19	319	7.9	3	3
Sept. 1-12.....	478	.12	3.3	16	6.5	6.5	2.2	154	15	5.6	.1	2.2	.172	142	14	281	7.0	--	--
Sept. 13-21.....	478	.12	3.3	16	6.5	6.5	2.2	154	15	5.6	.1	2.2	.172	142	14	281	7.0	--	--
Sept. 20-21.....	980	.14	--	--	.7	.7	105	105	12	1.6	--	2.8	--	102	16	208	7.3	--	--
Sept. 21-22.....	509	.09	36	14	3.9	3.9	1.6	164	15	3.9	.1	2.5	174	148	13	298	8.1	7	4
24-29.....																			
Weighted average.....	--	12	0.08	34	14	3.9	1.7	149	20	5.5	0.1	2.9	172	143	21	291	7.3	5	--
Time-weighted average.....	a370	12	0.09	36	15	4.4	1.9	162	19	6.1	0.1	3.0	182	153	20	311	7.4	5	--
Tons per day..	--	12	0.08	33	14	3.9	1.7	149	20	5.5	0.1	2.9	170	--	--	--	--	5	--

a Represents 99 percent of runoff.

Temperature (°F) of water, water year October 1959 to September 1960

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.....	70	65	62	62	60	55	61	64	63	63	62	57	55	55	52	50	53	57	43	45	47	44	50	58	58	55	53	48	45	45	47	56
November.....	50	48	46	49	51	49	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	44
December.....	38	38	38	39	40	42	44	40	36	37	37	39	45	38	36	38	40	40	39	34	33	33	--	33	34	35	36	36	35	36	33	37
January.....	34	33	37	35	34	34	36	34	33	33	33	32	33	33	33	33	34	34	34	33	33	33	34	33	33	33	33	36	35	35	35	34
February.....	34	33	33	33	33	33	36	37	34	35	38	37	38	33	33	33	35	35	36	35	38	36	36	34	36	35	35	35	35	36	--	35
March.....	33	33	33	33	33	33	33	33	33	33	33	34	33	34	33	36	37	37	39	39	38	36	35	38	37	35	35	41	41	42	44	35
April.....	--	46	45	48	48	43	42	43	43	45	43	46	46	50	52	55	56	56	52	54	54	51	61	58	59	59	58	54	59	55	--	51
May.....	53	48	50	54	57	58	60	62	61	57	56	56	40	59	56	56	60	61	59	64	63	60	67	67	57	59	61	62	63	61	60	59
June.....	62	62	60	66	67	68	61	65	64	67	68	64	63	64	61	61	65	66	64	66	64	65	68	--	65	66	68	73	69	--	65	65
July.....	68	68	68	68	69	69	65	65	68	69	70	69	73	71	66	66	71	71	70	71	68	68	68	69	68	69	69	69	71	69	68	69
August.....	66	66	68	69	67	68	67	68	67	68	67	68	67	68	67	68	70	65	65	67	70	70	70	71	66	64	65	68	68	72	71	67
September.....	70	70	65	63	64	63	65	66	69	69	64	61	59	59	58	62	59	59	50	57	60	58	--	58	59	60	58	60	60	--	--	--

HOUSATONIC RIVER BASIN--Continued  
1-2005. HOUSATONIC RIVER AT GAYLORDSVILLE, CONN.

LOCATION--At bridge on U.S. Highway 7, 0.5 mile downstream from gaging station at Gaylordsville, Litchfield County, and 1 mile downstream from Temale River. DRAINAGE AREA--994 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 169 ppm Oct. 1-10; minimum, 91 ppm Apr. 1-9.

Hardness: Maximum, 143 ppm Sept. 1-12; minimum, 65 ppm Apr. 1-9.

Specific conductance: Maximum daily, 345 micromhos Oct. 1; minimum, freezing point Dec. 23, 24, Jan. 11.

Water samples: Maximum, July 13, 14, Aug. 31; minimum, freezing point Dec. 23, 24, Jan. 11.

REMARKS--Records of specific conductance and pH of daily samples available in district office at Albany, N.Y. Records of discharge for water year October 1959 to September 1960 given in WSP 1701.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color	Oxygen consumed	
														Calcium	Non-carbonate				Filtered	Unfiltered
Oct. 1-10, 1959.	869	7.6	0.11	31	13	8.2	2.6	139	22	7.2	0.2	1.5	169	131	17	301	7.3	8	4	11
Oct. 11-20, 1959.	894	8.3	0.16	29	10	4.9	2.1	121	17	5.7		1.8	146	114	15	254	7.0	7	5	8
Oct. 21-31, 1959.	1600	9.9	0.18	27	9.6	4.6	2.1	113	15	5.2	.2	1.8	139	107	15	239	7.0	8	5	9
Nov. 1-30, 1959.	2426	8.2	.20	24	9.4	3.6	1.6	100	16	4.6	.1	1.9	122	99	17	217	6.3	8	4	5
Dec. 1-31, 1959.	2915	8.1	.14	26	10	2.4	1.3	103	19	5.0	.2	2.4	125	106	22	220	6.6	5	2	2
Jan. 1-10, 1960.	3969	6.9	.21	23	9.0	3.2	1.2	94	13	5.5	.1	3.1	116	95	18	216	7.1	4	2	6
Jan. 11-20, 1960.	1597	19.6	.15	29	13	5.4	1.5	128	18	6.8	.1	2.2	148	122	20	283	7.5	4	2	4
Feb. 1-11, 1960.	1397	19.6	.13	20	7.4	4.5	1.2	82	13	5.7	.1	2.1	114	81	14	183	7.3	4	2	4
Feb. 12-17, 1960.	4980	11	.09	27	12	5.6	1.2	117	22	6.1	.1	1.7	151	117	21	240	7.8	3	2	4
Feb. 18-29, 1960.	2291	16																		
Mar. 1-30, 1960.	1328	8.1	.13	29	11	4.9	1.7	128	14	7.2	.1	2.5	149	118	13	258	7.8	5	3	4
Mar. 31, 1960.	7200	--	.25	--	--	3.7	--	75	14	6.0	--	4.3	--	--	80	19	169	7.7	--	--
Apr. 1-30, 1960.	1870	8.5	.14	16	6.0	2.8	1.1	64	12	4.0	.1	2.1	91	65	12	143	7.1	5	2	5
May 1-30, 1960.	3260	8.5	.14	23	11.4	3.8	1.2	116	13	6.0	.1	1.6	132	110	15	234	7.4	4	3	5
May 1-31, 1960.	1699	6.5	.14	23	11	4.0	1.2	116	13	6.0	.1	1.6	132	110	15	234	7.4	4	3	5
June 1-30, 1960.	1289	9.0	.14	28	12	4.5	1.4	124	13	5.5	.1	2.2	144	115	13	240	7.5	11	3	6

July 1-30, 1960.	658	8.4	11	31	12	5.7	1.6	143	14	6.2	.2	2.2	158	127	10	269	7.4	7	2	6
July 31.....	2590	--	14	--	--	2.3	--	98	11	2.6	--	1.8	--	92	12	188	7.2	8	--	--
Aug. 1-11.....	1252	8.4	12	27	11	5.0	1.4	125	15	5.2	.2	2.2	141	113	10	235	7.5	14	--	--
Aug. 12.....	2320	--	--	--	--	2.8	--	70	22	3.0	--	1.7	--	80	23	173	7.3	11	--	--
Aug. 13-31.....	961	10	13	28	12	5.5	1.6	134	13	5.6	.2	1.6	146	120	10	247	7.6	10	4	4
Sept. 1-12.....	532	7.6	10	34	14	6.4	1.9	158	15	6.5	.1	1.7	168	143	13	296	7.9	4	--	--
Sept. 13-30.....	297	9.8	18	24	9.0	4.1	1.7	105	12	3.0	.1	1.9	127	97	11	213	7.4	17	--	--
Sept. 21-30.....	2551	9.0	17	27	9.8	3.8	1.4	117	12	3.1	.1	1.7	133	108	12	226	7.7	8	4	6
Weighted average.....	--	8.4	0.14	24	9.7	3.8	1.4	104	15	5.4	0.1	2.1	126	101	16	216	6.9	6	--	--
Time-weighted average.....	2072	8.5	0.14	27	11	4.4	1.5	117	15	5.7	0.1	2.1	138	111	15	237	7.0	7	--	--
Tons per day..	--	47	0.82	136	54	21	7.5	581	82	30	0.7	12	702	--	--	--	--	34	--	--

Temperature (°F) of water, water year October 1959 to September 1960

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.....	72	70	66	67	66	68	67	66	65	65	63	61	58	57	55	55	54	53	51	49	49	48	48	48	48	56	53	51	48	47	48	58			
November.....	50	49	46	46	49	58	49	46	45	45	42	50	43	47	47	46	47	41	39	38	38	38	39	42	45	42	42	47	44	39	--	45			
December.....	39	38	39	39	40	41	44	40	38	37	37	39	43	39	37	38	39	39	38	35	33	33	32	32	34	34	35	35	34	34	33	37			
January.....	33	33	36	35	34	34	34	35	33	33	32	33	33	33	34	33	34	33	34	34	34	34	34	34	34	33	33	34	35	34	33	34			
February.....	34	35	33	34	35	35	37	36	36	38	37	37	34	33	33	33	35	35	35	36	35	36	35	34	34	36	36	36	36	--	--	35			
March.....	34	33	33	33	34	34	33	34	33	33	34	33	34	35	35	36	37	38	41	39	40	38	37	40	38	37	37	42	42	42	42	36			
April.....	41	40	41	41	45	40	40	41	42	42	45	46	47	50	53	51	53	50	49	51	54	55	56	58	59	59	59	56	51	56	--	48			
May.....	56	52	53	55	57	59	60	63	62	60	59	59	61	60	58	60	62	63	61	64	64	63	62	60	59	60	63	64	62	65	65	60			
June.....	66	65	68	69	67	68	67	67	67	67	68	70	65	67	63	63	65	67	68	69	69	70	68	70	69	69	71	71	74	72	--	68			
July.....	72	70	71	70	69	69	67	67	70	72	74	74	75	75	70	71	72	72	73	73	72	72	72	73	73	74	72	72	74	67	72	72			
August.....	69	71	74	72	71	68	71	71	72	68	66	69	68	70	69	67	69	70	69	71	72	72	71	69	69	69	70	72	74	75	70	70			
September.....	74	73	72	66	68	65	67	69	71	72	68	67	61	61	60	61	62	62	62	60	60	61	60	60	61	60	61	62	63	62	--	64			

## HUDSON RIVER BASIN

1-3277. HUDSON RIVER AT HUDSON FALLS, N. Y.

LOCATION.--At west shore of river at Arkell and Smith Manufacturers, Hudson Falls, Saratoga County.

DRAINAGE AREA.--3,941 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: November 1957 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 75°F July 23, 26, 28-30; minimum, 34°F on many days during December to April.

EXTREMES, 1957-60.--Water temperatures: Maximum, 75°F Aug. 21, Sept. 2, 3, 1959; minimum, freezing point Feb. 17, 18, 1958.

Temperature (°F) of water, water year October 1959 to September 1960  
(Once-daily measurement at approximately 9 a.m.)

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.....	70	68	--	--	--	53	52	--	50	42	--	41	43	44	--	--	--	--	--	54	53	50	54	54	55	55	53	50	53	--	--	
November.....	54	56	50	53	51	53	42	41	40	40	40	41	39	38	38	45	43	43	40	42	43	43	44	45	45	42	41	41	41	--	46	
December.....	43	44	45	45	41	41	43	42	41	40	40	41	39	38	38	38	38	41	40	40	39	37	37	36	38	36	34	36	40	--	40	
January.....	36	36	44	37	39	38	35	35	35	34	--	38	36	36	36	--	--	--	--	--	--	--	--	--	35	36	37	35	37	--	37	
February.....	36	36	38	37	39	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	--	36
March.....	35	34	34	34	34	34	35	35	34	34	34	37	36	35	37	37	38	37	36	34	35	35	36	36	36	38	37	39	39	39	39	39
April.....	41	41	43	42	35	34	35	38	38	39	41	42	43	45	42	43	45	43	42	44	46	48	47	52	49	46	47	46	--	43	43	
May.....	46	47	46	47	47	47	48	59	60	60	60	60	60	57	56	59	59	59	60	62	61	61	64	62	61	60	60	61	60	60	60	57
June.....	59	59	58	59	60	70	69	70	70	69	69	70	69	67	69	70	69	68	69	69	69	70	71	69	69	--	--	--	--	--	67	
July.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	74	74	74	72	73	--	--	75	75	75	75	75	--	--	--	
August.....	73	74	73	73	73	72	73	73	73	73	73	73	73	73	74	72	73	72	72	72	74	73	73	73	73	73	73	74	73	73	73	73
September.....	73	73	72	73	69	69	71	73	72	72	71	71	69	69	68	65	64	65	65	64	64	65	64	65	64	65	65	66	65	66	--	68







HUDSON RIVER BASIN--Continued  
1-3515. SCHOHARIE CREEK AT BURTONVILLE, N.Y.

LOCATION.--At bridge west of Eaton Corners, Schoharie County, 0.4 mile north of gaging station, 3.1 miles north of Esperance, and 13.9 miles upstream from mouth. DRAINAGE AREA.--883 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960.

Extremes: Maximum, 17.8 ppm June 26-30; minimum, 51 ppm Sept. 21-30.

Specific conductance: Maximum daily, 31.5 microhos June 5.

Specific conductance: Maximum daily, 367 microhos Feb.; minimum daily, 32 microhos June 5.

Water temperatures: Maximum, 78°F Aug. 30; minimum, freezing point on several days during December to March.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Albany, N.Y. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mho/cm at 25°C)	pH	Oxygen consumed	
														Calcium	Non-magnesium			Filtrated	Unfiltrated
Oct. 1-10, 1959.	40	16	0.06	36	5.5	11	2.1	116	23	12	0.2	0.5	171	113	18	284	7.3	3	--
Oct. 11-20, .....	61	13	.10	42	5.2	9.2	2.4	126	28	7.0	.2	.6	176	127	23	285	7.3	3	3
Oct. 21-31, .....	53	16	.12	38	4.8	4.7	1.7	182	26	5.3	.2	1.4	132	194	24	224	7.3	3	4
Nov. 1-10, .....	525	8.9	.07	31	3.9	4.1	1.8	45	15	2.8	--	1.6	--	52	15	125	7.2	8	--
Nov. 11-20, .....	929	--	.10	--	--	2.5	--	45	15	--	--	--	--	--	--	--	--	--	--
Nov. 21-30, .....	576	11	.07	18	2.3	3.6	1.2	53	15	3.3	.2	1.2	90	55	11	138	7.4	6	3
Nov. 18-27, .....	11500	--	.45	--	--	3.7	--	80	20	1.8	--	5.7	--	85	20	198	6.9	7	--
Nov. 28--	9475	--	.14	--	--	2.5	--	39	12	2.0	--	2.5	--	44	12	112	7.1	8	--
Nov. 29-30, .....	2168	11	.04	18	1.6	3.8	.9	50	16	2.8	.2	2.3	91	52	11	135	7.3	12	5
Dec. 1-6, 8-31, .....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan. 1-9, 18-29, 1960.	1872	14	.13	20	3.2	4.5	1.0	58	18	4.0	.2	1.9	100	63	16	154	7.0	3	2
Feb. 1-10, .....	452	--	.05	--	--	5.8	--	59	19	5.6	--	2.3	--	66	18	160	7.4	--	--
Feb. 2-5, .....	464	--	.05	--	--	23	--	46	46	13	--	86	--	124	87	356	6.5	14	--
Feb. 6-7, .....	580	--	.04	--	--	8.0	--	70	26	5.2	--	2.1	--	76	19	180	7.3	6	--
Feb. 8-10, .....	901	--	.10	--	--	24	--	42	43	13	--	91	--	120	86	346	7.1	--	--
Feb. 9-20, .....	3806	5.7	.12	22	3.2	3.1	1.6	54	20	3.5	.1	4.4	100	68	24	156	7.1	4	3
Feb. 22, .....	1160	--	.10	--	--	--	--	98	15	8.4	--	7.6	--	104	24	243	6.9	4	--
Feb. 23-29, .....	1001	6.5	.06	23	3.1	2.8	.9	60	19	4.5	.1	1.4	90	70	21	152	6.9	4	--
Mar. 1-30, .....	804	10	.06	28	3.4	5.2	1.3	82	22	6.5	.1	2.6	125	84	17	202	7.6	3	3
Mar. 31, .....	25000	--	.08	--	--	3.0	--	56	11	6	--	1.3	--	53	7	126	7.8	11	--
Apr. 1, .....	22700	--	.10	--	--	2.1	--	48	11	1.0	--	2.4	--	50	11	116	7.4	8	--



11850	Apr. 2-3, 1960.....	16	.08	44	--	1.2	1.0	98	13	--	4.8	--	96	16	201	7.4	8	--			
9616	Apr. 4-5, 10-13.....	44	13	2.7	4.0	1.0	1.0	46	13	--	2.8	.2	85	44	112	7.6	15	--			
2535	Apr. 14-28.....	7.9	.03	10	3.0	4.7	36	14	4.4	1.1	65	38	8	96	7.3	9	5	6			
1610	Apr. 30.....	--	--	--	1.4	1.4	55	13	--	.6	.5	--	57	12	126	7.8	7	--			
1305	May 1-31.....	8.6	.02	14	3.6	3.5	1.0	55	13	--	.2	.9	60	50	125	7.2	8	6			
2040	June 1.....	--	.10	--	--	3.9	--	53	9.6	--	1.7	--	48	5	124	6.9	4	--			
1445	June 2-3.....	--	.14	--	--	1.6	--	20	6.8	--	3.0	--	24	8	56	6.4	4	--			
922	June 4-5.....	--	.07	--	--	1.7	--	12	5.0	--	1.5	--	15	5	34	6.4	5	--			
3250	June 6.....	8.7	.08	22	5.7	7.8	1.3	84	16	4.8	4.3	118	79	9	180	6.6	4	6			
876	June 7-25.....	--	--	--	--	--	7.0	--	--	--	--	--	--	--	--	--	--	--			
381	June 26-30.....	22	.08	40	5.3	8.1	1.9	136	22	6.4	1.1	1.2	177	122	11	271	7.9	9	--		
168	July 1-31.....	11	.05	38	4.5	7.0	2.0	128	15	5.8	2.7	1.7	157	114	9	260	7.6	4	2		
1088	Aug. 1-31.....	36	.09	39	3.0	3.3	2.4	138	19	2.6	0.6	169	129	16	274	7.2	4	2			
3026	Aug. 31-Sept. 3.....	2	.02	20	1.8	1.8	1.1	18	8.0	1.1	1.1	1.1	31	26	64	6.6	4	4			
2117	Sept. 21-30.....	3.7	.7.2	1.33	1.8	1.4	1.5	22	--	--	1.0	1.0	31	26	64	6.6	23	9	12		
Weighted average.....		--	11	0.12	19	3.3	3.7	1.2	61	15	3.4	0.2	2.7	98	62	148	7.2	9	4	5	
Time-weighted average.....		1742	11	0.10	25	3.9	5.1	1.4	79	18	5.7	0.2	3.5	118	79	14	187	7.1	7	3	5
Tons per day.....		--	43	0.59	78	13	17	4.9	288	72	16	0.6	13	395	--	--	--	--	44	--	--

Temperature ( $^{\circ}\text{F}$ ) of water, water year October 1959 to September 1960[illegible]



## HUDSON RIVER BASIN--Continued

## 1-3580. HUDSON RIVER AT GREEN ISLAND, N.Y.

LOCATION.--At east shore of Green Island, Albany County, at Ford Motor Co., opposite Troy barge lock.

DRAINAGE AREA, 1,090 square miles, approximately 1954 to September 1960.

WATER TEMPERATURES.--Water temperatures: Maximum, 77°F July 22-24, 26-28; minimum, 33°F on many days during December to March.

EXTREMES, 1959-60.--Water temperatures: Maximum, 77°F July 22-24, 26-28; minimum, 33°F on many days during December to March.

EXTREMES, 1954-60.--Water temperatures: Maximum, 81°F July 31, Aug. 1, 1959; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Temperature (°F) of water, water year October 1959 to September 1960  
(Once-daily measurement at approximately 8 a.m.)

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.....	70	70	69	68	67	67	67	67	67	66	65	63	61	59	57	57	56	54	54	54	51	52	53	54	55	53	52	52	51	51	59
November.....	50	50	47	47	48	48	46	46	45	45	44	43	43	42	43	42	41	40	40	40	40	40	41	41	40	39	38	37	37	37	43
December.....	36	36	37	37	37	38	38	37	37	38	37	36	35	35	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	35
January.....	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
February.....	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
March.....	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
April.....	36	36	37	38	38	38	38	38	39	39	40	42	43	45	46	47	48	48	48	48	49	51	52	53	53	54	54	55	55	55	45
May.....	54	54	54	54	55	57	58	59	60	61	61	61	61	61	61	61	62	62	62	62	62	62	62	62	63	64	65	65	66	67	61
June.....	67	67	67	68	69	69	70	70	71	71	72	72	73	73	73	72	72	71	71	72	73	73	73	73	74	74	74	74	74	74	71
July.....	75	75	75	76	74	74	73	72	72	73	73	73	74	73	73	73	75	76	76	76	77	77	77	77	77	77	77	77	76	76	75
August.....	75	75	75	75	75	75	75	75	75	74	74	74	74	74	74	74	74	74	74	75	75	75	76	76	76	75	74	74	74	75	76
September.....	76	76	75	75	75	74	74	74	74	74	72	72	65	61	61	61	60	60	60	61	61	62	62	63	65	65	65	65	65	65	67





HUDSON RIVER BASIN--Continued  
1-3743.1. HUDSON RIVER AT PEESKILL, N. Y.

LOCATION.--At Charles Point on Lent Cove at Peekskill, Westchester County.  
RECORDS AVAILABLE.--Water temperatures: October 1959 to September 1960.  
EXTREMES, 1959-60.--Water temperatures: Maximum, 77°F Aug. 2-6, 30, 31, Sept. 1; minimum, freezing point on many days during January to March.

Month	Temperature (°F) of water, water year October 1959 to September 1960																															Aver- age
	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	
October.....	73	72	72	72	72	72	71	71	71	71	71	70	70	67	68	68	68	67	66	65	64	63	64	64	63	62	60	59	59	59	67	
November.....	59	59	58	57	57	57	56	54	53	53	52	52	52	51	51	50	48	48	47	46	46	46	46	45	45	45	45	44	44	44	51	
December.....	43	42	40	40	40	40	40	39	40	39	39	39	38	38	38	38	38	38	38	37	36	36	36	35	35	35	35	35	35	35	38	
January.....	36	36	36	33	33	33	33	33	32	32	32	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	
February.....	33	33	33	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	34	34	35	35	35	35	36	33	
March.....	33	33	33	33	33	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	34	34	35	35	35	35	36	36	33	
April.....	37	38	40	40	40	40	41	41	41	41	42	42	43	43	44	44	44	45	46	47	48	48	49	51	52	53	54	54	54	54	44	
May.....	54	54	54	55	56	57	57	57	57	57	57	58	58	59	60	60	60	61	61	61	61	61	61	65	62	62	62	63	67	64	59	
June.....	64	67	68	68	67	68	68	68	68	68	69	69	70	70	70	70	70	71	71	71	71	71	72	71	72	71	71	72	73	73	70	
July.....	--	--	--	74	74	73	72	73	74	74	74	75	75	75	75	75	75	75	76	76	76	76	76	76	76	76	76	76	76	76	75	
August.....	76	77	77	77	77	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	75	75	76	75	75	75	75	75	77	77	76	
September.....	77	76	76	76	75	75	75	75	75	75	76	75	74	73	72	72	72	71	71	70	70	69	68	68	68	67	66	66	66	--	72	



## QUALITY OF SURFACE WATERS, 1960

## RARITAN RIVER BASIN--Continued

## 1-3970. SOUTH BRANCH RARITAN RIVER AT STANTON, N. J.--Continued

Suspended sediment, December 1959 to September 1960  
(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..							--	--	--
2..							--	--	--
3..							--	--	--
4..							--	--	--
5..							--	--	--
6..							--	--	--
7..							--	--	--
8..							--	--	--
9..							--	--	--
10..							210	--	2
11..							189	2	1
12..							442	91 S	261
13..							1100	187 S	730
14..							414	20	22
15..							330	2	2
16..							300	2	2
17..							272	2	1
18..							254	3	2
19..							247	3	2
20..							216	2	1
21..							195	3	2
22..							210	--	2
23..							180	--	2
24..							185	--	2
25..							186	--	2
26..							180	--	1
27..							244	--	4
28..							378	--	20
29..							1530	134 S	717
30..							560	--	30
31..							418	--	14
Total							8240	--	1822
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..	342	--	9	254	C 2	1	272	C 6	4
2..	296	--	6	237	C 2	1	240	C 6	4
3..	1480	--	600	201	C 2	1	225	--	4
4..	789	--	43	201	C 2	1	254	16	11
5..	511	--	12	204	C 2	1	292	10	8
6..	439	--	8	728	78 B	150	250	8	5
7..	398	--	5	446	--	12	235	8	5
8..	370	4	4	303	C --	4	230	C 4	2
9..	322	--	3	282	C --	4	228	C 4	2
10..	296	--	2	272	C --	4	222	C 4	2
11..	278	--	2	818	87 S	224	204	C 4	2
12..	247	2	1	488	--	13	204	C 3	2
13..	358	9	9	366	C --	5	204	C 3	2
14..	330	5	4	342	C --	5	204	C 3	2
15..	382	7	7	318	C --	5	201	C 3	2
16..	414	4	4	296	C --	5	204	C 3	2
17..	310	2	2	310	C --	5	213	C 3	2
18..	310	6	5	334	--	7	231	C 3	2
19..	382	8	8	794	--	60	278	12	9
20..	314	5	4	470	--	18	275	5	4
21..	264	--	1	390	--	13	272	C 3	2
22..	244	--	1	358	--	10	258	C 3	2
23..	231	C 1	1	326	9	8	225	C 3	2
24..	216	C 1	1	300	5	4	244	C 3	2
25..	204	C 1	1	289	4	3	268	6	4
26..	201	C 1	1	565	28	43	222	C 3	2
27..	201	C 1	1	444	12	14	225	C 3	2
28..	479	--	13	338	C 3	3	358	30	29
29..	378	--	3	322	C 3	3	475	40	51
30..	334	--	2	--	--	--	444	22	26
31..	275	--	1	--	--	--	771	96 S	218
Total	11595	--	763	10996	--	624	8428	--	416

S Computed by subdividing day.

B Computed from estimated concentration graph.

C Composite period.



## RARITAN RIVER BASIN--Continued

1-3970. SOUTH BRANCH RARITAN RIVER AT STANTON, N. J.--Continued

Suspended sediment, December 1959 to September 1960--Continued

Day	APRIL			MAY			JUNE		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	535	27	39	322	15	5	189	10	5
2..	386	10	10	286	8	6	155	6	2
3..	417	13	19	210	C	4	142	C	2
4..	1520	174	775	189	C	4	140	C	2
5..	1730	130	624	172	C	4	148	C	2
6..	997	28	75	165	C	4	130	6	2
7..	758	15	31	122	C	4	114	C	5
8..	674	11	20	165	C	4	103	C	5
9..	905	13	21	247	21	14	97	C	5
10..	488	10	13	250	12	8	93	C	5
11..	430	C	8	189	5	3	97	C	5
12..	402	C	8	180	8	4	95	6	2
13..	358	C	8	204	12	7	130	C	6
14..	362	C	8	172	C	5	116	C	6
15..	322	C	8	160	C	5	198	C	21
16..	303	C	7	152	C	5	211	C	28
17..	292	C	7	142	C	5	130	C	7
18..	303	C	7	172	C	5	130	C	6
19..	300	C	7	175	6	3	107	C	6
20..	261	C	7	148	C	5	91	C	6
21..	244	C	5	142	C	5	85	C	6
22..	234	C	5	278	27	S	80	C	5
23..	227	C	5	453	49	S	80	C	5
24..	216	C	5	282	17	13	82	C	5
25..	213	C	5	247	27	18	83	C	5
26..	228	13	8	183	C	7	73	C	5
27..	318	21	18	158	C	7	67	C	3
28..	234	C	6	142	C	7	64	C	3
29..	207	C	6	145	C	7	64	C	3
30..	192	C	6	160	C	7	67	C	3
31..	--	--	--	303	48	39	--	--	--
Total	13721	--	1747	6345	--	258	3361	--	79
Day	JULY			AUGUST			SEPTEMBER		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	78	6	S	192	17	9	170	17	8
2..	123	11	4	135	12	4	116	5	2
3..	89	14	3	109	10	3	91	C	2
4..	236	68	S	125	20	7	82	C	2
5..	103	15	4	140	33	12	80	C	2
6..	80	8	2	148	47	19	76	C	2
7..	74	C	7	105	C	9	71	C	2
8..	69	C	7	99	C	9	69	C	2
9..	63	C	7	87	C	9	69	C	2
10..	61	C	7	121	12	4	76	C	2
11..	63	C	4	150	17	7	110	30	B
12..	64	C	4	107	8	2	1930	280	S
13..	61	C	4	97	7	2	1250	55	2250
14..	118	30	S	95	C	4	422	10	186
15..	138	42	16	89	C	4	303	6	11
16..	97	9	2	87	C	4	250	C	5
17..	74	5	1	82	C	4	219	C	5
18..	69	3	1	69	C	4	216	C	5
19..	66	5	1	82	C	4	377	28	S
20..	87	8	2	484	54	S	1260	111	S
21..	76	5	1	178	10	5	502	15	433
22..	63	4	1	310	52	S	358	9	20
23..	59	3	T	204	8	4	300	C	6
24..	56	C	2	138	8	3	268	C	6
25..	53	C	2	112	C	4	240	C	6
26..	52	C	2	95	C	4	219	C	6
27..	78	11	S	91	C	4	204	C	4
28..	223	46	S	83	C	4	192	C	4
29..	93	8	2	80	C	4	189	C	4
30..	730	191	S	97	5	1	198	C	4
31..	605	79	S	205	46	S	--	--	--
Total	3901	--	943	4171	--	269	9907	--	3001

Total discharge for period (cfs-days)..... 80,665  
 Total load for period (tons)..... 9,922

S Computed by subdividing day.

B Computed from estimated-concentration graph.

T Less than 0.50 ton.

C Composite period.

A Computed from partly estimated-concentration graph.

RARITAN RIVER BASIN--Continued  
1-3970. SOUTH BRANCH RARITAN RIVER AT STANTON, N. J.--Continued

Particle-size analyses of suspended sediment: December 1959 to September 1960  
(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 tem- per- ature (° F)	Sam- pling point	Discharge (cfs)	Sediment concentra- tion (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Dec. 12, 1959.....	2120	48		1,050	233		7	18	38	56	72	78	91	97				BSWC
Dec. 12, 1959.....	1840	48		1,050	271		1	(3)	13	30	65	74	89	96				BSN
Dec. 13, 1959.....	1215	49		1,710	892		7	13	32	48	63	69	83	97				BSWC
Dec. 29, 1959.....	0900	39		1,650	168		9	18	36	54	69	73	88	96				BSWC
Feb. 6, 1960.....	1000	45		1,020	266		14	23	51	71	90	96	98	99				BSWC
Apr. 4, 1960.....	0840	48		1,940	232		7	20	35	51	71	83	89	96				BSWC
Apr. 5, 1960.....	1330	50		2,020	145		--	23	41	52	67	77	84	95				BSWC
July 30, 1960.....	1430	70		1,020	569		14	35	54	71	89	95	95	99				BSWC
Sept. 12, 1960.....	1840	63		3,920	578		7	20	41	57	80	94	94	98				BSWC
Sept. 12, 1960.....	1840	63		3,920	660		4	11	23	39	64	92	95	98				BSN

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## RARITAN RIVER BASIN--Continued

1-4010. STONY BROOK AT PRINCETON, N. J.

LOCATION.--At gaging station on right bank, 12 feet downstream from bridge on U.S. Highway 206, 1.6 miles southwest of Princeton, Mercer County, and 4 miles upstream from Lake Carnegie.

**DRAINAGE AREA: --44.5 square miles.**

RECORDS AVAILABLE. --Water temperatures: October 1956 to September 1960.

Sediment records: January 1956 to September 1960.

EXTREMES, 1959-60. ---Water temperatures: Maximum daily, 81°F Aug. 2; minimum daily, freezing point on several days during December to March.

**Sediment concentrations:** Maximum daily, 354 ppm Feb. 11; minimum daily, 2 ppm on several days.

Sediment loads: Maximum daily, 2,350 tons Sept. 12; minimum daily, less than 0.05 ton on many days.

EXTREMES, 1956-60. ---Water temperatures: Maximum, 89°F July 3, 1958, June 30, 1959; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 939 ppm Mar. 6, 1959; minimum daily, 0 ppm on several days.

Sediment loads: Maximum daily, 6,800 tons Feb. 28, 1958; minimum daily, 0 tons on several days.

REMARKS.--Station established January 1956 for Stony Brook watershed project. Records of specific conductance and pH sampled on a periodic basis, are available in the subdistrict office at Harrisburg, Pa. Records of discharge for the water year October 1959 to September 1960 given in WSP 1702. Flow affected by ice Dec. 22, Jan. 13, 24, and Mar. 2-4.

Chemical analyses, in parts per million. April, July 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids at 180°C	Hardness as CaCO <sub>3</sub>	Total acidity (micro-mhos at 25°C)	pH	Color	
Apr. 4, 1960..	711	13		0.05	0.01	9.8	4.3	4.8	2.2	12	31	5.4	0.2	5.1	93	42	32	116	6.5	28
Apr. 6.....	265	3.4		.04	.02	11	5.0	6.5	2.1	16	35	6.9	.1	6.1	104	48	35	141	6.6	17
July 6.....	2.2			.94		7.7	7.7	11	2.5	6.1	28	10	.4	9	110	69	14	186	6.7	7

Temperature ( $^{\circ}\text{F}$ ) of water, water year October 1959 to September 1960[illegible]

## RARITAN RIVER BASIN--Continued

1-4010. STONY BROOK AT PRINCETON, N. J.--Continued

Suspended sediment, water year October 1959 to September 1960  
(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..	6.8	30	S	1.1	2.7	C	3	T	25	C	4	0.2
2..	2.9	12		.1	2.2	C	3	T	22	C	4	.2
3..	1.6	C	3	T	1.8	C	3	T	20	C	4	.2
4..	1.4	C	3	T	1.8	C	3	T	19	C	4	.2
5..	1.5	C	3	T	1.8	C	3	T	17	C	4	.2
6..	1.4	C	3	T	2.3	5	S	T	18	C	4	.2
7..	1.4	C	3	T	4.3	46	S	5.9	276	184	S	168
8..	3.1	13	S	.1	40	10	S	1.2	106	22		6.3
9..	4.9	16	S	.3	16	10		.4	70	6		1.1
10..	3.1	6		.1	11	9		.3	59	7		1.1
11..	3.8	C	4	T	8.3	8		.2	51	7		1.0
12..	2.4	C	4	T	6.6	C	6	.1	327	226	S	236
13..	1.7	C	4	T	6.0	C	6	.1	362	86	S	13
14..	3.9	C	4	S	25	--	--	1.0	100	20		5.4
15..	3.4	C	4	T	71	--	--	9.0	66	C	5	.5
16..	3.2	C	4	T	25	15		1.0	57	C	5	.5
17..	2.5	C	4	T	29	17	S	1.4	47	C	5	.5
18..	2.0	C	4	T	37	17		1.7	43	C	5	.5
19..	1.6	C	4	T	22	7		.4	45	C	5	.5
20..	1.6	C	4	T	18	5		.2	35	C	5	.5
21..	1.6	C	4	T	16	9		.4	30	C	5	.5
22..	1.6	C	4	T	14	10		.4	29	C	5	.5
23..	1.7	C	4	T	12	11		.4	25	C	5	.5
24..	3.8	C	3	S	34	51	S	14	30	C	5	.5
25..	3.6	C	3	T	185	87	S	46	29	8		.6
26..	2.4	C	3	T	65	17	S	3.1	29	8		.6
27..	2.4	C	3	T	39	10		1.1	87	17	S	4.3
28..	2.2	C	3	T	42	16		1.8	167	23	S	11
29..	1.8	C	3	T	44	7		.8	698	188	S	560
30..	1.8	C	3	T	30	5		.4	209	13		7.3
31..	2.1	C	3	T	--	--	--	--	128	6		2.1
Total	79.2	--	--	2.2	851.5	--	--	91.4	3222	--	--	1024.0
JANUARY				FEBRUARY				MARCH				
1..	82	5		1.1	57	C	3	0.4	70	C	5	0.6
2..	62	4		.7	52	C	3	.4	48	C	5	.6
3..	470	160	S	293	39	C	3	.4	30	C	5	.6
4..	174	13		6.1	37	C	3	.4	43	C	5	.6
5..	96	C	6	1.1	35	C	3	.4	56	C	5	.6
6..	73	C	6	1.1	353	201	S	308	48	C	5	.6
7..	66	C	6	1.1	134	20	S	8.0	40	C	5	.6
8..	56	C	6	1.1	74	8		1.6	35	5		.5
9..	44	C	6	1.1	63	6		1.0	34	10	S	1.1
10..	39	C	3	.3	56	5		.8	32	C	4	.3
11..	36	C	3	.3	479	354	S	688	28	C	4	.3
12..	29	11	S	1.0	164	30	A	15	28	C	4	.3
13..	132	17	S	7.4	92	--	--	6.0	28	C	4	.3
14..	155	10	S	4.0	78	C	--	3.0	31	C	4	.3
15..	278	36	S	45	60	C	--	3.0	32	C	4	.3
16..	222	13	S	9.0	57	C	--	3.0	38	C	4	.3
17..	96	6	S	1.7	68	C	--	3.0	62	14	S	3.0
18..	107	14	S	6.2	132	37	S	62	114	34	S	11
19..	335	40	S	43	809	325	S	1070	154	26	S	11
20..	126	13	S	4.8	165	14		6.2	137	11	S	4.4
21..	74	C	5	.6	103	C	6	1.3	108	C	5	1.0
22..	56	C	5	.6	86	C	6	1.3	110	C	5	1.0
23..	48	C	5	.6	70	C	6	1.3	76	C	5	1.0
24..	39	C	5	.6	56	C	6	1.3	80	C	5	1.0
25..	37	C	5	.6	54	11	S	1.8	90	C	5	1.0
26..	33	C	5	.6	558	129	S	276	54	C	5	1.0
27..	31	C	5	.6	143	9	S	3.7	48	C	5	1.0
28..	234	64	S	48	92	5		1.2	63	C	5	1.0
29..	27	19	S	6.1	82	5		1.1	59	C	5	1.0
30..	90	C	3	.6	--	--	--	--	51	5		.7
31..	66	C	3	.6	--	--	--	--	133	25	S	10
Total	3613	--	--	488.6	4248	--	--	2469.6	1960	--	--	57.0

S Computed by subdividing day.  
T Less than 0.05 ton.A Computed from partly estimated-concentration graph.  
C Composite period.

## RARITAN RIVER BASIN--Continued

1-4010. STONY BROOK AT PRINCETON, N. J.--Continued

Suspended sediment, water year October 1959 to September 1960--Continued

Day	APRIL			MAY			JUNE		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	94	14	S 3.7	73	26	S 7.4	13	2	0.1
2..	55	10	1.5	74	12	S 2.8	8.6	C 2	T
3..	69	54	28	36	C 5	.3	6.6	C 2	T
4..	711	281	S 687	26	C 5	.3	18	C 10	S 1.2
5..	980	265	S 813	22	C 5	.3	21	8	S .5
6..	265	30	S 23	18	C 5	.3	9.8	4	.1
7..	138	15	5.6	17	C 5	.3	6.6	5	.1
8..	103	C 4	.9	16	C 5	.3	5.0	6	.1
9..	101	C 4	.9	17	10	.5	3.8	C 4	T
10..	76	C 4	.9	16	C 3	.1	3.2	C 4	T
11..	59	C 4	.9	13	C 3	.1	2.9	C 4	T
12..	55	C 4	.9	12	C 3	.1	3.1	C 4	T
13..	46	11	1.4	14	8	.3	3.2	C 4	T
14..	42	10	1.1	12	9	.3	3.2	C 4	T
15..	38	C 6	.6	10	C 4	.1	8.3	57	S 2.0
16..	34	C 6	.6	9.4	C 4	.1	28	103	S 9.8
17..	30	C 6	.6	9.0	C 4	.1	11	28	S .8
18..	36	C 6	.6	12	C 4	.1	11	17	.5
19..	39	C 6	.6	14	C 4	.1	5.5	C 3	T
20..	30	C 6	.6	14	10	S .4	3.8	C 3	T
21..	29	C 6	.4	16	9	.4	3.2	C 3	T
22..	26	C 6	.4	16	6	.3	2.4	C 3	T
23..	22	C 6	.4	36	16	S 1.6	2.2	5	T
24..	20	C 6	.4	35	11	S 1.0	6.4	--	.1
25..	20	C 6	.4	30	7	.6	11	--	.6
26..	26	C 6	.4	18	5	.2	4.7	C 2	T
27..	50	12	S 1.6	12	8	.3	2.9	C 2	T
28..	36	8	.8	9.8	.1	.1	2.2	C 2	T
29..	25	7	.5	9.0	C 3	.1	2.0	C 5	T
30..	20	8	.4	11	C 3	.1	2.1	C 5	T
31..	--	--	--	16	C 3	.1	--	--	--
Total	3275	--	1578.1	643.2	--	19.1	214.7	--	16.5
Day	JULY			AUGUST			SEPTEMBER		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	8.1	15	S 0.7	49	C 5	0.4	54	C 8	0.4
2..	20	20	A 1.1	30	C 5	.4	20	C 8	.4
3..	9.0	C 4	.1	22	C 5	.4	12	C 8	.4
4..	6.3	C 4	.1	17	C 5	.4	9.0	C 8	.4
5..	3.6	C 4	.1	24	C 5	.4	7.9	C 8	.4
6..	2.7	4	T	32	C 5	.4	9.4	C 5	.1
7..	1.8	C 4	T	18	C 6	.2	7.2	C 5	.1
8..	1.4	C 4	T	14	C 6	.2	4.5	C 5	.1
9..	1.3	C 4	T	12	C 6	.2	4.0	C 5	.1
10..	1.2	C 4	T	9.8	C 6	.2	5.7	C 5	.1
11..	1.2	C 4	T	10	C 6	.2	11	10	.3
12..	1.2	C 4	T	8.6	C 3	.1	22.0	329	S 2350
13..	1.4	10	T	7.6	C 3	.1	310	30	S 33
14..	107	162	S 80	7.2	C 3	.1	108	C 7	1.6
15..	42	44	S 4.5	8.3	4	S .2	65	C 7	1.6
16..	12	40	1.3	23	30	A 1.9	48	C --	3.0
17..	6.6	23	.4	9.8	10	.3	37	C --	3.0
18..	4.2	17	.2	6.6	.1	.1	36	C --	3.0
19..	3.2	10	.1	11	6	S .2	185	--	50
20..	2.7	5	T	16	3	.1	310	--	140
21..	2.1	10	.1	9.4	2	.1	124	--	26
22..	2.1	C 5	T	42	23	S 3.2	73	--	10
23..	1.8	C 5	T	22	8	S .6	54	C --	3.0
24..	1.6	22	.1	12	C 6	.1	43	C --	3.0
25..	1.4	14	.1	7.9	C 6	.1	35	C --	3.0
26..	1.2	15	T	6.3	C 6	.1	32	C --	3.0
27..	9.5	33	1.7	5.5	C 6	.1	28	C 6	.4
28..	40	39	S 5.3	4.7	C 6	.1	26	C 6	.4
29..	9.8	6	.2	4.2	C 6	.1	26	C 6	.4
30..	1130	218	S 1560	3.6	C 6	.1	80	--	10
31..	139	20	S 9.3	56	--	6.0	--	--	--
Total	1576.7	--	1665.7	509.5	--	17.1	4004.7	--	2647.2

Total discharge for year (cfs-days)..... 24,195.5  
 Total load for year (tons)..... 10,076.5

S Computed by subdividing day.  
 T Less than 0.05 ton.

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

## RARITAN RIVER BASIN--Continued

## 1-4010. STONY BROOK AT PRINCETON, N. J.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
 (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 tem- per- ature (°F)	Sam- pling per- centage	Discharge (cfs)	Sediment concentra- tion (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis	
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Dec. 29, 1959.....	0645	38		1,370	580		--	25	52	67	88	94	97	98		99	--	BSWC
Feb. 6, 1960.....	1130	44		1,775	537		25	32	63	85	94	97	98	99		100	--	BSWC
Feb. 26.....	0600	36		1,230	342		21	40	53	77	93	97	98	99		100	--	BSWC
Apr. 4.....	0730	52		1,270	399		16	29	39	56	83	97	98	99		100	--	BSWC
Apr. 4.....	0730	52		1,270	558		--	17	34	53	76	97	98	99		100	--	BSN
Apr. 5.....	0830	47		1,490	343		17	26	40	60	86	95	98	99		100	--	BSWC
July 27.....	2055	72		32	93		41	57	80	93	94	97	98	99		100	--	BSWC
July 30.....	1345	69		2,900	387		12	28	49	69	87	96	97	98		100	--	BSWC

## DELAWARE RIVER BASIN

## 1-4340. DELAWARE RIVER AT PORT JERVIS, N.Y.

LOCATION---At gaging station at bridge on U.S. Highways 6 and 209 at Port Jervis, Orange County, 1.5 miles upstream from Neversink River, and 6.5 miles downstream from Mongaup River.

DRAINAGE AREA--3,076 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1957 to September 1959.

Water temperatures: February 1957 to September 1960.

Sediment records: February 1957 to September 1960.

EXTREMES, 1957-60--Water temperatures: Maximum, 78°F Aug. 29; minimum, freezing point on many days during December to March.

Sediment concentrations: Maximum daily, 490 ppm Feb. 22; minimum daily, 1 ppm on many days during October, November, January, February, March, and May.

Sediment loads: Maximum daily, 58,200 tons Feb. 12; minimum daily, 2.4 tons Oct. 20.

EXTREMES, 1957-60--Water temperatures: Maximum, 85°F July 19, 1959; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 559 ppm Apr. 6, 1958; minimum daily, 0.3 ppm Aug. 29, 1957.

Sediment loads: Maximum daily, 69,800 tons Dec. 21, 1957; minimum daily, 0.8 ton Aug. 28, 1957.

REMARKS--Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Temperature (°F) of water, water year October 1959 to September 1960

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 .....	--	--	61	--	71	--	--	70	68	65	63	60	52	56	59	59	58	56	53	52	51	55	60	58	58	55	53	48	51	48	58	
November .....	52	50	48	47	54	54	50	48	43	43	39	50	48	51	50	48	45	45	40	42	41	45	40	45	45	45	45	41	39	--	46	
December .....	45	42	44	45	42	44	44	42	40	36	35	41	40	42	40	39	41	43	32	34	34	32	32	35	32	37	32	41	33	33	38	
January .....	32	39	40	--	--	38	40	--	32	35	35	32	32	34	34	32	34	41	38	35	32	34	32	32	32	35	36	34	34	37	39	
February .....	34	37	41	40	42	32	32	35	40	40	38	36	32	33	32	33	34	39	36	34	33	34	35	32	32	--	36	35	33	--	35	
March .....	34	35	34	36	32	32	34	32	34	35	34	33	35	32	34	36	32	34	39	39	40	38	36	37	40	37	39	38	45	43	42	44
April .....	40	43	40	41	41	40	40	40	42	42	44	47	46	50	50	53	53	55	51	51	54	--	56	59	59	--	63	61	59	59	49	
May .....	55	58	60	64	65	61	63	63	50	59	60	58	58	55	62	63	61	65	64	65	63	59	59	60	64	61	65	65	64	66	61	
June .....	65	65	65	67	72	73	69	66	65	--	--	--	67	64	65	64	68	68	67	67	66	65	66	65	66	69	67	69	69	69	67	
July .....	68	68	69	69	69	68	68	68	65	--	--	77	--	69	72	78	--	74	--	--	--	--	--	--	--	--	--	--	--	70	71	--
August .....	76	--	--	--	--	--	--	73	--	--	--	--	--	73	--	--	--	--	68	68	70	73	72	70	--	--	--	79	--	--	--	
September .....	--	--	--	--	70	--	--	--	--	--	--	76	67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## QUALITY OF SURFACE WATERS, 1960

## DELAWARE RIVER BASIN--Continued

## 1-4340. DELAWARE RIVER AT PORT JERVIS, N.Y.--Continued

Suspended sediment, water year October 1959 to September 1960  
(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..	2290	--	69	5580	7	105	13600	12	441
2..	2800	--	69	9310	14	352	10600	12	343
3..	3160	14	119	7460	8	161	8900	4	96
4..	2250	--	81	6410	13	225	7330	5	99
5..	1680	--	81	6040	2	33	6310	5	85
6..	2080	--	81	6120	1	17	5550	4	60
7..	2540	--	81	10900	22	S 717	8800	14	333
8..	4850	18	236	11100	28	839	14500	29	S 1150
9..	10300	128	B 3560	9120	8	197	10900	7	206
10..	15800	129	J 5810	7990	3	67	8880	4	96
11..	7930	30	642	6880	4	74	7640	6	124
12..	5520	14	209	5390	4	58	7150	4	77
13..	4400	6	71	4830	2	26	20600	55	S 3570
14..	4100	4	44	4210	2	23	20100	35	1900
15..	3830	4	41	4480	4	48	13400	30	1090
16..	2980	2	16	5950	5	80	10700	3	87
17..	2600	6	42	5330	5	72	9420	4	102
18..	2250	4	24	5780	3	47	8340	4	90
19..	2480	1	6.7	5290	2	29	6870	3	56
20..	2230	--	2.4	4650	2	25	5840	3	47
21..	1930	1	5.2	4210	2	23	5090	8	110
22..	2050	1	5.5	3840	2	21	4920	6	80
23..	2190	1	5.9	4040	1	11	4890	11	145
24..	2770	2	15	4210	2	23	3910	38	401
25..	8990	34	S 958	5260	2	28	3260	2	18
26..	8980	19	461	5620	4	61	3800	2	21
27..	6870	10	185	4650	3	38	3980	2	21
28..	5710	7	108	24500	217	S 27400	4530	2	24
29..	4860	4	52	45500	236	S A 34100	9330	20	504
30..	4150	6	67	21800	58	A	11500	27	A 838
31..	3680	5	50	--	--	--	8310	6	125
Total	138250	--	13197.7	256450	--	66410	268950	--	12339
JANUARY			FEBRUARY			MARCH			
1..	6440	4	70	3060	4	33	3820	4	41
2..	5340	4	58	3590	3	29	3460	2	19
3..	11300	38	B 1160	3360	2	18	3630	6	59
4..	29900	201	J 16200	3120	1	8.4	2710	17	124
5..	17300	154	A 7190	2850	2	15	3640	16	157
6..	11800	10	319	3200	2	17	3180	8	69
7..	9550	7	B 180	3690	3	30	2820	2	15
8..	8080	4	87	4060	4	44	3500	2	19
9..	6500	3	53	4440	2	24	3510	2	19
10..	5370	3	43	4220	3	34	3490	2	19
11..	5180	2	28	16800	118	J 9200	3280	2	18
12..	5620	3	46	42400	490	J 58200	3160	3	26
13..	4900	3	40	20700	70	A 3910	2450	2	13
14..	4890	3	40	13300	6	215	2340	2	13
15..	4990	4	54	10500	4	113	3000	2	16
16..	4460	4	48	8590	4	93	3000	2	16
17..	3790	4	41	8210	4	89	3120	2	17
18..	3900	3	32	7500	2	40	2870	1	7.7
19..	4100	3	33	7590	4	82	2830	3	23
20..	4020	3	33	6960	4	75	2330	2	13
21..	3850	1	10	5820	2	31	2110	3	17
22..	3880	1	10	5470	3	44	2860	2	15
23..	3190	1	8.6	5490	2	30	2620	2	14
24..	2370	2	B 13	5000	2	27	2690	3	22
25..	2660	2	14	4760	4	51	2770	3	22
26..	3190	3	26	4950	3	40	2510	2	14
27..	3340	3	27	4890	2	26	1800	2	9.7
28..	3750	4	40	4090	2	22	1950	4	21
29..	3780	2	20	4040	4	44	4210	8	91
30..	3660	2	20	--	--	--	8160	35	771
31..	3080	4	33	--	--	--	36000	248	S 26900
Total	194180	--	25976.6	222650	--	72584.4	129820	--	28600.4

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

R Computed from estimated-concentration graph.

J Computed from partly estimated-concentration graph and subdividing day.



## DELAWARE RIVER BASIN--Continued

1-4340. DELAWARE RIVER AT PORT JERVIS, N. Y.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	52700	200	28500	3720	1	10	5320	7	101
2..	32900	46	4090	4020	1	11	5410	2	29
3..	23200	20	1250	3920	1	11	5100	3	41
4..	50700	272	S 44100	3600	2	B 19	4100	4	44
5..	69100	303	S 56700	3290	2	18	3090	2	17
6..	49400	86	11600	3030	1	8.2	3590	2	19
7..	31200	20	1680	2520	1	6.8	4500	3	36
8..	21000	5	284	2180	1	5.9	3990	4	43
9..	16400	5	221	2900	2	16	3220	2	17
10..	13800	8	298	3670	2	20	2510	2	B 14
11..	11700	6	190	4140	4	45	2030	2	B 11
12..	10300	5	139	4070	2	22	1940	2	B 10
13..	10200	5	138	6720	16	290	2970	2	16
14..	9710	8	210	8040	11	239	2950	4	32
15..	9200	4	99	6020	6	98	6310	19	324
16..	8850	4	96	5510	3	45	7790	26	547
17..	8780	4	95	4750	3	38	6580	12	213
18..	8300	4	90	4550	2	25	7300	14	276
19..	8370	3	68	4340	2	23	7550	15	306
20..	7850	4	85	4040	2	22	6380	11	189
21..	6430	4	69	3110	3	25	6320	10	171
22..	5880	4	B 64	3670	2	20	5500	7	104
23..	4900	4	53	5480	7	104	4860	6	79
24..	3970	3	32	6930	10	187	7450	15	S 379
25..	4100	3	33	6880	10	186	15000	68	J 2830
26..	3690	--	20	5840	6	95	10700	24	693
27..	3800	3	31	5020	4	54	7840	11	233
28..	5130	2	28	3930	4	42	6360	9	155
29..	4830	2	26	3310	2	18	5080	6	82
30..	3940	2	21	3140	2	17	5150	4	56
31..	--	--	--	4010	2	22	--	--	--
Total	500330	--	150310	136350	--	1742.9	166890	--	7067
	JULY			AUGUST			SEPTEMBER		
1..	5140	5	69	2320	3	19	2360	2	B 13
2..	4400	4	48	2590	4	B 28	2240	2	B 12
3..	3710	2	20	2460	5	B 33	1620	2	B 8.7
4..	4190	5	57	2210	5	B 30	1100	2	B 5.9
5..	3910	6	63	2060	6	B 33	1360	2	B 7.3
6..	3460	5	47	3890	6	63	1520	--	8.2
7..	3060	4	33	2390	4	B 32	1200	--	6.5
8..	2690	4	B 29	2210	4	24	1430	--	7.7
9..	2290	3	B 19	2370	4	B 26	1950	--	11
10..	1770	3	B 14	2630	3	B 21	1670	--	9.0
11..	1890	2	10	2640	3	B 21	1660	--	--
12..	2270	2	B 12	2270	3	B 18	8450	38	S 1910
13..	2540	2	B 14	2050	3	B 17	35400	156	S 15100
14..	3390	2	18	1160	2	B 13	21400	36	S 2210
15..	4680	8	101	1670	2	9.0	12000	13	421
16..	3770	8	81	2200	5	B 30	8340	5	113
17..	2620	6	B 42	1590	7	B 30	6300	4	68
18..	2380	--	19	1160	9	B 28	5350	2	29
19..	2440	--	20	3000	12	97	5700	3	46
20..	2300	--	19	11800	79	S 2550	23900	100	S 11100
21..	2000	--	16	7890	24	511	31000	102	S 9580
22..	1930	--	16	4700	8	102	16500	23	1020
23..	1930	--	16	4060	8	88	11600	13	407
24..	1450	--	12	3280	4	35	8590	6	139
25..	1650	--	18	2560	4	B 28	6450	6	104
26..	1800	--	19	2290	3	B 19	6100	4	66
27..	2010	--	22	2140	3	B 17	5820	3	47
28..	2150	--	23	1780	2	B 9.6	5510	2	30
29..	2200	--	24	1870	2	10	5190	2	28
30..	2910	4	31	2470	2	B 13	5960	4	64
31..	2510	4	27	2330	2	B 13	--	--	--
Total	85440	--	959	90540	--	3967.6	247670	--	42580.3

Total discharge for year (cfs-says)..... 2437520  
 Total load for year (tons)..... 425734.9

S Computed by subdividing day.

B Computed from estimated concentration graph.

J Computed from partly estimated-concentration graph and subdividing day.

## DELAWARE RIVER BASIN--Continued

1-4385. DELAWARE RIVER AT MONTAGUE, N. J., (MILFORD, PA.)

LOCATION.--At center of toll bridge at Montague, Sussex County, 0.4 mile downstream from gaging station, and approximately 1.2 miles downstream from Saw Kill. DRAINAGE AREA.--3,480 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1960.

TEMPERATURES: October 1956 to December 1957.

REMARKS: Specific conductance available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH or Col- or
																Calcium, magnesium	Non-carbonate		
Oct. 21, 1959.	2,110	2.1		0.00	0.00	7.8	1.1	3.3	1.0	18	13	3.0	0.1	0.6	40	24	9	70	6.3
Nov. 24.....	4,420	1.9		.00	.00	7.3	2.3	3.0	1.0	18	16	3.0	.0	1.4	45	28	13	65	6.0
Dec. 16.....	12,000	3.8		.00	.00	4.1	2.4	3.0	1.0	10	15	2.2	.0	1.4	40	20	12	51	6.0
Jan. 13, 1960.	5,530	3.4		.02	.01	6.1	1.1	2.2	.7	12	11	2.1	.0	1.4	43	20	10	56	6.4
Feb. 24.....	5,630	4.2		.03	.01	5.7	1.5	2.2	.7	11	12	2.2	.0	1.0	40	20	11	56	6.6
Mar. 16.....	3,060	2.4		.00	.00	7.3	1.1	2.5	1.1	14	11	3.6	.0	.4	45	23	11	64	6.4
Apr. 20.....	8,980	2.2		.00	.00	5.3	1.2	2.0	1.1	12	11	1.8	.1	.8	38	18	8	50	6.0
May 18.....	5,040	2.0		.01	.01	6.1	1.1	1.1	1.0	13	10	2.1	.1	.7	40	20	9	55	6.3
June 15.....	6,500	3.8		.05	.00	4.1	2.4	3.5	1.0	18	10	1.6	.2	1.5	35	20	5	56	6.5
Sept. 21.....	33,800	3.2		.02	.00	4.5	1.0	1.5	1.3	10	9.0	1.0	.1	1.4	42	15	7	44	6.2

## DELAWARE RIVER BASIN--Continued

1-4635. DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)

LOCATION--At gaging station, 450 feet upstream from Calhoun Street Bridge at Trenton, Mercer County, 200 feet downstream from gaging station, and 0.5 mile upstream from Assumpink Creek.

DATA--Maximum daily discharge, 12,450 cfs, 1949-50.

RECORDS AVAILABLE--Chemical analyses: October 1944 to September 1960.

Water temperatures: October 1944 to September 1960.

Sediment records: September 1949 to September 1960.

EXTREMES, 1959-60.--Specific conductance: Maximum daily, 380 micromhos Oct. 25; minimum daily, 63 micromhos Apr. 12.

Water temperatures: Maximum, 86°F July 23-25; minimum, freezing point Mar. 4.

Sediment concentrations: Maximum daily, 877 ppm Nov. 29; minimum daily, 2 ppm on several days.

Sediment loads: Maximum daily, 37,000 tons Aug. 20, 1955; minimum daily, 156 tons Oct. 1-9, 1953; maximum, 44 ppm Mar. 21-31, 1945.

End uses: Maximum daily, 1,040 tons Aug. 20, 1955; minimum daily, 156 tons Oct. 1-9, 1953; maximum, 44 ppm Mar. 21-31, 1945.

Hardness: (1944-47, 1949-59): Maximum, 103 ppm Oct. 1-9, 1953; minimum, 25 ppm Apr. 1-10, 1950, Feb. 21-28, 1954.

Specific conductance: Maximum daily, 400 micromhos Jan. 24, 1959; minimum daily, 50 micromhos Mar. 19, 1945.

Water temperatures: Maximum, 93°F June 18, 1957; minimum, freezing point on many days during winter months.

Sediment concentrations (1949-60): Maximum daily, 1,720 ppm Nov. 26, 1950; minimum daily, 0 ppm Oct. 21, 1952.

Sediment loads (1949-60): Maximum daily, 1,087,000 tons Aug. 20, 1955; minimum daily, 0 tons Oct. 21, 1952.

REMARKS.--Chemical quality samples collected at raw water intake, Morrisville Filter Plant. Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Sediment samples collected at midstream from bridge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	↓	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
															Calcium, magnesium	Non-carbonate			
Oct. 1-10, 1959.....	6,170	9.0	0.00	17	5.7	7.9	2.0	49	30	7.2	0.2	3.5		104	66	26	172	6.8	2
Oct. 11-18.....	9,950	---	---	---	---	a 2.5	---	22	23	4.2	---	3.1		80	45	27	121	6.7	6
Oct. 19-24.....	4,710	---	---	---	---	7.4	---	44	29	5.8	---	2.7		98	60	24	160	6.9	3
Oct. 26-30.....	12,630	---	---	---	---	a 4.8	---	27	23	4.4	---	3.0		75	44	22	118	6.6	4
Nov. 1-10.....	12,450	---	---	---	---	a 5.5	---	28	23	4.1	---	2.5		75	43	20	114	6.8	5
Nov. 11-19.....	11,710	---	---	---	---	a 8.5	---	31	20	4.4	---	2.7		79	46	21	123	6.8	4
Dec. 1-10.....	20,740	6.0	.03	9.0	3.3	4.0	1.5	20	23	4.2	.2	3.6		70	36	20	100	6.6	3
Jan. 1-10, 1960.....	25,350	6.8	.00	9.8	3.8	4.0	1.0	26	19	3.8	.0	3.8		62	40	19	103	6.5	5
Feb. 1-10.....	10,060	4.4	.02	15	5.0	5.5	1.7	36	26	5.2	.1	4.1		95	58	29	146	7.3	2
Mar. 1-10.....	9,050	5.2	.10	13	5.7	5.5	1.4	38	25	5.0	.2	4.1		92	56	25	142	7.2	3
Apr. 1-10.....	68,030	6.8	.00	8.2	2.6	4.0	.8	19	18	2.8	.2	3.6		97	51	16	182	7.0	3
May 1-10.....	8,560	3.0	.00	15	4.5	5.0	1.0	43	26	4.6	---	3.2		93	56	21	137	7.5	3
June 1-7.....	10,780	6.2	.01	12	3.8	4.5	1.2	33	20	3.9	.2	3.1		73	46	19	118	6.7	4
July 1-10.....	7,720	5.6	.01	13	4.3	4.2	1.5	39	20	4.2	.3	2.2		73	50	18	124	7.5	3
Aug. 1-10.....	6,520	8.7	.01	16	5.7	6.0	.6	50	23	5.6	.1	3.7		102	64	23	152	6.9	3
Sept. 1-10.....	6,950	4.9	.03	18	5.8	5.5	1.3	51	28	5.4	.2	4.6		106	69	27	166	7.4	5

a Sodium, potassium calculated as sodium (Na).

## DELAWARE RIVER BASIN--Continued

1-4635. DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

Temperature (°F) of water, water year October 1959 to September 1960  
(Continuous gas actuated-thermograph)

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	76	75	73	74	76	78	78	77	75	72	68	64	62	61	61	61	60	58	59	58	55	59	63	61	59	58	56	54	53	52	65	
	Maximum	74	73	71	69	71	72	74	73	74	72	68	62	60	59	58	57	54	53	54	53	54	58	59	58	56	54	52	52	52	62	
November	54	53	51	51	53	—	—	—	—	—	—	48	47	47	51	49	49	47	44	43	42	43	43	46	44	44	47	46	44	—	47	
	Maximum	52	51	50	49	50	—	—	—	—	—	45	45	46	47	49	48	47	43	42	41	41	41	42	44	42	44	44	41	—	45	
December	41	41	40	41	42	43	43	42	41	40	39	43	43	42	40	40	40	41	41	39	38	37	35	34	35	36	37	38	39	38	40	
	Minimum	40	39	39	40	42	41	41	40	39	38	39	42	40	39	39	39	40	39	38	37	35	33	34	35	36	37	38	37	38	37	
January	37	36	40	38	36	37	38	37	36	36	35	36	36	35	35	35	35	36	37	38	37	35	37	36	37	38	39	40	40	39	37	
	Maximum	36	35	36	36	36	36	37	36	36	35	35	35	35	35	35	35	36	37	38	37	34	34	35	35	36	37	38	39	38	36	
February	39	40	38	39	39	41	41	40	41	43	47	44	37	35	34	35	37	38	38	37	37	38	39	39	38	39	38	39	40	40	39	
	Maximum	38	37	36	36	37	39	39	38	39	41	43	37	35	33	33	34	36	36	36	36	37	37	38	37	38	37	36	37	38	37	
March	39	38	34	34	36	36	37	37	38	38	39	40	42	41	40	42	43	42	43	42	42	44	42	41	45	48	50	51	41	41		
	Minimum	37	36	33	32	33	33	34	34	34	34	35	36	36	37	39	40	41	40	38	39	40	39	40	41	45	48	49	45	38	55	
April	45	43	44	46	46	44	43	44	45	47	49	51	53	55	57	57	57	58	58	59	62	63	66	69	67	66	65	63	—	55	52	
	Maximum	42	42	42	44	43	42	42	43	43	44	47	49	51	53	54	55	55	55	55	57	59	61	63	66	67	64	63	59	—	52	
May	60	61	63	65	67	68	67	67	66	64	62	63	62	64	66	67	67	68	68	69	65	63	64	66	68	66	68	69	65	65	63	
	Minimum	57	58	59	61	63	64	65	64	61	62	61	60	58	61	63	66	66	65	63	61	63	61	62	64	66	65	65	63	63	63	
June	70	71	73	75	76	76	75	74	76	75	73	73	73	73	73	73	74	75	74	75	74	75	77	73	74	76	75	77	—	74	71	
	Maximum	67	68	70	72	71	73	72	72	71	70	72	71	71	70	69	71	72	71	72	72	73	72	72	73	71	73	74	73	—	71	
July	76	76	77	78	76	78	80	80	80	85	85	85	80	80	80	81	83	84	83	84	86	86	86	83	83	83	80	79	81	76	86	
	Maximum	74	73	74	75	74	73	74	76	76	79	74	74	74	76	76	77	77	77	78	79	78	77	76	75	79	71	74	76	76		
August	79	82	83	82	80	81	80	82	83	83	81	79	78	80	79	80	78	80	78	75	77	79	78	79	80	82	84	85	82	80		
	Minimum	77	77	79	79	78	77	77	77	77	77	77	77	77	77	76	75	76	75	73	74	75	74	74	75	76	78	80	77	76		
September	78	79	77	76	77	78	78	79	81	81	77	72	65	63	64	65	64	65	64	63	64	64	64	64	65	66	66	66	66	66	70	
	Maximum	76	76	74	73	73	72	72	73	75	76	72	65	63	62	61	62	63	63	64	64	63	62	62	63	63	64	65	65	65	67	

## DELAWARE RIVER BASIN--Continued

1-4635. DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

Suspended sediment, water year October 1959 to September 1960  
(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..	4490	7	85	8050	5	109	32700	126	S 11500
2..	7200	34	661	8620	7	163	23600	42	2680
3..	6700	31	561	13400	18	651	19400	20	1050
4..	5900	21	335	12200	16	527	16700	16	721
5..	5620	19	288	10600	10	286	14800	14	559
6..	4420	12	143	9950	8	215	12900	8	279
7..	3720	8	80	12700	18	617	15900	32	1370
8..	4350	10	117	16600	31	1390	23400	98	A 6200
9..	6300	22	374	17600	30	1430	26500	92	A 6600
10..	13000	82	S 3350	14800	18	719	21500	28	1630
11..	20700	163	9110	13600	11	404	18100	13	635
12..	13500	98	3520	12100	C 5	136	18200	14	688
13..	9950	47	1260	10500	C 5	136	29200	138	10900
14..	8450	C 8	126	9560	C 5	136	40900	175	19300
15..	7450	C 8	126	9100	C 5	136	34900	90	8480
16..	7450	C 8	126	9100	C 5	136	26700	31	2230
17..	6550	C 8	126	10000	5	135	22200	15	899
18..	5780	C 8	126	10200	6	165	19600	10	529
19..	5220	C 8	126	10000	5	135	17800	8	384
20..	4820	C 8	126	9900	5	134	15700	7	297
21..	4860	C 8	126	8800	4	95	13700	5	185
22..	4560	C 8	126	8200	3	66	12300	7	232
23..	4210	C 8	126	7750	2	42	11500	8	248
24..	4600	C 8	126	7400	2	40	10200	9	248
25..	7700	15	312	9620	6	156	10100	10	273
26..	14300	75	2900	10900	7	206	9200	5	124
27..	15800	60	2560	11000	7	208	9560	5	129
28..	12800	26	899	10200	6	170	10900	5	147
29..	10800	15	437	44600	877	S 119000	19600	59	S 3280
30..	9440	10	255	54200	305	S 45800	21600	47	2740
31..	8500	7	161	--	--	--	22000	38	2260
Total	248940	--	28794	401250	--	173543	601360	--	86797
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..	17600	10	475	9380	6	152	11000	C 5	146
2..	14900	7	282	8600	5	116	10600	C 5	146
3..	19800	84	S 5860	8750	C 4	92	9560	C 4	95
4..	40300	245	S 27100	8200	C 4	92	8700	C 4	95
5..	47700	157	S 20700	7900	4	85	8000	C 4	95
6..	32400	84	7350	9620	29	753	8900	C 4	95
7..	25000	34	2300	12400	46	A 1500	9150	3	74
8..	21100	11	627	12100	20	653	8050	4	87
9..	18700	10	505	11600	10	313	8250	4	134
10..	16000	C 4	149	12000	11	356	8250	5	111
11..	13800	C 4	149	15100	21	S 896	8100	5	109
12..	12500	C 4	149	50300	197	S 29500	7550	7	143
13..	13700	C 4	149	60100	202	S 33700	7450	4	80
14..	13400	C 4	149	40800	88	S 10100	7120	4	77
15..	13800	C 4	149	26800	35	2530	6600	3	53
16..	14300	C 4	107	22300	15	903	6960	3	56
17..	12500	C 4	107	19600	11	582	7400	4	80
18..	11000	C 4	107	18600	17	854	7650	3	62
19..	11700	C 4	107	23500	32	2030	8250	3	67
20..	11500	C 4	107	21500	12	697	8650	4	93
21..	9900	C 4	107	18400	10	497	8300	3	67
22..	9500	C 4	107	15600	6	253	7700	2	42
23..	9100	C 4	107	14000	5	189	7600	4	82
24..	8750	C 4	107	13600	6	220	7650	4	83
25..	7400	C 4	107	12800	4	138	8000	4	86
26..	6840	C 4	107	14300	11	425	7400	2	40
27..	7550	C 4	107	14700	9	357	7160	3	58
28..	8800	C 4	107	13700	6	222	7080	4	76
29..	10700	C 7	204	12100	4	131	7750	5	105
30..	11000	C 7	204	--	--	--	11300	37	S 1230
31..	10600	C 7	204	--	--	--	26100	171	S 13200
Total	481340	--	68096	528350	--	88336	272230	--	16967

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

C Composite period.

## DELAWARE RIVER BASIN--Continued

1-4635. DELAWARE RIVER AT TRENTON, N. J. (MORRISVILLE, PA.)--Continued

Suspended sediment, water year October 1960 to September 1961--Continued

Suspended sediment, water year October 1964 to September 1965—Continued									
Day	Mean discharge (cfs)	APRIL		Mean discharge (cfs)	MAY		Mean discharge (cfs)	JUNE	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	72800	333	5 67800	10400	5	140	10800	8	233
2..	74500	385	77400	10100	5	136	11300	8	244
3..	41100	125	17200	9620	4	104	11200	7	212
4..	57700	175	19500	9380	3	76	10800	6	175
5..	107000	456	5 137000	8750	3	71	12400	36	1210
6..	112000	358	108000	8350	3	68	9800	21	556
7..	76000	128	26300	7800	3	63	9200	11	273
8..	53600	70	10100	7350	3	60	9500	10	257
9..	41700	42	4730	7000	4	76	8950	10	242
10..	43900	35	3200	7900	4	85	8000	7	151
11..	28800	30	2330	9850	6	160	6920	6	112
12..	25000	24	1620	10000	9	243	6220	6	101
13..	27100	18	1070	10700	7	202	5980	6	97
14..	20800	15	842	13500	15	547	6800	5	92
15..	19600	12	635	15400	21	873	8350	7	158
16..	18300	8	395	13100	13	460	12700	16	549
17..	17500	C 7	326	11600	9	282	14700	44	1750
18..	17200	C 7	326	11100	7	210	13100	34	1200
19..	17000	C 7	326	12000	9	292	14600	28	1100
20..	16300	7	308	11400	9	277	14600	23	907
21..	15200	10	410	10700	8	231	12100	13	425
22..	13400	12	434	10200	7	193	11300	14	427
23..	12200	8	264	13400	12	434	10200	13	358
24..	11400	8	246	17200	43	2000	9320	12	302
25..	9900	5	134	17800	41	1970	10400	8	225
26..	9680	5	131	16600	32	1430	18700	24	1210
27..	10300	6	167	14400	20	778	15100	48	1960
28..	11300	9	275	12400	11	368	11600	22	689
29..	11100	5	150	11200	8	242	10200	C 9	233
30..	11000	7	208	10200	6	165	8950	C 9	233
31..	—	—	—	10200	7	193	—	—	—
Total	998380	—	481827	349600	—	12429	323790	—	15681
Day	Mean discharge (cfs)	JULY		Mean discharge (cfs)	AUGUST		Mean discharge (cfs)	SEPTEMBER	
		Suspended sediment			Suspended sediment			Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	8450	10	228	9260	37	925	13900	155	5820
2..	9500	11	282	7080	C 15	258	10400	82	2300
3..	8800	10	238	5860	C 15	258	8500	48	1100
4..	8300	7	157	5500	C 15	258	7000	32	600
5..	8800	12	285	5780	C 15	258	5780	20	312
6..	8450	9	205	6020	C 15	258	5140	10	139
7..	7200	4	78	7450	C 15	258	5100	C 4	53
8..	6550	C 3	42	6880	C 15	258	4780	C 4	53
9..	5900	C 3	42	5780	14	218	4360	4	47
10..	5300	C 3	42	5620	14	212	4560	7	86
11..	4870	C 3	42	6400	C 13	226	5260	25	355
12..	4320	C 3	42	6700	C 13	226	22500	282	S 28500
13..	4470	C 3	42	6180	C 13	226	57000	461	S 71100
14..	5500	12	178	5460	10	147	59400	228	S 37700
15..	7000	8	151	4820	C 7	98	38100	70	7200
16..	9440	20	510	4600	C 7	98	25700	40	A 2800
17..	8600	10	232	6220	C 7	98	19400	30	A 1600
18..	6880	C 8	123	5820	C 7	98	15900	12	515
19..	5620	C 8	123	4820	C 7	98	15100	12	489
20..	5340	C 8	123	4920	C 7	98	22700	41	S 2640
21..	5020	C 8	123	20400	138	B 7600	47300	154	S 20800
22..	4670	C 4	43	16400	85	B 3800	44600	100	12000
23..	4180	C 4	43	12400	33	B 1100	29700	44	S 3570
24..	4070	C 4	43	10000	C 12	256	23200	17	1060
25..	3790	C 4	43	8500	C 12	256	18700	13	656
26..	3380	C 4	43	7080	C 12	256	15300	12	496
27..	3620	C 4	43	6060	C 12	256	13700	10	370
28..	4420	C 6	74	5500	10	148	13100	10	354
29..	4660	C 6	74	5100	8	110	12200	8	264
30..	6800	50	918	5900	35	B 700	11900	6	193
31..	8350	30	676	11900	148	B 4500	—	—	—
Total	197110	—	5288	230410	—	23556	580300	—	203172
Total discharge for year (cfs-days).....									5,208,060
Total load for year (tons).....									1,204,486

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

B Computed from estimated concentration graph.

C Composite period.

DELAWARE RIVER BASIN--Continued  
1-4646. DELAWARE RIVER AT BRISTOL, PA.-BURLINGTON, N. J. BRIDGE

LOCATION.--Three hundred feet upstream from the Bristol-Burlington Bridge.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.

Water temperatures: October 1954 to September 1960.

EXTREMES, 1954-60.--Water temperatures: Maximum, 80°F. July 26, 28, 29, Aug. 10, 12.

Minimum, 34°F. Oct. 1954 to Sept. 1955. Minimum, 84°F. July 1-6, Aug. 21, 22, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1267, Chemical characteristics of Delaware River water, Trenton, N.J., to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub> Calcium Non-carbonate	Specific conductance (micro-mhos at 25°C)	pH	Color	Biochemical oxygen demand	Dissolved oxygen
Feb. 3, 1960....	8,750	4.5	0.04	16	4.7	6.0	1.8	34	32	6.2	0.2	5.9	100	60 32	152	6.5	4	0.7	8.4
Mar. 15.....	7,600	4.8	.05	18	4.5	5.9	1.9	34	27	10	.3	5.4	99	59 31	156	6.8	30	1.9	11.8
Apr. 1.....	107,000	5.1	.22	18.6	2.0	4.3	1.6	36	23	5.2	.2	2.8	80	43 17	148	6.8	20	4.1	13.0
May 3.....	9,620	2.5	.02	13	5.0	4.8	1.6	38	24	5.2	.2	3.8	80	53 22	131	6.8	3	1.9	8.8
June 6.....	9,800	3.4	.04	11	4.3	5.0	1.3	32	21	4.8	.3	3.2	86	45 19	118	6.6	5	.7	7.0
July 5.....	8,800	4.5	.14	11	4.5	5.0	1.2	32	22	4.8	.1	4.0	87	46 20	124	7.0	4	2.7	7.2
Aug. 3.....	5,860	4.5	.29	14	4.7	7.7	--	38	26	7.0	.2	5.6	105	55 24	152	6.6	50	6.1	4.8
Sept. 6.....	5,140	6.3	.03	18	3.5	6.6	1.7	42	29	4.0	.3	5.4	101	60 25	163	6.7	14	3.2	5.6

a Samples taken approximately 3 feet from surface.





## DELAWARE RIVER BASIN--Continued

1-4670.3. DELAWARE RIVER AT TORRESDALE INTAKE, PHILADELPHIA, PA.

LOCATION.--In river opposite the intake building of the Torresdale Filter Plant.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.

Water temperatures: October 1956 to November 1957.

REMARKS.--Samples taken at center of stream approximately 3 feet from top. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N.J., to Marcus Hook, Pa.

Chemical analyses, in parts per million, February to September 1960

Date of collection	Mean discharge (cfs)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	pH	Biochemical oxygen demand	Dissolved oxygen
Feb. 3, 1960.....	8,750	6.0	157	7.1	0.4	8.4
Mar. 15.....	6,600	6.5	154	7.0	2.4	11.8
Apr. 5.....	107,000	2.0	85	7.0	3.1	11.4
May 3.....	9,620	3.0	139	6.9	1.7	8.2
June 6.....	9,800	4.0	129	7.1	1.9	6.6
July 5.....	8,800	4.0	113	6.8	4.0	7.0
Aug. 3.....	5,860	7.5	167	6.8	4.8	3.8
Sept. 6.....	5,140	5.0	161	6.8	2.0	5.2

1-4671. DELAWARE RIVER AT LEHIGH AVENUE, PHILADELPHIA, PA.

LOCATION.--Between river end of pier 11, of Port Richmond Terminal, Lehigh Avenue, Philadelphia, and west bank of Petty Island, N.J.

DRAINAGE AREA.--7,935 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.

REMARKS.--Samples taken at center of stream approximately 3 feet from top. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N.J., to Marcus Hook, Pa.

Chemical analyses, in parts per million, January to September 1960

Date of collection	Mean discharge (cfs)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	pH	Biochemical oxygen demand	Dissolved oxygen
Jan. 5, 1960.....	47,700	4.0	118	6.7	3.2	11.8
Feb. 3.....	8,750	7.0	167	6.9	.3	6.0
Mar. 15.....	6,600	7.0	162	7.3	1.6	10.8
Apr. 5.....	107,000	3.0	86	7.1	.7	10.0
May 3.....	9,620	5.0	153	6.8	1.4	6.6
June 6.....	9,800	5.0	136	6.7	3.4	4.8
July 5.....	8,800	5.5	135	6.8	3.9	1.6
Aug. 3.....	5,860	10	185	6.7	3.4	2.0
Sept. 6.....	5,140	6.5	164	6.9	4.0	3.6

DELAWARE RIVER BASIN--Continued  
1-4672. DELAWARE RIVER AT PHILADELPHIA, PA.--BENJAMIN FRANKLIN BRIDGE (PHILADELPHIA-CAMDEN BRIDGE)

LOCATION--Opposite pier 13 north, 100 feet south of Vine Street and Delaware Avenue, Philadelphia.

RECORDS AVAILABLE--Chemical analyses: August 1949 to September 1960.

REMARKS--Samples taken at center of stream approximately 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N.J. to Marcus Hook, Pa.

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color	Biochemical oxygen demand	Dissolved oxygen
														Calcium	Non-carbonate					
Jan. 5, 1960....	47,700	6.4	0.05	11	4.3	4.5	1.5	24	26	5.2	0.3	4.8	80	45	26	117	6.4	6	3.2	12.0
Feb. 3.....	8,750	6.4	.06	13	5.7	6.1	2.0	34	35	7.6	.2	6.8	110	61	33	167	6.3	5	1.4	7.2
Mar. 3.....	6,000	5.2	.06	13	4.3	5.1	1.3	28	31	5.1	.3	2.5	160	33	15	186	6.9	10	2.8	17.4
Apr. 5.....	107,000	5.2	.20	9.0	2.6	2.4	1.7	17	18	3.2	.2	2.5	160	33	15	186	6.9	10	2.8	17.4
May 3.....	9,620	2.8	.00	14	5.2	6.3	1.8	38	29	6.4	.2	5.2	90	57	26	153	6.8	3	4.1	8.0
June 6.....	9,800	4.1	.06	13	4.0	5.0	2.0	28	25	7.2	.3	5.8	102	49	26	143	6.6	5	3.6	4.6
July 5.....	8,800	4.5	.10	11	4.0	7.8	1.9	28	24	8.0	.2	5.8	98	44	21	141	6.8	3	6.6	3.8
Aug. 3.....	5,860	3.7	.12	16	5.2	11	3.0	39	31	11	.2	5.8	112	62	30	184	6.4	18	3.0	3.0
Sept. 6.....	5,140	4.4	.03	16	5.5	6.6	1.7	42	28	6.5	.2	5.8	106	63	28	165	6.8	15	4.0	3.6

a Samples taken approximately 3 feet from surface.

## DELAWARE RIVER BASIN--Continued

## 1-4673. DELAWARE RIVER AT WHARTON STREET, PHILADELPHIA, PA.

LOCATION.--Between pier 55 south, Wharton Street, Philadelphia, and Kaighn Point, Camden, N.J.

DRAINAGE AREA.--7,998 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.

REMARKS.--Samples collected at center of stream, approximately 3 feet from top.

Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N.J., to Marcus Hook, Pa.

Chemical analyses, in parts per million, December 1959 to September 1960

Date of collection	Mean discharge (cfs)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	pH	Biochemical oxygen demand	Dissolved oxygen
Dec. 15, 1959.....	34,900	6.0	136	6.5	--	--
Jan. 4, 1960.....	40,300	5.0	125	6.9	3.2	11.0
Feb. 2.....	8,600	9.0	180	6.7	1.1	7.4
Apr. 4.....	57,700	2.0	69	6.9	1.0	10.0
May 2.....	10,100	6.0	158	6.5	.9	2.8
June 7.....	9,200	7.5	168	6.6	3.1	1.8
July 6.....	8,450	6.5	137	6.8	2.3	2.0
Aug. 4.....	5,500	11	193	6.6	1.0	1.6
Sept. 7.....	5,100	9.0	176	6.8	3.5	2.0

## 1-4674. DELAWARE RIVER AT LEAGUE ISLAND, PHILADELPHIA, PA.

LOCATION.--Between pier 2, U.S. Naval Base, League Island, Philadelphia, and a point 100 feet off shore, adjacent to and downstream from ferry slip, National Park, N.J.

DRAINAGE AREA.--8,072 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.

REMARKS.--Samples taken at center of stream, approximately 3 feet from top. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N.J., to Marcus Hook, Pa.

Chemical analyses, in parts per million, December 1959 to September 1960

Date of collection	Mean discharge (cfs)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	pH	Biochemical oxygen demand	Dissolved oxygen
Dec. 15, 1959.....	34,900	6.0	132	6.6	--	--
Jan. 4, 1960.....	40,300	5.5	146	7.0	3.5	11.0
Feb. 2.....	8,600	10	193	6.5	1.7	6.8
Apr. 4.....	57,700	3.0	75	6.8	1.8	9.5
May 2.....	10,100	7.0	175	6.5	1.5	1.4
June 7.....	9,200	8.5	178	6.7	.0	1.4
July 6.....	8,450	9.0	179	6.7	1.0	1.2
Aug. 4.....	5,500	13	217	6.8	.9	1.6
Sept. 7.....	5,100	9.5	184	7.3	3.5	1.4

## DELAWARE RIVER BASIN--Continued

## 1-4705. SCHUYLKILL RIVER AT BERNE, PA.

LOCATION.--At gaging station at highway bridge, Berne, Berks County, 0.5 mile upstream from Mill Creek, and 6.5 miles downstream from Little Schuylkill River.

DRAINAGE AREA.--355 square miles.

RECORDS AVAILABLE.--Chemical analyses: December 1947 to February 1953, October 1956 to September 1960.

Water temperatures: February 1948 to September 1953, December 1956 to September 1960.

EXTREMES, 1948-50.--Water temperatures: Maximum, 85°F Aug. 29; minimum, freezing point Mar. 3-5.

Sediment concentrations: Maximum daily, 208 ppm Sept. 12; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 3,330 tons Sept. 12; minimum daily, 1 ton on many days.

EXTREMES, 1947-60.--Water temperatures (1948-53, 1956-60): Maximum, 90°F June 17, 1957, June 29, 1959; minimum, freezing point on several days during winter months.

Sediment concentrations: Maximum daily, 8,030 ppm Nov. 4, 1947; minimum daily, 0 ppm on many days during 1952.

Sediment loads: Maximum daily, 60,160 tons Nov. 12, 1947; minimum daily, 0 tons on many days during 1952.

REMARKS.--Records of hydrology, including discharge, in District Office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702. Flow affected by ice Mar. 5-6, 8-9.

## Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH or
																Calcium	Non-carbonate		
Oct. 2-24, 1959	--	13	5.2	0.04	3.0	51	37	13	3.0	0	331	6.0	0.1	2.1	460	279	279	630	4.2
Oct. 25-28, 1959	--	--	--	--	--	--	--	--	--	0	138	3.5	--	4.3	210	120	120	324	4.4
Dec. 1-14, 1959	--	--	--	--	--	--	--	--	--	0	113	3.0	--	4.1	192	106	106	293	4.4
Feb. 1-10, 1960	--	10	1.5	0.00	2.0	32	23	7.8	3.0	0	186	4.2	--	2.0	292	175	175	425	4.6
Mar. 7, 1960	509	11	--	0.01	2.2	31	21	9.0	1.2	0	171	4.0	1.1	1.7	264	164	164	399	4.4
Apr. 5, 1960	6,010	7.1	3	0.00	46	8.2	25	2.5	1.4	2	51	2.4	1.1	2.5	97	50	49	145	5.2
Apr. 2, 1960	394	10	2.1	0.00	2.6	27	16	8.9	3.3	0	232	3.5	1.1	2.0	331	196	196	449	4.2
June 6, 1960	758	8.1	1.3	0.00	1.0	23	16	5.0	3.0	0	138	3.5	1.1	1.6	216	124	124	320	4.5
July 6, 1960	285	11	5.2	0.07	3.6	42	29	9.5	1.5	0	263	5.0	1.3	1.6	390	224	224	533	4.4
Aug. 3, 1960	208	10	2.0	0.05	3.2	44	32	12	2.0	0	280	5.2	1.1	2.9	400	242	242	555	4.5

## DELAWARE RIVER BASIN--Continued

1-4705. SCHUYLKILL RIVER AT BERNE, PA.--Continued

Temperature (°F) of water, water year October 1939 to September 1960

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	69	74	76	74	75	74	76	72	72	73	64	62	57	61	62	56	59	57	59	56	53	55	60	60	56	53	52	50	49	51	63
November.....	53	50	48	50	54	55	49	49	47	45	47	47	46	52	50	47	47	40	40	42	42	44	43	43	40	40	40	40	39	42	40	45
December.....	43	43	44	44	43	45	47	50	49	41	41	44	41	42	39	39	43	43	42	40	38	37	35	35	36	37	40	42	41	40	40	40
January.....	38	38	41	40	38	37	39	40	38	39	39	38	37	38	39	39	37	37	36	34	34	35	35	35	36	38	39	40	40	42	40	38
February.....	40	40	45	48	40	42	40	38	41	43	48	41	39	33	35	37	41	41	38	39	38	40	41	38	38	39	40	30	39	--	39	40
March.....	38	36	32	--	--	36	35	36	38	38	38	30	40	40	42	41	38	44	43	38	38	40	40	44	40	39	45	46	49	48	48	40
April.....	50	47	45	49	48	46	47	48	47	47	48	50	54	54	60	62	62	60	57	58	61	66	68	60	73	69	66	61	66	62	--	57
May.....	58	60	59	67	67	70	57	65	59	54	77	54	54	54	56	64	53	62	66	64	62	60	58	58	64	63	58	54	61	60	64	62
June.....	66	66	70	71	73	74	72	67	67	69	73	71	69	67	64	72	77	71	74	72	69	71	73	72	77	79	79	79	74	78	--	72
July.....	72	73	78	77	74	76	75	71	79	80	77	83	76	74	75	79	80	81	82	82	75	82	70	70	83	79	75	83	78	74	79	78
August.....	81	83	82	78	75	77	78	81	82	77	80	74	75	74	74	74	77	74	75	74	82	70	78	75	80	71	82	81	85	84	78	78
September.....	83	82	80	74	78	73	78	74	75	78	68	69	62	60	63	66	63	63	63	62	64	63	61	64	61	64	60	63	63	63	--	67

## DELAWARE RIVER BASIN--Continued

## 1-4705. SCHUYLKILL RIVER AT BERNE, PA.--Continued

## Suspended sediment, water year October 1959 to September 1960

Day	OCTOBER				NOVEMBER				DECEMBER			
	Mean discharge (cfs)	Suspended sediment		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		Mean concentration (ppm)	Tons per day
1..	599	9	S 22	653	C 2	3	1730	17	79			
2..	490	3	4	540	C 2	3	1390	15	56			
3..	291	C 1	1	486	C 2	3	1170	12	38			
4..	269	C 1	1	449	C 2	3	994	10	27			
5..	248	C 1	1	442	C 2	3	872	8	19			
6..	222	C 1	1	442	C 2	3	829	8	18			
7..	213	C 1	1	525	C 2	2	2890	67	S 580			
8..	203	C 1	1	478	C 2	2	2560	25	173			
9..	526	C 3	4	435	C 2	2	1970	13	69			
10..	394	C 1	1	408	C 2	2	1610	11	48			
11..	331	C 1	1	394	C 2	2	1360	11	40			
12..	320	C 1	1	394	C 2	2	2010	20	S 139			
13..	269	C 1	1	381	C 2	2	5350	53	766			
14..	302	C 1	1	401	C 2	2	3340	21	189			
15..	291	C 1	1	478	C 2	2	2410	11	72			
16..	264	C 1	1	401	C 2	2	2040	10	55			
17..	253	C 1	1	415	C 2	2	1690	10	46			
18..	253	C 1	1	408	C 2	2	1420	8	31			
19..	238	C 1	1	381	C 2	2	1240	6	20			
20..	217	C 1	1	356	C 2	2	1060	5	14			
21..	213	C 1	1	356	C 2	2	936	6	15			
22..	213	C 1	1	369	C 2	2	872	8	19			
23..	350	9	9	356	C 2	2	748	6	12			
24..	1410	40	S 92	406	C 2	2	690	5	9			
25..	1820	10	49	616	5	8	662	6	11			
26..	1250	4	14	478	1	3	625	C 5	9			
27..	994	3	8	449	2	1	625	C 5	9			
28..	798	C 3	5	4330	162	S 2270	653	C 5	9			
29..	672	C 3	5	3490	45	424	1050	10	S 28			
30..	600	C 3	5	2260	18	110	904	5	12			
31..	566	C 3	5	--	--	--	818	5	11			
Total	15079	--	241	21977	--	2870	46518	--	2623			
Day	JANUARY				FEBRUARY				MARCH			
	Mean discharge (cfs)	Suspended sediment		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		Mean concentration (ppm)	Tons per day
1..	768	C 5	10	471	C 2	2	768	C 5	9			
2..	728	C 5	10	449	C 2	2	672	C 5	9			
3..	2130	34	S 224	415	C 2	2	644	C 5	9			
4..	2340	14	88	401	C 2	2	672	C 5	9			
5..	1830	10	49	401	C 2	2	640	C 5	9			
6..	1510	9	37	847	14	S 38	570	6	9			
7..	1270	8	27	839	8	18	509	5	7			
8..	1120	6	18	718	C 5	10	470	6	8			
9..	948	6	15	709	C 5	10	440	C 4	5			
10..	872	5	12	690	C 5	10	456	C 4	5			
11..	798	C 5	10	2220	34	S 242	415	C 4	5			
12..	709	C 5	10	2410	18	117	415	C 4	4			
13..	758	C 5	10	1900	11	56	408	C 4	4			
14..	709	C 5	10	1680	9	41	408	C 4	4			
15..	728	C 5	10	1350	9	33	388	C 4	4			
16..	768	C 5	10	1100	9	27	375	C 4	4			
17..	662	C 5	10	1040	9	25	401	5	5			
18..	653	C 4	6	1020	8	22	415	C 6	8			
19..	718	C 4	6	1970	27	S 144	486	C 6	8			
20..	634	C 4	6	1540	14	58	463	C 6	8			
21..	574	C 4	6	1250	8	27	478	C 6	8			
22..	532	C 4	6	1100	6	18	478	C 6	8			
23..	509	C 4	6	971	5	13	456	C 5	6			
24..	486	C 4	6	861	5	12	442	C 5	6			
25..	456	C 4	6	798	5	11	449	C 5	6			
26..	435	C 3	4	1040	10	28	415	C 5	6			
27..	428	C 3	4	1010	C 6	15	428	C 5	6			
28..	540	C 3	4	904	C 6	15	599	7	11			
29..	557	C 3	4	850	C 6	15	1200	13	42			
30..	525	C 3	4	--	--	--	2200	26	154			
31..	502	C 3	4	--	--	--	4480	107	1290			
Total	26197	--	632	30954	--	1015	21640	--	1676			

S Computed by subdividing day.  
C Composite period.

## DELAWARE RIVER BASIN--Continued

1-4705. SCHUYLKILL RIVER AT BERNE, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	3920	41	434	401	C 3	3	798	C 3	6
2..	2800	20	151	394	C 3	3	699	C 3	6
3..	2340	16	101	362	C 2	2	662	C 3	6
4..	4980	112	1540	350	C 2	2	699	22	42
5..	6010	74	1200	344	C 2	2	662	6	11
6..	4360	32	377	325	C 2	2	758	C 3	6
7..	3180	17	146	308	C 2	2	608	C 3	6
8..	2410	24	156	320	C 2	2	532	C 2	3
9..	1970	15	80	1650	26	S 143	478	C 2	2
10..	1630	8	35	1900	15	77	449	C 2	2
11..	1360	7	26	1550	C 6	24	422	C 2	2
12..	1200	5	16	1340	C 6	24	422	C 2	2
13..	1030	C 3	7	1520	C 6	24	478	C 2	2
14..	925	C 3	7	1280	C 6	20	486	9	18
15..	850	C 3	7	1160	C 6	20	709	36	69
16..	798	C 3	7	1050	C 6	20	509	18	25
17..	738	C 3	7	948	C 6	20	442	8	10
18..	709	C 3	7	1570	C 6	20	1120	34	5
19..	634	C 2	3	1240	C 6	20	798	6	13
20..	566	C 2	3	1140	C 4	13	662	3	5
21..	532	C 2	3	1170	C 4	13	566	C 2	2
22..	517	C 2	3	1140	C 4	13	509	C 2	2
23..	486	C 2	3	1390	C 4	13	486	C 2	2
24..	471	C 2	3	1310	C 4	13	494	C 2	2
25..	449	C 1	1	1240	C 4	13	471	C 2	2
26..	428	C 1	1	1100	C 4	10	388	C 2	2
27..	517	C 1	1	982	C 4	10	369	C 2	2
28..	463	C 1	1	872	C 4	10	344	C 2	2
29..	422	C 1	1	948	C 4	10	337	C 2	2
30..	394	C 1	1	850	C 4	10	362	C 2	2
31..	--	--	--	1040	C 4	10	--	--	--
Total	47089	--	4328	31194	--	568	16719	--	367
Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	359	C 1	1	264	C 1	1	308	C 1	1
2..	528	C 1	1	232	C 1	1	258	C 1	1
3..	356	C 1	1	208	C 1	1	227	C 1	1
4..	381	C 1	1	232	C 1	1	198	C 1	1
5..	320	C 1	1	269	C 1	1	189	C 1	1
6..	285	C 1	1	408	C 1	1	194	C 1	1
7..	264	C 1	1	274	C 1	1	184	C 1	1
8..	253	C 1	1	253	C 1	1	180	C 1	1
9..	238	C 1	1	238	C 1	1	175	C 1	1
10..	232	C 1	1	506	53	S 79	184	C 1	1
11..	232	C 1	1	381	C 1	1	199	C 1	1
12..	232	C 1	1	297	C 1	1	4060	206	S 3330
13..	234	C 1	1	274	C 1	1	3550	98	S 682
14..	532	7	S 64	258	C 1	1	1900	10	51
15..	502	2	3	264	C 1	1	1310	5	18
16..	344	C 1	1	382	12	A 12	1020	3	8
17..	285	C 1	1	264	C 1	1	839	C 2	4
18..	253	C 1	1	238	C 1	1	798	C 2	4
19..	243	C 1	1	227	C 1	1	702	6	S 19
20..	248	C 1	1	227	C 1	1	5810	79	S 1430
21..	227	C 1	1	217	C 1	1	3210	15	130
22..	208	C 1	1	286	C 1	1	2180	8	47
23..	208	C 1	1	264	C 1	1	1660	4	18
24..	194	C 1	1	222	C 1	1	1350	C 2	5
25..	180	C 1	1	198	C 1	1	1110	C 2	5
26..	184	C 1	1	189	C 1	1	960	C 2	5
27..	198	C 1	1	180	C 1	1	850	C 2	5
28..	217	C 1	1	175	C 1	1	768	C 2	5
29..	189	C 1	1	180	C 1	1	709	C 2	5
30..	316	10	S 10	198	C 1	1	758	C 2	5
31..	428	5	6	243	C 1	1	--	--	--
Total	8875	--	110	8048	--	120	36040	--	5787
Total discharge for year (cfs-days).....									310,330
Total load for year (tons).....									20,337

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

C Composite period.

## DELAWARE RIVER BASIN--Continued

## 1-4705. SCHUYLKILL RIVER AT BERNE, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
(Methods of analysis: B, bottom with sediment tube; C, chemically dissolved; 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 tem- per- ature (°F)	Sam- pling point	Discharge (cfs)	Sediment con- cen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis	
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Nov. 28, 1959.....	1430	46		5,880	223		15	25	48	67	84	93	94	98		100	--	BSWC
Dec. 7.....	1330	39		4,030	101		17	28	43	64	82	89	90	95		99	100	BSWC
Mar. 31, 1960.....	1400	49		4,720	104		8	20	38	54	70	81	83	91		97	100	BSWC
Apr. 4.....	1115	49		5,740	156		5	17	35	49	69	81	84	92		97	100	BSWC
Sept. 1.....	1053	61		5,420	86		11	23	33	50	64	79	84	94		99	100	BSWC
Sept. 20.....	1055	62		7,450	86		16	30	53	70	84	88	90	98		100	--	BSWC







## DELAWARE RIVER BASIN--Continued

1-4738. SCHUYLKILL RIVER AT MANAYUNK, PA.

LOCATION.--At Green Lane Avenue bridge, 5 miles upstream from gaging station at Fairmount Dam, Philadelphia County.

DRAINAGE AREA.--1,893 square miles (at Fairmount Dam).

RECORDS AVAILABLE.--Sediment records: November 1947 to September 1960.

EXTREMES, 1959-60.--Sediment concentrations: Maximum daily, 673 ppm Sept. 13; minimum daily, 5 ppm Dec. 27, Mar. 8-11.

Sediment loads: Maximum daily, 57,800 tons Sept. 12; minimum daily, 8 tons Aug. 28-30.

EXTREMES, 1947-60.--Sediment concentrations: Maximum daily, 4,910 ppm Dec. 30, 1948; minimum daily, 1 ppm on several days.

Sediment loads: Maximum daily, estimated 650,000 tons Aug. 19, 1955; minimum daily, 2 tons on several days during 1957.

REMARKS.--Records of discharge for water year October 1959 to September 1960 for Schuylkill River at Philadelphia given in WSP 1702.

Suspended sediment, water year October 1959 to September 1960

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..	1470	31	S 150	1410	12	46	4100	33	365
2..	1330	22	79	1730	16	75	3240	17	149
3..	1420	19	73	1410	14	53	2660	10	72
4..	818	15	33	1200	13	42	2310	8	50
5..	606	12	20	1080	13	38	2250	7	43
6..	574	10	15	1210	13	42	2150	8	46
7..	478	10	13	3410	34	S 333	5800	82	1280
8..	510	12	17	2980	32	257	7900	295	6290
9..	1990	66	S 408	2050	19	105	5200	115	1610
10..	1000	41	111	1680	15	68	4400	45	535
11..	1120	23	70	1450	13	51	3700	30	300
12..	744	20	40	1330	12	43	4800	24	311
13..	638	16	28	1200	12	39	13000	240	8420
14..	929	17	43	1290	16	56	11000	117	3470
15..	818	17	38	1240	14	47	9000	66	1600
16..	744	16	32	1290	14	49	7300	35	690
17..	638	16	28	1330	15	54	5700	28	431
18..	542	15	22	1410	14	53	4280	24	277
19..	510	14	19	1240	9	30	3740	23	232
20..	478	12	15	1040	6	17	3240	15	131
21..	446	11	13	1000	7	19	2710	8	59
22..	414	11	12	1040	11	31	2610	10	70
23..	446	12	14	966	10	26	2310	7	44
24..	1250	19	64	1160	12	38	1980	8	43
25..	2970	35	S 297	2040	18	S 104	1980	8	43
26..	3140	29	246	2590	13	91	1930	6	31
27..	2390	19	123	1860	8	40	1980	5	27
28..	1910	16	83	2010	14	S 76	2410	30	195
29..	1590	15	64	7350	142	S 3010	9280	405	S 10900
30..	1330	14	50	5720	68	1050	5780	108	1690
31..	1290	11	38	--	--	--	4220	26	296
Total	34533	--	2258	56716	--	5983	142960	--	39700

S Computed by subdividing day.

## DELAWARE RIVER BASIN--Continued

1-4738. SCHUYLKILL RIVER AT MANAYUNK, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	3300	15	134	2410	8	52	3460	8	75
2..	2820	10	76	2260	7	43	3030	8	65
3..	8340	194 S	6580	2070	8	45	2920	8	63
4..	10400	279 S	8960	1790	5	24	2460	8	53
5..	7280	96	1890	1790	5	24	2610	8	56
6..	5700	30	462	3140	22	187	2660	6	43
7..	4750	22	282	4040	28	305	2460	6	40
8..	4000	27	292	3130	18	152	2210	C 5	28
9..	3600	18	175	2660	9	65	2070	C 5	28
10..	3300	10	90	2560	7	48	2020	C 5	28
11..	3000	8	65	5410	85	1240	1930	C 5	28
12..	2610	8	56	6760	100	1830	1830	C 6	29
13..	2920	8	63	5520	60	894	1790	C 6	29
14..	1630	11	109	4700	36	457	1740	C 6	29
15..	4650	34 S	493	3980	22	236	1790	C 6	29
16..	5660	58 S	912	3580	13	126	1830	C 6	29
17..	3690	21	209	3350	12	109	2210	7	42
18..	3740	9	79	3740	18	182	2760	8	60
19..	4860	24	316	10000	340	9180	3920	13	138
20..	4740	18	211	8270	110	2460	3690	14	139
21..	3190	12	103	5780	44	687	3630	12	118
22..	2660	10	72	4760	22	283	3410	10	92
23..	2460	C 6	35	4280	14	162	3080	9	75
24..	2260	C 6	35	3800	13	133	2820	8	61
25..	2070	C 6	35	3460	12	112	3080	8	67
26..	1980	C 6	35	5520	40	596	2660	8	57
27..	1930	C 6	35	5130	28	388	2410	7	46
28..	3120	25	211	4100	13	144	2610	7	49
29..	3860	24	250	3690	9	90	3190	7	60
30..	3190	16	138	--	--	--	3980	15	161
31..	2710	11	80	--	--	--	7120	54	1040
Total	121540	--	22483	121680	--	20254	87380	--	2857

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..	8930	118	2850	1790	13	63	2610	17	120
2..	6950	80	1500	1980	18	96	2120	16	92
3..	5840	46	725	1650	13	58	1790	13	63
4..	13900	441 S	17800	1480	12	48	1700	13	60
5..	20100	605 S	34400	1350	12	44	3020	22	179
6..	17900	408 S	20400	1270	12	41	2920	34	268
7..	12300	157	5060	1230	11	37	2410	27	176
8..	8840	78	1860	1230	9	30	1830	20	99
9..	7280	57	1120	1840	14	70	1610	18	78
10..	6040	42	685	4020	24	260	1400	17	64
11..	5000	23	310	3580	18	174	1310	18	64
12..	4400	C 16	171	2980	12	97	1420	20	77
13..	3920	C 16	171	3130	14	118	1740	18	85
14..	3520	C 16	171	3240	15	131	1650	22	98
15..	3240	C 15	120	2760	11	82	1730	34	159
16..	3030	C 15	120	2560	10	69	4820	89	1160
17..	2820	C 15	120	2260	10	61	2610	51	359
18..	2760	C 15	120	2660	14	101	2410	35	228
19..	2870	C 14	92	3190	15	129	3030	33	270
20..	2460	C 14	92	2610	15	106	2260	27	165
21..	2260	C 14	92	2560	22	152	1830	22	109
22..	2120	C 14	92	3350	55	497	1610	21	91
23..	2020	C 12	61	4220	51	581	1480	23	92
24..	1880	C 12	61	4760	42	540	1440	20	78
25..	1790	C 12	61	3740	25	252	1480	21	84
26..	1790	C 12	61	3240	18	157	1570	19	81
27..	1930	14	73	2710	17	124	1160	20	63
28..	2070	13	73	2410	14	91	930	17	43
29..	1790	15	72	2410	17	111	864	19	44
30..	1570	12	51	2710	20	146	864	21	49
31..	--	--	--	2460	16	106	--	--	--
Total	161320	--	88584	81380	--	4572	57618	--	4598

S Computed by subdividing day.

C Composite period.

## DELAWARE RIVER BASIN--Continued

1-4738. SCHUYLKILL RIVER AT MANAYUNK, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	1220	25	82	1600	26	112	2840	73	560
2..	2040	32	176	1040	17	48	1650	57	254
3..	1880	23	117	798	12	26	1080	46	134
4..	1270	23	79	666	15	27	798	33	71
5..	1080	19	55	850	17	39	600	27	44
6..	968	28	73	3470	58	543	510	22	30
7..	831	20	45	1870	37	187	450	C 19	22
8..	765	19	39	1230	25	83	398	C 19	22
9..	699	15	28	968	C 21	56	425	C 21	29
10..	666	20	36	930	C 21	56	610	C 21	29
11..	699	C 13	24	1050	C 21	56	782	25	53
12..	699	C 13	24	1280	22	76	23300	450	S 49600
13..	666	C 13	24	968	C 19	46	27600	673	S 57800
14..	2770	101	619	864	C 19	46	10500	146	S 4570
15..	4360	71	S 869	864	C 19	46	5820	55	864
16..	2470	40	S 273	864	C 26	62	4160	25	281
17..	1440	23	89	968	C 26	62	3290	20	178
18..	1080	21	61	798	C 26	62	2930	15	119
19..	897	23	56	732	20	40	3340	24	216
20..	831	21	47	699	C 17	29	8890	271	S 7310
21..	1010	23	63	600	C 17	29	12400	410	S 14100
22..	798	19	41	600	C 17	29	7470	90	1820
23..	666	21	38	1010	C 20	44	5400	45	656
24..	600	16	26	831	C 20	44	4220	25	285
25..	540	15	22	600	C 20	44	3550	18	173
26..	480	15	19	480	C 16	18	3080	C 14	97
27..	860	74	S 226	372	C 16	18	2680	C 14	97
28..	948	30	S 84	346	C 10	8	2440	C 14	97
29..	897	21	51	320	C 10	8	2340	C 14	97
30..	2730	87	S 774	274	C 10	8	2340	C 14	97
31..	2230	54	S 324	2030	57	312	--	--	--
Total	38590	--	4484	29972	--	2264	145893	--	139705

Total discharge for year (cfs-days)..... 1,079,582

Total load for year (tons)..... 337,742

S Computed by subdividing day.

C Composite period.

## DELAWARE RIVER BASIN--Continued

## 1-4738. SCHUYLKILL RIVER AT MANAYUNK, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
 (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 tem- per- ature (° F)	Sam- pling point	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis	
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Nov. 30, 1959.....	0930	40		9,000	67		--	26	55	78	93	96	96	97		99	--	BSC
Dec. 8.....	1530	40		9,000	225		10	16	40	64	89	95	95	97		99	100	BSC
Dec. 13.....	1330	--		14,300	723		9	23	40	60	81	96	96	98		99	100	BSC
Feb. 19, 1960.....	1045	40		11,500	615		--	--	43	63	87	97	97	99		99	100	BSC
Feb. 19.....	1045	40		11,500	659		--	14	23	52	79	98	98	99		--	--	BSN
Apr. 4.....	0930	57		16,800	581		20	31	46	58	77	90	93	96		98	100	BSC
Apr. 5.....	1145	52		21,300	710		7	19	33	43	61	80	86	92		96	100	BSC
Sept. 13.....	0915	67		26,200	542		2	8	14	22	43	69	68	74		85	100	BSN
Sept. 13.....	0915	67		26,200	479		8	17	32	45	62	75	77	84		93	100	BSC
Sept. 21.....	1330	68		11,900	371		16	33	57	74	90	95	96	98		99	--	BSC

## DELAWARE RIVER BASIN--Continued

1-4745. SCHUYLKILL RIVER AT BELMONT FILTER PLANT, PHILADELPHIA, PA.

LOCATION.--At Belmont Filter Plant, Philadelphia, Philadelphia County, 1.6 miles upstream from gaging station, which is 40 feet upstream from Fairmont

DRAINAGE AREA --1,893 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1960.

Water temperatures: Maximum, 83°F Aug. 7; minimum, 34°F Mar. 6.

EXTREMES, 1959-60.--Specific conductance: Maximum daily, 511 micromhos Oct. 9; minimum daily, 141 micromhos Sept. 13.

Water temperatures: Maximum, 83°F Aug. 7; minimum, 34°F Mar. 6.

EXTREMES, 1945-60.--Dissolved solids (1945-56) (1958-60): Maximum, 362 ppm Oct. 21-20, 1953; minimum, 123 ppm Feb. 21-29, 1948, Jan. 1-10, 1949.

Hardness (1946-60): Maximum, 231 ppm Oct. 21-20, 1953; minimum, 181 micromhos per centimeter daily, 141 micromhos Sept. 13, 1960.

Water temperatures: Maximum, 83°F July 20, Aug. 7, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Samples collected at raw-water intake on west side of river at Belmont Filter Plant by city of Philadelphia. Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 for Schuylkill River at Philadelphia given in WSP 1702.

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium-carbonate	Non-carbonate			
Oct. 1-11, 1959.....	1,030	20	0.00	42	19	21	3.5	72	139	20	0.3	5.9	322	183	124	460	7.0	2
Oct. 12-28.....	1,120	--	--	--	--	17	--	64	121	18	--	7.7	275	172	120	434	7.2	2
Oct. 29-Nov. 15.....	1,000	11	0.00	24	8.5	13	2.5	48	98	12	--	7.0	219	136	97	341	6.9	2
Dec. 1-10.....	1,000	11	0.00	24	8.5	18	2.5	34	67	8.8	1.1	8.9	160	135	67	241	6.8	3
Jan. 1-10, 1960.....	5,350	12	0.00	24	10	9.2	2.4	40	64	9.0	0.2	9.7	174	101	68	255	7.2	3
Feb. 1-10.....	2,580	14	0.02	29	12	10	2.4	54	74	11	0.2	10	202	122	78	307	7.3	3
Mar. 1-10.....	2,590	11	0.03	26	12	9.2	2.1	48	68	10	0.2	9.7	178	115	75	278	7.4	3
Apr. 1-10.....	10,810	9.8	0.04	17	8.2	5.8	1.9	34	42	5.4	0.2	8.6	134	76	48	187	7.0	3
May 1-10.....	1,780	9.8	0.00	33	14	12	2.6	74	78	13	0.1	7.6	221	140	80	335	7.4	3
June 1-10.....	2,140	9.9	0.02	29	10	10	1.9	61	66	8.8	0.1	6.8	188	114	64	283	7.3	5
July 1-10.....	1,140	9.3	0.01	36	14	12	2.4	66	95	12	0.2	7.2	235	148	94	359	7.2	5
Aug. 1-10.....	1,340	11	0.01	33	14	14	2.6	77	74	14	0.2	7.3	216	140	77	333	7.4	5
Sept. 1-10.....	936	10	0.02	33	15	14	2.8	84	78	15	0.2	7.8	224	144	75	245	7.5	5

DELAWARE RIVER BASIN--Continued  
 1-4745. SCHUYLKILL RIVER AT BELMONT FILTER PLANT, PHILADELPHIA, PA.--Continued  
 Temperature (°F) of water, water year October 1959 to September 1960

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	
75	74	73	76	76	72	78	72	79	79	76	70	50	54	67	65	64	64	63	61	60	58	58	60	64	65	65	61	59	56	57	
58	58	53	49	55	57	58	57	55	53	50	50	50	54	48	54	54	51	50	47	45	46	47	48	50	48	49	51	47	--	51	
48	43	43	43	44	46	44	42	42	41	41	41	41	41	42	43	42	43	43	42	42	41	39	37	37	37	38	39	40	40	41	42
40	40	40	40	40	39	39	--	39	39	40	38	39	39	40	40	39	40	39	40	39	38	37	37	37	37	37	38	39	41	42	41
42	40	39	41	38	43	43	42	43	45	47	45	37	40	38	37	37	40	39	41	38	38	49	40	40	40	40	40	40	--	--	41
40	39	40	36	36	34	35	35	35	36	36	36	39	40	40	42	42	43	44	44	44	44	44	43	43	43	43	43	45	47	50	53
54	54	52	52	50	48	48	49	47	48	49	51	52	56	60	62	64	62	61	61	62	64	66	69	70	72	71	69	68	--	58	--
61	63	64	64	65	66	66	69	69	68	67	65	64	64	62	63	65	67	68	70	71	70	67	67	68	67	70	69	68	67	76	--
69	70	72	74	72	77	77	77	--	76	77	75	75	75	75	75	74	75	75	76	77	77	77	77	77	78	79	79	79	--	76	--
80	80	--	80	81	79	80	80	81	79	79	80	80	81	80	79	78	78	79	79	79	81	81	81	81	82	81	79	80	79	80	80
80	80	81	81	80	80	83	81	81	81	81	81	81	80	81	--	80	80	79	78	80	80	80	80	80	80	79	80	81	82	82	80
82	82	78	79	78	77	79	78	77	79	77	71	68	67	66	67	67	67	68	67	67	67	67	66	67	66	66	66	67	67	--	72



## DELAWARE RIVER BASIN--Continued

## 1-4762. DELAWARE RIVER AT EDDYSTONE, PA.--Continued

LOCATION.--Between river end of piers of Sun Shipbuilding and Drydock Co., Eddystone, Pa.  
DRAINAGE AREA.--10,190 square miles.

RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.

REMARKS.--Samples taken at center of stream, approximately 3 feet from surface and 3 feet from bottom. Additional data published in WSP 1262, Chemical Characteristics of Delaware River water, Trenton, N.J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, December 1959 to September 1960

Date of collection	Sampling station	Mean discharge (cfs)	Fluoride (F)	Specific conductance (micro-mhos at 25°C)	pH	Biochemical oxygen demand	Dissolved oxygen
Dec. 15, 1959...	Top	34,900	8.5	162	6.5	--	--
	Bottom	--	--	160	6.6	--	--
Jan. 4, 1960...	Top	40,300	8.0	193	6.7	3.5	10.2
	Bottom	--	--	197	6.8	--	--
Feb. 2.....	Top	8,600	12	227	6.5	4.0	7.0
	Bottom	--	--	228	6.5	--	--
Apr. 4.....	Top	57,700	4.0	117	7.0	3.6	10.6
	Bottom	--	--	112	6.9	--	--
May 2.....	Top	10,100	9.0	196	6.5	.5	2.0
	Bottom	--	--	196	6.4	--	--
June 7.....	Top	9,200	10	193	6.6	2.5	1.8
	Bottom	--	--	199	6.8	--	--
July 6.....	Top	8,450	12	217	6.8	5.0	3.0
	Bottom	--	--	215	6.6	--	--
Aug. 4.....	Top	5,500	17	246	6.4	3.4	3.2
	Bottom	--	--	254	6.6	--	--
Sept. 7.....	Top	5,100	13	224	6.6	3.5	3.0
	Bottom	--	--	220	6.5	--	--

## QUALITY OF SURFACE WATERS, 1960

 DELAWARE RIVER BASIN--Continued  
 1-4772. DELAWARE RIVER AT MARCUS HOOK, PA.

LOCATION.--Between river end of piers of Sun Oil Co., Marcus Hook, and a point 2,000 feet offshore from New Jersey bank of river.  
 RECORDS AVAILABLE.--Chemical analyses: August 1949 to September 1960.  
 REMARKS.--Samples collected at center of river, approximately 3 feet from surface and 3 feet from bottom. Additional data published in WSP 1262, Chemical characteristics of Delaware River water, Trenton, N.J. to Marcus Hook, Pa.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		pH	Color	Biochemical oxygen demand	Dissolved oxygen
														Calcium	Non-carbonate				
Dec. 15, 1959... Top..... Bottom.....	34,900	8.2	0.00	16	5.2	9.3	2.3	14	--	9.5	0.4	7.5	--	61	50	187	5.4	--	--
Jan. 4, 1960... Top..... Bottom.....	40,300	--	--	16	7.7	9.3	2.3	28	--	8.5	--	--	--	--	--	196	6.8	3.4	9.6
Feb. 2..... Top..... Bottom.....	8,600	--	--	--	--	--	--	--	45	9.4	.4	8.4	128	71	48	195	6.9	--	--
Apr. 4..... Top..... Bottom.....	57,700	8.2	.00	18	6.6	14	2.8	26	50	13	.4	10	140	72	51	225	6.5	4.3	6.8
May 2..... Top..... Bottom.....	10,100	--	--	--	3.0	3.7	3.7	24	--	5.0	--	--	--	--	--	112	7.0	2.2	9.0
June 7..... Top..... Bottom.....	9,200	5.2	.00	16	6.0	9.8	2.9	32	41	11	.3	7.2	115	65	39	194	6.5	1.7	3.4
July 6..... Top..... Bottom.....	8,450	--	--	18	5.7	11	3.2	22	55	12	.5	8.5	152	69	51	217	6.2	2.8	2.6
Aug. 4..... Top..... Bottom.....	5,500	4.1	.00	20	6.6	17	2.5	28	--	22	--	--	--	--	--	278	6.6	3.5	2.1
Sept. 7..... Top..... Bottom.....	5,100	--	.11	21	6.6	22	--	20	70	22	.4	7.6	182	80	63	300	6.6	3.1	3.0
Bottom.....	--	--	--	--	--	--	--	--	--	19	--	--	--	--	--	260	6.5	3.5	2.2
Bottom.....	--	.9	.02	21	7.5	17	3.2	37	55	19	.4	7.2	156	84	53	261	6.3	--	--

DELAWARE RIVER BASIN--Continued  
1-4800, RED CLAY CREEK AT WOODDALE, DEL.

LOCATION.--Temperature recorder at gaging station on right bank 12 feet upstream from bridge on State Highway 48, 0.3 mile south of Wooddale, New Castle County, and 2.3 miles north of Marshallton.  
DRAINAGE AREA, 47.0 square miles.  
PERMANENT FLOW, 100 cfs.  
WATER TEMPERATURES: April 1953 to September 1960.  
Maximum, 81°F; minimum, 30°F; maximum, freezing point Dec. 24.  
EXTREMES, 1953-60.--Water temperatures: Maximum, 87°F July 17, Aug. 2, 6, 1955; minimum, freezing point on several days during winter months.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Month	Temperature (°F) of water, water year October 1959 to September 1960																															Average
	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	
October	75	74	71	72	75	76	74	75	74	74	73	71	63	61	58	57	59	59	57	56	56	55	52	45	46	40	57	56	52	52	56	64
Maximum	74	70	69	68	70	71	73	71	71	72	71	63	59	56	54	55	57	53	51	54	52	55	62	60	56	50	56	52	50	49	52	61
Minimum	58	--	--	--	56	60	57	48	47	46	46	48	49	45	55	50	46	41	40	42	45	44	50	49	44	45	48	47	40	--	48	--
November	58	--	--	--	56	56	48	47	44	43	43	46	44	48	50	49	46	40	38	40	42	42	44	41	40	41	40	45	40	37	--	45
Maximum	39	40	41	41	41	43	44	38	38	38	39	45	46	43	39	41	44	44	44	41	38	36	36	34	36	39	41	44	45	43	42	41
Minimum	37	38	39	39	39	41	38	37	37	37	37	39	43	39	37	39	41	44	41	38	36	35	32	34	36	39	41	43	42	40	38	40
December	40	37	45	44	41	40	41	42	41	39	39	39	40	41	43	43	40	41	42	41	39	37	38	38	36	38	42	43	44	44	43	41
Maximum	37	35	37	41	40	39	40	40	38	37	39	37	38	39	41	40	39	39	41	39	36	36	37	35	34	35	37	42	43	42	40	38
January	41	41	40	39	41	45	45	41	43	47	50	49	43	38	35	38	42	40	39	38	39	41	41	40	41	40	41	40	41	--	41	--
Maximum	40	40	36	36	38	41	41	38	39	43	47	42	38	33	33	34	37	39	37	36	36	37	38	38	39	39	40	--	--	38	--	38
Minimum	40	38	38	35	35	37	36	37	38	40	39	39	39	40	42	41	40	44	44	42	42	42	46	45	42	46	45	56	55	56	42	42
February	48	36	43	53	54	53	54	53	54	53	54	55	56	57	56	57	58	58	56	54	52	49	46	40	39	38	43	50	52	53	36	40
March	58	56	53	56	56	49	51	52	52	51	52	57	59	62	62	65	63	58	60	63	68	70	69	70	71	68	64	64	63	--	60	
Maximum	53	52	48	48	49	46	46	40	49	46	45	50	41	43	57	57	58	58	53	52	53	59	61	62	63	65	64	60	56	59	--	54
Minimum	61	61	62	63	65	66	64	66	64	60	63	62	62	61	63	68	67	68	68	67	65	62	64	65	64	67	66	63	67	67	65	
May	58	57	54	55	57	50	60	56	56	56	57	59	57	58	56	61	63	61	61	54	52	59	60	61	61	62	63	60	60	61	59	
June	70	71	73	72	73	72	70	69	69	68	70	70	68	69	69	72	74	73	72	72	72	72	71	74	74	74	74	75	74	75	--	72
Maximum	64	64	68	70	67	67	66	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	68	
Minimum	74	72	76	75	74	71	71	71	72	72	72	72	72	72	72	73	74	75	74	77	76	75	77	79	77	75	74	75	74	74	75	74
July	72	65	70	72	70	67	58	66	68	68	69	67	72	70	68	67	70	72	71	72	71	72	72	72	71	72	68	70	70	74	70	74
Maximum	75	78	70	78	77	77	76	77	77	78	77	78	77	76	76	76	75	75	73	73	72	77	77	77	74	72	74	76	78	81	79	76
Minimum	71	74	76	76	75	74	74	76	74	75	76	75	72	71	72	71	71	69	72	75	73	72	75	74	70	68	69	73	76	74	73	74
August	77	77	73	70	71	72	72	73	77	73	72	67	66	65	65	64	66	66	67	67	66	66	64	64	62	63	64	64	67	--	68	
September	74	73	63	66	69	68	68	68	71	71	67	65	65	62	63	65	65	65	65	66	66	65	63	62	61	60	63	64	64	--	66	
Maximum	77	77	73	70	71	72	72	73	77	73	72	67	66	65	65	64	66	66	67	67	66	66	64	64	62	63	64	64	67	--	68	
Minimum	74	73	63	66	69	68	68	68	71	71	67	65	65	62	63	65	65	65	65	66	66	65	63	62	61	60	63	64	64	--	66	

DELAWARE RIVER BASIN--Continued  
1-4815. BRANDYWINE CREEK AT WILMINGTON, DEL.

LOCATION.--At Henry Clay Bridge in Wilmington, New Castle County, 0.2 mile upstream from gaging station and 4.4 miles upstream from mouth. DRAINAGE AREA.--314 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950, October 1952 to July 1953, October 1956 to September 1960. Sediment concentrations: December 1946 to September 1960.

Water temperatures: December 1946 to September 1960. Sediment concentrations: Maximum, 80°F Aug. 31; minimum, freezing point on several days during winter months.

EXTREMES, 1959-60.--Water temperatures: Maximum, 80°F Aug. 31; minimum, freezing point on several days during winter months. Sediment concentrations: Maximum daily, 912 ppm Sept. 12; minimum daily, 3 ppm Jan. 26-27.

EXTREMES, 1946-60.--Water temperatures (1956-60): Maximum, 86°F June 17, 1957; minimum, freezing point on many days during winter months. Sediment concentrations: Maximum daily, 1,550 ppm Feb. 28, 1958; minimum daily, 1 ppm on many days.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1702. Flow affected by ice Dec. 22-24, Jan. 22-26, Feb. 14-17.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (micro-mhos at 25°C)	Specific conductance (micro-mhos at 25°C)	pH or Col.
																Calcium	Non-carbonate			
Oct. 7, 1959..	116	12		0.02	0.01	18	6.3	11	3.0	52	27	8.5	0.2	3.9	123	71	20		191	6.7
Nov. 12, 1959..	215	14		0.06	0.01	18	5.6	8.7	3.0	58	27	11.4	0.1	7.3	115	61	28		175	6.4
Dec. 10, 1959..	493	14		0.00	0.00	15	5.7	10	3.0	40	29	11.4	0.1	7.3	115	61	28		175	6.4
Jan. 27, 1960.	450	15		0.00	0.00	13	6.7	7.0	2.0	44	22	8.0	0.2	9.7	112	60	24		168	7.5
Mar. 7, 1960..	460	14		0.01	0.02	13	5.5	6.3	2.2	38	22	8.0	0.1	9.3	114	55	24		152	6.8
Apr. 4, 1960..	3,340	9.8		0.04	0.00	9.0	6.2	3.5	2.5	34	19	5.2	0.2	6.1	90	48	20		123	6.5
May 2, 1960..	570	11		0.02	0.00	11	7.2	6.5	1.8	44	21	8.0	0.1	7.6	112	57	21		153	6.9
June 6, 1960..	518	14		0.09	0.01	13	5.7	7.5	2.0	46	20	7.6	0.3	6.7	102	56	19		153	7.2
July 7, 1960..	220	13		0.04	0.00	16	5.2	8.5	2.0	56	19	7.6	0.3	6.8	105	62	16		164	7.2
Aug. 4, 1960..	220	13		0.03	0.00	14	7.2	8.5	2.5	62	22	7.4	0.2	5.8	120	65	14		177	7.2
Aug. 10, 1960..	256	12		0.02	0.00	16	6.2	10	3.0	58	28	11	0.3	4.5	120	66	18		137	7.0
Sept. 2, 1960..	256	12		0.02	0.00	16	6.2	10	3.0	58	28	11	0.3	4.5	120	66	18		188	7.0

a Sodium, potassium calculated as sodium (Na).

## DELAWARE RIVER BASIN--Continued

## 1-4815. BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

(Once-daily measurement at 6:00 a.m.)

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 .....	73	70	69	68	70	71	73	71	74	72	71	68	60	58	54	52	53	53	56	50	52	52	53	52	58	55	55	50	46	49	49	60
November .....	53	52	--	48	56	57	53	46	42	42	45	40	52	47	50	41	46	36	36	37	39	38	32	47	42	47	49	45	42	--	46	
December .....	33	--	49	38	41	--	35	36	37	39	37	44	39	37	36	35	43	43	38	36	36	32	33	33	38	40	43	43	37	41	38	
January .....	35	37	42	40	39	38	38	39	36	35	37	35	37	37	40	37	37	38	39	37	34	33	33	33	34	36	40	43	40	37	37	
February .....	39	39	33	33	37	43	44	40	38	43	46	45	39	34	34	32	--	40	38	36	35	38	39	37	--	39	38	36	38	--	38	
March .....	35	35	--	33	36	33	32	33	32	--	35	33	34	35	32	38	38	42	40	38	39	33	34	39	37	38	42	51	54	56	30	
April .....	55	53	50	50	53	45	46	46	48	47	50	51	54	59	49	59	64	54	52	56	69	63	61	69	66	66	60	56	58	--	56	
May .....	57	53	55	53	50	60	62	64	60	55	56	58	52	52	60	52	51	55	62	44	65	65	60	60	56	62	72	75	62	60	63	60
June .....	64	65	70	72	70	70	68	68	65	64	63	64	67	68	68	65	70	73	67	70	68	70	70	--	72	69	71	73	72	--	69	
July .....	75	73	73	75	74	72	75	69	70	74	73	70	75	78	69	67	72	74	75	73	74	73	75	76	75	75	75	72	74	71	72	73
August .....	--	76	78	77	77	76	76	77	75	77	78	76	75	72	76	73	72	73	70	74	77	75	75	75	72	68	70	74	76	79	80	75
September .....	77	77	--	72	74	72	70	70	73	74	73	68	62	60	60	66	66	67	68	63	65	62	63	62	64	60	64	66	66	--	67	

## DELAWARE RIVER BASIN--Continued

1-4815. BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

Suspended sediment, water year October 1959 to September 1960

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..	240	18	12	256	17	12	268	8	6
2..	226	17	10	280	9	7	230	C 6	4
3..	145	12	5	215	13	8	244	C 6	4
4..	125	12	4	190	C 9	4	238	C 6	4
5..	125	9	3	175	C 9	4	226	C 6	4
6..	116	13	4	175	C 9	4	244	C 6	4
7..	116	11	3	595	43	72	1380	127	S 527
8..	125	16	5	442	21	25	901	117	285
9..	592	107	S 208	294	5	4	586	28	46
10..	274	48	36	250	7	5	493	13	17
11..	200	20	11	232	7	4	442	10	12
12..	157	12	5	215	C 11	6	1310	351	S 2570
13..	132	14	5	185	C 11	6	4860	770	S 12300
14..	250	25	17	185	C 11	6	1050	65	184
15..	268	18	13	195	C 11	6	714	20	39
16..	200	12	6	200	C 11	6	620	10	17
17..	170	C 10	4	210	C 11	6	561	11	17
18..	157	C 10	4	232	C 5	3	527	11	16
19..	145	C 10	4	205	C 5	3	527	9	13
20..	136	C 10	4	190	C 5	3	450	C 5	6
21..	136	C 10	4	185	C 5	3	425	C 5	6
22..	132	C 10	4	185	C 5	3	395	C 5	6
23..	149	C 10	4	180	C 5	3	360	C 5	6
24..	349	35	S 38	259	16	S 15	350	25	24
25..	544	55	S 84	468	35	S 45	395	C 8	9
26..	294	25	20	322	11	10	395	C 8	9
27..	238	15	10	256	10	7	434	C 8	9
28..	232	C 12	6	364	18	S 25	493	C 28	S 54
29..	195	C 12	6	629	46	78	1510	C 206	S 915
30..	180	C 12	6	329	14	12	884	C 52	124
31..	190	C 12	6	--	--	--	620	C 45	75
Total	6438	--	551	8098	--	395	22152	C --	17310
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..	518	15	21	484	C 5	6	688	C 7	11
2..	468	22	28	468	C 5	6	629	C 7	11
3..	1720	212	S 1250	425	C 5	6	580	C 7	11
4..	1190	163	S 560	425	C 5	6	540	C 7	11
5..	774	55	115	418	C 5	6	500	C 7	11
6..	646	22	38	858	48	S 126	480	C 5	6
7..	595	15	24	706	27	51	460	C 5	6
8..	578	C 9	12	510	10	14	450	C 5	6
9..	527	C 9	12	484	7	9	450	C 5	6
10..	493	C 9	12	476	15	19	470	C 5	6
11..	493	C 9	12	1190	170	S 612	450	C 5	6
12..	459	C 9	12	816	77	S 184	450	C 5	6
13..	629	20	34	586	18	28	450	C 5	6
14..	765	15	31	520	C 7	9	460	C 5	6
15..	978	48	S 157	490	C 7	9	480	C 5	6
16..	944	52	133	480	C 7	9	520	9	13
17..	638	11	19	520	C 7	9	672	14	25
18..	604	10	16	825	45	S 258	790	20	43
19..	842	15	34	2530	433	S 3280	876	26	S 61
20..	672	9	16	1170	50	S 170	740	11	22
21..	544	5	7	876	18	43	697	C 7	12
22..	480	5	6	782	C 12	24	646	C 7	12
23..	460	C 4	5	756	C 12	24	595	C 7	12
24..	450	C 4	5	706	C 12	24	570	C 7	12
25..	430	7	8	688	C 12	24	586	9	14
26..	420	3	3	1730	144	S 672	527	8	11
27..	450	3	4	1110	60	180	518	6	8
28..	740	17	34	808	15	33	527	10	14
29..	656	20	35	756	9	18	544	20	29
30..	561	14	21	--	--	--	527	19	27
31..	510	11	15	--	--	--	833	56	S 136
Total	20232	--	2679	22593	--	5859	17705	--	566

S Computed by subdividing day.  
C Composite period.

## DELAWARE RIVER BASIN--Continued

## 1-4815. BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

## Suspended sediment, water year October to September 1960--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..	765	56	116	578	27	42	629	58	99
2..	578	24	37	570	19	29	561	40	61
3..	774	89	S 386	484	20	26	527	35	50
4..	3340	632	S 5840	468	24	30	518	32	45
5..	2980	283	S 2320	468	20	25	561	39	59
6..	1670	130	586	450	22	27	518	34	48
7..	1100	48	143	442	26	31	468	38	48
8..	1050	30	85	450	41	50	442	32	38
9..	1000	24	65	1290	238	S 909	434	27	32
10..	876	15	35	969	100	262	418	26	29
11..	799	15	32	604	25	41	425	30	34
12..	774	22	46	570	13	20	459	55	68
13..	714	35	67	782	40	84	697	72	S 137
14..	697	23	43	595	29	47	561	56	85
15..	672	27	49	518	20	28	782	69	A 150
16..	646	25	44	502	15	20	1110	178	A 600
17..	620	28	47	493	22	29	578	86	134
18..	663	29	52	765	48	99	850	176	A 440
19..	714	25	48	612	36	59	502	155	210
20..	612	24	40	536	33	48	425	63	72
21..	578	20	31	1970	536	S 2980	372	45	45
22..	561	18	27	1800	554	S 2800	358	46	44
23..	536	26	38	2050	300	1660	365	38	37
24..	518	23	32	1420	172	659	380	35	36
25..	518	16	22	960	156	S 406	402	34	37
26..	493	23	31	1490	381	S 1570	322	26	23
27..	595	28	45	884	168	401	294	22	17
28..	536	22	32	740	55	110	287	20	15
29..	493	18	24	986	86	S 235	287	20	15
30..	476	22	28	799	60	129	280	23	17
31..	--	--	--	740	50	100	--	--	--
Total	26348	--	10391	25985	--	12956	14812	--	2725
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..	322	28	24	301	30	24	425	46	S 55
2..	388	36	38	244	28	18	256	17	12
3..	308	29	24	220	27	16	190	C 17	8
4..	268	23	17	220	27	16	175	C 17	8
5..	244	23	15	232	28	18	166	C 17	8
6..	226	23	14	262	29	21	166	C 18	8
7..	220	22	13	226	26	16	157	C 18	8
8..	210	24	14	556	111	S 225	153	C 18	8
9..	205	23	13	250	53	36	168	C 18	8
10..	205	16	9	256	36	25	442	71	S 91
11..	308	30	S 26	250	27	18	406	82	S 100
12..	256	27	19	226	C 25	15	6950	912	S 20500
13..	220	17	10	226	C 25	15	7500	521	S 16800
14..	712	123	S 422	232	C 25	15	1100	48	143
15..	944	153	S 445	262	29	S 21	620	22	37
16..	410	53	59	350	33	31	484	C 15	18
17..	280	42	32	256	23	16	418	C 15	18
18..	244	30	20	226	15	9	434	C 15	18
19..	232	29	18	226	20	12	580	28	44
20..	220	27	16	280	30	23	1100	54	160
21..	240	24	16	250	17	11	520	42	59
22..	195	12	14	244	15	10	400	24	26
23..	190	24	12	442	32	S 39	340	C 12	10
24..	190	21	11	268	23	17	320	C 12	10
25..	166	25	11	210	16	9	300	C 12	10
26..	166	71	32	195	C 15	8	290	C 12	10
27..	368	200	S 309	185	C 15	8	290	C 13	11
28..	418	238	S 320	190	C 15	8	290	C 13	11
29..	226	27	16	170	C 12	6	310	C 13	11
30..	1000	313	S 1110	170	C 12	6	360	C 13	11
31..	561	55	83	194	14	S 8	--	--	--
Total	10142	--	3180	7819	--	720	25310	--	38221
Total discharge for year (cfs-days).....									207,734
Total load for year (tons).....									95,553

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

C Composite period.

## DELAWARE RIVER BASIN--Continued

## 1-4815. BRANDYWINE CREEK AT WILMINGTON, DEL.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960

(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 tem- per- ature (° F)	Sam- pling point	Discharge (cfs)	Sediment concentra- tion (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Dec. 13, 1959.....	0905	39		7,150	773		4	8	25	43	58	82	91	97				BSWC
Feb. 16, 1960.....	1000	38		4,010	571		10	19	35	51	76	94	97	99			100	BSWC
Apr. 4.....	1145	52		4,490	725		6	20	33	49	69	90	97	99			99	BSWC
May 22.....	0600	65		2,640	561		15	35	49	64	82	94	96	99			100	BSWC
Sept. 12.....	2115	65		11,600	876		5	14	26	39	56	79	88	95			98	BSWC
Sept. 12.....	2115	65		11,600	917		3	6	12	22	37	67	89	96			99	BSN



## DELAWARE RIVER BASIN--Continued

## 1-4821. DELAWARE RIVER AT DELAWARE MEMORIAL BRIDGE, WILMINGTON, DEL.

LOCATION.--Center of the navigation channel at the center of the Delaware Memorial Bridge, 1.9 miles downstream from the mouth of Christina River.

DRAINAGE AREA.--11,030 square miles.

RECORDS AVAILABLE.--Chemical analyses: July 1955 to September 1960.

Water temperatures: October 1956 to September 1960.

EXTREMES, 1956-60.--Water temperatures: Maximum, 83°F June 26, 28, 1957; minimum, freezing point on many days during winter months.

REMARKS.--Maximum and minimum daily records of specific conductance taken from continuous conductivity recorder available in district office, Philadelphia, Pa.

Records of discharge for water year 1959 to September 1960 at Trenton, N.J., given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	Coliform
															Calcium	Non-carbonate		
Oct. 9, 1959.	6,300	1.1	--	0.03	0.70	47	46	400	20	8	197	650	0.8	4.4	1,420	307	2,420	6.0
Dec. 15, 1959.	34,900	12	--	0.09	.18	14	4.5	9.9	2.5	10	44	10	.3	7.2	1,107	54	1,174	6.0
Mar. 15, 1960.	6,600	7.9	0.2	.14	.34	29	36	257	15	8	142	440	.4	5.4	996	221	1,730	5.8
Apr. 13, 1960.	22,100	5.6	--	.19	.14	11	3.8	8.2	1.9	12	32	10	.3	5.6	90	43	1,390	6.4
July 8, 1960.	6,550	4.7	--	.06	.40	24	17	110	6.0	16	130	170	.8	6.5	495	130	1,830	6.1
Sept. 9, 1960.	4,380	.9	--	.02	.19	31	41	317	15	26	195	510	.6	3.3	1,170	246	1,970	6.6



DELAWARE RIVER BASIN--Continued  
1-4827. DELAWARE RIVER AT REEDY POINT, DEL.

LOCATION.--One hundred yards west of buoy "IN", 0.8 mile southeast of Chesapeake and Delaware Canal, and 2.1 miles south of Pea Patch Island.  
DRAINAGE AREA.--11,220 square miles.

RECORDS AVAILABLE.--Chemical analyses: July 1955 to July 1960.

Water temperatures: October 1956 to September 1959.

REMARKS.--Composited samples selected from representative daily samples collected one hour prior to high-water slack, 3 feet below surface. Single-dated samples collected at river of channel 3 feet from bottom during course of service trips. Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 at Trenton, N.J., given in WSP 1702.

Chemical analyses, in parts per million, October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesian			
Oct. 2-5, 1959.....	--	8.1	0.02	98	232	2,000	75	35	556	3,400	0.8	--	6,800	1,200	1,170	10,600	6.9	3
Nov. 7-10.....	--	4.5	.01	63	130	1,060	46	23	326	1,820	.8	1.3	3,580	692	673	6,040	7.1	3
Dec. 15.....	34.90	4.9	.08	17	90	960	16.0	46	83	1,820	.4	7.7	9,388	1,682	1,774	15,260	7.1	5
Jan. 1, 1960.....	6,600	5.1	.08	11	34.6	2,790	10.6	16	53	4,920	.2	4.0	1,680	1,680	94	15,260	7.1	5
Apr. 13.....	22,100	5.1	.16	13	115	87	5.6	30	272	1,172	.8	2.3	2,990	465	539	4,900	6.3	7
July 8.....	6,550	4.9	.02	46	109	860	32	30	272	1,640	.8	2.3	2,990	465	539	4,900	6.3	6

## SUSQUEHANNA RIVER BASIN

## 1-5090. TIOGHENI RIVER AT CORTLAND, N. Y.

LOCATION.--At bridge on U. S. Highway 11 at Cortland, Cortland County, about 0.3 mile downstream from gaging station, and 0.7 mile upstream from outlet of Cortland Reservoir. Drainage area, 16 square miles (including 16 square miles of the river basin).  
 DRAINAGE AREA.--296 square miles (including 16 square miles, the flow from which may be diverted into DeBuyer Reservoir in Oswego River basin).  
 RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1957.

Water temperatures: October 1956 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 67°F July 13, 23; minimum, 33°F on several days during February and March.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Temperature (°F) of water, water year October 1959 to September 1960

(Once-daily measurement at approximately 9 a.m.)

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.....	64	58	55	59	58	62	62	62	62	59	58	54	52	51	51	50	50	49	47	47	48	50	50	49	47	45	44	45	---	53	---	
November.....	---	---	---	---	42	45	47	42	40	44	43	44	43	44	40	42	42	38	---	---	---	---	---	---	---	---	---	---	---	---	---	---
December.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
January.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
February.....	40	39	39	38	40	40	41	36	39	40	36	33	33	33	33	35	35	37	37	37	37	36	35	34	33	36	35	35	35	---	36	
March.....	34	33	35	34	34	33	33	33	33	33	33	33	33	33	34	35	37	37	36	37	36	34	34	33	33	35	36	40	41	---	35	
April.....	41	40	40	41	40	40	42	42	42	41	44	44	44	44	48	48	46	44	45	46	46	47	46	52	53	55	48	52	52	---	45	
May.....	52	48	52	55	58	58	58	55	60	55	56	56	53	56	55	55	57	59	58	57	58	55	54	54	55	55	57	56	55	55	---	56
June.....	56	56	59	59	60	60	60	56	57	56	54	57	57	58	57	58	60	---	58	58	56	56	56	56	58	58	60	60	62	---	58	
July.....	62	62	60	56	57	56	58	60	62	65	60	62	67	63	58	59	58	58	63	64	62	63	67	66	62	61	62	---	63	65	---	61
August.....	60	63	63	63	63	63	62	63	61	62	62	60	60	62	61	58	60	62	62	60	60	64	62	58	58	57	63	60	63	65	62	61
September.....	65	63	65	60	61	58	57	57	60	64	61	58	58	56	54	56	58	56	57	56	56	56	56	58	58	58	58	58	58	58	---	58

## SUSQUEHANNA RIVER BASIN--Continued

1-5135. SUSQUEHANNA RIVER AT JOHNSON CITY, N. Y.

LOCATION.--At the New York State Gas and Electric Corp., Goudey Station, Johnson City, N. Y.

DRAINAGE AREA.--3,916 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 77°F Aug. 30; minimum, freezing point on several days during summer months in 1957 and 1959; minimum, freezing

and February.

EXTREMES, 1955-60.--Water temperatures: Maximum, 81°F on several days during summer months in 1957 and 1959; minimum, freezing

Point on many days during winter months.

REMARKS.--Temperatures are measured by plant employees from water diverted to plant through underground tubes.

Temperature (°F) of water, water year October 1959 to September 1960  
(Once-daily measurement at approximately 8 a.m.)

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	.....	72	68	66	67	69	69	65	66	65	61	60	61	56	55	54	54	55	53	48	47	49	49	51	55	55	54	52	48	45	44	47	57	
November	.....	48	47	44	44	45	51	50	44	41	40	41	42	42	46	46	43	43	37	36	35	36	37	38	40	42	41	39	40	37	35	--	42	
December	.....	35	36	37	37	38	39	41	37	35	34	34	35	37	35	33	35	37	37	35	32	32	32	33	33	33	33	34	35	34	34	34	35	35
January	.....	34	33	35	34	33	32	32	33	33	33	33	33	33	33	34	34	34	34	34	34	33	33	33	33	33	34	34	36	36	35	34	34	
February	.....	35	35	33	33	33	33	35	33	34	35	37	33	33	33	33	32	32	32	32	32	32	32	32	32	32	32	33	33	33	34	--	33	
March	.....	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34	35	37	36	36	36	34	36	34	36	34	33	34	41	40	34	
April	.....	34	36	39	38	39	38	37	38	40	40	38	41	42	42	46	47	49	53	48	48	50	53	56	58	61	61	58	54	52	55	--	45	
May	.....	53	50	52	56	58	60	61	63	61	57	55	54	53	53	51	53	56	58	60	62	60	62	59	57	54	55	58	64	63	61	61	57	
June	.....	60	60	63	67	69	68	66	65	64	65	68	69	65	69	61	61	64	66	63	63	62	63	62	65	65	66	67	71	72	69	--	65	
July	.....	71	68	71	68	66	65	65	66	69	71	72	74	76	74	68	70	72	74	74	75	72	72	75	73	73	73	73	73	74	76	72	71	
August	.....	72	73	76	73	76	71	72	74	74	75	73	71	72	72	72	72	74	71	72	74	73	70	69	68	71	72	75	77	75	73	--	73	
September	.....	74	75	71	70	69	68	70	72	74	73	70	65	58	58	57	62	64	63	64	62	63	63	63	65	66	64	64	66	65	63	--	66	

## SUSQUEHANNA RIVER BASIN--Continued

## 1-5165. COREY CREEK NEAR MAINESBURG, PA.

LOCATION --At gaging station, 1.1 miles downstream from Mainesburg, Tioga County, 3.5 miles east of Mansfield, and 4.5 miles upstream from mouth.  
DRAINAGE AREA --12.2 square miles.

RECORDS AVAILABLE --Water temperatures: October 1958 to September 1960.

Sediment records: May 1954 to September 1960.

EXTREMES, 1959-60. --Water temperatures: Maximum, 82°F July 12, 29; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 419 ppm Mar. 29; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 454 tons Mar. 29; minimum daily, less than 0.05 ton on many days.

EXTRIMES, 1959-60. --Air temperatures: Maximum, 86°F July 12, 29; minimum, 0°F on several days during August 1959; minimum, freezing point on many days during winter months.

Sediment concentrations: Maximum daily, 1,440 ppm Mar. 29; minimum daily, 0 ppm on many days.

Sediment loads: Maximum daily, 1,940 tons Oct. 14, 1955; minimum daily, 0 tons on many days.

REMARKS --Records of specific conductance and pH of periodic sediment samples available in subdistrict office at Harrisburg, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702. Flow affected by ice Dec. 20-28, Jan. 1-2, 5-12, Jan. 16 to Feb. 6, Feb. 12-18, Mar. 2-23.

Chemical analyses, in parts per million. April, July 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Alum- inum (Al)	Iron (Fe)	Man- gan- ese (Mn)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acid- ity as H <sup>+</sup>	Specific conduct- ance (micro- mhos at 25°C)	Col- or pH
																Cal- cium, magne- sium	Non- carbon- ate			
Apr. 11, 1960.	14	4.9		0.02	0.00	11	3.3	2.5	1.3	28	17	2.6	0.1	1.8	76	41	18	92	7.3	5
July 14, .....	8.9	10		.01	.01	21	3.6	4.0	3.0	61	15	7.3	.1	1.1	114	68	18	155	7.1	7



## QUALITY OF SURFACE WATERS, 1960

## SUSQUEHANNA RIVER BASIN--Continued

1-5165. COREY CREEK NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1959 to September 1960  
(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..	3.0	12	S 0.1	5.1	C 3	0.1	18	C 3	0.1
2..	1.4	C 3		5.3	C 3	.1	16	C 3	.1
3..	.8	C 3	T	5.1	C 3	.1	14	C 3	.1
4..	.6	C 3	T	7.2	C 3	.1	12	C 3	.1
5..	.6	C 3	T	8.8	C 3	.1	10	C 3	.1
6..	1.3	10	T	69	169	S 45	10	C 3	.1
7..	6.4	13	S .2	35	6	.6	79	127	S 36
8..	5.2	6	S .2	20	C 1	T	36	30	2.9
9..	14	9	S .5	16	C 1	T	26	18	1.3
10..	4.4	C 2	T	12	C 1	T	20	10	.5
11..	2.6	C 2	T	10	C 1	T	17	12	.6
12..	1.8	C 2	T	8.5	C 1	T	113	55	S 20
13..	1.6	C 2	T	7.4	C 1	T	75	15	3.0
14..	2.9	C 2	T	9.0	C 1	T	50	10	1.4
15..	1.8	C 2	T	16	C 1	T	29	C 2	.1
16..	1.6	C 2	T	9.4	C 1	T	18	C 2	.1
17..	1.5	C 2	T	8.3	C 3	.1	12	C 2	.1
18..	1.4	C 2	T	7.7	C 3	.1	9.7	C 2	.1
19..	1.3	C 2	T	7.0	C 3	.1	8.8	C 2	.1
20..	1.3	C 2	T	6.7	C 3	.1	8.4	C 2	.1
21..	1.3	C 2	T	6.4	C 3	.1	8.8	C 2	.1
22..	1.3	C 2	T	6.1	C 3	.1	8.2	C 2	.1
23..	2.0	C 2	T	5.8	C 3	.1	7.9	C 2	.1
24..	83	29	S 7.8	7.7	C 3	.1	7.6	C 2	.1
25..	41	7	.8	9.1	C 3	.1	7.5	C 2	.1
26..	13	C 3	.1	8.5	C 3	.1	7.5	C 2	.1
27..	9.1	C 3	.1	11	7	S .3	25	C 2	.1
28..	6.8	C 3	.1	220	168	S 150	28	C 2	.1
29..	6.1	C 3	.1	52	14	2.0	73	C 2	.1
30..	5.3	C 3	.1	26	2	.1	30	C 2	.1
31..	4.7	C 3	.1	--	--	--	18	C 2	.1
Total	229.1	--	10.4	626.1	--	199.8	833.4	--	68.0
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..	15	C 3	0.1	4.0	2	T	5.6	C 1	T
2..	12	C 3	.1	2.7	C 1	T	5.0	C 1	T
3..	32	C 3	.1	2.4	C 1	T	4.5	C 1	T
4..	18	C 3	.1	2.2	C 1	T	6.2	C 1	T
5..	14	C 3	.1	2.4	6	T	5.4	C 1	T
6..	11	C 3	.1	85	49	S 18	4.9	C 1	T
7..	10	C 3	.1	20	4	.2	4.6	C 1	T
8..	9	C 3	.1	12	4	.1	4.4	C 1	T
9..	8	C 3	.1	8.8	2	T	4.2	C 1	T
10..	7.5	C 3	.1	29	30	S 3.7	4.0	C 1	T
11..	5.8	C 3	.1	98	125	S 42	3.7	C 1	T
12..	5.1	3	T	30	4	.3	3.3	C 1	T
13..	8.8	--	.1	16	C 2	.1	3.0	C 1	T
14..	8.0	--	.1	11	C 2	.1	2.7	C 1	T
15..	10	C 1	T	16	C 2	.1	2.4	C 1	T
16..	8.8	C 1	T	14	C 2	.1	2.5	C 1	T
17..	7.0	C 1	T	12	C 2	.1	2.7	C 1	T
18..	5.8	C 1	T	13	C 2	.1	2.8	C 1	T
19..	4.9	C 1	T	15	C 2	.1	2.9	C 1	T
20..	4.3	C 1	T	14	C 2	.1	2.7	C 1	T
21..	3.6	C 1	T	12	C 2	.1	2.9	C 1	T
22..	3.2	C 1	T	11	C 2	.1	2.8	C 1	T
23..	3.0	C 1	T	9.2	C 2	.1	2.7	C 1	T
24..	2.7	C 1	T	8.4	C 2	.1	2.9	C 1	T
25..	2.5	C 1	T	7.2	C 2	.1	2.3	C 1	T
26..	2.6	C 1	T	9.6	C 2	.1	2.0	C 1	T
27..	2.3	C 1	T	7.4	C 2	.1	5.5	C 1	T
28..	3.1	C 1	T	6.8	C 2	.1	8.4	--	20
29..	4.7	C 1	T	6.3	C 2	.1	281	419	S 454
30..	5.6	C 1	T	--	--	--	348	385	S 407
31..	6.4	2	T	--	--	--	333	398	A 400
Total	244.8	--	1.5	485.4	--	66.1	1144.2	--	1281.2

S Computed by subdividing day.  
T Less than 0.05 ton.A Computed from partly estimated-concentration graph.  
C Composite period.



## SUSQUEHANNA RIVER BASIN--Continued

1-5165. COREY CREEK NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--Continued

Day	APRIL				MAY				JUNE			
	Suspended sediment				Suspended sediment				Suspended sediment			
	Mean discharge (cfs)	Mean concentration (ppm)		Tons per day	Mean discharge (cfs)	Mean concentration (ppm)		Tons per day	Mean discharge (cfs)	Mean concentration (ppm)		Tons per day
1..	159	100	A	50	10	C	1	T	12	C	1	T
2..	84	12	A	2.7	8.6	C	1	T	8.3	C	1	T
3..	74	6	A	1.9	7.1	C	1	T	8.3	C	3	T
4..	105	10	A	3.6	5.8	C	1	T	6.1	C	3	T
5..	94	3		.8	5.2	4		0.1	5.4	C	3	T
6..	49	C	2		4.6	1			4.8	C	3	T
7..	35	C	2	.1	4.1	1		T	3.9	C	3	T
8..	29	C	2	.1	13		S	5.9	3.4	C	3	T
9..	24	C	2	.1	214	152	S	96	3.1	C	3	T
10..	17	C	2	.1	82	10		2.2	2.8	C	3	T
11..	14	C	2	.1	99	20	S	6.4	2.6	C	3	T
12..	12	C	2	.1	81	22	S	6.9	22	48	S	6.0
13..	10	C	2	.1	68	4		.7	9.0	4		.1
14..	9.3	C	2	.1	91	15	S	4.7	42	45	S	9.2
15..	8.6	C	2	.1	56	1		.2	56	31	S	5.9
16..	10	C	2	T	46	3		.4	27	7		.5
17..	9.0	C	2	T	30	1		.1	52	42	S	12
18..	9.0	C	2	T	36	3		.3	33	C	6	.4
19..	7.4	C	2	T	23	C	3	.2	20	C	6	.4
20..	6.6	C	2	T	18	C	3	.2	14	5		.2
21..	6.1	C	2	T	49	--		6.0	10	C	2	T
22..	5.6	C	1	T	56	--		8.0	8.0	C	2	T
23..	5.4	C	1	T	85	--		20	8.3	5	S	.2
24..	5.0	C	1	T	52	--		6.8	93	172	S	110
25..	4.6	C	1	T	36	C	2	.1	30	14		1.1
26..	4.3	C	1	T	27	C	2	.1	17	C	4	.1
27..	64	40	S	11	18	C	2	.1	11	C	4	.1
28..	25	3		.2	14	C	2	.1	7.7	C	4	.1
29..	14	C	1	T	12	C	2	.1	6.8	C	4	.1
30..	12	C	1	T	12	C	2	.1	5.8	C	4	.1
31..	--	--		--	16	C	2	.1	--	--		--
Total	911.9	--		71.6	1279.4	--		165.9	533.3	--		147.0
Day	JULY				AUGUST				SEPTEMBER			
	Suspended sediment				Suspended sediment				Suspended sediment			
	Mean discharge (cfs)	Mean concentration (ppm)		Tons per day	Mean discharge (cfs)	Mean concentration (ppm)		Tons per day	Mean discharge (cfs)	Mean concentration (ppm)		Tons per day
1..	6.1	C	2	T	1.2	C	2	T	1.0	C	1	T
2..	5.8	C	2	T	1.0	C	2	T	1.1	C	1	T
3..	5.0	C	2	T	4.1	12	A	0.4	.8	C	1	T
4..	5.2	C	2	T	5.2	16	S	.3	.8	C	1	T
5..	3.7	C	2	T	69	24	S	11	.8	C	1	T
6..	3.3	C	2	T	8.2	3		.1	.7	C	1	T
7..	3.0	C	2	T	5.6	2			.7	C	1	T
8..	2.5	C	2	T	55	11	A	4.2	.7	C	1	T
9..	2.2	C	2	T	10	C	1	T	.6	C	1	T
10..	2.1	C	2	T	7.7	C	1	T	1.0	1		T
11..	2.1	C	2	T	5.8	C	1	T	5.5	11	S	0.2
12..	1.8	C	2	T	4.4	C	1	T	31	22	S	2.8
13..	2.8	9		0.1	3.9	C	1	T	9.4	3		.1
14..	8.9	13		.3	3.4	C	1	T	5.2	C	1	T
15..	5.6	6		.1	3.3	C	1	T	3.6	C	1	T
16..	3.3	C	2	T	3.1	C	1	T	3.1	C	1	T
17..	2.5	C	2	T	2.5	C	1	T	2.6	C	1	T
18..	2.1	C	2	T	2.4	C	1	T	3.0	C	1	T
19..	3.2	8		.1	2.0	C	1	T	2.8	C	1	T
20..	4.0	18		.2	2.2	C	1	T	3.7	4		T
21..	2.4	10		.1	2.1	C	1	T	3.3	C	1	T
22..	1.8	C	2	T	1.7	C	1	T	2.8	C	1	T
23..	1.6	C	2	T	1.6	C	1	T	2.5	C	1	T
24..	1.5	C	2	T	1.5	C	1	T	2.1	C	1	T
25..	1.2	C	2	T	1.3	C	1	T	2.0	C	1	T
26..	1.1	C	2	T	1.2	C	1	T	2.0	C	1	T
27..	1.3	C	2	T	1.1	C	1	T	1.8	C	1	T
28..	1.2	C	2	T	1.0	C	1	T	1.8	C	1	T
29..	1.0	C	2	T	1.0	C	1	T	2.0	C	1	T
30..	1.2	C	2	T	1.0	C	1	T	2.5	C	1	T
31..	1.7	C	2	T	1.0	C	1	T	--	--		--
Total	91.2	--		1.2	214.5	--		16.2	100.9	--		3.3
Total discharge for year (cfs-days).....											6,684.2	
Total load for year (tons).....											2,032.2	

S Computed by subdividing day.

T Less than 0.05 ton.

A Computed from partly estimated-concentration graph.

C Composite period.

## SUSQUEHANNA RIVER BASIN--Continued

1-5165. COREY CREEK NEAR MAINESBURG, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
(Methods of analysis: P, bottom water; C, chemically dispersed; F, filtration; A, in native water;  
P, Pipet; S, sieve; V, visual accumulation tube; W<sub>i</sub> in distilled water)

Date of collection	Time (24 hour)	Water tem- per- ature (°F)	Sam- pling point	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Dec. 12, 1959.....	1330	36		156	87		18	35	53	67	80	88	94	98				BSWC
Mar. 29, 1960.....	1750	38		540	765		7	10	24	41	55	72	86	95		100		BSWC
Apr. 27.....	0700	51		156	50		18	34	57	70	84	93	96	98				BSWC
May 9.....	0600	51		372	76		12	30	46	63	82	94	97	99				BSWC
June 24.....	1045	60		474	461		--	22	50	65	82	92	96	98		100		BSWC
June 24.....	1145	60		474	535		11	19	30	54	76	90	96	99				BSN
Aug. 5.....	0400	64		458	68		27	47	61	77	91	96	96	99		100		BSWC



## QUALITY OF SURFACE WATERS, 1960

## SUSQUEHANNA RIVER BASIN--Continued

1-5170. ELK RUN NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1959 to September 1960

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..	2.3	4	T	6.2	C 2	T	20	C 2	0.1
2..	1.0	1	T	6.6	C 2	T	18	C 2	.1
3..	.4	C 1	T	4.8	C 2	T	16	C 2	.1
4..	.3	C 1	T	8.2	C 2	T	14	C 2	.1
5..	.3	C 1	T	11	C 2	T	13	C 2	.1
6..	.4	3	T	94	33 S	13.0	14	4 S	.3
7..	7.9	10	0.2	43	8 S	1.0	81	69 S	22
8..	7.8	6 S	.3	23	4	.2	33	7	.6
9..	24	14	.9	16	2	.1	24	C 2	.1
10..	6.5	3	.1	11	C 2	T	19	C 2	.1
11..	4.1	C 2	T	7.9	C 2	T	17	C 2	.1
12..	2.7	C 2	T	6.2	C 2	T	127	78 S	35
13..	2.3	C 2	T	5.5	C 2	T	85	19 S	5.2
14..	4.1	3	T	8.4	4	.1	37	5	.5
15..	2.7	C 1	T	15	5	.2	28	5	.4
16..	2.0	C 1	T	7.5	C 1	T	24	C 2	.1
17..	1.8	C 1	T	6.5	C 1	T	20	C 2	.1
18..	1.8	C 1	T	5.5	C 1	T	18	C 2	.1
19..	1.6	C 1	T	5.1	C 1	T	15	C 2	.1
20..	1.3	C 1	T	5.1	C 1	T	14	C 2	.1
21..	1.0	C 1	T	4.8	C 1	T	13	C 2	.1
22..	1.0	C 1	T	4.1	C 1	T	12	C 2	.1
23..	2.0	2	T	3.5	C 1	T	12	C 2	.1
24..	66	118 S	32	3.5	C 1	T	11	C 2	.1
25..	30	9	.7	3.8	C 1	T	11	C 2	.1
26..	16	4	.2	2.5	C 1	T	11	C 2	.1
27..	12	C 1	T	5.5	5	.1	25	20 S	2.1
28..	7.9	C 1	T	258	136 S	148	50	39 S	11
29..	6.2	C 1	T	57	14	2.2	62	25 S	5.9
30..	5.1	C 1	T	28	C 1	.5	33	4	.4
31..	4.8	C 1	T	--	--	--	21	2	.1
Total	229.3	--	34.6	667.2	--	165.9	898	--	85.4
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..	16	C 1	T	3.2	C 2	T	4.6	C 1	T
2..	14	C 1	T	2.4	C 2	T	4.0	C 1	T
3..	39	24 S	3.7	2.0	C 2	T	3.7	C 1	T
4..	16	C 1	T	1.9	C 2	T	5.2	C 1	T
5..	15	C 1	T	2.0	C 2	T	4.6	C 1	T
6..	13	C 1	T	90	96 S	31	4.1	C 1	T
7..	11	C 1	T	11	7 S	.3	3.8	C 1	T
8..	10	C 1	T	6.6	C 3	T	3.6	C 1	T
9..	9.0	C 1	T	5.4	C 3	T	3.5	C 1	T
10..	8.8	C 1	T	28	58 S	6.9	3.4	C 1	T
11..	7.0	C 1	T	107	275 S	137	3.2	C 2	T
12..	5.6	C 1	T	23	8	.5	2.8	C 2	T
13..	8.8	C 1	T	14	C 1	T	2.5	C 2	T
14..	7.5	C 1	T	9.0	C 1	T	2.2	C 2	T
15..	13	5 S	.3	14	C 1	T	2.0	C 2	T
16..	11	4	.1	12	C 1	T	2.1	C 2	T
17..	6.0	C 1	T	10	C 1	T	2.2	C 2	T
18..	4.3	C 1	T	11	C 1	T	2.3	C 2	T
19..	3.9	C 1	T	13	C 1	T	2.4	C 2	T
20..	3.5	C 1	T	12	C 1	T	2.3	C 2	T
21..	3.0	C 1	T	10	C 1	T	2.4	C 1	T
22..	2.8	C 1	T	9.0	C 1	T	2.4	C 1	T
23..	2.5	C 1	T	8.0	C 1	T	2.2	C 1	T
24..	2.4	C 1	T	7.0	C 1	T	2.1	C 1	T
25..	2.1	C 1	T	6.2	C 1	T	1.9	C 1	T
26..	2.2	C 1	T	8.0	C 1	T	1.7	C 1	T
27..	2.0	C 1	T	6.6	C 1	T	5.0	10 S	0.4
28..	2.6	C 1	T	6.0	C 1	T	120	174 S	145
29..	3.9	C 1	T	5.2	C 1	T	291	402 S	409
30..	4.7	C 1	T	--	--	--	360	442 S	452
31..	5.2	C 1	T	--	--	--	512	393 S	35
Total	255.8	--	4.7	443.5	--	176.4	1165.2	--	1041.7

S Computed by subdividing day.

T Less than 0.05 ton.

C Composite period.

## SUSQUEHANNA RIVER BASIN--Continued

1-5170. ELK RUN NEAR MAINESBURG, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--Continued

Day	APRIL			MAY			JUNE		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	159	110	47	12	C 2	T	16	C 4	0.1
2..	79	40	8.5	9.2	C 2	T	11	C 4	.1
3..	67	19	3.5	7.9	C 2	T	11	C 8	.2
4..	92	28	S 7.6	6.2	C 2	T	7.9	C 8	.2
5..	83	21	S 5.4	5.1	C 2	T	7.0	C 2	T
6..	42	11	1.2	4.4	C 2	T	5.5	C 2	T
7..	32	C 3	.2	3.7	C 2	T	4.1	C 2	T
8..	28	C 3	.2	9.9	11	0.3	3.4	C 2	T
9..	24	C 3	.2	238	164	S 128	2.8	C 2	T
10..	18	C 3	.2	82	16	3.5	1.9	C 2	T
11..	14	C 3	.2	93	43	S 14	1.6	C 2	T
12..	13	C 2	.1	78	27	S 9.7	12	20	S 1.2
13..	11	C 2	.1	58	6	.9	9.0	5	.1
14..	11	C 2	.1	73	25	S 6.6	26	47	S 6.4
15..	11	C 2	.1	44	7	.8	36	51	S 5.5
16..	14	C 2	.1	41	8	S 1.0	18	4	.2
17..	11	C 2	T	29	C 5	.3	67	519	S 263
18..	11	C 2	T	30	C 5	.3	37	11	S 1.2
19..	7.9	C 2	T	22	C 5	.3	26	C 3	.1
20..	6.6	C 2	T	18	C 5	.3	19	C 3	.1
21..	5.9	C 2	T	75	162	S 143	14	C 3	.1
22..	5.5	C 2	T	63	32	S 6.7	10	C 3	.1
23..	4.8	C 2	T	88	82	S 22	11	19	S 1.3
24..	3.7	C 2	T	55	13	1.9	98	279	S 158
25..	3.4	C 2	T	38	C 7	.4	30	6	.5
26..	3.1	C 2	T	30	C 7	.4	22	3	.2
27..	58	56	S 17	22	C 7	.4	15	C 3	.1
28..	3	3	.2	17	C 7	.4	11	C 3	.1
29..	18	C 1	T	16	C 7	.4	9.2	C 3	.1
30..	14	C 1	T	17	C 7	.4	7.4	C 3	.1
31..	--	--	--	21	C 7	.4	--	--	--
Total	874.9	--	92.3	1306.4	--	342.6	549.8	--	439.1
Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	7.7	C 2	T	0.9	C 3	T	0.6	C 1	T
2..	8.1	C 2	T	.5	C 3	T	.7	C 1	T
3..	5.9	C 2	T	1.4	6	S 0.1	.5	C 1	T
4..	6.2	C 2	T	5.4	14	S .3	.4	C 1	T
5..	4.1	C 1	T	56	153	S 85	.4	C 1	T
6..	2.8	C 1	T	8.3	11	.2	.4	C 1	T
7..	2.5	C 1	T	5.5	6	S .1	.3	C 1	T
8..	1.9	C 1	T	34	47	A 9.1	.2	C 1	T
9..	1.4	C 1	T	12	C 1	T	.2	C 2	T
10..	1.3	C 1	T	11	C 1	T	.2	C 2	T
11..	1.1	C 1	T	7.0	C 1	T	4.5	20	B 0.2
12..	.9	C 1	T	3.7	C 1	T	35	43	S 5.3
13..	1.2	C 2	T	3.1	C 1	T	13	4	.1
14..	7.8	C 2	T	2.5	C 1	T	6.0	C 2	T
15..	5.6	C 2	T	2.5	C 1	T	3.8	C 2	T
16..	2.2	C 2	T	2.2	C 1	T	3.0	C 2	T
17..	1.6	C 2	T	1.4	C 1	T	2.3	C 2	T
18..	1.1	C 2	T	1.1	C 1	T	3.0	C 2	T
19..	1.6	C 2	T	1.3	C 1	T	2.7	C 2	T
20..	3.3	C 2	T	1.6	C 1	T	4.1	8	.1
21..	1.4	C 2	T	1.4	C 1	T	3.3	C 1	T
22..	.9	C 2	T	1.3	C 1	T	2.5	C 1	T
23..	.3	C 2	T	1.0	C 1	T	2.1	C 1	T
24..	.5	C 1	T	1.0	C 1	T	1.9	C 1	T
25..	.4	C 1	T	.8	C 1	T	1.7	C 1	T
26..	.4	C 1	T	.8	C 1	T	1.4	C 1	T
27..	.4	C 1	T	.7	C 1	T	1.3	C 1	T
28..	.4	C 3	T	.6	C 1	T	1.3	C 1	T
29..	.3	C 3	T	.5	C 1	T	1.5	C 1	T
30..	.5	C 3	T	.6	C 1	T	2.3	C 1	T
31..	1.4	C 3	T	.5	C 1	T	--	--	--
Total	75.4	--	0.3	170.6	--	94.9	100.6	--	5.9

Total discharge for year (cfs-days)..... 6,736.7  
 Total load for year (tons)..... 2,483.8

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.

## SUSQUEHANNA RIVER BASIN--Continued

1-5170. ELK RUN NEAR MAINESBURG, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
 (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 tem- per- ature (°F)	Sam- pling point	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	
Nov. 28, 1959.....	0900	43		423	301		9	29	42	57	71	83	91	97		99	100	BSWC
Dec. 12.....	1900	44		234	153		10	25	41	54	74	88	95	99		99	100	BSWC
Dec. 28.....	2230	43		160	241		10	23	48	61	77	91	95	98		99	100	BSWC
Feb. 11, 1960.....	0650	49		292	1,110		4	12	30	43	58	71	92	98		100	--	BSWC
Mar. 29.....	1600	46		485	1,700		5	10	20	30	44	60	82	95		99	100	BSWC
Mar. 29.....	1600	46		485	1,680		5	8	13	24	36	58	84	95		99	100	BSN
Mar. 30.....	1200	50		451	901		10	16	26	37	52	71	86	97		99	100	BSWC
May 9.....	0445	60		390	654		7	16	32	43	56	72	87	96		99	100	BSWC
May 21.....	2020	68		405	1,370		5	22	43	60	73	86	92	98		100	--	BSWC
June 17.....	1700	74		314	1,590		7	24	46	64	78	92	95	98		99	100	BSWC
June 24.....	1100	70		384	1,550		8	23	36	53	67	80	92	97		99	100	BSWC

SUSQUEHANNA RIVER BASIN--Continued  
1-5405. SUSQUEHANNA RIVER AT DANVILLE, PA.

LOCATION.--At gaging station at Mill Street Bridge on State Highway 54 at Danville, Montour County, 0.8 mile upstream from Mahoning Creek.  
DRAINAGE AREA.--11,220 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: October 1945 to June 1953, October 1956 to September 1960.  
Water temperatures: October 1945 to June 1953, October 1956 to September 1960.  
EXTREMES, 1956-60.--Dissolved solids: Maximum 315 ppm Sept. 4-11; minimum, 73 ppm Mar. 31 to Apr. 7.  
Specific conductance: Maximum 315 microhos Sept. 11-14; minimum, 148 microhos Oct. 1-3.  
Sulfate: Maximum, 203 ppm Sept. 11-14; minimum, 114 ppm Oct. 1-3.  
Water temperatures: Maximum, 81°F Aug. 29, 30; minimum, freezing point on several days during the winter months.  
EXTREMES, 1945-53, 1956-60.--Dissolved solids (1945-47, 1958-60): Maximum, 346 ppm July 31 to Aug. 16, 1959; minimum, 68 ppm May 21-31, 1946.  
Hardness (1945-47, 1949-53, 1956-60): Maximum, 232 ppm Nov. 1-10, 1952; minimum, 33 ppm Apr. 7-10, 1958.  
Specific conductance: Maximum daily, 586 microhos Sept. 22, 1957; minimum daily, 81 microhos Apr. 2, 1960.  
Water temperatures: Maximum daily, 586 microhos Sept. 22, 1957; minimum, freezing point on many days during the winter months.  
REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (microhos at 25°C)	pH	Col- or
																Calcium, sum	Non-carbonate			
Oct. 1-8, 1959		6.6		0.01	0.03	41	19	15	2.3	25	171	14	0.0	3.1	293	181	160	440	7.0	4
Oct. 9-10, 1959		--	--	--	--	--	--	a 11	--	56	58	8.8	--	3.5	150	98	52	246	7.0	2
Oct. 12-25, 1959		--	--	--	--	--	--	a 8.3	--	42	35	6.2	--	3.0	101	64	30	165	7.0	2
Oct. 26-Nov. 6, 1959		--	--	--	--	--	--	a 7.4	--	32	27	6.6	--	2.9	77	50	24	125	6.9	2
Nov. 8-13, 1959		--	--	--	--	--	--	a 6.9	--	40	33	6.4	--	2.9	100	64	31	161	6.8	3
Nov. 14-28, 1959		--	--	--	--	--	--	4.3	1.5	26	25	4.6	.2	3.0	83	45	24	111	6.3	3
Nov. 29-Dec. 5, 1959		7.1		.00	.00	11		4.0												
Dec. 6-21, 1959		--	--	--	--	--	--	a 6.0	--	32	28	5.8	--	2.7	81	52	26	133	6.7	3
Dec. 22-30, 1959		--	--	--	--	--	--	a 8.0	--	44	38	9.6	--	3.4	110	74	38	189	7.0	3
Dec. 31-Jan. 8, 1960		--	--	--	--	--	--	a 5.5	--	28	24	5.4	--	3.1	86	46	23	122	7.2	3
Jan. 9-24, 1960		--	--	--	--	--	--	a 8.3	--	42	41	9.9	--	3.7	133	76	42	198	7.4	3
Jan. 25-Feb. 11, 1960		6.8		.07	.00	26	9.5	12	1.8	56	56	15	.1	3.8	163	104	58	257	7.3	3
Feb. 12-17, 1960		--	--	--	--	--	--	a 5.5	--	26	23	5.9	--	3.7	89	45	24	119	7.3	5
Feb. 18-24, 1960		--	--	--	--	--	--	a 7.4	--	35	35	8.3	--	3.1	110	63	35	168	7.5	3
Feb. 25-Mar. 6, 1960		--	--	--	--	--	--	a 9.9	--	45	49	12	--	3.4	138	86	49	222	7.5	4
Mar. 7-29, 1960		--	--	--	--	--	--	a 18	--	52	85	16	--	3.4	188	116	74	286	7.1	2
Mar. 31-Apr. 7, 1960		4.1		.05	.00	9.0	3.0	3.2	1.4	18	19	5.0	.1	3.1	73	35	20	89	6.8	2
Apr. 11-17, 1960		--	--	--	--	--	--	a 7.1	--	36	34	6.4	--	3.2	112	61	32	153	7.1	3
Apr. 20-25, 1960		--	--	--	--	--	--	a 10	--	50	48	8.7	--	.3	136	81	40	199	6.6	1

a Sodium, potassium calculated as sodium (Na).

SUSQUEHANNA RIVER BASIN--Continued  
1-5405. SUSQUEHANNA RIVER AT DANVILLE, PA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>	Total acidity as H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	Col- or pH
Apr. 26-30, May 1-10....		--		--	--	--	--	a 11	--	53	64	3.9	--	2.0	150	100	57	242	7.2
May 11-20....		--		--	--	--	--	a 6.1	--	36	42	6.7	--	2.0	120	73	41	140	7.0
May 21-29....		--		--	--	--	--	a 6.4	--	43	42	6.1	--	2.0	112	73	40	177	7.2
May 30-31, June 1-15....		--		--	--	--	--	a 7.1	--	39	35	4.3	--	2.5	95	61	29	148	7.1
June 16-29....		--		--	--	--	--	a 9.4	--	50	52	6.7	--	1.5	124	85	44	205	6.7
June 30-July 7		--		--	--	--	--	a 6.9	--	44	34	4.7	--	2.3	106	65	29	150	6.9
July 8-20....		--		--	--	--	--	a 7.1	--	48	56	6.8	--	2.3	155	94	55	222	7.0
July 21-30, Aug. 1-15....		4.9		0.01	0.00	33	12	8.5	1.5	52	89	9.2	0.2	1.3	190	132	90	309	7.0
Aug. 16-19		--		--	--	--	--	a 12	--	43	134	9.2	--	1.9	251	162	127	372	7.1
Aug. 20-31, Sept. 1-3....		--		--	--	--	--	a 9.0	--	41	99	8.1	--	2.0	193	130	97	306	7.4
Sept. 4-11....		4.2		.01	1.0	44	23	a 11	--	27	156	9.9	--	1.5	264	176	154	402	6.8
Sept. 12-14....		--		--	--	--	--	a 12	1.5	14	191	9.6	.2	1.6	315	205	193	459	6.8
Sept. 15-30....		--		--	--	--	--	a 6.0	--	30	47	4.7	--	2.3	116	69	45	171	6.8
Time-weighted average....		--		--	--	--	--	a 8.0	--	19	89	4.1	--	2.1	160	98	83	239	6.8
a Sodium, potassium calculated as sodium (Na).		--		--	--	--	--	9.3	--	41	63	8.4	--	2.7	147	93	60	227	7.0
		--		--	--	--	--		--				--						3



SUSQUEHANNA RIVER BASIN--Continued  
 1-5405. SUSQUEHANNA RIVER AT DANVILLE, PA.--Continued  
 Temperature (°F) of water, water year October 1959 to September 1960

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.....	73	70	69	73	75	70	--	72	69	70	--	63	62	59	61	60	61	57	56	57	56	50	59	57	55	52	53	54	51	51	62	
November.....	52	48	59	50	52	50	--	46	57	46	47	44	42	38	38	36	41	40	42	32	30	41	52	42	42	35	42	40	39	38	--	45
December.....	39	39	--	41	40	41	39	40	38	39	38	40	40	37	38	39	40	39	37	36	34	32	32	33	34	34	35	35	37	36	37	37
January.....	37	37	37	37	37	35	37	39	35	37	36	34	34	34	36	24	35	35	34	34	32	32	34	34	33	35	35	36	37	39	38	35
February.....	38	34	34	35	36	39	36	35	38	40	40	39	36	32	32	33	35	36	34	34	35	35	36	37	35	36	35	37	35	--	--	36
March.....	35	35	32	32	32	34	32	34	34	35	37	37	37	37	37	37	36	39	39	39	40	36	40	39	39	41	43	45	47	46	42	37
April.....	45	42	40	44	42	43	41	41	41	41	45	48	47	51	51	55	56	--	54	56	57	60	63	62	--	65	65	63	65	60	--	51
May.....	60	60	61	65	64	64	64	64	58	58	56	53	53	53	57	59	60	61	64	66	65	63	62	63	63	65	63	64	65	64	61	63
June.....	68	69	71	73	73	73	73	72	72	71	74	71	71	69	70	68	68	69	70	68	--	71	72	69	72	75	74	74	75	--	--	71
July.....	72	75	75	73	72	73	74	74	76	74	75	78	72	76	79	75	80	80	79	--	--	--	--	--	--	78	--	80	79	77	--	--
August.....	80	79	80	79	78	76	75	78	78	--	--	--	77	76	77	--	78	79	78	--	78	77	76	--	--	--	80	80	81	81	79	--
September.....	--	79	75	73	76	77	78	78	--	67	62	65	65	65	65	65	63	64	63	64	65	--	67	66	67	66	65	66	65	65	--	68

SUSQUEHANNA RIVER BASIN--Continued  
1-5435. SINNEMAHONING CREEK AT SINNEMAHONING, PA.

LOCATION.--At gaging station on left bank, 0.2 mile upstream from Grove Run and 0.7 mile upstream from Pennsylvania Railroad bridge at Sinnemahoning, Cameron County, Pa.

DRAINAGE AREA.--685 square miles.

REMARKS.--Records of discharge for water year October 1959 to September 1960 are given in WSP 1702.

Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>			Total acidity (micro-mhos at 25°C)	Specific conductance (micro-mhos at 25°C)	pH or Col.
																Calcium	Non-carbonate	Hardness			
Oct. 22, 1959.	67	6.8	5.0	0.02	1.9	21	8.5	14	1.8	0	115	22	0.2	1.3	195	88	88	0.8	458	3.9	2
Dec. 17, 1959.	2,090	5.6	---	0.07	1.25	9.0	2.8	4.0	1.5	5	31	3.5	1.1	1.6	64	34	30	0.4	93	5.5	3
Jan. 26, 1960.	790	8.1	1.1	0.03	.54	10	4.7	3.0	1.4	0	59	3.5	1.1	1.2	112	45	45	.4	180	3.9	1
Mar. 10, 1960.	330	6.9	2.3	.04	.65	11	---	4.2	1.0	0	66	4.5	---	.4	---	47	47	.4	207	4.0	3
Apr. 20a, 1960.	680	---	---	---	---	---	---	b7.8	---	2	43	6.8	---	.2	---	39	38	---	123	4.8	1
Apr. 20c, 1960.	680	---	---	---	---	---	---	---	---	0	51	1.0	---	.1	---	38	38	---	156	4.0	1
Aug. 31, 1960.	48	---	---	---	---	---	---	---	---	0	145	16	---	.2	231	98	98	---	397	3.7	1

a Left side and center.

b Sodium, potassium calculated as sodium (Na).

c Right side.

## SUSQUEHANNA RIVER BASIN--Continued

1-5458. WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN, PA.

LOCATION.--At center of Lockport Bridge, which is situated at the termination of North Jay Street, Lock Haven, Clinton County, and 30.1 miles downstream from Conowingo, Md., to Renovo, Pa.

DRAINAGE AREA.--3 337 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1951, October 1958 to September 1960.

Water temperatures: October 1945 to September 1951, October 1958 to September 1960.

EXTREMES, 1959-60.--Specific conductance: Maximum daily, 738 micromhos Oct. 6; minimum daily, 105 micromhos Mar. 31.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Hardness (1943-47, 1958-59).--Dissolved solids (1943-47): Maximum, 262 ppm Sept. 21-30, 1946; minimum, 51 ppm Mar. 1-10, 1946.

Hardness (1943-47, 1958-59).--Dissolved solids (1943-47): Maximum, 262 ppm Sept. 21-30, 1946; minimum, 51 ppm Mar. 1-10, 1946.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

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Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Water temperatures: Maximum, 81°F Aug. 2, 3, Sept. 1; minimum, freezing point Dec. 22-23.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (H <sup>+</sup> )	Specific conductance (micro-mhos at 25°C)	Color or pH
																Calcium, magnesium	Non-carbonate			
Oct. 1-9, 1959		14	5.9	0.25	3.1	49	2.1	16	2.5	0	284	9.0	0.2	0.5	425	209	209	1.4	649	3.4
Oct. 10-24...		--	--	--	--	--	--	--	--	0	152	5.0	--	0.9	236	116	116	0.7	395	3.6
Oct. 25-Nov. 6		--	--	--	--	--	--	--	--	0	83	1.5	--	1.1	133	66	66	0.4	226	3.9
Nov. 7-15...		--	--	--	--	--	--	--	--	0	64	0.5	--	1.1	108	54	54	0.2	172	4.3
Dec. 1-10...		7.3	1.4	.02	.66	13	5.2	2.4	1.1	0	64	2.2	--	0	108	54	54	0.2	161	4.1
Jan. 1-10, 1960		6.8	1.3	.00	.62	11	5.2	3.2	1.3	0	62	2.0	0.1	0.4	100	49	49	0.2	165	4.2
Feb. 1-10...		7.0	2.1	.03	1.0	25	4.1	5.5	1.3	0	106	3.0	0.1	0.4	167	80	80	0.4	281	3.8
Mar. 1-10...		8.5	--	.03	1.1	20	7.8	6.8	1.2	0	100	4.2	0.1	0.4	154	82	82	0.4	286	4.0
Apr. 1-10...		7.2	--	.04	.59	10	4.3	3.0	1.3	0	51	2.1	0.1	0.9	83	43	43	0.3	153	4.2
Apr. 2-10...		6.0	1.0	.00	.71	20	7.5	3.2	3.0	0	87	6.5	0.1	0.4	152	81	81	0.2	220	4.5
Apr. 27.....																				
May 1-10...		4.6	1.7	.03	.64	16	7.2	3.2	4.0	0	83	4.5	0.1	0.2	134	70	70	0.3	229	4.0
June 1-10...		8.2	1.8	.02	.89	13	7.2	6.0	1.5	0	75	3.0	0.2	0.1	120	62	62	0.5	216	4.0
July 1-10...		7.8	3.1	.07	1.6	26	9.0	6.2	1.4	0	128	3.4	0.1	0.0	186	102	102	0.7	325	3.8
Aug. 1-10...		8.6	4.6	.19	2.6	35	15	8.5	1.8	0	186	4.3	0.2	0.0	264	149	149	0.9	473	3.6
Sept. 1-10...		11	6.6	.34	3.2	45	20	13	2.0	0	258	6.5	0.2	0.6	376	195	195	1.0	635	3.5

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 based on records for West Branch Susquehanna River at Renovo, Pa., are given in WSP 1702.

SUSQUEHANNA RIVER BASIN--Continued  
 1-5458. WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN, PA.--Continued  
 Temperature (°F) of water, water year October 1959 to September 1960

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	70	71	73	74	73	70	73	67	65	67	57	57	55	56	56	53	53	52	52	51	56	55	52	51	50	49	48	49	59	43	
November.....	50	47	48	47	51	51	47	46	46	45	45	44	45	45	45	46	44	41	38	36	38	38	37	42	41	39	37	41	41	39	43	38	
December.....	39	40	41	41	40	41	40	37	37	37	36	38	40	39	40	42	42	41	40	38	33	32	32	32	32	33	33	33	38	39	38		
January.....	37	35	37	37	35	35	35	37	36	36	36	38	35	37	39	38	38	38	36	35	34	33	33	33	33	34	34	34	37	26	36	36	
February.....	37	37	36	--	--	37	38	37	39	42	46	40	--	36	34	36	37	39	37	35	36	37	38	38	35	37	38	36	--	--	37	36	
March.....	35	35	34	34	34	34	34	34	33	34	33	34	34	34	35	34	33	34	35	35	36	35	36	38	37	38	41	46	48	48	43	36	
April.....	--	44	46	46	46	47	46	45	46	44	46	46	52	56	58	52	64	57	67	58	60	64	--	68	69	70	67	65	64	61	--	56	
May.....	57	58	52	63	65	66	65	62	57	51	50	49	50	51	54	60	60	61	61	60	61	62	58	57	58	61	63	60	58	59	60	59	
June.....	64	65	69	71	72	74	70	70	70	71	73	70	68	67	61	63	65	66	69	71	71	68	68	71	72	74	76	77	77	77	76	--	70
July.....	73	75	79	74	72	71	71	73	76	75	74	78	76	70	72	75	76	77	78	78	77	78	78	80	78	77	77	79	80	78	79	76	
August.....	79	81	81	79	79	79	78	78	78	79	77	77	77	77	78	79	80	79	76	76	76	77	76	77	76	75	75	77	78	79	80	80	
September.....	81	80	78	75	76	76	77	77	76	76	71	68	64	69	67	69	68	67	68	69	71	70	71	71	71	71	69	67	67	--	67	72	

SUSQUEHANNA RIVER BASIN--Continued  
1-5475. NORTH BALD EAGLE CREEK AT BLANCHARD, PA.

LOCATION.--At gaging station, 0.7 mile upstream from Marsh Creek and 0.9 mile south of Blanchard, Centre County.  
DRAINAGE AREA.--339 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1960.

Water temperatures: October 1956 to September 1957.

Streamflow records: December 1955 to March 1956.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>	Total acidity as H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	Col- or pH
Oct. 2, 1959...	172	---	---	---	---	36	10	45.5	---	158	21	9.0	---	7.5	208	158	29	322	7.9
Nov. 15, .....	272	5.6	0.00	---	---	36	10	6.0	1.8	132	22	6.0	0.1	7.6	159	131	23	275	7.6
Dec. 16, .....	781	---	---	---	---	37	12	45.1	---	88	25	3.8	---	4.6	123	96	24	202	7.8
Jan. 28, 1960.	326	16	---	.01	---	37	12	6.8	1.4	133	25	8.0	.1	7.8	180	142	33	298	8.2
Mar. 7, .....	270	7.1	---	.01	---	37	12	5.0	1.2	135	24	6.0	.1	4.4	166	142	32	288	7.9
Apr. 18, .....	464	6.4	---	.01	---	38	12	4.0	1.4	138	23	8.5	.0	8.5	183	145	32	291	7.7
June 6, .....	350	6.6	---	---	---	33	10	2.8	1.3	128	20	3.2	.2	4.8	174	124	19	236	7.8
July 11, .....	350	---	---	---	---	33	10	4.2	---	131	20	5.0	---	5.1	180	140	21	300	7.8
Sept. 1, .....	167	---	---	---	---	33	10	47.8	---	173	23	7.2	---	6.5	190	164	22	332	7.6

a Sodium, potassium calculated as sodium (Na).

SUSQUEHANNA RIVER BASIN--Continued  
1-5535, WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA.

LOCATION.--At gaging station at Market Street Bridge at Lewisburg, Union County, 0.2 mile downstream from Buffalo Creek, and 7.4 miles upstream from mouth. DRAINAGE AREA.--6,847 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953, October 1956 to September 1958, April to September 1960.  
REMARKS.--Records of specific conductance of daily samples available in district office in Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, April to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (micro-moles H <sup>+</sup> )	Specific conductance (micro-mhos at 25°C)	pH or Col.
																Calcium	Non-carbonate			
Apr. 7, 1960..	49,000	6.2		0.02	0.08	6.9	2.6	2.0	0.9	6	24	2.0	0.0	2.0	60	28	23		80	6.5
Apr. 27, .....	7,280	--		.64	.34	--	--	66.4	--	12	54	4.5	--	1.8	120	60	50		154	6.7
May 5, .....	6,430	4.7		.02	.36	15	5.2	3.5	1.5	12	50	3.6	.1	1.1	107	59	49		148	6.7
June 2, .....	19,200	5.6		.02	.43	11	5.5	2.5	1.2	2	48	2.4	.1	.4	81	50	49		129	6.7
July 11, .....	2,960	4.9		.02	.09	19	8.0	4.2	1.5	10	72	3.8	.1	1.8	130	81	73		198	6.3
Aug. 9, .....	4,600	4.5		.02	.03	18	6.6	4.2	1.5	12	65	4.4	.1	1.8	120	72	82		189	6.4
Sept. 6, .....	1,230	5.8		.02	.00	28	10	9.7	2.0	28	89	7.6	.2	2.2	108	111	88		268	6.8

a Sodium, potassium calculated as sodium (Na).

## SUSQUEHANNA RIVER BASIN--Continued

1-5545. SHAMOKIN CREEK AT WEIGH SCALE, PA.

LOCATION--At foot bridge, 400 feet downstream from gaging station at Weigh Scale, Northumberland County, 1 mile downstream from Trout Run, and 2 miles northwest of Shamokin.

DRAINAGE--12 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1949 to September 1950, October 1958 to September 1960.

Water temperatures: October 1958 to September 1960.

EXTREMES: 1959-60.--Dissolved solids: Maximum, 1,400 ppm Feb. 1-5; minimum, 853 ppm Mar. 28 to Apr. 9.

Hardness: Maximum, 780 ppm Oct. 28 to Nov. 13; minimum, 468 ppm Mar. 28 to Apr. 9.

Specific conductance: Maximum daily, 1,840 micromhos Feb. 3, July 20; minimum daily, 585 micromhos Aug. 31.

Water temperatures: Maximum, 75°F Aug. 29; minimum, 43°F Dec. 22, Feb. 14.

EXTREMES, 1949-50, 1958-60.--Specific conductance (1958-60): Maximum daily, 1,910 micromhos Sept. 16, 1959; minimum daily, 477 micromhos Aug. 22, 1959.

TEMPERATURES (1958-60): Maximum, 82°F June 29, 1959; minimum, 36°F Jan. 5, 6, 18, 1959.

REMARKS--Records of specific conductance and water temperature available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	pH	Color
																Calcium	Non-carbonate				
Oct. 2-22, 1959																					
Oct. 28-Nov. 13	21	--	12	4.5	11	122	96	12	--	0	977	6.0	--	0.6	1220	685	555	3.2	1540	3.0	1
Nov. 1-5	--	--	--	--	--	--	--	--	--	0	823	6.0	0.3	1.2	1240	690	590	3.2	1700	2.9	3
Nov. 16-22	22	--	13	3.5	8.7	114	96	12	4.0	0	829	5.0	--	1.7	1140	645	645	3.1	1590	3.2	4
Nov. 30-Dec. 11	--	--	--	--	--	--	--	--	--	0	816	5.0	--	.3	1160	680	680	3.4	1700	3.2	5
Dec. 13-27	--	--	--	--	--	--	--	--	--	0	790	3.0	--	.4	1000	600	600	3.1	1550	3.1	3
Dec. 28-																					
Jan. 10, 1960	--	--	--	--	--	--	--	--	--	0	702	6.0	--	.6	1070	600	600	2.8	1490	3.0	3
Jan. 11-31	--	--	--	--	--	--	--	--	--	0	823	6.0	--	.2	1240	690	590	3.2	1700	2.9	3
Feb. 1-5	--	--	--	--	--	--	--	--	--	0	745	8.0	--	1.4	1390	690	471	3.5	1850	2.9	4
Feb. 16-22	21	--	13	3.5	10	122	86	11	4.1	0	786	3.5	.4	1.0	1200	659	659	3.2	1610	3.0	1
Feb. 23-Mar. 22	21	--	13	8.7	11	122	86	13	4.4	0	788	6.8	.4	1.0	1200	659	659	3.2	1610	3.0	4
Mar. 23-27	--	--	--	--	--	--	--	--	--	0	786	3.5	--	.6	1170	615	615	3.1	1650	3.0	1
Mar. 28-Apr. 9	18	--	8.7	1.5	7.1	82	64	5.8	2.8	0	562	3.2	.3	.7	853	468	468	2.2	1230	3.1	1
Apr. 10-May 8	--	--	--	--	--	--	--	--	--	0	794	2.5	--	.7	1150	610	610	3.5	1590	2.9	1
May 10-24	--	--	--	--	--	--	--	--	--	0	591	4.0	--	.7	930	490	490	2.4	1310	3.0	2
May 25-June 4	--	--	--	--	--	--	--	--	--	0	679	2.5	--	.4	1040	550	550	2.8	1490	3.0	3
June 6-30	--	--	--	--	--	--	--	--	--	0	748	4.0	--	.9	1180	630	630	3.1	1620	3.0	3

SUSQUEHANNA RIVER BASIN--Continued  
1-5545. SHAMOKIN CREEK AT WEIGH SCALE, PA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity as H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	pH or Col.
																Calcium, magnesium	Non-carbonate			
July 2-13, 1960	--	--	--	--	--	--	--	--	--	0	748	6.0	--	0.7	1200	660	660	3.0	1590	3.2
July 15-29, 1960	--	--	--	--	--	--	--	--	--	0	815	6.0	--	.8	1270	690	690	3.2	1660	3.0
Aug. 6-14, 1960	--	--	--	--	--	--	--	--	--	0	790	3.5	--	.8	1130	640	640	2.6	1460	3.6
Sept. 1-3, 1960	--	--	--	--	--	--	--	--	--	0	794	5.0	--	.5	1130	650	650	2.4	1540	3.6
Sept. 13-30, 1960	2.3	1.2	2.7	8.3	89	102	89	8.5	2.8	0	719	5.0	0.4	.7	1090	621	621	2.8	1530	3.1
Weighted average...	--	--	--	--	--	--	--	--	--	0	779	4.8	--	0.7	1140	633	633	3.1	1580	3.0

Temperature (°F) of water, water year October 1959 to September 1960

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	69	65	71	73	72	67	68	68	64	66	59	58	56	58	59	62	61	56	59	58	57	60	60	58	55	54	52	52	53	55	61	
November.....	53	50	52	53	60	55	48	48	50	51	52	50	54	57	49	53	49	45	46	50	51	51	52	54	48	46	53	47	45	45	--	51	
December.....	47	50	50	52	52	52	44	48	48	49	50	51	47	49	51	52	55	53	44	44	44	43	46	48	49	52	54	54	51	49	49	49	
January.....	49	50	47	49	49	50	46	51	53	50	49	51	52	54	47	50	49	49	48	47	46	49	49	50	48	49	50	52	53	54	49	52	51
February.....	48	48	49	53	52	52	44	51	56	56	51	49	48	43	48	46	53	52	46	43	49	50	50	48	49	50	49	51	50	--	--	50	
March.....	48	50	46	44	45	49	48	47	50	48	49	50	51	53	50	52	55	52	53	51	49	52	53	51	54	56	55	57	55	56	51	51	
April.....	58	57	54	57	54	53	55	57	55	54	58	61	60	64	64	65	66	58	60	62	64	67	67	69	69	69	59	58	64	58	--	61	
May.....	55	61	63	63	64	65	64	69	65	65	65	63	55	55	60	64	60	56	62	59	61	57	58	61	62	61	65	59	58	59	61	60	
June.....	63	66	66	67	67	65	64	65	65	65	67	63	62	61	68	69	69	64	66	67	68	67	68	67	68	70	71	67	68	71	67	68	
July.....	63	69	70	66	65	64	63	70	72	65	68	73	73	65	71	71	70	71	72	69	73	73	70	71	73	71	71	71	71	71	69	71	
August.....	74	74	71	69	73	70	70	74	72	72	70	72	72	72	72	72	73	68	72	72	71	71	71	71	71	71	71	71	71	71	71	72	
September.....	74	70	69	--	69	69	70	72	71	68	65	63	68	62	66	65	60	60	62	64	63	61	63	64	62	64	63	63	60	65	--	--	



## SUSQUEHANNA RIVER BASIN--Continued

1-5670. JUNIATA RIVER AT NEWPORT, PA.

LOCATION.--At gaging station on right bank at downstream side of highway bridge at Newport, Perry County, 1,000 feet upstream from Little Buffalo Creek. DRAINAGE AREA.--3,354 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953, October 1956 to September 1960.

Water temperatures: October 1944 to September 1960, June 1958 to September 1960.

Sediment records: January 1931 to September 1960.

EXTREMES: Specific conductance: Maximum daily, 411 micromhos Oct. 24; minimum daily, 102 micromhos Mar. 31.

Water temperatures: Maximum daily, 80°F minimum freezing point on several days during December, February and March.

Sediment concentrations: Maximum daily, 689 ppm Oct. 26; minimum daily, 1 ppm Aug. 21-31, Sept. 24-30.

EXTREMES: Maximum daily, 33,300 tons Mar. 31; minimum daily, 2 tons Aug. 21-31.

Hardness (1944-47, 1949-53, 1957-58): Maximum, 282 ppm Oct. 1-10, 1944; minimum, 78 ppm Mar. 1-10, 1945, May 21-31, 1946.

Specific conductance: Maximum daily, 499 micromhos Dec. 17, 1946; minimum daily, 59 micromhos Aug. 19, 1950.

Water temperatures (1944-50, 1956-60): Maximum, 87°F July 3, 1949; minimum, freezing point on many days during winter months.

Continuity of flow: Maximum daily, 13,000 tons Mar. 2, 1954; minimum daily, 0 tons Mar. 2, 1954; no flow on many days.

Sediment loads (1951-60): Maximum daily, 128,000 tons Mar. 2, 1954; minimum daily, 0 tons Mar. 2, 1954.

REMARKS.--Records of specific conductance and pH of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year

October 1959 to September 1960 given in WSP 1702. Flow affected by ice Dec. 24, Jan. 21-25, Feb. 14-16, Mar. 4-9.

Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> ) (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (micro-mhos at 25°C)	Coliform or pH
														Calcium	Non-carbonate		
Oct. 1-4, 6-23, 1959	6.4		0.00	0.00	29	7.9	17	2.8	46	13	0.1	3.2	170	105	30	279	8.1
Oct. 27-Nov. 19	--	--	--	--	--	--	a8.7	--	36	6.9	--	5.1	134	90	32	216	7.4
Nov. 20-28, ...	--	--	--	--	--	--	a13	--	43	10	--	3.6	170	112	34	271	7.9
Nov. 29-Dec. 28	--	--	--	--	--	--	a7.6	--	31	6.4	--	4.9	128	80	29	193	7.8
Dec. 29-31, 1960																	
Jan. 1-3-15, 1960							a6.4	--	28	5.8	--	4.7	118	76	27	197	7.9
Jan. 16-31, ...							a7.1	--	30	6.6	--	4.8	122	78	29	190	7.3
Feb. 1-10, ...	5.6		.00	.00	24	8.5	8.5	1.9	39	7.8	.1	4.9	150	95	31	235	7.7
Mar. 31, ...	16		.02	.01	13	3.3	2.2	1.8	30	2.5	.1	6.9	83	46	22	111	7.1
Apr. 1, ...	7.5		.02	.00	14	2.8	3.5	2.0	32	7.3	.2	7.8	153	108	31	236	8.0
Apr. 2, ...	7.1		.02	.00	14	2.8	3.5	2.0	32	7.3	.2	7.8	153	108	31	236	8.2
June 4, ...	7.1		.05	.02	20	6.3	4.0	1.9	62	4.2	.2	3.2	111	76	25	169	7.4
July 3, ...	3.4		.02	.00	29	8.4	6.5	1.5	102	3.5	.2	2.5	145	107	24	243	7.8
Aug. 1, ...	1.9		.02	.00	33	13	11	2.0	43	13	.2	2.3	190	136	33	315	7.6
Aug. 21, ...	1.5		.02	.00	33	15	18	2.0	49	19	.2	.4	200	144	46	341	7.5

a Sodium, potassium calculated as sodium (Na).

## SUSQUEHANNA RIVER BASIN--Continued

## 1-5670. JUNIATA RIVER AT NEWPORT, PA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

(Once-daily measurement at approximately 11:30 a.m.)

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.....	58	59	67	75	--	74	72	71	71	72	73	60	60	53	60	58	57	60	59	57	62	58	59	--	59	56	59	57	60	59	58	63	
November.....	58	57	60	59	57	59	52	57	61	60	58	58	61	59	58	57	55	57	55	57	60	57	57	58	57	62	57	55	55	55	59	--	57
December.....	41	37	38	39	39	41	37	37	39	40	39	36	40	41	40	42	42	41	41	40	38	35	35	33	32	34	37	40	39	--	38	39	
January.....	40	--	37	37	38	37	36	39	37	40	40	36	37	38	40	40	37	38	37	36	34	33	36	34	35	38	36	37	39	41	38	37	
February.....	40	35	37	39	40	42	37	38	40	44	45	40	38	32	32	38	38	37	39	32	33	35	37	35	37	42	33	38	37	--	38	38	
March.....	35	35	34	32	32	32	32	32	32	34	35	40	39	36	40	37	36	40	39	41	40	38	38	41	37	40	45	50	47	48	38	40	
April.....	50	48	48	49	49	46	46	47	45	43	47	50	51	56	53	64	65	59	55	54	56	62	69	69	68	69	69	63	60	63	--	56	
May.....	63	60	63	58	59	67	--	--	56	54	52	51	50	50	54	54	60	61	60	52	61	60	62	62	64	64	61	63	60	58	58	59	
June.....	60	61	69	68	70	71	59	66	66	67	70	69	70	69	68	70	69	70	70	70	71	69	69	71	71	70	71	75	75	--	69	69	
July.....	74	75	76	75	75	67	59	71	72	73	73	72	76	72	68	75	77	73	75	71	--	74	75	76	74	77	75	74	76	77	75	74	
August.....	75	76	79	79	79	78	77	77	77	78	75	74	76	75	74	76	74	75	74	73	77	75	75	73	69	67	72	80	78	80	76	76	
September.....	78	76	73	73	74	72	72	74	--	--	67	66	62	72	74	76	70	70	71	72	69	70	73	--	71	70	63	67	71	--	71	71	

## SUSQUEHANNA RIVER BASIN--Continued

1-5670. JUNIATA RIVER AT NEWPORT, PA.--Continued

Suspended sediment, water year October 1959 to September 1960

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..	985	C --	6	2740	C --	50	9020	73	1780
2..	1400	C --	6	2130	C --	50	6740	62	1130
3..	1190	C --	6	2240	C --	50	5400	34	496
4..	1070	C --	6	2290	C --	50	4750	24	308
5..	820	C --	6	2420	C --	50	4240	18	206
6..	900	C --	6	2850	C --	50	4000	18	194
7..	779	C --	6	4960	C --	340	4120	14	156
8..	748	C --	6	6340	C --	340	4750	34	436
9..	1580	C --	17	5010	C --	340	4880	26	343
10..	1920	C --	17	4500	C --	340	4240	15	172
11..	1550	C --	17	3870	C --	120	3620	10	98
12..	1240	C --	17	3500	C --	120	3760	16	163
13..	1040	C --	3	3260	C --	120	9000	217	5830
14..	960	C --	3	3140	C --	120	13700	180	6660
15..	990	C --	3	2920	C --	120	11800	40	1270
16..	886	C --	3	2350	C --	34	8440	28	638
17..	844	C --	3	2310	C --	34	6880	27	502
18..	760	C --	3	2150	C --	34	5900	C 11	144
19..	672	C --	3	2120	C --	34	5270	C 11	144
20..	635	C --	3	1690	C --	34	4750	C 11	144
21..	698	C --	3	1710	C --	34	4370	C 11	144
22..	685	C --	3	1670	C --	34	4120	C 11	144
23..	672	C --	3	1400	C --	34	3740	C 7	58
24..	1240	C --	10	1710	C --	34	3400	C 7	58
25..	5460	350 S	8240	1850	C --	34	3120	C 7	58
26..	11500	689 S	21700	2040	C --	34	2740	C 7	58
27..	6480	112 S	2180	2180	C --	34	2240	C 7	58
28..	4240	--	200	2860	C --	34	3070	8	66
29..	3260	C --	80	15300	235 S	10800	4370	21	248
30..	2950	C --	80	14300	150	5790	5800	35	548
31..	2810	C --	80	--	--	--	7300	38	749
Total	60964	--	32719	107810	--	19292	169430	--	23003
	JANUARY			FEBRUARY			MARCH		
1..	6060	16	262	2830	C 6	44	4500	C 7	71
2..	5140	7	97	2810	C 6	44	3740	C 7	71
3..	7070	6 S	1380	2830	C 6	44	3620	C 7	71
4..	11400	105	3210	2440	C 6	44	3600	C 7	71
5..	11800	75	2390	2290	C 6	44	3300	C 7	71
6..	9320	30	755	2970	C 6	44	3000	7	57
7..	7580	26	532	4370	34	401	2600	C 7	49
8..	6470	23	402	5140	33	458	2300	C 7	49
9..	5660	17	260	4500	17	207	2400	C 7	49
10..	4880	C 8	97	4370	12	142	2780	C 7	49
11..	4500	C 8	97	5010	17	230	2830	C 7	49
12..	4240	C 8	97	5140	26	361	2650	C 7	49
13..	4000	C 8	97	5140	21	291	2580	C 7	49
14..	4880	C 8	97	4600	17	211	2440	C 7	49
15..	7580	26	532	4200	17	193	2370	C 7	48
16..	9620	32	831	3900	18	190	2290	C 7	48
17..	10500	27	765	4120	15	167	2330	C 7	48
18..	9020	30	731	4370	15	177	2490	C 7	48
19..	7860	16	340	8430	114 S	3020	2460	C 7	48
20..	7020	20	379	11800	135	4300	2900	C 7	48
21..	5900	C 10	127	8440	62	1410	3040	C 7	48
22..	5000	C 10	127	7300	26	512	3000	6	49
23..	4550	C 10	127	6060	19	311	3070	10	83
24..	4200	C 10	127	5270	C 11	145	2850	6	46
25..	3900	C 10	127	5010	C 11	145	3040	10	82
26..	3380	C 6	53	5140	C 11	145	3020	C 6	50
27..	3380	C 6	53	5010	C 11	145	3140	C 6	50
28..	3380	C 6	53	4500	C 11	145	4420	29 S	380
29..	3260	C 6	53	4370	C 11	145	12400	177 S	6590
30..	3260	C 6	53	--	--	--	29400	310 S	24500
31..	3140	C 6	53	--	--	--	41100	300	33300
Total	187910	--	14324	142360	--	13715	165660	--	66270

S Computed by subdividing day.

C Composite period.

## SUSQUEHANNA RIVER BASIN--Continued

1-5670. JUNIATA RIVER AT NEWPORT, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	35000	264	S 28000	2350	7	44	8150	38	836
2..	26500	122	S 8940	2220	6	36	7300	34	670
3..	18800	66	S 3350	2180	9	53	6600	34	606
4..	28100	286	S 22000	1920	5	26	5930	35	560
5..	35300	210	S 20000	1830	5	25	5930	36	576
6..	28600	92	S 7090	1730	4	19	5400	32	467
7..	20600	65	S 3620	1790	8	A 38	5270	35	498
8..	16000	52	S 2250	1830	8	A 40	4620	46	574
9..	12400	47	S 1570	13800	242	S 12400	4120	38	423
10..	10200	48	S 1320	39000	261	S 27200	3740	27	273
11..	8440	40	S 912	25700	95	S 6970	3140	24	203
12..	7300	35	S 690	18800	40	S 2030	3000	10	81
13..	6470	29	S 507	16000	34	S 1470	3380	10	91
14..	5800	32	S 501	13400	28	S 1010	4500	30	364
15..	5270	29	S 413	12400	42	S 1410	6340	104	S 2510
16..	4880	29	S 382	10200	40	S 1100	9920	290	7770
17..	4880	30	S 395	8440	30	S 684	7580	90	1840
18..	4620	29	S 362	9020	50	S 1220	8150	130	2860
19..	4120	28	S 311	11400	66	S 2030	6740	102	1860
20..	3740	22	S 222	9920	45	S 1210	5400	55	802
21..	3500	16	S 151	8730	33	S 778	4750	46	590
22..	3180	11	S 100	9320	48	S 1210	4240	45	515
23..	3140	10	S 85	15500	172	S 7200	3870	31	324
24..	3070	14	S 116	20900	250	S 14100	3380	30	274
25..	2900	14	S 110	15700	85	S 3600	2690	C 6	38
26..	2970	17	S 136	11800	64	S 2040	2530	C 6	38
27..	2810	16	S 121	9020	52	S 1270	2290	C 6	38
28..	2740	8	S 59	7580	37	S 757	2370	C 6	38
29..	2600	13	S 91	7580	42	S 860	2240	C 6	38
30..	2400	9	S 58	8150	35	S 770	2110	C 6	38
31..	--	--	--	7860	38	S 806	--	--	--
Total	320730	--	103862	326070	--	92406	145680	--	25795
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..	2020	C 3	18	1260	2	7	830	C 3	6
2..	2180	C 3	18	1170	C 3	9	1050	C 3	6
3..	2240	C 3	18	1140	C 3	9	812	C 3	6
4..	2420	C 3	18	1200	C 3	9	591	C 3	6
5..	1960	C 2	9	1100	C 3	9	635	C 3	6
6..	1710	C 2	9	1170	C 3	9	505	C 3	6
7..	1590	C 2	9	1260	C 3	9	539	C 3	6
8..	1550	C 2	9	1070	C 3	9	1830	C 6	21
9..	1460	C 6	22	1050	C 3	9	1670	C 6	21
10..	1380	C 6	22	1590	C 2	8	913	C 6	21
11..	1240	C 6	22	1350	C 2	8	900	C 6	21
12..	1240	C 6	22	1150	C 2	5	1320	C 6	21
13..	1570	38	161	915	C 2	5	2260	10	61
14..	1690	26	119	1050	C 2	5	2420	8	52
15..	2040	10	55	872	C 2	5	1790	C 2	7
16..	3260	6	53	735	C 2	5	1330	C 2	7
17..	2400	C 7	37	710	C 2	5	1220	C 2	7
18..	2090	C 7	37	748	C 2	5	990	C 2	7
19..	1750	C 7	37	698	C 2	5	1070	C 2	7
20..	1690	C 7	37	735	C 2	5	1310	C 2	7
21..	1690	C 2	8	698	C 1	2	1570	C 2	7
22..	1690	C 2	8	648	C 1	2	1960	C 4	21
23..	1500	C 2	8	591	C 1	2	1980	C 4	21
24..	1360	C 2	8	788	C 1	2	1400	C 1	3
25..	1190	C 2	8	685	C 1	2	1270	C 1	3
26..	1070	C 2	8	591	C 1	2	1120	C 1	3
27..	1170	C 2	7	602	C 1	2	945	C 1	3
28..	1170	C 2	7	980	C 1	2	748	C 1	3
29..	1290	C 2	7	602	C 1	2	685	C 1	3
30..	1350	C 2	7	602	C 1	2	660	C 1	3
31..	1190	C 2	7	624	C 1	2	--	--	--
Total	52150	--	815	27984	--	162	36323	--	372
Total discharge for year (cfs-days).....								1,743,071	
Total load for year (tons).....								392,735	

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

C Composite period.



## SUSQUEHANNA RIVER BASIN--Continued

1-5675. BIXLER RUN NEAR LOYSVILLE, PA.

LOCATION--At bridge on State Highway 850 at Bixler, 400 feet downstream from gaging station, 2.3 miles upstream from mouth, and 3.6 miles west of Loysville, Perry County.

DRAINAGE AREA--15.0 square miles.

RECORDS AVAILABLE--Water temperatures: November 1956 to September 1960.

Sediment records: February 1954 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 78°F June 11; minimum, freezing point on several days during December and January.

Sediment concentrations: Maximum daily, 193 ppm Mar. 31; minimum daily, 2 ppm on several days during December to February.

Sediment loads: Maximum daily, 128 tons Apr. 4; minimum daily, 85 lb. on 1959-60. Maximum daily, 27 tons on 1957-58. Freezing point on many days during winter months.

EXTREMES, 1944-60.--Water temperatures: Maximum daily, 85°F, June 27, 1954; minimum daily, 32°F, Oct. 29-30, 1956.

Sediment concentrations: Maximum daily, 986 ppm June 10, 1954; minimum daily, 0 tons Oct. 29-30, 1956.

Sediment loads: Maximum daily, 650 tons Nov. 1, 1956; minimum daily, 0 tons Oct. 29-30, 1956.

REMARKS--Records of specific conductance and pH of periodic sediment samples available in subdistrict office at Harrisburg, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702. Flow affected by ice Dec. 22-24, Feb. 13-16, Mar. 1-16, 25.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Chemical analyses, in parts per million, water year October 1959 to September 1960																																
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>			Total acidity (micro-mhos at 25°C)	Specific conductance (micro-mhos at 25°C)	pH or Col.											
																Calcium, carbonate sum	Non-carbonate	Total														
Temperature (°F) of water, water year October 1959 to September 1960																																
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	63	64	69	63	67	59	--	51	56	--	--	54	58	58	50	42	46	50	53	58	54	48	48	46	40	42	54	56		
November	.....	50	46	50	52	56	44	46	49	47	51	42	55	48	52	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	
December	.....	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	44	44	44	44	44	
January	.....	32	36	38	39	36	39	37	40	38	43	41	37	41	40	35	39	37	37	37	37	37	37	37	37	37	37	37	37	37	37	
February	.....	32	36	38	39	36	39	37	40	38	43	41	37	41	40	35	39	37	37	37	37	37	37	37	37	37	37	37	37	37	37	
March	.....	38	40	35	34	35	36	38	37	42	32	40	40	34	46	38	40	43	46	45	38	41	35	44	44	48	50	46	50	40	40	
April	.....	55	50	50	47	41	44	57	50	69	54	48	57	62	60	66	64	54	--	59	49	65	70	58	61	61	59	59	50	59	--	55
May	.....	58	55	63	62	65	54	61	58	50	48	49	50	53	48	44	58	64	57	68	56	63	57	56	60	59	54	65	57	55	57	57
June	.....	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	
July	.....	63	65	69	70	65	68	57	61	61	66	62	64	66	65	68	60	70	63	65	69	63	71	64	71	64	66	65	69	65	64	70
August	.....	65	73	72	74	74	75	70	75	73	69	65	63	64	72	71	71	65	66	64	63	73	70	66	64	62	58	75	72	69	74	71
September	.....	67	71	65	60	66	70	63	71	69	72	60	60	60	57	62	60	62	61	61	61	65	64	66	67	65	62	--	62	60	66	--

## SUSQUEHANNA RIVER BASIN--Continued

1-5675. BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Suspended sediment, water year October 1959 to September 1960

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..	52	69	S 18	8.3	C 4	0.1	12	C 3	0.1
2..	9.4	10	.3	7.3	C 4	.1	11	C 3	.1
3..	7.0	5	.1	6.4	C 3	.1	9.8	C 3	.1
4..	6.0	C 4	.1	6.6	C 4	.1	9.2	C 3	.1
5..	5.2	C 4	.1	6.6	C 4	.1	8.3	C 3	.1
6..	4.9	C 4	.1	15	17	S .9	11	4	S .2
7..	4.7	C 4	.1	12	8	.3	23	14	S 1.0
8..	12	24	S 4.6	9.8	4	.1	15	4	.2
9..	20	70	S 5.9	8.9	C 3	.1	13	2	.1
10..	7.9	13	.3	8.1	C 3	.1	13	C 2	.1
11..	6.7	8	.1	7.8	C 3	.1	12	C 2	.1
12..	5.4	C 4	.1	7.3	C 3	.1	59	93	S 31
13..	5.2	C 4	.1	6.9	C 3	.1	51	25	S 3.8
14..	6.2	C 4	.1	6.6	C 3	.1	30	C 6	.4
15..	5.4	C 4	.1	6.4	C 3	.1	23	C 6	.4
16..	4.9	C 4	.1	6.1	C 3	.1	20	C 4	.2
17..	4.7	C 4	.1	7.3	C 3	.1	18	C 4	.2
18..	4.4	C 4	.1	6.1	C 3	.1	17	C 4	.2
19..	4.2	C 4	.1	5.9	C 3	.1	15	C 4	.2
20..	4.2	C 4	.1	5.5	C 3	.1	13	C 4	.2
21..	4.2	C 4	.1	5.5	C 3	.1	12	C 4	.2
22..	4.4	C 4	.1	5.5	C 3	.1	11	C 4	.1
23..	7.8	7	.1	5.7	C 3	.1	9.2	C 4	.1
24..	59	71	S 26	8.6	C 3	.1	9.3	C 4	.1
25..	20	10	S .6	8.3	C 3	.1	10	C 4	.1
26..	12	C 5	.1	6.4	C 3	.1	10	C 4	.1
27..	6.8	C 5	.1	6.6	C 3	.1	11	C 4	.1
28..	8.1	C 5	.1	41	66	S 10	18	10	S .7
29..	7.1	C 5	.1	20	7	.4	20	9	S .5
30..	6.6	C 5	.1	15	4	.2	16	C 2	.1
31..	7.6	C 5	.1	--	--	--	14	C 2	.1
Total	327.2	--	58.1	277.5	--	14.3	523.8	--	41.0
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..	13	C 2	0.1	10	C 2	0.1	23	C 4	0.2
2..	12	C 2	.1	10	C 2	.1	21	C 4	.2
3..	57	84	S 21	8.9	C 2	.1	20	C 4	.2
4..	31	8	.7	8.9	C 2	.1	18	C 4	.2
5..	25	5	.3	10	4	A .1	19	C 4	.2
6..	21	C 3	.2	33	42	S 4.8	17	C 4	.2
7..	19	C 3	.2	18	C 5	.2	16	C 4	.2
8..	18	C 4	.2	17	C 5	.2	15	C 4	.2
9..	15	C 4	.2	18	C 5	.2	14	C 3	.1
10..	15	C 4	.2	17	C 5	.2	14	C 3	.1
11..	14	C 4	.2	26	22	S 1.8	13	C 3	.1
12..	13	C 4	.2	18	C 4	.2	13	C 3	.1
13..	18	C 4	.2	16	C 4	.2	12	C 3	.1
14..	19	C 4	.2	15	C 11	.4	12	C 3	.1
15..	30	62	S 6.1	14	C 11	.4	11	C 3	.1
16..	23	12	.7	15	C 4	.2	12	C 3	.1
17..	20	C 3	.1	17	C 4	.2	14	C 3	.1
18..	22	C 3	.1	24	16	S 2.2	15	C 3	.1
19..	22	C 3	.1	92	77	S 20	17	C 3	.1
20..	18	C 3	.1	47	18	2.3	18	C 3	.1
21..	15	C 3	.1	33	C 5	.4	18	C 3	.1
22..	14	C 3	.1	30	C 5	.4	18	C 3	.1
23..	13	C 3	.1	26	C 5	.4	17	C 3	.1
24..	13	C 3	.1	24	C 5	.4	19	C 3	.1
25..	12	C 3	.1	26	6	.4	17	C 3	.1
26..	12	C 3	.1	41	13	1.4	18	C 3	.1
27..	12	C 3	.1	31	C 5	.4	31	38	S 4.8
28..	13	C 3	.1	29	C 5	.4	73	113	S 32
29..	13	C 3	.1	29	C 5	.4	83	60	13
30..	11	C 3	.1	--	--	--	101	73	S 21
31..	10	C 3	.1	--	--	--	123	193	S 93
Total	563	--	32.3	703.8	--	38.6	832	--	167.2

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

C Composite period.

## SUSQUEHANNA RIVER BASIN--Continued

1-5675. BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	76	30	6.2	11	C 3	0.1	23	9	0.6
2..	54	16	2.3	11	C 3	.1	20	15	.8
3..	105	76 S	4.6	10	C 5	.1	24	22 S	1.5
4..	253	140 S	128	9.8	C 5	.1	19	9	.5
5..	165	46 S	22	9.5	C 5	.1	19	15 S	.9
6..	94	18	4.6	8.9	C 5	.1	18	C 8	.3
7..	70	13	2.5	8.9	C 5	.1	15	C 8	.3
8..	57	13	2.0	62	114 S	38	14	C 8	.3
9..	45	C 9	.8	145	79 S	33	13	C 8	.3
10..	37	C 9	.8	74	19	3.8	12	C 9	.3
11..	32	C 9	.8	60	16	2.6	12	C 9	.3
12..	29	C 9	.8	47	C 9	1.1	21	---	1.0
13..	26	C 9	.8	38	C 9	.8	16	10 A	.4
14..	23	C 9	.8	35	C 9	.8	38	155 S	31
15..	21	C 7	.4	28	C 9	.8	24	25 S	2.0
16..	22	C 7	.4	24	C 9	.8	16	10	.4
17..	21	C 7	.4	26	10 S	.8	33	53 S	12
18..	19	C 7	.4	45	32 S	4.7	70	112 S	49
19..	17	C 7	.4	27	9	.7	28	C 9	.5
20..	16	C 7	.4	26	8	.6	22	C 9	.5
21..	15	C 7	.4	38	21 S	3.6	19	C 9	.5
22..	15	C 6	.2	56	28 S	6.4	18	C 9	.5
23..	14	C 6	.2	103	43 S	13	17	C 9	.5
24..	14	C 6	.2	65	19	3.3	15	C 9	.5
25..	13	C 6	.2	48	12	1.6	13	C 8	.2
26..	13	C 6	.2	37	C 9	.8	12	C 8	.2
27..	13	C 6	.2	31	C 9	.8	11	C 8	.2
28..	12	11	.4	32	C 9	.8	10	C 8	.2
29..	12	28	.9	30	C 9	.8	12	C 8	.2
30..	11	10	.3	34	15 S	1.7	10	C 8	.2
31..	---	---	---	31	16	1.3	---	---	---
Total	1314	---	224.0	1211.1	---	123.3	594	---	106.1
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..	16	41 A	2.1	5.3	C 9	0.1	4.0	C 11	0.1
2..	12	16	.5	5.1	C 9	.1	3.8	C 11	.1
3..	10	C 3	.1	8.7	---	.3	3.7	C 11	.1
4..	9.2	C 3	.1	7.9	---	.3	3.8	C 11	.1
5..	8.3	C 10	.2	6.6	C 11	.2	4.0	C 11	.1
6..	8.1	C 10	.2	5.5	C 11	.2	3.8	C 12	.1
7..	7.8	C 10	.2	5.5	C 11	.2	3.8	C 12	.1
8..	7.3	C 10	.2	5.3	C 11	.2	3.8	C 12	.1
9..	7.1	C 10	.2	11	---	.6	4.0	C 12	.1
10..	7.6	C 11	.2	8.2	38 E	.8	4.2	C 12	.1
11..	9.1	C 11	.2	5.7	C 9	.1	11	71 S	3.0
12..	8.1	C 11	.2	5.3	C 9	.1	16	54 S	2.8
13..	8.8	---	.7	5.3	C 9	.1	7.1	19 S	.4
14..	18	65 E	3.0	5.3	C 9	.1	5.3	C 10	.1
15..	11	10 S	.3	5.0	C 9	.1	4.6	C 10	.1
16..	8.1	C 9	.2	4.8	C 9	.1	4.4	C 10	.1
17..	7.3	C 9	.2	4.8	C 7	.1	4.2	C 10	.1
18..	7.1	C 9	.2	4.6	C 7	.1	5.7	C 10	.1
19..	7.5	10 S	.2	4.6	C 7	.1	5.5	C 10	.1
20..	9.1	11	.3	4.6	C 7	.1	7.3	17	.3
21..	6.6	C 9	.2	4.4	C 7	.1	5.5	13	.2
22..	6.4	C 9	.2	4.4	12	.1	4.8	C 7	.1
23..	6.4	C 9	.2	4.4	C 12	.1	4.4	C 7	.1
24..	6.1	C 9	.2	4.2	C 12	.1	4.2	C 7	.1
25..	5.7	C 9	.2	4.0	C 12	.1	4.0	C 7	.1
26..	5.9	C 9	.2	4.0	C 12	.1	3.8	C 7	.1
27..	5.9	C 9	.1	4.0	C 12	.1	3.8	C 7	.1
28..	5.7	C 9	.1	4.0	C 12	.1	3.8	C 7	.1
29..	5.5	C 9	.1	4.0	C 12	.1	4.0	C 7	.1
30..	5.9	C 9	.1	4.0	C 7	.1	3.8	C 7	.1
31..	5.7	C 9	.1	4.0	C 7	.1	---	---	---
Total	253.3	---	11.2	164.5	---	5.1	152.1	---	9.2

Total discharge for year (cfs-days)..... 6,916.3  
 Total load for year (tons)..... 830.4

E Estimated.

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

C Composite period.



## SUSQUEHANNA RIVER BASIN--Continued

1-5675. BIXLER RUN NEAR LOYSVILLE, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
 (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 tem- per- ature (°F)	Sam- pling point	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis
							Percent finer than size indicated, in millimeters										
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	
Oct. 1, 1959.....	0600	67		162	174		--	67	74	86	96	98	99	100		--	BSWC
Oct. 24.....	0635	58		232	346		15	43	65	84	93	98	99	100		--	BSWC
Nov. 28.....	0950	43		67	142		34	54	67	85	89	95	98			99	BSWC
Dec. 12.....	1720	44		137	371		17	34	60	76	88	95	96	98		99	BSWC
Mar. 28, 1960.....	1930	50		126	217		13	30	59	76	90	93	95	98		99	BSWC
Mar. 31.....	0810	50		257	640		--	20	25	57	88	95	98	99		--	BSN
Mar. 31.....	2540	50		257	640		--	46	62	78	89	94	98	99		--	BSWC
May 8.....	2005	56		188	152		18	30	61	75	84	89	90	95		99	BSWC

SUSQUEHANNA RIVER BASIN--Continued  
1-5705. SUSQUEHANNA RIVER AT HARRISBURG, PA.

LOCATION.--At Walnut Street Bridge in Harrisburg, Dauphin County, 3,700 feet upstream from gaging station.  
DRAINAGE AREA.--24,100 square miles, approximately.  
RECORDS AVAILABLE.--Composites of daily samples collected from east channel station 1180, October 1944 to September 1946.  
Cross-section samples: 1 to 3 times monthly, October 1944 to September 1949.  
Monthly cross-section samples: November 1950 to January 1953, March to July 1956, October 1956 to September 1960.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Station	Mean discharge (cfs)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
															Calcium	Non-carbonate			
Oct. 19, 1959..	East Channel 120	9,260	---	---	---	---	47.6	20	125	8.0	3.2	144	128	337	144	128	337	7.0	3
	1600						46.9	42	65	8.0	2.1	100	66	242	100	66	242	6.8	2
	1180						43.5	24	64	6.0	1.8	84	65	212	84	65	212	6.6	3
	West Channel 600						45.8	22	70	6.0	1.4	88	70	220	88	70	220	6.7	3
Nov. 25.....	1100	23,700	---	---	---	---	49.2	88	56	9.0	1.3	124	52	291	124	52	291	7.3	3
	1320						412	160	21	13	2.9	148	17	322	148	17	322	8.0	2
	East Channel 120						45.8	17	80	3.0	3.5	92	78	224	92	78	224	6.9	1
	1600						44.4	34	38	4.0	2.8	66	38	165	66	38	165	6.9	3
Dec. 14.....	1180	129,000	---	---	---	---	44.1	50	35	3.0	2.7	58	34	149	58	34	149	6.9	2
	West Channel 600						43.9	17	42	3.0	2.2	55	41	142	55	41	142	7.1	1
	1100						46.7	65	39	4.0	3.6	88	35	217	88	35	217	7.3	2
	1320						47.8	120	29	9.0	5.2	128	30	289	128	30	289	7.5	2
Jan. 15, 1960..	East Channel 120	35,200	---	---	---	---	43.7	10	41	5.0	5.8	54	46	142	54	46	142	6.6	2
	1600						45.8	23	32	5.5	3.6	51	32	136	51	32	136	6.6	3
	1180						44.4	19	24	4.5	3.1	40	25	104	40	25	104	6.5	3
	West Channel 600						42.8	12	25	2.0	2.2	35	25	92	35	25	92	6.4	3
Jan. 15, 1960..	1100	35,200	---	---	---	---	45.5	46	26	4.5	5.0	63	26	155	63	26	155	6.9	8
	1320						43.9	49	24	3.0	7.8	67	27	161	67	27	161	7.5	8
	East Channel 120						47.1	17	87	6.0	3.2	100	86	246	100	86	246	6.6	5
	1600						46.7	36	43	7.5	3.4	73	44	187	73	44	187	7.1	6
Jan. 15, 1960..	1180	35,200	---	---	---	---	44.1	15	41	4.0	2.1	53	41	138	53	41	138	6.7	2
	West Channel 600						43.7	28	35	3.5	2.9	36	36	143	36	36	143	6.8	2
	1100						45.8	65	27	4.0	4.2	78	25	180	78	25	180	7.5	5
	1320						47.4	102	22	8.0	7.4	108	25	242	108	25	242	7.6	7

[illegible]

a Sodium, potassium calculated as sodium (Na).

b Includes equivalent of 4 parts per million of carbonate ( $\text{CO}_3$ ).

## SUSQUEHANNA RIVER BASIN--Continued

1-5705. SUSQUEHANNA RIVER AT HARRISBURG, PA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960.--Continued

Date of collection	Station	Mean discharge (cfs)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity as H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	Col- or
															Calcium	Non-calcium			
June 16, 1960..	East Channel 600	67,800	0.26	0.20			a9.4		24	104	7.0		3.3		120	101		286	2
	600		.44	.10			a7.8		45	92	7.0		2.7		58	41		232	2
	1180		.25	.10			a5.9		28	46	3.0		1.7		68	45		183	2
	West Channel 600						a5.8		67	29	3.0		4.1		80	25		185	4
July 15.....	1100		.50	.04			a9.4		79	23	4.0		5.3		78	14		193	4
	1320		.52	.04			a7.4		129	17	5.0		7.7		120	15		242	5
	East Channel 120	13,300	.54	.03															
	1180						a36		16	209	6.5		1.8		162	149		376	1
Aug. 26.....	West Channel 600						a22		18	18	8.5		1.6		166	87		208	1
	1100						a15		31	83	4.0		1.6		86	61		216	3
	1320						a9.9		54	56	5.0		2.1		90	46		216	4
	East Channel 120	5,530					a11		100	39	6.5		1.5		108	26		243	3
Sept. 15.....	1100						a8.7		169	22	7.0		6.6		158	20		315	4
	1320																		
	West Channel 600						a33		5	301	8.0		2.4		260	256		542	2
	1180						a46		25	223	8.0		1.9		172	151		521	2
Sept. 15.....	1320						a14		37	54	6.0		.9		106	76		286	2
	East Channel 120	49,500					a17		62	70	8.5		.8		106	55		259	3
	1100						a11		113	44	14		1.0		122	30		291	4
	1320								95	25	12		1.7		98	20		234	4
Sept. 15.....	West Channel 600						a4.1		6	84	4.0		6.0		94	89		228	2
	1180						a8.5		17	53	4.0		4.7		60	46		157	2
	1320						a7.1		25	34	4.0		3.6		49	29		136	2
	West Channel 600						a5.5		24	37	4.0		3.3		54	35		139	3
Sept. 15.....	1100						a7.6		55	42	6.0		2.8		83	38		204	5
	1320						a8.0		96	30	6.0		7.1		106	28		245	7

a Sodium, potassium calculated as sodium (Na).

## SUSQUEHANNA RIVER BASIN--Continued

## 1-5730. SWATARA CREEK AT HARPER TAVERN, PA.

LOCATION--At bridge on State Route 934, at Harper Tavern, Lebanon County, 6 miles northwest of Annville, and 8.5 miles downstream from Little Swatara Creek. DRAINAGE AREA--333 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1949 to September 1950, October 1958 to September 1960.

Water temperatures: October 1939 to September 1960.

Water chemistry: Dissolved solids: Maximum, 140 ppm July 23-29; minimum, 75 ppm May 9-15.

Hardness: Maximum, 90 ppm Sept. 1-4, 6-8, 10-12; minimum, 40 ppm Jan. 3-9, May 9-15.

Specific conductance: Maximum daily, 252 micromhos, Aug. 30; minimum daily, 81 micromhos Apr. 4.

Water temperatures: Maximum, 84°F Aug. 30; minimum, freezing point on many days during December and January.

Sediment concentrations: Maximum daily, 850 ppm Sept. 20; minimum daily, 2 ppm Oct. 17-22, July 26-27, 29.

Sediment loads: Maximum daily, 20,000 tons Sept. 20; minimum daily, less than 0.5 ton July 26-27, 29, Aug. 25-30.

EXTREMES: 1958-60.--Dissolved solids: Maximum, 165 ppm July 12 to Aug. 5, 1959; minimum, 70 ppm Mar. 1, 1961, 16-21, 23-28, 31, Apr. 1-4, 6-11.

Hardness: Maximum, 90 ppm Sept. 1-4, 6-8, 10-12; minimum, 40 ppm Jan. 3-9, May 9-15, 1960.

Specific conductance: Maximum daily, 252 micromhos, Aug. 30; minimum daily, 81 micromhos Apr. 4.

Water temperatures: Maximum, 84°F Aug. 30; minimum, freezing point on many days during December and January.

Sediment concentrations: Maximum daily, 850 ppm Sept. 20, 1960; minimum daily, 2 ppm May 18-31, Sept. 25-30, Oct. 17-22, 1959, July 26-27, 29, 1960.

Sediment loads: Maximum daily, 20,000 tons Sept. 20, 1960; minimum daily, less than 0.5 ton Aug. 16, Sept. 25-30, Oct. 17-22, 1959, July 26-27, 29, Aug. 25-30, 1960.

REMARKS--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (micro-mhos at H <sup>+</sup> 25°C)	Specific conductance (micro-mhos at 25°C)	pH or Col.
																Calcium	Non-carbonate			
Oct. 4-12,																				
14-23, 1959.		8.2	0.00	0.00	0.00	19	7.8	6.0	2.5	25	61	4.6	0.2	3.9	126	80	59	196	7.2	3
Oct. 24-Nov. 8		--	--	--	--	--	--	a 5.5	--	18	41	3.6	--	6.8	94	56	41	145	7.0	4
Nov. 10-24...		--	--	--	--	--	--	a 4.4	--	16	50	3.6	--	4.4	98	64	51	159	6.6	5
Nov. 26-Dec. 5,		--	--	--	--	--	--	a 3.7	--	13	31	3.7	--	7.6	86	46	36	122	6.6	3
Dec. 7-12, 13-17.		--	--	--	--	--	--	--	--	15	39	3.5	--	5.9	102	54	42	139	6.8	2
Jan. 1-2, 1960		--	--	--	--	--	--	a 4.1	--	14	27	3.2	--	7.4	87	40	29	109	6.8	4
Jan. 3-9.....		--	--	--	--	--	--	a 4.6	--	20	36	3.6	--	6.8	98	54	38	139	6.6	2
Jan. 10-24, 26,		--	--	--	--	--	--	a 4.8	--	19	33	3.8	--	6.0	96	51	36	131	7.2	2
Jan. 29-31.....		--	--	--	--	--	--	a 4.4	--	16	28	5.0	--	7.1	85	45	32	118	7.0	3
Feb. 4-13.....		--	--	--	--	--	--	a 3.0	--	18	48	3.2	--	4.0	117	66	51	160	6.7	3
Feb. 16-18.....		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Feb. 20-26.....		8.2	0.04	0.04	0.04	11	4.3	4.1	1.5	16	28	5.0	--	7.1	85	45	32	118	7.0	3
Apr. 19-May 7.		--	--	--	--	--	--	a 3.0	--	18	48	3.2	--	4.0	117	66	51	160	6.7	3

a Sodium, potassium calculated as sodium (Na).

SUSQUEHANNA RIVER BASIN--Continued  
1-5730. SWATARA CREEK AT HARPER TAVERN, PA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (micro-mhos at 25°C)	pH or Color	
																Calcium, magnesium	Non-carbonate			
May 9-15, 1960		--	--	--	--	--	--	a 2.1	--	12	27	3.0	--	3.3	75	40	30	100	6.6	3
May 16-June 2		--	--	--	--	--	--	a 4.6	--	19	32	2.9	--	4.0	81	46	31	117	6.5	3
June 3-14		--	--	--	--	--	--	a 5.3	--	24	40	3.4	--	2.9	96	57	38	139	6.7	3
June 20-22																				
24-July 2		6.8	0.03	0.00	15	7.2	3.2	1.8	26	48	3.0	0.2	3.8	110	67	46	164	7.2	3	3
July 3-12																				
14-22								a 3.4	--	26	48	3.6	--	4.0	120	72	51	171	7.2	3
July 23-29								a 5.8	--	40	54	4.2	--	4.5	140	86	53	201	7.0	3
Aug. 3-10		5.6	.02	.00	18	7.5	2.0	2.0	34	48	4.0	2.0	3.8	115	76	48	188	7.0	4	4
Sept. 1-4, 6-8																				
10-12		--	--	--	--	--	--	a 5.1	--	28	67	3.8	--	4.0	133	90	67	209	7.2	4
Sept. 14, 16-19		--	--	--	--	--	--													
21-23, 25-26		--	--	--	--	--	--	3.0	--	22	33	4.0	--	7.0	100	57	39	144	7.0	6
Time-weighted average		--	--	--	--	--	--	4.3	--	21	42	3.6	--	5.1	103	61	44	150	6.8	3

a Sodium, potassium calculated as sodium (Na).

Temperature (°F) of water, water year October 1959 to September 1960																																
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	
October.....	72	70	67	71	74	72	74	73	72	70	66	63	--	56	58	56	53	59	55	50	52	53	56	60	57	54	54	51	49	51		61
November.....	56	50	48	50	55	56	45	46	48	45	46	48	49	53	47	37	35	38	35	35	35	35	32	32	32	36	40	42	--	41	39	45
December.....	43	42	41	42	43	--	40	39	39	41	47	43	--	42	45	44	43	40	38	--	--	--	--	--	--	--	--	--	--	--	--	--
January.....	38	38	37	38	39	39	41	37	37	38	36	37	39	40	37	38	37	35	33	33	33	33	33	33	33	33	33	33	33	33	37	
February.....	--	--	--	38	38	42	40	36	41	43	49	38	37	--	37	38	39	40	41	39	37	37	37	38	39	37	38	--	--	--	--	
March.....	--	37	--	--	--	36	--	--	34	39	--	--	--	--	38	38	38	39	40	41	39	37	37	38	39	40	46	50	52	--	51	
April.....	52	48	47	46	49	--	47	47	46	46	--	52	53	40	66	65	64	58	60	62	67	67	69	73	74	73	65	59	64	61	--	59
May.....	61	64	63	65	70	71	62	--	51	54	54	54	56	55	62	61	51	62	63	64	64	61	59	63	65	63	52	50	60	65	61	62
June.....	68	70	69	68	74	73	71	69	68	67	76	70	68	66	68	67	74	69	72	--	71	68	--	73	74	77	77	78	79	76	--	72
July.....	69	74	77	72	73	72	76	79	81	78	81	80	--	70	73	71	76	79	79	79	80	80	80	83	80	78	76	81	79	--	77	--
August.....	78	--	82	81	78	--	--	--	--	--	83	75	78	76	78	78	80	81	74	79	83	76	--	--	76	76	79	83	82	84	77	--
September.....	78	77	73	74	--	79	78	78	--	78	--	68	68	--	64	--	67	65	65	64	--	67	66	65	--	64	63	--	--	--	--	--

## SUSQUEHANNA RIVER BASIN--Continued

1-5730. SWATARA CREEK AT HARPER TAVERN, PA.--Continued

Suspended sediment, water year October 1959 to September 1960

Day	OCTOBER			NOVEMBER			DECEMBER		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	805	147	B 480	965	72	188	1370	35	129
2..	631	156	A 110	666	16	29	965	22	57
3..	276	13	10	545	13	19	797	21	45
4..	198	5	3	486	12	16	690	20	37
5..	176	7	3	460	12	15	585	17	27
6..	137	4	1	429	12	14	555	15	22
7..	140	3	1	478	13	17	2390	166	S 1230
8..	120	3	1	429	11	13	1890	54	276
9..	330	30	27	341	10	9	1370	37	137
10..	290	33	26	308	8	7	1140	25	77
11..	179	7	3	288	7	5	965	32	83
12..	158	4	2	272	9	7	2040	99	S 887
13..	134	4	1	252	7	5	4830	711	S 2580
14..	144	4	2	264	7	5	2650	42	A 300
15..	158	5	2	446	13	16	1970	34	181
16..	134	4	1	358	10	10	1530	29	120
17..	120	2	1	350	12	11	1250	26	88
18..	117	2	1	358	13	13	1040	27	76
19..	117	2	1	296	10	8	895	23	56
20..	114	C 2	1	284	9	7	714	20	39
21..	114	C 2	1	268	7	5	624	21	35
22..	117	C 2	1	264	7	5	590	22	35
23..	930	156	S 586	248	6	4	480	C 13	16
24..	2900	371	S 3910	363	58	S 81	450	C 13	16
25..	3160	165	S 1450	848	150	S 371	450	C 13	16
26..	1960	63	S 339	505	18	25	438	C 13	16
27..	1330	41	147	446	12	14	496	17	23
28..	930	34	85	3700	311	S 3480	590	22	35
29..	696	22	41	2710	100	S 749	1160	101	S 328
30..	580	17	27	1690	49	224	832	27	61
31..	606	40	65	--	--	--	654	14	25
Total	17791	--	7329	19317	--	5372	36400	--	7053
Day	JANUARY			FEBRUARY			MARCH		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	575	13	20	333	8	7	600	10	16
2..	525	13	18	300	8	6	480	10	13
3..	2560	428	S 3880	240	6	4	430	12	A 13
4..	2290	89	S 576	230	10	6	380	12	A 13
5..	1570	40	170	250	15	10	410	12	A 13
6..	1180	28	89	702	117	S 256	380	12	12
7..	1000	19	51	660	46	82	350	12	A 11
8..	881	20	48	496	18	24	320	12	A 11
9..	720	17	33	482	15	20	290	11	9
10..	630	14	24	491	15	20	300	12	10
11..	600	12	19	1540	114	S 629	270	12	A 8
12..	520	10	14	1610	70	304	260	12	A 8
13..	550	12	18	1100	27	80	260	12	A 8
14..	612	41	68	890	18	43	260	12	A 8
15..	851	60	S 141	720	22	43	250	C 12	8
16..	850	31	S 75	670	35	63	270	C 12	8
17..	600	13	21	636	37	64	290	17	13
18..	600	11	18	709	46	S 89	330	21	19
19..	804	14	30	2730	211	S 1620	520	26	37
20..	580	14	22	1700	57	S 270	473	20	26
21..	490	14	19	1160	28	A 90	478	17	22
22..	420	12	14	978	C 11	24	443	17	20
23..	455	12	15	849	C 11	24	399	14	15
24..	412	14	16	712	C 11	24	426	12	14
25..	366	13	13	646	C 11	24	439	13	15
26..	370	12	17	1060	59	S 175	376	11	11
27..	350	10	9	933	19	48	387	11	11
28..	454	21	25	737	12	24	555	22	33
29..	451	20	24	730	12	A 24	870	51	120
30..	408	14	15	--	--	--	1350	109	A 420
31..	358	10	10	--	--	--	2350	196	S 1250
Total	24012	--	5507	24294	--	4097	15196	--	2195

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

B Computed from estimated-concentration graph.

C Composite period.

## SUSQUEHANNA RIVER BASIN--Continued

1-5730. SWATARA CREEK AT HARPER TAVERN, PA. --Continued

Suspended sediment, water year October 1959 to September 1960--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..	1960	112	593	268	7	5	905	25	61
2..	1400	52	197	264	C	9	724	C	16
3..	1280	66	274	226	C	9	628	C	16
4..	4800	474	6180	216	C	9	590	C	16
5..	5150	194	2740	206	C	4	560	C	16
6..	3420	80	750	199	C	4	764	152	S
7..	2180	75	482	192	C	4	482	40	52
8..	1880	52	264	282	13	S	402	28	30
9..	1520	50	205	2950	226	S	353	9	9
10..	1160	32	100	1780	60	S	328	6	5
11..	933	22	55	1360	60	220	286	9	7
12..	800	23	50	1130	20	61	417	112	S
13..	676	22	40	1400	50	189	548	112	S
14..	610	24	40	1090	20	59	470	48	S
15..	560	26	39	912	18	44	1170	243	S
16..	525	18	26	737	11	22	622	55	92
17..	505	16	27	646	15	26	451	35	43
18..	460	25	31	1130	57	S	912	95	234
19..	414	18	20	814	33	73	575	35	54
20..	379	C	9	688	53	98	439	16	19
21..	361	C	9	908	85	S	364	12	12
22..	346	14	13	1280	142	491	332	10	9
23..	324	C	13	1120	100	518	314	10	8
24..	310	C	13	1680	50	227	300	9	7
25..	300	C	13	1280	30	104	353	25	24
26..	292	C	13	1020	C	18	261	8	6
27..	303	13	11	821	C	18	216	5	3
28..	292	7	5	700	C	18	189	7	4
29..	264	C	7	1180	91	S	302	175	9
30..	250	C	7	877	40	95	186	10	5
31..	--	--	--	1360	96	353	--	--	--
Total	33854	--	12409	29516	--	5633	14316	--	2411
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..	202	11	5	123	14	5	419	189	S
2..	324	14	12	101	12	3	126	34	12
3..	230	5	3	88	C	13	82	12	3
4..	199	7	4	82	C	13	68	C	6
5..	169	8	4	129	25	9	68	C	6
6..	139	8	3	148	20	A	65	C	6
7..	129	10	3	104	12	A	62	C	6
8..	120	9	3	98	12	A	54	C	6
9..	110	5	1	95	13	3	56	6	1
10..	107	3	1	117	15	A	85	7	2
11..	110	3	1	129	16	6	199	22	S
12..	193	5	2	92	C	4	3510	292	S
13..	110	4	1	79	C	4	3490	154	S
14..	428	119	S	79	C	4	1310	40	141
15..	510	70	96	105	40	S	744	26	52
16..	252	18	12	129	32	11	535	19	27
17..	165	8	4	104	20	6	426	16	18
18..	142	5	2	79	C	5	426	16	18
19..	126	5	2	68	C	5	1160	73	S
20..	149	7	3	70	C	5	8740	--	E
21..	120	7	2	79	C	5	3570	164	S
22..	100	5	1	79	C	5	1880	42	213
23..	94	4	1	104	C	6	1320	28	100
24..	88	3	1	73	C	6	940	22	56
25..	85	4	1	62	C	3	737	19	38
26..	82	2	T	54	C	3	616	24	40
27..	79	2	T	51	C	3	530	C	16
28..	85	3	1	51	C	3	469	C	16
29..	82	2	T	51	C	3	430	C	16
30..	172	--	E	48	C	3	482	C	16
31..	258	--	E	85	33	S	--	--	--
Total	5099	--	998	2756	--	118	32599	--	29742
Total discharge for year (cfs-days).....									254150
Total load for year (tons).....									82264

E Estimated.

S Computed by subdividing day.

T Less than 0.5 ton.

A Computed from partly estimated concentration graph.

C Composite period.



SUSQUEHANNA RIVER BASIN--Continued  
1-5730. SWATARA CREEK AT HARPER TAVERN, PA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N<sub>1</sub> in native water;  
P, pipet; S, sieve; V, visual accumulation tube; W<sub>1</sub> in distilled water)

Date of collection	Time (24 hour)	Water tem- per- ature (°F)	Sam- pling point	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis	
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
Oct. 24, 1959.....	1430	60		4,420	671		14	25	48	65	80	85	92	96			99	BSWC
Nov. 28.....	0945	--		4,210	953		15	38	58	71	84	88	93	97			99	BSWC
Dec. 13.....	0550	45		6,130	298		16	25	44	56	70	75	88	94			98	BSWC
Dec. 13.....	0550	45		6,130	318		5	14	26	48	68	76	86	94			98	BSN
Jan. 3, 1960.....	1845	38		4,250	454		17	31	51	65	77	79	87	93			96	BSWC
Apr. 4.....	1130	46		5,850	646		8	27	41	58	74	87	91	95			98	BSWC
May 9.....	1500	51		3,410	213		13	25	38	59	77	85	87	92			97	BSWC
Sept. 12.....	1650	63		6,070	786		7	19	44	60	77	86	91	96			98	BSWC

## SUSQUEHANNA RIVER BASIN--Continued

1-5765. CONESTOGA CREEK AT LANCASTER, PA.

LOCATION.--At raw-water intake for Lancaster, Lancaster County, 500 feet upstream from gaging station at Pennsylvania Railroad bridge, and 0.8 mile east of Lancaster.

DRAINAGE AREA.--322 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1950, October 1958 to September 1960.

EXTREMES, 1947-50.--Specific conductance: Maximum daily, 463 micromhos, Oct. 3; minimum daily, 184 micromhos Apr. 5.

Water temperatures: Maximum, 78°F Aug. 10, 11; minimum, 33°F Mar. 5.

EXTREMES, 1947-50.--Dissolved solids (1947-49): Maximum, 276 ppm July 11-20, 1948; minimum, 156 ppm Apr. 11-20, 1948.

Hardness (1947-50): Maximum, 193 ppm Sept. 1-10, 1948; minimum, 109 ppm May 21-31, 1950.

Specific conductance: Maximum daily, 464 micromhos, July 4, 1948; minimum daily, 142 micromhos Jan. 6, 1949.

Water temperatures: Maximum, 83°F June 30 to July 3, 1959; minimum, freezing point on many days during winter months.

REMARKS.--Records of specific conductance of daily samples available in district office at Philadelphia, Pa. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub> : Calcium, magnesium	Total acidity as H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	pH or	Col-
Oct. 2-7, 9-24, 1952	15			0.00	0.00	55	17	9.3	3.8	188	46	10	0.2	14	267	207	53	430	7.5	4
Oct. 25, 1952																				
Oct. 4, 6, 8-15, 1952																				
Nov. 16-25, 1952																				
Dec. 1-10, 1952	14			0.00	0.00	42	11	7.1	1.8	166	37	9.6		13	218	172	53	361	7.4	3
Jan. 1-10, 1960	11			0.03	0.00	44	12	6.0	2.3	137	32	8.9		21	208	188	52	385	7.6	3
Feb. 2-10, 1960	11			0.00	0.00	46	13	7.3	2.8	138	36	8.4		21	202	160	47	320	7.2	4
Mar. 1-10, 1960	12			0.05	0.00	44	16	5.8	1.9	145	32	8.4		22	220	169	56	330	7.7	8
Apr. 1-3, 4-10, 1960	13			0.04	0.00	31	19	5.8	2.2	94	27	7.0		15	238	176	57	347	7.9	2
May 1-10, 1960	13			0.05	0.00	41	17	5.2	2.0	164	28	7.6		19	189	118	41	253	7.5	3
June 1-10, 1960	10			0.02	0.01	41	19	5.0	2.1	133	25	7.1		18	215	173	38	353	7.9	3
July 1-10, 1960	11			0.02	0.00	47	14	7.8	2.5	170	26	7.8		15	183	143	34	306	7.3	7
Aug. 1-10, 1960	11			0.02	0.00	47	13	7.8	3.5	160	28	8.2		15	212	175	36	355	7.9	3
Sept. 1-10, 1960	12			0.02	0.03	47	13	7.6	3.5	162	30	8.5		16	213	171	40	348	7.8	3
															233	171	38	356	7.8	5

a Sodium and potassium calculated as sodium (Na).

SUSQUEHANNA RIVER BASIN--Continued  
1-5765. CONESTOGA CREEK AT LANCASTER, PA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960																																			
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.....		--	70	68	70	72	74	--	71	70	68	63	60	58	66	57	59	57	55	54	52	55	53	59	57	58	53	51	50	55	61				
November.....		53	52	50	53	--	53	--	49	48	48	48	46	52	50	45	48	45	41	40	39	40	47	45	47	43	44	48	--	--	47				
December.....		40	40	40	41	39	41	39	41	40	37	41	43	45	48	40	47	45	--	45	44	43	42	39	36	40	41	45	46	46	40	42			
January.....		38	40	42	40	42	40	40	38	40	44	38	38	39	40	39	38	37	39	37	36	35	35	38	40	39	39	44	--	--	40				
February.....		24	41	40	37	36	40	40	44	39	40	42	48	43	38	36	35	36	40	37	40	38	39	40	40	40	39	39	44	--	--	40			
March.....		39	38	36	34	33	35	39	35	35	37	38	40	40	41	42	--	40	41	41	42	40	43	42	40	43	41	48	50	54	55	41			
April.....		55	55	--	50	53	48	44	47	47	48	48	49	50	54	57	58	60	60	56	55	57	62	65	65	67	65	64	63	63	58	--	56		
May.....		59	57	58	59	64	63	62	61	58	59	58	57	58	60	63	57	64	66	65	66	65	62	59	59	58	54	63	63	60	61	61	61		
June.....		62	65	68	70	70	70	72	68	68	63	68	70	67	--	67	66	68	69	68	70	69	68	68	68	70	70	71	--	72	74	--	69		
July.....		73	70	75	70	70	71	73	71	70	73	74	73	75	74	--	73	73	73	75	75	72	73	75	--	75	--	74	74	72	73	73			
August.....		71	--	72	75	74	76	76	75	77	78	78	75	75	74	75	73	74	74	73	73	75	74	73	72	73	74	75	76	74	74	--	66		
September.....		75	75	72	72	72	71	73	72	73	73	68	65	63	60	61	62	--	63	62	62	65	64	64	60	62	62	66	66	--	--	66			

## POTOMAC RIVER BASIN

1-5970. CRABTREE CREEK NEAR SWANTON, MD.

LOCATION.--Temperature recorder at gaging station, 0.9 mile upstream from Middle Fork, 1.0 mile downstream from Springlick Run, and 5.0 miles northeast of Swanton, Garrett County.

DRAINAGE AREA.--16.7 square miles.

RECORDS AVAILABLE.--Water temperatures: February 1952 to December 1955, July 1956 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 74°F Aug. 3, 8, 9, 30, Sept. 1; minimum, freezing point on many days during December to March.

EXTREMES, 1952-60.--Water temperatures: Maximum, 82°F Aug. 2, 3, 1955; minimum, freezing point on many days during winter months.

REMARKS.--Records probably because of friction in recorder. Records of discharge for water year October 1959 to September 1960 given in NSP 1702.

Temperature (°F) of water, water year October 1959 to September 1960

(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Average																															
Day																															
Month																															
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	63	64	65	65	65	64	63	65	62	62	56	52	51	52	52	54	52	50	51	48	48	50	52	50	47	46	46	45	46	49
Maximum	60	57	56	57	58	58	60	56	60	56	56	51	48	50	48	45	47	48	44	43	43	45	47	47	46	46	42	41	42	46	50
Minimum	49	47	44	50	51	45	42	41	41	42	43	43	46	44	44	42	42	34	36	36	39	38	38	40	40	36	39	40	38	--	42
November	47	42	39	44	48	45	41	39	38	38	38	40	39	42	40	38	34	33	34	34	35	38	34	33	35	39	38	36	--	38	--
Maximum	39	40	40	39	40	39	38	35	34	37	43	43	41	40	43	44	44	42	38	38	36	32	34	37	40	44	44	41	39	39	
Minimum	36	38	39	38	37	38	33	32	32	32	34	37	41	39	39	40	41	42	37	36	36	32	32	34	37	40	42	41	39	37	
December	35	35	38	38	38	38	37	35	35	38	37	37	42	42	39	38	39	35	34	32	32	33	32	33	32	33	34	36	38	37	36
Maximum	37	38	40	38	38	38	38	37	40	38	44	44	46	42	40	40	39	36	36	33	34	35	32	36	32	36	38	39	38	38	38
Minimum	35	33	38	38	38	38	37	35	35	38	37	42	42	39	38	39	35	34	32	32	33	32	33	32	33	34	36	38	37	36	36
January	38	37	34	34	36	36	35	35	39	42	42	37	36	33	33	33	38	36	32	32	32	34	36	34	35	34	32	34	--	35	35
February	35	33	32	32	34	34	32	32	35	38	37	35	32	32	32	32	35	32	32	32	32	33	32	33	32	32	32	32	--	33	33
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34	35	36	36	33	36	37	36	36	40	40	42	42	34	34
Minimum	44	46	44	44	43	44	48	45	42	42	45	52	53	54	53	57	56	52	52	54	54	61	60	62	63	61	58	56	58	--	52
March	42	41	42	40	40	39	40	41	38	38	37	43	41	45	48	48	47	41	42	45	51	49	52	53	54	51	48	45	51	--	45
Maximum	55	57	59	60	63	63	60	56	48	47	46	46	47	47	56	60	61	56	61	63	62	61	57	60	56	56	54	52	55	56	56
Minimum	47	44	46	46	48	50	54	47	45	45	44	45	44	45	44	49	51	50	54	56	54	53	52	52	54	54	52	51	51	52	49
June	57	59	60	64	65	64	62	63	63	65	62	63	67	63	69	71	67	69	69	61	61	65	64	67	69	70	71	72	69	--	65
Maximum	50	51	55	55	57	57	53	53	52	58	59	61	59	56	60	59	57	58	59	57	58	59	55	58	58	64	65	--	57	57	57
Minimum	66	71	68	69	68	65	68	68	70	66	63	70	66	66	67	68	66	68	69	70	71	70	70	71	71	71	71	71	72	71	69
July	63	61	59	61	58	57	57	56	57	60	63	60	61	59	56	55	58	59	61	61	58	58	61	63	62	64	65	63	65	60	60
Maximum	72	73	74	71	72	70	73	74	70	69	66	72	69	72	67	71	70	69	69	69	70	72	69	70	70	70	73	74	70	71	71
Minimum	62	63	66	66	65	65	65	67	65	64	64	64	64	64	64	64	64	62	61	62	63	64	64	64	58	60	62	63	64	66	67
August	74	73	71	70	70	70	73	72	72	68	66	64	60	61	62	64	60	62	62	64	61	64	64	64	64	64	63	62	61	60	61
September	65	66	63	61	65	65	65	64	64	66	64	60	58	55	54	57	59	60	61	61	60	60	59	58	57	56	56	58	57	--	50
Maximum	55	66	63	61	65	65	65	64	64	66	64	60	58	55	54	57	59	60	61	61	60	60	59	58	57	56	56	58	57	--	60





## POTOMAC RIVER BASIN--Continued

1-6116. CACAPON RIVER AT GREAT CACAPON, W. VA.

LOCATION.--At the Potomac Edison hydroelectric plant, 4 miles downstream from gaging station, 1 mile south of Great Cacapon, Morgan County, 2.5 miles upstream from mouth.  
 RECORDS AVAILABLE.--Water temperatures, October 1946 to September 1960.  
 Sediment records: October 1959 to September 1960 (periodic).  
 EXTREMES, 1958-60.--Water temperatures: Maximum, 78°F on many days during July to September; minimum, 33°F on several days during March.

EXTREMES, 1946-54, 1958-60.--Water temperatures: Maximum, 96°F July 23, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Sediment samples collected at gaging station. Sediment discharge measurements usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in NSP 1702.

Temperature (°F) of water, water year October 1959 to September 1960

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.....	70	68	---	---	68	70	70	70	---	---	68	65	64	64	62	---	---	58	57	56	56	56	---	55	54	54	52	52	52	---	---		
November.....	---	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	---		
December.....	41	41	40	40	---	---	38	38	38	38	38	38	38	40	40	40	40	40	40	38	38	38	38	38	38	38	38	38	38	38	39	---	
January.....	---	38	38	38	38	38	37	37	37	37	37	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	---	
February.....	34	36	36	36	36	---	---	---	---	---	---	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	---	
March.....	34	34	34	34	34	34	33	33	33	33	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
April.....	43	---	---	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	---		
May.....	---	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	---	
June.....	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	---	
July.....	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	---	
August.....	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	---
September.....	78	78	---	---	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	---

## POTOMAC RIVER BASIN--Continued

## 1-6130. POTOMAC RIVER AT HANCOCK, MD.

LOCATION.--Temperature recorder at gaging station, 0.2 mile downstream from Little Tonoloway Creek, 0.5 mile downstream from Little Tonoloway Creek, Washington County, and 1.1 miles upstream from Tonoloway Creek.

DRAINAGE AREA.--4,075 square miles.

RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 88°F Aug. 29; minimum, freezing point Jan. 23-27, Mar. 4-11.

EXTREMES, 1952-60.--Water temperatures: Maximum, 93°F July 22, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Records fair, because of friction in recorder. Range during this period Aug. 5-8: 78°F to 84°F. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Month	Temperature (°F) of water, water year October 1959 to September 1960 (Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)																															Average	
	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		
October	71	71	71	73	75	77	76	74	76	74	74	70	65	62	62	63	63	60	58	57	55	57	57	57	55	54	53	52	52	64			
Maximum	70	70	70	70	72	73	74	73	73	72	70	65	62	60	58	57	57	56	55	55	55	55	55	54	53	52	51	51	62				
Minimum	54	54	52	51	52	54	54	51	49	47	46	47	47	45	45	45	47	45	41	40	40	39	41	41	40	39	41	40	40	46			
November	52	52	49	50	51	52	51	49	47	45	45	45	45	45	45	47	49	46	45	41	39	38	39	39	40	38	38	39	40	39	44		
Maximum	39	39	39	40	40	40	40	38	37	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	39		
Minimum	38	38	38	39	40	40	38	37	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36		
December	40	38	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37		
Maximum	38	36	36	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36		
Minimum	39	39	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37		
January	37	39	37	36	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37		
Maximum	36	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	36	
Minimum	37	36	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	36	
February	45	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
Maximum	45	45	47	47	47	47	46	46	47	45	47	50	53	57	59	62	64	61	61	62	66	68	70	71	71	70	67	66	65	65	65	65	57
Minimum	66	65	66	67	69	71	70	68	58	54	52	52	52	52	52	52	53	59	59	62	67	69	69	68	67	65	62	64	64	64	64	64	55
March	64	60	61	62	63	66	67	57	54	52	52	52	52	52	52	52	53	59	62	67	69	69	68	66	65	62	64	64	64	64	64	64	55
April	65	67	70	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Maximum	62	64	67	70	70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
Minimum	80	82	82	82	81	80	81	81	83	79	76	83	84	81	78	79	82	82	83	85	83	84	85	87	86	84	83	84	84	84	84	84	84
May	77	75	77	78	76	75	75	74	74	76	74	74	79	73	75	77	77	76	80	78	79	79	80	79	79	77	78	80	77	77	77	77	77
Maximum	86	87	85	84	--	--	--	--	85	83	82	79	81	79	81	79	81	82	83	85	85	85	85	85	85	85	85	85	85	85	85	85	83
Minimum	78	80	77	77	--	--	--	--	79	79	77	77	76	78	73	77	76	76	77	78	78	77	75	74	75	75	79	80	81	81	81	81	77
June	84	84	84	82	80	79	81	83	83	81	79	72	69	68	70	70	68	68	71	71	69	69	67	67	67	67	67	67	67	67	67	67	74
Maximum	78	79	77	76	77	77	75	76	76	72	69	68	67	68	68	68	68	68	68	68	68	68	68	68	67	66	66	66	66	66	66	66	66
Minimum	78	79	77	76	77	77	75	76	76	72	69	68	67	68	68	68	68	68	68	68	68	68	68	68	67	66	66	66	66	66	66	66	66



## POTOMAC RIVER BASIN--Continued

1-6145. CONOCOCHEAGUE CREEK AT FAIRVIEW, MD.

LOCATION --- At highway bridge 0.7 mile downstream from gaging station at Fairview, Washington County.

LOCATION.--At Highway bridge, 0.1  
DRAINAGE AREA --494 square miles.

DRAINAGE AREA. 22494 square miles. April 1948 to September 1950.

Sediment records: March 1959 to September 1960 (periodic).

REMARKS. -- Sediment-discharge measurements in 1960 usually made during periods of high-water discharge. Records of discharge for water year October 1959 to October 1960 are not available.

Periodic determinations of suspended-sediment discharge and particle size. March 1959 to September 1960

Odor determinations of suspended-sediment discharge and particle size, March 1966 to September 1966. (Methods of analysis: B bottom withdrawal tube; C chemically dispersed; D decantation; N in native water.)

B pipot: 3 sterile: V visual accumulation tube: W in distilled water)  
: B, bottom withdrawal tube; C, chemically dispersed; D, decantation,  
B pipot: 3 sterile: V visual accumulation tube: W in distilled water)





## POTOMAC RIVER BASIN--Continued

1-6340. NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA.

LOCATION.--At gaging station at bridge on State Highway 55, 1.5 miles southeast of Strasburg, Shenandoah County, 2.2 miles upstream from Cedar Creek, and 10 miles upstream from confluence with South Fork.

RECORDS AVAILABLE.--772 square miles.

RECORDS AVAILABLE.--Chemical analyses: April 1929 to March 1930, October 1948 to September 1949, October 1955 to September 1956.

TEMPERATURES.--October 1948 to September 1955 to September 1956 (periodic).

SEDIMENT CONCENTRATIONS.--October 1955 to September 1956 (periodic).

EXTREMES, 1955-56.--Sediment concentrations: Maximum daily, 344 ppm Mar. 15; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 2,470 tons Mar. 15; minimum daily, less than 0.50 ton on many days.

REMARKS.--Sediment-discharge measurements in 1960 were usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Periodic determinations of suspended-sediment discharge and particle size, January to September 1960  
(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)	Samp- ling point	Water tem- per- ature (°F)	Discharge (cfs)	Sediment con- cen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
			43	740	4	8.0	--	--	--	--	--	--	--	--	--	--	--	SBWC
Jan. 16, 1960.....	1450		50	6860	188	3480	23	46	66	84	91	93	96	98				SBWC
Mar. 30.....	1620		---	7360	261	5190	---	---	---	---	---	---	---	---	---	---	---	SBWC
Mar. 31.....	1005		52	4060	102	1120	---	---	---	---	---	---	---	---	---	---	---	SBWC
Apr. 1.....	0945		52	3320	76	682	---	---	---	---	---	---	---	---	---	---	---	SBWC
Apr. 1.....	1955		52	4520	124	4510	---	---	---	---	---	---	---	---	---	---	---	SBWC
Apr. 4.....	1755		50	11000	626	18600	28	50	70	87	93	94	97	98			SBWC	
Apr. 5.....	1900																	SBWC

## POTOMAC RIVER BASIN--Continued

1-6385, POTOMAC RIVER AT POINT OF ROCKS, MD.

LOCATION.--At gaging station at bridge on U.S. Highway 15 at Point of Rocks, Frederick County, 0.3 mile downstream from Catocin Creek (Virginia), and 6 miles upstream from Monocacy River.

DRAINAGE AREA.--6,600 square miles. March 1959 to September 1960 (periodic).

REMARKS.--Sediment-discharge measurements usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Periodic determinations of suspended-sediment discharge and particle size. March 1959 to September 1960  
(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)	Sam- pling point	Water tem- per- ature (°F)	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis		
							Percent finer than size indicated, in millimeters												
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000		2.000	
Mar. 3, 1959.....	1000		39	3120	9	76	---	---	---	---	---	---	---	---	---	---	---	---	SBWC
Oct. 1.....	1100		---	1310	382	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 2.....	1500		---	25200	918	62600	64	79	93	98	100	---	---	---	---	---	---	---	---
Oct. 2.....	2245		---	18200	691	33900	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 3.....	0635		---	20000	320	17300	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 3.....	0850		---	19100	311	16000	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 3.....	1305		---	16800	268	12200	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 3.....	1805		---	14700	208	8260	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 4.....	1135		---	9900	124	3320	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 4.....	1640		---	9120	113	2780	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 5.....	1440		---	6480	77	1350	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 6.....	1445		---	4740	64	820	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 7.....	1500		---	3120	38	320	---	---	---	---	---	---	---	---	---	---	---	---	---
Oct. 10.....	1050		---	2390	33	213	---	---	---	---	---	---	---	---	---	---	---	---	---
Dec. 13.....	1520		---	4770	28	361	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 15, 1960.....	1840		43	9160	14	350	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 16.....	1105		38	13600	20	740	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 16.....	1220		39	14300	20	770	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 16.....	1715		39	17400	33	1560	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 17.....	1440		40	26600	135	9700	60	68	89	95	98	99	99	---	---	---	---	---	---
Jan. 18.....	0920		40	21600	124	7240	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 19.....	0900		40	17300	56	2620	---	---	---	---	---	---	---	---	---	---	---	---	---
Jan. 20.....	0855		37	15900	30	1290	---	---	---	---	---	---	---	---	---	---	---	---	---
Mar. 18.....	1210		38	6820	2	37	---	---	---	---	---	---	---	---	---	---	---	---	---
Mar. 21.....	1005		39	11400	11	340	---	---	---	---	---	---	---	---	---	---	---	---	---
Mar. 30.....	1240		52	73400	627	124000	---	---	---	---	---	---	---	---	---	---	---	---	---
Mar. 31.....	1105		50	81900	1130	250000	---	---	---	---	---	---	---	---	---	---	---	---	---
Apr. 1.....	0845		49	97800	653	175000	26	44	59	79	91	93	97	99	---	---	---	---	---
Apr. 1.....	0845		49	97800	663	175000	9	20	33	57	96	98	99	100	---	---	---	---	---
Apr. 1.....	0845		49	97800	663	175000	---	---	---	---	---	---	---	---	---	---	---	---	---



## POTOMAC RIVER BASIN--Continued

1-6390. MONOCACY RIVER AT BRIDGEPORT, MD.

LOCATION.--At gaging station on right bank 60 feet downstream from bridge on State Highway 32 at Bridgeport, Carroll County, 0.9 mile upstream from Cattail Branch, 3.4 miles northeast of Taneytown, and 4.8 miles downstream from confluence of Rock and Marsh Creeks at Pennsylvania-Maryland State line. DRAINAGE AREA.--173 square miles.

RECORDS AVAILABLE, --Chemical analyses: April 1948 to June 1951.

**Sediment records:** March to September 1960 (periodic).

REMARKS.--Sediment-discharge measurements in 1960 were usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

periodic determinations of suspended-sediment discharge and particle size, March to September 1960

(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)





POTOMAC RIVER BASIN--Continued  
1-6425, LINGANORE CREEK NEAR FREDERICK, MD.

LOCATION.--Temperature recorder at gaging station on left bank, 2.2 miles upstream from mouth, and 4 miles east of Frederick.

Frederick County.

DRAINAGE AREA.--82.3 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1960.

EXTREMES, 1951-60.--Water temperatures: Maximum, 82°F Aug. 8, 30; minimum, freezing point on many days during January to March.

EXTREMES, 1951-60.--Water temperatures: Maximum, 90°F June 30, 1959; minimum, freezing point on many days during winter months.

REMARKS.--Sediment-discharge measurements usually made during periods of high-water discharge. Records of discharge for water

year October 1959 to September 1960 given in WSP 1702.

Month	Temperature (°F) of water, water year October 1959 to September 1960 (Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)																															Average
	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	
October	72	72	70	74	76	76	74	72	74	74	74	68	63	59	59	57	59	58	55	56	54	53	55	59	59	55	55	53	51	50	53	62
Maximum	70	68	66	68	69	70	70	70	70	70	68	60	56	56	55	52	53	54	51	49	51	52	55	55	55	53	50	46	46	50	58	58
Minimum	56	53	49	52	58	60	56	48	46	45	45	49	48	52	52	48	49	43	39	39	39	43	42	46	42	46	49	47	40	--	48	--
November	53	49	45	49	52	56	48	44	41	41	41	45	43	48	48	46	43	38	36	36	38	39	39	42	42	39	39	46	40	37	--	43
Maximum	41	40	40	39	38	41	41	38	37	37	38	46	46	42	39	41	43	43	39	36	36	34	34	34	34	37	43	44	44	42	40	40
Minimum	38	37	37	35	36	38	38	36	34	35	36	38	42	39	37	37	41	45	39	35	34	34	34	34	34	37	43	42	38	37	37	37
December	38	36	40	40	38	39	39	38	38	38	42	40	40	41	42	44	47	48	39	38	34	34	32	32	32	32	34	34	37	35	36	38
Maximum	35	34	36	38	37	38	39	38	36	35	38	38	38	41	37	36	37	38	34	32	32	32	32	32	32	32	34	38	37	38	37	38
Minimum	38	37	34	34	36	41	41	36	40	44	48	45	37	32	32	32	34	35	34	34	38	38	37	36	38	37	38	37	38	37	38	37
January	36	34	32	32	34	36	36	34	35	40	44	37	32	32	32	32	32	32	32	32	32	33	34	35	35	36	35	34	35	36	--	34
Maximum	36	34	34	32	32	32	32	32	32	32	33	34	37	37	39	35	37	43	43	42	43	42	42	46	46	45	49	54	56	56	56	40
Minimum	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	38	39	39	38	41	39	41	42	46	52	55	54	37	37	
February	56	56	54	56	56	51	55	54	53	52	53	60	60	64	65	67	68	67	61	62	65	70	72	73	73	72	68	62	64	62	62	62
Maximum	51	52	49	48	49	46	49	51	50	47	52	54	57	60	60	64	58	54	54	56	62	62	64	65	66	62	67	62	67	64	65	55
Minimum	55	54	55	56	58	59	61	56	54	56	55	55	54	62	62	61	66	67	65	68	64	67	67	68	69	69	66	67	70	70	--	67
March	71	74	76	76	78	78	74	73	71	71	72	70	69	69	71	74	78	73	75	74	71	73	76	76	78	78	77	75	--	74	--	74
Maximum	62	64	68	71	69	71	67	64	62	62	61	66	67	65	65	68	68	64	67	67	68	69	69	66	67	67	67	70	70	--	71	--
Minimum	73	73	79	79	78	75	77	76	79	75	72	78	81	74	76	77	78	80	78	79	81	81	79	78	75	78	75	78	76	74	77	71
April	71	68	69	71	69	67	69	66	67	70	68	71	70	67	66	69	70	73	72	69	68	70	72	73	73	71	72	70	71	70	--	70
Maximum	80	81	80	78	80	79	79	82	81	77	77	74	74	73	79	77	77	76	78	77	77	77	77	77	73	75	78	80	81	82	79	78
Minimum	73	73	75	74	74	74	75	74	73	72	71	70	71	71	70	69	68	69	71	72	72	72	72	66	66	68	71	74	75	74	72	72
May	81	79	76	76	74	75	77	77	78	76	74	68	66	66	67	69	67	67	71	69	68	67	67	67	67	64	65	65	65	70	--	71
Maximum	73	73	68	66	71	70	69	68	70	72	68	64	63	60	63	64	66	66	66	67	67	67	63	62	62	60	62	64	65	--	66	--
Minimum	73	73	75	74	74	74	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50



## POTOMAC RIVER BASIN--Continued

1-6430. MONOCACY RIVER AT JUG BRIDGE, NEAR FREDERICK, MD.

LOCATION.--At Riech's Ford Bridge, 1 mile downstream from U.S. Highway 40, 1.2 miles downstream from gaging station, and 2 miles southeast of Frederick, Frederick County.

FREDERICK COUNTY.  
DRAINAGE AREA. ---817 square miles.

RECORDS AVAILABLE. -- Sediment records: March 1959 to September 1960 (periodic).

REMARKS: ---Sediment discharge measurements usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

periodic determinations of suspended-sediment discharge, March 1959 to September 1960

(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; ; periodic determinations of suspended-sediment discharge; March 1955 to September 1955)

P. pipet: S. sleeve: V. visual accumulation tube: W. in distilled water)

## POTOMAC RIVER BASIN--Continued

1-6440. GOOSE CREEK NEAR LEESBURG, VA.

LOCATION.--At gaging station at highway bridge, at Evergreen Mills, 6.7 miles south of Leesburg, Loudoun County.

DISCHARGE.--Sediment discharge.

RECORDS AVAILABLE.--Sediment discharge: March 1959 to September 1960 (periodic).

REMARKS.--Sediment discharge measurements usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

Periodic determinations of suspended-sediment discharge, March 1959 to September 1960

(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)	Temp- er- ature point (°F)	Discharge (cfs)	Sediment con- cen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis	
						Percent finer than size indicated, in millimeters											
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000		2.000
Mar. 4, 1959.....	1625	42	113	4	1.2												
Jan. 15, 1960.....	1510	43	338	54	49												
Mar. 18.....	1120	36	333	9	8.1												
Apr. 3.....	1550	52	611	112	185												S
Apr. 9.....	1250	53	1580	347	1480												
May 23.....	1005	--	1700	678	3120	5	12	47	72	88	96	98	99	100	100		SBC



## POTOMAC RIVER BASIN--Continued

1-6452. WATTS BRANCH AT ROCKVILLE, MD.

LOCATION.--Temperature recorder at gaging station on left bank, 0.2 mile south of State Highway 28, 1.3 miles west of post office in Rockville, Montgomery County.  
DRAINAGE AREA.--3.70 square miles.

RECORDS AVAILABLE.--Water temperatures: September 1957 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 80°F Aug. 22, 29; minimum, 34°F Jan. 22-24, Feb. 13-15, Mar. 2-15, 25.

EXTREMES, 1957-60.--Water temperatures: Maximum, 88°F June 29, 30, 1959; minimum, freezing point on several days during winter months.

Temperature (°F) of water, water year October 1959 to September 1960

(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

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	70	69	74	76	76	72	71	73	72	72	66	59	58	57	59	58	55	56	53	53	58	61	59	54	55	54	55	54	52	51	54	
Maximum	68	65	66	63	66	66	67	66	68	67	66	59	55	55	54	51	52	53	50	48	51	52	55	58	54	51	49	46	46	51	57		
Minimum	58	55	51	54	59	62	56	49	48	48	48	52	51	56	54	50	52	43	42	43	48	46	49	49	44	52	53	46	42	--	50		
November	53	49	45	49	53	56	48	44	42	42	43	47	44	51	48	48	43	39	38	38	41	43	42	46	43	40	43	46	41	39	--	45	
Maximum	45	44	45	45	44	47	47	43	43	43	44	49	49	44	43	46	47	47	45	40	42	40	38	38	40	44	49	50	45	44	45	41	
Minimum	40	39	40	40	40	44	41	40	38	39	39	44	43	41	39	40	44	45	40	38	40	37	36	36	37	40	44	46	45	44	40	41	
December	42	40	44	43	42	43	42	44	41	43	45	41	44	44	44	43	41	41	40	37	37	36	37	38	40	41	43	43	45	42	42	40	
Maximum	37	36	40	40	40	41	42	40	38	38	41	38	39	42	43	38	37	40	38	36	34	34	35	35	36	40	42	40	42	40	39	38	
Minimum	44	42	40	41	41	48	44	40	45	50	53	45	40	35	36	38	42	42	41	41	39	44	43	42	40	44	44	42	42	--	--	42	
January	40	38	35	35	37	41	38	36	40	44	45	40	34	34	34	35	37	36	35	35	38	36	36	36	37	36	36	37	38	--	--	37	
February	41	39	36	34	34	36	36	37	36	39	38	40	40	41	44	36	40	44	46	44	44	44	48	43	47	52	57	58	58	56	54	43	
Maximum	35	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	35	35	38	37	36	37	35	36	37	37	41	48	50	50	50	37	
March	46	47	48	47	46	43	44	47	45	42	41	47	47	50	53	54	55	51	47	46	50	55	54	57	59	59	58	52	49	54	--	50	
Maximum	58	57	51	60	52	52	58	56	54	54	55	62	62	66	66	68	67	61	61	65	71	72	72	74	71	63	58	64	62	--	62		
Minimum	46	47	48	47	46	43	44	47	45	42	41	47	47	50	53	54	55	51	47	46	50	55	54	57	59	59	58	52	49	54	--	50	
April	53	63	64	65	67	68	65	60	56	58	59	54	57	56	64	69	66	64	67	71	69	62	61	65	71	72	72	74	71	63	58	64	62
Maximum	53	49	49	50	52	53	54	56	52	50	53	52	51	50	51	54	55	57	61	61	61	65	65	67	67	67	67	67	67	67	67	64	
Minimum	59	69	71	69	73	71	69	69	68	68	70	67	66	69	69	71	73	69	69	72	68	67	69	70	72	73	74	74	74	74	--	70	
May	56	57	61	62	61	62	58	58	56	56	56	60	62	63	62	62	58	60	61	62	62	62	62	62	62	62	62	62	62	64	64	--	60
Maximum	64	64	64	66	65	62	65	61	62	64	65	63	65	66	63	61	64	65	66	66	64	63	65	67	65	67	68	66	66	66	66	65	
Minimum	75	78	75	78	78	73	76	77	77	74	73	76	74	73	76	74	73	74	75	76	78	74	77	71	72	75	75	80	78	76	75	75	
June	66	67	69	69	69	69	69	69	69	69	68	66	67	66	67	66	67	66	65	64	65	67	69	67	67	64	62	65	67	68	69	69	67
July	68	75	77	76	75	73	75	75	76	69	68	74	77	73	73	73	74	75	73	75	74	75	77	77	77	75	76	72	73	73	75	74	74
Maximum	64	64	64	66	65	62	65	61	62	64	65	63	65	66	63	61	64	65	66	66	64	63	65	67	65	67	68	66	66	66	66	66	65
Minimum	75	78	75	78	78	73	76	77	77	74	73	76	74	73	76	74	73	74	75	76	78	74	77	71	72	75	75	80	78	76	75	75	
August	66	67	69	69	69	69	69	69	69	69	68	66	67	66	67	66	67	66	65	64	65	67	69	67	67	64	62	65	67	68	69	69	67
September	77	76	73	73	70	73	73	73	71	71	68	64	64	65	66	64	65	66	64	65	68	65	65	65	63	62	63	60	61	61	61	60	66
Maximum	70	69	64	62	57	66	65	64	66	66	66	63	59	57	57	60	62	63	63	63	61	59	57	57	56	57	56	57	59	60	--	61	
Minimum	77	78	75	78	78	73	76	77	77	74	73	76	74	73	76	74	73	74	75	76	78	74	77	71	72	75	75	80	78	76	75	75	

## POTOMAC RIVER BASIN--Continued

1-6460. DIFFICULT RUN NEAR GREAT FALLS, VA.

LOCATION.--At gaging station on right bank 300 feet downstream from Rocky Run, 0.7 mile upstream from mouth, and 1.5 miles southeast of Great Falls, Fairfax County, VA.--58 square miles, approximately.

RECORDS AVAILABLE.--Sediment records: March 1959 to September 1960 (periodic).

REMARKS.--Sediment-discharge measurements usually made during periods of high-water discharge. Records of water discharge available from Virginia Department of Conservation and Economic Development, Division of Water Resources.

Periodic determinations of suspended-sediment discharge and particle size, March 1959 to September 1960  
(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)	Sam- pling point	Water tem- per- ature (°F)	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 2, 1959.....	1015		42	37	2	0.2	--	--	--	--	--	--	--	--	--	--	SEN	
Mar. 18, 1960.....	1040		39	83	28	6.3	--	--	--	--	--	--	--	--	--	--		
May 9.....	1210		--	249	130	88	--	--	--	--	--	--	--	--	--	--		
May 23.....	0920		66	51	240	33	--	--	--	--	--	--	--	--	--	--		
Sept. 12.....	0850		68	450	965	1180	4	8	18	35	55	83	87	96	98	--	SBWC	
Sept. 12.....	0850		68	450	965	1180	11	18	25	39	64	82	86	94	98	--		
Sept. 12.....	1140		69	500	722	955	--	--	--	--	--	--	--	--	--	--		
Sept. 12.....	1505		70	461	405	505	--	--	--	--	--	--	--	--	--	--		
Sept. 13.....	1040		65	59	29	4.6	--	--	--	--	--	--	--	--	--	--		





## POTOMAC RIVER BASIN--Continued

1-6480, ROCK CREEK AT SHERRILL DRIVE, WASHINGTON, D. C.

LOCATION.--At gaging station at bridge on Sherrill Drive in Rock Creek Park, Washington, 7.5 miles upstream from mouth.

**DRAINAGE AREA.--62.2 square miles.**

RECORDS AVAILABLE.--Sediment records: October 1959 to September 1960 (periodic).

REMARKS. --Sediment-discharge measurements usually made during periods of high-water discharge. Records of discharge for water year October 1959 to September 1960 given in WSP 1702.

periodic determinations of suspended-sediment discharge and particle size, water year October 1959 to September 1960

terminations of suspended-sediment discharge and particle size, water, from October 1995 to September 1996. Methods of analysis: B. bottom withdrawal tube; C. chemically dispersed; D. decantation; N. in native water:

P. pinet: S. sieve: V. visual accumulation tube: W. in distilled water)











## RAPPAHANNOCK RIVER BASIN

1-6640. RAPPAHANNOCK RIVER AT REMINGTON, VA.

LOCATION.--At gaging station on left bank 80 feet upstream from bridge on U.S. Highway 29 at Remington, Fauquier County, 0.3 mile upstream from Tinpot Run, 0.4 mile downstream from Ruffans Run, and 2.5 miles downstream from Hazel River, and at mile 35.2.

DRAINAGE AREA.--616 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1956.

Water temperatures: May 1951 to September 1956, October 1958 to September 1959.

Sediment records: April 1951 to September 1960.

EXTREMES, 1959-60.--Sediment concentrations: Maximum daily, 1,330 ppm Oct. 1; minimum daily, 5 ppm Nov. 14, 22.

Sediment loads: Maximum daily, 21,900 tons Feb. 19; minimum daily, 2 tons Nov. 19-23.

EXTREMES, 1951-60.--Sediment concentrations: Maximum daily, 1,330 ppm Oct. 1, 1959; minimum daily, 1 ppm on many days.

Sediment loads: Maximum daily, 23,400 tons June 10, 1951; minimum daily, less than 0.50 ton on many days.

REMARKS.--Flow affected by ice Dec. 24, Jan. 22-26, Feb. 15, 16, Mar. 3-17.

Suspended sediment, water year October 1959 to September 1960  
(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..	2820	1330	8830	361	--	20	475	--	20
2..	1070	--	660	316	--	9	409	--	10
3..	566	--	220	300	--	8	367	--	10
4..	379	75	77	280	--	6	338	--	9
5..	280	--	40	280	--	5	316	--	9
6..	232	--	30	270	7	5	300	8	6
7..	193	--	20	260	--	5	515	--	50
8..	177	--	20	260	--	5	579	--	40
9..	280	--	30	250	--	4	439	--	10
10..	295	--	40	230	--	4	385	--	10
11..	241	--	30	220	--	4	355	--	10
12..	290	--	30	220	--	3	425	--	40
13..	173	--	20	210	--	3	1090	--	410
14..	374	--	90	210	5	3	800	--	160
15..	832	91	204	214	--	3	638	--	70
16..	540	--	90	205	--	3	572	--	40
17..	350	--	30	197	--	3	514	19	30
18..	280	10	8	193	--	3	718	--	140
19..	230	--	5	185	--	2	1120	--	260
20..	210	--	3	181	--	2	865	--	70
21..	200	--	3	181	--	2	728	--	30
22..	200	--	3	185	5	2	638	--	20
23..	600	--	50	181	--	2	540	--	20
24..	1600	245	1060	272	--	20	480	71	92
25..	1780	140	673	540	--	80	488	224	295
26..	1120	--	140	385	--	10	475	131	168
27..	761	--	80	285	--	8	475	--	70
28..	618	--	50	691	--	130	463	--	30
29..	482	--	40	995	--	160	735	--	180
30..	415	--	20	618	--	40	664	--	110
31..	379	--	20	--	--	--	546	--	40
Total	17967	--	12616	9175	--	554	17452	--	2459

S Computed by subdividing day.

## RAPPAHANNOCK RIVER BASIN--Continued

1-6640. RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	475	--	20	364	--	5	1030	--	110
2..	427	--	20	348	--	5	925	--	80
3..	1000	182 S	539	326	--	4	800	23	50
4..	1100	110 S	352	296	--	4	700	32	60
5..	778	--	90	342	--	9	660	20	36
6..	659	23	41	2300	--	1900	620	23	39
7..	610	--	30	1620	169	739	600	36	58
8..	624	--	40	1100	58	172	580	31	49
9..	544	--	30	925	31	77	560	20	30
10..	484	--	20	806	28	61	540	18	26
11..	460	--	20	1210	70	229	540	15	22
12..	442	--	20	995	--	80	540	12	17
13..	496	--	20	820	--	40	540	15	22
14..	502	14	19	855	--	40	540	12	17
15..	673	34	62	710	17	33	540	--	20
16..	855	40	92	640	18	31	540	--	20
17..	673	--	40	666	18	32	540	--	20
18..	604	--	30	1150	--	540	925	27	67
19..	610	--	30	7450	1060 S	21900	1250	--	180
20..	550	--	20	3160	--	3500	1620	--	300
21..	484	--	20	2000	--	840	1440	--	240
22..	400	--	10	1590	65	279	1320	--	180
23..	420	9	10	1400	50	189	1290	44	153
24..	410	6	7	1210	41	134	1250	36	122
25..	370	--	5	1180	50	159	1290	--	100
26..	370	--	5	2000	--	810	1140	25	77
27..	397	--	6	1780	80	384	1060	34	97
28..	442	--	7	1400	--	250	1140	--	250
29..	460	--	7	1250	--	180	1620	102	446
30..	430	--	7	--	--	--	2000	170	660
31..	392	--	5	--	--	--	2450	155 S	1030
Total	17141	--	1624	39893	--	32626	30590	--	4578
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..	1920	--	390	490	12	16	1480	110	440
2..	1510	--	200	490	--	10	1100	65	193
3..	1730	174 S	1000	442	8	10	960	45	117
4..	4140	597 S	6700	419	--	9	820	45	100
5..	8630	694 S	16100	402	--	10	764	40	83
6..	6440	217 S	3920	386	9	9	645	35	61
7..	3510	145	1370	375	10	10	580	30	47
8..	2520	103	701	1580	132 S	1160	520	25	35
9..	2000	73	394	4790	270 S	3710	472	20	25
10..	1620	54	236	2150	94	546	436	15	18
11..	1400	--	140	1480	54	216	419	15	17
12..	1250	30	101	1180	--	140	402	20	22
13..	1100	29	86	1140	37	114	419	20	23
14..	995	25	67	925	26	65	3320	760 S	7410
15..	960	21	54	792	--	40	3050	543 S	4920
16..	890	--	50	680	17	31	1360	158 S	607
17..	820	--	40	592	17	27	890	80	192
18..	799	17	37	995	157 S	449	736	79	157
19..	729	15	30	666	90	162	598	80	129
20..	673	19	35	556	31	47	532	48	69
21..	645	11	19	528	27	38	478	28	36
22..	624	10	17	3120	763 S	7400	466	24	30
23..	592	10	16	3080	980 S	8610	472	30	38
24..	562	8	12	1480	175 S	715	868	638 S	1810
25..	544	9	13	960	80	207	466	80	101
26..	514	11	15	792	55	118	392	30	32
27..	792	39	83	708	45	86	358	30	29
28..	666	50	90	1910	280 S	1750	326	25	22
29..	544	17	25	2000	165 S	899	396	277 S	514
30..	502	--	20	1620	91 S	442	538	611 S	983
31..	--	--	--	2600	463 S	3630	--	--	--
Total	49621	--	31961	39328	--	30676	24303	--	18260

S Computed by subdividing day.



## RAPPAHANNOCK RIVER BASIN--Continued

1-6640. RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	430	140	163	224	42	25	471	273	S 460
2..	532	205	294	178	25	12	197	97	52
3..	302	--	170	131	24	8	150	41	17
4..	342	--	100	124	23	8	135	31	11
5..	301	--	40	420	459	S 548	150	62	25
6..	272	21	15	273	90	66	214	79	46
7..	251	21	14	519	--	370	154	42	17
8..	243	15	10	222	83	50	140	28	11
9..	258	--	9	182	28	14	140	20	8
10..	230	17	11	178	34	16	373	372	S 427
11..	286	20	15	185	73	36	2010	1060	S 6900
12..	291	23	18	144	69	27	3130	613	S 5420
13..	243	15	10	782	251	S 704	1200	134	S 459
14..	345	243	S 359	666	138	S 267	568	50	77
15..	370	269	S 288	1100	536	S 1720	375	28	28
16..	224	--	20	680	198	S 380	286	21	16
17..	214	22	13	344	80	74	247	23	15
18..	198	18	10	238	30	19	282	32	24
19..	210	22	12	198	42	22	527	55	78
20..	240	23	14	162	120	52	2100	567	S 3510
21..	238	26	17	158	52	22	764	98	202
22..	174	25	12	160	35	15	490	40	53
23..	154	25	10	160	24	10	392	29	31
24..	137	18	7	150	27	11	331	--	20
25..	128	13	4	130	25	9	291	19	15
26..	118	13	4	120	10	3	259	--	10
27..	140	15	6	114	10	3	243	15	10
28..	186	18	9	115	14	4	230	11	7
29..	144	22	9	110	11	3	214	12	7
30..	150	30	12	110	9	3	222	40	24
31..	140	18	7	250	11	7	--	--	--
Total	7571	--	1683	8528	--	4508	16285	--	17980
Total discharge for year (cfs-days).....									277,854
Total load for year (tons).....									159,525

S Computed by subdividing day.

## RAPPAHANNOCK RIVER BASIN--Continued

## 1-6640. RAPPAHANNOCK RIVER AT REMINGTON, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
 (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)	Sam- pling point	Water tem- per- ature (°F)	Discharge (cfs)	Sediment con- cen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Apr. 6, 1960.....	0640			8360	188		6	17	32	49	68	81	91	96	99	100	SEWC	

## MISCELLANEOUS ANALYSES OF STREAMS IN NORTH ATLANTIC SLOPE BASINS

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity as H <sup>+</sup>	Specific conductance (micro-mhos at 25°C)	Color or pH
CONNECTICUT RIVER BASIN																				
MAD RIVER AT WATERBURY, CONN.																				
Apr. 5, 1960.				0.22						5	20	6.0			84	23	56		84	5.8
May 9.....										0	37								137	4.3
1-1890. PEQUABUCK RIVER AT FORRESTVILLE, CONN.																				
Apr. 6, 1960.	390			0.23						12	20	5.8			65	24	26		82	5.9
May 9.....	al 89									25	9.4								94	6.3
HOUSATONIC RIVER BASIN																				
1-2069. NAUGATUCK RIVER AT THOMASTON, CONN.																				
Apr. 6, 1960.	al 820			0.14						8	28	3.0			64	19	27		54	6.1
May 9.....	203									10	22								93	6.1
NAUGATUCK RIVER ON COLONIAL ST., AT WATERBURY, CONN.																				
Apr. 5, 1960.				0.23						8	13	2.8			53	19	23		54	6.1
May 9.....										17	14								83	6.5
STEEL BROOK AT WATERBURY, CONN.																				
Apr. 5, 1960.				0.17						11	18	5.0			107	24	30		86	6.6
May 9.....										30	36								173	6.7
NAUGATUCK RIVER ON BANK ST., AT WATERBURY, CONN.																				
Apr. 5, 1960.				0.18						7	21	3.8			61	18	30		55	6.1
May 9.....										18	15								93	6.7

a Discharge at time of sampling.

## MISCELLANEOUS ANALYSES OF STREAMS IN NORTH ATLANTIC SLOPE BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> ) (Al)	Alum-inum (Al)	Iron (Fe)	Man-ga-nese (Mn)	Cal-cium (Ca)	Mag-nesium (Mg)	Sodium (Na)	Po-tas-sium (K)	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chloride (Cl)	Fluo-ride (F)	Ni-trate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>	Total acidity (micro-mhos at 25°C)	pH	Col-or
Apr. 5, 1960.				0.20					8	13	2.6				73	19	59	6.5	
May 9, 1960.								15	24						73	31	116	6.4	

## HOUSATONIC RIVER BASIN--Continued

NAUGATUCK RIVER AT PLATTS MILL WATERBURY, CONN.

Apr. 5, 1960.				0.13					8	16	4.8				56	21	67	6.1	
May 9, 1960.								16	12						56	23	78	6.6	

## HOP BROOK NEAR NAUGATUCK, CONN.

Apr. 5, 1960.				0.13					8	16	4.8				56	21	67	6.1	
May 9, 1960.								16	12						56	23	78	6.6	

## DELAWARE RIVER BASIN

1-4315. LACKWAXEN RIVER AT HAWLEY, PA.

Oct. 13, 1959.	320	6.6		0.01	0.03	11	1.1	4.0	1.5	23	17	2.5	0.2	2.1	64	32	13	87	6.7	3
Nov. 21, 1959.	136	3.2		.02	.00	11	1.3	4.0	1.5	26	15	3.2	.1	1.3	53	33	12	89	6.5	3
Nov. 24, 1959.	330	4.6		.03	.01	7.8	.6	4.1	.8	21	17	2.5	.1	1.4	53	30	13	78	6.6	5
Jan. 6, 1960.	920	21		.03	.02	8.6	1.6	4.5	1.0	20	13	1.5	.1	1.7	42	22	12	65	6.5	5
Feb. 16, 1960.	680			.03	.02	8.6	1.6	4.5	1.0	20	13	3.0	.1	1.2	62	28	12	83	6.7	10
Apr. 25, 1960.	290	1.9		.00	.00	7.3	1.8	3.0	1.0	20	13	2.2	.2	.3	49	26	9	67	7.1	3
May 11, 1960.	290	2.4		.02	.01	10	.9	3.7	1.8	25	13	2.2	.2	1.3	--	29	8	77	7.1	5
Aug. 2, 1960.	123	--		--	--	--	--	b3.7	--	35	8.8	3.2	--	1.0	62	36	8	83	6.6	9
Sept. 21, 1960.	2,600	--		--	--	--	--	b1.6	--	19	10	1.5	--	.8	--	23	10	62	6.6	16

1-4325. SHOHOLA CREEK NEAR SHOHOLA, PA.

Oct. 21, 1959.		5.4		0.04	0.00	3.3	1.5	2.8	0.8	8	11	2.0	0.0	0.9	35	14	8	50	5.7	15
Apr. 25, 1960.		2.7		.05	.01	3.3	.7	2.2	.8	8	8.4	1.5	.2	.3	40	11	5	36	6.6	22

1-4395. BUSH KILL AT SHOEMAKERS, PA.

Oct. 21, 1959.	126	3.6		0.02	0.00	3.3	1.5	2.3	0.8	8	11	1.2	0.0	0.5	30	14	8	38	5.8	15
Apr. 25, 1960.	206	1.9		.03	.01	3.3	1.0	2.0	.4	7	9.2	.8	.3	.2	34	12	7	35	6.5	8

## 1-4425. BROADHEAD CREEK AT MINISINK HILLS, PA.

Oct. 21, 1959.	136	3.9		0.00	11	1.3	4.0	0.8	22	15	3.8	0.1	1.6	56	33	15	92	6.1	3
Apr. 25, 1960.	412	3.4		.01	6.9	2.1	2.0	1.3	18	12	2.5	.1	.9	48	26	11	65	7.1	2

## 1-4455. PEQUEST RIVER AT PEQUEST, N. J.

Oct. 21, 1959.	52	7.3		0.02	52	26	11	2.0	223	55	8.8	0.2	4.2	278	237	54	457	7.8	10
Apr. 25, 1960.	172	4.3		.05	47	20	6.8	2.2	190	40	8.7	.1	4.0	237	200	44	353	7.9	15

## 1-4465. DELAWARE RIVER AT BELVIDERE, N. J.

Oct. 21, 1959.	3,000	3.1	0.01	8.2	2.1	4.0	0.9	23	14	3.5	0.2	0.9	56	29	10	76	6.8	6	
Apr. 25, 1960.	6,420	1.2	.02	.01	8.2	2.1	2.2	.9	23	12	2.3	.1	1.0	52	29	10	72	7.1	4

## 1-4475. LEHIGH RIVER AT STODDARTSVILLE, PA.

Apr. 26, 1960.	165	1.9		0.00	3.3	1.2	b1.8	0.9	7	9.2	1.4	0.2	0.2	40	13	8	34	6.4	10
July 12, .....	85						b1.2		6	8.6	.5		.2		12	7	30	6.8	

## 1-4480. LEHIGH RIVER AT TANNERY, PA.

Oct. 22, 1959.		3.0	0.2	0.03	0.00	3.3	1.0	2.0	0.5	4	11	1.6	0.2	0.4	27	12	9	44	5.6	8
Apr. 26, 1960.		1.1		.00	.00	2.4	1.2	1.8	.8	6	8.4	1.2	.2	.2	22	11	6	28	6.3	10
July 12, .....		--		--	--		--	b1.8	--	8	7.1	1.0	--	.5	--	12	6	32	6.9	--

## 1-4500. POHOPOCO CREEK NEAR PARRYVILLE, PA.

Oct. 22, 1959.	52	5.4		0.00	0.00	4.1	1.5	2.3	0.8	8	11	2.4	0.0	2.1	35	16	10	48	6.1	3
Apr. 26, 1960.	169	3.7		.03	.01	3.3	1.9	2.2	.8	12	6.5	2.2	.2	2.3	37	16	6	39	6.7	4
July 13, .....	199	--		--	--		--	b2.3	--	10	6.1	1.0	--	1.3	--	12	4	31	6.8	--

b Sodium, potassium calculated as sodium (Na).

## MISCELLANEOUS ANALYSES OF STREAMS IN NORTH ATLANTIC SLOPE BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Total acidity (micro-mhos at 25°C)	Color	
																Calcium, magnesium	Non-carbonate sum			
DELAWARE RIVER BASIN--Continued																				
LEHIGH RIVER AT LEHIGH GAP, PA.																				
July 13, 1960 c								b13		18	57	1.5		3.2		50	35		179	6.7
July 13 d....								b9.2		12	47	2.0		2.4		44	34		150	6.5
July 13 e....								b3.0		6	30	1.5		.5		32	27		90	6.1
1-4510. LEHIGH RIVER AT WALNUTPORT, PA.																				
Oct. 22, 1959.	664	5.9		0.03	0.49	11	3.8	4.7	1.0	5	51	2.6	0.9	0.9	94	48	44		149	5.5
Apr. 26, 1960.	1,640	4.1		.00	.29	7.3	5.0	3.0	1.0	6	31	2.2	.5	.9	66	34	29		98	6.2
1-4515. LITTLE LEHIGH CREEK NEAR ALLENTOWN, PA.																				
Apr. 26, 1960.	119	9.0		0.00	0.00	33	16	4.0	2.0	140	20	5.6	0.2	9.4	185	149	34		286	8.1
July 28.....	60							b 7.8		1146	18	4.0		9.0		136	15		280	8.4
JORDAN CREEK NEAR OREFIELD, PA.																				
July 13, 1960.								b 6.0		888	39	4.5		8.7		118	41		250	8.8
July 28.....								b 6.9		92	34	5.0		8.4		110	35		248	8.2
1-4520. JORDAN CREEK AT ALLENTOWN, PA.																				
Oct. 22, 1959.	16	6.6		0.00	0.00	39	13	6.8	2.0	126	44	5.8	0.2	6.1	205	151	48		327	6.8
Apr. 26, 1960.	119	5.2		.00	.00	24	7.5	5.0	2.0	6	34	4.8	.2	9.4	138	91	39		212	7.1
1-4525. MONOCACY CREEK AT BETHLEHEM, PA.																				
Apr. 22, 1960.	66	6.8		0.00	0.00	49	24	4.0	2.4	174	57	6.2	0.1	11	260	221	79		419	7.9
July 28.....	42							b 6.4		189	56	5.0		12		216	61		430	7.9

## 1-4570. MUSCONETONG RIVER NEAR BLOOMSBURY, N. J.

Oct. 21, 1959.	254	5.6		0.00	0.00	15	7.2	4.1	1.0	60	18	6.0	0.1	1.8	105	67	18	153	6.8	3
Apr. 25, 1960.	218	5.5		.01	.02	19	14	4.0	1.2	100	20	5.0	.1	5.1	133	105	23	216	7.5	5

## 1-4595. THICKON CREEK NEAR PIPERSVILLE, PA.

Oct. 22, 1959.	6.7	2.8		0.02	0.00	29	11	15	3.2	86	51	21	0.3	2.0	192	118	47	312	7.2	5
Apr. 25, 1960.	37	.3		.15	.00	18	6.8	8.2	1.6	52	34	9.0	.1	1.2	122	73	31	191	7.3	7

## 1-4655. NESHAMINY CREEK NEAR LANGHORNE, PA.

Oct. 23, 1959.	73	9.4		0.00	0.00	21	10	14	2.8	70	40	18	0.1	6.8	165	94	36	270	7.1	5
Apr. 25, 1960.	148	1.4		.32	.01	18	8.0	12	2.2	51	37	12	.1	8.6	136	78	36	220	7.1	8

## 1-4695. LITTLE SCHUYLKILL RIVER AT TAMAQUA, PA.

Oct. 22, 1959.	26	9.0	1.2	0.02	0.00	7.8	2.6	2.7	0.8	0	36	2.0	0.1	0.4	65	30	30	0.4	110	4.4	1
Apr. 27, 1960.	112	4.9	.4	.00	.21	5.3	2.4	1.8	1.1	1	23	2.0	.0	.8	55	23	22	.1	75	4.8	2

## MAIDEN CREEK AT CROSS KEYS, PA.

Oct. 22, 1959.	11			0.01	2.6	46	27	9.9	2.5	5	227	4.8	0.5	0.7	358	226	222		518	5.3	1
Apr. 27, 1960.		8.7		.01	2.0	36	21	9.0	2.2	11	168	3.2	.1	5.1	275	177	168		397	6.6	2

## 1-4710. TULPEHOCKEN CREEK NEAR READING, PA.

Oct. 22, 1959.	80	5.6		0.01	0.00	50	14	6.0	3.0	174	30	7.5	0.3	1.1	212	183	40		368	7.5	1
Apr. 27, 1960.	283	4.5		.00	.00	43	13	4.0	2.4	148	26	6.4	.1	1.1	209	161	40		324	7.7	3

## 1-4730. PERKIMON CREEK AT GRATERFORD, PA.

Oct. 6, 1959.	68	5.6			0.00	19	6.6	b 11	6.3	2.0	85	33	12	2.4	154	100	31		262	7.7	10
Apr. 27, 1960.	256										56	36		4.0	118	75	29		182	7.1	3

e Right side.

f Includes equivalent of 2 parts per million of carbonate (CO<sub>3</sub>).g Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

b Sodium, potassium calculated as sodium (Na).

c Left side.

d Left center.

## MISCELLANEOUS ANALYSES OF STREAMS IN NORTH ATLANTIC SLOPE BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>	Total acidity (H <sup>+</sup> )	Specific conductance (micro-mhos at 25°C)	Color or pH	
DELAWARE RIVER BASIN--Continued																				
1-4740. WISSAHICKON CREEK AT PHILADELPHIA, PA.																				
Oct. 23, 1959.		14		0.00	0.00	31	17	19	4.8	116	51	21	0.2	18	240	148	53		375	7.0
Apr. 27, 1960.		8.2		.00	.00	27	13	14	5.0	92	41	18	.2	13	200	121	46		318	6.9
SUSQUEHANNA RIVER BASIN																				
1-5360. LACKAWANNA RIVER AT OLD FORGE, PA.																				
Nov. 4, 1959.	497	8.4	--	0.00	1.0	29	17	10	2.5	3	146	4.0	0.4	3.3	237	143	140	--	349	5.3
Dec. 18, 1959.	890	7.9	1.2	.02	1.4	27	17	10	5.0	0	141	4.0	--	2.5	214	138	138	0.2	342	4.4
Jan. 27, 1960.	379	12	5.3	.07	3.4	70	47	10	2.1	0	400	7.0	.2	1.4	590	368	368	.8	812	4.0
Mar. 9, 1960.	315	11	2.0	.04	2.6	61	41	15	2.9	6	329	16	.3	1.3	512	321	316	--	712	5.7
Apr. 20, 1960.	656	8.8	1.6	.07	1.6	32	23	8.5	2.0	0	186	4.5	.2	4.3	288	175	175	.3	432	4.0
June 1, 1960.	358	6.1	--	.02	.67	19	9.5	5.6	1.6	4	485	4.2	--	3.7	170	87	83	.8	524	6.0
July 15, 1960.	358	--	--	--	--	--	--	--	--	0	489	9.5	--	.3	750	460	460	.8	948	4.2
Aug. 23, 1960.	164	--	--	--	--	--	--	--	--	0	573	8.0	--	.7	850	530	530	1.4	1,080	3.8
1-5410. WEST BRANCH SUSQUEHANNA RIVER AT BOWER, PA.																				
Oct. 21, 1959.	49	14	11	0.13	1.9	109	36	62	4.0	0	603	13	0.3	1.4	865	420	420	2.1	1,240	3.5
Apr. 26, 1960.										0	287	1.5	--	.9	415	204	204	.6	592	4.2
1-5412. WEST BRANCH SUSQUEHANNA RIVER NEAR CURWENSVILLE, PA.																				
Apr. 22, 1960.	342	--	--	--	--	--	--	--	--	0	196	2.0	--	1.4	296	152	152	0.4	443	4.4
Apr. 26, 1960.	324	8.6	3.7	0.00	0.94	46	14	22	2.5	0	222	5.0	0.3	1.2	335	173	173	.6	501	4.2
June 10, 1960.	241	8.6	3.7	.04	1.3	41	13	20	1.3	0	213	4.0	.2	.8	340	156	156	.5	457	4.4
July 28, 1960.	246	9.8	7.0	.08	1.5	70	19	40	1.4	0	380	7.0	.1	.8	562	253	253	1.2	812	3.7
Aug. 1-10, 1960.	--	13	7.4	--	1.6	63	20	38	4.4	0	342	4.0	.2	1.5	514	239	239	2.1	746	3.8
Sept. 1-10, 1960.	--	15	14	.66	2.7	106	35	76	3.9	0	650	6.0	.2	1.2	934	409	409	2.2	1,300	3.4



WEST BRANCH SUSQUEHANNA RIVER AT CHATHAM RUN, PA.

[illegible]

1-5540. SUSQUEHANNA RIVER AT SUNBURY, PA.

[illegible]

1-5545. SHAMOKIN CREEK AT WEIGH SCALE, PA.

[illegible]

1-5730. SWATARA CREEK AT HARPER TAVERN, PA.

	June 7, 1960.	482	7.5	0.04	0.01	12	5.7	3.2	1.6	24	34	3.2	0.2	4.0	89	54	34	133	71.9	2
	July 7, .....	139	7.9	.19	17	6.9	2.6	2.5	1.2	26	50	6.0	—	5.9	135	76	55	186	81.8	5
	Sept. 1, .....	419	—	—	—	—	—	b3.5	—	26	54	4.0	—	—	—	—	—	166	77.0	5

<sup>b</sup> Sodium, potassium calculated as sodium (Na).

c Left side.

### h Center and right side.

1 Station 400.

j Station 920.

Station 1420.

1 Station 1980.

## PART 2. SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS

## PASQUOTANK RIVER BASIN

2-438.52. PASQUOTANK RIVER NEAR ELIZABETH CITY, N. C.

LOCATION:--At end of county road 4.6 miles northwest of Elizabeth City, Pasquotank County, and 4.0 miles downstream from Lake Drummond Canal.

DATE:--APR. 27, 1960. SQUARE MILES OF BASIN:--1.0. DISTANCE TO NEAREST TOWN:--Elizabeth City, N. C. 10.0 miles.

RECORDS AVAILABLE:--October 1957 to September 1960.

Water temperatures:--October 1957 to September 1960.

EXTREMES, 1959-60.--Chloride: Maximum, 39 ppm Oct. 1; minimum, 8.5 ppm Feb. 1-29.

Specific conductance: Maximum daily, 190 microhos Oct. 1; minimum daily, 60 microhos Feb. 2, Sept. 15.

Water temperatures: Maximum, 88°F Aug. 6, Sept. 1; minimum, 39°F Mar. 4, 5, 10, 11.

EXTREMES, 1957-60.--Chloride: Maximum, 1,630 ppm Nov. 29, 1958; minimum, 7.7 ppm Mar. 1-10, 1958.

Specific conductance: Maximum daily, 5,020 microhos Nov. 10, 1958; minimum daily, 60 microhos May 20, 1958, Feb. 2, Sept. 15, 1960.

\* Specific temperatures: Maximum, 90°F July 31, 1958, June 8, 29, 1959; minimum, 33°F Feb. 18, 1958.

REMARKS:--Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (microhos at 25°C)	pH	Color
														Residue at 180°C	Calculation				
Oct. 1, 1959...																			
Oct. 2-31.....		11	0.78	6.2	2.3	10	2.7	14	8.9	39	--	0.9		--	--	12	190	6.5	--
Nov. 1-30.....		12	.59	6.4	2.6	8.8	1.5	13	14	16	0.3	.8		138	69	25	103	6.2	360
Dec. 1-31.....		11	.38	6.8	2.7	8.4	1.4	7	17	12	.3	2.7		143	67	27	102	5.4	220
Jan. 1-31, 1960		10	.54	5.1	2.9	7.1	1.1	7	15	12	.2	1.0		122	66	28	100	5.2	180
Feb. 1-29.....		7.3	.26	4.7	1.6	5.8	1.0	6	9.0	8.5	.3	2.3		110	57	25	88	5.3	240
Mar. 1-31.....		3.9	.38	5.1	1.4	6.0	.8	4	11	9.0	.3	.9		92	44	18	74	5.5	180
Apr. 1-30.....		5.9	.67	5.4	1.8	6.4	1.0	6	13	10	.3	.7		123	48	21	80	5.4	320
May 1-31.....		7.9	.92	6.3	1.3	5.9	1.0	6	9.0	12	.4	1.2		155	49	21	87	5.2	280
June 1-30.....		9.0	.77	5.0	2.1	6.5	1.3	8	10	13	.4	1.2		151	53	22	87	5.5	360
July 1-31.....		8.1	.50	4.1	2.1	6.3	1.8	8	9.8	9.5	.3	.8		106	47	19	72	5.6	280
Aug. 1-31.....		9.2	1.1	3.6	2.5	4.9	1.4	7	7.8	10	.4	.0		125	44	19	67	5.3	400
Sept. 1-30.....		8.7	1.4	4.7	2.1	5.4	1.4	6	11	10	.5	.6		161	49	21	69	5.1	800
Time-weighted average.....		8.8	0.69	5.3	2.1	6.8	1.4	7	12	11	0.3	1.0		128	53	22	84	--	320

## PASQUOTANK RIVER BASIN--Continued

2-438.52. PASQUOTANK RIVER NEAR ELIZABETH CITY, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	58	52	48	44	49	62	69	78	78	82	88
2	75	60	50	49	46	43	66	68	79	80	83	81
3	73	59	49	52	46	41	63	68	77	84	86	80
4	72	60	52	47	43	39	64	68	76	80	87	80
5	74	60	50	50	45	39	64	70	77	79	82	80
6	80	64	49	45	46	40	61	71	77	77	88	76
7	78	59	47	45	46	40	60	70	77	80	86	77
8	78	55	42	46	46	40	63	68	76	78	82	79
9	78	56	49	41	48	40	62	69	77	81	84	80
10	76	56	50	46	53	39	59	70	70	82	85	80
11	76	58	50	46	54	39	63	69	80	78	81	77
12	70	55	53	45	55	40	65	68	79	76	80	73
13	68	55	50	49	49	41	60	68	82	81	84	74
14	71	56	49	49	44	41	68	67	83	78	85	72
15	65	55	51	49	45	40	71	71	80	72	77	70
16	62	54	49	49	42	45	70	76	85	78	78	74
17	62	55	58	41	42	46	71	74	77	73	75	73
18	60	50	54	40	46	44	68	80	80	84	74	73
19	60	50	48	41	45	47	65	75	78	84	77	75
20	65	50	48	44	46	46	70	76	80	84	79	77
21	60	51	48	44	43	46	68	76	80	80	80	73
22	65	52	40	42	44	46	73	75	83	84	78	72
23	64	52	43	41	45	50	72	78	83	85	77	72
24	67	54	44	41	46	50	72	80	82	83	74	72
25	63	51	40	42	46	48	72	78	81	84	71	71
26	65	50	41	45	48	48	76	80	79	84	76	68
27	65	50	42	44	48	55	77	74	83	82	75	68
28	51	54	48	45	48	62	75	77	78	81	79	73
29	55	52	48	45	48	57	65	78	82	74	80	--
30	58	50	49	45	--	56	70	79	84	78	81	--
31	59	--	48	46	--	58	--	82	--	76	82	--
Average	68	55	48	45	46	46	67	73	79	80	80	75

PASQUOTANK RIVER BASIN--Continued  
2-438.62. PASQUOTANK RIVER AT ELIZABETH CITY, N. C.

LOCATION.--At draw section of bridge on U.S. Highway 158 at Elizabeth City, Pasquotank County.

RECORDS AVAILABLE.--303 square miles.  
DRAINAGE AREA.--303 square miles.

TEMPERATURES.--October 1957 to September 1960.

EXTREMES.--October 1957 to September 1960.

Specific conductance: Maximum daily, 4,900 microhos Oct. 9 (bottom); minimum daily, 66 microhos Sept. 17 (bottom), 18, 19, (top).

Water temperatures: Maximum, 89°F Sept. 1 (top); minimum, 37°F Mar. 5, 10-12 (bottom).

EXTREMES, 1957-60.--Chloride: Maximum, 8,020 ppm Oct. 30 (bottom), 1958; minimum, 10 ppm Sept. 13-30, 1960.

Specific conductance: Maximum daily, 20,800 microhos Oct. 29 (bottom), 1958; minimum daily, 66 microhos Sept. 17 (bottom), 18, 19, (top), 1960.

Water temperatures: Maximum, 89°F July 29, 30, (top), 1959, Sept. 1 (top), 1960; minimum, freezing point on several days during winter months.

REMARKS.--Top (T) and bottom (B) samples were collected once daily (10:30 a.m.) and were composited unless otherwise indicated. When specific conductance values indicated salt-water encroachment, only specific conductance and chloride were determined on individual samples. The individual chloride determinations are tabulated separately from the composite chemical analyses. Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, January to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids			Hardness as CaCO <sub>3</sub>	Specific conductance (microhmhos at 25°C)	Color or pH		
														Residue at 180°C	Calculation	Non-magnesium					
Jan. 16, 21 (B), 23 (B), 1960.		9.5	0.37	6.7	4.9	27	2.4	10	16	48	0.2	1.0		149	121	37	29	218	6.3	210	
Jan. 17-20, 21 (T), 22, 23 (T), 24 (T).....		9.7	.43	5.9	3.2	12	1.8	10	14	20	.2	1.3		124	64	28	20	123	6.1	280	
Feb. 1.....		9.7	.22	7.4	8.2	52	3.2	8	23	101	.3	.6		--	210	52	45	403	5.9	--	
Feb. 2-4.....		6.2	.31	3.9	2.2	3.3	6.6	1.8	9	9.5	.3	1.0		--	49	19	11	77	6.2	120	
Feb. 5-6.....		5.7	.20	4.2	3.3	18	2.3	10	10	35	.3	1.1		--	85	24	16	155	6.3	--	
Feb. 7-10.....		6.9	.14	4.3	2.2	6.7	1.7	8	9.6	12	.4	1.2		88	49	20	13	82	6.0	120	
Feb. 11.....		7.4	.20	4.8	4.3	18	2.3	10	14	31	.2	1.1		--	88	30	21	165	6.5	--	
Feb. 12-29.....		7.1	.38	4.6	2.3	6.7	1.2	7	8.6	12	.3	.7		91	47	21	15	88	5.6	160	
Mar. 1-29.....		5.9	.39	4.5	2.5	7.5	1.1	8	9.4	14	.3	.2		111	50	22	15	87	5.8	210	
Apr. 1-2.....		5.7	.24	6.2	2.3	8.2	1.0	8	12	14	.3	.6		--	55	25	19	108	5.7	160	
Apr. 3-4.....		6.4	.37	6.2	3.2	20	1.5	4	14	36	.2	.6		--	90	29	25	178	5.7	200	
Apr. 5-14, 15 (T)		5.2	.38	5.3	2.6	8.6	1.9	7	13	14	.3	.6		122	54	24	18	96	5.7	200	
May 1-7.....		5.7	.26	5.9	2.4	15	1.6	11	12	28	.3	1.7		158	78	25	16	140	5.8	240	
June 1-6.....		6.6	.11	6.5	4.3	28	2.0	14	16	48	.3	.3		185	119	34	22	220	6.1	240	
June 7-10, 11 (T)		7.3	.35	6.7	2.1	13	1.1	12	11	20	.3	.0		--	68	26	16	119	6.4	320	
June 11 (B), 12		6.2	.14	6.8	3.5	23	1.8	14	16	38	.3	.5		--	103	31	20	185	6.6	--	
Aug. 1-15.....		8.0	.52	4.6	2.3	10	1.3	10	9.4	18	.3	.0		123	59	21	13	103	6.0	320	
Aug. 16-30.....		9.1	.99	3.5	2.8	6.8	1.4	9	13	20	.3	.0		127	53	20	13	170	5.6	400	
Aug. 31 (T).....		--	--	--	--	--	--	--	8	7.6	--	2.1		--	--	--	20	14	180	6.0	--
Aug. 31 (B).....		--	--	--	--	--	--	--	8	7.6	--	--		--	--	--	20	14	80	6.1	--
Sept. 1 (T).....		--	--	--	--	--	--	8	8.0	34	--	1.5		--	--	28	22	159	6.0	--	

Chloride, in parts per million, water year October 1959 to September 1960																									
Day	October		November		December		January		February		March		April		May		June		July		August		September		
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	
1	380	370	88	805	190	900	100	790	101	101	4	7.6	16	.3	1.0	129	57	22	14	94	5.9	400			
2	296	298	84	805	110	935	94	804	13	13	9	11	24	.3	.7	143	71	31	16	134	6.0	400			
3	265	272	103	312	71	940	696	700	13	13	6	18	82	.3	2.0	40	38	37	16	134	6.0	400			
4	278	318	120	490	188	725	692	708	13	13	8	11	36	28	2.0	40	38	37	16	134	6.0	400			
5	282	318	89	496	290	875	148	736	35	35	8	11	36	28	.4	3	49	20	13	73	5.7	400			
6	310	390	67	--	152	910	74	865	35	35															
7	336	1,153	49	88	160	925	53	780	12	12															
8	336	1,153	49	88	160	925	53	780	12	12															
9	434	1,509	34	34	870	850	29	560	12	12															
10	284	1,210	--	--	125	980	18	440	12	12															
11	183	715	54	700	114	980	20	442	31	31															
12	175	725	102	775	171	865	21	238																	
13	145	474	--	--	170	865	18	348																	
14	140	434	81	--	468	685	20	346																	
15	38	33	274	404	520	685	58	185			14	14													
16	32	29	266	398	528	940	48	48																	
17	25	720	--	985	630	955	20	20																	
18	25	1,080	--	985	124	122	20	20																	
19	172	1,360	322	1,100	121	120	20	20																	
20	123	1,240	320	1,080	68	405	20	20	12	12															
21	334	414	400	1,020	62	400	20	48																	
22	330	422	244	980	23	660	20	--																	
23	370	693	248	975	23	643	20	48																	
24	550	685	408	462	23	665	20	334																	
25	550	685	406	468	37	675	524	386																	
26	556	680	398	705	50	710	520	590																	
27	168	178	388	880	62	740	54	680																	
28	172	179	660	526	65	735	77	590																	
29	120	522	266	380	490	930	48	572																	
30	63	489	266	374	185	900	67	488																	
31	68	635	--	--	278	750	95	250	--	--	46	102	33	62	78	72	115	115	30	30	32	7.6	--		
									--	--	42	47	--	--	--	--	--	--	--	--	--	--	--		

PASQUOTANK RIVER BASIN--Continued  
2-438. 62. PASQUOTANK RIVER AT ELIZABETH CITY, N. C.--Continued

Day	Temperature (°F) of water, water													
-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## PERQUIMANS RIVER BASIN

2-438.92. PERQUIMANS RIVER AT HERTFORD, N. C.

LOCATION --At draw section of bridge on U.S. Highway 17 at Hertford, Perquimans County.

DRAINAGE AREA --94.2 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1957 to September 1960.

Water temperatures: October 1957 to September 1960.

EXTREMES, 1959-60 --Chloride: Maximum, 337 ppm Dec. 11, 27; minimum, 8.0 ppm Feb. 1-15.

Specific conductance: Maximum daily, 1,230 micromhos Dec. 11; minimum daily, 49 micromhos Feb. 3.

Water temperatures: Maximum, 82 F on several days during June, July and August; minimum, freezing point Mar. 12-14.

EXTREMES, 1958-59 --Chloride: Maximum, 175 ppm Dec. 25, 1958; minimum, 8.0 ppm Feb. 15, 1960.

Specific conductance: Maximum daily, 1,230 micromhos Dec. 25, 1958; minimum, 49 micromhos Feb. 15, 1960.

Water temperatures: Maximum, 87 F Aug. 7, 1958; minimum, freezing point Feb. 18, 1958; Mar. 12-14, 1960.

REMARKS--When specific conductance values indicated salt-water encroachment, only specific conductance and chloride were determined on individual samples.

The individual specific conductance and chloride determinations are tabulated separately from the composite chemical analyses. Records of specific

conductance of samples collected from October 1957 to September 1959 available in district office at Raleigh, N. C. No discharge records available for

this station.

## Chemical analyses, in parts per million, January to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium	Non-carbon- ate			
Jan. 10-20, 22-23, 1960		9.8	0.30	7.1	3.0	10	2.0	15	14	18	0.2	0.8	94	30	18	110	7.0	140
Feb. 1		5.6	.18	5.2	1.2	4.4	1.4	8	8.7	18.0		2.0	97	11	11	69	6.1	100
Feb. 16-29		6.6	.27	5.3	1.8	7.5	1.1	8	11	12	.2	1.9	b99	20	14	90	6.3	180
Mar. 1-31		4.9	.21	5.0	2.5	9.3	1.2	10	12	15	.3	3	92	23	15	98	6.5	120
Apr. 1-30		3.6	.11	6.3	3.0	12	1.6	14	12	20	.2	3	101	28	17	120	6.7	160
May 1-31		4.3	.37	6.0	2.9	17	2.0	14	11	28	.3	.5	123	27	16	150	6.2	220
June 1-11		5.1	.27	5.2	3.7	17	1.6	17	8.7	38	.3	.5	c133	28	14	140	6.8	240
June 12-30		4.9	.23	4.3	4.3	19	2.6	14	11	38	.3	.6	125	29	18	169	6.5	200
July 1-11		6.0	.44	5.0	5.0	33	2.8	13	12	56	.2	.1	d131	34	22	240	6.5	---
July 29-30		5.1	.11	5.2	5.1	33	2.8	14	16	56								
July 31		--	--	--	--	--	--	16	11	33	--	2.3	--	26	13	170	7.0	--
Aug. 1		--	--	--	--	--	--	18	8.4	28	--	2.7	--	44	29	160	7.0	--
Aug. 2-20		7.5	.33	4.9	2.6	9.2	1.8	16	9.4	16	.3	.0	98	22	10	102	6.3	200
Aug. 21-23		6.9	.35	8.9	.4	15	2.1	16	12	26	.2	.0	d80	24	11	140	6.5	200
Aug. 24-29		9.7	.57	5.5	2.2	7.0	1.8	14	9.8	12	.3	.0	e110	23	12	83	6.8	260
Aug. 30-31		--	--	--	--	--	--	14	7.6	22		7	--	25	14	130	6.6	--
Sept. 1-5		9.9	.54	5.1	3.3	15	1.9	15	10	23	.3	.9	477	26	14	130	6.7	240
Sept. 6-11		8.1	.44	5.4	4.1	21	2.0	14	10	36	.2	.0	142	30	19	169	6.7	200
Sept. 12-28		7.0	.56	4.9	2.5	6.0	2.6	15	6.2	11	.3	3	f100	22	10	84	6.7	300
Sept. 29-30		--	--	--	--	--	--	14	6.0	38		2.7	--	28	16	190	6.7	--

a Organic matter present; sum of mineral constituents 41 parts per million. d Calculated from determined constituents.

b Organic matter present; sum of mineral constituents 52 parts per million. e Organic matter present; sum of mineral constituents 56 parts per million.

c Organic matter present; sum of mineral constituents 78 parts per million. f Organic matter present; sum of mineral constituents 48 parts per million.

## PERQUIMANS RIVER BASIN--Continued

2-438.92. PERQUIMANS RIVER AT HERTFORD, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	59	49	44	43	43	--	67	77	80	79	80
2	76	59	48	43	43	43	55	65	78	80	80	79
3	75	58	48	45	42	43	58	65	77	81	81	79
4	74	58	47	45	42	40	58	66	77	81	81	79
5	75	59	49	45	42	38	59	67	78	82	82	79
6	77	61	49	44	43	38	60	67	77	81	82	80
7	77	60	46	44	43	38	59	67	77	81	81	78
8	77	58	44	44	43	38	59	68	77	80	81	79
9	77	56	44	44	44	38	59	67	74	81	81	80
10	77	54	44	44	46	37	60	67	74	81	82	80
11	77	54	44	44	48	36	59	68	72	80	82	81
12	76	55	46	43	48	32	59	69	73	80	82	77
13	75	55	47	44	46	32	59	69	76	81	82	75
14	74	57	47	44	46	32	60	68	77	82	82	74
15	70	56	47	45	45	33	62	68	78	80	82	73
16	76	55	46	45	44	35	63	68	78	80	82	71
17	67	55	48	45	43	37	65	69	80	79	81	71
18	67	52	48	46	42	40	67	72	80	79	79	71
19	65	50	45	45	42	40	65	71	80	81	79	74
20	64	49	43	44	39	43	64	72	79	81	79	74
21	64	50	44	--	39	43	65	73	80	82	79	74
22	65	50	43	42	40	42	67	76	78	81	80	72
23	66	50	42	40	40	42	67	74	79	82	80	71
24	67	53	41	39	41	43	68	74	80	82	80	71
25	66	54	42	39	43	43	68	75	81	81	77	71
26	64	53	43	39	44	45	69	75	82	81	76	71
27	63	52	44	40	44	45	71	75	80	81	76	70
28	62	55	45	41	44	47	70	75	79	81	76	70
29	60	53	45	43	44	49	72	75	80	81	78	70
30	60	--	43	42	--	55	67	78	80	77	79	71
31	60	--	43	43	--	52	--	78	--	78	80	--
Average	70	55	45	43	43	41	63	71	78	81	80	75



## CHOWAN RIVER BASIN

2-532.44. CHOWAN RIVER AT WINTON, N. C.

LOCATION.--At drawbridge on U. S. Highway 158 and State Highway 97, at Winton, Hertford County, and 2.7 miles downstream from Meherrin River.

DRAINAGE AREA.--4,198 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1960.

EXTREMES 1954-60.--Temperature: Maximum, 86° F.; minimum, 50° F.; range, 36° F. (Oct. 1954 to Sept. 1955).

EXTREMES 1959-60.--Chloride: Maximum, 26 mgm daily, July 1-14; minimum, 14 mgm daily, 40 micromhos Sept. 14.

Specific conductance: Maximum daily, 239 micromhos July 11; minimum, 40 micromhos Sept. 14.

Water temperatures: Maximum, 78° F. Aug. 5; minimum, freezing point Feb. 12.

EXTREMES, 1954-60.--Chloride: Maximum, 398 ppm Dec. 15, 1958; minimum, 2.9 ppm Apr. 1-30, 1958.

Specific conductance: Maximum daily, 1,400 micromhos Dec. 13, 15, 1958; minimum, 40 micromhos May 12, 1958.

Water temperatures: Maximum, 87° F. Aug. 5, 7, 8, 1955, July 27, 1957; minimum, freezing point Feb. 12, 1960.

REMARKS.--Records of suspended matter of composite samples from October 1954 to September 1955 and records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-17, 1959.....		13	0.27	6.7	1.7	18	2.7	38	7.2	16	0.3	0.8	104	24	0	139	7.0	180
Oct. 18-31.....	9.5		.25	5.0	.9	6.4	2.3	16	5.0	8.0	.2	.5	72	16	3	70	6.6	150
Nov. 1-30.....	13		.17	5.1	1.9	7.6	2.0	22	5.6	9.0	.2	.7	73	20	2	80	6.6	100
Dec. 1-9.....	12		.08	5.1	.5	5.4	2.0	14	3.6	6.5	.1	1.4	62	15	4	64	7.1	80
Dec. 10-31.....	13		.09	4.6	1.5	9.2	1.7	21	4.6	10	.1	1.2	71	18	0	89	7.2	60
Jan. 1-31, 1960.....	12		.23	4.6	1.3	7.6	1.5	18	6.4	7.7	.1	.5	64	17	2	74	7.1	70
Feb. 1-15.....	8.9		.13	3.4	1.3	5.3	1.6	13	3.7	7.0	.2	.7	54	14	3	59	6.9	80
Feb. 16-19.....	11		.13	6.4	2.4	9.4	2.5	30	7.8	10	.2	.5	83	26	1	103	7.3	60
Feb. 20-29.....	7.6		.06	2.9	1.3	3.9	1.4	12	3.0	6.3	.2	.3	44	13	3	48	7.0	50
Mar. 1-7.....	8.3		.14	3.5	1.4	5.1	1.4	14	5.0	6.5	.2	.7	a39	14	3	57	7.3	40
Mar. 8-21.....	9.3		.04	4.3	1.5	6.2	1.1	17	4.5	7.0	.2	1.3	50	17	3	71	7.3	30
Mar. 22-31.....	7.5		.06	3.8	1.4	4.8	1.2	14	4.1	6.0	.2	1.5	40	15	4	58	7.1	30
Apr. 1-30.....	7.5		.18	5.5	1.1	3.8	1.2	20	2.6	5.5	.2	1.5	56	18	2	84	7.1	70
Apr. 31.....	14		.09	6.0	1.1	5.6	1.4	24	4.0	7.0	.1	1.4	71	20	0	94	7.0	60
June 1-30.....	12		.07	8.4	1.6	27	1.9	56	8.4	26	.0	.3	133	28	0	188	6.8	100
July 1-14.....	10		.02	7.4	1.8	12	2.1	35	9.2	14	.2	.0	77	26	0	120	6.6	100
July 15-29.....																		
July 30-31.....	6.4		.06	5.4	1.1	7.8	1.4	20	9.4	7.5	.2	.1	a49	18	2	75	6.6	--

a Calculated from determined constituents.

## CHOWAN RIVER BASIN--Continued

2-532.44. CHOWAN RIVER AT WINTON, N. C.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Aug. 1-10, 1960.....		8.0	0.18	5.0	1.3	6.3	1.9	18	7.0	7.0	0.2	1.1	60	18	3	75	7.1	90
Aug. 11-15.....		11	.33	5.3	1.5	16.0	2.0	26	5.6	11	.2	1.4	62	22	2	98	6.8	120
Aug. 16-31.....		10	.30	5.3	1.5	16.0	2.0	25	5.6	8.0	.2	1.4	62	19	2	73	6.8	120
Sept. 1-9.....		11	.30	6.4	.9	7.9	1.4	25	4.6	10	.1	.4	75	20	0	83	7.3	100
Sept. 10-22.....		6.3	.28	4.1	.8	3.7	1.7	13	3.6	6.0	.1	.3	59	13	2	52	6.8	120
Sept. 23-30.....		9.7	.39	6.6	1.4	7.8	1.7	24	8.2	10	.2	.2	83	22	2	87	7.1	140
Time-weighted average.....		11	0.17	5.3	1.3	7.7	1.7	22	5.1	8.8	0.2	0.8	68	19	2	81	--	85

a Calculated from determined constituents.

## CHOWAN RIVER BASIN--Continued

2-532.44. CHOWAN RIVER AT WINTON, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	58	--	47	38	40	45	56	65	69	77	75
2	64	--	52	48	38	38	45	57	66	70	77	75
3	64	--	51	47	37	37	46	56	67	70	77	75
4	64	--	51	48	37	37	46	56	68	70	77	74
5	65	58	50	50	37	37	46	59	67	71	78	73
6	65	58	51	50	38	36	47	58	69	69	76	73
7	65	59	52	50	38	36	47	58	67	70	77	73
8	66	59	51	49	36	37	47	59	67	69	77	73
9	65	57	--	50	38	38	48	58	68	69	77	74
10	63	57	52	50	39	37	49	58	68	68	77	72
11	63	56	52	49	40	36	49	59	68	69	76	71
12	62	57	52	46	32	37	50	58	68	69	76	70
13	63	57	51	47	36	37	50	58	69	73	76	71
14	60	57	51	46	35	37	50	58	69	74	77	71
15	59	58	50	46	35	37	51	60	69	75	76	71
16	59	57	51	46	39	37	52	61	69	76	76	69
17	60	56	--	45	40	38	52	61	69	76	75	69
18	61	55	51	46	40	38	51	62	71	76	75	70
19	60	54	50	45	39	38	51	61	70	76	75	69
20	61	53	50	45	40	37	52	62	70	75	75	69
21	60	54	49	43	40	37	52	63	70	77	76	69
22	60	53	48	42	39	39	54	63	69	75	76	68
23	61	53	50	41	41	39	54	64	70	76	76	69
24	60	54	49	40	40	40	55	64	69	77	76	68
25	59	54	--	38	41	40	55	65	69	77	75	68
26	59	53	49	39	41	42	55	66	69	77	74	68
27	58	53	49	39	40	43	55	66	69	77	74	67
28	59	53	48	38	40	43	55	65	69	76	75	68
29	58	52	49	39	39	44	56	65	70	76	74	68
30	59	51	48	39	--	44	56	64	70	75	75	67
31	59	--	47	38	--	45	--	65	--	76	74	--
Average	61	55	50	45	38	39	51	61	69	73	76	71

## CHOWAN RIVER BASIN--Continued

2-536.52. CHOWAN RIVER NEAR EDENHOUSE, Bertie County.

LOCATION.--At draw section of bridge on U.S. Highway 17, 0.8 mile northeast of Edenhouse, Bertie County.

DRAINAGE AREA.--4,871 square miles.

WATERS AVAILABLE.--Chemical analyses: October 1957 to September 1960.

WATER TEMPERATURES.--Maximum daily, 11,300 microhms Oct. 14 (bottom); minimum, 6.0 ppm Sept. 13-30.

EXTREMES, 1959-60.--Chloride: Maximum, 3,830 ppm Oct. 14 (bottom); minimum daily, 43 microhms Sept. 22 (bottom).

Specific conductance: Maximum daily, 11,300 microhms Oct. 14 (bottom); minimum, 38°F Mar. 9, 10 (bottom).

Water temperatures: Maximum, 87°F July 15 (top); minimum, 38°F Mar. 9, 10 (bottom).

EXTREMES, 1957-60.--Chloride: Maximum, 9,140 ppm Nov. 11 (bottom), 1958; minimum, 4.0 ppm May 1-31, 1958.

Specific conductance: Maximum daily, 23,500 microhms Nov. 11 (bottom), 1958; minimum daily, 43 microhms Sept. 22 (bottom), 1960.

Water temperatures: Maximum, 91°F June 11 (top), 1959; minimum, 35°F Feb. 17 (top), 1958.

REMARKS.--Top (T) and bottom (B) samples were collected once daily (3 P.m.) and were composited unless otherwise indicated.

The specific conductance was determined by the method of the National Bureau of Standards. The individual chloride

determinations are tabulated separately from the composite chemical analyses. Records of specific conductance of samples collected available in

district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color	
													Calcium	Non-carbon- ate				
Oct. 1-11, 1959.....		11	0.13	6.6	3.4	18	2.6	31	7.8	25	0.2	1.0	107	30	5	158	6.9	80
Dec. 1-2.....	9.1	17	4.7	2.7	18	8.6	2.3	14	11	30	.2	.9	a86	23	12	149	6.5	100
Dec. 3-31.....	12	27	4.8	1.8	8.6	2.3	1.7	14	4.6	12	.2	1.0	84	20	6	92	7.0	110
Jan. 1-31, 1960.....	12	23	4.7	1.5	8.8	1.9	2.0	16	5.8	10	.2	.6	71	18	2	82	6.9	100
Feb. 1-29.....	11	11	3.8	1.2	6.3	1.4	1.4	20	6.0	8.5	1	1.7	62	14	3	67	6.6	45
Mar. 1-31.....	7.5	106	3.7	1.3	4.9	1.3	1.3	11	4.1	6.5	.1	1.3	50	14	5	69	6.6	40
Apr. 1-30.....	6.8	102	4.7	1.0	5.5	1.7	1.8	16	6.0	7.5	.1	1.1	50	16	1	67	6.7	40
May 1-31.....	3.3	11	4.2	1.7	5.5	1.5	1.9	5.4	7.5	7.5	.3	1.0	48	18	2	71	7.0	60
June 1-30.....	4.1	04	3.8	1.8	5.8	1.5	2.0	4.9	7.5	7.5	.1	1.4	58	17	0	71	6.5	40
July 1-31.....	4.8	08	3.3	2.2	8.8	1.7	21	5.4	10	5.4	.1	.9	52	17	0	80	6.4	50
Aug. 1-31.....	5.6	14	3.8	1.9	7.5	2.2	23	6.0	9.5	9.5	.2	.3	53	18	0	84	6.6	80
Sept. 1-12.....	7.2	20	4.6	1.4	3.3	1.8	11	1.2	7.2	9.5	.1	1.4	65	17	0	79	6.7	80
Sept. 13-30.....	5.6	26	3.8	1.6	3.9	3.5	1.8	13	5.0	6.0	.1	.3	53	14	3	52	6.7	100
Time-weighted average.....		7.4	0.13	4.2	1.6	7.2	1.8	18	5.5	9.3	0.2	1.1	60	17	2	78	--	65

a. Calculated from determined constituents.

2-536.52. CHOWAN RIVER NEAR EDENHOUSE, N. C.--Continued  
CHOWAN RIVER BASIN--Continued

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	80	79	85	84	52	46	45	44	45	44	45	44	59	54	68	67	78	76	86	83	--	--	84	82
2	76	76	80	80	51	46	45	44	45	44	45	44	59	54	68	67	78	76	86	83	--	--	84	82
3	79	77	80	80	52	46	45	44	45	44	45	44	59	54	68	67	78	76	86	83	83	83	84	82
4	79	77	80	80	52	46	45	44	45	44	45	44	59	54	68	67	78	76	86	83	83	83	84	82
5	79	77	83	81	50	49	47	46	49	47	40	40	59	54	69	67	79	78	82	85	85	85	83	81
6	80	78	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
7	80	78	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
8	78	78	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
9	78	78	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
10	79	78	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
11	79	78	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
12	80	79	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
13	80	79	83	81	50	49	46	45	49	47	40	40	59	54	68	67	79	78	82	85	85	85	83	81
14	70	71	63	60	51	49	47	46	43	41	40	39	64	62	70	69	83	77	85	82	86	84	81	80
15	70	71	63	60	--	--	--	--	--	--	39	38	62	59	70	69	83	77	85	82	86	84	81	80
16	69	70	61	58	51	49	50	49	43	41	41	40	67	66	70	69	81	77	81	80	86	84	76	75
17	69	70	61	58	51	49	48	47	46	45	41	40	67	66	70	69	81	77	81	80	86	84	76	75
18	69	70	61	58	51	49	48	47	46	45	41	40	67	66	70	69	81	77	81	80	86	84	76	75
19	72	69	57	54	50	49	48	47	45	46	42	43	64	66	75	72	81	79	83	85	85	85	82	79
20	72	69	57	54	50	49	46	45	45	45	44	43	64	64	75	72	81	79	83	85	85	84	82	79
21	69	67	56	54	46	45	46	45	48	47	44	43	64	64	73	72	81	80	84	82	85	84	82	79
22	69	67	56	54	46	45	45	44	48	47	44	43	64	64	73	72	81	80	84	82	85	84	74	74
23	69	67	56	54	46	45	45	44	48	47	44	43	64	64	73	72	81	80	84	82	85	84	74	74
24	69	67	56	54	46	45	45	44	48	47	44	43	64	64	73	72	81	80	84	82	85	84	74	74
25	69	68	53	53	46	45	43	43	43	43	45	46	69	69	76	77	82	81	84	82	81	81	73	72
26	66	66	52	52	46	45	44	43	43	43	45	46	69	69	76	77	82	81	84	82	80	79	73	72
27	66	66	54	54	46	45	44	43	46	45	46	45	69	69	77	75	82	81	84	82	80	79	72	73
28	63	63	54	54	46	45	44	43	46	45	46	45	69	69	77	75	82	81	84	82	80	79	72	72
29	63	63	53	53	47	48	44	43	46	45	44	43	69	72	76	74	82	81	84	82	80	79	72	72
30	63	62	53	53	47	48	45	46	--	--	--	--	69	72	79	76	82	82	82	81	84	80	72	72
31	63	62	--	--	46	46	--	--	--	--	--	--	--	--	81	78	--	--	--	--	81	84	--	--
Average	73	72	58	57	49	48	46	45	47	46	43	43	64	62	72	71	80	78	83	82	84	83	79	78

## ROANOKE RIVER BASIN

2-660. ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA.

LOCATION.--At gaging station at bridge on State Highway 746, 2.8 miles northwest of Randolph, Charlotte County, and 3.6 miles upstream from Roanoke Creek.

DRAINAGE AREA.--3,000 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: April 1929 to March 1930, October 1950 to September 1956.

Water temperatures: October 1950 to September 1956.

Sediment records: January 1954 to September 1960.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 2,060 ppm May 20, 1957; minimum daily, 6 ppm Dec. 28-31, 1955.

Sediment loads: Maximum daily, 71,500 tons Mar. 2, 1954; minimum daily, 13 tons Sept. 21, 22, 1956.

REMARKS.--Sediment samples collected daily from January 1954 to June 1957 and at approximately ten-day intervals and during flood stages from July 1957 to September 1960.

Suspended sediment, water year October 1959 to September 1960

(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 discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	11700	1440	S 43200	2120	--	520	3060	--	580			
2..	24600	690	S 44800	2210	--	480	2510	52	352			
3..	15000	--	13000	1960	--	420	2300	--	310			
4..	4550	--	2900	1820	--	380	2210	--	300			
5..	3280	--	1900	1720	--	320	2120	--	290			
6..	2510	--	1400	1720	--	280	1960	--	260			
7..	2120	--	1100	1820	--	240	2120	--	290			
8..	1890	--	1000	1820	--	220	2300	--	310			
9..	3610	--	5100	1640	--	150	2120	--	290			
10..	3720	--	3400	1580	20	85	1960	--	260			
11..	4250	--	3200	1540	--	80	1820	--	270			
12..	5450	--	3800	1540	--	80	1820	--	270			
13..	4050	--	1600	1500	--	80	2690	--	1300			
14..	3060	--	1200	1500	--	80	4250	--	2100			
15..	3500	--	1700	1500	--	80	3720	73	733			
16..	5000	175	2360	1500	--	80	3060	--	470			
17..	4450	170	2040	1470	--	80	2620	--	370			
18..	3390	--	1500	1470	--	80	2400	--	320			
19..	2730	--	1100	1440	--	80	4730	--	4600			
20..	2300	--	810	1360	21	77	9700	--	5100			
21..	2040	--	720	1360	--	80	7740	--	2100			
22..	1890	--	660	1400	--	80	5360	--	1300			
23..	1820	--	620	1500	--	80	4250	--	1000			
24..	2750	--	1700	1610	--	130	3500	--	800			
25..	7100	--	9000	6380	--	7100	3060	--	640			
26..	6140	--	3700	7500	--	4500	2840	--	540			
27..	4350	--	1600	5180	--	1500	2730	--	440			
28..	3390	110	1010	3830	--	1000	2620	--	340			
29..	2730	--	770	4150	--	1100	2730	33	243			
30..	2300	--	620	3940	--	960	2730	--	260			
31..	2120	--	520	--	--	--	2620	--	280			
Total	147790	--	158030	70080	--	20422	99650	--	26718			

S Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

## 2-660. ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA--Continued

Suspended sediment, water year October 1959 to September 1960--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..	2300	--	240	2400	--	230	5810	--	1700
2..	2120	--	230	2210	--	210	5540	--	1500
3..	2770	--	1500	2120	--	190	5180	--	1400
4..	5900	--	4600	1960	--	160	5000	--	1300
5..	5360	--	1600	2390	--	900	5180	--	1300
6..	4350	--	760	10100	--	35000	4550	--	1100
7..	4250	--	520	16300	--	40000	4250	--	1000
8..	5000	63	850	8460	590	13500	4050	--	870
9..	5000	60	810	5720	--	5900	3830	--	780
10..	4350	--	470	4730	--	3600	3720	--	700
11..	3720	--	400	5900	--	11000	3720	--	700
12..	3390	--	370	15900	--	46000	3720	--	650
13..	3170	--	340	11400	--	18000	3610	--	580
14..	2950	--	320	7260	--	7400	3720	--	550
15..	2840	--	310	6460	--	5100	3940	55	585
16..	2730	--	290	5540	--	3600	4640	--	1400
17..	2510	--	270	5180	--	3100	5630	--	4300
18..	2400	--	260	6640	--	4800	7260	--	5700
19..	2300	--	190	18700	496 S	25900	9200	--	4000
20..	2300	--	190	25500	395 S	26800	9400	--	2900
21..	2120	25	143	12400	--	6700	9020	--	2300
22..	1960	--	120	7340	--	2400	7900	--	1900
23..	1750	--	100	6700	--	1600	6860	--	1600
24..	1640	--	100	6300	--	1400	6460	--	1400
25..	1720	--	130	6540	--	2700	6220	--	1200
26..	1750	--	150	8930	--	8200	6540	--	1100
27..	1890	--	150	9200	--	3700	6140	--	990
28..	2120	--	200	7260	--	2400	5900	--	1000
29..	2400	32	210	6220	--	1800	6540	108	1900
30..	2300	--	220	--	--	--	8300	--	4000
31..	2120	--	200	--	--	--	12600	386 S	13900
Total	91480	--	16243	235760	--	282290	184430	--	64305
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..	15500	535 S	23000	3060	--	500	3610	--	2400
2..	9400	--	4800	3060	--	500	2950	--	1800
3..	8300	--	2600	3060	--	500	2730	--	1600
4..	9500	--	3300	2730	60	442	2840	--	1600
5..	18300	485 S	25300	2620	--	420	2730	--	1500
6..	26700	455 S	32300	2510	--	410	2510	--	1200
7..	19100	--	13000	2510	--	410	2510	150	1020
8..	9110	--	5200	5530	--	3700	2300	--	870
9..	7100	--	3400	15100	--	14000	2120	--	740
10..	6300	--	2700	8620	--	3700	1960	--	690
11..	5720	--	2300	5720	--	1700	1960	--	690
12..	5270	--	1800	4640	--	1400	1890	--	660
13..	4910	--	1500	4450	--	1300	1820	--	640
14..	4730	--	1400	4050	--	1200	1850	--	610
15..	4450	--	1100	3720	--	1000	1890	--	610
16..	4250	--	1000	3390	--	820	1820	--	590
17..	4150	--	900	3170	--	680	1960	--	640
18..	4050	--	760	2950	--	560	1750	--	570
19..	4050	--	760	2730	--	440	1610	--	520
20..	3830	70	724	2510	52	350	1720	--	510
21..	3610	--	680	2400	--	320	1960	--	580
22..	3610	--	680	2300	--	310	1610	110	478
23..	3720	--	700	2300	--	310	1580	--	470
24..	3500	--	660	2210	--	300	1640	--	490
25..	3280	--	620	2120	--	230	1750	--	520
26..	3170	--	600	2040	--	220	1750	--	470
27..	3170	--	600	2510	--	340	1580	--	430
28..	4050	--	660	6040	--	8600	1500	--	400
29..	3720	--	600	8840	--	13000	1400	--	340
30..	3280	--	530	5810	--	5500	1360	--	290
31..	--	--	--	4450	--	3400	--	--	--
Total	209830	--	134174	127150	--	66562	60700	--	23928

S Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

## 2-660, ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA.--Continued

## Suspended sediment, water year October 1959 to September 1960--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..	1400	--	260	1260	--	240	1230	--	170
2..	1500	--	280	1230	--	230	1540	--	210
3..	1680	--	270	1580	--	260	1720	--	280
4..	1610	--	260	1230	--	200	1470	--	200
5..	1440	--	230	1080	--	150	1360	--	220
6..	1330	--	180	1300	--	210	1170	--	190
7..	1230	53	176	1580	--	260	1080	--	170
8..	1170	--	160	1400	--	291	1050	--	170
9..	1170	--	160	1640	122	540	1050	--	170
10..	1140	--	150	1470	--	440	1020	--	140
11..	1170	--	190	1200	--	260	1200	--	190
12..	1330	--	180	1080	--	170	3470	430	4290
13..	1540	--	210	1470	--	480	2730	225	1660
14..	1330	--	180	2210	--	1300	1820	--	590
15..	1200	--	160	2210	--	900	1440	--	390
16..	1140	--	150	1580	--	510	1200	--	290
17..	1080	--	140	1400	--	340	1110	--	240
18..	1020	--	160	1230	--	200	1180	--	250
19..	1020	--	140	1110	50	150	4120	--	4300
20..	1080	--	150	1050	--	140	4910	--	2900
21..	1110	52	156	1020	--	140	3830	--	3000
22..	1050	--	170	2190	--	1500	2210	238	1420
23..	1020	--	170	1610	--	1000	1720	--	880
24..	1050	--	170	2120	--	1100	1500	--	610
25..	1140	--	180	1890	--	870	1360	--	400
26..	1110	--	180	1400	--	530	1300	--	320
27..	1200	--	190	1230	--	370	1230	--	270
28..	1610	--	390	1170	--	280	1200	--	190
29..	1820	112	550	1140	--	220	1230	55	180
30..	1470	--	320	1110	--	180	1400	--	190
31..	1260	--	200	1080	56	160	--	--	--
Total	39420	--	6462	44270	--	13621	52850	--	24480
Total discharge for year (cfs-days).....									1,363,410
Total load for year (tons).....									837,235

S Computed by subdividing day.



## ROANOKE RIVER BASIN--Continued

2-660. ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960

(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 tem- per- ature (° F)	Discharge (cfs)	Sediment concen- tration (ppm)	Sediment discharge (tons per day)	Suspended sediment												Method of analysis
						Percent finer than size indicated, in millimeters												
						0. 002	0. 004	0. 008	0. 016	0. 031	0. 062	0. 125	0. 250	0. 500	1. 000	2. 000		
Oct. 2, 1959.....	1420		26400	589		46	51	64	71	77	81	87	95	99	100		SBWC	
Feb. 8, 1960.....	1425		7580	552		22	30	46	62	77	84	89	91	97	100		SBW	
Feb. 19.....	1555		22000	577		19	25	35	46	57	69	80	89	99	100		SBWC	
Sept. 12.....	1310		4550	463		37	41	58	70	80	82	98	99	100	--		SBWC	

## ROANOKE RIVER BASIN--Continued

2-755. DAN RIVER AT PACES, VA.

LOCATION.--At gaging station at bridge on State Highway 658, 0.5 mile southeast of Paces, Halifax County, 0.5 mile upstream from Big Toby Creek, and 2.7 miles upstream from Birch Creek.

DRAINAGE AREA.--2,550 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to August 1956.

Water temperatures: January 1954 to September 1956.

Sediment records: January 1954 to September 1960.

EXTREMES, 1954-57.--Sediment concentrations: Maximum daily, 2,260 ppm July 13, 1955 and Sept. 18, 1957; minimum daily, 10 ppm Jan. 17, 1956.

Sediment loads: Maximum daily, 94,200 tons Sept. 18, 1957; minimum daily, 11 tons Sept. 23, 1956.

REMARKS.--Sediment samples collected daily from January 1954 to June 1957 and at approximately ten-day intervals and during flood stages from July 1957 to September 1960.

Suspended sediment, water year October 1959 to September 1960

(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..	14100	1280	5 46600	2760	--	740	1970	--	320
2..	20200	530	28900	2180	--	590	2040	45	248
3..	11800	220	7010	2040	--	550	2180	--	290
4..	4100	--	1700	2320	--	630	2180	--	350
5..	3600	--	1400	2320	--	630	2110	--	340
6..	3400	--	1100	2320	--	560	2040	--	330
7..	2460	--	800	2460	--	400	1790	--	290
8..	2600	--	980	2600	--	420	1910	--	310
9..	4200	--	4500	1730	--	280	2040	--	330
10..	12000	--	39000	1670	55	248	1730	--	280
11..	25200	--	49000	1670	--	270	1850	--	350
12..	29000	--	29000	1850	--	300	1910	--	410
13..	17500	--	12000	1790	--	290	2110	--	400
14..	5800	--	4400	1790	--	240	2840	--	540
15..	11000	--	27000	2040	--	330	2390	70	452
16..	10600	360	10000	1350	--	220	2180	--	470
17..	5240	180	2500	1550	--	250	2180	--	470
18..	4120	--	1700	1670	--	270	2250	--	670
19..	2920	--	1200	1730	--	230	7870	--	1800
20..	2530	--	1100	1610	40	174	16700	--	28000
21..	3000	--	1000	1610	--	170	11100	--	4800
22..	2920	--	1100	1550	--	170	4500	--	1600
23..	2840	--	1100	1400	--	190	4100	--	1400
24..	3480	--	1100	1550	--	590	3800	--	1200
25..	4120	--	1300	3860	--	5600	3560	--	1100
26..	3240	--	1000	5560	--	4200	3240	--	790
27..	2600	--	840	3080	--	1700	2390	--	520
28..	2680	120	868	2530	--	1000	2460	--	930
29..	2600	--	840	2390	--	710	3000	360	2900
30..	2460	--	800	2180	--	470	3240	--	960
31..	2530	--	750	--	--	--	2920	--	790
Total	224840	--	280588	65160	--	22422	106580	--	69840

S Computed by subdividing day.

## ROANOKE RIVER BASIN--Continued

2-755. DAN RIVER AT PACES, VA.--Continued

Suspended sediment, water year October 1959 to September 1960--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..	2600	--	560	12200	--	29000	4600	--	1700
2..	2680	--	650	13900	--	15000	4200	--	1600
3..	2890	--	1200	5480	--	4000	4120	--	1600
4..	5220	--	12000	3800	--	2200	4120	--	1600
5..	5320	--	4700	4200	--	2500	4280	--	1500
6..	4200	--	2000	15400	--	51000	3880	--	1300
7..	5560	--	2800	22400	--	48000	3640	--	1200
8..	7840	240	5080	10800	350	10200	3160	--	1000
9..	6830	300	5500	4400	--	2500	3640	--	1200
10..	4760	--	3300	4200	--	2000	3560	--	1100
11..	3800	--	2200	7110	--	13000	3560	--	960
12..	3320	--	1400	13800	--	22000	3800	--	1000
13..	3560	--	1200	8090	--	4800	3720	--	1000
14..	3320	--	1100	5560	--	2100	3160	--	850
15..	3160	--	940	4840	--	1600	3560	100	961
16..	3000	--	890	4440	--	1300	5000	--	3200
17..	2840	--	770	4920	--	1500	6290	--	4600
18..	2110	--	510	8650	--	16000	8860	--	11000
19..	2250	--	490	20000	720	38900	11100	--	7200
20..	2460	--	400	25500	450	31000	9580	--	4400
21..	2320	50	313	14300	--	10000	8620	--	3700
22..	2250	--	240	6500	--	3200	7730	--	3300
23..	2110	--	230	6290	--	2400	7100	--	3100
24..	2040	--	220	5720	--	2000	7010	--	2600
25..	1670	--	220	5800	--	4400	6470	--	2400
26..	1790	--	290	8740	--	15000	6120	--	2300
27..	2110	--	460	7620	--	4500	5160	--	1800
28..	2390	--	520	5560	--	2200	5000	--	1600
29..	2600	--	420	4920	--	1900	5240	125	1770
30..	2530	--	410	--	--	--	6380	--	3400
31..	3910	--	2300	--	--	--	13900	652	S 25300
Total	104440	--	53313	265080	--	344200	176060	--	100241
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	855	42000	2920	--	630	3080	--	750
2..	8020	--	6500	2780	--	600	2920	--	710
3..	6600	--	4100	3000	--	650	2680	--	650
4..	11800	--	25000	2760	80	596	3400	--	1500
5..	19200	--	44000	2600	--	560	4200	--	2400
6..	23400	550	34700	2530	--	550	2320	--	1800
7..	17500	--	18000	2600	--	560	2680	400	2890
8..	6700	--	4700	3320	--	1300	2760	--	1500
9..	5480	--	3100	9650	--	11000	2320	--	940
10..	4920	--	2500	7080	--	3100	2250	--	850
11..	4600	--	2100	4440	--	1100	2110	--	740
12..	4360	--	1900	3880	--	840	2250	--	790
13..	4200	--	1800	3560	--	770	1510	--	530
14..	4040	--	1600	3560	--	770	1850	--	600
15..	3880	--	1400	3400	--	730	1970	--	640
16..	3800	--	1200	2320	--	500	1790	--	530
17..	3640	--	980	2460	--	460	1730	--	510
18..	3240	--	870	2460	--	460	1730	--	560
19..	3160	--	850	2390	--	450	1850	--	599
20..	3480	85	799	2320	62	390	1220	--	400
21..	3320	--	630	2250	--	360	1730	--	560
22..	3560	--	670	2250	--	360	1910	125	645
23..	3560	--	580	1800	--	340	2180	--	760
24..	3480	--	560	1850	--	350	2110	--	680
25..	2390	--	450	2250	--	420	1910	--	620
26..	2600	--	490	2460	--	460	2180	--	650
27..	2760	--	670	4060	--	3000	1310	--	390
28..	3480	--	1000	10200	--	6600	1450	--	430
29..	3800	--	1100	7370	--	2800	1610	--	480
30..	3320	--	810	4440	--	1200	1610	--	480
31..	--	--	--	3400	--	920	--	--	--
Total	192290	--	205059	112360	--	42826	64620	--	25584

S Computed by subdividing day.



## ROANOKE RIVER BASIN--Continued

2-755, DAN RIVER AT PACES, VA.--Continued

Particle-size analyses of suspended sediment, water Year October 1959 to September 1960

(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)	Sam- pling point	Water tem- per- ature (°F)	Discharge (cfs)	Sediment concent- ration (ppm)	Sediment discharge (tons per day)	Suspended sediment										Method of analysis
							Percent finer than size indicated, in millimeters										
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	
Oct. 1, 1959.....	1845			16360	1050		33	40	52	64	77	82	91	96	99	100	SBWC
Oct. 2.....	1100			20440	481		40	47	54	60	66	71	79	90	98	100	SBWC
Feb. 8, 1960.....	1310			12540	278		30	38	51	61	72	79	83	88	98	100	SBWC
Feb. 19.....	1410			20860	831		20	24	31	37	43	49	56	72	95	100	SBWC
Mar. 31.....	1900			15640	872		34	39	48	55	62	70	80	89	98	100	SBWC
Sept. 9.....	1410			3560	697		52	58	73	82	88	89	94	98	100	---	SBWC

## ROANOKE RIVER BASIN--Continued

2-810.94. ROANOKE RIVER AT JAMESVILLE, N. C.

LOCATION.--At boat dock in Jamesville, Martin County and 1 mile downstream from lower mouth of Devils Gut.

WATER AREA.--247 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1960.

Water temperatures: October 1955 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 78 ppm Dec. 1-31, Aug. 15-31; minimum, 60 ppm Mar. 1-31.

Hardness: Maximum, 52 ppm Oct. 1; minimum, 25 ppm Mar. 1-31.

Specific conductance: Maximum daily, 140 micromhos Oct. 1; minimum daily, 73 micromhos Mar. 25.

Water temperatures: Maximum 82°F Aug. 11; minimum, 34°F Mar. 9-13.

EXTREMES, 1955-60.--Dissolved solids: Maximum, 91 ppm June 1-10, 1956; minimum, 54 ppm June 1-30, 1957.

Hardness: Maximum, 52 ppm Oct. 1, 1959; minimum, 13 ppm June 1-30, 1957.

Specific conductance: Maximum daily, 166 micromhos June 23-29, 1959; minimum, 73 micromhos Mar. 3, 1958.

Water temperatures: Maximum 88°F July 19, 1959; minimum, 33°F Mar. 20-21, 1958.

REMARKS.--Records of suspended matter of composite samples from October 1955 to September 1960 available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
													Calcium	Non-carbonate	Calcium	Non-carbonate			
Oct. 1, 1959.....	---	---	---	---	---	---	---	72	5.2	4.5	---	---	---	---	52	0	140	7.7	---
Oct. 2-31.....	6.3	9.1	.09	11	2.2	7.4	2.6	50	3.0	4.0	0.1	1.5	64	35	64	35	110	7.2	35
Nov. 1-30.....	10	30	.30	9.1	2.6	6.6	2.7	43	4.0	4.0	---	---	76	34	76	34	103	7.2	45
Dec. 1-31.....	11	11	.09	7.8	2.8	6.6	2.9	33	3.5	4.0	---	---	78	33	78	33	106	7.2	15
Jan. 1-31, 1960.....	11	11	.09	7.8	2.8	6.6	2.9	33	3.5	4.0	---	---	78	33	78	33	106	7.2	15
Feb. 1-29.....	12	12	.09	6.7	2.4	5.0	1.4	32	3.4	3.5	---	---	64	27	64	27	86	7.5	35
Mar. 1-31.....	10	10	.10	6.6	2.1	4.0	1.5	28	5.5	3.0	0	2.3	60	25	60	25	77	7.1	55
Apr. 1-30.....	9.1	9.1	.06	7.5	2.7	3.9	1.5	33	6.2	3.5	---	---	65	30	65	30	84	7.0	35
May 1-31.....	9.8	9.8	.06	9.8	2.4	5.5	1.3	41	6.2	3.5	---	---	65	34	65	34	94	7.3	55
June 1-30.....	8.3	8.3	.03	11	2.4	6.9	1.3	48	6.0	2.8	---	---	64	38	64	38	101	6.7	20
July 1-31.....	9.6	9.6	.05	12	3.5	6.0	1.2	54	8.4	4.0	---	---	76	44	76	44	116	7.4	20
Aug. 1-31.....	9.8	9.8	.10	12	2.4	8.5	1.9	56	7.9	3.9	---	---	78	39	78	39	117	7.4	15
Sept. 1-30.....	7.3	7.3	.04	11	2.5	7.2	1.8	48	4.2	4.5	---	---	68	36	68	36	103	7.3	45
Time-weighted average.....	9.5	0.10	9.4	2.5	6.1	1.8	42	5.4	3.7	0.1	1.6	69	34	1	99	---	---	---	36

## ROANOKE RIVER BASIN--Continued

2-810.94. ROANOKE RIVER AT JAMESVILLE, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	61	49	45	40	40	55	63	70	78	77	78
2	75	60	49	44	40	39	56	62	70	78	78	78
3	73	58	49	45	40	38	57	62	71	78	78	79
4	75	58	48	44	39	37	57	61	71	78	79	79
5	76	58	48	44	40	36	59	60	72	78	80	79
6	76	60	47	43	41	35	56	62	71	79	80	80
7	77	58	46	43	40	35	55	62	72	79	81	80
8	77	58	46	43	40	35	57	61	71	80	81	80
9	76	57	46	43	40	34	57	61	72	80	81	80
10	76	55	46	42	42	34	57	62	72	79	81	80
11	77	55	46	43	40	34	51	62	70	80	82	80
12	73	55	46	42	43	34	55	63	71	80	81	79
13	73	55	46	43	43	34	55	63	73	80	80	78
14	73	54	46	43	42	35	57	63	74	79	80	77
15	72	55	46	45	40	35	60	64	75	78	80	74
16	71	55	46	45	39	35	63	64	75	80	80	74
17	68	52	46	45	39	36	64	64	76	80	80	72
18	65	55	47	45	39	37	65	65	78	79	79	73
19	63	53	47	44	39	42	63	56	77	80	79	73
20	62	53	47	42	38	44	65	67	77	79	79	74
21	63	53	46	40	38	44	60	69	75	80	79	74
22	64	53	45	39	38	42	62	70	76	80	80	74
23	65	53	44	38	38	39	65	70	78	80	80	74
24	67	54	43	38	38	39	64	75	78	80	--	74
25	65	53	42	38	40	40	67	71	78	80	78	73
26	63	--	42	38	40	45	66	71	--	80	77	72
27	60	--	42	38	40	44	65	72	79	80	77	72
28	60	53	42	38	41	50	65	72	79	80	77	71
29	60	52	42	39	41	51	63	71	78	79	77	71
30	60	50	43	39	--	53	63	70	79	78	79	71
31	63	--	44	39	--	53	--	71	--	77	78	--
Average	69	55	46	42	40	40	60	66	74	79	79	76

## ALBEMARLE SOUND

2-811.53. ALBEMARLE SOUND NEAR EDEXTON, N. C.

LOCATION.--At draw section on State Highway 32 bridge, 7.6 miles southeast of Edenton, Chowan County.

DRAINAGE AREA.--14,600 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960.

Water temperatures: October 1957 to September 1960.

EXTREMES, 1959-60.--Chloride: Maximum, 7,320 ppm Oct. 12 (bottom); minimum 6.0 ppm Mar. 1-31, Apr. 1-30, May 1-31.

Specific conductance: Maximum, 20,200 micromhos Oct. 12 (bottom); minimum, 38°F Mar. 1-31, Apr. 1-30, May 1-31.

Water temperatures: Maximum, 87°F Aug. 14 (top); minimum, 38°F Mar. 1-31, Apr. 1-30, May 1-31.

EXTREMES, 1957-58.--Chloride: Maximum, 7,320 ppm Oct. 12 (bottom); minimum, 6.0 ppm Mar. 1-31, Apr. 1-30, May 1-31.

Specific conductance: Maximum, 20,200 micromhos Oct. 12 (bottom); minimum, 38°F Mar. 1-31, Apr. 1-30, May 1-31.

Water temperatures: Maximum, 87°F Aug. 14 (top); minimum, 38°F Mar. 1-31, Apr. 1-30, May 1-31.

REMARKS.--Top (T) and bottom (B) samples were collected once daily (12 m.) and were composited unless otherwise indicated. When specific conductance values indicated salt-water encroachment only specific conductance and chloride were determined on individual samples. The individual chloride determinations are tabulated separately from the composite chemical analyses. Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, December 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
															Calcium	Non-carbonate			
Dec. 14-15, 18-24, 1959.....		11	0.25	7.7	3.2	12	2.4	35	7.0	14	0.2	1.0	90	32	32	4	129	7.3	80
Jan. 1-2, 23-25, 1960.....		12	.31	5.9	3.4	21	2.8	23	10	33	.2	.6	114	29	29	10	172	7.0	50
Jan. 3-22, 26-31.....		11	.35	5.6	2.3	10	2.3	27	6.3	13	.1	.6	70	24	24	1	103	7.2	100
Feb. 1.....		--	.05	6.4	3.7	15	2.2	32	7.5	22	.2	.6	--	31	31	5	140	7.7	--
Feb. 2, 3.....		11	.43	7.4	5.6	33	3.0	30	11	57	.2	.5	154	42	17	263	7.6	--	--
Feb. 4-15.....		11	.16	5.6	2.2	9.5	1.9	26	5.0	13	.2	.5	68	23	23	2	98	7.5	50
Feb. 16-29.....		10.2	.13	4.6	1.8	4.8	1.3	19	5.2	8	.1	.5	55	26	26	1	92	7.2	60
Mar. 1-31.....		10.2	.03	5.6	1.8	4.8	1.3	19	5.2	8	.1	.5	55	26	26	1	92	7.2	30
Apr. 1-30.....		8.5	.07	5.6	1.6	5.4	1.7	26	6.4	6.0	.1	1.7	52	20	20	0	74	6.8	40
May 1-31.....		8.2	.07	5.8	2.5	4.9	1.4	28	4.6	6.0	.1	1.2	65	24	24	2	84	7.4	45
June 1-10.....		7.2	.04	5.0	2.2	6.5	1.8	27	5.2	7.0	.1	.5	50	22	22	0	76	6.9	40
June 18-23, 24 (T).....		7.8	.06	4.2	2.9	11	2.0	23	6.4	16	.1	.7	66	22	22	4	106	6.6	40
Sept. 14-24.....		8.0	.20	4.9	2.0	8.4	1.7	24	6.0	10	.2	.6	60	20	20	0	91	6.7	100



ALBEMARLE SOUND--Continued  
 2-811.53. ALBEMARLE SOUND NEAR EDENTON, N. C.--Continued  
 Chloride, in parts per million, water year October 1959 to September 1960

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	153	158	234	282	75	74	33	33	22	22									108	120	80	53	56	566
2	135	144	2,410	100	100	100			57	57									70	72	35	55	51	91
3	116	188	464	466	128	122			57	57									68	72	54	75	164	162
4	117	190	406	1,030	81	88													120	115	64	137	156	168
5	118	251	303	974	75	90													90	85	64	91	152	152
6	114	127	680	422	61	62													75	60	118	136	278	232
7	120	478	232	284	62	55													42	32	120	120	120	120
8	118	534	236	304	136	134													37	36	70	70	128	128
9	170	440	295	93	140	149													27	40	71	75	74	230
10	138	206	97	125	71	75													36	53	70	76	91	92
11	102	6,430	130	122	45	45													92	102	94	70	92	91
12	202	7,320	134	130	85	89													95	108	56	56	85	138
13	119	1,070	119	116	149	149													33	80	35	56	61	55
14	356	2,540	118	113															52	85	53	53	52	49
15	338	6,770	118	114	14	14													55	52	29	29		
16	432	600	105	270	46	90													16	19	21	21		
17	396	5,850	105	271	55	55													28	30	31	35		
18	430	6,230	106	108															26	28	37	36		
19	374	372	91	92															22	22	75	83	10	10
20	324	3,970	59	71															75	580	70	86		
21	404	480	61	73	14	14																		
22	374	940	86	87															75	310	51	52		
23	398	398	87	85															30	32	94	106		
24	468	730	101	107															36	145	65	85		
25	462	476	92	95	44	42													30	54	95	112		
26	472	468	103	107	85	88													113	530	114	109	36	35
27	444	440	102	101	50	50																		
28	444	444	100	100	88	88													83	105	82	205	34	36
29	314	314	88	88	13	13													80	82	68	123	80	105
30	92	92	105	100	89	81													110	115	102	247	85	132
31	188	1,080			76	82													160	190	109	212	162	166
																			92	115	75	316		

ALBEMARLE SOUND--Continued  
 2-811.53. ALBEMARLE SOUND NEAR EDENTON, N. C.--Continued

Day	Temperature (°F) of water, water year, 1959 to September 1960																								
	October		November		December		January		February		March		April		May		June		July		August		September		
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	
1	76	76	63	63	52	52	44	44	45	45	43	43	50	68	68	77	76	83	82	83	81	83	81	83	80
2	75	75	63	63	50	50	45	45	45	45	43	43	53	53	64	64	78	78	82	82	82	81	82	81	
3	75	75	59	59	50	50	45	45	45	45	42	42	53	53	69	69	78	77	82	82	83	82	81	81	
4	75	75	62	62	50	50	45	45	45	45	40	40	56	56	69	69	78	77	82	82	83	82	81	79	
5	76	76	61	61	48	48	45	45	45	45	43	43	40	58	65	64	78	81	80	84	80	84	80	80	
6	76	76	64	64	47	47	45	45	45	45	42	42	56	56	66	65	78	78	80	84	83	80	84	79	
7	76	76	57	57	47	47	45	45	45	45	41	41	60	60	65	65	77	77	81	81	85	84	79	78	
8	76	76	55	55	46	46	--	--	45	45	41	41	60	60	66	66	75	75	79	81	85	84	80	80	
9	78	78	55	55	47	47	45	45	45	45	39	39	62	62	67	67	74	74	81	80	84	84	80	79	
10	78	78	55	55	47	47	45	45	47	47	38	38	58	66	66	66	74	73	81	80	85	83	80	80	
11	77	77	56	56	47	47	45	45	48	48	38	38	57	37	66	66	75	75	80	79	84	83	80	80	
12	76	76	57	57	48	48	45	45	48	48	39	39	60	67	66	76	75	80	84	83	79	84	78		
13	77	77	57	57	48	48	45	45	48	48	40	40	62	64	66	65	79	78	79	79	87	85	78		
14	77	77	58	58	49	49	48	48	43	43	40	40	64	64	65	65	78	78	79	79	87	85	75		
15	72	72	58	58	49	49	49	49	43	43	41	41	64	64	65	65	79	78	79	79	85	84	79	79	
16	72	72	58	58	49	49	49	49	45	45	40	40	64	70	69	80	79	79	78	81	81	81	79	75	
17	72	72	58	58	49	49	48	48	45	45	42	42	65	65	71	70	78	79	79	79	81	81	75	75	
18	71	71	53	52	50	50	48	48	48	48	42	42	65	65	72	72	79	78	80	79	80	80	78	76	
19	69	69	52	52	50	50	48	48	48	48	43	43	65	65	70	70	78	78	82	81	80	80	79	77	
20	67	67	52	48	48	44	44	44	47	47	44	44	65	64	71	71	80	77	81	81	81	80	74	74	
21	68	68	52	52	45	45	45	45	46	46	44	44	65	64	71	71	78	78	81	80	81	81	74	74	
22	68	68	53	53	45	45	43	43	42	42	45	45	65	65	72	71	79	79	81	81	80	82	73	73	
23	67	67	53	53	45	45	41	41	41	41	45	45	65	65	75	74	78	79	83	82	81	81	73	73	
24	68	68	52	46	46	40	40	40	42	42	45	45	66	66	75	75	82	80	84	83	79	79	72	72	
25	67	67	53	46	46	40	40	40	43	43	45	45	66	66	76	75	80	82	81	79	79	71	71	71	
26	63	63	53	48	48	40	40	44	44	44	46	46	73	72	74	74	78	79	82	81	79	78	71	71	
27	62	62	54	48	48	42	42	44	44	44	47	47	73	72	75	75	79	79	82	84	79	78	71	71	
28	61	61	54	46	46	44	45	45	45	45	49	47	68	68	76	75	79	79	82	80	79	73	72	72	
29	61	61	52	45	45	44	44	45	44	45	52	52	68	68	74	74	82	85	81	80	80	79	72	72	
30	61	61	43	43	45	45	44	44	44	44	--	--	68	68	75	75	83	82	79	79	82	80	71	71	
31	63	63	--	--	45	45	45	45	--	--	53	53	--	--	77	76	--	--	82	81	85	80	--	--	
Avg--	71	71	56	48	48	48	45	45	45	45	43	43	62	70	70	70	78	78	81	80	82	81	77	76	

## SCUPPENONG RIVER BASIN

2-811.66. SCUPPENONG RIVER NEAR CRESWELL, N. C.  
LOCATION.--At bridge on county road at Cross Landing, 3-1/2 miles east of Creswell, Washington County.

DRAINAGE AREA.--115 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960. Maximum, 82° minimum, 7.5 ppm Feb. 1-29.

EXTREMES, 1959-60.--Chloride: Maximum, 282 ppm Sept. 12; minimum, 140° microhos Feb. 1.

Water to temperature: Maximum, 81° minimum, 7.5 ppm Feb. 1-29.

REMARKS.--When specific conductance values indicated salt-water encroachment, only specific conductance and chloride were determined on individual samples.

The individual specific conductance and chloride determinations are tabulated separately from the composite chemical analyses. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (microhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 11-31, 1959....		13	0.67	9.3	2.9	13	1.8	23	11	22	0.3	0.3	138	35	16	133	6.8	350
Nov. 1-24, 26-30....		15	.48	11	3.4	12	1.3	36	8.5	19	.2	.9	137	41	12	148	7.5	200
Nov. 25.....		14	..	..	..	..	..	30	16	66	..	1.5	..	56	31	293	7.1	..
Dec. 1-31, 1960....		11	.40	6.7	2.6	8.7	1.2	22	14	14	..	1.7	13	37	19	120	7.1	..
Jan. 1-31, 1960....		6.7	.21	5.6	1.4	4.6	.7	18	8.7	7.5	..	2.4	80	20	13	70	6.1	150
Mar. 1-31.....		6.0	.33	5.8	1.8	5.7	.6	11	8.8	9.5	.2	.5	b89	22	13	74	6.5	140
Apr. 1-22.....		6.2	.28	6.8	1.4	5.2	.5	12	7.7	8.0	.2	.7	c91	23	13	79	6.4	200
Apr. 23.....		..	..	..	..	..	..	82	8.3	16	..	1.3	..	83	16	208	7.3	..
Apr. 24-30.....		6.2	.32	7.1	1.8	5.7	.5	14	9.2	8.5	..	.6	d100	25	14	85	6.9	160
May 1-31.....		6.0	.28	7.2	2.4	6.4	.8	18	9.8	10	.3	.7	e111	28	13	89	6.6	140
June 1-30.....		7.3	.34	7.7	2.7	6.4	.9	20	7.5	12	.2	.9	..	30	14	89	6.6	200
July 1-31.....		7.2	.23	8.7	2.0	8.1	.9	22	12	10	.1	.6	74	30	12	95	6.7	120
Aug. 1-31.....		8.8	.40	8.7	2.2	6.7	1.2	24	8.0	11	.3	.2	96	30	11	93	6.6	160
Sept. 1-5.....		..	..	..	..	..	..	38	5.6	8.4	..	3.2	..	43	12	110	7.4	..
Sept. 15-16.....		..	..	..	..	..	..	16	7.2	9.2	..	3.7	..	26	12	84	7.0	..
Sept. 18-30.....		10	.57	8.4	2.6	7.5	1.6	22	10	11	.3	.6	f112	32	14	97	6.5	320
Time-weighted average.....		9.1	0.36	7.9	2.4	7.5	1.0	20	9.8	12	0.2	1.0	99	30	14	98	..	190

a Organic matter present; sum of mineral constituents 42 parts per million. d Organic matter present; sum of mineral constituents 47 parts per million.

b Organic matter present; sum of mineral constituents 44 parts per million. e Organic matter present; sum of mineral constituents 56 parts per million.

c Organic matter present; sum of mineral constituents 43 parts per million. f Organic matter present; sum of mineral constituents 64 parts per million.

## SCUPPERNONG RIVER BASIN--Continued

2-811.66. SCUPPERNONG RIVER NEAR CRESWELL, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	65	52	45	50	48	60	65	74	80	78	80
2	74	60	50	45	48	50	62	66	74	79	78	80
3	74	60	50	48	45	45	63	62	75	80	80	80
4	73	62	50	48	45	42	64	63	75	80	80	80
5	72	65	52	48	48	42	62	64	75	80	80	78
6	75	64	51	48	54	40	60	64	75	78	80	76
7	74	62	48	46	50	40	60	65	74	80	80	78
8	75	60	46	45	48	40	60	66	75	79	81	80
9	75	62	46	45	48	40	60	66	75	79	80	78
10	75	58	45	44	48	40	60	68	72	79	80	78
11	77	58	45	43	53	40	60	68	72	78	80	80
12	76	62	48	43	52	40	58	68	72	79	81	78
13	73	61	49	48	50	40	58	65	75	79	81	78
14	74	62	50	50	48	40	60	65	76	79	81	76
15	70	65	48	50	45	42	62	65	77	79	81	75
16	65	62	48	50	42	46	65	65	78	78	80	70
17	65	61	48	46	50	46	66	60	78	79	79	70
18	65	56	50	48	48	46	65	70	78	79	80	70
19	63	54	50	48	50	48	65	70	79	79	78	70
20	59	55	48	48	45	49	62	68	79	80	78	75
21	60	55	48	45	42	49	62	70	79	80	78	75
22	62	60	45	42	45	46	65	70	78	80	80	75
23	65	60	44	45	45	45	65	70	78	80	80	72
24	70	67	44	49	50	46	67	70	80	80	80	70
25	65	60	44	48	55	46	67	70	79	80	78	70
26	65	59	45	40	50	48	67	72	79	80	78	70
27	65	59	45	52	50	52	68	72	79	80	78	70
28	59	59	50	52	50	52	65	72	78	80	78	70
29	60	58	50	50	48	55	68	70	79	78	78	70
30	58	55	48	48	--	--	68	72	80	78	80	70
31	62	--	48	48	--	60	--	72	--	79	80	--
Average	65	60	48	47	48	46	63	68	76	79	79	75

## PAMLICO RIVER BASIN

## 2-830. FISHING CREEK NEAR ENFIELD, N. C.

LOCATION.--Temperature recorder at gaging station 15 feet downstream from bridge on U.S. Highway 301, 2,000 feet downstream from Atlantic Coast Line Railroad bridge, 2 miles southwest of Enfield, Halifax County, 4-3/4 miles downstream from Rocky Creek.

DRAWINGS.--21. General map of basin, showing location of station.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949.

Water temperatures: October 1948 to September 1949, October 1953 to September 1960.

EXTREMES, 1950-60.--Water temperatures: Maximum, 82°F July 25; minimum, 36°F on several days during January and March.

EXTREMES, 1948-49, 1953-60.--Water temperatures: Maximum, 86°F July 27-29, 1955, June 30, July 1, 2, 1959; minimum, 33°F Dec. 28, 1948 and on several days during December 1958.

REMARKS.--Clock stopped May 30 through June 14. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Mar. 18, 1960.....	2,490	9.4	0.05	2.8	1.4	3.1	1.5	15	2.3	3.7	0.0	0.4	36	13	0	44	6.7	
Aug. 17.....	442	17	.50	4.0	1.6	3.3	1.8	21	2.6	3.0	.0	.9	43	16	0	53	7.0	60

a Calculated from determined constituents.



## PAMLICO RIVER BASIN--Continued

2-835. TAR RIVER AT TARBORO, N. C.

LOCATION.--At gaging station on U. S. Highway 64, in Tarboro, Edgecombe County, 6-1/2 miles downstream from Fishing Creek. DRAINAGE AREA.--2,140 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1944 to September 1945, October 1953 to September 1954.

Water temperatures: October 1944 to September 1945, October 1953 to September 1954.

Sediment records: January 1958 to September 1960.

EXTREMES, 1958-60.--Sediment concentrations: Maximum daily, 222 ppm Aug. 26; minimum daily, 11 ppm Jan. 23, 25.

EXTREMES, 1958-60.--Sediment loads: Maximum daily, 3,176 tons Sept. 12; minimum daily, 12 tons July 25.

EXTREMES, 1958-60.--Sediment loads: Maximum daily, 6,130 tons May 12, 1958; minimum daily, 9 tons June 24, 1959.

REMARKS.--Records of suspended matter of composite samples from October 1944 to September 1945, October 1953 to September 1954 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Mar. 16, 1960.....	4,500	11	0.06	4.0	1.7	5.2	1.2	18	2.3	6.2	0.0	0.9	50	17	2	63	7.3	30
Aug. 16.....	4,020	12	.44	3.9	1.0	3.0	1.4	18	1.1	2.5	.2	1.5	A36	14	0	49	7.1	70

A Calculated from determined constituents.

## PAMLICO RIVER BASIN--Continued

2-835. TAR RIVER AT TARBORO, N. C.--Continued

Day	Suspended sediment, water year October 1959 to September 1960								
	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...	530	20	29	4,400	34	404	3,230	32	279
2...	742	32	64	3,480	32	301	2,590	27	189
3...	1,620	63	276	2,940	28	222	2,200	21	125
4...	1,590	45	193	2,540	30	206	2,100	18	102
5...	1,160	38	119	2,340	27	171	2,000	22	119
6...	810	38	83	1,990	28	150	1,900	16	82
7...	750	30	61	2,390	37	239	1,900	18	92
8...	672	34	62	3,590	45	436	2,000	16	86
9...	750	52	105	4,830	46	600	2,000	18	97
10...	1,720	106	s542	5,800	76	1,190	1,900	15	77
11...	5,110	173	s2,270	6,200	86	1,440	1,800	14	68
12...	7,270	72	1,410	6,800	50	918	1,700	12	55
13...	8,130	63	1,380	5,000	30	405	1,700	14	64
14...	9,300	60	1,510	3,800	30	308	1,800	16	78
15...	10,600	58	1,660	3,000	24	194	2,000	18	97
16...	11,500	44	1,370	2,600	23	161	2,140	17	98
17...	11,700	44	1,390	2,500	22	149	1,840	16	79
18...	11,700	48	1,520	2,400	27	175	2,050	102	s602
19...	10,900	40	1,180	2,300	20	124	4,040	78	851
20...	8,370	34	768	2,300	20	124	5,000	53	716
21...	6,080	32	525	2,200	17	101	5,850	46	727
22...	3,910	38	401	2,200	16	95	6,380	80	1,420
23...	2,890	42	328	3,000	22	178	7,190	71	1,380
24...	5,610	176	s2,770	3,500	20	189	7,260	46	902
25...	9,560	108	2,790	3,100	27	226	5,810	29	455
26...	12,800	72	2,490	3,000	32	259	4,630	25	313
27...	14,400	63	2,450	5,200	40	562	3,480	21	197
28...	15,400	47	1,950	6,000	132	2,140	2,820	22	168
29...	13,000	37	1,300	6,600	92	1,640	2,590	16	112
30...	9,220	30	747	4,500	57	693	2,440	17	112
31...	6,520	27	475	--	--	--	2,640	19	135
Total	204,315	--	32,218	110,500	--	14,270	97,180	--	9,877
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
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1...	2,820	20	152	6,620	128	s2,240	6,320	34	580
2...	2,390	21	136	8,800	65	1,540	5,390	30	437
3...	2,190	45	266	9,850	58	1,540	4,740	27	346
4...	2,880	45	350	11,100	59	1,770	5,000	27	365
5...	3,540	40	382	12,200	53	1,750	5,390	28	407
8...	4,440	52	623	12,600	44	1,500	5,580	21	316
7...	5,190	68	953	11,500	61	1,890	5,450	19	280
8...	6,180	57	951	10,800	65	1,900	5,120	19	263
9...	6,990	46	868	10,600	84	2,400	4,740	20	256
10...	7,470	55	1,110	11,200	67	2,030	4,380	21	248
11...	7,550	45	917	11,100	51	1,530	4,200	20	227
12...	6,380	30	517	9,950	54	1,450	4,260	19	219
13...	5,000	28	378	9,030	54	1,320	4,440	18	216
14...	3,920	24	254	9,480	83	2,120	4,500	15	182
15...	3,360	21	191	10,800	62	1,810	4,440	15	180
16...	3,000	22	178	11,800	44	1,400	4,560	20	246
17...	2,700	21	153	11,800	34	1,080	5,720	32	494
18...	2,490	18	121	11,100	32	959	6,720	47	853
19...	2,390	17	110	10,600	43	1,230	7,760	48	1,010
20...	2,340	17	107	10,400	41	1,150	8,770	47	1,110
21...	2,340	18	114	10,400	54	1,520	9,660	41	1,070
22...	2,190	18	106	10,400	80	2,250	10,200	40	1,100
23...	1,990	11	59	10,600	69	1,970	10,200	37	1,020
24...	1,840	12	60	11,100	55	1,650	9,120	28	689
25...	1,740	11	52	10,400	39	1,100	6,960	22	413
28...	1,690	13	59	8,090	32	699	5,200	21	295
27...	1,690	13	59	7,330	28	554	4,130	20	223
28...	1,690	14	64	6,850	40	740	3,600	20	194
29...	1,690	13	59	6,850	47	869	3,240	22	192
30...	1,840	18	89	--	--	--	3,060	20	165
31...	2,930	46	s422	--	--	--	3,480	26	244
Total	104,850	--	9,860	293,350	--	43,961	176,330	--	13,840

s Computed by subdividing day.



## PAMLICO RIVER BASIN--Continued

2-835. TAR RIVER AT TARBORO, N. C.--Continued

Suspended sediment, water year October 1959 to September 1960--Continued

Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day
1...	4,260	47	541	3,920	59	624	1,750	182	860
2...	5,390	88	1,280	2,950	43	342	1,120	97	293
3...	6,320	118	2,010	2,540	41	281	990	62	166
4...	6,990	65	1,230	2,340	40	253	970	53	139
5...	7,330	42	831	2,090	41	231	1,440	96	373
6...	8,050	53	1,150	1,790	31	150	1,840	64	318
7...	8,940	55	1,330	1,590	32	137	1,640	54	239
8...	9,750	47	1,240	1,490	32	129	1,350	57	208
9...	10,400	47	1,320	2,400	75	486	1,390	55	206
10...	10,600	37	1,060	3,880	95	995	1,270	59	202
11...	8,360	25	564	4,800	119	1,540	990	44	118
12...	6,240	27	455	5,320	114	1,640	812	40	88
13...	4,300	24	279	3,890	61	641	742	26	52
14...	3,400	30	275	3,240	43	376	708	28	54
15...	2,940	31	246	2,940	42	333	690	40	75
16...	2,640	32	228	2,440	33	217	870	122	287
17...	2,440	29	191	1,990	29	156	795	75	161
18...	2,290	29	179	1,640	25	111	690	38	71
19...	2,190	29	171	1,440	27	105	620	27	45
20...	2,140	30	173	1,270	22	75	560	22	33
21...	2,090	24	135	1,150	26	81	575	22	34
22...	1,990	24	129	1,070	24	69	560	19	29
23...	1,840	24	119	950	18	46	655	24	42
24...	1,790	28	135	910	30	74	704	30	57
25...	1,740	25	117	850	18	41	830	67	150
26...	1,640	21	93	812	17	37	725	64	125
27...	1,490	21	84	835	24	54	620	38	64
28...	1,520	25	103	1,050	58	164	575	28	43
29...	3,060	101	s896	1,880	146	s752	545	20	29
30...	4,080	137	1,510	2,170	127	744	530	20	29
31...	--	--	--	2,640	99	706	--	--	--
Total	136,210	--	18,074	68,277	--	11,590	27,556	--	4,590
Day	July			August			September		
	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day
1...	500	20	27	11,000	47	1,400	2,240	57	345
2...	545	23	34	11,200	40	1,210	1,640	47	208
3...	530	28	40	10,400	34	955	1,490	50	201
4...	455	21	26	8,310	36	808	1,350	44	160
5...	440	19	23	5,800	31	485	1,390	49	184
6...	425	21	24	3,250	53	465	1,190	42	135
7...	410	19	21	2,170	60	352	990	28	75
8...	410	19	21	2,740	86	636	974	32	s89
9...	395	23	25	2,390	78	503	1,440	88	342
10...	395	16	17	1,740	64	301	1,350	48	175
11...	425	21	24	1,590	64	275	1,030	32	89
12...	485	35	46	1,690	65	297	6,340	185	s3,170
13...	470	26	33	2,390	100	645	10,400	88	s2,450
14...	655	35	62	3,270	99	874	12,000	47	1,520
15...	742	59	118	4,020	115	1,250	12,400	26	870
16...	795	64	137	4,080	71	782	12,100	23	751
17...	760	55	113	3,960	60	642	10,700	23	664
18...	690	50	93	3,080	47	391	8,420	23	523
19...	575	39	61	2,220	50	300	5,960	30	483
20...	485	36	47	1,740	52	244	3,590	33	320
21...	425	34	39	1,310	42	149	2,540	43	295
22...	410	29	32	910	36	88	2,140	40	231
23...	425	33	38	930	36	90	1,940	35	183
24...	340	22	20	1,190	54	174	1,640	37	164
25...	300	15	12	2,580	110	s809	1,390	33	124
26...	305	18	15	4,530	222	s2,710	1,070	29	84
27...	290	19	15	4,930	111	1,480	1,030	24	67
28...	867	108	s326	4,790	65	841	970	22	58
29...	1,510	190	s774	5,320	118	1,690	930	20	50
30...	5,860	206	s3,120	5,580	145	2,180	910	22	54
31...	9,650	77	2,010	4,840	88	1,150	--	--	--
Total	30,969	--	7,393	123,950	--	24,176	111,554	--	14,064
Total discharge for year (cfs-days).....									
Total load for year (tons).....									
1,485,041									
203,913									

s Computed by subdividing day.

PAMLICO RIVER BASIN--Continued  
2-841.24. TAR RIVER NEAR PACTOLUS, N. C.  
2-841.24. TAR RIVER NEAR PACTOLUS, Pitt County.

LOCATION.--At Yankee Hall Landing about 1-1/2 miles southeast of Pactolus, Pitt County.

DRAINAGE AREA.--2,680 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 80 ppm July 1-31; minimum, 48 ppm Feb. 25-29.

Hardness: Maximum, 32 ppm Feb. 23-24; minimum, 14 ppm Feb. 23-29.

Water temperature: Maximum, 85°F July 24; minimum, 53°F Feb. 14.

Water temperature range: Maximum, 85°F July 24; minimum, 53°F Feb. 14.

EXTREMES, 1956-60.--Dissolved solids: Maximum, 85 ppm Oct. 1-31, 1957; minimum, 47 ppm Sept. 1-6, 8-15, 1959.

Hardness: Maximum, 66 ppm May 30, 1959; minimum, 13 ppm Dec. 21-31, 1956.

Specific conductance: Maximum daily, 45 micromhos Mar. 29, 1958.

Water temperatures: Maximum, 94°F June 29, 1959; minimum, freezing point on several days during winter months.

REMARKS.--Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-11, 1959.....		17	0.04	6.0	2.1	9.0	2.6	27	5.0	10	0.2	2.6	71	24	1	95	7.2	35
Oct. 12-31.....	9.6	14	.11	5.2	1.3	4.3	2.8	14	8.6	6.0		0.2	56	18	7	66	6.4	90
Nov. 1-30.....		14	.28	4.8	1.8	6.2	2.2	18	4.3	7.0		1.8	70	20	5	71	6.7	70
Dec. 1-31.....		13	.04	4.6	1.3	7.0	1.9	18	3.9	8.5		1.7	58	17	2	74	7.2	15
Jan. 1-31, 1960.....		13	.05	5.2	1.3	5.6	1.6	16	5.7	7.5		2.3	60	18	5	73	7.2	20
Feb. 1-20.....	7.7		.08	7.3	2.3	4.5	2.2	13	14	7.5		3.0	64	28	17	90	7.1	30
Feb. 21-22.....		--		4.2	1.6	2.3	1.9	12	6.0			.6	--	17	7	51	6.9	--
Feb. 23-24.....			.01	9.2	2.9	4.0	2.4	13	19.7	6.3		2.0	48	32	21	105	7.1	--
Feb. 25-29.....		8.4	.05	3.4	1.3	4.0	1.4	13	3.7	6.3		1.0	48	14	3	52	7.0	30
Mar. 1-31.....		8.1	.05	4.1	1.6	4.9	1.4	15	6.0	6.5		1.5	50	17	4	64	7.2	10
Apr. 1-20.....	10		.07	5.0	2.1	4.6	1.8	22	3.9	6.0		1.1	54	21	3	66	6.9	40
Apr. 21-30.....		13	.07	6.4	1.8	6.0	2.5	22	6.5	7.0		1.4	66	24	6	90	6.7	40
May 1-31.....		13	.04	5.0	2.3	4.8	1.8	21	6.9	7.0		1.6	58	22	5	73	6.9	25
June 1-30.....		14	.07	5.8	2.2	7.1	1.7	27	6.5	6.5		1.8	71	24	2	79	6.9	30
July 1-31.....		13	.17	5.0	1.4	7.5	2.2	28	7.8	5.5		1.7	80	18	6	80	6.5	85
Aug. 1-31.....		13	.23	4.8	1.6	7.7	2.0	17	8.0	6.0		2.2	68	18	4	64	7.0	80
Sept. 1-16.....	9.2			6.4	1.4	3.3	2.2	22	8.0	6.5		2.0	67	22	4	82	7.0	80
Sept. 17-30.....		13	.30															
Time-weighted average.....		12	0.10	5.3	1.8	5.4	2.0	19	6.7	7.0	0.2	1.9	62	20	5	75	--	42

## PAMLICO RIVER BASIN--Continued

2-841.24. TAR RIVER NEAR PACTOLUS, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	59	46	45	42	42	58	69	81	80	81	79
2	78	60	45	46	45	41	59	68	77	80	80	78
3	78	59	45	47	46	39	57	63	80	82	80	78
4	72	59	45	46	47	38	60	64	78	83	81	79
5	70	59	44	47	46	37	62	65	80	82	81	77
6	79	53	42	46	48	37	61	68	75	79	80	80
7	78	54	43	47	47	37	62	63	73	80	82	81
8	--	53	42	47	49	36	63	65	74	80	81	81
9	76	54	40	47	55	39	60	65	75	79	82	80
10	75	55	42	48	56	37	64	68	74	80	82	81
11	76	56	42	45	58	36	65	66	75	80	79	76
12	77	55	40	46	45	40	65	69	73	81	78	73
13	77	55	41	47	36	42	67	70	74	79	79	73
14	76	54	40	44	33	39	64	71	76	80	79	73
15	75	53	43	50	35	41	64	71	80	80	75	73
16	76	53	45	50	41	42	65	65	80	80	74	74
17	76	54	45	46	47	40	68	68	79	80	76	73
18	74	54	47	49	45	49	70	70	78	80	76	73
19	64	56	50	48	42	49	71	69	79	80	74	73
20	64	55	50	39	49	46	70	75	80	80	74	73
21	70	56	52	40	46	49	71	77	79	80	80	73
22	65	55	47	41	45	49	70	80	78	81	81	73
23	64	56	45	41	47	51	68	78	80	82	80	73
24	65	55	42	41	49	46	71	79	80	85	80	73
25	60	56	42	39	49	48	73	80	78	80	76	70
26	55	55	43	38	45	52	75	76	80	83	72	70
27	50	55	45	40	42	55	75	80	80	84	76	71
28	55	45	50	46	52	--	74	78	80	83	78	71
29	57	46	50	45	54	--	74	80	80	82	73	70
30	57	46	46	44	--	--	68	80	80	80	77	74
31	50	--	46	41	--	--	--	80	--	80	74	70
Average	69	54	45	45	46	43	66	72	78	81	78	75

## NEUSE RIVER BASIN

2-872.24. NEUSE RIVER NEAR MILBURNIE, N. C.

LOCATION.--At bridge on county road, 2.5 miles south of U. S. Highway 401, and 0.5 mile below Hodges Mill Creek, 3.4 miles north of Milburnie, Wake County, N. C.

DRAINAGE AREA.--857 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1958 to September 1960.

Water temperatures: January 1958 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 112 ppm July 19-23; minimum, 44 ppm Aug. 24-29.

Hardness: Maximum, 30 ppm July 1-10, 19-23; minimum, 15 ppm Feb. 1-29.

Specific conductance: Maximum daily, 206 microhos, July 21; minimum daily, 41 microhos Feb. 21.

Water temperatures: Maximum, 82°F Aug. 4, 9; minimum, freezing point Jan. 25.

EXTREMES, January 1959 to September 1960.--Dissolved solids: Maximum, 134 ppm Dec. 2-10, 1958; minimum, 30 ppm July 10-13, 1959.

Hardness: Maximum, 35 ppm Nov. 15-18, 1958; minimum, 13 ppm Nov. 10-13, 1958.

Specific conductance: Maximum daily, 277 microhos, Nov. 15, 1958; minimum daily, 35 microhos May 6, 1958.

Water temperatures: Maximum, 84°F June 28-30, July 1, 1959; minimum, freezing point Dec. 11, 25, 27, 1958, Jan. 25, 1960.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-31, 1959.....		15	0.06	4.6	1.8	7.0	2.2	24	3.6	6.5	0.2	1.1	67	19	0	78	7.4	20
Nov. 1-6.....		17	.21	5.3	2.4	10	2.0	29	2.2	11	.1	2.1	72	23	0	96	6.9	45
Nov. 7-10.....		14	.10	4.3	2.4	5.2	1.8	23	3.6	5.5	.1	.7	a49	21	2	93	7.3	35
Nov. 11-13.....		17	.19	3.5	1.0	3.2	2.2	18	5.8	2.5	.1	1.7	50	21	0	97	7.5	30
Nov. 26-30.....		16	.03	5.3	1.1	7.1	1.7	26	3.1	8.5	.2	1.5	65	18	4	86	7.3	20
Dec. 1-31.....																		
Jan. 1-31, 1960.....		16	.03	5.4	1.8	7.4	1.5	26	3.4	7.0	.2	.6	68	21	0	86	7.7	15
Feb. 1-29.....		10	.01	3.8	1.4	3.6	1.1	16	3.9	5.0	.2	1.0	47	15	2	54	7.2	25
Mar. 1-31.....		12	.06	4.2	2.3	4.9	1.0	19	5.6	4.5	.0	1.0	52	20	4	66	6.5	30
Apr. 1-12.....		11	.06	3.7	1.9	3.6	1.3	18	4.6	3.2	.1	1.4	56	17	2	67	7.9	40
Apr. 13-30.....		16	.05	5.3	2.3	7.7	1.3	29	4.3	6.0	.1	1.5	62	22	0	86	7.2	25
May 1-22.....		16	.05	5.2	1.8	7.0	1.4	27	2.8	7.5	.3	4.2	65	20	0	81	6.8	15
May 23-28.....		18	.03	6.0	2.8	13	1.5	34	4.8	14	.1	2.9	a81	26	0	128	7.3	15
May 29-31.....		16	.17	3.8	1.8	5.6	1.5	19	6.6	3.5	.1	4.0	a52	17	2	57	7.2	--
June 1-8.....		16	.07	5.2	1.8	9.6	1.5	27	4.6	9.5	.1	1.8	66	20	0	89	7.4	10
June 9-10.....		20	.20	6.0	3.0	19	1.8	34	5.8	22	.1	4.8	a99	28	0	140	6.9	--
June 11-13.....		21	.07	6.2	3.3	11	1.6	36	5.0	10	.1	3.5	a80	29	0	103	6.8	--
June 14-30.....		17	.07	7.0	2.8	18	1.7	43	5.0	18	.1	2.9	102	29	0	138	6.7	15

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
July 1-10 <sup>a</sup> , 1960.....		21	.04	7.6	2.8	10	2.1	40	4.8	7.5	1	1.9	80	30	0	110	6.8	10
July 11.....		--	--	--	--	--	--	34	--	--	--	--	--	--	--	80	7.5	--
July 12-18.....		19	.10	7.2	2.1	12	2.0	34	5.2	16	.1	1.6	a82	26	0	120	6.6	20
July 19-23.....		20	.09	6.0	3.5	24	2.2	43	5.8	27	.1	2.8	a112	30	0	180	7.4	--
July 24-29.....		19	.06	6.0	2.8	--	--	40	4.2	20	.2	3.3	--	26	0	150	7.2	10
July 30-31.....		13	.09	4.2	2.3	7.4	2.3	24	6.6	5.5	.1	3.0	a56	20	0	175	7.2	--
Aug. 1-5.....		17	.07	5.4	2.6	16	2.0	28	7.0	19	.1	1.1	a84	24	1	130	6.7	20
Aug. 6-7.....		16	.16	4.6	1.5	6.1	1.9	24	3.2	4.5	.1	2.4	a52	18	0	68	6.8	--
Aug. 8-13.....		16	.16	5.6	2.6	15	2.4	30	9.6	16	.1	2.9	a85	24	0	122	6.8	--
Aug. 14-18.....		16	.10	5.8	1.9	9.4	2.0	29	5.4	9.2	.2	2.9	a67	22	0	95	7.3	--
Aug. 19-23.....		18	.12	5.6	2.6	11	2.0	33	5.2	10	.1	2.5	a73	24	0	101	7.4	--
Aug. 24-29.....		10	.14	4.4	1.6	4.5	1.7	19	5.6	4.3	.1	2.2	a44	18	2	59	6.4	40
Aug. 30-31.....		14	.25	5.0	2.1	11	1.9	26	5.0	12	.1	2.7	a67	21	0	98	6.6	--
Sept. 1-4.....		16	.17	6.0	2.1	8.9	2.1	20	3.6	8.0	.1	3.2	a68	20	0	94	6.8	--
Sept. 5.....		15	.16	5.1	2.2	11	1.9	29	6.8	1.7	.2	2.6	a70	22	0	102	7.5	50
Sept. 6-18.....		15	.16	6.6	2.6	16	2.3	35	8.6	17	.2	3.8	a93	27	0	138	7.6	35
Sept. 19-30.....		18																
Time-weighted average.....		15	0.07	5.2	2.1	8.6	1.7	27	4.5	9.0	0.1	1.8	69	22	1	90	--	23

<sup>a</sup> Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

2-872.24. NEUSE RIVER NEAR MILBURNIE, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	61	44	42	43	43	57	64	72	76	76	78
2	72	59	44	42	44	39	56	60	70	79	78	78
3	--	55	45	46	42	36	59	63	72	81	80	77
4	--	56	45	45	41	35	59	64	72	81	82	75
5	--	57	44	44	43	33	58	65	74	78	80	76
6	--	64	47	43	45	36	58	66	74	77	80	75
7	--	58	44	44	45	37	58	65	73	76	79	76
8	--	54	43	44	44	34	59	63	73	77	80	76
9	--	51	43	45	45	33	60	62	71	76	82	77
10	--	49	42	44	48	36	55	62	70	75	81	78
11	--	49	43	45	51	37	55	62	71	75	80	76
12	--	52	47	46	50	38	58	60	74	76	79	76
13	--	49	47	49	43	39	58	60	75	78	77	73
14	--	56	46	48	40	40	63	61	76	76	79	71
15	--	56	42	52	39	40	65	63	76	77	79	69
16	--	51	45	50	40	39	67	66	78	77	76	67
17	--	55	46	48	41	37	70	69	79	76	76	71
18	--	49	48	47	42	38	65	70	79	78	75	72
19	--	48	47	46	41	40	64	70	79	76	76	72
20	--	47	46	44	40	41	65	70	76	79	77	74
21	--	47	44	42	40	42	66	72	75	80	79	73
22	--	48	42	38	40	41	66	73	77	79	79	71
23	--	49	40	36	41	42	68	72	78	80	77	70
24	--	52	40	36	43	44	72	72	80	80	75	70
25	--	54	42	32	43	43	73	74	78	80	73	69
26	--	50	43	38	44	45	74	75	74	80	73	67
27	--	52	45	39	43	48	70	73	75	78	71	66
28	57	51	47	43	46	52	65	73	76	77	73	66
29	53	49	47	44	44	55	65	74	77	72	75	67
30	57	--	46	44	--	52	63	71	79	74	78	69
31	59	--	45	43	--	56	--	70	--	75	78	--
Average	--	53	44	44	43	41	63	67	75	77	78	72

NEUSE RIVER BASIN--Continued  
2-875.66. NEUSE RIVER AT SMITHFIELD, N. C.

LOCATION.--At bridge on U. S. Highway 70 at Smithfield, Johnston County, and 1.7 miles upstream from Swift Creek.  
DRAINAGE AREA.--1,201 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955, October 1958 to September 1960.  
REMARKS.--Records of discharge for gaging station near Clayton for water year October 1959 to September 1960 given in WSP 1703. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....	2,580	14	0.09	5.0	1.1	8.9	2.6	25	5.3	7.2	0.1	0.8	65	17	0	83	6.3	40
Nov. 2.....	1,120	16	.15	5.0	1.6	6.7	2.0	27	1.8	9.1	.1	1.1	64	19	0	88	7.0	30
Dec. 1.....	1,280	15	.13	4.8	1.9	5.6	2.0	23	1.9	6.2	.2	.8	60	20	1	69	6.8	30
Jan. 4, 1960.....	2,650	15	.07	4.8	1.8	6.0	1.5	23	4.8	6.5	.0	3.2	57	19	0	77	7.5	10
Feb. 1.....	7,040	11	.03	3.2	1.7	4.5	1.9	17	3.8	5.8	.1	1.0	44	15	1	56	6.4	15
Mar. 2.....	1,820	14	.06	3.5	1.7	6.3	1.3	20	2.7	6.5	.1	1.4	55	16	0	67	6.8	15
Apr. 1.....	5,310	8.0	.01	3.5	1.3	3.6	1.2	14	6.5	4.2	.0	.5	44	14	2	56	6.9	20
May 1.....	1,550	14	.00	4.4	2.0	6.2	1.6	30	4.4	5.0	.0	.0	58	19	0	77	6.7	5
June 2.....	1,764	15	.06	4.8	1.8	7.7	1.7	25	4.2	7.8	.1	3.5	61	20	0	82	6.6	25
June 30.....	320	18	.00	6.7	1.9	12	2.3	40	3.3	10	.2	2.1	78	24	0	120	6.7	5
Aug. 1.....	1,080	12	.06	4.5	1.5	6.3	2.1	20	8.0	5.5	.2	3.0	57	17	0	70	6.4	20
Aug. 31.....	715	13	.01	5.0	1.2	6.9	2.1	24	4.2	6.8	.1	1.2	56	18	0	75	6.6	30

Chemical analyses, in parts per million, October 1959 to August 1960

## NEUSE RIVER BASIN--Continued

2-883.64. NEUSE RIVER NEAR ROSEWOOD, N. C.

LOCATION--At bridge on county road (Asylum Road), 3.5 miles southwest of Goldsboro, Wayne County, and 6.5 miles upstream from Little River.

DRAINAGE AREA--2,037 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1958 to September 1960.

REMARKS--No discharge records available for this station.

Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....		16	0.12	5.6	1.7	13	2.1	29	5.1	14	0.2	1.4	75	21	0	108	6.7	20
Nov. 2.....		11	.23	3.4	1.1	5.5	2.0	15	2.4	7.2	.2	.8	55	13	1	60	8.2	70
Dec. 1.....		12	.16	3.9	1.6	4.9	2.2	17	2.2	7.3	.1	1.1	41	16	2	63	7.1	15
Dec. 1, 1960.....		12	.16	3.9	1.6	5.2	2.2	17	2.2	7.3	.1	1.1	41	16	2	63	7.1	15
Jan. 1.....		9.1	.16	2.2	1.6	6.2	1.5	15	3.4	7.0	.0	1.3	48	12	0	59	6.4	30
Feb. 1.....		7.7	.06	2.6	1.8	4.3	1.3	14	3.2	5.5	.1	1.0	48	14	3	49	6.6	35
Mar. 2.....																		
Apr. 1.....		8.5	.01	3.7	1.1	5.1	1.0	14	7.7	5.7	.0	.3	48	14	2	63	6.9	10
May 1.....		10	.12	3.5	1.2	4.9	1.7	18	3.4	4.4	.0	1.5	53	14	0	63	6.5	60
June 2.....		22	.20	3.5	1.5	4.2	1.9	18	4.4	3.0	.0	2.6	60	13	0	59	7.0	60
June 30.....		15	.02	5.5	2.2	10	2.0	32	4.4	10.0	.1	1.0	75	22	0	105	6.9	7
July 1.....		8	.06	4.0	1.6	2.6	2.5	9	5.2	4.7	.1	1.4	56	16	0	58	6.7	50
Aug. 31.....		12	.01	4.0	1.3	4.4	2.0	19	5.2	4.3	.1	1.4	52	16	0	58	6.6	30



NEUSE RIVER BASIN--Continued  
2-888.21. NEUSE RIVER AT GOLDSBORO, N. C.

LOCATION.--At bridge on U. S. Highway 117, 2 miles southwest of Goldsboro, Wayne County, and 1.7 miles upstream from gage.

DRAINAGE AREA.--2,370 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949, October 1958 to September 1960.

REMARKS.--Records of discharge for gaging station near Goldsboro for water year October 1959 to September 1960 given in WSP 1703. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)			Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
													Calcium	Non-magnesium	sum	Calcium	Non-carbonate			
Oct. 1, 1959.....	902	16	0.15	6.2	1.4	12	2.1	29	5.4	12	0.1	1.3	78	21	0	104	0	104	6.6	30
Nov. 2.....	8,370	11	.25	3.0	1.1	2.9	2.0	14	.9	5.2	.2	.8	49	12	1	55	1	55	6.1	60
Dec. 1.....	4,930	10	.13	3.3	1.7	5.0	2.3	16	2.5	6.6	.1	1.0	54	15	2	70	2	70	6.2	50
Jan. 4, 1960.....	2,970	11	.13	3.4	1.3	6.3	1.6	16	2.2	8.0	.1	.9	47	14	1	66	1	66	7.0	30
Feb. 1.....	5,340	8.7	.19	2.7	1.1	5.6	1.6	13	3.1	6.0	.1	1.5	45	11	1	57	1	57	6.3	30
Mar. 2.....	8,390	7.4	.06	2.6	1.3	4.4	1.3	12	3.0	5.3	.1	1.0	49	12	2	50	2	50	6.5	25
Apr. 1.....	4,930	8.1	.00	4.0	.6	4.6	1.2	15	5.1	6.0	.0	.2	41	12	0	58	0	58	7.0	15
May 1.....	3,870	9.9	.04	3.4	1.4	4.9	1.8	18	4.4	4.0	.0	.4	50	14	0	62	0	62	6.3	15
June 2.....	3,030	11	.03	4.3	1.1	5.3	1.8	19	4.4	4.2	.1	1.6	47	16	0	60	0	60	6.4	40
June 30.....	735	12	.00	5.1	1.8	10	2.2	29	2.8	11	.1	1.7	70	20	0	100	0	100	6.5	10
Aug. 1.....	9,800	5.0	.06	3.2	.6	2.2	1.5	7	4.8	2.3	.2	1.1	30	10	4	36	4	36	5.8	60
Aug. 31.....	2,070	12	.04	3.8	1.6	4.8	2.2	17	4.9	5.3	.1	1.8	58	16	2	61	2	61	6.5	40

## NEUSE RIVER BASIN--Continued

## 2-890. NEUSE RIVER NEAR GOLDSBORO, N. C.

LOCATION.--At gaging station at highway bridge, 0.2 mile upstream from Stony Creek, 1.5 miles downstream from Atlantic Coast Line Railroad bridge, 3.2 miles upstream from County Court House in Goldsboro, and 4.3 miles downstream from Little River.

DRAINAGE AREA.--2,390 acres.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955, October 1958 to September 1960.

Water temperatures: October 1958 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 70 ppm Oct. 1-3, June 13-30; minimum, 41 ppm Dec. 21-31, Jan. 1, 4-6.

Hardness: Maximum, 20 ppm Oct. 1-3, May 21-31, June 1-12, 13-30; minimum, 11 ppm Feb. 1-29, July 28-31.

Specific conductance: Maximum daily, 129 micromhos July 23; minimum daily, 36 micromhos Oct. 27.

Water temperatures: Maximum, 86°F July 1, 23; minimum, freezing point Mar. 5.

EXTREMES, 1958-60.--Dissolved solids: Maximum, 92 ppm June 1-9, 1959; minimum, 38 ppm Sept. 1-10, 1959.

Hardness: Maximum, 37 ppm June 1-9, 1959; minimum, 17 ppm Mar. 5, 1959.

Specific conductance: Maximum daily, 177 micromhos, Mar. 3, 1959; minimum, 36 micromhos Oct. 27, 1959.

Water temperatures: Maximum, 85°F June 30, 1959; minimum, freezing point on several days during winter months.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of samples collected from October 1958 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-3, 1959.....	2,094	17	0.06	5.2	1.7	12	2.0	29	2.5	12	0.2	2.6	a70	20	0	110	6.8	20
Oct. 15-20.....	2,434	14	.15	4.5	1.2	6.2	2.5	20	2.4	5.5	.2	1.7	32	16	0	46	7.6	70
Oct. 21-31.....	2,434	9.8	.13	3.2	.9	3.3	1.9	27	1.5	2.5	.2	1.3	43	15	0	46	7.6	70
Oct. 30-31.....	13,600	13	.19	4.6	.9	6.0	1.9	20	1.9	5.3	.2	1.7	47	15	0	70	7.6	--
Nov. 1-30.....	3,805	13	.14	4.2	1.3	6.5	1.7	19	2.6	7.0	.2	1.7	a48	16	0	73	6.6	50
Dec. 1-10.....	2,938	14	.21	3.9	1.2	6.5	1.6	18	1.8	6.0	.2	1.8	a45	15	0	71	6.6	45
Dec. 11-20.....	2,634	13	.17	3.2	1.5	5.0	1.4	16	2.3	5.5	.2	1.5	41	14	1	63	7.0	50
Dec. 21-31.....	5,471	12	.07	3.8	1.3	5.1	1.2	17	2.6	5.0	.2	1.2	a41	15	1	67	6.4	25
Jan. 1-4-6, 1960...	3,672	12	.04	3.0	1.2	4.5	1.2	10	3.1	5.0	.2	3.5	42	11	2	58	6.9	15
Mar. 1-25.....	10,660	8.2	.08	3.6	1.2	5.3	1.4	19	4.2	4.3	.1	1.7	55	17	2	64	6.8	40
Mar. 26-31.....	5,456	9.7	.09	3.6	2.0	5.3	1.4	19	4.2	4.3	.1	1.7	55	17	2	64	6.8	40
Apr. 1-30.....	5,456	9.7	.09	3.6	2.0	5.3	1.4	19	4.2	4.3	.1	1.7	55	17	2	64	6.8	40
May 1-20.....	3,406	11	.02	4.0	1.6	5.6	1.5	19	3.1	5.0	.2	4.7	a56	16	1	69	6.9	20
May 21-31.....	1,646	12	.03	4.5	2.1	9.4	1.2	27	4.6	7.5	.3	4.0	a55	20	0	87	6.6	15
June 1-12.....	1,653	14	.06	4.6	1.9	8.0	1.2	23	8.4	7.8	.1	3.6	a61	20	0	81	6.8	25
June 13-30.....	917	14	.04	5.1	1.9	11	1.4	26	7.2	10	.1	3.6	70	20	0	100	7.2	20
July 1-27.....	1,016	11	.10	4.1	1.8	8.5	1.6	21	6.6	9.0	.2	3.4	--	17	3	85	7.1	35
July 28-31.....	5,195	--	--	--	--	--	--	10	5.4	2.3	--	--	--	11	3	40	6.8	--

Aug. 1-19, 1960.....	5,033	9.6	12	3.2	1.4	5.6	2.0	15	5.8	4.3	2	3.1	48	14	2	57	6.0	50
Aug. 20-31.....	2,271	13	.21	3.8	2.0	7.2	1.9	21	7.8	5.5	.2	3.5	63	18	0	73	7.4	50
Sept. 1-12.....	1,508	14	.17	5.1	1.5	9.2	2.0	23	4.8	7.3	.1	2.5	66	18	0	85	7.2	35
Sept. 13-20.....	5,776	8.3	.23	3.3	1.1	5.2	2.5	14	8.8	4.3	.2	2.2	51	12	1	56	7.2	75
Sept. 21-30.....	1,137	14	.23	4.4	.9	9.5	2.4	23	7.8	8.7	.2	3.0	63	14	0	87	7.5	45
Time-weighted average.....	4,388	11	0.11	3.9	1.4	6.4	1.6	18	4.6	6.0	0.2	2.4	53	15	1	69	--	38

a Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

2-890. NEUSE RIVER NEAR GOLDSBORO, N. C.--Continued

Temperature (°F) of water, December 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			45		45	--	62	64	--	86	--	--
2			40		42	--	62	63	66	85	--	--
3			41		43	41	63	64	67	82	83	--
4			45		46	39	64	64	--	82	81	81
5			40		48	--	65	64	67	82	83	--
6												
7			46		42	39	62	65	68	82	81	81
8			41		46	39	63	68	70	74	80	79
9			44		46	39	63	68	70	74	80	81
10			43		47	34	63	68	72	77	82	82
			44		48	38	63	66	--	77	--	80
11												
12			44		52	38	60	64	74	78	81	81
13			51		53	39	61	63	76	80	81	--
14			51		48	39	63	63	77	81	80	79
15			43		46	41	64	66	78	81	82	78
			41		44	43	66	68	81	83	81	74
16												
17			50		43	43	64	68	80	84	81	74
18			41		43	--	--	72	80	--	82	74
19			50		44	--	67	74	81	--	81	72
20			40		44	--	68	74	--	80	80	73
			40		44	--	68	76	79	82	80	74
21												
22			40		44	--	68	78	81	--	81	74
23			41		44	41	70	79	82	83	80	75
24			50		--	41	72	79	79	86	79	73
25			55		46	48	74	81	83	--	80	75
			41		--	48	76	--	--	--	77	74
26												
27			40		--	49	74	--	82	83	75	73
28			45		46	51	75	78	83	--	75	73
29			55		--	47	70	78	85	--	76	73
30			44		47	48	70	75	--	--	78	73
31			42		--	53	68	73	--	74	75	71
			44		--	--	--	75	--	--	--	--
Average			44		46	43	66	70	--	--	80	76

NEUSE RIVER BASIN--Continued  
2-891.16. NEUSE RIVER NEAR WHITEHALL, N. C.

LOCATION.--At bridge on State Highway 111, 4.2 miles northwest of Whitehall, Wayne County, and 4.0 miles upstream from Walnut Creek.

DRAINAGE AREA.--2,455 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1960.

REMARKS.--No discharge records available for this station.

Date of collection	Mean discharge (cfs)	Chemical analyses, in parts per million, October 1959 to August 1960																
		Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....		15	0.13	5.8	1.5	12	2.2	27	4.6	12	0.2	1.1	77	20	0	104	6.5	40
Nov. 2.....		9.8	.23	3.6	.9	5.5	2.3	13	3.1	6.7	.2	.8	50	13	2	54	5.9	60
Dec. 1.....		11	.10	3.9	1.6	4.9	2.3	17	3.2	5.7	.1	.9	42	16	2	57	6.5	50
Jan. 4, 1960.....		12	.04	4.5	1.2	6.3	1.6	16	6.8	8.0	.1	1.9	52	16	3	68	6.8	25
Feb. 1.....		8.7	.12	2.6	1.4	5.8	1.6	12	3.7	7.5	.1	1.2	46	12	2	58	6.3	30
Mar. 2.....		7.1	.06	2.7	1.1	4.5	1.3	12	3.5	5.2	.1	.9	41	11	2	49	6.6	30
Apr. 1.....		7.6	.00	3.4	1.1	4.7	1.0	18	2.6	6.0	.0	.2	44	13	0	59	6.9	10
May 1.....		10	.14	3.8	1.4	4.8	1.8	17	4.4	5.0	.0	2.2	60	15	1	57	6.1	60
June 2.....		10	.06	4.5	.8	4.4	1.8	17	4.4	4.3	.1	2.4	50	14	0	57	6.1	40
June 30.....		13	.02	5.4	1.7	10	2.1	28	5.7	11	.1	1.5	67	20	0	100	6.4	10
Aug. 1.....		5.2	.04	2.2	1.0	2.5	1.5	7	5.6	2.2	.1	.7	34	10	4	37	5.8	60
Aug. 31.....		11	.08	4.3	1.4	4.1	1.9	10	12	4.8	.1	2.0	60	17	9	63	5.9	40

NEUSE RIVER BASIN--Continued  
2-891.92. NEUSE RIVER AT WHITEHALL, N. C.

LOCATION.--At bridge on paved county road at Whitehall, Wayne County, and 3.5 miles downstream from Walnut Creek.  
DRAINAGE AREA.--2,492 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1960.  
REMARKS.--No discharge records available for this station.

Chemical Analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (G/s)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....		14.8	0.19	5.0	1.5	10.0	2.1	25	5.6	10	0.1	1.3	86	19	0	92	6.5	40
Nov. 1.....		10.8	.26	3.5	1.5	4.9	2.3	17	2.3	16.4	.1	1.1	48	11	3	48	6.7	85
Dec. 1.....		10.0	.26	3.5	1.5	4.9	2.3	17	2.3	16.4	.1	1.1	48	11	3	48	6.7	85
Jan. 4, 1960.....		11	.06	3.8	1.4	6.1	1.7	16	3.6	7.7	.1	1.6	50	15	2	64	6.6	60
Feb. 1.....		9.0	.17	2.6	1.5	5.9	1.6	13	5.3	8.0	.1	1.7	45	13	2	70	6.4	25
Mar. 2.....		6.9	.08	2.7	1.3	4.5	1.3	13	3.7	6.0	.1	.8	37	12	1	60	6.5	30
Apr. 1.....		7.2	.00	3.5	1.0	4.8	1.0	16	4.3	5.8	.0	.6	41	13	0	50	6.5	30
May 1.....		10	.15	3.8	1.3	5.2	2.0	17	5.4	4.0	.0	2.1	64	14	1	60	6.8	10
June 20.....		10	.03	4.6	1.6	4.2	3.6	25	4.4	3.2	.1	2.1	66	14	1	64	6.5	80
July 1.....		10	.06	5.0	1.6	4.2	3.6	25	5.1	3.2	.1	1.9	66	19	0	90	6.5	10
Aug. 1.....		5.1	.04	3.0	1.5	2.4	1.4	8	6.1	3.0	.2	1.2	39	10	3	37	5.7	50
Aug. 31.....		11	.03	4.3	.8	4.2	1.9	17	5.1	4.5	.2	1.3	56	14	0	58	6.4	40

## NEUSE RIVER BASIN--Continued

## 2-895. NEUSE RIVER AT KINSTON, N. C.

LOCATION.--At bridge on U. S. Highway 258, 0.2 mile south of Kinston, Lenoir County, and 0.9 mile downstream from gage.

WATER APPROPRIATION.--None.

RECORDS AVAILABLE.--Chemical analyses October 1949 to September 1950, January 1955 to September 1956, October 1958 to September 1960.

REMARKS.--Records of discharge for gaging station at Kinston for water year October 1959 to September 1960 given in WSP 1703. No appreciable inflow between sampling point and gaging station except during periods of heavy local runoff.

Chemical analyses, in parts per million, October 1959 to August 1960																		
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....	935	14	0.06	5.3	1.4	10	2.0	25	7.0	8.7	0.1	0.1	68	19	0	92	6.3	30
Nov. 2.....	13,100	8.5	.03	2.5	1.1	3.2	2.0	11	.6	4.0	.2	.9	43	11	2	42	6.6	85
Dec. 1.....	4,470	11	.12	3.4	1.8	4.7	2.2	16	1.6	7.0	.1	1.2	41	16	3	63	6.5	50
Jan. 4, 1960.....	3,470	11	.04	4.2	1.3	5.9	1.6	15	4.7	7.7	.1	1.6	49	16	3	69	6.5	20
Feb. 1.....	4,140	11	.09	3.3	1.8	6.1	1.7	14	5.7	7.7	.1	1.4	51	16	4	64	6.2	25
Mar. 2.....	10,400	7.1	.06	2.5	1.4	4.4	1.3	12	3.7	5.8	.1	1.0	40	12	2	50	6.6	30
Apr. 1.....	8,210	5.5	.00	3.4	1.1	4.0	1.0	14	5.3	4.7	.0	.6	42	13	2	56	6.8	10
May 1.....	3,130	10	.03	3.8	1.5	6.3	1.9	21	4.4	6.0	.1	.7	55	16	0	73	6.8	20
June 2.....	1,000	12	.05	4.6	1.0	6.4	1.8	19	5.6	5.3	.1	3.7	51	16	0	68	7.2	30
June 30.....	9,280	4.9	.12	5.0	1.7	8.8	1.8	24	6.4	10.3	.1	.6	66	20	0	96	6.3	15
Aug. 1.....	9,280	4.9	.12	2.7	.5	2.0	1.5	8	3.2	3.0	.1	.8	37	9	2	38	5.8	50
Aug. 31.....	3,130	11	.05	3.8	1.6	5.0	2.1	18	2.8	6.0	.1	1.6	56	16	1	64	6.5	40

Chemical analyses, in parts per million, October 1959 to August 1960

## NEUSE RIVER BASIN--Continued

2-918.14. NEUSE RIVER NEAR FORT BARNWELL, N. C.

LOCATION --At county bridge off State Highway 55 between Fort Barnwell and Vanceboro, Craven County.

DRAINAGE AREA --3,897 square miles.

RECORDS AVAILABLE --Chemical analyses: September 1954 to September 1960.

SPECIFIC CONDUCTANCE: Maximum daily, 110 micromhos Oct. 1-14; minimum, 42 ppm Feb. 1-29.

HARDNESS: Maximum, 20 ppm July 1-31; minimum, 11 ppm Feb. 1-29.

Water temperatures: Maximum daily, 87°F June 25; minimum, 38°F Mar. 9, 10.

SPECIFIC CONDUCTANCE: Maximum daily, 110 micromhos Oct. 4; minimum daily, 39 micromhos Nov. 2.

HARDNESS: Maximum, 171 ppm Oct. 12, 15, 1954; minimum, 11 ppm Feb. 1-29, 1960.

TEMPERATURES: Maximum daily, 673 micromhos Aug. 21, 1955; minimum daily, 39 micromhos Nov. 2, 1959.

REMARKS --Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

## Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-14, 1959.....		13	0.02	5.4	1.4	8.5	2.6	22	4.3	10	0.2	2.0	67	19	1	86	7.2	50
Oct. 15-31.....		10	.07	3.4	1.3	4.6	2.2	14	3.9	6.0	.2	1.2	54	14	2	56	6.6	70
Nov. 1-10.....		9.4	.10	3.1	2.3	4.6	1.4	16	3.3	5.5	.1	1.4	51	17	4	52	6.7	40
Nov. 11-30.....		12	.13	4.5	1.5	6.7	2.0	19	4.7	9.0	.1	1.7	62	17	2	71	7.0	35
Dec. 1-31.....		11	.36	3.8	1.7	6.1	2.0	16	4.7	8.8	.1	1.0	63	16	3	68	6.6	80
Jan. 1-31, 1960.....		9.8	.31	3.5	1.5	5.7	1.6	13	5.1	7.4	.1	1.3	46	15	4	64	6.1	40
Feb. 1-29.....		6.9	.10	3.0	.9	4.0	1.3	10	4.9	5.0	.1	1.7	42	11	3	52	6.5	30
Mar. 1-31.....		5.9	.00	3.0	1.4	5.0	1.4	12	8.0	7.5	.1	1.2	43	14	4	58	6.8	30
Apr. 1-30.....		7.1	.08	4.2	1.4	5.1	1.7	18	4.4	6.5	.1	1.5	50	16	2	65	6.8	50
May 1-31.....		9.5	.05	4.6	1.3	5.2	1.6	18	7.0	7.5	.1	2.0	55	17	2	71	6.6	35
June 1-30.....		10	.13	5.1	1.5	6.4	1.9	20	6.4	8.0	.1	2.5	61	19	2	78	7.0	60
July 1-31.....		10	.13	5.5	1.6	7.3	1.7	20	8.0	8.7	.2	2.4	56	20	4	77	7.2	40
Aug. 1-31.....		8.9	.22	4.0	1.3	4.4	2.0	14	6.0	5.0	.1	1.1	44	15	4	57	6.9	90
Sept. 1-30.....		9.4	.24	4.6	1.4	5.8	2.0	18	5.8	7.0	.2	1.8	65	18	2	68	6.5	70
Time-weighted average.....		9.3	0.15	4.1	1.4	5.6	1.8	16	5.7	7.3	0.1	1.6	54	16	3	66	--	50



## NEUSE RIVER BASIN--Continued

2-918.14. NEUSE RIVER NEAR FORT BARNWELL, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	62	48	45	45	45	61	68	79	86	74	80
2	75	61	47	47	45	43	63	68	77	79	75	79
3	75	67	47	47	40	43	65	65	77	80	75	79
4	76	69	46	48	44	43	65	67	79	81	76	79
5	76	61	47	48	45	40	66	67	77	80	77	80
6	75	60	43	47	47	40	65	68	78	79	78	79
7	75	50	40	45	46	40	65	69	78	78	78	80
8	77	59	45	46	49	39	65	68	78	79	80	80
9	76	56	44	46	46	38	64	68	77	80	80	81
10	79	57	45	48	48	38	62	66	73	79	81	81
11	78	57	45	47	52	39	61	67	75	78	80	80
12	76	57	47	49	49	40	60	67	78	77	81	75
13	72	56	42	50	46	41	65	66	80	81	82	75
14	68	57	45	48	45	41	65	68	80	80	80	74
15	65	59	47	51	48	40	66	68	80	80	81	72
16	66	58	48	50	46	41	67	68	81	79	83	73
17	62	57	51	49	43	42	68	69	80	78	80	73
18	67	51	52	49	45	43	68	69	80	79	80	72
19	61	58	48	48	40	45	68	70	80	80	78	73
20	62	57	49	46	44	45	68	69	82	80	79	75
21	60	59	46	45	43	45	68	70	80	84	78	78
22	65	57	44	43	42	45	69	71	84	85	77	73
23	65	57	44	40	45	46	70	78	84	85	77	73
24	65	55	42	42	48	47	71	78	82	85	77	75
25	60	54	44	42	48	48	71	79	87	84	75	75
26	62	50	47	45	47	50	73	78	85	84	74	75
27	61	56	45	45	46	55	69	76	86	84	75	73
28	60	50	48	44	46	55	68	78	86	84	76	73
29	58	50	47	45	46	58	60	79	86	82	78	75
30	59	49	46	45	--	57	68	78	--	77	78	76
31	62	--	49	45	--	57	--	79	--	75	--	--
Average	68	57	46	46	46	45	66	71	80	81	78	76

NEUSE RIVER BASIN--Continued  
2-918.2. CORE CREEK NEAR FORT BARNWELL, N. C.

LOCATION.--At bridge on State Highway 55, 3-3/4 miles southeast of Fort Barnwell, Craven County, and 6.5 miles above mouth.

DRAINAGE AREA.--59.2 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960.

REMARKS.--No discharge records available for this station.

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....		9.4	0.18	18	1.1	5.4	1.4	47	8.8	6.8	0.2	0.6	96	48	10	118	6.8	80
Nov. 2.....		7.8	.35	11	1.1	4.5	1.0	28	1.5	8.0	.2	1.5	76	31	8	85	6.5	110
Dec. 1.....		7.3	.15	8.3	1.0	3.9	.8	21	2.4	8.5	.2	1.1	61	25	8	74	6.3	90
Jan. 4, 1960.....		5.4	.10	7.5	.7	3.2	.8	18	4.8	6.0	.2	.7	a63	22	7	64	6.6	100
Feb. 1.....		3.7	.06	4.2	1.0	2.6	.8	11	6.6	3.5	.2	.2	44	14	5	43	6.2	60
Mar. 2.....		2.6	.15	5.9	.7	2.9	.3	13	3.7	5.5	.2	.3	46	18	7	48	6.5	100
Apr. 1.....		2.8	.03	8.3	.4	3.1	.5	21	3.7	5.0	.1	.1	55	22	6	62	7.4	80
May 2.....		4.7	.05	8.7	.7	2.4	.7	23	3.2	4.0	.1	.0	57	24	6	63	7.1	80
June 2.....		5.6	.12	10	.5	2.3	.4	24	4.0	4.3	.2	1.3	61	28	8	70	6.3	120
June 30.....		7.2	.16	23	1.0	3.6	.8	63	5.4	4.0	.2	2.1	114	60	8	135	6.8	120
Aug. 1.....		6.1	.09	8.3	.7	2.9	.7	16	11	4.3	.2	.2	61	24	11	64	6.3	80
Aug. 31.....		7.4	.31	12	1.1	3.6	.8	34	4.2	7.0	.2	.8	80	35	7	82	6.8	140

a Organic matter present; sum of mineral constituents 38 parts per million.

NEUSE RIVER BASIN--Continued  
2-918.31. NEUSE RIVER AT COWEN LANDING, NEAR VANCEBORO, N. C.

LOCATION --At Cowen Landing 6.0 miles southeast of Vanceboro, Craven County.  
DRAINAGE AREA --4,027 square miles.  
RECORDS AVAILABLE --Chemical analyses: September 1954 to September 1960.  
Water temperatures: October 1954 to September 1960. Maximum, 79° F. (p.m.); minimum, 43° F. Jan. 1-21.  
EXTREMES, 1954-60. --Dissolved solids: Maximum, 270 ppm (p.m.); minimum, 14 ppm (a.m.), 1-31.  
Hardness: Maximum, 21 (p.m.); minimum, 26-30 (p.m.); minimum daily, 40 micromhos Feb. 25 (a.m.).  
Specific conductance: Maximum daily, 123 micromhos Sept. 30 (p.m.); minimum daily, 40 micromhos Feb. 25 (a.m.).  
Water temperatures: Maximum 86° F. July 26 (p.m.); minimum, 37° F. Mar. 11 (a.m.).  
EXTREMES, 1954-60. --Dissolved solids: Maximum, 6,270 ppm Oct. 15 (p.m.), 1954; minimum, 43 ppm Jan. 1-21, 1960.  
Hardness: Maximum, 1,550 ppm Aug. 12 (p.m.), 1955; minimum, 12 ppm July 16 (p.m.), 17-20, 1955.  
Specific conductance: Maximum daily, 12,900 micromhos Aug. 12 (p.m.), 1955; minimum daily, 40 micromhos Feb. 25 (a.m.), 1960.  
Water temperatures: Maximum, 92° F. July 28 (p.m.), 1955; minimum, freezing point Dec. 16 (a.m.), 1958.  
REMARKS --Samples were collected twice daily (7:30 a.m. and 4:30 p.m.) and were composited unless otherwise indicated. Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-31, 1959.....		12	0.07	5.1	1.2	6.9	2.6	18	4.0	8.0	0.2	2.1	65	18	3	75	7.3	55
Nov. 1-30.....		11	.13	4.7	1.8	5.9	1.5	17	3.3	7.5	.2	1.9	58	19	5	69	6.3	70
Dec. 1-31.....		11	.07	4.7	1.4	6.1	2.0	18	6.4	8.5	.1	1.6	57	18	3	74	7.2	100
Jan. 1-31, 1960.....		9.3	.21	5.4	1.1	5.7	1.6	12	5.6	7.2	.1	1.7	43	15	6	66	6.9	70
Feb. 1-31.....		3.8	.07	5.9	.9	3.1	1.3	12	6.1	6.0	.1	2.0	47	17	4	60	7.3	73
Mar. 1-31.....		4.3	.04	4.1	.9	4.5	1.1	12	4.1	6.2	.2	2.0	43	14	4	59	7.1	30
Apr. 1-22.....		5.1	.02	4.3	1.1	4.8	1.7	16	4.3	7.0	.1	2.1	49	16	2	62	6.5	45
Apr. 23-30.....		9.0	.11	5.5	1.7	6.7	2.2	22	5.3	9.0	.2	3.0	57	20	2	82	7.0	40
May 1-31.....		9.3	.06	4.8	1.5	5.6	2.1	18	4.7	7.5	.1	3.1	58	18	3	79	7.0	35
June 1-30.....		10	.09	5.6	1.4	6.5	2.2	21	6.3	8.5	.1	2.9	60	20	3	83	6.8	35
July 1-31.....		8.6	.07	5.9	1.2	8.5	2.2	21	7.2	9.0	.2	3.7	61	20	3	89	6.7	30
Aug. 1-31.....			.24	4.6	1.3	4.6	2.6	21	6.2	6.5	.2	3.2	46	17	4	70	6.8	80
Sept. 1-12.....		11	.21	5.5	1.5	7.5	2.1	22	6.6	9.5	.1	3.5	71	20	2	87	6.5	50
Sept. 13-24, 25(a.m.)		5.9	.24	5.6	1.1	3.1	2.6	18	7.2	5.0	.1	1.0	63	18	4	63	6.3	100
Sept. 25(p.m.), 26-30		9.7	.44	5.8	1.6	6.0	2.3	21	7.0	8.5	.1	2.3	72	21	4	81	6.2	80
Time-weighted average.....		8.9	0.11	5.0	1.2	5.7	2.0	17	5.4	7.5	0.1	2.4	55	18	4	72	--	55

NEUSE RIVER BASIN--Continued  
 2-918.31. NEUSE RIVER AT COWEN LANDING, NEAR VANCEBORO, N. C.--Continued

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
1	78	80			48	48	45	45	46	48	45	46	57	62	67	68	76	78	80	81	76	77	78	80
2	77	78			47	49	44	46	45	48	41	43	59	64	65	66	76	77	80	83	75	77	79	80
3	76	78			46	48	42	46	44	45	41	42	65	65	62	64	76	77	80	83	75	77	79	80
4	76	78			46	48	42	46	44	45	41	42	65	65	62	64	76	77	80	83	75	77	79	80
5	75	78			46	48	46	48	45	47	39	41	63	63	63	67	74	76	80	82	76	80	75	80
6	75	78			47	47	48	46	48	49	40	42	60	64	64	66	75	76	80	82	78	80	77	80
7	75	79			45	44	46	47	45	47	40	41	61	65	64	67	75	77	80	81	79	82	78	80
8	75	78			44	47	45	48	44	48	41	42	61	66	68	69	75	77	82	82	78	82	78	81
9	77	79			45	46	45	47	45	50	47	39	62	65	66	66	72	76	78	81	79	81	78	82
10	78	80			47	47	46	48	48	53	41	41	69	61	65	65	76	73	78	81	79	81	79	80
11	78	80			46	48	46	49	56	55	37	40	58	61	66	66	75	75	80	81	80	81	80	79
12	74	77			48	45	46	46	48	51	39	40	57	62	65	68	74	78	78	82	78	82	76	80
13	76	77			49	50	47	49	48	45	39	41	60	65	63	67	76	78	80	83	80	82	75	76
14	74	73			49	50	47	48	41	44	40	42	66	66	63	65	75	78	79	81	81	82	73	75
15	76	70			49	50	51	54	41	48	41	42	62	66	64	66	78	80	80	81	81	82	74	76
16	72	76			48	50	48	50	40	45	41	44	65	68	64	67	80	80	78	81	80	82	73	72
17	75	77			50	55	48	50	41	48	42	45	65	69	66	69	80	80	80	80	80	80	72	72
18	85	86			50	52	48	50	41	48	42	45	64	68	68	70	79	81	79	82	78	80	74	77
19	82	81			47	48	46	46	41	42	40	48	64	68	68	70	79	81	79	82	76	79	72	75
20	60	63			47	48	45	47	40	46	45	48	65	66	68	70	79	81	80	83	77	80	72	76
21	61	61			47	46	42	44	42	45	43	41	63	68	68	69	79	80	84	84	78	77	73	76
22	63	65			44	45	41	43	45	46	43	48	66	69	71	69	79	81	80	84	77	80	72	73
23	65	66			43	45	40	41	41	49	42	47	62	70	72	75	78	80	80	83	78	78	71	74
24	65	66			42	44	39	40	39	50	45	50	68	70	72	76	79	82	82	84	76	50	71	73
25	62	62			42	46	40	41	50	52	45	49	67	72	74	79	80	82	85	85	75	71	72	72
26	58	58			45	45	40	43	50	52	45	50	70	73	76	79	80	81	81	86	75	77	72	72
27	60	61			44	45	40	45	45	50	47	53	71	73	78	78	80	80	85	74	77	69	74	74
28	58	59			47	51	43	45	46	50	56	56	70	70	74	78	78	80	81	84	75	78	71	72
29	57	59			47	46	45	46	47	50	55	58	66	66	75	78	80	80	80	79	76	80	71	72
30	58	61			45	47	46	46	--	--	56	58	65	67	74	78	80	80	80	80	77	80	72	75
31	61	63			45	46	47	47	--	--	57	60	--	--	76	78	--	--	78	76	76	80	--	--
Average	69	70			46	48	45	47	45	48	44	46	64	67	68	70	77	79	80	82	77	80	74	77



NEUSE RIVER BASIN--Continued

Day	October		November		December		Temperature (°F) of water, water year				October 1959 to September 1960				July		August		September	
	Top		Bottom		Top		Bottom		Top		Bottom		Top		Bottom		Top		Bottom	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	79	79	64	62	48	49	46	46	46	48	47	61	61	68	68	77	77	80	79	
2	78	78	61	47	48	52	50	47	47	42	43	63	63	62	68	77	80	76	80	
3	77	77	58	48	49	53	51	46	46	42	42	67	67	66	70	75	81	78	79	
4	78	77	59	48	48	49	49	47	47	41	41	68	67	66	65	76	84	78	78	
5	78	60	61	47	47	50	50	48	48	40	40	64	63	67	66	77	76	81	79	
6	77	76	61	62	47	48	48	48	48	42	41	63	63	67	66	77	76	83	80	
7	78	77	58	56	46	47	47	47	48	48	44	62	62	67	67	77	76	79	80	
8	80	79	55	56	46	47	47	47	48	39	39	63	62	66	66	75	74	81	80	
9	78	79	58	58	47	46	48	48	48	38	38	64	63	66	66	75	80	81	82	
10	79	79	54	55	48	51	49	50	50	39	39	63	63	67	67	74	80	79	82	
11	78	78	55	55	48	49	52	49	52	39	39	58	57	68	67	73	73	84	83	
12	75	75	52	53	49	50	51	51	52	38	38	62	61	65	65	78	86	80	81	
13	76	76	53	54	50	51	50	49	50	47	47	65	64	66	66	80	79	85	81	
14	70	70	56	57	49	50	51	50	47	39	41	65	64	66	66	80	84	82	74	
15	68	68	56	56	49	50	52	51	47	47	41	68	67	66	66	81	81	83	73	
16	66	66	55	56	49	50	52	51	48	47	44	65	68	67	69	82	81	81	80	
17	65	65	55	55	50	50	52	51	48	48	44	64	69	68	70	82	82	80	79	
18	66	65	52	51	51	52	51	49	48	46	45	68	67	71	70	83	83	81	80	
19	63	63	54	55	49	50	52	50	47	47	46	68	67	71	70	81	82	81	78	
20	63	63	53	53	48	48	49	47	45	44	46	65	65	72	71	83	83	82	73	
21	61	62	52	51	48	48	47	45	44	47	46	67	66	74	73	79	78	84	80	
22	63	63	53	53	44	45	43	42	44	46	45	69	68	75	74	81	80	86	85	
23	65	64	53	53	44	44	42	41	43	47	46	70	69	77	76	80	79	85	84	
24	65	64	54	54	45	45	42	41	46	45	50	48	74	73	76	83	82	86	85	
25	62	62	54	54	47	46	43	42	47	46	49	76	74	79	78	82	81	87	86	
26	60	60	54	54	47	46	42	43	48	47	50	49	77	75	81	80	81	88	74	
27	66	66	54	54	46	46	42	43	48	47	50	49	77	76	82	81	87	86	75	
28	59	59	53	53	49	48	47	47	48	48	48	73	72	79	78	83	80	86	76	
29	58	58	51	51	48	47	46	46	49	48	56	73	69	79	78	80	80	86	78	
30	58	58	51	52	49	49	47	47	49	48	57	56	69	68	80	80	80	79	72	
31	60	60	50	50	49	47	46	46	49	48	58	68	68	80	79	84	78	79	73	
Average	69	69	55	56	48	48	48	47	48	47	45	67	66	72	71	79	79	83	76	

## NEUSE RIVER BASIN--Continued

## 2-920. SWIFT CREEK NEAR VANCEBORO, N. C.

LOCATION.--Temperature recorder at gaging station at highway bridge, 2-1/2 miles upstream from bridge on State Highway 118, 2-1/2 miles downstream from Clayroot Swamp, and 3-1/2 miles northwest of Vanceboro, Craven County.

DRAINAGE AREA.--182 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1930 to September 1952, January 1955 to September 1959.

STATUS: AVAILABLE: October 1951 to September 1952, July 1954 to September 1960.

TEMPERATURES: 1930-52, 1955-59, 1960-61, maximum, 87°F; minimum, 33°F; annual, 63°F.

EXTREMES, 1951-52, 1955-59, 1960-61, maximum, 87°F; minimum, 33°F; annual, 63°F.

EXTREMES, 1951-52, 1955-59, 1960-61, maximum, 87°F; minimum, 33°F; annual, 63°F.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non- carbonate			
Aug. 18, 1960.....	85	11	0.59	9.1	1.3	24	2.2	21	9.5	37	0.1	2.0	107	28	11	190	6.8	80

NEUSE RIVER BASIN--Continued  
2-920. SWIFT CREEK NEAR VANCEBORO, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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



NEUSE RIVER BASIN--Continued  
2-921.22. BATCHELDERS CREEK NEAR STREETS FERRY, N. C.

LOCATION --At bridge on county road 2.4 miles south of Streets Ferry, Craven County.

DRAINAGE AREA.--55.3 square miles.

RECORDS AVAILABLE.--Chemical analyses: September 1957 to September 1960.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1, 1959.....		9.7	0.14	15	1.0	4.7	1.8	40	6.9	7.3	0.1	0.2	83	40	8	102	6.6	80
Nov. 2.....		13	.17	19	1.6	4.0	1.4	61	5.5	8.7	.1	4.4	99	54	4	138	7.4	55
Dec. 1.....		10	.11	12	1.5	4.5	1.4	32	3.1	9.0	.1	.7	74	36	10	96	6.6	35
Jan. 4, 1960.....		9.1	.13	13	1.0	4.2	1.1	40	2.8	7.3	.1	.7	65	36	4	100	6.7	35
Feb. 1.....		4.8	.07	5.5	1.8	2.4	1.1	17	3.8	3.5	.1	.5	39	17	3	46	6.9	50
Mar. 2.....		6.0	.08	7.4	1.3	3.4	1.7	24	2.8	6.0	.1	.2	49	24	4	62	6.7	35
Apr. 1.....		5.7	.02	10	1.1	3.0	.7	33	3.0	5.0	.0	1.0	56	30	3	79	7.3	25
May 2.....		9.8	.08	24	2.3	6.2	1.3	82	3.4	8.0	.0	.8	106	69	2	170	7.3	30
June 2.....		9.7	.04	27	1.1	5.5	1.5	86	5.4	7.6	.1	.7	114	72	2	175	6.7	25
June 30.....		11	.01	30	1.9	6.2	1.4	99	4.4	6.0	.1	.0	126	84	2	190	7.0	30
Aug. 1.....		8.2	.04	9.5	.9	2.7	.9	26	3.1	4.2	.2	1.0	54	27	6	67	6.5	60
Aug. 31.....		11	.11	19	1.4	4.0	1.1	60	1.3	6.2	.1	.6	89	52	4	120	7.0	50

NEUSE RIVER BASIN--Continued  
2-921.62. NEUSE RIVER AT NEW BERN, N. C.

Craven County.

LOCATION.--At bridge on U. S. Highway 17 in New Bern, Craven County.

DRAINAGE AREA.--4,467 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1960.

Water temperatures: October 1956 to September 1960.

EXTREMES, 1959-60.--Chloride: Maximum, 8,490 ppm Aug. 18 (bottom); minimum, 6.5 ppm Aug. 1-8, 9 (top).

Specific conductance: Maximum daily, 24,000 micromhos Aug. 18 (bottom); minimum daily, 53 micromhos Aug. 5, 6 (bottom).

Water temperatures: Maximum daily, 85°F Aug. 18 (top); minimum, 53°F Aug. 1-8, 9 (top).

EXTREMES, 1956-60.--Chloride: Maximum, 9,420 ppm Sept. 28 (bottom); minimum, 6.1 ppm May 16-28, 31, 1958.

Specific conductance: Maximum daily, 25,900 micromhos Sept. 28 (bottom); minimum daily, 52 micromhos May 16 (top), 1958.

Water temperatures: Maximum, 89°F June 17, 22, Aug. 3, 18 (top), 1957; minimum, 33°F Feb. 18 (top), 19, 20, 1958.

REMARKS.--Top (T) and bottom (B) samples were collected once daily (11 a.m.) and were composited unless otherwise indicated. When specific conductance values indicated salt-water encroachment, only specific conductance and chloride were determined on individual samples. The individual chloride determinations are tabulated separately from the composite chemical analyses. Integrated samples were collected once daily during October and November 1956. Records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1 (T), 4 (T),																		
5-8, 1959.....		8.9	0.14	3.8	1.9	8.4	2.2	14	3.3	13	0.2	1.0	67	18	6	79	6.8	80
Jan. 13 (T), 14-27,																		
28 (T), 29 (T), 1960		8.8	.22	4.6	1.8	7.7	1.6	15	6.5	11	.1	1.1	62	19	7	83	6.8	70
Feb. 4-29.....		6.7	.11	4.2	1.3	5.2	1.6	13	4.8	8.2	.2	.8	46	16	5	63	6.5	20
Mar. 1-31.....		4.9	.04	5.1	1.5	5.6	1.1	16	4.8	8.5	.1	1.6	50	19	6	72	7.1	30
Apr. 1-21.....		5.3	.12	5.1	1.4	5.2	1.5	18	5.9	7.0	.1	1.3	49	18	4	73	7.0	45
May 1-19, 20 (T).....		7.8	.17	6.7	2.1	7.0	1.8	22	5.1	12	.3	1.8	69	23	4	97	7.2	50
May 21-25, 26 (T).....		8.9	.30	6.6	1.8	7.0	2.2	22	4.0	11	.3	1.1	79	24	6	94	7.1	80
May 27 (B), 28-31.....		9.4	.31	5.2	2.2	7.1	1.6	22	7.8	11	.3	1.1	71	22	4	94	7.1	80
June 1-8.....		8.9	.13	7.6	2.1	12	2.0	28	7.3	19	.3	.5	a74	28	4	130	7.0	40
June 9.....		9.7	.11	5.9	1.6	7.2	1.9	20	8.2	11	.1	2.1	73	21	3	88	7.1	70
June 9.....		9.7	.13	7.1	2.2	17	2.5	24	8.7	28	.2	2.0	a90	26	7	152	7.1	--
June 10-18.....		11	.17	6.0	1.9	8.1	2.0	24	6.3	12	.1	1.5	a61	23	4	91	7.3	55
Aug. 1-8, 9 (T).....		11	.18	5.8	1.8	10	1.6	14	6.0	16	.2	1.8	56	17	6	145	6.7	60
Sept. 15-30.....		7.8	.28	5.1	1.9	6.4	2.3	20	6.4	8.5	.2	.0	65	21	4	80	6.5	100

a Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

2-921.62. NEUSE RIVER AT NEW BERN, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
1	77	77	61	64	47	49	45	47	45	46	45	46	59	59	68	68	78	79	82	81	79	78	81	79
2	78	77	60	63	48	50	45	47	45	46	44	44	59	59	67	68	78	78	80	79	78	77	80	79
3	75	77	58	63	47	51	48	48	45	46	42	43	64	62	67	67	77	78	82	81	77	76	80	79
4	77	77	57	60	47	50	48	50	45	46	39	40	65	65	63	64	78	77	84	81	77	76	77	79
5	76	76	59	58	46	51	48	50	44	44	37	39	64	62	66	65	77	77	84	81	77	76	78	79
6	77	--	60	59	46	51	48	50	46	46	39	39	62	62	65	65	78	76	82	80	78	77	78	79
7	77	77	60	60	45	50	48	50	46	47	39	39	60	60	67	65	77	77	81	80	80	79	78	79
8	77	77	56	57	44	49	46	49	46	45	39	39	61	61	67	67	76	76	79	80	79	79	80	79
9	77	77	56	60	45	48	46	48	46	45	38	39	63	62	67	66	74	74	80	79	80	79	80	80
10	79	78	53	60	45	50	46	48	46	47	35	36	59	60	66	66	76	72	79	80	83	80	80	80
11	78	78	55	58	46	50	47	47	51	36	36	36	58	58	65	65	75	73	80	80	80	80	80	80
12	76	77	54	59	46	50	45	46	49	36	36	36	58	58	65	65	72	73	83	80	80	80	80	78
13	73	75	55	60	47	50	45	46	49	37	37	37	60	60	67	67	75	73	82	80	81	80	80	75
14	74	75	56	60	47	48	47	48	47	39	38	62	62	62	66	66	80	78	81	80	80	80	76	78
15	71	75	56	59	46	45	47	48	43	44	40	40	64	63	65	66	78	78	81	80	81	80	78	79
16	68	74	54	57	48	49	50	49	45	45	40	42	65	65	66	66	79	78	79	80	80	80	75	75
17	67	74	55	59	50	49	49	49	46	46	42	42	77	76	68	67	80	80	81	80	78	80	74	73
18	68	72	52	53	51	50	48	49	46	46	44	44	67	67	68	67	80	80	81	80	78	80	74	73
19	65	71	51	55	51	50	47	47	45	44	43	43	67	69	68	68	80	80	83	80	74	80	73	73
20	62	71	50	54	45	47	46	46	41	41	45	45	64	64	69	69	84	81	82	80	75	78	73	73
21	63	69	50	54	46	50	45	46	47	48	45	45	65	65	67	68	81	80	79	77	77	79	74	74
22	63	70	50	54	45	49	43	44	44	44	44	44	65	65	72	71	79	78	82	81	80	79	73	73
23	64	68	52	54	43	48	40	41	44	45	45	45	69	68	73	73	81	80	85	83	78	79	71	72
24	65	68	53	55	42	48	41	--	43	43	46	45	70	69	75	75	80	79	83	81	73	79	71	71
25	63	68	54	55	43	48	40	40	45	45	47	47	71	69	77	75	82	81	83	81	76	80	71	71
26	60	67	52	54	44	48	40	40	45	46	47	47	72	70	80	76	81	80	85	83	75	79	71	71
27	61	67	53	54	44	47	42	41	46	45	48	47	73	72	76	76	79	80	84	82	75	78	69	70
28	59	65	56	55	45	48	43	43	46	45	53	51	73	73	81	77	78	79	83	83	76	77	69	70
29	57	66	53	55	45	48	44	44	47	47	54	53	69	69	76	76	81	82	79	79	78	79	70	70
30	59	63	48	50	46	45	46	--	--	56	55	--	--	--	79	78	81	80	80	79	78	79	71	70
31	59	64	--	--	46	47	46	45	--	--	57	56	--	--	78	78	--	--	80	79	81	79	--	--
Average	69	72	55	57	46	49	45	46	46	46	43	43	65	65	70	69	79	78	82	80	78	79	75	76

## NEUSE RIVER BASIN--Continued

2-925. TRENT RIVER NEAR TRENTON, N. C.

LOCATION.--At gaging station 50 feet downstream from Free Bridge, 800 feet downstream from Little Chinquapin Branch, 1-1/2 miles southwest of Phillips Crossroads and 6 miles west of Trenton, Jones County.

DISCHARGE DATA.--68 square miles. Discharge measurements: October 1951 to September 1953, January 1955 to September 1960.

RECORDS AVAILABLE.--Dissolved solids: October 1951 to September 1953, January 1955 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 101 ppm June 12-30, Sept. 1-11: minimum, 36 ppm July 28-31.

Hardness: Maximum, 60 ppm Oct. 1-10, 11, Sept. 1-11: minimum, 21 ppm Feb. 1-29.

Specific conductance: Maximum daily, 185 micromhos Oct. 1; minimum daily, 43 micromhos July 31.

Water temperatures: Maximum, 80°F July 24; minimum, freezing point Dec. 23, 24.

EXTREMES, 1951-53, 1955-60.--Dissolved solids: Maximum, 153 ppm Sept. 1-10, 1957; minimum, 39 ppm July 18-20, 1959.

Hardness: Maximum, 117 ppm Aug. 11-20, 1957; minimum, 18 ppm Mar. 2-10, 1959.

Specific conductance: Maximum daily, 195 micromhos June 17, 1957; minimum daily, 37 micromhos Mar. 10, 1959.

REMARKS.--Records of suspended matter of composite samples from October 1951 to September 1953 and records of specific conductance of samples collected from January 1955 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

## Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color	
													Calcium	Non-carbonate				
Oct. 1-10, 1959.....	34	9.5	0.26	21	1.6	5.0	1.1	58	7.0	7.5	0.2	1.1	100	60	12	138	7.2	120
Oct. 11-20.....	128	7.5	0.22	--	--	--	--	56	5.7	7.0	--	0.9	--	60	14	140	7.6	--
Oct. 21-30.....	345	7.8	0.22	11	1.0	3.9	1.1	22	8.8	7.0	--	0.5	73	31	13	79	6.8	140
Nov. 1-10.....	233	8.5	0.14	13	1.3	4.3	0.9	31	5.0	7.0	--	1.2	35	31	11	88	7.2	110
Nov. 11-20.....	373	7.5	0.17	11	1.3	4.1	0.8	26	5.6	7.5	--	1.0	74	32	10	80	6.8	110
Nov. 21-30.....	150	8.1	0.14	15	1.5	4.4	0.8	39	4.7	8.0	0.1	0.8	88	43	11	102	7.3	100
Dec. 1-10.....	136	9.2	0.14	15	1.4	4.6	0.7	40	4.9	8.0	0.2	0.6	91	44	11	105	7.1	100
Dec. 11-20.....	532	6.3	0.17	9.4	0.8	3.7	0.7	22	4.9	6.5	0.2	1.3	27	9	13	69	7.0	110
Jan. 1-10, 18-31, 1960	201	6.2	0.12	13	1.1	3.4	0.4	31	5.3	5.0	0.2	1.4	53	36	11	111	7.3	80
Feb. 1-10.....	27	4.8	0.15	7.7	1.6	3.1	0.6	18	4.4	5.5	0.2	1.2	52	22	7	59	7.1	90
Feb. 11-20.....	662	3.3	0.16	7.4	0.7	2.8	0.4	16	5.0	6.0	0.2	1.1	55	21	8	58	7.1	80
Mar. 1-23.....	469	2.4	0.10	8.2	0.8	2.3	0.3	18	4.1	6.0	0.2	1.0	49	24	9	62	7.1	80
Mar. 24-31.....	191	2.1	0.15	11	1.3	3.8	0.6	30	5.4	7.0	0.2	0.9	66	33	9	84	7.5	80
Apr. 1-14.....	663	2.8	0.15	8.4	0.6	2.5	0.7	20	4.0	5.0	0.2	1.6	52	24	7	60	7.0	120
Apr. 15-30.....	104	5.1	0.22	17	1.2	3.5	0.8	45	6.1	6.0	0.2	1.4	77	48	10	106	7.5	100
May 1-20.....	148	5.1	0.25	12	1.0	3.0	0.6	31	3.0	6.0	0.1	1.8	68	33	8	86	7.2	120
May 21-31.....	40	5.7	0.27	21	1.3	3.5	0.7	58	7.1	5.0	0.3	1.5	96	38	11	137	7.5	100

June 1-11, 1960.....	165	6.1	.09	12	1.0	3.2	.7	37	7.4	5.0	.2	.9	71	34	8	83	7.1	110
June 12-30.....	34	6.9	.20	20	1.5	3.5	.6	57	8.5	6.0	.2	1.5	101	57	10	130	7.5	120
July 1-17.....	43	6.4	.18	19	2.3	3.0	1.0	57	7.0	5.5	.2	.8	91	58	11	129	7.3	110
July 18-27.....	32	6.4	.17	17	7.3	3.5	.5	45	8.0	4.5	.2	.6	82	47	10	105	7.7	120
July 28-31.....	1,004	3.6	.11	7.3	1.1	1.7	.6	16	9.6	3.2	.2	.8	a36	22	10	51	7.1	100
Aug. 1-7.....	1,335	5.3	.12	7.6	1.1	2.1	1.1	15	8.4	4.0	.0	.4	b70	24	11	58	6.7	140
Aug. 8-31.....	94	8.4	.26	16	2.1	3.9	.8	44	8.4	6.0	.2	.7	93	50	14	110	7.0	120
Sept. 1-31.....	1,124	8.5	.22	27.8	1.2	3.1	1.6	90	4.8	3.3	.2	1.6	161	24	10	157	7.1	140
Sept. 12-31.....	104	8.8	.26	21	.9	3.9	.9	58	8.0	6.0	.2	1.4	98	56	8	138	7.4	120
Time-weighted average.....	311	6.1	0.18	13	1.2	3.5	0.7	35	6.1	6.1	0.2	1.0	75	38	10	92	--	110

a Calculated from determined constituents

b Organic matter present; sum of mineral constituents 37 parts per million.

c Organic matter present; sum of mineral constituents 36 parts per million.

## NEUSE RIVER BASIN--Continued

2-925. TRENT RIVER NEAR TRENTON, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	64	35		--	46	60	65	72	75	75	79
2	75	58	35		--	40	68	58	74	76	78	79
3	--	52	44		--	35	69	58	72	77	78	78
4	68	52	42		--	35	67	60	72	78	78	68
5	62	62	45		--	35	58	60	71	78	78	77
6	72	60	46		--	35	58	60	74	77	78	78
7	72	50	38		--	35	58	63	74	78	78	78
8	--	45	35		--	38	59	65	68	76	78	78
9	75	48	39		--	38	63	62	62	75	76	77
10	75	42	39		--	36	60	63	62	--	79	76
11	78	42	40		--	36	58	63	68	76	78	76
12	71	45	--		--	36	--	63	70	76	79	--
13	71	48	52		--	38	58	60	78	78	79	65
14	60	60	52		--	36	59	62	78	79	79	63
15	71	62	40		--	36	59	62	78	78	79	68
16	57	55	48		--	40	59	63	78	76	79	67
17	58	55	49		--	38	60	69	78	76	75	68
18	60	40	52		--	46	68	69	75	78	70	68
19	56	35	48		47	45	65	70	75	76	69	75
20	55	--	36		46	46	59	70	75	78	69	75
21	62	48	38		42	46	61	74	78	79	75	68
22	65	55	35		47	42	60	71	76	79	75	68
23	65	48	32		38	46	60	72	76	78	76	66
24	68	48	32		39	48	60	72	79	80	67	68
25	55	54	40		48	48	65	74	79	79	68	68
26	48	56	40		46	48	65	73	75	79	68	68
27	53	56	48		46	50	68	74	78	75	70	68
28	51	58	47		47	55	55	72	79	75	72	68
29	52	--	50		46	54	59	72	75	75	--	70
30	58	37	45		--	54	64	73	79	68	78	72
31	63	--	44		--	60	--	72	--	78	78	--
Average	64	51	42		--	43	61	67	74	77	75	72

## NEUSE RIVER BASIN--Continued

2-925.58. TRENT RIVER NEAR NEW BERN, N. C.

LOCATION.--At private pier on north bank of river 3 miles southwest of New Bern, Craven County, and 100 yards downstream from Haywood Creek.  
DRAINAGE AREA.--430 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1958 to September 1960.

Water temperatures: October 1958 to September 1960.

EXTREMES: 1959-60.--Chloride: Maximum, 1,800 ppm Sept. 8; minimum, 3.0 ppm July 31.

Specific conductance: Maximum daily, 6480 micromhos, Sept. 8; minimum daily, 64 micromhos Aug. 5.

Water temperatures: Maximum daily, 86°F Mar. 5, 6, 12, 1960; minimum, 37°F Mar. 5, 6, 12, 1960.

EXTREMES: 1958-60.--Chloride: Maximum, 3,200 ppm July 8, 1959; minimum, 3.0 ppm July 31, 1960.

Specific conductance: Maximum daily, 10,500 micromhos July 8, 1959; minimum daily, 48 micromhos Mar. 11, 1959.

Water temperatures: Maximum, 86°F June 30, 1959; minimum, 37°F Mar. 5, 6, 12, 1960.

REMARKS.--When specific conductance values indicated salt-water encroachment, only specific conductance and chloride were determined on individual samples. The individual specific conductance and chloride determinations are tabulated separately from the composite chemical analyses. Records of specific conductance of samples collected from October 1958 to September 1959 available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, November 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Phosphate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Nov. 1-2, 4-8, 26-30, 1959.....		9.1	0.22	21	3.4	14	1.3	67	8.8	24	0.2	0.5	138	67	16	198	7.7	110
Nov. 9-17, 19-25.....		8.2	.22	16	2.4	7.1	1.1	45	7.0	12	.2	.5	98	50	13	125	7.5	150
Dec. 1-7.....		8.7	.20	19	2.6	7.4	1.0	55	6.0	13	.2	.5	107	58	13	148	7.0	110
Dec. 16-19.....		7.8	.13	16	2.8	12	1.2	44	7.4	22	.1	.5	92	50	14	168	7.5	110
Dec. 20-31.....		5.8	.17	10	1.5	4.8	.9	26	5.9	7.5	.2	.6	72	32	11	86	7.1	130
Jan. 1-8, 19-31, 1960		7.4	.21	16	2.3	7.0	.8	47	6.8	12	.2	.6	84	48	10	127	7.5	80
Jan. 9-18.....		5.4	.18	8.7	1.2	4.3	.8	24	5.9	7.8	.1	.5	50	22	7	72	7.2	100
Feb. 1-2.....		1.6	.15	2.3	2.3	6.2	.7	50	5.4	11	.2	.6	--	48	7	118	7.9	--
Feb. 10-3-29.....		4.5	.16	10	1.4	4.9	.7	28	4.2	10	.2	.5	66	31	8	84	7.5	100
Mar. 1-3.....		5.2	.06	9.3	1.0	4.9	.6	28	7.8	8.6	.2	.0	432	27	4	78	7.2	100
Mar. 4.....		--	--	12	4.9	--	--	45	7.2	38	--	1.3	--	49	12	195	7.9	--
Mar. 5-30.....		3.8	.14	12	1.8	4.9	.5	36	5.7	8.2	.3	.5	71	37	7	95	7.5	100
Mar. 31.....		6.1	.07	19	3.1	7.2	1.0	30	6.1	23	--	.9	80	61	7	180	7.5	155
Apr. 1-15.....		4.3	.11	11	1.9	4.1	.8	34	4.8	16.5	.2	.8	470	30	6	183	8.1	110
Apr. 16-30.....		4.0	.11	20	1.8	6.7	1.0	60	5.7	11	.2	1.3	96	58	8	138	7.3	90
May 1-31.....		7.1	.19	22	1.9	6.2	.8	64	7.8	11	.2	.9	103	63	10	159	7.6	100
June 1-24.....		7.2	.11	21	1.9	6.2	1.1	64	7.3	9.5	.2	1.4	108	60	8	149	7.7	90
July 15-25.....		4.9	.05	15	1.6	5.2	.8	50	8.0	8.0	.1	.3	83	45	4	113	7.4	80
Aug. 1-11.....		5.8	.18	11	1.6	2.3	1.1	28	7.8	6.0	.2	.4	80	34	10	78	7.3	140
Sept. 16-30.....		6.2	.23	12	2.1	8.3	1.8	37	8.4	14	.2	.0	93	39	8	117	6.8	140

a Calculated from determined constituents.

## NEUSE RIVER BASIN--Continued

2-925.58. TRENT RIVER NEAR NEW BERN, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	62	48	46	42	47	60	67	78	82	76	80
2	77	63	47	47	45	46	62	67	78	82	78	80
3	75	60	48	52	45	43	68	64	78	84	76	79
4	74	63	47	50	43	35	68	65	78	82	73	79
5	74	66	47	49	45	37	65	64	78	83	73	80
6	--	67	47	50	47	37	60	64	79	83	80	79
7	76	58	43	48	47	38	60	68	77	--	78	80
8	77	57	43	45	47	38	61	69	79	82	80	80
9	76	56	42	45	47	39	61	65	74	81	80	80
10	76	48	40	46	49	38	61	66	74	81	80	80
11	77	52	39	41	54	35	58	--	72	81	82	81
12	75	52	--	41	51	37	58	68	79	81	82	--
13	73	52	52	47	51	38	60	69	76	82	82	75
14	74	55	48	47	45	40	62	68	78	82	82	74
15	71	56	42	51	45	42	63	67	78	78	83	73
16	66	49	47	49	45	43	65	68	79	77	81	72
17	65	50	50	50	44	43	66	71	80	77	82	72
18	65	50	52	50	45	43	68	72	80	78	80	72
19	63	51	52	47	42	43	67	74	82	79	79	74
20	62	50	50	47	43	46	65	73	81	79	79	74
21	63	52	49	42	45	45	65	76	81	79	78	74
22	63	54	57	42	45	45	66	75	79	80	80	73
23	64	51	45	42	43	46	67	81	80	82	80	71
24	67	55	44	41	43	46	67	79	81	83	78	72
25	63	54	43	42	45	48	70	78	82	83	80	72
26	61	53	44	41	47	49	71	79	83	82	71	71
27	61	51	45	42	47	50	73	79	80	83	76	70
28	59	61	47	44	47	52	73	78	80	82	76	71
29	59	54	48	44	48	55	69	77	81	81	80	72
30	60	--	48	45	--	60	77	78	81	75	79	72
31	60	--	48	48	--	62	--	77	--	76	80	--
Average	68	55	47	46	46	44	65	72	79	81	79	75



## CAPE FEAR RIVER BASIN

2-935. HAW RIVER NEAR BENAJA, N. C.

LOCATION.--Temperature recorder at gaging station 200 feet upstream from site of old High Rock Mill, 500 feet upstream from highway bridge, half a mile upstream from Rockingham-Durford County line, 6 miles downstream from Troublesome Creek, and 6 miles east of Benaja, Rockingham County. Drainage area, 168 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953.

Water temperatures: October 1952 to September 1953, July 1954 to September 1960.

EXTREMES, 1952-53, July 1954 to September 1960.--Water temperatures: Maximum, 79°F Aug. 8-10; minimum, 33°F on several days during January, February, and March.

EXTREMES, 1952-53, July 1954 to September 1960.--Water temperatures: Maximum, 84°F Aug. 2, 1953; minimum, freezing point on many days during winter months.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Feb. 8, 1960.....	732	8.9	0.04	3.6	0.5	2.3	0.8	12	3.4	4.0	0.0	1.5	32	11	1	41	5.9	

## CAPE FEAR RIVER BASIN--Continued

2-935. HAW RIVER NEAR DENAJA, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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

CAPE FEAR RIVER BASIN--Continued  
2-965. HAW RIVER AT HAW RIVER, N. C.

LOCATION.--At gaging station at town of Haw River, Alamance County, 650 feet downstream from Southern Railway bridge and 3 miles downstream from Stony Creek.  
DRAINAGE AREA.--399 square miles.  
Drainage Area.--399 square miles.  
Chemical analyses: October 1956 to September 1960.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 15, 1959.....	4,520	11	0.10	4.7	1.2	4.6	2.1	22	5.4	2.9	0.2	0.9	57	17	0	64	6.5	40
Nov. 16.....	268	21	.13	8.8	4.1	32	4.4	77	11	24	.6	3.7	159	39	0	253	6.6	30
Dec. 13.....	398	21	.07	9.5	3.5	27	3.6	65	12	20	.6	3.8	140	38	0	208	7.2	10
Jan. 14, 1960.....	540	16	.06	4.7	2.9	16	2.0	42	10	12	.2	3.6	92	29	0	140	6.8	10
Feb. 15.....	1,060	13	.08	4.8	2.6	8.4	1.3	38	8.6	7.5	.2	3.7	69	28	2	107	6.5	40
Mar. 17.....	2,060	13	.01	6.6	2.6	8.4	1.3	32	10	7.3	.2	3.2	69	28	2	109	6.5	5
Apr. 14.....	640	14	.01	6.9	2.2	15	1.8	47	9.5	8.5	.2	2.8	89	26	0	140	7.6	20
May 16.....	358	17	.10	6.7	3.5	18	2.7	54	6.0	11	.6	2.7	98	31	0	149	6.9	20
June 15.....	171	23	.09	9.4	3.6	39	4.4	68	21	28	5.0	5.8	192	38	0	130	7.6	20
July 14.....	226	15	.04	8.8	3.0	24	3.8	49	21	19	1.2	.4	131	34	0	190	6.5	20
Aug. 13.....	514	20	.00	9.0	2.7	41	5.3	88	13	26	.7	3.5	167	34	0	260	6.8	20
Sept. 13.....	167	18	.19	10	2.7	24	3.9	48	18	20	1.1	5.6	143	37	0	203	7.0	40



CAPE FEAR RIVER BASIN--Continued  
2-969.59. HAW RIVER AT BYNUM, N. C.

LOCATION --At millrace to textile mill, 100 yards downstream from bridge at Bynum, Chatham County, and 3-1/2 miles upstream from gaging station.  
DRAINAGE AREA --1,280 square miles, approximately.  
RECORDS AVAILABLE --Chemical analyses: October 1955 to September 1960.

REMARKS --Venomous snakes (Crotalus) seen on road between station and millrace, 1500 feet above sea level, 1500 feet above sea level.  
EXTREMES 1959-60: Dissolved solids: Maximum, 150 ppm Aug. 15, 1959; minimum, 15 ppm Feb. 1-29.

Hardness: Maximum, 39 ppm Sept. 24-30; minimum, 15 ppm Feb. 1-29.  
Specific conductance: Maximum daily, 288 micromhos Sept. 26; minimum daily, 47 micromhos Feb. 18, 19.

Water temperatures: Maximum, 79°F June 26, Aug. 5, Sept. 19; minimum, freezing point Feb. 22, Mar. 5-7.  
EXTREMES, 1955-60. --Dissolved solids: Maximum, 355 ppm Aug. 24-25, 1956; minimum, 45 ppm Sept. 5-10, 1959.

Hardness: Maximum, 45 ppm July 9, 1956; minimum, 14 ppm July 24, 1957.  
Specific conductance: Maximum daily, 657 micromhos Aug. 24, 1956; minimum daily, 47 micromhos Feb. 18, 19, 1960.

Temperatures: Maximum, 86°F July 5, 1956; minimum, freezing point on several days during winter months.  
REMARKS --Records of discharge for gaging station near Pittsboro for water year October 1959 to September 1960 given in WSP 1703. 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 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1, 1959.....	3,860	--	--	--	--	--	--	54	9.7	16	--	--	--	31	0	178	7.5	--
Oct. 2-9.....	1,168	16	0.09	6.0	2.4	9.5	2.3	32	35	6.3	0.3	2.3	80	25	0	103	7.4	30
Oct. 10-21.....	7,030	12	.03	4.5	2.3	5.2	2.3	23	5.8	3.8	.2	1.8	58	21	2	72	7.4	20
Oct. 22-31.....	1,552	6.7	.01	7.9	2.5	11	1.6	37	8.9	6.5	.3	2.2	102	27	0	112	6.9	25
Nov. 1-10.....	1,292	20	.03	6.8	7.4	16	2.2	44	11	10	.3	1.1	103	30	0	141	7.8	15
Dec. 1-10.....	739	20	.12	7.5	2.8	14	2.2	44	6.3	10	.3	1.1	99	30	0	141	7.8	15
Dec. 11-18.....	768	21	.19	7.9	2.9	19	2.3	51	8.6	14	.5	2.1	115	32	0	168	7.9	15
Dec. 19-31.....	2,720	16	.01	5.7	2.2	7.6	1.9	29	8.0	5.8	.3	1.1	73	23	0	97	7.4	15
Jan. 1-31, 1960....	1,776	17	.14	6.5	2.6	11	1.8	38	6.2	7.0	.2	1.1	86	27	0	117	7.4	30
Feb. 1-29.....	5,749	12	.04	4.5	1.8	4.3	1.2	20	4.5	3.5	.3	3.9	51	18	2	66	6.6	20
Mar. 1-15.....	1,806	17	.03	5.2	2.8	8.7	1.1	32	7.3	7.0	.4	4.2	75	24	0	101	7.4	35
Mar. 16-31.....	5,814	11	.14	4.5	1.9	6.2	1.1	10	1.0	4.0	.1	1.9	53	19	2	73	6.9	35
Apr. 1-11.....	6,455	13	.17	5.4	2.0	7.8	1.4	28	7.6	5.0	.2	1.7	63	22	0	88	7.4	40
Apr. 12-30.....	1,267	15	.07	6.6	2.6	11	1.7	39	6.8	8.5	.5	4.7	78	27	0	121	6.8	20
May 1-16.....	1,221	18	.07	7.3	1.9	14	1.5	40	8.6	7.5	.3	3.7	98	26	0	117	7.6	45
May 17-27.....	508	19	.04	6.8	3.5	17	2.0	52	6.7	12	.6	6.1	108	32	0	151	7.4	5
May 28-31.....	2,408	13	.07	5.9	2.7	8.1	1.6	27	8.2	4.5	.4	3.7	85	26	4	89	7.5	40
June 1-9.....	614	16	.01	6.8	2.5	12	1.5	42	9.2	8.0	.3	.7	83	27	0	117	7.0	10

## CAPE FEAR RIVER BASIN--Continued

2-969 59. HAW RIVER AT BYNUM, N. C.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium carbonate			
June 10-30, 1960....	317	17	0.03	8.9	3.4	27	2.6	62	9.4	21	0.5	4.1	a126	36	0	198	7.1	15
July 1-12.....	395	19	.02	9.0	3.1	25	2.9	60	11	19	.7	4.0	130	36	0	190	7.3	15
July 13-14.....	823	--	--	--	--	16	2.0	37	8.0	8.3	--	--	--	28	0	123	6.5	--
July 15-31.....	371	16	.10	8.4	3.3	25	3.3	54	16	18	.7	1.6	122	34	0	181	7.0	20
Aug. 1-22.....	392	15	.03	7.4	3.3	22	3.1	52	13	16	.5	4.8	115	32	0	172	7.7	25
Aug. 23-26.....	3,654	10	.17	4.4	2.2	8.1	2.1	25	5.6	5.0	.2	2.5	a52	20	0	85	7.2	--
Aug. 27-31.....	517	15	.12	6.2	3.3	13	2.6	33	13	9.3	.4	3.8	a83	29	2	119	6.6	--
Sept. 1-4.....	1,588	15	.01	6.4	3.7	18	3.4	49	12	14	.3	.5	a98	31	0	148	6.7	20
Sept. 5-11.....	403	12	.06	6.7	2.0	8.9	2.5	32	7.0	7.0	.3	1.2	.70	26	0	96	6.5	25
Sept. 12-23.....	464	16	.10	8.2	3.8	22	3.0	53	15	17	.6	4.1	a116	36	0	176	7.4	30
Sept. 24-30.....	265	17	.09	9.4	3.8	34	3.9	71	15	26	.8	3.6	a150	39	0	240	7.6	20
Time-weighted average.....	1,994	16	0.07	6.7	2.7	14	2.1	41	8.8	10	0.4	2.8	90	28	0	130	--	22

a Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

2-969.59. HAW RIVER AT BYNUM, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	56	40	38	37	39		61	67	76	72	75
2	70	54	41	38	39	39		59	69	75	73	72
3	70	54	41	41	39	36		59	69	78	76	72
4	69	57	40	40	38	33		61	72	76	78	73
5	69	51	39	39	39	32		62	72	75	79	72
6	70	54	39	39	40	32		62	73	74	77	71
7	70	58	39	39	41	32		61	73	75	77	71
8	70	51	38	39	40	33		60	--	74	78	73
9	71	51	38	40	44	34		56	71	76	71	73
10	68	47	39	40	--	33		57	69	76	71	72
11	68	49	42	39	41	33		58	68	77	76	72
12	66	48	42	40	40	36		57	71	73	74	69
13	60	49	40	40	39	36		58	73	71	75	67
14	60	51	39	44	37	36		60	76	73	77	65
15	59	52	39	47	--	37		59	77	73	76	64
16	58	--	41	42	--	34		62	75	73	73	64
17	59	51	--	43	39	34		64	78	73	71	67
18	58	42	43	44	35	36		67	74	70	73	69
19	59	42	43	41	36	36		70	75	69	72	79
20	59	44	42	39	35	37		70	77	71	72	69
21	56	44	41	36	35	39		72	76	77	74	69
22	56	46	38	34	32	39		73	76	76	75	69
23	55	44	36	34	35	39		72	75	77	69	68
24	55	46	36	33	38	38		74	77	77	69	68
25	54	49	36	33	39	41		73	78	78	68	67
26	53	46	36	34	40	44		71	79	78	62	65
27	54	46	38	34	40	45		72	71	77	66	64
28	53	44	40	36	40	46		69	74	74	69	62
29	51	42	40	37	39	59		67	78	72	72	61
30	54	40	41	34	--	57		67	77	71	75	62
31	55	--	39	33	--	55		68	--	71	78	--
Average	61	49	40	38	38	39		65	74	74	73	69

## CAPE FEAR RIVER BASIN--Continued

2-981.56. NEW HOPE RIVER NEAR NEW HILL, N. C.

LOCATION --At bridge on county road 0.2 mile downstream from mouth of Beaver Creek and approximately 4 miles downstream from gaging station near Pittsboro, Chatham County.

DRAINAGE AREA --340 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1956 to September 1960.

Water temperatures: October 1956 to September 1960.

EXTREMES, 1959-60 --Dissolved solids: Maximum, 101 ppm June 15-30, July 1-14, Sept. 1-30; minimum, 33 ppm Aug. 9-10.

Hardness: Maximum, 44 ppm July 26-29; minimum, 12 ppm Aug. 9-10.

Specific conductance: Maximum daily, 197 micromhos/cm (unit 27; minimum daily, 31 micromhos Aug. 9.

Specific conductance Composite samples, 81 micromhos/cm (unit 27; minimum daily, 31 micromhos Aug. 9.

EXTREMES, 1956-60 --Dissolved solids: Maximum, 139 ppm Dec. 1-10, 1958; minimum, 31 ppm Sept. 1, 6-9, 1959.

Hardness: Maximum, 48 ppm Sept. 21-30, Oct. 21-31, 1958; minimum, 8 ppm July 24, 1957.

Specific conductance: Maximum daily, 284 micromhos Nov. 1, 1958; minimum daily, 25 micromhos July 24, 1957.

Water temperatures: Maximum, 80°F July 1, 2, 1959; minimum, freezing point on many days during winter months.

REMARKS --Records of suspended matter of composite samples and records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-14, 1959		15	0.14	8.7	2.7	11	3.5	33	10	11	0.5	2.8	92	33	5	131	7.2	35
Oct. 15-31		12	0.09	4.6	2.0	5.8	2.1	19	4.9	6.2		1.5	63	20	4	74	6.3	40
Nov. 1-30		16	0.12	6.7	2.3	7.3	2.1	28	4.7	8.0		1.3	77	26	4	98	6.8	35
Dec. 1-18		16	0.16	7.9	2.2	9.0	2.1	30	5.3	9.5		2.1	85	29	4	116	7.5	20
Dec. 19-31		13	0.08	5.4	1.8	6.2	1.7	20	4.7	6.2		2.8	69	21	4	82	6.6	30
Jan. 1-15, 1960		12	0.04	5.3	1.7	5.6	1.5	18	4.9	6.2		2.2	61	20	6	77	6.7	20
Jan. 16-31		15	0.01	6.7	2.5	8.2	1.5	27	4.5	9.5		2.2	75	27	5	107	7.5	15
Feb. 1-15		13	0.06	4.4	2.4	3.6	1.3	23	7.7	5.3		3.2	63	21	4	81	7.3	35
Mar. 1-15		13	0.05	4.4	2.4	3.7	1.0	14	7.3	3.0		3.3	44	16	4	56	7.2	10
Mar. 16-25		18.9	0.01	3.2	1.8	3.0	1.0	22	8.2	5.2		1.1	a50	20	2	75	6.4	20
Mar. 26-30		10	0.09	4.8	1.8	6.3	1.0	13	6.0	1.5		--	--	14	4	42	7.2	--
Mar. 31		--	--	--	--	--	--	--	--	--		--	--	--	--	--	--	--
Apr. 1-30		9.5	0.10	5.6	1.7	5.2	1.3	24	3.4	5.2		3.4	60	21	2	76	6.9	30
May 1-31		15	0.03	6.6	2.6	7.0	1.7	31	3.7	5.5		3.5	76	27	2	100	6.9	20
June 1-14		14	0.05	17.4	2.5	7.3	1.5	31	5.6	5.4		2.6	64	26	4	120	6.6	10
June 15-30		14	0.03	10.1	3.0	14	2.6	49	13	14		3.0	101	38	4	138	7.1	45
July 1-14		14	0.09	9.3	3.5	14	3.0	37	11	7.5		2.5	83	34	4	112	7.8	25
July 15-25		14	0.10	8.3	3.3	8.3	2.6	37	11			2.2						



July 26-29, 1960....	17	.01	11	4.2	17	3.7	54	12	13	11.3	5.6	all 3	44	0	170	7.0	20
July 30-31.....	--	--	--	--	--	--	14	7.6	4.0	--	--	--	16	4	56	6.3	50
Aug. 1-8.....	14	.18	7.4	2.1	8.5	2.5	28	9.4	7.0	.2	2.8	80	27	4	102	7.5	--
Aug. 9-10.....	7.1	.16	3.8	.7	3.1	1.5	10	8.0	2.5	.1	1.4	a33	12	4	40	5.8	--
Aug. 11-22.....	13	.07	6.3	2.7	8.3	2.2	29	11	7.2	.3	3.1	75	27	3	99	7.4	35
Aug. 23-31.....	12	.10	5.6	1.9	7.8	2.4	24	8.0	6.0	.2	2.4	68	22	2	87	7.4	30
Sept. 1-30.....	15	.16	9.0	3.3	12	4.2	40	10	9.7	.3	4.7	101	36	3	138	7.5	35
Time-weighted average.....	13	0.08	6.6	2.4	7.9	2.1	28	6.7	7.4	0.3	3.0	74	26	3	98	--	28

a Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

2-981.56. NEW HOPE RIVER NEAR NEW HILL, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	56	41	40	41	41	55	59	68	75	71	75
2	70	55	39	39	41	40	57	60	68	73	72	75
3	69	53	40	41	41	39	58	59	70	75	74	75
4	68	51	40	44	39	33	59	58	70	75	75	75
5	69	53	40	43	40	32	59	59	72	75	76	73
6	69	56	41	42	43	33	54	59	69	75	76	75
7	69	55	40	42	42	33	55	60	71	74	77	74
8	70	52	38	41	41	33	56	61	70	72	77	72
9	71	50	38	40	43	33	58	59	69	73	72	72
10	72	47	38	40	44	32	52	58	66	73	75	74
11	72	45	38	41	49	32	53	57	65	72	77	74
12	69	46	41	43	49	34	52	57	68	73	75	72
13	67	48	43	45	45	34	55	55	70	72	75	70
14	66	50	42	46	36	35	59	55	71	73	76	68
15	66	53	42	49	35	36	61	56	72	72	75	66
16	64	54	41	48	36	36	62	58	72	71	74	65
17	66	49	42	47	37	33	65	60	75	71	71	65
18	66	49	45	46	39	36	66	63	75	71	71	67
19	56	45	47	44	43	38	62	65	75	72	71	68
20	54	43	44	41	38	41	60	65	75	73	72	69
21	55	43	41	39	39	41	59	67	76	75	73	70
22	56	44	39	36	39	41	61	68	73	74	75	69
23	56	44	37	33	39	41	63	68	75	75	73	67
24	61	46	36	32	39	42	63	68	75	75	72	65
25	59	50	37	32	40	43	65	70	76	76	72	64
26	55	46	37	32	41	44	65	70	75	76	71	64
27	53	46	38	34	41	44	68	68	71	77	70	63
28	52	50	42	37	41	47	69	65	71	75	70	63
29	52	48	45	40	42	51	62	68	72	74	72	63
30	52	45	45	42	--	55	58	70	75	73	73	71
31	54	--	43	42	--	55	--	70	--	71	74	--
Average	63	49	41	41	41	41	60	62	72	74	73	69

## CAPE FEAR RIVER BASIN--Continued

## 2-1025. CAPE FEAR RIVER AT LILLINGTON, N. C.

LOCATION --Temperature recorder at gaging station in downstream end of pier of bridge on U. S. Highway 401, 1,800 feet downstream from Norfolk Southern Railway bridge, 0.5 mile north of Lillington, Harnett County, and 1 mile downstream from Neal Creek.

DRAINAGE AREA --3,440 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: November 1944 to October 1954, October 1954 to September 1955.

Water temperatures: November 1944 to October 1945, October 1945 to September 1955, June 1959 to September 1960.

EXTREMES, 1959-60 --Water temperatures: Maximum, 91°F Aug. 7, 8; minimum, 35°F Mar. 6, 7, 9-11.

EXTREMES, November 1944 to October 1945, 1954-55, June 1959 to September 1960 --Water temperatures: Maximum, 96°F June 30, 1959; minimum, 34°F

Dec. 20, 1944 and on several days during January and February 1955.

REMARKS --No temperature record Apr. 10 to May 27 due to failure of thermometer. Records of discharge for water year October 1959 to September 1960 given in NSP 1763.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Mar. 7, 1960.....	a4,570	14	0.21	3.8	1.8	6.1	0.9	28	2.4	5.3	0.0	0.9	60	17	0	67	6.8	60
Aug. 29, .....	a798	10	.19	3.6	2.0	5.9	2.0	24	5.4	5.6	.2	.3	b47	17	0	74	6.0	80
Sept. 28, .....	418	10	.17	6.4	2.9	16	2.6	45	8.4	13	.3	1.8	87	28	0	140	7.0	40

a Discharge at time of sampling.

b Calculated from determined constituents.

CAPE FEAR RIVER BASIN--Continued  
 2-1025. CAPE FEAR RIVER AT LILLINGTON, N. C.--Continued

Temperature, (°F) of water, water year October 1959 to September 1960

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
1	78	74	59	57	46	45	44	43	46	46	45	44	54	54	--	--	72	70	88	86	79	76	85	85
2	74	73	59	57	45	44	44	44	46	46	46	44	39	55	54	--	72	71	87	83	80	78	85	84
3	73	72	57	56	44	44	44	44	46	46	46	40	39	57	55	--	71	71	89	86	84	80	84	84
4	72	71	57	56	44	44	46	45	46	46	46	40	36	57	56	--	74	72	89	87	88	84	84	82
5	73	71	58	57	44	44	45	45	47	46	46	37	36	57	56	--	77	74	88	86	87	86	82	80
6	75	72	61	58	44	44	45	45	47	47	47	37	35	56	55	--	76	74	87	86	86	84	82	82
7	75	73	55	53	42	41	45	45	48	47	47	33	32	57	56	--	74	74	84	83	81	80	82	82
8	75	74	53	52	41	41	45	45	47	46	46	33	35	57	56	--	74	73	84	83	81	80	84	83
9	75	74	52	51	42	41	45	45	49	48	48	36	35	58	57	--	73	72	83	83	84	82	85	83
10	74	72	52	51	42	41	45	45	49	48	48	36	35	58	57	--	73	72	83	83	84	82	85	83
11	72	70	51	51	41	40	45	45	52	49	37	35	58	54	--	--	73	72	83	81	82	82	85	79
12	70	70	51	51	41	40	45	45	52	52	38	36	58	55	--	--	77	73	84	82	83	82	79	78
13	70	69	52	51	44	43	48	46	52	46	39	36	60	57	--	--	79	77	84	84	82	82	79	78
14	69	68	52	51	44	43	48	46	52	46	39	36	60	57	--	--	81	78	84	83	82	82	82	76
15	67	63	55	54	42	41	51	48	44	42	40	39	61	60	--	--	81	79	83	81	82	82	77	76
16	63	61	54	54	43	41	52	51	42	41	40	40	--	--	--	--	83	79	82	81	82	82	76	76
17	61	60	55	54	43	43	52	51	41	41	40	38	--	--	--	--	84	80	84	81	82	81	77	75
18	60	60	55	51	45	43	52	51	42	41	40	39	--	--	--	--	84	80	84	81	82	81	77	75
19	60	59	51	49	44	44	51	50	42	42	40	40	--	--	--	--	84	82	84	81	83	81	79	76
20	59	58	49	49	44	43	50	48	42	42	41	40	--	--	--	--	85	83	86	83	83	82	81	79
21	58	58	50	49	44	43	48	47	42	42	41	41	--	--	--	--	83	79	87	85	86	83	80	78
22	59	58	50	49	43	41	47	45	42	42	41	41	--	--	--	--	83	77	87	85	85	83	79	76
23	60	58	49	48	41	40	45	44	43	42	43	41	--	--	--	--	83	82	87	85	85	82	78	76
24	60	60	52	49	40	39	44	43	43	41	43	42	--	--	--	--	85	83	86	84	82	78	78	75
25	60	58	52	50	40	39	44	43	43	42	45	43	--	--	--	--	87	85	86	84	78	77	75	75
26	58	57	50	49	40	40	44	43	43	42	45	44	--	--	--	--	86	82	87	86	78	78	75	74
27	57	56	50	49	42	40	44	43	43	43	48	44	--	--	--	--	82	82	87	85	78	74	73	73
28	56	56	49	48	41	42	46	44	44	44	50	46	--	--	--	--	83	85	82	85	81	78	73	73
29	56	56	49	48	41	42	46	44	44	44	50	46	--	--	--	--	83	85	82	85	81	78	73	73
30	56	56	48	46	44	44	46	46	46	46	53	52	--	--	--	--	84	84	84	84	82	82	77	77
31	57	56	--	--	44	44	46	46	--	--	54	53	--	--	71	69	--	--	77	75	85	84	--	--
Average	66	64	53	52	43	42	47	46	45	44	42	40	--	--	--	--	80	77	85	83	84	82	79	78

CAPE FEAR RIVER BASIN--Continued  
2-1057.71. CAPE FEAR RIVER NEAR ACME, N. C.

LOCATION.--At bridge on State Highway 141, 6.0 miles northwest of Acme, Columbus County.

DRAINAGE AREA.--5,223 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1960.

Water temperatures: October 1956 to September 1960.

EXTRIMES, 1959-60.--Dissolved solids: Maximum, 94 ppm Oct. 3-10; minimum, 30 ppm Sept. 15-18.

Hardness: Maximum, 27 ppm Oct. 3-10; minimum, 12 ppm Feb. 1-29 Sept. 13-18.

Water temperatures: Maximum, 86°F Aug. 16; minimum, 37°F Mar. 12-13.

EXTRIMES, 1956-60.--Dissolved solids: Maximum, 94 ppm Oct. 3-10, 1959; minimum, 30 ppm Sept. 15-18, 1960.

Hardness: Maximum, 27 ppm Oct. 3-10, 1959; minimum, 11 ppm Mar. 1-10, 1957, Apr. 11-20, 1958.

Specific conductance: Maximum daily, 148 micromhos Oct. 6, 8, 1959; minimum daily, 40 micromhos Feb. 12, 1960.

Water temperatures: Maximum, 86°F July 18-20, 1957, Aug. 2, 1958, Aug. 16, 1960; minimum, 33°F Jan. 12, 1958.

REMARKS.--Records of suspended matter of composite samples from October 1956 to September 1958 and records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-2, 11-31, 1959		9.7	0.09	3.0	1.2	3.8	1.7	12	3.9	3.5	0.2	1.5	49	13	3	52	6.9	40
Oct. 3-10, .....		15	.18	5.9	3.0	19	2.9	45	4.8	16.5	2.4	2.4	94	27	0	143	7.7	45
Nov. 1-30, .....		11	.22	4.6	.7	5.9	2.0	18	2.0	6.5	.2	1.4	52	14	0	61	6.7	55
Dec. 1-31, .....		11	.08	4.4	1.1	6.1	1.7	20	3.0	7.2	.2	1.2	52	15	0	65	6.6	15
Jan. 1-31, 1960, .....		10	.13	4.5	1.1	5.3	1.4	15	3.1	6.0	.1	2.7	51	16	3	62	6.9	40
Feb. 1-29, .....		8.3	.10	2.7	1.3	3.1	1.0	11	4.9	3.5	.1	1.2	47	12	4	45	6.4	55
Mar. 1-31, .....		9.0	.04	3.4	1.7	3.8	.8	13	4.3	4.0	.1	.9	47	16	5	51	7.2	35
Apr. 1-28, .....		8.5	.09	3.8	1.6	3.7	1.0	15	4.5	4.0	.1	1.5	58	16	4	52	7.2	70
Apr. 29-30, .....		10	.09	5.0	1.8	5.2	1.0	28	5.2	7.5	.1	1.8	86	20	0	86	7.2	---
May 1-31, .....		10	.10	4.4	1.2	6.1	1.0	19	5.0	4.5	.1	2.5	48	16	0	66	6.8	25
June 1-28, .....		11	.10	5.3	1.4	8.2	1.4	24	6.6	6.0	.2	2.8	a55	18	0	78	6.9	25
June 29, .....		---	---	---	---	---	---	23	5.8	20	---	---	---	21	2	140	7.3	---
June 30, .....		---	---	---	---	---	---	28	3.2	7.0	---	3.2	---	18	0	89	7.2	---
July 1-31, .....		8.0	.14	5.4	1.3	9.9	1.5	27	7.3	8.0	.2	1.4	59	19	2	52	5.8	25
Aug. 1-31, .....		7.9	.14	4.8	1.3	8.8	1.4	16	6.4	5.6	.2	1.2	56	16	2	66	7.0	40
Sept. 1-14, .....		8.8	.18	3.9	1.3	6.9	1.9	15	6.4	5.6	.2	2.4	56	16	2	66	7.0	65
Sept. 15-18, .....		7.6	.31	2.2	1.6	3.3	1.2	9	3.4	3.5	.2	2.4	a30	12	4	45	6.6	---
Sept. 19-30, .....		9.3	.27	5.5	1.1	6.3	1.5	18	7.4	6.5	.1	1.8	62	18	3	73	6.2	90
Time-weighted average, .....		9.5	0.12	4.2	1.3	6.1	1.4	18	5.0	5.8	0.2	1.8	53	16	2	66	---	43

a Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

2-1057.71. CAPE FEAR RIVER NEAR ACME, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	59	50	51	44	45	55	70	80	83	80	75
2	74	59	49	52	44	45	57	70	79	84	80	76
3	74	58	49	53	44	44	58	70	79	84	80	78
4	74	57	48	51	44	42	60	70	78	84	80	79
5	75	57	47	50	45	42	61	70	79	84	80	79
6	75	56	46	49	45	41	61	70	79	84	80	80
7	75	56	45	48	45	40	60	70	79	84	80	80
8	76	56	45	47	45	39	60	70	80	85	81	81
9	76	56	45	45	45	34	60	69	80	85	81	82
10	76	55	46	45	46	38	60	68	80	85	82	84
11	75	54	48	45	47	38	60	67	80	85	83	85
12	74	54	50	45	48	37	60	67	80	85	83	85
13	73	54	50	45	48	37	60	67	80	85	83	82
14	73	54	50	45	48	38	63	67	80	85	84	82
15	71	54	50	45	48	40	63	67	80	85	85	80
16	70	54	50	45	48	40	64	68	80	85	86	78
17	68	53	51	46	47	40	65	68	81	85	85	76
18	66	53	51	46	46	40	66	69	82	85	84	75
19	64	53	52	47	45	42	67	70	83	85	83	76
20	62	53	52	47	44	42	68	71	84	85	82	76
21	60	53	50	47	43	44	60	72	85	85	81	76
22	61	53	49	46	43	45	69	72	85	85	80	76
23	62	53	48	45	43	46	70	73	84	85	80	75
24	63	53	46	44	43	44	70	74	83	85	80	74
25	63	53	44	43	44	46	70	75	82	85	80	74
26	62	53	45	43	45	47	71	76	81	85	79	74
27	61	53	46	43	45	48	72	78	80	85	77	74
28	61	52	47	43	45	49	73	79	79	82	75	74
29	60	52	48	43	45	50	70	80	80	82	75	74
30	60	52	49	44	--	52	70	80	81	81	75	74
31	59	--	50	44	--	53	--	80	--	80	75	--
Average	66	54	48	46	45	43	64	72	81	84	81	78

CAPE FEAR RIVER BASIN--Continued  
2-1075.76. CAPE FEAR RIVER AT NAVASSA, N. C.

LOCATION.--At drawspan on Atlantic Coast Line Railroad bridge at Navassa, Brunswick County.  
DRAINAGE AREA.--7,060 square miles.  
RECORDS AVAILABLE.--Chemical analyses: October 1959 to August 1960.

Water temperatures: October 1959 to August 1960.

EXTREMES, 1959-60.--Chloride: Maximum, 2,630 ppm June 11; minimum, 5.0 ppm Feb. 1-29.

Specific conductance: Maximum daily, 8,320 micromhos June 11; minimum, 5.0 ppm Feb. 1-29.

Water temperatures: Maximum, 84°F on several days during July; minimum, 44°F Jan. 26, Feb. 21, 22, 24.

REMARKS.--Specific conductance values indicated salt-water encroachment; only specific conductance and chloride were determined on individual samples. The individual specific conductance and chloride determinations are tabulated separately from the composite chemical analyses. No discharge records available for this station.

Chemical analyses, in parts per million, October 1959 to August 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 12-31, 1959....		9.9	0.11	4.2	1.0	5.9	1.9	15	4.3	6.5	0.2	0.8	51	15	2	62	7.0	100
Nov. 1-28, 30.....		9.8	.22	4.0	1.1	7.3	1.2	15	3.3	10	.2	.5	59	14	2	69	7.1	100
Nov. 29.....		--	--	--	--	--	--	30	4.9	11	--	--	--	24	0	101	7.3	--
Dec. 1-4, 6-31.....		9.5	.15	3.8	1.5	8.0	1.5	16	4.6	10	.2	.8	60	16	2	174	6.6	80
Dec. 5-31.....		--	--	--	--	5.7	--	11	5.1	26	--	1.5	49	26	14	154	6.7	100
Jan. 1-31, 1960.....		8.7	.21	3.2	1.3	6.0	1.1	16	5.1	8.3	.1	1.5	49	13	4	59	6.7	100
Feb. 1-29.....		7.2	.07	3.7	.4	4.6	1.1	10	3.7	5.0	.1	1.5	as5	11	3	50	6.8	90
Mar. 1-31.....		6.5	.07	3.3	.8	4.7	.8	12	3.6	6.3	.2	1.4	45	11	2	54	6.8	45
Apr. 1-30.....		6.8	.10	4.0	1.0	5.6	1.2	16	5.2	7.5	.2	1.4	58	14	1	62	6.8	90
May 1-6.....		7.4	.23	4.0	1.2	5.7	1.2	17	5.6	7.5	.0	.8	64	15	1	69	7.1	100
May 9-25.....		11	.24	5.0	1.2	8.1	1.3	19	4.0	12	.0	.7	75	18	2	87	7.1	100
June 1-5.....		10	.04	5.8	2.0	12	1.5	30	6.2	15	.2	1.8	670	23	0	107	7.3	55
AUG. 1-31.....		9.3	.04	4.1	1.7	8.5	1.4	20	6.4	12	.2	.3	72	11	0	86	7.0	60

a Organic matter present; sum of mineral constituents 32 parts per million.

b Calculated from determined constituents.

## CAPE FEAR RIVER BASIN--Continued

2-1075.76. CAPE FEAR RIVER AT NAVASSA, N. C.--Continued

Temperature (°F) of water, October 1959 to August 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--	61	46	46	46	46	54	70	78	81	83	
2	--	61	52	--	--	45	57	69	78	82	83	
3	--	60	50	50	--	45	58	67	79	82	82	
4	76	61	50	48	45	45	59	66	80	81	82	
5	76	61	50	48	48	45	60	66	79	82	81	
6	75	62	51	48	47	44	58	66	79	83	81	
7	75	62	50	48	46	45	59	68	80	82	81	
8	75	58	47	46	47	44	60	68	80	83	82	
9	76	60	50	46	47	44	60	68	79	83	82	
10	76	58	47	46	48	45	61	68	78	83	81	
11	76	54	48	46	49	44	60	68	77	83	81	
12	74	52	49	46	50	44	60	69	77	83	80	
13	76	--	48	47	49	44	60	68	79	82	81	
14	74	54	48	48	49	44	63	68	80	84	81	
15	72	58	50	50	48	45	62	67	80	84	80	
16	70	54	50	50	48	46	65	67	79	83	80	
17	70	58	50	49	48	46	65	69	81	83	80	
18	68	55	50	50	46	46	65	70	82	84	79	
19	68	56	50	50	46	47	65	69	82	84	78	
20	68	54	50	49	45	46	65	70	77	83	79	
21	64	55	49	48	44	45	66	69	77	84	78	
22	--	55	49	46	44	45	66	69	78	84	79	
23	65	56	45	45	--	45	66	72	78	83	78	
24	66	55	46	45	44	45	67	72	78	84	79	
25	64	55	45	45	45	46	69	71	79	83	78	
26	62	55	46	44	46	46	69	73	79	83	77	
27	63	55	46	47	46	46	70	74	--	82	76	
28	61	56	47	45	45	46	--	76	79	82	76	
29	61	54	48	45	46	48	--	77	80	82	77	
30	60	52	48	45	--	49	70	--	80	81	76	
31	61	--	48	45	--	52	--	--	--	81	76	
Average	67	57	48	47	47	46	63	69	79	83	80	



## CAPE FEAR RIVER BASIN--Continued

2-1080. NORTHEAST CAPE FEAR RIVER NEAR CHINQUAPIN, N. C.

LOCATION.--At bridge on State Highway 41, 540 feet upstream from gaging station, 0.4 mile downstream from Muddy Creek, and 1-1/4 miles west of Chinquapin, Duplin County.

DRAINAGE AREA.--600 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951; October 1956 to September 1960.

EXTREMES: 1950-60--Dissolved solids: Maximum, 87 ppm Aug. 1-31; minimum, 32 ppm Jan. 21-31.

Hardness: Maximum, 26 ppm Jan. 12; minimum, 11 ppm Feb. 1-28.

Specific conductance: Maximum daily, 143 micromhos Aug. 20; minimum daily, 43 micromhos Feb. 19, 20, 22, 23, 26, Dec. 13, 14.

Water temperatures: Maximum, 79°F July 20, 22-26; minimum, 33°F Mar. 12.

EXTREMES, 1950-51, 1956-60.--Dissolved solids: Maximum, 163 ppm Aug. 11-20, 1957; minimum, 25 ppm Feb. 27-28, 1957.

Hardness: Maximum, 40 ppm Aug. 1-10, 1957; minimum, 10 ppm Mar. 21-31, 1958.

Specific conductance (1956-60): Maximum daily, 287 micromhos Aug. 13, 14, 1957; minimum daily, 39 micromhos Mar. 31, 1958.

Water temperatures: Maximum, 87°F July 1, 1951; minimum, freezing point Feb. 3, 16, 17, 1951; October 1956 to September 1960 and records of specific conductance of samples collected from October 1956 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

REMARKS: 1950-51, 1956-60.--Dissolved solids: Maximum, 163 ppm Aug. 11-20, 1957; minimum, 25 ppm Feb. 27-28, 1957.

Hardness: Maximum, 40 ppm Aug. 1-10, 1957; minimum, 10 ppm Mar. 21-31, 1958.

Specific conductance (1956-60): Maximum daily, 287 micromhos Aug. 13, 14, 1957; minimum daily, 39 micromhos Mar. 31, 1958.

Water temperatures: Maximum, 87°F July 1, 1951; minimum, freezing point Feb. 3, 16, 17, 1951; October 1956 to September 1960 and records of specific conductance of samples collected from October 1956 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos/cm at 25°C)	pH	Color
														Calcium	Non-Calcium			
Oct. 1-31, 1959.....	997	9.8	0.22	4.1	1.2	6.5	1.3	13	3.3	9.0	0.2	1.2	a72	15	5	70	6.6	110
Nov. 1-30.....	1,061	9.0	.41	4.6	.8	6.5	1.2	12	3.1	9.0	.2	1.1	69	15	5	64	7.0	110
Dec. 1-31.....	1,300	7.1	.16	3.5	.8	4.9	1.2	9	3.4	6.5	.2	1.0	51	12	5	53	5.8	90
Jan. 1-31, 1960.....	3,997	5.2	.13	4.2	1.7	5.9	1.5	11	2.3	9.0	.1	1.9	35	13	4	58	5.7	70
Feb. 1-28.....	1,780	4.6	.18	4.0	.7	4.4	.7	10	3.1	5.7	.2	.9	39	13	5	57	6.7	70
Mar. 1-31.....	786	4.1	.18	3.9	.8	4.2	.6	10	5.2	6.5	.2	1.1	32	13	5	57	6.5	70
Apr. 1-30.....	2,126	2.8	.13	3.6	.5	3.8	.7	6	3.2	7.5	.2	.9	b48	11	6	50	6.6	60
May 1-31.....	2,950	--	--	--	--	--	--	20	4.2	12	--	.9	--	18	2	82	7.6	--
June 1-30.....	1,531	1.7	.08	3.7	.9	4.8	.7	8	3.9	7.5	.1	.4	48	13	6	57	5.6	60
July 1-21.....	1,088	5.2	.23	4.7	1.2	6.5	1.0	15	3.2	10	.2	1.5	67	17	4	71	6.5	120
July 22-31.....	358	7.9	.22	6.4	.9	12	.9	13	3.0	18	.1	3.3	71	20	8	105	6.8	80
Aug. 1-31.....	235	8.5	.20	6.7	1.6	14	.9	16	8.8	21	.1	3.1	81	23	10	120	7.0	70
Sept. 1-20.....	245	8.7	.17	6.1	1.6	17	1.0	14	7.4	26	.1	2.6	84	22	10	129	6.5	70
Time-weighted average.....	1,961	6.2	.12	4.6	1.3	8.0	1.0	10	10	10	.2	.8	65	16	8	78	6.5	70
	1,961	10	.30	6.1	1.8	11	1.9	17	4.4	22	.1	2.1	87	22	8	122	6.5	100
	1,910	7.4	.51	4.6	1.8	6.5	2.8	10	7.2	9.7	.3	.3	77	19	11	77	6.8	200
	1,233	6.8	0.22	4.8	1.1	8.0	1.1	12	5.1	12	0.2	1.9	65	17	7	81	--	90

a Organic matter present; sum of mineral constituents 43 parts per million.

b Organic matter present; sum of mineral constituents 26 parts per million.

## CAPE FEAR RIVER BASIN--Continued

2-1080. NORTHEAST CAPE FEAR RIVER NEAR CHINQUAPIN, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	59	48	38	41	40	58	70	72	78	78	73
2	74	59	48	38	40	40	58	70	74	78	78	73
3	76	59	49	38	41	39	58	70	74	78	78	73
4	76	59	49	38	41	39	59	70	74	78	78	72
5	75	59	48	37	41	37	59	70	74	78	77	72
6	75	59	48	37	43	37	59	70	74	78	76	72
7	76	59	49	37	43	35	57	70	74	78	76	72
8	76	58	49	37	43	35	60	70	74	78	76	72
9	74	58	48	37	43	34	60	70	74	78	76	72
10	73	58	49	37	44	34	60	70	70	78	76	72
11	71	56	47	37	43	34	60	70	70	78	76	73
12	69	56	46	37	45	33	60	70	70	78	76	72
13	69	56	46	37	43	34	64	71	70	78	76	72
14	69	56	46	38	40	35	64	71	71	78	76	72
15	69	56	46	38	40	35	64	71	71	78	76	72
16	69	56	46	38	44	37	64	72	71	78	76	72
17	68	56	45	38	44	37	64	72	74	78	76	72
18	68	56	45	38	45	38	64	72	75	78	75	72
19	68	48	45	38	45	40	62	72	75	78	75	71
20	68	48	40	39	40	40	62	72	75	79	75	71
21	68	53	40	39	42	40	62	73	78	78	75	--
22	68	53	39	39	42	45	62	73	78	79	75	--
23	65	53	39	39	42	42	62	73	77	79	75	--
24	65	53	40	39	44	43	60	73	76	79	75	--
25	64	53	40	39	44	45	60	73	78	79	74	--
26	63	53	40	39	44	45	62	73	77	79	74	--
27	60	--	40	40	44	50	60	73	78	78	74	--
28	60	50	41	40	40	50	60	73	78	78	74	--
29	58	50	40	40	40	50	60	73	78	--	74	--
30	58	48	39	41	--	55	60	73	78	--	74	--
31	58	--	39	41	--	55	--	73	--	--	74	--
Average	69	55	44	38	42	40	61	71	74	78	76	--

## CAPE FEAR RIVER BASIN--Continued

2-1086.22. NORTHEAST CAPE FEAR RIVER AT CASTLE HAYNE, N. C.

LOCATION --alt bridge on U. S. Highway 117, 0.8 mile north of Castle Hayne, New Hanover County, and 4.7 miles upstream from Prince George Creek.

DRAINAGE AREA--459 square miles.

RECORDS AVAILABLE--Chemical analyses: October 1954 to September 1960.

Water temperatures: October 1954 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 79 ppm June 1-30; minimum, 42 ppm Mar. 1-31.

Hardness: Maximum, 37 ppm Jan. 27; minimum, 14 ppm Mar. 1-31, Apr. 1-30.

Specific conductance: Maximum daily, 108 micromhos Oct. 3; minimum daily, 41 micromhos Mar. 9, 10, Apr. 7, 8, Sept. 14.

Water temperatures: Maximum daily, 84°F July 13-24; minimum, 37°F Mar. 13.

EXTREMES, 1954-60.--Dissolved solids: Maximum, 1,530 ppm Oct. 21-22, 25-27, 29, 1954; minimum, 42 ppm Mar. 1-31, 1960.

Hardness: Maximum, 516 ppm Oct. 13, 1954; minimum, 10 ppm Sept. 21-22, 1955.

Specific conductance: Maximum daily, 9,340 micromhos Oct. 13, 1954; minimum daily, 34 micromhos Sept. 25, 1955, Mar. 10, 1959.

Water temperatures: Maximum, 90°F Aug. 10, 1956; minimum, 37°F Feb. 2, 1958, Mar. 13, 1960.

REMARKS.--Records of composite samples from October 1954 to September 1957 and records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-31, 1959.....		8.3	0.23	6.4	1.5	7.3	1.2	16	6.1	10	0.2	0.8	78	22	10	78	6.7	200
Nov. 1-30.....		7.5	.23	5.1	1.0	5.2	.9	11	3.0	10	.2	.5	a70	17	8	61	6.7	160
Dec. 1-31.....		5.1	.23	5.3	1.7	5.2	.9	15	4.7	9.0			88	22	10	53	6.7	160
Jan. 1-31, 1960.....		5.3	.18	13.0	1.4	4.0	.6	35	7.3	10.5	.2	1.8	53	37	8	98	6.5	130
Feb. 1-29.....		3.4	.14	4.6	.9	3.6	.6	9	4.4	7.0	.2	1.3	48	15	9	50	6.5	110
Mar. 1-31.....		2.3	.02	3.8	1.0	3.6	.6	9	4.6	7.0	.1	1.1	42	14	6	50	6.2	100
Apr. 1-30.....		3.8	.19	4.8	.5	3.7	.7	11	5.0	6.5	.2	.4	b50	14	5	50	6.4	180
May 1-31.....		5.3	.07	4.6	1.1	3.9	.6	12	4.6	7.5	.2	.7	c70	16	6	54	6.7	130
June 1-30.....		5.6	.15	5.9	1.9	6.0	.6	17	7.8	10	.2	.9	d79	22	8	70	6.4	160
July 1-31.....		6.1	.07	5.3	1.3	1.9	.8	11	6.4	12.0	.3	.6	e70	17	9	52	6.5	200
Aug. 1-31.....		6.1	.28	5.3	.6	3.6	1.0	11	3.2	7.5	.2	.0	f69	17	8	57	6.8	200
Sept. 1-30.....		6.1	.28	5.8	.6	3.6	1.0	11	3.2	7.5	.2	.0						
Time-weighted average.....		5.7	0.17	5.4	1.1	4.8	0.9	21	4.8	8.3	0.2	0.7	64	18	8	61	--	150

a Organic matter present; sum of mineral constituents 39 parts per million. d Organic matter present; sum of mineral constituents 47 parts per million.

b Organic matter present; sum of mineral constituents 31 parts per million. e Organic matter present; sum of mineral constituents 32 parts per million.

c Organic matter present; sum of mineral constituents 35 parts per million. f Organic matter present; sum of mineral constituents 33 parts per million.

## CAPE FEAR RIVER BASIN--Continued

2-1086.22. NORTHEAST CAPE FEAR RIVER AT CASTLE HAYNE, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76	--	53	46	--	--	53	68	75	80	79	79
2	76	66	53	45	--	--	54	69	76	80	79	79
3	75	--	53	46	--	--	54	68	76	80	79	79
4	75	65	52	46	48	--	55	68	76	81	79	79
5	75	65	51	46	48	--	56	68	76	81	79	78
6	75	65	52	45	48	--	56	68	76	82	78	--
7	75	65	52	46	48	--	57	68	77	82	78	--
8	75	62	50	45	47	42	57	69	77	82	78	--
9	74	61	50	47	46	41	58	69	77	83	77	--
10	74	61	51	47	45	40	59	69	77	83	77	--
11	74	60	50	47	46	38	59	70	77	83	77	--
12	73	60	50	47	46	38	59	70	77	83	76	76
13	74	60	49	47	46	37	60	70	78	84	76	76
14	73	59	49	47	46	38	60	70	78	84	75	76
15	72	59	49	47	46	38	61	71	78	84	75	75
16	71	57	48	48	46	39	61	71	78	84	75	76
17	71	58	48	48	46	40	62	71	78	84	75	75
18	69	56	48	--	45	41	63	71	79	84	76	75
19	68	56	48	--	46	41	62	71	79	84	76	75
20	67	55	48	--	45	40	63	72	79	84	76	75
21	67	55	48	--	45	41	64	73	79	84	76	75
22	66	55	48	--	46	41	64	73	80	84	76	73
23	67	55	48	--	45	43	65	73	80	84	77	73
24	67	55	47	--	45	44	65	74	80	84	77	73
25	66	55	47	--	44	45	66	73	81	83	77	72
26	66	55	43	--	44	45	66	74	81	82	77	72
27	66	55	46	--	45	46	67	74	81	82	78	72
28	66	56	46	--	45	47	67	75	81	81	78	71
29	65	55	46	--	--	48	68	75	81	80	78	71
30	64	54	45	--	--	49	69	76	82	--	79	70
31	64	--	45	--	--	51	--	76	--	80	79	--
Average	71	58	47	--	46	--	61	71	78	83	77	--

## CAPE FEAR RIVER BASIN--Continued

2-1086.37. NORTHEAST CAPE FEAR RIVER NEAR CASTLE HAYNE, N. C.

LOCATION.--At end of county road 1.0 mile east of U. S. Highway 421 at Cowpen Landing, and 5-1/2 miles west of Castle Hayne, New Hanover County.

DRAINAGE AREA.--1,691 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960.

EXTREMES, 1959-60.--Chloride: Maximum, 364 ppm Oct. 1; minimum, 6.0 ppm Aug. 1-31.

Specific conductance: Maximum daily, 1,290 micromhos Oct. 1; minimum daily, 40 micromhos Mar. 3, Sept. 18.

Sulfate: Maximum daily, 1,290 micromhos Oct. 1; minimum daily, 40 micromhos Mar. 3, Sept. 18.

REMARKS.--When specific conductance values indicated salt-water encroachment only; specific conductance and chloride were determined on individual samples.

The individual specific conductance and chloride determinations are tabulated separately from the composite chemical analyses. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color or pH
														Residue at 180°C	Calculation			
Oct. 12-31, 1959	8.5	0.33	6.4	1.0	6.6	1.2	13	7.2	10	0.2	0.4			81	48	20	73	6.8
Nov. 1-30, 1959	7.6	0.15	4.9	1.6	5.5	1.0	13	3.9	9.0	0.2	0.3			68	40	19	64	6.7
Dec. 1-31, 1959	7.3	0.18	5.1	1.4	5.4	1.0	12	4.9	9.0	0.2	0.3			60	41	18	62	6.9
Jan. 1-31, 1960	3.0	0.12	4.3	1.3	4.2	0.6	10	3.7	8.5	0.2	1.3			57	34	17	53	6.4
Feb. 1-29, 1960	2.6	0.11	4.3	1.3	4.2	0.6	10	3.7	8.5	0.2	1.3			57	34	17	53	6.4
Mar. 1-31, 1960	2.6	0.10	4.9	1.3	3.6	0.3	9	3.4	6.5	0.2	0.4			45	26	14	46	6.4
Apr. 1-30, 1960	2.9	0.15	4.6	1.8	3.9	0.9	12	2.9	6.5	0.1	0.4			53	29	14	50	6.2
May 1-31, 1960	6.0	0.24	4.4	1.1	4.2	0.7	12	5.0	8.5	0.3	0.3			57	36	16	56	6.5
June 1-11, 1960	5.3	0.13	5.3	0.9	5.9	0.9	13	5.6	9.5	0.2	0.3			70	40	16	65	6.7
June 12-14, 1960	6.0	0.13	5.9	3.2	23	1.7	12	8.7	40	0.2	0.2			--	95	28	18	180
June 15, 1960	--	--	--	--	--	--	--	12	78	--	2.2			--	--	39	320	7.0
June 16-21, 1960	5.3	0.11	5.6	1.9	13	1.0	16	6.3	24	0.2	0.1			87	66	22	117	7.0
June 22-30, 1960	5.6	0.07	5.8	1.5	7.6	0.8	18	4.6	13	0.2	0.1			68	48	20	84	6.9
July 1-6, 1960	7.0	0.12	6.7	1.2	7.8	0.7	17	5.8	16	0.1	0.0			73	53	22	94	6.0
July 7-14, 1960	6.4	0.14	6.7	1.3	9.0	0.8	17	6.6	14	0.1	0.0			78	53	22	91	6.2
Aug. 1-31, 1960	5.6	0.22	4.7	1.3	3.2	0.7	11	4.4	6.0	0.2	0.0			66	31	17	8	52
Sept. 1-30, 1960	5.6	0.18	4.8	1.0	3.6	0.8	12	4.2	8.0	0.2	0.0			69	34	16	57	6.3
Time-weighted average.....	5.5	0.16	5.0	1.1	5.0	0.8	12	4.5	9.1	0.2	0.4			61	37	17	82	--

## CAPE FEAR RIVER BASIN--Continued

2-1086.37. NORTHEAST CAPE FEAR RIVER NEAR CASTLE HAYNE, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	--	54	46	44	48	55	68	78	84	78	80
2	78	64	52	46	--	46	55	68	78	83	78	80
3	78	62	52	46	44	45	62	66	78	83	78	79
4	76	62	51	48	45	43	63	66	76	84	81	80
5	76	62	51	46	45	42	63	66	77	84	79	80
6	76	62	--	48	46	--	60	66	77	82	79	81
7	76	60	--	48	45	38	63	68	78	83	80	81
8	76	60	--	46	45	36	62	68	78	83	81	81
9	77	58	--	48	46	36	63	68	78	82	81	81
10	77	58	--	46	48	36	63	68	76	83	81	82
11	76	56	--	48	50	35	62	66	77	83	81	80
12	76	56	--	46	50	35	63	66	78	83	81	79
13	76	57	46	46	50	35	63	66	78	83	81	79
14	76	58	47	48	50	35	64	64	78	84	81	76
15	74	56	46	49	48	35	64	65	78	83	81	74
16	72	56	48	49	46	38	65	68	79	81	81	68
17	72	56	48	48	46	38	65	68	80	83	80	73
18	71	54	48	49	46	38	65	66	80	82	80	74
19	70	56	48	48	44	40	64	68	81	81	80	74
20	68	54	48	48	44	42	65	68	82	82	80	73
21	66	56	48	46	44	42	65	70	78	83	80	74
22	64	55	48	45	44	44	67	70	82	83	81	74
23	66	55	46	44	42	44	67	72	84	84	79	74
24	65	55	45	44	44	45	68	72	83	84	79	74
25	64	55	44	44	45	45	70	73	84	84	79	73
26	64	55	45	42	45	47	70	74	83	84	79	73
27	62	55	44	42	45	48	70	75	82	84	79	72
28	62	56	46	42	46	49	70	76	83	84	79	72
29	62	54	46	42	48	50	70	76	83	80	79	72
30	62	52	48	44	--	52	68	78	83	83	80	72
31	62	--	48	44	--	55	--	78	--	78	80	--
Average	68	57	48	46	46	42	64	69	80	83	80	76



WACCAMAW RIVER BASIN--Continued  
2-1095. WACCAMAW RIVER AT FREELAND, N. S.--Continued

Temperature (°F) of water, June to September 1960  
Continuous ethyl alcohol-actuated thermometer

Day	October		November		December		January		February		March		April		May		June		July		August		September	
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	
1																	--	91	82	75	76	79	79	
2																	--	84	80	75	76	79	79	
3																	--	82	80	77	77	76	79	
4																	--	80	78	79	77	78	78	
5																	83	79	78	79	78	77	77	
6																	89	80	79	78	80	79	76	
7																	85	82	78	77	81	80	77	
8																	84	81	77	76	82	80	78	
9																	84	80	77	76	82	80	78	
10																	83	78	76	76	82	81	79	
11																	84	77	76	76	82	81	79	
12																	90	78	76	76	82	81	77	
13																	91	80	77	76	82	81	77	
14																	94	82	80	77	81	80	76	
15																	92	83	79	78	81	80	75	
16																	94	83	78	76	80	80	74	
17																	90	84	77	76	80	79	74	
18																	98	84	77	76	79	78	74	
19																	98	83	77	77	78	77	75	
20																	92	84	78	77	77	76	75	
21																	89	84	79	77	77	76	76	
22																	94	83	80	78	77	77	76	
23																	90	82	79	78	78	78	75	
24																	95	81	78	77	78	78	74	
25																	95	83	77	76	78	77	73	
26																	89	81	77	77	77	75	72	
27																	81	76	77	77	75	74	71	
28																	82	76	77	77	74	74	71	
29																	85	76	77	75	76	74	71	
30																	88	79	75	74	78	76	72	
31																	--	75	75	75	79	78	--	
Aver- age																	89	81	78	77	79	78	76	



## PEE DEE RIVER BASIN

2-1120, YADKIN RIVER AT WILKESBORO, N. C.

LOCATION.--Temperature recorder at gaging station 150 feet upstream from bridge on U.S. Highway 421 between North Wilkesboro and Wilkesboro, 150 feet downstream from Reddies River, and half a mile northeast of Wilkesboro, Wilkes County.

DRAINAGE AREA.--493 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1948. April 1960.

TEMPERATURE RECORDS.--Temperature recorder at gaging station 150 feet upstream from bridge on U.S. Highway 421 between North Wilkesboro and Wilkesboro, 150 feet downstream from Reddies River, and half a mile northeast of Wilkesboro, Wilkes County.

EXTREMES, 1947-48, October 1957 to April 1960.--Water temperatures: Maximum, 83°F June 24, 25, 1948; minimum, freezing point on several days during winter months of 1958.

REMARKS.--No temperature record Apr. 3 through Sept. 30 due to failure of thermograph. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium	Non- magne-carbon- slum ate			
Dec. 30, 1959.....	960	15	0.04	2.4	0.7	2.1	0.8	13	0.3	1.2	0.1	0.9	32	9	0	30	7.3	10
June 29, 1960.....	832	15	.00	2.5	.9	1.5	.8	16	.6	1.0	.1	.3	431	10	0	30	6.7	10

a Calculated from determined constituents.



## PEE DEE RIVER BASIN--Continued

2-1165. YADKIN RIVER AT YADKIN COLLEGE, N. C.

LOCATION.--At gaging station at bridge on U. S. Highway 64, 1-1/2 miles south of Yadkin College, Davidson County, and 6-1/4 miles downstream from Reedy Drainage Area --2,280 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1943 to September 1944, October 1950 to September 1951, October 1955 to September 1960.

Water temperatures: October 1943 to September 1944, October 1950 to September 1951, October 1955 to September 1960.

Sediment records: January 1951 to September 1960.

EXTREMES, 1950-60.--Dissolved solids: Maximum, 49 ppm Aug. 1-31; minimum, 33 ppm Apr. 1-30.

Hardness: Maximum, 14 ppm Oct. 1-31, Nov. 1-30, Jan. 1-30, June 1-30, July 1-31, Sept. 1-30; minimum, 12 ppm Feb. 1-29, Apr. 1-30, May 1-31, Aug. 1-31.

Specific conductance: Maximum daily, 76 micromhos July 22; minimum daily, 31 micromhos Feb. 19, Apr. 5.

Water temperatures: Maximum, 83°F Aug. 9; minimum, freezing point Dec. 23, 28 ppm Dec. 4.

Sediment loadings: Maximum daily, 70,100 tons Feb. 6; minimum, 168 tons Nov. 21.

EXTREMES, 1943-44, 1950-60.--Dissolved solids (1943-44, 1950-51, 1955-60): Maximum, 65 ppm Nov. 1-10, 1950; minimum, 32 ppm Mar. 21-31, 1944.

Hardness (1943-44, 1950-51, 1955-60): Maximum, 26 ppm Mar. 6, 1950; minimum, 10 ppm July 11-20, 1944, Sept. 1-4, 7-10, 1959.

Specific conductance (1955-60): Maximum daily, 136 micromhos Aug. 17, 1956; minimum daily, 28 micromhos Apr. 29, 1958.

Water temperatures (1943-44, 1950-51, 1955-60): Maximum, 88°F Aug. 24, 1959; minimum, freezing point on many days during winter months.

Sediment concentrations (1951-60): Maximum daily, 2,970 ppm May 26, 1952; minimum daily, 1 ppm Dec. 3, 1953.

Sediment loads (1951-60): Maximum daily, 108,000 tons Jan. 23, 1954; minimum, 2 tons Dec. 3, 1953.

REMARKS.--Records of suspended matter of composite samples from October 1943 to September 1944, October 1950 to September 1951 and records of specific conductance of suspended matter of composite samples from October 1943 to September 1944, October 1950 to September 1951 and records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (retained at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium-carbonate			
Oct. 1-31, 1959.....	7,169	14	0.00	3.5	1.3	3.4	1.8	20	2.2	0.5	0.1	1.6	45	14	0	49	7.4	10
Nov. 1-30.....	2,763	15	.08	3.5	1.3	3.8	1.4	22	1.8	1.0	.1	.9	46	14	0	51	7.4	15
Dec. 1-31.....	3,841	14	.06	3.9	1.7	3.5	1.4	18	1.5	3.2	.1	1.7	40	13	0	48	7.1	10
Jan. 1-31, 1960.....	3,970	13	.01	3.4	1.2	2.7	1.1	18	3.3	3.0	.0	1.0	41	14	0	46	7.0	10
Feb. 1-29.....	10,507	11	.03	2.7	1.2	2.7	1.0	14	1.8	1.5	.2	.8	39	12	1	39	6.2	12
Mar. 1-31.....	6,386	12	.03	3.1	1.3	3.0	.9	14	2.4	2.0	.0	.6	36	13	2	44	6.8	5
Apr. 1-30.....	7,337	12	.01	3.0	1.0	2.3	1.0	15	2.9	1.2	.1	1.2	33	12	0	44	6.9	10
May 1-31.....	4,688	13	.07	3.1	1.1	3.4	1.1	17	2.2	1.5	.0	1.2	39	12	0	42	7.0	5
June 1-30.....	2,997	14	.01	3.4	1.2	2.6	.9	18	1.2	3.0	.1	2.2	41	14	0	45	6.2	5
July 1-31.....	2,425	15	.07	4.1	1.0	4.2	1.4	21	1.7	2.5	.1	1.3	44	14	0	48	6.7	7
Aug. 1-31.....	3,031	13	.08	3.4	.9	4.7	1.6	18	2.2	2.0	.2	2.4	49	12	0	50	7.2	35
Sept. 1-30.....	2,401	13	.03	3.8	1.0	4.8	1.8	20	3.4	2.7	.1	2.4	43	14	0	52	7.1	10
Time-weighted average.....	4,740	13	0.04	3.4	1.1	3.4	1.3	18	2.2	2.0	0.1	1.7	41	13	0	47	--	11

a Calculated from determined constituents.

## QUALITY OF SURFACE WATERS, 1960

## PEE DEE RIVER BASIN--Continued

2-1165. YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	62	37		36	35	54	65	71	78	77	78
2	68	55	37		39	--	54	60	72	76	77	79
3	68	50	38		44	--	55	60	72	77	78	76
4	68	50	35		42	--	55	60	72	77	80	76
5	68	58	40		44	33	53	60	73	76	80	78
6	70	60	41		43	33	53	63	74	76	79	78
7	70	53	41		--	35	53	64	72	75	81	75
8	72	48	36		44	35	55	62	71	75	81	77
9	71	45	35		44	--	55	58	70	75	83	74
10	72	45	36		46	--	52	58	71	75	81	75
11	69	44	36		50	35	50	58	70	59	79	74
12	65	43	45		48	35	51	56	74	72	76	75
13	64	56	46		--	38	49	55	75	76	76	72
14	64	50	39		38	39	58	55	76	76	76	70
15	63	53	37		39	40	61	65	76	75	75	67
16	57	50	35		34	--	61	61	--	76	76	69
17	57	53	41		35	39	64	66	76	78	75	67
18	60	44	45		40	40	64	69	--	75	75	71
19	52	41	44		37	40	60	69	80	79	74	70
20	53	40	44		47	41	59	69	77	78	77	70
21	56	45	42		40	40	57	72	76	78	78	71
22	55	43	38		40	42	62	73	74	79	78	70
23	55	42	31		40	41	65	72	73	80	76	69
24	59	49	35		40	42	65	72	74	81	75	69
25	57	46	38		40	41	68	71	74	80	75	68
26	54	46	38		41	43	69	71	74	78	73	67
27	55	49	41		40	45	68	69	73	80	74	65
28	50	47	47		42	45	64	67	74	76	76	65
29	50	40	44		40	53	61	70	75	75	78	65
30	51	34	45		--	55	61	69	72	73	80	65
31	53	--	41		--	54	--	70	--	76	80	--
Average	61	48	40		41	40	58	65	74	77	77	72

## PEE DEE RIVER BASIN--Continued

2-1165. YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Suspended sediment, water year October 1959 to September 1960

Day	October			November			December		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1...	22,700	751	s44,400	3,850	144	1,500	2,650	48	343
2...	24,400	254	s17,200	3,550	120	1,150	2,460	60	399
3...	6,360	240	4,120	3,050	116	955	2,550	86	592
4...	4,160	215	2,410	2,850	129	993	2,550	28	193
5...	3,450	190	1,770	2,750	54	401	2,460	30	199
6...	2,950	120	956	2,650	70	501	2,410	44	286
7...	2,850	140	1,080	2,550	79	544	2,550	29	200
8...	3,250	149	s1,330	2,460	79	525	2,550	35	241
9...	6,250	651	s11,000	2,460	40	266	2,410	31	202
10...	12,900	955	s34,400	2,410	41	267	2,320	29	182
11...	25,000	799	s53,300	2,360	59	376	2,270	29	178
12...	19,200	467	s23,800	2,320	59	370	2,360	30	191
13...	6,250	385	6,500	2,320	60	376	3,350	122	1,100
14...	10,800	1,070	s30,200	2,270	62	380	3,750	141	1,430
15...	11,500	440	13,700	2,320	43	269	3,050	82	675
16...	6,360	240	4,120	2,270	48	294	2,750	62	460
17...	4,820	165	2,150	2,320	44	276	2,550	31	213
18...	4,050	140	1,530	2,270	38	233	2,950	84	s743
19...	3,650	110	1,080	2,220	33	198	12,200	736	s24,100
20...	3,250	95	834	2,170	30	176	16,600	560	s25,700
21...	2,950	95	757	2,080	30	168	7,160	301	s5,990
22...	2,850	75	577	2,120	30	172	4,930	225	2,990
23...	2,850	88	677	2,170	49	287	4,050	179	1,960
24...	4,490	298	s4,830	2,530	128	s821	3,550	150	1,440
25...	6,140	514	s8,730	5,810	308	4,830	3,250	114	1,000
26...	3,950	206	2,200	4,550	85	1,040	3,250	112	983
27...	3,350	112	1,010	3,250	115	1,010	3,050	81	667
28...	3,050	85	700	2,850	90	693	3,050	70	576
29...	2,750	71	527	3,150	63	536	3,150	115	978
30...	2,750	60	446	2,950	72	573	3,650	126	1,240
31...	2,950	106	844	--	--	--	3,250	90	790
Total	222,230	--	277,178	82,880	--	20,180	119,080	--	76,241
Day	January			February			March		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1...	2,950	75	597	20,800	749	s42,200	4,930	100	1,330
2...	2,750	60	446	10,000	350	9,450	4,600	100	1,240
3...	4,420	276	s4,030	5,480	310	4,590	4,820	100	1,300
4...	6,140	406	6,730	4,380	270	3,190	5,040	100	1,360
5...	4,600	218	2,710	6,410	480	s7,040	4,710	140	1,780
6...	4,490	243	2,950	22,700	1,210	s70,100	4,270	90	1,040
7...	6,250	280	4,730	23,300	451	s29,400	4,160	105	1,180
8...	8,130	216	4,740	7,640	330	6,810	4,160	70	786
9...	6,140	180	2,980	5,700	285	4,390	4,050	110	1,200
10...	4,820	160	2,080	5,040	520	7,080	4,160	120	1,350
11...	4,270	130	1,500	15,400	1,320	s53,700	4,380	120	1,420
12...	3,850	128	1,330	21,600	507	s30,700	4,160	140	1,570
13...	3,650	92	907	8,910	280	6,740	4,050	79	864
14...	3,450	70	652	7,520	345	7,000	4,160	79	887
15...	3,350	89	805	6,470	410	7,160	4,600	120	1,490
16...	3,150	100	850	5,700	190	2,920	5,040	140	1,910
17...	3,050	60	494	5,700	170	2,620	5,480	222	s3,340
18...	3,050	80	659	10,200	511	s17,100	8,130	351	s7,480
19...	3,050	72	593	23,400	660	41,700	8,780	230	5,450
20...	2,950	111	884	18,800	390	19,800	7,640	170	3,510
21...	2,750	120	891	8,000	420	9,070	7,880	275	5,850
22...	2,650	80	572	7,040	310	5,890	7,400	215	4,300
23...	2,460	150	996	6,580	340	6,040	8,130	290	6,370
24...	2,410	138	898	5,920	180	2,880	7,520	250	5,080
25...	2,550	178	1,230	6,140	170	2,820	7,160	195	3,770
26...	2,550	81	558	7,160	190	3,670	6,580	170	3,020
27...	2,550	65	448	6,250	155	2,620	6,140	175	2,900
28...	2,850	62	477	5,590	140	2,110	6,250	170	2,870
29...	2,950	75	597	5,260	120	1,700	6,360	180	3,080
30...	3,650	206	s2,280	--	--	--	11,500	640	s21,300
31...	11,200	1,273	s41,800	--	--	--	21,800	1,100	s64,100
Total	123,080	--	91,414	293,090	--	410,490	198,040	--	163,137

s Computed by subdividing day.

## PEE DEE RIVER BASIN--Continued

## 2-1165. YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Suspended sediment, water year October 1959 to September 1960--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...	18,600	453	s23,700	4,490	155	1,880	3,450	180	1,680
2...	9,040	330	8,050	4,710	165	2,100	3,150	150	1,280
3...	7,880	360	7,660	4,050	145	1,590	3,250	165	1,450
4...	14,400	694	s28,900	3,850	108	1,120	4,130	642	s7,300
5...	23,400	791	s49,100	3,750			3,750	250	2,530
6...	21,800	475	28,000	3,650	108	1,060	3,650	182	1,790
7...	9,860	295	7,850	3,550			3,550	210	2,240
8...	7,760	370	7,750	10,500	966	s29,900	3,950	338	3,240
9...	6,800	290	5,320	11,800	576	s19,700	3,150	190	1,620
10...	6,250	385	6,500	6,140	230	3,810	3,050	138	1,140
11...	5,810	190	2,980	4,820	225	2,930	2,850	105	808
12...	5,590	170	2,570	4,490	220	2,670	2,850		
13...	5,370	150	2,170	4,270			2,850		
14...	5,150	124	1,710	4,160	137	1,530	2,750	100	742
15...	5,040			3,950			2,550		
16...	4,820	98	1,280	3,750	120	1,220	2,650	90	644
17...	4,820			3,650	90	887	2,550	70	482
18...	4,820			3,550	83	784	2,360	80	510
19...	4,600			3,450			2,410	60	390
20...	4,380			3,350			2,410		
21...	4,380	82	984	3,250	80	709	2,950	180	1,430
22...	4,490			3,250			3,150	270	2,300
23...	4,380			3,250			3,250	210	1,840
24...	4,270	90	1,000	3,050	69	587	3,250	170	1,490
25...	4,160			3,150			2,950	145	1,150
26...	4,050			3,450	90	838	2,650	150	1,070
27...	4,050			7,060	1,060	s20,800	2,550		
28...	5,480	160	2,370	8,890	1,755	s43,200	2,650	92	646
29...	4,600	210	2,610	6,030	916	14,900	2,550		
30...	4,050	130	1,420	4,270	570	6,570	2,650		
31...	--	--	--	3,750	300	3,040	--	--	--
Total	220,100	--	203,130	145,330	--	170,381	89,910	--	42,326
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...	2,460	360	2,390	2,750	329	s2,660	2,650	769	s5,970
2...	2,750	110	817	2,410	330	2,150	2,030	215	1,180
3...	2,950	210	1,670	2,030	260	1,430	2,550	405	2,790
4...	2,550	190	1,310	2,320	294	1,840	2,120	155	887
5...	4,160	672	s12,100	2,030	290	1,590	1,940	110	576
6...	2,750	413	s3,170	1,980	165	882	1,760	86	403
7...	2,360	215	1,370	1,890	128	653	1,710		
8...	2,270	109	640	2,080	125	702	3,820	513	s7,690
9...	2,080			2,080	150	842	3,920	630	6,670
10...	2,170			1,940	150	786	2,850	500	3,850
11...	3,150	348	s3,720	2,080	215	1,210	3,150	330	2,810
12...	3,350	414	s3,830	2,410	200	1,300	3,350	390	3,530
13...	2,550	130	895	7,770	1,180	s19,800	2,650	320	2,290
14...	2,220	90	539	7,630	948	s20,000	2,120	155	887
15...	2,120	75	429	5,260	665	9,440	1,890	110	561
16...	1,940	53	272	4,490	863	s11,300	1,800	70	365
17...	1,940			4,330	966	s11,900	1,760		
18...	1,890			2,750	400	2,970	2,240	950	11,500
19...	1,890			2,550	195	1,340	4,480		
20...	1,840			2,270	130	797	3,150	800	6,800
21...	1,760	52	243	2,170	100	586	2,850	300	2,310
22...	1,710			3,100	561	s5,460	2,170	210	1,230
23...	1,620			6,530	1,100	s19,000	1,890	120	612
24...	1,840	150	842	3,850	580	6,030	1,840	90	447
25...	2,080			2,750	280	2,080	1,800		
26...	1,840	90	447	2,360	175	1,120	1,760	65	304
27...	3,040	544	s5,220	2,120	105	601	1,710		
28...	4,270	725	8,360	2,120			1,660		
29...	3,150	345	2,930	2,080	90	488	2,030	150	822
30...	2,360	240	1,530	1,940			2,360	220	1,400
31...	2,120	130	744	1,890	138	704	--	--	--
Total	75,180	--	56,565	93,960	--	130,750	72,020	--	67,929
Total discharge for year (cfs-days).....									
Total load for year (tons).....									
s Computed by subdividing day.									

Total discharge for year (cfs-days).....1,734,900

Total load for year (tons).....1,709,721

s Computed by subdividing day.

## PEE DEE RIVER BASIN--Continued

## 2-1165. YADKIN RIVER AT YADKIN COLLEGE, N. C.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
 (Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; M, mechanically dispersed;  
 N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250		0.500
X <sub>1</sub> , in native water; X <sub>2</sub> , pyrex 5; sieve; X <sub>3</sub> , visual accumulation tubes; X <sub>4</sub> , in distilled water															
Oct. 1, 1959...	11:30 a.m.	23,100		643	1,030	29	36	48	58	67	76	87	97	100	BCMSW
Oct. 11, 1959...	12 m.	25,800		714	1,720	47	53	63	70	76	80	87	95	99	BCMSW
Feb. 6, 1960...	3:10 p.m.	24,800		961	1,680	41	48	60	69	76	81	89	95	100	BCMSW
Feb. 12, 1960...	9:30 a.m.	24,400		511	802	35	44	53	60	66	71	79	89	98	BCMSW
Apr. 5, 1960...	7:10 p.m.	25,800		590	1,020	33	42	55	62	70	73	83	93	99	BCMS
Apr. 5, 1960...	7:10 p.m.	25,800		645	1,050	42	49	58	65	71	75	84	93	99	100

## PEE DEE RIVER BASIN--Continued

## 2-1180. SOUTH YADKIN RIVER NEAR MOCKSVILLE, N. C.

LOCATION --At gaging station on county highway bridge 1 mile upstream from Little Creek, 4 miles downstream from Fifth Creek, 4-1/2 miles upstream from Hunting Creek and 6-1/2 miles southwest of Mocksville, Davie County.

DRAINAGE AREA --313 square miles.

RECORDS AVAILABLE --Chemical analyses: October 1953 to September 1954.

Sediment records: January 1958 to September 1960.

EXTREMES, 1959-60 --Sediment concentrations: Maximum daily, 941 ppm Mar. 30; minimum daily, 14 ppm Nov. 23, Dec. 10.

Sediment loads: Maximum daily, 5,120 tons Feb. 6; minimum daily, 10 tons Nov. 23. 1,500 ppm Aug. 5, 1959; minimum daily, 5 ppm Nov. 23, 1958.

EXTRIMES, January 1958 to September, 1960 --Sediment concentrations: Maximum daily, 1,500 ppm Aug. 5, 1959; minimum daily, 5 ppm Nov. 23, 1958.

REMARKS --Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180° C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25° C)	pH	Color
														Calcium	Non- magne-carbon- ate			
July 19, 1960.....	312	17	0.05	3.5	1.6	2.6	1.4	24	1.0	2.5	0.2	0.7	43	16	0	46	7.1	25



## PEE DEE RIVER BASIN--Continued

2-1180. SOUTH YADKIN RIVER NEAR MOCKSVILLE, N. C.--Continued

Suspended sediment, water year October 1959 to September 1960

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...	2,290	350	s2,130	542	78	114	318	18	15
2...	3,120	139	s1,220	435	47	55	312	22	19
3...	745	38	s79	390	37	39	324	25	22
4...	480	45	58	360	30	29	324	20	17
5...	405	56	61	346	26	24	304	17	14
6...	349	121	114	338	26	24	298	18	14
7...	335	142	128	326	25	22	312	23	19
8...	523	200	s321	312	27	23	298	22	18
9...	1,140	491	s1,510	307	22	18	287	19	15
10...	995	357	s980	301	21	17	284	14	11
11...	1,200	291	s947	296	23	18	284	16	12
12...	1,100	182	s541	293	20	16	338	50	s53
13...	685	112	207	290	16	16	465	109	137
14...	2,260	598	s3,710	287	20	15	405	59	65
15...	2,460	194	s1,330	287	21	16	360	32	31
16...	1,160	91	285	284	19	15	340	22	20
17...	685	104	192	284	18	14	329	22	20
18...	575	89	138	282	18	14	442	136	s226
19...	480	60	78	273	18	13	1,320	818	s2,820
20...	420	49	56	273	18	13	1,920	234	1,210
21...	390	47	49	270	19	14	1,210	150	490
22...	405	45	49	270	18	13	635	118	202
23...	375	42	43	268	14	10	510	66	91
24...	495	96	128	394	184	s241	465	42	53
25...	510	94	129	700	182	s353	435	40	47
26...	420	73	83	435	61	72	435	40	47
27...	375	70	71	363	56	55	405	40	44
28...	346	70	65	390	63	66	390	42	44
29...	332	59	53	390	56	59	465	82	103
30...	329	66	59	335	32	29	435	88	103
31...	495	77	103	--	--	--	390	60	63
Total	25,879	--	14,917	10,321	--	1,427	15,039	--	6,048
Day	January			February			March		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1...	372	31	31	3,940	405	s4,220	605	40	65
2...	360	25	24	3,560	202	s2,010	575	30	47
3...	542	188	s301	1,120	123	s366	590	30	48
4...	590	302	s491	700	67	127	650	40	70
5...	480	76	98	1,530	495	s2,980	575	31	48
8...	605	72	118	3,100	617	s5,120	525	24	34
7...	900	142	345	3,260	286	s2,630	510	25	34
8...	965	156	406	1,140	109	s351	510	25	34
9...	715	112	216	745	78	157	525	28	40
10...	575	62	96	704	76	s149	542	36	53
11...	495	45	60	1,670	711	s3,240	542	33	48
12...	465	38	48	2,110	357	s2,030	525	28	40
13...	435	34	40	1,160	125	s410	525	31	44
14...	420	37	42	885	70	167	542	37	54
15...	405	38	42	745	62	125	590	40	64
18...	390	37	39	668	51	92	700	48	91
17...	372	27	27	715	65	125	792	118	s281
18...	390	30	32	1,520	257	s1,340	1,130	170	519
19...	405	34	37	2,660	322	2,310	1,100	91	270
20...	366	26	26	2,680	155	s1,170	965	75	195
21...	352	26	25	1,140	102	314	995	73	196
22...	338	18	16	930	69	173	965	73	190
23...	326	15	13	855	68	157	1,100	150	446
24...	329	17	15	760	115	236	900	72	175
25...	324	18	16	885	70	167	855	60	139
28...	324	15	13	965	79	206	745	50	101
27...	332	15	13	792	70	150	715	50	97
28...	390	30	32	700	48	91	700	50	94
29...	375	51	52	650	40	70	723	109	s255
30...	639	139	s252	--	--	--	1,740	941	s4,350
31...	2,370	536	s3,540	--	--	--	2,800	748	s5,090
Total	16,346	--	6,506	42,289	--	30,686	25,256	--	13,212

s Computed by subdividing day.

## PEE DEE RIVER BASIN--Continued

2-1180. SOUTH YADKIN RIVER NEAR MOCKSVILLE, N. C.--Continued

Suspended sediment, water year October 1959 to September 1960--Continued									
Day	April			May			June		
	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Tons per day
1...	3,600	298	s3,090	525	68	96	332	81	73
2...	1,360	134	s500	525	78	111	326	84	74
3...	1,050	137	s411	450	45	55	346	153	143
4...	1,570	667	2,830	435	35	41	352	120	114
5...	2,640	515	s3,630	420	34	39	390	116	122
6...	2,850	165	1,270	420	36	41	375	127	129
7...	1,640	130	576	405	37	40	343	104	96
8...	930	95	239	860	262	s674	324	77	67
9...	792	90	192	930	194	487	315	67	57
10...	715	70	135	605	82	134	307	61	51
11...	650	64	112	510	55	76	296	61	49
12...	635	59	101	480	50	65	293	68	54
13...	605	59	96	465	36	45	284	70	54
14...	590	54	86	450	40	49	279	57	43
15...	575	53	82	420	47	53	270	55	40
16...	560	47	71	405	40	44	262	51	36
17...	542	45	66	390	41	43	259	54	38
18...	525	45	64	390	41	43	254	53	36
19...	510	45	62	369	37	37	248	42	28
20...	495	38	51	363	37	38	266	93	s85
21...	495	35	47	363	37	36	542	919	s1,390
22...	542	37	54	358	39	38	375	345	349
23...	495	37	49	343	34	31	346	270	252
24...	480	42	54	335	33	30	335	204	185
25...	465	40	50	346	51	48	307	120	99
26...	450	36	44	356	46	44	293	94	74
27...	450	39	47	620	423	s709	310	85	71
28...	510	40	55	465	249	313	290	70	55
29...	480	40	52	375	155	157	276	64	48
30...	450	35	43	372	114	115	270	68	50
31...	--	--	--	349	90	85	--	--	--
Total	27,651	--	14,159	14,099	--	3,217	9,465	--	3,962

s Computed by subdividing day.

## PEE DEE RIVER BASIN--Continued

## 2-1180. SOUTH YADKIN RIVER NEAR MOCKSVILLE, N. C.--Continued

Particle-size analyses of suspended sediment, water year October 1959 to September 1960  
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; M, mechanically dispersed;  
N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000
N, in native water, F, pipet, S, sieve, V, visual accumulation tube, W, in distilled water															

## PEE DEE RIVER BASIN--Continued

2-12566.81. ROCKY RIVER AT GADDY, NEAR NORWOOD, N. C.

LOCATION.--At bridge on county road, 2 miles upstream from gaging station, half a mile downstream from Cribbs Creek, and 5-1/2 miles southwest of Norwood, Stanly County.

DRAINAGE AREA.--1,231 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1960.

Water temperatures: Maximum, 89°F July 22, 1956, June 30, 1959; minimum, freezing point Dec. 17, 18, 22, 1955.

EXTREMES: Maximum, 89°F July 22, 1956, June 30, 1959; minimum, 34°F Mar. 9.

Specific conductance: Maximum daily, 548 micromhos Sept. 28; minimum daily, 38 micromhos Jan. 31.

Water temperatures: Maximum, 88°F June 28; minimum, 34°F Mar. 9.

EXTREMES, 1955-60.--Dissolved solids: Maximum, 506 ppm Sept. 6-8, 1957; minimum, 42 ppm July 8, 10, 1958.

Hardness: Maximum, 60 ppm July 17-18, 1957; minimum, 12 ppm Jan. 31, 1960.

Specific conductance: Maximum daily, 1,000 micromhos Sept. 7, 1957; minimum daily, 38 micromhos Jan. 31, 1960.

Water temperatures: Maximum, 89°F July 22, 1956, June 30, 1959; minimum, freezing point Dec. 17, 18, 22, 1955.

REMARKS.--Records of suspended matter of composite samples and records of specific conductance of samples collected available in district office at Raleigh, N. C. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color	
													Calcium	Non-magnesium				
Oct. 1-2, 1959.....		12	0.06	5.6	1.9	4.5	2.6	24	4.7	4.5	0.2	1.7	a50	22	2	76	6.4	--
Oct. 3-10.....		18	.03	6.9	2.8	12	2.6	41	7.7	8.5	.1	1.8	89	29	0	122	7.6	20
Oct. 11-19.....		14	.01	5.8	2.6	6.6	2.2	28	5.9	5.5	.1	2.1	68	25	2	90	7.2	15
Oct. 20-31.....		16	.02	6.8	3.6	13	1.9	44	8.4	8.5	.2	1.5	88	32	0	130	7.0	10
Nov. 1-5, 10-11, 18, 25-30.....		17	.07	8.0	3.3	13	2.0	49	7.3	11	.3	.5	94	34	0	134	7.0	25
Nov. 6-9, 12-17, 19-24		19	.11	9.1	4.2	28	2.6	80	9.6	18	.2	.6	136	40	0	212	8.0	18
Dec. 1-10.....		19	.12	8.6	3.6	25	2.3	69	11	15	.2	1.3	132	36	0	199	7.9	15
Dec. 11-17.....		18	.07	8.7	4.4	31	2.5	80	8.9	18	.3	1.8	137	40	0	218	7.6	10
Dec. 18-23.....		13	.10	5.7	3.0	8.3	1.9	32	5.3	7.0	.1	1.5	78	26	0	103	7.6	35
Dec. 24-31.....		17	.13	7.5	3.3	12	1.8	44	5.6	9.5	.1	1.9	93	32	0	132	7.7	15
Jan. 1-2, 13-30, 1960		16	.10	7.7	2.8	19	1.8	53	6.7	14	.2	1.4	105	31	0	160	7.6	10
Jan. 3-12.....		12	.02	5.5	2.6	7.2	1.3	27	5.5	8.0	.2	1.7	68	25	2	96	7.3	15
Jan. 31.....		--	--	--	--	--	--	8	3.4	1.5	--	--	--	12	6	38	7.0	--
Feb. 1-9.....		11	.02	4.2	2.2	4.9	1.3	19	4.4	6.5	.1	1.5	47	20	3	72	7.2	10
Feb. 10-18.....		11	.02	4.3	2.2	6.7	1.0	21	4.7	7.5	.2	1.4	50	20	3	82	7.0	10
Feb. 19-23.....		12	.03	4.2	2.6	5.5	1.1	24	4.7	5.0	.2	1.8	a49	21	2	96	7.5	20
Feb. 24-29.....		13	.02	5.3	2.6	9.6	1.1	32	6.6	8.0	.3	1.4	66	24	0	98	7.4	10

Mar. 1-15, 1960.....	14	03	5.4	2.8	9.6	1.2	34	7.7	8.8	.2	4.4	a72	25	0	109	7.3	10
Mar. 16-21.....	--	--	5.0	1.8	3.7	1.6	20	8.6	3.0	--	--	--	20	4	66	6.3	--
Mar. 22-29.....	14	.01	4.6	3.2	10	3.5	35	7.6	7.0	.3	4.2	74	24	0	105	7.3	5
Mar. 30-31.....	18	.01	4.8	1.9	5.6	1.5	17	7.8	4.5	.0	4.6	a47	20	6	88	6.3	--
Apr. 1-7.....	15	.01	6.4	2.9	3.5	1.1	42	6.7	5.0	.2	2.9	83	28	0	122	7.7	8
Apr. 8-19.....	15	.01	6.4	2.9	14	1.4	46	6.7	10	.2	2.9	83	28	0	122	7.7	8
Apr. 20-30.....	15	.00	7.4	3.5	20	1.9	60	8.8	12	.2	3.8	106	33	0	160	7.1	8
May 1-6.....	17	.04	8.2	3.3	24	1.8	57	19	12	.1	2.2	a116	34	0	158	7.7	20
May 7-11.....	12	.07	5.5	1.8	7.4	1.0	25	7.6	5.0	.1	3.2	57	21	0	82	7.3	45
May 12-18.....	4.1	.01	7.1	2.8	24	5.6	73	6.4	13	.1	1.5	a100	30	0	160	7.6	5
May 19-31.....	18	.10	9.5	3.6	37	3.0	87	16	23	.2	1.1	155	38	0	255	7.3	10
June 1-4.....	--	--	--	--	--	--	91	30	26	--	--	--	41	0	288	7.2	--
June 5-8.....	--	--	--	--	--	--	36	16	6.0	--	.3	--	24	0	107	6.6	--
June 9-21.....	16	.02	9.8	4.8	48	3.2	106	19	28	.2	2.5	a182	44	0	280	7.3	15
June 22-30.....	13	.01	7.4	2.9	18	2.5	52	11	12	.2	2.5	98	30	0	151	7.0	15
July 1-5.....	--	--	9.6	3.7	35	2.9	76	14	22	--	--	--	40	0	228	7.0	--
July 6-15.....	7.3	.02	11	4.8	21	2.4	75	9.0	11	--	--	--	46	0	176	7.1	--
July 16-25.....	--	--	12	4.6	64	4.5	147	21	40	.2	1.7	231	49	0	385	7.1	20
July 26-28.....	--	--	5.6	1.8	12	2.7	29	9.2	10	--	--	--	22	0	115	6.7	--
July 29-31.....	--	--	7.4	2.9	25	3.0	57	11	18	--	--	--	30	0	181	6.9	--
Aug. 1-6.....	15	.12	9.1	3.4	38	4.1	87	15	24	.3	3.8	168	37	0	260	7.8	45
Aug. 7-11.....	15	.12	8.4	2.8	26	3.9	61	13	18	.2	5.9	a123	32	0	190	7.7	30
Aug. 12-15.....	11	.25	5.0	2.2	13	2.8	32	9.6	9.3	.1	5.0	a74	22	0	118	7.4	--
Aug. 16-20.....	16	.18	6.8	3.2	25	3.3	57	11	18	.2	3.1	a115	30	0	189	7.7	35
Aug. 21-22.....	16	.13	9.4	3.6	54	4.7	110	21	30	.3	2.7	a196	38	0	324	8.2	--
Aug. 23-27.....	14	.19	9.2	3.6	16	3.6	103	20.4	33	.2	2.7	a188	38	0	324	7.7	30
Aug. 28-31.....	14	.19	9.2	3.6	16	3.6	103	20.4	33	.2	2.7	a188	38	0	324	7.7	30
Sept. 1-3.....	11	.16	5.4	1.5	18	3.5	38	10	14	.1	4.7	a87	20	0	133	7.2	--
Sept. 4-11.....	13	.06	10	3.6	48	4.9	107	15	32	.2	2.9	192	40	0	310	8.0	30
Sept. 12-30.....	12	.03	12	4.7	70	5.9	143	18	48	.3	2.2	246	48	0	410	8.2	25
Time-weighted average.....	14	0.06	7.6	3.3	23	2.5	61	10	16	0.2	2.1	115	32	0	176	--	17

a Calculated from determined constituents.

## PEE DEE RIVER BASIN--Continued

2-1256.81. ROCKY RIVER AT GADDY NEAR NORWOOD, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	60	44	41	44	43	59	68	80	81	82	84
2	71	60	44	40	45	36	58	66	77	84	85	80
3	72	56	47	46	44	35	59	68	77	84	87	81
4	73	57	48	45	44	46	60	69	80	86	77	82
5	73	62	48	44	47	37	57	69	78	85	78	83
6	74	65	46	44	48	37	57	71	76	82	77	84
7	72	52	43	44	46	37	59	68	75	81	85	83
8	72	55	41	45	45	39	61	61	76	82	85	83
9	74	54	44	45	46	34	62	62	75	82	86	84
10	73	52	43	45	51	38	58	62	75	81	85	84
11	73	50	44	46	53	38	56	61	77	82	87	78
12	70	53	47	47	49	38	60	60	80	82	77	81
13	68	54	49	51	41	40	63	62	82	85	79	79
14	67	56	47	52	39	42	66	63	83	83	82	76
15	64	55	45	56	40	42	68	67	83	83	81	78
16	62	56	46	53	42	43	70	72	83	84	82	75
17	63	57	47	49	45	39	71	74	85	84	80	77
18	64	50	51	50	45	40	69	77	83	84	80	79
19	61	47	50	46	43	44	68	77	83	82	80	80
20	60	47	46	44	47	43	68	77	83	85	82	82
21	60	48	40	42	49	44	69	80	79	84	82	80
22	59	52	42	39	45	46	72	80	73	84	82	76
23	60	52	40	38	47	47	73	79	81	83	76	77
24	60	53	40	37	45	48	75	80	85	81	77	76
25	59	54	42	--	45	47	76	81	80	83	80	75
26	57	54	45	38	46	53	78	81	77	82	76	75
27	55	51	47	39	45	54	75	78	76	81	79	74
28	57	53	50	42	45	58	67	77	88	80	83	70
29	54	48	50	45	47	48	79	81	81	76	86	70
30	55	45	46	46	--	59	67	80	84	75	84	74
31	58	--	45	44	--	58	--	80	--	74	86	--
Average	66	54	45	45	46	46	66	71	80	82	82	79

## PEE DEE RIVER BASIN--Continued

2-1290. PEE DEE RIVER NEAR ROCKINGHAM, N. C.

LOCATION --At gaging station at bridge on U. S. Highway 74, 2.5 miles upstream from Falling Creek, 3.3 miles downstream from Blewett Falls Hydroelectric plant and 6 miles west of Rockingham, Richmond County.

DRAINAGE AREA --6,870 square miles, approximately.

RECORDS AVAILABLE --Chemical analyses: October 1946 to September 1960.

Water temperatures: October 1946 to September 1960.

EXTREMES, 1959-60. --Dissolved solids: Maximum, 67 ppm Nov. 1-16, 18-30; minimum, 44 ppm May 1-31.

Hardness: Maximum, 24 ppm Nov. 17; minimum, 16 ppm Feb. 1-29, Apr. 1-30.

Water conductance: Maximum, 152 micromhos Nov. 17; minimum, 88 micromhos Nov. 1-7.

Specific conductance: Maximum, 82 micromhos Nov. 17; minimum, 46 micromhos Feb. 17-19.

Water turbidity: Maximum, 28 mg/l. Nov. 17, 1959; minimum, 1-31, 1959.

Hardness: Maximum, 24 ppm Mar. 21-31, 1948; Nov. 17, 1959; minimum, 11 ppm Feb. 1-10, 1958.

Specific conductance (1957-60): Maximum daily, 152 micromhos Nov. 17, 1959; minimum daily, 46 micromhos Feb. 17-19, 1948.

Water temperatures: Maximum, 84°F Aug. 16-19, 1958, Aug. 31, Sept. 1, 1959; minimum, 33°F Feb. 13, 1948.

REMARKS --Records of suspended matter of composite samples from October 1946 to September 1948, October 1957 to September 1958 and records of specific conductance of samples collected from October 1957 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-31, 1959.....	18,350	12	0.08	4.2	2.1	5.2	2.2	25	3.8	3.5	0.1	1.5	62	19	0	68	7.1	40
Nov. 1-16, 18-30.....	7,472	13	.07	4.8	2.2	5.0	2.0	27	2.8	3.5	.2	.6	67	21	0	71	7.0	35
Nov. 17.....	6,280	--	--	--	--	--	--	31	2.2	28	--	--	--	67	24	0	152	7.2
Dec. 1-31.....	8,634	14	.03	5.2	1.8	6.3	2.0	29	2.3	4.2	.1	1.6	54	20	0	78	7.1	15
Jan. 1-31, 1960.....	13,290	--	.08	4.8	1.6	6.7	1.8	29	2.8	5.8	.1	1.9	51	18	0	78	7.4	20
Feb. 1-29.....	36,040	10	.12	3.8	1.5	3.2	1.2	17	3.7	2.2	.0	1.3	49	16	2	52	7.1	10
Mar. 1-31.....	19,160	12	.03	3.9	1.7	3.8	.9	20	5.1	3.0	.0	1.0	52	17	1	62	7.4	35
Apr. 1-30.....	20,480	11	.12	4.0	1.5	4.5	1.1	20	6.6	1.5	.1	1.5	45	16	0	56	6.4	30
May 1-31.....	9,032	11	.06	4.1	1.7	5.3	1.2	24	3.9	2.5	.0	1.2	44	17	0	61	6.7	10
June 1-30.....	6,241	11	.01	5.0	1.5	6.0	1.1	27	7.4	3.5	.1	2.3	49	18	0	65	6.5	10
July 1-31.....	4,420	12	.06	4.6	1.8	7.4	1.6	30	4.3	4.5	.1	1.6	57	19	0	74	7.2	15
Aug. 1-31.....	5,769	12	.04	5.0	1.5	8.3	1.8	29	4.0	5.0	.1	1.1	54	18	0	76	7.1	15
Sept. 1-30.....	5,220	11	.03	4.4	2.1	7.5	1.8	27	1.0	10	.1	.4	52	20	0	69	6.9	10
Time-weighted average.....	12,747	12	0.06	4.5	1.7	5.8	1.6	25	4.0	4.2	0.1	1.3	53	18	0	68	--	20

## PEE DEE RIVER BASIN--Continued

2-1290. PEE DEE RIVER NEAR ROCKINGHAM, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	63	52	46	42	41	52	63	75	77	80	82
2	74	62	52	45	43	41	53	63	74	77	80	82
3	74	62	51	45	43	39	54	64	73	77	80	82
4	74	61	51	45	43	39	55	64	73	77	80	82
5	74	61	50	45	44	38	55	65	73	77	79	82
6	74	61	50	45	44	38	55	65	73	78	79	81
7	74	62	50	44	44	38	56	65	73	78	79	81
8	74	61	50	44	45	38	56	65	73	79	79	81
9	74	61	49	44	45	38	56	64	73	79	79	81
10	73	60	49	44	45	38	56	63	73	79	79	80
11	73	58	48	44	46	38	56	62	74	80	79	80
12	73	57	48	44	46	39	57	65	74	80	78	80
13	73	57	48	45	45	39	57	65	74	80	77	80
14	72	57	48	45	44	41	57	66	74	80	76	80
15	72	57	48	46	43	41	58	66	74	80	76	80
16	71	57	--	46	43	41	58	66	74	79	77	80
17	68	57	48	46	43	41	59	68	75	79	79	79
18	68	57	48	45	43	41	59	69	75	79	79	79
19	68	56	48	45	43	42	60	69	76	80	79	78
20	68	56	47	45	43	42	60	69	76	80	80	78
21	67	56	47	45	44	42	60	69	76	79	80	78
22	66	56	47	44	44	42	60	70	76	79	80	78
23	66	55	47	44	43	43	60	71	77	79	81	78
24	65	55	46	44	43	44	61	71	77	79	81	78
25	65	54	46	44	42	44	61	71	77	79	81	77
26	64	54	46	43	43	45	62	72	77	79	81	77
27	64	54	46	43	42	45	62	72	78	79	81	77
28	64	54	46	43	42	46	63	72	78	79	82	76
29	63	53	46	42	42	47	63	72	78	80	82	76
30	63	52	46	42	--	49	64	73	78	80	82	76
31	63	--	46	41	--	51	--	74	--	80	82	--
Average	70	58	48	44	44	42	58	68	75	79	80	79



PEE DEE RIVER BASIN--Continued  
2-1320. LYNCHES RIVER AT EFFINGHAM, S. C.

LOCATION.--Temperature recorder at gaging station on left bank at downstream side of bridge on U.S. Highway 52, 75 feet upstream from Atlantic Coast line Railroad bridge, and 1 mile south of Effingham, Florence County.  
DRAINAGE AREA.--1,030 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1952.

Water temperatures: October 1954 to September 1960.

EXTREMES, 1954-60.--Water temperatures: Maximum, 89° F Aug. 10, 13; minimum, 33° F Mar. 12.  
ESTIMES, 1954-60.--Water temperatures: Maximum, 89° F Aug. 10, 13, 1960; minimum, 33° F Mar. 12, 1960.

Temperature (°F) of water, water year October 1959 to September 1960  
(Continuous ethyl alcohol-actuated thermometer)

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	72	72	72	72	72	71	72	76	76	76	72	71	69	63	62	63	64	62	60	61	63	63	62	59	58	56	57	60	67		
Maximum	72	71	70	69	70	69	70	71	71	72	75	72	69	69	63	62	61	62	61	60	60	60	61	62	59	57	56	56	57	63			
Minimum	63	63	62	59	60	64	64	56	54	54	52	54	55	58	59	59	57	51	48	49	54	54	55	55	53	55	54	49	---	---	56		
November	60	61	58	56	58	60	56	54	53	51	50	50	53	55	58	57	57	51	48	46	48	49	52	55	53	50	50	53	49	44	---	53	
Maximum	44	44	47	49	49	48	47	45	45	45	47	49	51	51	48	49	51	57	54	49	45	43	40	44	44	44	48	52	52	51	47	48	
Minimum	41	42	44	46	47	47	45	42	42	44	44	47	49	48	45	46	49	51	54	49	45	42	40	40	40	43	44	46	51	47	43	45	
December	46	43	50	50	48	46	46	46	46	48	50	50	52	52	55	55	53	51	50	48	44	41	38	37	38	39	40	43	45	45	45	44	
Maximum	43	42	43	48	46	46	46	44	43	45	47	48	48	50	52	53	51	50	48	44	41	38	36	35	35	35	38	40	43	45	45	44	
Minimum	46	48	46	46	48	49	49	49	49	52	53	54	52	45	44	45	46	47	46	45	44	44	44	45	47	49	48	47	49	---	---	48	
January	44	45	46	44	44	48	47	46	46	49	52	50	45	43	41	42	43	46	44	42	42	43	42	42	45	46	46	46	46	---	---	45	
February	48	45	40	38	38	37	39	39	36	36	35	39	40	41	43	45	47	47	47	48	47	50	51	54	56	59	62	62	65	62	65	43	
Maximum	45	40	38	36	36	35	35	36	35	34	33	34	36	40	40	40	43	46	44	43	44	45	44	45	49	50	52	57	59	62	61	43	
Minimum	66	66	66	66	65	63	65	66	67	66	61	62	64	67	68	70	72	71	70	69	68	71	74	75	76	77	76	73	67	66	---	68	
Maximum	62	64	64	65	62	60	61	62	65	61	58	57	59	62	65	67	69	66	65	64	66	69	72	72	73	76	76	62	63	---	65		
Minimum	68	68	66	67	68	69	68	67	67	66	64	66	65	64	67	69	72	75	76	78	80	81	81	81	80	80	80	81	82	80	81	73	
May	85	85	83	82	84	85	86	83	86	83	83	82	83	82	80	83	85	82	79	75	73	75	75	77	77	77	76	77	75	68	73	68	
June	79	78	76	78	80	82	81	80	78	75	75	78	82	83	84	83	83	83	82	81	80	83	84	82	84	82	77	76	80	84	---	81	
Maximum	74	75	74	74	75	76	78	77	74	71	69	73	76	78	79	80	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	76	
Minimum	85	84	87	87	86	85	79	80	81	81	82	83	85	86	84	85	86	84	83	87	86	85	84	86	87	85	84	86	85	84	76	84	
July	81	80	81	82	83	79	78	77	78	79	78	80	82	81	80	80	80	82	81	81	82	82	81	81	82	82	82	82	82	82	82	75	80
Maximum	78	79	82	83	84	87	86	89	87	88	89	88	88	85	83	81	79	77	76	78	80	83	82	81	80	78	77	80	81	81	81	83	
Minimum	74	77	76	80	81	81	82	84	85	85	85	85	84	84	81	79	77	76	76	78	80	79	78	78	78	76	75	77	78	78	79	79	
August	82	81	82	81	80	80	80	80	81	82	81	77	78	76	73	74	74	76	78	78	76	76	76	74	72	71	70	69	69	71	---	74	
Maximum	78	78	77	77	76	76	77	77	78	78	76	74	74	72	71	71	72	72	74	76	76	76	76	74	72	71	70	69	69	71	---	74	
Minimum	78	78	77	77	76	76	77	77	78	78	76	74	74	72	71	71	72	72	74	76	76	76	76	74	72	71	70	69	69	71	---	74	

## PEE DEE RIVER BASIN--Continued

## 2-1335. DROWNING CREEK NEAR HOFFMAN, N. C.

LOCATION.--Temperature recorder at gaging station 10 feet downstream from bridge on U. S. Highway 1, three-fourths of a mile downstream from Deep Creek, 1 mile upstream from Seaboard Air Line Railway bridge, and 4 miles northeast of Hoffman, Richmond County.

DRAINAGE AREA.--178 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.

Water temperatures: October 1953 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 76°F on several days during June, July and August; minimum, 33°F on several days during March.

EXTREMES, 1953-60.--Water temperatures: Maximum, 77°F Aug. 21, 1955, Aug. 1, 2, 1958; minimum, 33°F on several days during March 1960.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
															Calcium	Non-magnesium			
Mar. 20, 1960.....	651	2.6	0.03	1.1	0.2	1.8	0.7	3	2.4	2.0	0.1	0.4	12	4	4	2	22	5.4	20
Aug. 28.....	132	6.7	.11	.6	.3	2.3	.3	3	.6	1.5	.4	.5	14	2	2	0	20	5.1	40

## PEE DEE RIVER BASIN--Continued

2-1335, DROWNING CREEK NEAR HOFFMAN, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960  
Continuous ethyl alcohol-actuated thermograph/

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

## SANTEE RIVER BASIN

2-1435. INDIAN CREEK NEAR LABORATORY, N. C.

LOCATION.--Temperature recorder at gaging station 250 feet upstream from remains of Rudisill Mill dam, half a mile upstream from highway bridge, 1-1/2 miles upstream from mouth, 1-1/2 miles south of Laboratory, Lincoln County, and 3-1/2 miles south of Lincolnton.

DRAINAGE AREA.--Agricultural land, 1,000 acres.

RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1952.

Water temperatures: January 1953 to September 1960.

EXTREMES, 1959-60.--Water temperatures: Maximum, 76°F Aug. 10; minimum, 34°F Mar. 3, 4.

EXTREMES, 1953-60.--Water temperatures: Maximum, 84°F Aug. 1, 2, 5, 1953; minimum, 33°F on several days during winter months.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium	Non- carbonate			
Dec. 21, 1959.....	121	15	0.09	3.4	1.6	2.5	1.7	15	0.7	4.5	0.0	2.1	39	15	3	47	7.2	25
July 8, 1960.....	58.9	16	.03	3.8	1.8	1.8	1.4	24	1.1	2.0	.1	.3	440	16	0	46	7.0	10

<sup>a</sup> Calculated from determined constituents.

## SANTÉE RIVER BASIN--Continued

2-1435. INDIAN CREEK NEAR LABORATORY, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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

SANTÉE RIVER BASIN--Continued  
2-1460. CATAWBA RIVER NEAR ROCK HILL, S.C.

LOCATION.--At gaging station on right bank at downstream side of bridge on U.S. Highway 21, 3.5 miles downstream from Catawba Dam, 5 miles northeast of Rock Hill, York County, and 7.5 miles upstream from Sugar Creek.

DRAINAGE AREA.--3,050 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Col- or
													Residue at 180°C	Calc- ulated	Calcium, magne- carbon- sum ate	Non-			
Oct. 15, 1959.		9.2	0.03	3.4	0.8	2.1	2.9	14	2.7	3.0	0.11	1.2			12	0	43	6.6	20
Nov. 12.....		12	.03	4.1	1.2	4.3	3.6	20	2.7	4.0	.01	.7			14	0	44	6.6	12
Dec. 16.....		12	.01	3.4	1.7	5.2	1.6	20	4.2	4.0	.01	.8			16	0	61	6.5	15
Jan. 15, 1960.		12	.01	3.6	1.7	5.2	1.6	21	4.5	4.5	.11	.9			16	0	61	7.0	5
Feb. 15.....			.01	2.7	1.2	2.7	1.6	14	3.8	2.5	.11	1.0			12	0	40	6.5	10
Mar. 18.....		9.5	.00	2.7	1.8	3.2	1.3	17	5.0	2.8	.21	1.1			14	0	48	6.9	5
Apr. 14.....		10	.06	3.0	1.9	2.9	1.2	19	5.0	2.0	.01	1.2			19	2	42	7.0	8
May 16.....		10	.13	3.1	1.8	4.0	1.4	18	4.3	4.5	.01	1.3			15	0	56	6.8	5
June 15.....			.04	4.2	1.5	4.5	1.2	20	6.2	3.0	.01	.6			16	0	61	6.6	5
July 14.....		13	.01	3.9	1.6	5.6	1.1	22	3.2	3.5	.11	1.1			16	0	64	6.7	5
Aug. 15.....		15	.07	4.1	1.6	4.7	1.9	23	5.9	3.0	.01	.3			16	0	62	6.8	10
Sept. 15.....		18	.02	3.7	1.5	5.4	1.3	22	5.0	3.5	.11	.2			15	0	59	6.5	5

SANTÉE RIVER BASIN--Continued  
2-1483.3. WATEREE RIVER NEAR EASTOVER, S.C.

LOCATION.--At bridge on U.S. Highway 76, 400 feet downstream from Colonels Creek and 6.1 miles northeast of Eastover, Richland County.  
DRAINAGE AREA.--5,540 square miles, approximately.  
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Col- or
													Residue at 180°C	Calculated	Calcium, magnesium	Non-carbonate			
Oct. 21, 1959.	11,700	11	0.03	4.1	1.9	7.5	1.7	28	5.1	9.3	0.1	0.7	0.00	52	18	0	76	7.3	15
Nov. 2, 1959.	8,590	11	.07	4.2	1.9	4.7	2.0	28	3.1	5.6	.2	.7	.00	45	18	0	66	6.9	25
Dec. 1, 1959.	7,010	15	.10	4.6	2.0	7.4	1.9	28	2.5	5.6	.2	.7	.00	45	20	0	79	6.8	25
Jan. 28, 1960.	7,180	12	.03	4.2	2.2	6.2	1.4	23	4.6	5.7	.1	.9	.00	53	19	1	66	6.7	20
Mar. 24, 1960.	13,000	20	.03	3.9	2.0	4.8	1.1	20	4.0	5.0	.0	.9	.00	51	18	2	62	6.6	5
Apr. 26, 1960.	8,070	9.8	.01	2.8	1.6	4.4	1.3	19	3.1	2.8	.1	1.6	.00	41	14	0	56	6.6	10
May 17, 1960.	8,240	11	.03	4.2	1.7	6.2	1.5	25	4.3	4.5	.1	1.1	.00	51	17	0	73	6.9	5
June 13, 1960.	1,820	9.8	.07	4.5	1.9	8.0	1.3	27	6.4	3.5	.1	.5	.00	44	19	0	73	7.0	10
July 31, 1960.	8,890	12	.01	4.1	2.1	8.1	1.3	36	8.0	5.5	.2	.4	.00	67	20	0	88	7.1	5
Aug. 21, 1960.	8,890	12	.01	4.4	2.1	9.8	1.4	36	9.8	6.0	.2	.1	.00	67	20	0	88	7.1	5
Sept. 16, 1960.	3,270	13	.01	4.6	1.8	8.9	1.4	28	7.4	6.0	.2	.1	.00	58	19	0	82	7.1	5

## SANTEE RIVER BASIN--Continued

2-1510. SECOND BROAD RIVER AT CLIFFSIDE, N. C.

LOCATION--At gaging station a quarter of a mile downstream from dam of Cliffside Mills, at Cliffside, Rutherford County, and 1-1/2 miles upstream from mouth of AREA--211 square miles.

RECORDS AVAILABLE--Chemical analyses:

Water temperatures: October 1948 to September 1949, October 1956 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 61 ppm Nov. 1-30; minimum, 38 ppm Apr. 1-30.

Hardness: Maximum, 16 ppm Nov. 1-30, Jan. 1-31, June 1-30, July 1-31, Aug. 1-31; minimum 8 ppm Mar. 31.

Specific conductance: Maximum daily, 89 micromhos Aug. 6; minimum daily, 26 micromhos Feb. 6, Mar. 31.

Water temperatures: Maximum, 74°F July 26, Aug. 4, 5, 10, Sept. 3; minimum, freezing point Jan. 22.

EXTREMES, 1948-49. 1950-60.--Dissolved solids: Maximum, 77 ppm Oct. 11-20, 1956; minimum, 36 ppm Nov. 21-30, 1948.

Hardness: Maximum, 27 ppm Oct. 21-31, 1957; minimum, 6 ppm June 2, 1956; minimum daily, 26 micromhos Feb. 6, 1960.

Specific conductance: Maximum, 119 micromhos July 23, 1956; minimum, 33 micromhos Feb. 6, 1960.

Water temperatures: Maximum 80°F June 26-28, July 28, 1949; minimum, freezing point Feb. 17-19, 1958, Jan. 22, 1960.

REMARKS.--Records of suspended matter of composite samples from October 1948 to September 1949, October 1956 to September 1958 and records of specific conductance of samples collected from October 1956 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-31, 1959.....	719	15	0.00	3.4	1.4	4.5	1.5	22	2.4	1.5	0.1	1.2	44	14	0	56	7.5	10
Nov. 1-30.....	310	17	.04	4.3	1.4	5.1	1.4	25	1.5	4.5	.1	1.7	61	16	0	63	7.0	10
Dec. 1-31.....	369	16	.02	4.0	1.0	5.4	1.3	22	1.3	3.3	.0	1.5	47	14	0	60	7.3	5
Jan. 1-31, 1960.....	386	17	.03	3.4	1.7	3.9	1.0	12	1.4	2.8	.1	1.2	39	15	0	48	7.1	10
Feb. 1-28.....	999	13	.03	3.3	1.1	3.2	1.0	12	2.3	2.8	.1	1.2	39	15	0	48	7.1	10
Mar. 1-30.....	692	14	.06	3.0	1.5	4.3	.9	18	4.0	2.5	.0	1.3	41	14	0	50	7.0	7
Mar. 31.....	4,630	--	--	--	--	--	--	9	4.4	.5	--	--	--	8	1	26	7.0	--
Apr. 1-30.....	753	16	.00	3.3	1.2	3.6	1.0	19	2.5	2.5	.0	1.3	40	13	0	49	7.2	10
May 1-31.....	411	16	.01	3.8	1.1	5.2	1.0	22	4.2	3.5	.0	.8	48	14	0	57	6.6	10
June 1-30.....	328	17	.01	3.9	1.3	6.1	.8	21	2.4	5.5	.1	2.1	49	16	0	61	6.3	5
July 1-31.....	247	18	.01	3.7	1.4	6.9	1.2	23	3.8	4.3	.0	1.6	45	16	0	55	7.5	10
Aug. 1-30.....	297	17	.03	3.6	1.5	6.2	1.4	24	4.6	4.4	.1	1.8	53	15	0	67	7.5	10
Sept. 1-30.....	294	15	.04	3.9	1.3	7.3	1.4	24	4.6	4.4	.1	1.8	53	15	0	68	6.7	10
Time-weighted average.....	491	16	0.04	3.7	1.3	5.5	1.2	22	3.1	3.7	0.0	1.3	49	15	0	59	--	9

a Calculated from determined constituents.



## SANTÉE RIVER BASIN--Continued

2-1510. SECOND BROAD RIVER AT CLIFFSIDE, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	55	38	40	45	45	54	60	67	73	71	71
2	67	58	38	39	47	39	54	60	64	71	72	70
3	66	53	44	43	45	33	53	59	68	73	72	74
4	65	53	44	44	43	33	54	58	69	73	74	72
5	66	56	45	43	43	35	54	59	67	73	74	72
6	67	60	44	44	43	39	50	60	69	72	73	71
7	67	58	42	44	45	37	54	60	68	72	73	72
8	67	50	39	44	44	40	56	58	68	71	73	70
9	69	47	40	43	43	37	56	59	66	71	72	70
10	68	46	42	42	48	38	53	56	66	70	74	70
11	67	48	44	45	49	41	50	58	66	68	73	70
12	65	47	46	47	43	43	52	55	70	69	71	70
13	63	49	48	50	47	39	56	53	70	70	70	68
14	64	47	45	52	38	40	62	57	70	72	72	64
15	63	54	43	55	39	43	60	55	70	72	71	62
16	60	46	43	50	40	39	59	60	70	73	72	64
17	61	47	46	48	43	40	64	63	70	69	70	66
18	62	51	50	45	44	43	63	69	69	70	70	65
19	60	46	50	44	40	41	58	67	72	70	70	68
20	58	39	45	39	42	43	58	66	71	72	70	70
21	57	44	44	39	43	41	59	70	70	70	70	68
22	58	45	43	31	44	42	62	70	70	72	72	69
23	58	47	39	33	45	44	64	66	68	72	72	68
24	59	50	39	36	43	45	63	66	70	72	71	65
25	57	50	40	34	45	48	64	66	72	73	71	65
26	52	46	44	36	45	45	66	67	69	74	70	64
27	55	47	46	39	44	51	66	69	65	73	72	62
28	54	51	49	42	44	52	62	63	67	72	70	61
29	53	46	49	46	44	54	60	63	71	70	72	61
30	52	39	44	46	--	55	60	64	72	68	73	61
31	54	--	43	44	--	53	--	68	--	70	73	--
Average	61	49	44	43	44	42	58	62	69	71	72	67

## SANTEE RIVER BASIN--Continued

2-1515. BROAD RIVER NEAR BOILING SPRINGS, N. C.

LOCATION.--At gaging station half a mile upstream from Sandy Run Creek, 3 miles downstream from Second Broad River, and 3-1/2 miles southwest of Boiling Springs, N. C. 664 square miles.

DRAINAGE AREA, 664 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1956 to September 1960.

Water temperatures: October 1945 to September 1946, October 1956 to September 1960.

EXTRIMES, 1959-60.--Dissolved solids: Maximum, 43 ppm Aug. 1-31; minimum, 29 ppm Feb. 1-29.

Hardness: Maximum, 12 ppm July 1-31, Sept. 1-30; minimum, 8 ppm Feb. 1-29.

Specific conductance: Maximum daily, 55 micromhos Aug. 26; minimum daily, 22 micromhos Mar. 30.

Water temperatures: Maximum, 83°F Aug. 7; minimum, freezing point Mar. 3, 1957; minimum, 26 ppm Apr. 21-30, 1958.

EXTRIMES, 1959-60.--Dissolved solids: Maximum, 87 ppm June 10-19, 1957; minimum, 26 ppm Apr. 21-30, 1958.

Hardness: Maximum, 12 ppm July 1-31, Sept. 1-30; minimum, 8 ppm Feb. 1-29.

Specific conductance: Maximum daily, 55 micromhos Aug. 26; minimum daily, 22 micromhos Mar. 30.

Water temperatures: Maximum, 85°F Aug. 7, 1958; minimum, freezing point Feb. 3, 4, 1946; Feb. 18, 19, 1958, Mar. 3, 1960.

REMARKS.--Records of suspended matter of composite samples from October 1945 to September 1946, October 1956 to September 1958 and records of specific conductance of samples collected from October 1956 to September 1960 available in district office at Raleigh, N. C. Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
														sum	ate			
Oct. 1-31, 1959.....	3,236	11	0.03	2.6	0.5	2.0	1.2	14	1.5	1.3	0.1	0.7	33	9	0	32	7.4	20
Nov. 1-30.....	1,881	14	.07	2.8	.6	2.6	1.0	15	.6	2.0	.1	1.1	33	10	0	36	6.6	10
Dec. 1-31.....	1,684	13	.07	2.8	.5	2.5	1.0	15	.3	1.5	.0	1.1	30	9	0	38	7.2	25
Jan. 1-31, 1960.....	1,965	13	.07	2.8	.5	2.5	1.0	15	.3	1.5	.0	1.1	30	9	0	36	7.1	15
Feb. 1-29.....	4,304	12	.01	2.3	.4	1.7	.8	12	2.9	1.0	.0	.8	29	8	0	28	7.2	5
Mar. 1-31.....	3,234	13	.00	2.4	1.1	2.0	.7	12	.9	.5	.1	3.7	33	10	0	32	7.2	5
Apr. 1-30.....	3,357	13	.00	2.4	.9	1.6	.7	13	2.0	1.0	.1	3.2	32	10	0	31	7.2	5
May 1-31.....	1,881	15	.01	2.4	1.0	2.2	.7	16	2.1	1.5	.1	3.0	31	10	0	35	6.6	8
June 1-30.....	1,260	14	.04	2.3	1.0	3.2	1.1	16	2.5	2.0	.9	2.5	26	12	0	40	6.3	20
July 1-31.....	1,268	14	.04	2.3	1.1	4.3	.9	20	2.0	2.0	.1	1.4	43	10	0	44	7.2	10
Aug. 1-31.....	1,294	15	.01	3.2	1.4	4.3	.9	20	2.0	2.0	.1	1.4	43	10	0	40	7.1	20
Sept. 1-30.....	1,357	14	.04	3.4	1.0	3.7	1.0	17	2.4	1.3	.0	.9	39	12	0	40	7.1	20
Time-weighted average.....	2,214	14	0.03	2.8	0.8	2.6	0.9	16	1.4	1.5	0.1	1.6	34	10	0	36	--	12

Chemical analyses, in parts per million, water year October 1959 to September 1960

## SANTÉE RIVER BASIN--Continued

2-1515. BROAD RIVER NEAR BOILING SPRINGS, N. C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	64	45	--	45	43	54	62	75	80	78	78
2	68	64	45	43	46	42	55	64	76	79	80	77
3	68	63	44	43	46	32	55	64	70	80	81	76
4	69	63	45	43	45	38	54	65	70	79	81	75
5	69	62	45	43	43	37	54	64	73	80	82	76
6	69	61	44	44	44	36	55	63	73	79	82	77
7	69	61	43	44	44	38	55	63	73	79	83	76
8	70	60	44	44	45	38	54	61	74	78	82	78
9	69	60	45	45	46	37	54	59	75	76	80	77
10	69	58	46	46	47	37	55	60	75	78	80	76
11	68	56	47	46	48	38	54	60	74	77	79	75
12	67	55	48	47	46	38	54	60	75	77	78	73
13	67	54	48	47	45	39	59	58	76	77	76	71
14	68	53	47	48	44	40	56	57	74	78	76	70
15	67	54	45	48	42	41	56	57	73	76	76	68
16	67	54	45	48	44	41	57	60	75	75	78	69
17	67	57	46	48	45	40	57	--	76	74	77	70
18	66	53	47	47	44	42	56	64	78	76	76	72
19	65	53	48	46	43	41	56	65	78	77	78	74
20	66	52	47	46	42	42	57	66	76	78	78	73
21	65	51	46	45	43	42	58	67	76	79	79	73
22	65	50	45	45	43	43	60	69	75	78	80	72
23	65	49	45	43	43	44	62	70	74	79	79	70
24	65	48	46	40	43	45	63	69	75	80	78	69
25	64	47	46	38	43	46	65	69	76	81	77	68
26	65	46	46	37	43	47	65	70	76	80	80	68
27	64	46	46	38	43	50	65	70	77	79	79	67
28	65	45	45	40	43	51	61	71	78	78	78	67
29	65	45	46	41	44	52	60	73	78	77	78	66
30	65	44	46	42	--	53	61	74	79	77	79	65
31	64	--	45	43	--	52	--	74	--	76	78	--
Average	67	54	46	44	44	42	58	65	75	78	79	72

## SANTÉE RIVER BASIN--Continued

## 2-1555. PACOLET RIVER NEAR FINGERVILLE, S.C.

LOCATION.--At gaging station, 100 feet upstream from highway bridge, 0.2 mile downstream from confluence of North Pacolet and South Pacolet Rivers, and 2.5 miles southeast of Fingerville, Spartanburg County.

DRAINAGE AREA.--212 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953, November 1958 to September 1960.

REMARKS.--Records of discharge for water year 1958 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	pH	Color	
														Residue at 180°C	Calculated					
Oct. 15, 1959.		11	0.02	3.8	1.1	2.6	3.0	16	4.6	2.7	0.1	1.7	0.00	40		14	1	51	6.7	5
Nov. 16.....		16	.01	2.9	1.8	7.9	1.3	24	3.3	2.5	.0	.3	.00	54		16	0	51	7.2	10
Dec. 14.....		14	.01	2.7	1.2	7.2	1.2	26	3.1	2.5	.0	1.0	.00	42		12	0	57	7.3	5
Jan. 14, 1960.		13	.00	1.8	1.5	6.2	1.2	23	2.2	3.2	.1	.8	.00	49		10	0	50	7.0	5
Feb. 15.....		13	.01	3.2	1.4	3.0	1.0	19	1.3	2.5	.0	.9	.00	38		14	0	40	6.7	10
Mar. 17.....	9.7		.00	2.7	1.0	3.5	1.1	18	1.6	1.7	.1	1.1	.00	31		11	0	40	7.1	5
Apr. 19.....		12	.09	2.6	1.2	3.7	1.1	20	4.0	1.0	.1	1.0	.10	42		12	0	44	7.3	5
May 16.....		13	.12	3.5	1.2	3.2	1.1	22	1.7	2.1	.0	.9	.00	40		14	0	48	7.2	5
June 15.....		12	.06	2.9	1.0	5.7	1.2	25	3.0	1.5	.2	0.0	.00	37		11	0	59	6.6	10
July 14.....		13	.01	3.3	1.5	6.2	1.0	28	5.0	1.5	.1	0.0	.00	40		14	0	55	6.8	5
Aug. 15.....		19	.07	4.1	1.2	2.8	1.9	29	2.1	1.0	.0	1.3	.00	36		15	0	50	6.7	8
Sept. 15.....		15	.10	3.4	1.4	9.9	1.2	36	2.4	3.5	.0	1.4	.00	36		14	0	71	7.3	15

## SANTÉE RIVER BASIN--Continued

2-1615. BROAD RIVER AT RICHTEX, S.C.

LOCATION--At gaging station, 0.8 mile west of Richtex, Fairfield County, 1.2 miles upstream from Little River, and 11 miles downstream from Parr Shoals Dam. DRAINAGE AREA--4,850 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses: October 1958 to September 1960.

REMARKS--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	pH or
														Residue at 180°C	Calculated	Calcium-magnesium sum		
Oct. 19, 1959.		14	0.06	3.5	2.2	4.3	2.0	25	5.1	4.0	0.1	0.4	0.00	44		18	59	6.7
Nov. 10, 1959.		16	.03	4.5	1.6	6.6	1.8	32	1.6	3.9	.1	.3	.00	52		18	71	6.6
Dec. 19, 1959.		11	.01	3.0	1.9	4.0	2.0	22	2.2	3.5	.2	1.2	.00	40		15	0	6.8
Jan. 23, 1960.		12	.01	3.1	1.7	3.1	1.3	19	2.3	4.1	.1	.6	.00	39		15	0	6.8
Feb. 1, 1960.		12	.01	3.1	1.4	3.6	1.3	19	2.3	2.8	.0	.9	.00	37		14	0	6.9
Mar. 1, 1960.		12	.01	3.7	1.5	3.8	1.3	19	2.4	3.2	.0	1.2	.00	37		15	0	6.8
Apr. 11, 1960.		13	.00	3.4	1.3	4.4	1.5	23	1.4	3.5	.2	.7	.00	40		14	0	6.8
May 18, 1960.		16	.01	9.1	1.5	5.8	1.3	29	3.3	2.0	.0	.0	.00	45		16	0	7.2
June 15, 1960.		15	.01	4.0	1.3	7.1	1.7	34	1.1	4.0	.1	1.2	.00	52		16	0	6.9
July 19, 1960.		17	.04	3.8	1.8	5.2	1.5	27	2.3	2.5	.1	.9	.00	46		16	0	6.6
Aug. 22, 1960.		16	.01	3.8	1.5	7.1	1.4	30	5.4	3.5	.2	.8	.00	55		16	0	6.7
Sept. 19, 1960.		13	.04	4.2	1.5	7.2	1.8	30	1.4	4.0	.2	.3	.00	59		16	0	6.8

## SANTÉE RIVER BASIN--Continued

2-1695. CONGAREE RIVER AT COLUMBIA, S.C.

LOCATION--At gaging station on right bank at Columbia, Richland County, 1,000 feet downstream from Gervais Street Bridge and 1.4 miles downstream from confluence of Broad and Saluda River.

DRAINAGE AREA--7,850 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses: October 1948 to September 1958 to September 1960.

REMARKS--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Residue at 180°C	Calculated	Calcium	Non-magnesium			
Oct. 26, 1959.		13	0.00	4.3	1.8	6.5	1.9	28	4.2	3.7	0.4	0.4	0.00	56		18	0	71	6.9	10
Nov. 25.....		12	.04	4.1	1.7	7.5	1.9	28	1.0	5.0	.5	.5	.00	52		17	0	76	6.6	12
Dec. 23.....		10	.01	4.6	1.7	6.3	2.0	25	1.4	4.0	.2	1.0	.00	45		14	0	67	6.8	18
Jan. 26.....		11	.01	4.1	1.6	7.4	1.8	28	3.4	4.5	.2	.8	.00	48		14	0	65	6.8	10
Feb. 26.....		9.2	.02	2.9	1.6	7.2	1.8	28	3.4	4.5	.2	.8	.00	48		14	0	65	6.8	10
Mar. 18.....		11	.03	4.4	1.9	3.9	1.3	18	3.6	4.8	.3	1.2	.00	42		17	2	52	6.6	5
Apr. 29.....		13	.03	3.4	1.7	5.7	1.6	25	2.2	3.0	.2	1.2	.10	47		16	0	62	6.8	15
May 13.....		9.4	.03	3.0	1.4	6.0	1.9	23	3.4	4.5	.1	1.0	.00	51		13	0	63	7.0	10
June 14.....		13	.02	3.4	1.6	6.4	1.7	27	1.7	4.0	.1	1.7	.00	50		15	0	63	6.7	5
July 15.....		10	.10	3.6	1.1	5.0	1.7	21	3.1	3.0	.0	1.0	.00	50		19	0	58	6.9	20
Aug. 12.....		14	.01	4.0	1.6	7.4	1.5	28	7.6	3.0	.4	.3	.00	46		16	0	68	7.2	5
Sept. 13.....		14	.01	4.0	1.7	6.3	1.8	26	5.6	4.0	.4	.4	.00	46		17	0	67	6.5	5

EDISTO RIVER BASIN  
2-1730. SOUTH FORK EDISTO RIVER NEAR DENMARK, S.C.

LOCATION.--Temperature recorder at gaging station on left bank at downstream side of bridge on U.S. Highway 321, 200 feet downstream from Seaboard Air Line Railroad bridge, 1.8 miles downstream from Little River, and 4.8 miles north of Denmark, Bamberg County.

DRAINAGE AREA.--720 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.

Temperatures: November 1956 to September 1960.

EXTREMES, 1952-1960.--Air temperatures: Maximum, 78°F. on several days during July and August; minimum, 38°F. Jan. 24-27.

EXTREMES, 1956-60.--Water temperatures: Maximum, 79°F. Aug. 16-18, 1957, July 30, 31, Aug. 1-3, 1958; minimum, 34°F. Feb. 19-21, 1958.

Temperature (°F) of water, water year October 1959 to September 1960  
(Continuous ethyl alcohol-actuated thermometer)

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	72	72	72	72	72	72	72	73	74	73	74	73	72	71	71	68	66	65	64	64	64	64	64	64	62	59	58	58	58	59	67		
Maximum	71	72	72	72	72	72	72	72	72	73	73	73	72	71	71	68	65	65	64	64	64	64	64	64	62	59	58	57	57	58	58	66		
Minimum	60	61	60	58	60	62	62	58	56	55	54	54	54	54	56	58	57	57	53	49	50	52	53	55	53	53	53	53	52	48	—	54		
November	59	60	58	58	58	60	58	56	55	54	53	53	54	54	56	58	57	57	53	49	50	52	53	55	53	53	51	52	48	—	—	56		
Maximum	45	44	46	46	46	46	46	44	43	46	47	50	50	49	48	51	55	55	54	50	48	46	44	44	44	45	46	48	50	48	48	48	48	
Minimum	45	43	44	46	46	46	44	42	42	43	46	47	50	49	47	47	48	51	54	50	48	46	44	44	44	45	46	48	50	48	46	46	46	
December	46	44	46	46	46	46	47	47	45	47	48	49	51	53	55	55	53	51	48	44	42	40	39	38	38	39	43	45	47	45	47	48		
Maximum	44	44	44	46	46	46	46	45	45	45	47	48	49	51	53	53	51	48	44	42	40	39	38	38	38	39	43	45	47	45	47	48		
Minimum	47	47	48	47	48	48	49	49	48	47	51	53	53	51	48	46	45	46	47	46	45	45	46	46	48	48	47	47	—	—	—	49		
January	46	44	42	41	41	41	41	41	41	41	40	40	40	40	41	44	44	46	49	49	50	50	53	53	56	59	60	62	64	64	64	48		
February	47	46	44	42	41	41	41	41	41	41	40	40	40	40	41	44	44	46	48	48	47	48	49	52	53	56	59	60	62	61	61	61	47	
Maximum	46	44	42	41	41	41	41	41	41	41	40	40	40	40	41	44	43	44	46	48	48	47	48	49	52	53	56	59	60	62	61	61	47	
Minimum	65	65	63	63	63	62	63	65	65	65	62	61	63	65	65	67	68	68	66	66	68	70	71	71	71	71	71	70	70	70	70	66	66	
March	62	63	62	63	62	63	65	65	65	62	61	63	65	65	67	68	68	68	66	66	68	70	71	71	71	71	70	70	70	70	70	64	64	
Maximum	64	63	64	64	64	64	64	64	64	62	61	61	60	60	62	64	67	69	69	70	71	72	72	72	71	71	71	71	71	72	72	72	67	
Minimum	82	83	82	83	83	84	84	84	81	81	81	81	80	79	80	82	84	87	88	89	90	91	91	91	91	91	90	90	90	91	91	91	86	
April	72	72	71	71	71	72	72	73	73	72	71	69	72	73	74	75	75	74	74	74	74	74	74	74	74	76	76	74	73	74	76	74	73	
Maximum	72	71	71	71	71	71	72	72	71	69	68	69	72	73	74	74	74	74	74	74	74	74	74	74	74	76	74	72	73	74	76	74	72	
Minimum	77	77	78	78	78	78	77	76	75	75	75	76	76	76	76	76	75	75	75	76	77	78	77	77	77	76	75	74	74	75	75	75	76	76
May	76	76	77	77	77	77	76	75	75	75	75	76	76	76	76	75	74	73	74	75	75	75	75	75	75	75	74	73	74	75	76	76	76	76
June	74	74	75	75	76	77	78	78	78	78	78	78	78	78	78	77	76	75	74	73	74	75	75	75	75	75	74	73	74	75	76	76	76	76
July	73	74	75	75	76	77	78	77	78	77	78	77	77	77	77	76	75	74	72	73	74	74	74	74	74	74	74	73	74	75	75	75	75	75
August	76	76	75	74	74	74	75	75	75	77	77	76	75	72	71	72	72	73	74	74	75	75	74	73	72	71	70	69	70	71	70	69	70	73
September	75	75	74	73	73	73	74	75	75	75	75	75	75	72	71	71	71	72	73	74	74	74	74	73	72	71	70	69	69	69	69	70	73	74
Maximum	75	75	74	73	73	73	74	75	75	75	75	75	75	72	71	71	71	72	73	74	74	74	74	73	72	71	70	69	69	69	70	73	74	74
Minimum	75	75	74	73	73	73	74	75	75	75	75	75	75	72	71	71	71	72	73	74	74	74	74	73	72	71	70	69	69	69	70	73	74	74

## EDISTO RIVER BASIN--Continued

2-1735. NORTH FORK EDISTO RIVER AT ORANGEBURG, S.C.

LOCATION.--At gaging station on left bank under bridge on U.S. Highway 301 at Orangeburg, Orangeburg County, 0.5 mile upstream from Atlantic Coast Line Railroad Bridge and 1.5 miles downstream from Caw Swamp.

DRAINAGE AREA.--863 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1948, November 1958 to September 1960.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1703.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Col- or
														Residue at 180°C	Calculated	Calcium	Non-carbonate			
Oct. 6, 1959..		7.1	0.07	1.6	0.7	1.8	1.5	6	1.8	3.8	0.2	0.3	0.0	43		7	2	29	6.4	120
Nov. 12.....		7.8	0.1	1.8	0.7	2.1	1.7	7	2.1	4.0	0.1	0.4	0.0	40		7	1	38	6.7	120
Dec. 21.....		4.8	0.07	1.8	0.4	2.1	1.7	7	1.9	3.0	0.1	0.4	0.0	32		6	0	25	6.0	50
Jan. 26, 1960		3.7	0.06	1.2	0.6	2.3	1.5	5	2.3	4.3	0.1	0.6	0.0	17		5	0	22	6.3	30
Feb. 2.....		2.9	0.06	1.8	0.5	2.0	1.6	7	2.1	3.0	0.1	0.6	0.0	23		6	1	25	6.3	35
Mar. 17.....		1.7	0.04	2.3	0.5	2.0	1.6	7	1.1	4.0	0.0	0.8	0.0	20		8	2	28	6.3	5
Apr. 25.....		2.9	0.10	1.2	0.6	2.2	1.8	6	0.7	2.7	0.1	0.8	0.0	25		6	0	27	5.4	40
May 27.....		6.1	0.12	1.7	0.4	1.5	1.6	7	1.7	2.5	0.0	0.5	0.0	22		6	0	23	6.5	50
June 24.....		7.0	0.1	1.5	0.4	1.5	1.4	6	1.2	2.5	0.1	0.5	0.0	25		5	1	25	5.6	50
July 2.....		7.3	0.1	1.5	0.5	1.9	1.5	6	1.2	2.5	0.1	0.5	0.0	28		6	0	25	5.7	55
Aug. 25.....		8.0	0.1	1.6	0.3	1.8	1.5	6	1.4	3.5	0.1	0.5	0.0	25		6	0	23	5.8	20
Sept. 19.....		8.4	0.08	1.4	0.5	1.2	1.2	6	2.2	2.0	0.0	0.8	0.0	24		6	0	21	5.8	35

a Organic matter present.



## EDISTO RIVER BASIN--Continued

2-1750.3. EDISTO RIVER (UPPER STATION) NEAR JACKSONBORO, S.C.

LOCATION.--On right bank at County Landing, 4.8 miles downstream from U.S. Highway 17 and 4.5 miles south of Jacksonboro, Colleton County.

DRAINAGE AREA.--2,860 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: January 1958 to September 1960.

Water temperatures: October 1958 to September 1960.

EXTREMES, 1958-60.--Dissolved solids: Maximum, 71 ppm Oct. 1-31; minimum, 31 ppm Mar. 1-31.

Hardness: Maximum, 46 ppm July 30; minimum, 12 ppm Feb. 1-29, May 1-31.

Specific conductance: Maximum daily, 259 microhos June 14; minimum daily, 36 microhos June 17, 18.

Water temperatures: Maximum, 84°F July 8, 9, Aug. 27; minimum, 37°F Mar. 16.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 11 ppm Oct. 1-31; minimum, 28 ppm Nov. 1-11, 14-30, 1958.

Hardness: Maximum, 48 ppm July 30; minimum, 10 ppm Oct. 1-31, 16-31, Nov. 14-30, 1958.

Specific conductance: Maximum daily, 259 microhos June 14, 1960; minimum daily, 25 microhos Nov. 2, 1958.

Water temperatures: Maximum, 85°F Aug. 26-28, 1959; minimum, freezing point Jan. 14, 1959.

REMARKS.--Records of specific conductance of daily samples collected available in district office at Raleigh, N.C. Records of discharge for gaging station near Gavahns for water year October 1959 to September 1960 given in WSP 1703. 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 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sium (K)	Bicar- bonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color	
														Calcium	Non- magne-carbon- ate				
Oct. 1-31, 1959.....		7.5	0.48	6.1	0.9	3.3	1.8	16	2.9	6.5	0.2	0.5	71	19	6	51	6.3	200	
Nov. 1-30.....		7.8	.24	5.3	.7	3.7	1.1	13	1.4	6.5	.2	.4	60	16	6	47	6.5	140	
Dec. 1-31.....		7.0	.17	4.5	.7	3.5	.8	13	4.5	7.0	.1	.4	48	14	3	47	7.0	100	
Jan. 1-31, 1960.....		5.0	.22	4.2	.9	3.7	.8	14	2.1	6.3	1	3	43	14	3	46	6.9	100	
Feb. 1-29.....		3.3	.13	4.2	.4	2.8	.5	10	3.4	5.5	.1	1.0	42	12	4	41	7.0	90	
Mar. 1-31.....		1.3	.15	4.0	1.0	2.9	.5	14	1.4	6.0	.1	1.1	31	14	3	44	6.8	80	
Apr. 1-30.....		2.9	.20	4.7	.8	2.8	.5	14	2.2	5.0	1	3	50	15	4	47	6.8	100	
May 1-31.....		5.3	.13	3.8	.6	2.5	.6	14	2.6	5.0	.0	1.5	49	12	0	43	6.4	80	
June 1-13.....		6.4	.13	3.7	.9	2.5	.4	12	1.4	5.5	1	1.2	50	13	3	42	6.7	80	
June 14.....		--	--	--	--	--	--	6	.8	6.4	--	4.6	4	13	8	259	6.2	--	
June 15-30.....		6.7	.15	3.8	.9	2.3	.4	13	1.0	4.5	1	1.3	45	14	3	40	6.9	70	
July 1-29.....		7.1	.13	5.1	.7	3.2	.6	15	3.2	5.0	.2	1.0	57	16	3	47	6.3	70	
July 30.....		--	--	--	--	--	--	2	2.8	32	--	5.8	--	--	44	152	5.4	--	
July 31.....		--	--	--	--	--	--	16	--	4.0	--	1.7	--	16	3	50	7.0	--	
Aug. 1-12.....		7.8	.13	6.1	.4	3.0	.6	15	2.8	5.1	.2	3	47	17	4	50	6.9	100	
Aug. 13.....		--	--	--	--	--	--	19	2.4	36	--	1.3	--	--	19	4	160	7.0	--
Aug. 14-31.....		7.6	.20	4.6	.9	2.3	.3	15	2.4	5.5	.0	1.5	53	16	3	44	7.0	60	
Sept. 1-30.....		7.3	.14	4.0	1.1	2.2	.3	13	2.0	4.5	.1	.8	50	14	4	43	6.6	60	
Time-weighted average.....		5.7	0.19	4.6	0.8	3.0	0.7	14	2.3	6.0	0.1	0.8	48	15	4	47	--	100	

## EDISTO RIVER BASIN--Continued

2-1750.3. EDISTO RIVER (UPPER STATION) NEAR JACKSONBORO, S.C.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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.....	68	--	69	67	58	76	76	75	76	75	76	76	76	73	73	71	66	67	65	63	63	62	62	59	57	--	56	53	53	53	52	67	
November.....	58	58	57	57	56	56	54	55	56	56	55	53	53	53	54	54	50	--	50	50	49	50	49	48	48	49	50	50	50	49	49	50	49
December.....	46	46	47	47	46	47	45	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
January.....	49	49	48	48	49	49	49	48	48	48	49	50	52	52	53	53	54	54	54	50	49	49	45	44	43	44	44	44	44	44	44	49	
February.....	50	50	49	50	--	49	50	51	51	49	52	54	56	56	55	--	55	54	55	54	55	54	55	54	54	55	51	50	--	52	52	52	
March.....	49	49	47	46	46	45	45	44	44	44	43	43	43	44	40	37	44	47	50	48	46	44	43	44	46	47	53	53	52	63	64	47	
April.....	55	55	56	56	54	54	56	55	54	53	52	54	55	56	59	62	63	64	66	67	69	70	70	70	70	70	69	69	70	--	61	61	
May.....	70	70	70	69	66	65	67	68	68	69	69	66	65	66	66	68	68	69	69	69	69	69	70	70	70	69	70	72	73	74	69	74	
June.....	68	69	68	79	70	70	70	72	73	73	73	73	74	73	74	74	75	74	74	75	74	74	75	75	76	75	76	76	75	75	--	73	
July.....	--	78	80	80	--	83	83	84	84	81	82	81	81	80	80	--	81	81	82	82	81	81	82	82	82	82	82	82	81	82	81	81	
August.....	78	78	79	79	79	80	80	79	79	80	80	81	81	81	81	82	82	82	82	83	83	83	83	83	83	82	84	81	81	82	83	81	
September.....	80	81	81	82	82	81	81	80	80	81	80	80	80	76	76	71	71	70	70	71	71	71	71	70	72	74	75	74	73	72	71	--	76

## EDISTO RIVER BASIN--Continued

2-1750.4. EDISTO RIVER NEAR (LOWER STATION) JACKSONBORO, S.C.

LOCATION--On left bank at Hill's Fishing Camp, 8.8 miles downstream from U.S. Highway 17, and 7.0 miles south of Jacksonboro, Colleton County.

DRAINAGE AREA--2,970 square miles, approximately.

RECORDS AVAILABLE--Chemical analyses: January 1958 to September 1960.

Water temperatures: January 1958 to September 1960.

EXTREMES, 1958-60.--Chloride: Maximum, 270 ppm Oct. 9; minimum, 5.0 ppm Feb. 1-29, Apr. 1-30, May 1-31.

Specific conductance: Maximum, 969 microhos Oct. 9; minimum daily, 38 microhos Feb. 24, Mar. 10.

Water temperatures: Maximum, 86°F July 3, Aug. 10-14; minimum, 40°F Mar. 11.

Extremes, 1958-60.--Chloride: Maximum, 3,500 ppm Oct. 13, 1958; minimum, 5.0 ppm Feb. 1-29, Apr. 1-30, May 1-31, 1960.

Specific conductance: Maximum, 1,019 microhos Oct. 13, 1958; minimum, 38 microhos Feb. 24, Mar. 10, 1960.

Water temperatures: Maximum, 89°F June 29, July 3, 1959; minimum, 34°F Jan. 3, 1958.

REMARKS--When specific conductance values indicated salt-water encroachment, only specific conductance and chloride were determined on individual samples. The individual specific conductance and chloride determinations are tabulated separately from the composite chemical analyses. Records of specific conductance of daily samples available in district office at Raleigh, N.C. Records of discharge for gaging station near Githans for water year October 1959 to September 1960 given in WSP 1703. 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 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Carbocation (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> ) (B)	Dissolved solids			Hardness as CaCO <sub>3</sub>		Specific conductance (microhm-cm at 25°C)	Color or pH	
														Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium, Sodium	Non-carbonate			
Oct. 8, 10-31..		8.1	0.51	5.6	1.5	5.5	2.0	17	0	2.9	10	0.2	0.3	77			20	6	68	6.6	220
Nov. 1-10, 22-30.																					
Nov. 11-21.....		8.0	.23	5.1	1.7	5.0	1.1	15	0	6.4	8.0	1	.6	68			15	3	55	6.8	140
Dec. 1-11.....		8.0	.24	5.6	1.5	12	1.7	16	0	3.6	22	1	.6	60			20	7	105	7.0	80
Jan. 1-31, 1960		6.9	.20	4.0	1.1	4.5	.9	14	0	2.9	9.0	1	1.2	60			14	3	55	6.6	80
Feb. 1-29.....		5.0	.22	4.2	1.0	4.4	.8	15	0	2.0	6.8	1	1.3	50			14	2	58	6.6	100
Mar. 1-31.....		3.3	.15	4.0	.5	3.2	.5	9	0	3.7	5.0	1	1.1	44			12	5	43	6.6	90
Apr. 1-30.....		1.3	.16	4.3	.7	3.0	.5	12	0	1.4	6.0	.2	.9	32			14	4	44	6.7	80
May 1-31.....		3.0	.25	4.6	1.3	2.7	.6	18	0	2.5	5.0	1	.4	57			17	2	48	6.9	120
June 1-9.....		6.7	.15	3.7	1.0	2.9	.6	14	0	.8	5.0	0	1.3	50			13	2	46	7.0	80
June 10-27.....		6.8	.18	3.9	1.8	5.7	.6	12	0	2.6	11	1	1.3	60			14	4	64	6.9	80
June 28-30.....		6.4	.13	4.6	1.9	6.8	.8	14	0	1.7	16	1	1.2	--			17	7	76	6.9	80
July 1-5.....		7.3	.15	4.4	1.2	7.1	.6	14	0	4.0	12	1	1.4	--			20	8	94	6.8	--
July 6-13.....																	16	4	66	6.2	60
July 14-31.....		7.1	.12	4.7	1.4	10	.8	13	0	5.6	17	1	.8	60			18	7	87	6.1	60
Aug. 1-10.....		7.1	.16	5.2	1.3	5.9	.6	17	0	5.8	9.5	1	1.8	55			18	4	64	6.3	80
Aug. 11-22.....		8.3	.17	5.7	1.0	5.8	.6	18	0	4.8	9.9	.2	2.1	57			18	3	68	7.0	100
Aug. 23-24.....		--	--	--	--	--	--	--	--	--	--	--	--	--			--	--	--	--	--
Aug. 25-31.....		8.4	.22	5.5	3.4	96	1.4	15	0	3.2	23	--	2.1	--			20	8	115	6.8	--
Sept. 1-12.....		7.0	.15	4.6	1.0	5.4	.7	13	0	9.2	44	.2	1.0	134			28	13	198	7.0	80
Sept. 12-22.....														52			16	5	59	6.9	100
Time-weighted average....		5.8	0.25	4.6	1.1	5.0	0.8	14	0	3.4	8.9	0.1	0.8	57			16	4	60	6.7	103

## EDISTO RIVER BASIN--Continued

2-1750.4. EDISTO RIVER NEAR (LOWER STATION) JACKSONBORO, S.C.--Continued

Specific conductance and chloride, in parts per million, water year  
October 1959 to September 1960

Day	October		November		December		January	
	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)
1	--	--	51	8.0	77	9.0	--	6.8
2	--	--	--	8.0	75	9.0	48	6.8
3	349	90	48	8.0	75	9.0	47	6.8
4	128	24	52	8.0	73	9.0	47	6.8
5	129	28	49	8.0	53	9.0	47	6.8
6	179	42	49	8.0	51	9.0	47	6.8
7	183	42	57	8.0	59	9.0	49	6.8
8	89	10	53	8.0	53	9.0	54	6.8
9	969	270	51	8.0	51	9.0	48	6.8
10	48	10	51	8.0	51	9.0	52	6.8
11	73	10	100	22	51	9.0	55	6.8
12	73	10	55	8.0	51	9.0	52	6.8
13	79	10	55	8.0	50	9.0	50	6.8
14	96	10	56	8.0	51	9.0	48	6.8
15	87	10	54	8.0	62	9.0	47	6.8
16	46	10	55	8.0	52	9.0	52	6.8
17	48	10	--	8.0	51	9.0	48	6.8
18	63	10	--	8.0	50	9.0	49	6.8
19	63	10	56	8.0	57	9.0	49	6.8
20	78	10	61	8.0	51	9.0	51	6.8
21	65	10	111	22	50	9.0	48	6.8
22	66	10	60	8.0	51	9.0	49	6.8
23	66	10	56	8.0	51	9.0	48	6.8
24	79	10	74	8.0	52	9.0	49	6.8
25	69	10	--	8.0	50	9.0	50	6.8
26	49	10	51	8.0	50	9.0	50	6.8
27	48	10	51	8.0	48	9.0	51	6.8
28	47	10	70	8.0	50	9.0	56	6.8
29	72	10	69	8.0	50	9.0	52	6.8
30	63	10	67	8.0	50	9.0	51	6.8
31	48	10	--	8.0	56	9.0	--	6.8
	February		March		April		May	
	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)
1	49	5.0	40	6.0	50	5.0	--	5.0
2	53	5.0	40	6.0	55	5.0	52	5.0
3	47	5.0	40	6.0	51	5.0	49	5.0
4	45	5.0	43	6.0	52	5.0	46	5.0
5	45	5.0	41	6.0	53	5.0	46	5.0
6	46	5.0	39	6.0	52	5.0	49	5.0
7	45	5.0	39	6.0	47	5.0	48	5.0
8	40	5.0	39	6.0	52	5.0	46	5.0
9	51	5.0	40	6.0	48	5.0	46	5.0
10	40	5.0	38	6.0	47	5.0	51	5.0
11	39	5.0	39	6.0	48	5.0	45	5.0
12	40	5.0	45	6.0	43	5.0	48	5.0
13	40	5.0	44	6.0	40	5.0	46	5.0
14	39	5.0	44	6.0	39	5.0	46	5.0
15	40	5.0	40	6.0	39	5.0	41	5.0
16	40	5.0	42	6.0	41	5.0	40	5.0
17	49	5.0	40	6.0	40	5.0	44	5.0
18	41	5.0	41	6.0	42	5.0	--	5.0
19	41	5.0	46	6.0	40	5.0	--	5.0
20	60	5.0	46	6.0	49	5.0	50	5.0
21	40	5.0	46	6.0	43	5.0	42	5.0
22	41	5.0	46	6.0	47	5.0	42	5.0
23	41	5.0	46	6.0	49	5.0	50	5.0
24	38	5.0	47	6.0	48	5.0	40	5.0
25	40	5.0	46	6.0	47	5.0	42	5.0
26	39	5.0	55	6.0	50	5.0	43	5.0
27	40	5.0	46	6.0	50	5.0	43	5.0
28	40	5.0	45	6.0	49	5.0	44	5.0
29	40	5.0	50	6.0	50	5.0	45	5.0
30	--	--	54	6.0	50	5.0	50	5.0
31	--	--	47	6.0	--	--	46	5.0

## EDISTO RIVER BASIN--Continued

2-1750.4. EDISTO RIVER NEAR (LOWER STATION) JACKSONBORO, S.C.--Continued

Specific conductance and chloride, in parts per million, water year  
October 1959 to September 1960--Continued

Day	June		July		August		September	
	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)	Specific conductance (micro-mhos at 25°C)	Chloride (Cl)
1	47	11	66	12	68	9.9	322	78
2	46	11	63	12	64	9.9	74	11
3	--	11	80	12	64	9.9	436	106
4	71	11	55	12	68	9.9	440	112
5	77	11	--	12	66	9.9	403	98
6	58	11	80	17	60	9.9	188	40
7	56	11	80	17	59	9.9	363	87
8	95	11	89	17	55	9.9	--	--
9	--	--	89	17	59	9.9	108	19
10	310	72	97	17	56	9.9	280	66
11	332	80	110	17	59	9.9	170	38
12	180	40	78	17	56	9.9	61	8.3
13	175	38	78	17	58	9.9	51	8.3
14	220	52	56	9.5	65	9.9	56	8.3
15	129	28	67	9.5	66	9.9	56	8.3
16	120	24	62	9.5	108	9.9	54	8.3
17	67	10	57	9.5	103	9.9	48	8.3
18	138	28	59	9.5	108	9.9	53	8.3
19	123	26	57	9.5	64	9.9	64	8.3
20	66	16	70	9.5	68	9.9	70	8.3
21	81	16	56	9.5	67	9.9	72	8.3
22	62	16	58	9.5	58	9.9	71	8.3
23	89	16	64	9.5	118	23	163	36
24	87	16	67	9.5	128	23	490	122
25	--	--	71	9.5	182	44	--	--
26	--	--	71	9.5	198	44	189	41
27	--	--	76	9.5	210	44	173	38
28	280	67	76	9.5	200	44	460	114
29	109	20	57	9.5	207	44	367	86
30	81	20	53	9.5	188	44	118	20
31	--	--	68	9.5	209	44	--	--

EDISTO RIVER BASIN--Continued  
 2-1750.4. EDISTO RIVER NEAR (LOWER STATION) JACKSONBORO, S.C.--Continued  
 Temperature (°F) of water, water year October 1959 to September 1960

Month	Temperature at 17° 02' water, 1860. In October, 1860 to September, 1860.																															Aver- age
	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	
October.....	--	--	78	75	74	76	77	76	77	77	77	75	78	71	71	72	72	70	68	68	67	68	68	68	66	66	66	65	64	64	63	71
November.....	65	--	62	66	67	67	62	60	60	60	62	60	60	65	65	60	--	--	54	52	55	54	55	56	--	52	55	48	48	48	58	
December.....	45	45	46	48	50	50	50	49	47	45	45	47	46	48	50	49	48	47	47	48	48	47	46	47	46	47	48	49	49	49	49	
January.....	--	45	46	48	49	48	49	49	51	52	52	52	53	54	55	51	52	53	50	47	47	43	43	42	43	43	45	48	48	--	49	
February.....	47	50	48	50	50	51	51	50	51	50	51	53	49	48	49	50	51	50	49	49	49	48	48	48	48	50	49	49	--	50		
March.....	48	47	47	46	45	45	45	45	43	43	40	41	41	41	43	43	42	43	45	45	46	49	50	52	55	57	58	60	61	63	48	
April.....	63	63	62	61	60	58	62	66	64	63	62	62	59	60	62	65	69	69	69	68	69	71	72	73	73	73	74	71	70	69	--	
May.....	--	70	69	70	70	70	70	69	68	65	65	67	67	67	70	73	--	73	73	77	78	77	78	79	78	79	78	70	78	81	83	
June.....	81	80	--	79	79	79	79	78	--	78	78	80	80	80	82	83	84	85	83	84	82	82	83	--	--	--	--	--	81	83	83	
July.....	85	85	86	84	--	80	80	82	82	83	83	84	84	82	82	82	82	82	82	82	84	84	82	82	82	82	84	84	82	83	84	
August.....	89	82	82	83	83	84	84	85	85	86	86	86	86	86	85	84	84	84	83	83	83	83	82	82	82	83	83	83	84	84	84	
September.....	84	83	82	82	83	82	83	--	82	82	80	79	78	78	77	76	75	77	77	79	79	79	78	77	--	75	76	75	75	--	79	

## SAVANNAH RIVER BASIN

2-1975. SAVANNAH RIVER AT BURTONS FERRY BRIDGE, NEAR MILLHAVEN, GA.

LOCATION.--Temperature recorder at gaging station on downstream side of drawspan of bridge on U.S. Highway 301, 2 miles downstream from Rocky Creek, 9 miles east of Millhaven, Screven County, and at mile 114.5.

DRAINAGE AREA.--8,650 square miles, approximately.

RECORDS AVAILABLE.--Water temperatures: January 1956 to September 1960.

EXTREMES, 1956-60.--Water temperatures: Maximum, 84°F July 21; minimum, 43°F Mar. 5-8, 12.

EXTREMES, 1956-60.--Water temperatures: Maximum, 86°F Aug. 25, 1959; minimum, 39°F Feb. 19, 20, 1958.

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	77	76	76	75	76	77	78	78	78	78	78	78	78	78	76	74	71	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	
Maximum	77	76	76	75	76	77	78	78	78	78	78	78	78	78	76	74	71	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	
Minimum	76	75	75	76	76	77	78	78	78	78	78	78	78	78	76	74	71	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	68	
November	65	65	65	64	64	65	66	66	64	62	61	60	61	62	62	63	63	63	62	60	60	60	60	60	60	60	60	60	60	60	60	60	60	
Maximum	65	65	65	64	64	65	66	66	64	62	61	60	61	62	62	63	63	63	62	60	60	60	60	60	60	60	60	60	60	60	60	60	60	
Minimum	64	65	64	64	64	65	66	64	62	61	60	60	61	62	62	63	63	63	62	60	60	60	60	60	60	60	60	60	60	60	60	60	60	
December	54	54	54	55	56	56	56	54	52	52	54	56	56	56	56	55	55	56	57	57	55	53	52	50	50	52	54	56	56	55	54	54	54	
Maximum	53	51	51	54	54	56	54	52	51	52	51	52	54	56	56	55	54	55	56	57	55	53	52	50	50	52	54	56	56	55	54	54	54	
Minimum	53	51	51	54	54	56	54	52	51	52	51	52	54	56	56	55	54	55	56	57	55	53	52	50	50	52	54	56	56	55	54	54	54	
January	51	50	51	51	51	51	50	50	50	51	52	52	52	52	53	54	54	54	53	49	48	47	45	45	45	45	45	45	45	45	45	45	45	
Maximum	51	50	51	51	51	51	50	50	50	51	52	52	52	52	53	54	54	54	53	49	48	47	45	45	45	45	45	45	45	45	45	45	45	
Minimum	51	50	51	51	51	51	50	50	50	51	52	52	52	52	53	54	54	54	53	49	48	47	45	45	45	45	45	45	45	45	45	45	45	
February	49	50	50	50	50	50	50	50	49	50	51	51	51	50	50	48	48	48	48	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
Maximum	48	49	50	50	50	50	50	50	49	49	50	51	51	50	50	48	48	48	48	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
Minimum	48	49	50	50	50	50	50	50	49	49	50	51	51	50	50	48	48	48	48	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
March	48	48	47	46	45	44	43	44	44	44	44	44	44	44	44	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
Maximum	48	48	47	46	45	44	43	44	44	44	44	44	44	44	44	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
Minimum	48	48	47	46	45	44	43	44	44	44	44	44	44	44	44	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
April	58	60	61	60	60	59	60	60	60	60	60	58	59	60	60	61	62	63	63	63	62	60	62	63	66	68	65	62	60	60	60	60	60	
Maximum	58	60	61	60	60	59	60	60	60	60	60	58	59	60	60	61	62	63	63	63	62	60	62	63	66	68	65	62	60	60	60	60	60	
Minimum	56	58	60	60	60	58	59	60	60	60	58	57	58	59	60	60	61	62	63	63	62	60	62	63	66	68	65	62	60	60	60	60	60	
May	61	63	63	63	63	62	62	64	64	64	62	60	61	62	64	67	71	73	73	74	74	76	76	76	76	76	76	74	75	77	77	77	77	
Maximum	59	61	63	63	63	62	62	64	64	64	62	60	61	62	64	67	71	73	73	74	74	76	76	76	76	76	74	75	77	77	77	77	77	
Minimum	59	61	63	63	63	62	62	64	64	64	62	60	61	62	64	67	71	73	73	74	74	76	76	76	76	76	74	75	77	77	77	77	77	
June	78	78	73	73	73	75	77	77	77	76	75	76	78	79	80	80	80	80	78	79	79	79	79	79	79	78	78	77	78	79	80	80	80	
Maximum	78	78	73	73	73	75	77	77	77	76	75	76	78	79	80	80	80	80	78	79	79	79	79	79	79	78	78	77	78	79	80	80	80	
Minimum	78	78	73	73	73	75	77	77	77	76	75	76	78	79	80	80	80	80	78	79	79	79	79	79	79	78	78	77	78	79	80	80	80	
July	80	79	81	82	82	83	82	80	77	76	78	80	82	81	79	79	80	80	83	84	83	82	81	81	81	81	81	81	81	81	81	81	81	81
Maximum	79	78	79	80	81	80	77	75	75	76	78	80	79	78	79	80	80	83	84	83	82	81	81	81	81	81	81	81	81	81	81	81	81	81
Minimum	79	78	79	80	81	80	77	75	75	76	78	80	79	78	79	80	80	83	84	83	82	81	81	81	81	81	81	81	81	81	81	81	81	81
August	79	79	79	79	77	77	79	82	82	82	79	79	81	82	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
Maximum	79	79	79	79	77	77	79	82	82	82	79	79	81	82	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
Minimum	79	79	79	79	77	77	79	82	82	82	79	79	81	82	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
September	82	82	80	80	81	81	82	82	81	81	81	80	79	79	78	78	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
Maximum	82	82	80	80	81	81	82	82	81	81	81	80	79	79	78	78	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
Minimum	82	80	80	80	81	81	82	82	81	81	81	80	79	79	78	78	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79

## ALTAMAHIA RIVER BASIN

2-2130. OCMULGEE RIVER AT MACON, GA.

LOCATION.--At Intake of Macon Water Treatment Plant at city limits of Macon, Bibb County, 3.1 miles upstream from gaging station at Fifth Street Bridge, and at mile 208.1.

DRAINAGE AREA.--2,230 square miles.

RECORDS AVAILABLE.--Chemical analyses: May 1937 to April 1938, July 1938 to September 1960.

Water temperatures: May 1937 to April 1938, July 1938 to September 1960.

EXTREMES 1938-60.--Dissolved solids: Maximum, 16 ppm Sept. 10-20, minimum, 33 ppm Feb. 1-10.

Water temperatures: Maximum, 32° minimum, 31° Oct. 1-10, 11-20, Apr. 1-10, 11-20.

Specific conductance: Maximum daily, 167 microhos Oct. 30; minimum daily, 34 microhos Feb. 14.

Water temperatures: Maximum, 90°F July 3; minimum, 34°F Mar. 3.

EXTREMES, 1937-38, 1958-60.--Dissolved solids: Maximum, 73 ppm Aug. 21-31, 1959; minimum, 31 ppm Apr. 11-20, 1938.

Hardness: Maximum, 58 ppm Oct. 28, 1958; minimum, 10 ppm Feb. 1-10, 11-20, Apr. 1-10, 11-20, 1960.

Specific conductance (1958-60): Maximum daily, 167 microhos Oct. 30, 1959; minimum daily, 34 microhos Feb. 14, 1960.

Water temperatures: Maximum, 90°F July 3, 1960; minimum, 34°F Jan. 19, 1959, Mar. 3, 1960.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704. 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 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (microhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-10, 1959.....	766	13	0.00	4.6	1.3	7.0	2.6	28	4.8	5.5	0.3	0.4	57	17	0	79	6.9	3
Oct. 11-15, 17-20....	1447	13	.00	4.0	1.7	7.9	2.7	30	4.4	7.0	.3	1.1	63	17	0	79	6.5	4
Oct. 16.....	2520	--	--	--	--	--	--	30	5.2	9.0	--	--	--	18	0	90	7.0	--
Oct. 21-29, 31.....	2361	13	.05	4.2	1.5	6.9	2.6	26	4.8	5.0	.3	2.3	56	16	0	75	6.4	15
Oct. 30.....	1800	--	--	5.6	1.9	--	--	0	8.0	26	--	--	--	22	22	167	4.1	--
Nov. 1-10.....	1241	13	.01	4.6	1.6	6.3	2.4	27	4.4	4.2	.2	1.6	57	18	0	76	6.6	12
Nov. 11-20.....	1087	13	.00	4.8	1.5	6.3	2.4	30	4.0	4.2	.3	1.1	53	18	0	76	6.8	7
Nov. 21-30.....	1098	12	.00	4.8	1.5	6.4	2.4	30	4.4	4.0	.3	1.8	56	18	0	77	6.7	5
Dec. 1-10.....	1326	11	.00	4.6	1.6	6.7	2.3	30	4.0	4.8	.3	1.0	a51	18	0	74	6.8	2
Dec. 11-20.....	1416	12	.00	4.4	1.7	7.0	2.3	30	4.0	4.5	.4	1.0	53	18	0	74	6.9	2
Dec. 21-31.....	1322	11	.00	4.6	1.6	7.0	2.3	30	4.0	4.8	.3	1.2	a52	18	0	74	6.8	2
Jan. 1-10, 1960.....	3868	13	.01	3.4	1.5	5.8	2.1	26	4.8	4.0	.2	.0	55	16	0	68	7.0	7
Jan. 11-20.....	4149	14	.00	3.4	1.6	4.7	1.8	22	4.8	4.0	.2	.1	52	15	0	58	7.0	8
Jan. 21-30.....	5349	12	.00	3.6	1.9	3.2	1.7	26	4.0	2.0	.0	.3	33	12	0	41	7.0	18
Feb. 1-10.....	11444	6.7	.02	2.6	.9	3.4	1.7	16	4.0	2.2	.1	1.2	38	10	0	42	7.1	3
Feb. 11-20.....	7061	12	--	2.6	.9	3.4	1.7	18	4.0	2.2	.1	1.2	38	10	0	42	7.1	--
Feb. 21-29.....	6002	11	.01	2.8	1.1	4.3	1.5	18	4.8	2.8	.1	.0	38	12	0	47	7.2	5
Mar. 1-10.....	4815	12	.06	3.2	1.1	3.8	1.4	20	4.4	2.5	.1	.9	a39	13	0	49	7.2	--



Mar. 11-20, 1960.....	5505	12	03	3.4	.9	3.8	1.4	20	4.0	2.5	.1	7	52	12	0	49	7.3
Mar. 21-31.....	5869	12	06	3.4	1.0	3.6	1.4	20	4.8	2.5	.1	8	49	12	0	49	7.2
Apr. 1-10.....	10028	10	03	3.8	1.1	3.2	1.3	16	3.2	4.0	.1	5	43	10	0	46	6.9
Apr. 11-20.....	3713	11	02	3.4	.2	4.7	1.3	18	4.0	4.0	.1	7	46	11	0	48	6.7
Apr. 21-30.....	3062	13	00	4.6	1.1	3.6	1.3	21	4.0	2.8	.1	7	44	14	0	54	6.7
May 1-10.....	2544	11	01	3.8	1.1	5.0	1.8	25	4.0	3.2	.2	6	45	14	0	59	7.0
May 11-20.....	1654	8.8	.01	4.4	1.1	5.4	1.7	27	3.3	3.5	.1	7	45	16	0	63	7.2
May 21-31.....	1111	9.3	.00	4.4	1.2	5.4	1.7	28	3.2	3.2	.1	7	43	16	0	65	7.1
June 1-10.....	1065	10	.00	4.2	1.2	5.7	1.6	27	3.6	4.0	.2	4	48	16	0	62	6.9
June 11-20.....	912	10	.00	4.6	1.2	5.9	1.4	27	2.8	3.5	.2	1.2	a44	16	0	68	6.8
June 21-30.....	1062	11	.00	4.6	1.5	6.6	1.6	29	3.2	4.0	.2	1.4	a48	18	0	74	6.8
July 1-10.....	714	11	.01	5.6	1.2	6.3	2.0	31	3.6	4.5	.2	5	50	19	0	73	7.1
July 11-20.....	843	10	.00	5.6	1.0	6.1	2.0	31	3.2	4.0	.2	7	52	18	0	72	7.1
July 21-31.....	811	11	.00	5.6	1.0	6.2	1.9	30	3.6	4.5	.2	9	53	18	0	72	7.1
Aug. 1-10.....	732	11	.01	5.0	1.3	6.1	1.8	31	3.2	4.8	.2	0	a48	18	0	73	7.0
Aug. 11-20.....	1192	12	.01	4.6	1.3	6.7	2.1	28	4.0	4.8	.2	.6	a50	17	0	73	7.0
Aug. 21-31.....	796	12	.01	4.8	1.5	7.0	2.1	29	4.0	4.8	.3	.8	a51	18	0	75	7.2
Sept. 1-10.....	766	11	.01	4.4	1.5	7.4	1.8	31	4.0	4.0	.3	.2	a50	17	0	73	7.0
Sept. 11-20.....	678	11	.00	4.4	1.7	7.5	1.8	31	3.2	4.5	.2	4	67	18	0	75	7.0
Sept. 21-30.....	1106	7.4	.02	4.4	1.7	7.6	1.8	31	3.6	5.0	.2	1.0	65	18	0	77	6.8
Time-weighted average.....	2751	11	0.01	4.2	1.2	5.7	1.9	26	4.0	3.9	0.2	0.7	50	16	0	65	--
																	5

a Calculated from determined constituents.

Temperature (°F) of water, water year October 1959 to September 1960																																
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.....	78	78	80	78	78	79	79	79	77	78	76	75	74	74	71	68	68	70	68	68	67	66	64	66	64	61	62	60	51	60	60	70
November.....	64	62	62	62	64	60	56	54	53	--	55	56	60	62	61	62	56	52	52	53	--	58	58	58	--	53	52	50	46	--	57	57
December.....	44	46	48	48	48	50	48	45	46	46	50	52	50	48	47	48	50	52	52	48	49	48	--	44	44	50	51	54	51	49	45	48
January.....	40	48	47	54	46	48	46	46	47	47	48	48	50	48	50	48	46	46	44	44	44	44	42	42	40	40	45	46	48	50	47	
February.....	47	46	48	46	47	47	50	44	47	49	50	48	47	42	44	43	46	48	46	44	44	44	47	48	--	49	46	44	45	--	46	46
March.....	44	42	34	42	40	40	43	42	41	43	42	41	40	41	43	45	50	52	50	45	40	46	46	52	50	51	58	52	58	55	59	46
April.....	60	60	60	58	57	59	60	64	58	--	48	55	50	50	49	50	48	52	50	50	56	63	--	64	--	62	--	60	60	--	56	--
May.....	--	58	66	65	66	70	68	67	65	64	--	--	68	75	72	75	74	76	76	81	75	77	77	72	75	74	76	71	72	75	74	76
June.....	76	76	77	76	78	80	--	77	76	80	86	78	78	78	78	78	79	79	80	80	80	83	80	83	80	83	80	81	83	82	--	79
July.....	--	83	80	82	83	84	85	83	82	85	84	83	84	84	82	85	85	--	83	85	85	85	85	84	84	85	86	83	80	--	84	--
August.....	82	84	84	85	86	84	84	85	83	83	81	82	81	82	82	82	82	82	82	81	83	83	83	83	80	--	80	81	82	83	84	83
September.....	83	83	81	83	82	83	83	83	83	84	84	82	80	76	77	77	77	77	77	77	77	77	77	76	76	75	77	72	73	--	80	--

## ST. JOHNS RIVER BASIN

## 2-2324. ST. JOHNS RIVER NEAR COCOA, FLA.

LOCATION.--At State Highway 520, approximately 0.5 mile downstream from outlet of Lake Poinsett, 10.5 miles west of Cocoa, Brevard County.

DRAINAGE AREA.--1,237 sq. miles.

RECORDS AVAILABLE.--Chemical analyses: October 1953 to September 1960.

Water temperatures: October 1953 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 408 ppm Mar. 1-10; minimum, 68 ppm Mar. 17-18.

Hardness: Maximum, 126 ppm June 11; minimum, 16 ppm Mar. 17-18.

Specific conductance: Maximum daily, 877 micromhos Mar. 18.

Water temperatures: Maximum, 86°F July 7, Aug. 13; minimum, 49°F Jan. 24.

EXTREMES, 1953-60.--Dissolved solids: Maximum, 998 ppm July 11-20, 1956; minimum, 68 ppm Mar. 17-18, 1960.

Hardness: Maximum, 294 ppm June 11-20, 1956; minimum, 16 ppm Mar. 17-18, 1960.

Specific conductance: Maximum daily, 1,120 micromhos June 11-20, 1956; minimum, 68 micromhos Mar. 18, 1960.

Water temperatures: Maximum, 95°F Aug. 9, 1956; minimum, 46°F Jan. 9, 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-10, 1959.....	2315	6.7	0.09	22	3.2	34	1.4	37	13.6	66	0.2	0.0	219	68	38	315	7.1	100
Oct. 11-20.....	2567	6.6	0.10	21	1.9	26	1.5	36	9.6	56	0.2	0.0	186	66	36	263	6.7	100
Oct. 21-31.....	3892	6.3	0.10	18	3.2	27	1.4	36	9.6	49	0.2	0.0	172	58	28	253	6.6	100
Nov. 1-10.....	3288	6.0	0.10	16	3.2	23	1.0	36	10.6	48	0.2	0.0	169	53	24	241	7.2	120
Nov. 11-20.....	2721	6.2	0.10	14	3.4	21	0.8	33	9.6	42	0.2	0.0	147	49	22	216	7.1	110
Nov. 21-30.....	2652	4.5	0.10	14	3.6	23	1.0	32	9.6	45	0.2	0.0	156	50	24	226	7.2	120
Dec. 1-10.....	2026	5.1	0.09	13	3.5	22	0.8	31	8.8	42	0.2	0.0	148	47	22	216	7.1	120
Dec. 11-20.....	1631	5.0	0.08	16	4.6	32	1.1	34	12	62	0.2	0.0	197	59	31	291	7.0	100
Dec. 21-31.....	1056	5.2	0.09	18	3.2	27	1.0	31	11	58	0.2	0.0	184	54	28	276	7.0	100
Jan. 1-10, 1960.....	1052	9.2	0.07	22	3.2	37	1.7	38	11	71	0.2	0.0	243	62	37	336	7.0	110
Jan. 11-20.....	832	6.2	0.08	22	3.2	36	0.7	38	13	72	0.2	0.0	235	68	37	332	7.1	110
Jan. 21-31.....	626	9.0	0.08	26	1.7	38	0.8	40	14	75	0.2	0.0	244	72	39	347	6.9	110
Feb. 1-10.....	630	5.6	0.08	27	3.0	45	0.9	40	17	89	0.2	0.0	289	80	47	402	7.1	100
Feb. 11-20.....	654	2.9	0.07	32	5.8	60	1.3	46	26	118	0.2	0.0	370	104	66	526	7.1	100
Feb. 21-29.....	757	4.8	0.06	37	4.7	65	1.9	44	28	129	0.2	0.0	407	112	76	574	7.0	100
Mar. 1-10.....	990	2.1	0.04	31	6.9	68	3.3	46	28	144	0.2	0.1	408	114	49	523	7.0	80
Mar. 11-16.....	5205	1.4	0.04	36	6.0	10	2.7	10	22	118	0.0	0.1	68	12	8	93	6.8	70
Mar. 17-18.....	5205	2.3	--	6.4	0.0	10	2.7	10	4	18	0.0	0.1	68	16	8	93	6.8	70

Mar. 19-31, 1960.	6008	3.2	.06	16	3.9	33	2.6	28	13	64	.1	.3	192	56	33	297	6.9	85
Apr. 1-10.	3875	2.3	.04	14	1.9	23	1.9	27	10	39	.2	.0	141	43	21	204	6.9	80
Apr. 11-20.	2668	.4	.06	14	1.7	22	1.3	28	8.8	36	.1	.1	138	42	19	101	7.1	100
Apr. 21-30.	2029	1.8	.07	15	1.8	23	1.1	30	8.0	37	.2	.1	142	45	20	198	7.0	120
May 1-4, 6-10.	1600	1.6	.08	15	2.6	23	1.3	28	7.2	43	.2	.3	160	48	25	217	6.9	80
May 5.	1620	3.2	--	19	2.3	36	--	31	--	67	.0	.0	57	57	32	306	7.3	--
May 11, 13, 16, 18-20.	1248	1.8	.08	17	2.8	27	1.1	24	8.8	50	.2	.3	192	54	34	250	6.5	100
May 12, 14, 15, 17.	1298	3.1	.06	17	4.7	35	1.5	32	11.8	73	.2	.0	238	62	36	330	6.9	100
May 21-27.	1030	2.2	.08	18	1.7	27	1.5	32	8.8	50	.2	.3	183	52	28	246	6.9	120
May 28.	926	--	--	22	3.6	46	--	31	--	84	--	--	--	70	44	383	7.2	--
May 29-31.	886	3.3	.05	18	6.6	34	1.0	32	13	69	.3	.1	230	72	46	322	6.9	100
June 1-10.	936	2.4	.08	20	2.4	34	3.3	34	11	66	.2	.1	224	60	32	316	7.0	80
June 11.	926	3.8	--	36	8.8	102	2.5	42	13	198	--	--	385	126	92	817	7.5	100
June 12-20.	926	5.4	.06	26	4.6	50	6	38	18	94	.3	.3	295	84	53	431	7.5	60
June 21-29.	1310	2.4	.06	30	4.6	53	6	40	22	106	.3	.3	295	84	53	431	7.5	60
July 1-10.	1724	4.6	.06	22	2.7	33	1.0	36	11	63	.2	.3	232	66	36	299	6.9	90
July 11-16, 28-30.	3072	5.3	.09	18	1.7	24	8	32	8.0	44	.2	.1	181	52	26	227	7.1	110
Aug. 1-10.	5073	6.8	.08	18	1.2	23	.5	32	9.6	44	.2	.1	167	50	24	221	7.1	120
Aug. 11-19.	3998	8.2	.10	17	2.3	20	.5	36	8.8	39	.2	.0	157	52	22	209	7.3	120
Aug. 20.	3380	7.0	--	22	3.6	42	--	35	--	78	--	.0	--	70	42	361	7.2	--
Aug. 21-28, 30.	3354	7.3	.10	13	2.8	17	3	34	6.8	34	.2	.0	139	44	16	180	7.3	120
Aug. 29.	3180	6.3	--	20	3.9	44	--	34	--	32	--	.0	--	46	16	336	7.6	--
Sept. 1-2.	2965	--	--	14	2.2	--	--	26	--	82	--	.0	--	44	22	178	6.6	110
Sept. 3-4.	2845	--	--	20	3.6	--	--	34	--	96	--	--	--	73	45	414	6.9	110
Sept. 5-6.	2795	--	--	19	3.8	--	--	36	--	72	--	--	--	63	34	316	7.1	100
Sept. 7-13.	3274	7.0	.07	13	2.6	19	.5	27	7.2	36	.2	.2	149	43	21	178	6.8	110
Sept. 14-30.	6544	5.7	.08	15	2.6	22	.9	29	9.6	43	.3	.0	178	48	24	211	6.7	110
Time-weighted average.	b2424	4.7	0.08	20	3.4	33	1.1	34	13	63	0.2	0.1	213	63	35	301	--	100

a Calculated from determined constituents.

b Represents more than 96 percent of runoff.

ST. JOHNS RIVER BASIN--Continued  
 2-2324. ST. JOHNS RIVER NEAR COCOA, FLA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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 .....	--	84	82	84	82	82	--	80	80	81	82	84	--	84	84	84	84	80	80	79	78	78	78	78	76	74	74	74	76	76	80		
November .....	75	74	75	75	76	76	73	70	69	68	71	71	71	71	72	75	73	71	71	70	71	71	71	70	75	70	68	69	68	56	--	71	
December .....	55	59	59	56	56	57	55	54	--	56	58	65	61	60	62	63	64	66	66	62	64	64	62	68	63	64	66	66	67	64	63	62	
January .....	--	63	67	66	66	66	70	69	65	65	66	66	67	67	67	65	65	64	65	56	55	54	50	49	55	56	57	58	63	64	60	62	
February .....	58	60	64	64	64	65	65	60	65	65	65	65	64	62	58	62	62	64	57	57	58	63	59	61	57	67	65	63	64	--	62		
March .....	67	67	68	68	59	56	55	57	58	62	63	60	59	59	--	63	62	64	59	61	60	59	59	61	64	65	68	68	69	71	74	63	
April .....	72	74	75	75	73	70	68	69	70	70	67	68	68	69	70	71	72	75	75	75	76	75	75	76	76	76	77	76	--	76	--	73	
May .....	76	76	76	75	76	76	76	72	68	74	71	76	76	76	76	76	78	81	81	81	80	79	80	80	80	81	81	81	83	80	84	82	77
June .....	83	84	85	83	83	83	80	80	80	75	75	80	80	82	83	81	--	81	81	81	82	82	83	82	83	83	83	82	83	84	--	--	82
July .....	81	82	81	83	83	85	86	85	84	84	84	83	82	83	84	85	--	--	--	--	--	--	--	--	--	--	--	--	83	80	80	--	--
August .....	80	83	83	85	84	84	84	84	84	85	85	84	86	85	85	85	83	85	83	81	83	84	83	83	83	80	83	84	84	83	83	--	84
September .....	84	83	83	82	83	82	82	84	84	80	83	82	82	82	83	82	82	80	80	81	81	81	81	81	80	80	81	82	81	81	81	--	82





## LAKE OKEECHOBEE AND THE EVERGLADES

2-2730. KISSIMEE RIVER NEAR OKEECHOBEE, FLA.

LOCATION.--At gaging station on downstream end of left pier of bridge on State Highway 70, 9.4 miles west of Okeechobee, Okeechobee County and 16 miles upstream from Lake Okeechobee.

DEATHS FROM LAKE OKEECHOBEE.

RECORDS AVAILABLE.--Chemical analyses: March 1940 to February 1941, October 1953 to September 1960.

Water temperatures: October 1953 to September 1960.

EXTREMES, 1953-60.--Dissolved solids: Maximum, 74 ppm Feb. 11-20; minimum, 39 ppm Apr. 1-10.

Hardness: Maximum, 19 ppm Dec. 21-31; minimum, 14 ppm Apr. 21-31, Sept. 1-30.

Specific conductance: Maximum daily, 97 micromhos Oct. 16; minimum daily, 47 ppm Aug. 18.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

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Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

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Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

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Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

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EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

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Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

Water temperatures: Maximum, 86°F July 9, 19, 23, 24; minimum, 51°F Jan. 25-27.

EXTREMES, 1940-41, 1951-60.--Dissolved solids: Maximum, 136 ppm May 11-20, 1956; minimum, 39 ppm Apr. 1-10, 1960.

Hardness: Maximum, 36 ppm July 21-31, 1956; minimum, 12 ppm Oct. 1-10, 1956.

Specific conductance: Maximum daily, 111 micromhos Oct. 16, 1956; minimum, 47 ppm Aug. 18, 1956.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Col- or pH
														Residue at 180°C	Calculation			
Oct. 1-10, 1959.....	6940	3.5	0.05	4.4	1.6	6.1	0.0	14	4.0	9.5	0.2	0.1		56	36	18	68	6.4
Oct. 11-20.....	7301	2.6	.06	4.4	1.6	6.0	.1	14	3.2	9.0	.2	.2		54	34	18	66	6.0
Oct. 21-31.....	9933	2.2	.06	4.4	1.5	5.6	.1	12	3.2	9.5	.2	.1		51	33	17	62	6.5
Nov. 1-10.....	2658	1.9	.04	3.8	1.6	6.4	.2	14	3.2	7.0	.4	.0		53	32	19	60	6.4
Nov. 11-20.....	5897	.9	.08	4.0	1.5	5.5	.2	13	3.2	8.0	.2	.0		61	30	16	66	6.5
Nov. 21-30.....																		100
Dec. 1-10.....	5122	2.5	.04	4.4	1.5	5.5	.2	14	4.4	8.8	.2	.0		59	34	17	61	6.5
Dec. 11-20.....	4470	2.5	.05	4.0	1.8	6.0	.2	13	4.0	9.0	.2	.1		58	34	18	64	6.3
Dec. 21-31.....	4011	3.1	.05	4.2	2.1	6.4	.0	14	4.0	9.5	.2	.1		66	37	19	65	6.4
Jan. 1-10, 1960	3775	.6	.05	3.8	1.8	6.2	.0	14	4.0	9.2	.2	.0		62	33	17	65	6.5
Jan. 11-20.....	2979	.5	.09	4.4	1.7	5.9	.0	14	3.6	9.2	.2	.0		64	32	18	63	6.5
Jan. 21-31.....	2481	.5	.07	4.8	1.5	7.2	.0	14	4.4	9.5	.1	.1		66	38	18	68	6.4
Feb. 1-10.....	2679	8.8	.04	5.0	1.3	6.4	.8	11	4.4	11	.0	.1		63	43	18	71	7.1
Feb. 11-20.....	3206	3.8	.03	5.0	1.1	7.5	.5	11	4.4	12	.1	.0		74	39	17	72	6.7
Feb. 21-29.....	3074	2.2	.11	5.2	1.5	7.4	.5	14	3.6	12	.1	.1		71	40	19	72	7.2
Mar. 1-10.....	2702	1.8	.06	5.6	1.1	7.5	.0	15	4.4	10	.1	.1		60	38	18	74	6.4

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2730. KISSIMEE RIVER NEAR OKEECHOBEE, FLA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids			Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	pH	Col or
														Residue at 180°C	Calculation	Calcium-magnesium				
Mar. 11-20, 1960	2712	2.5	0.05	5.4	0.7	7.0	0.2	14	4.8	9.5	0.1	0.1		56	37	16	5	68	6.6	85
Mar. 21-31.....	5738	1.7	.05	4.8	1.0	6.5	.1	13	3.6	9.2	.1	.3		54	34	16	6	64	6.3	90
Apr. 1-10.....	6190	1.3	.06	5.0	.6	6.2	.1	12	2.4	8.0	.0	.3		39	30	15	5	58	6.9	90
Apr. 11-20.....	6183	1.2	.05	5.0	.6	5.9	.1	12	3.2	8.0	.1	.0		54	30	15	5	58	6.7	90
Apr. 21-30.....	5602	2.4	.05	4.6	.7	5.9	.0	11	4.0	8.0	.1	.0		51	31	14	6	57	6.8	90
May 1-10.....	4854	.3	.05	5.4	.7	4.4	.0	14	3.8	8.0	.1	.1		55	30	16	5	59	6.6	70
May 11-20.....	3875	1.9	.04	4.8	.7	4.7	.0	13	3.0	8.2	.1	.1		53	31	16	6	57	6.5	75
May 21-31.....	3875	1.9	.04	4.8	.7	4.7	.0	13	3.0	8.2	.1	.1		53	31	16	6	57	6.5	70
June 1-10.....	2758	2.0	.06	5.2	1.0	5.5	.0	15	2.0	7.8	.2	1.0		43	32	17	4	60	6.8	70
June 11-20.....	2729	1.8	.07	4.2	1.1	5.2	.0	14	2.4	6.5	.1	.0		48	28	15	4	57	6.6	50
June 21-30.....	3053	2.2	.05	4.6	.9	5.3	.0	15	2.0	6.8	.2	.0		56	29	15	2	61	7.0	60
July 1-10.....	3161	2.3	.07	5.2	.7	5.4	.0	15	1.6	7.0	.2	.1		58	30	16	4	59	6.5	70
July 11-20.....	3812	3.1	.07	4.8	.7	5.2	.0	14	2.4	6.8	.1	.0		54	30	15	4	57	6.6	60
July 21-31.....	4906	3.4	.05	4.8	.9	5.4	.0	14	2.4	6.0	.1	.0		58	30	16	4	59	6.7	80
Aug. 1-10.....	8652	2.1	.05	4.2	1.3	4.8	.0	12	.8	6.5	.2	.0		44	28	16	6	53	6.7	80
Aug. 11-20.....	10277	2.2	.06	4.4	1.5	4.4	.0	12	.4	5.8	.1	.0		43	25	17	7	52	6.5	85
Aug. 21-31.....	8982	2.1	.06	4.4	1.7	4.2	.0	12	.8	5.5	.1	.0		41	24	14	4	52	6.9	80
Sept. 1-10.....	9120	4.5	.08	4.2	.7	5.9	.0	16	3.6	7.5	.1	.1		53	35	14	0	56	6.9	70
Sept. 11-20.....	12400	2.9	.08	4.2	.7	4.5	.2	14	2.8	8.0	.1	.1		48	30	14	2	51	6.8	80
Sept. 21-30.....	14060	5.3	.10	4.4	.7	4.9	.2	14	2.4	8.0	.1	.3		50	33	14	2	53	7.1	90
Weighted average....	--	2.5	0.06	4.5	1.1	5.5	0.1	13	2.9	8.0	0.1	0.1		53	32	16	5	59	6.6	84
Time-weighted average....	5584	2.3	0.05	4.6	1.2	5.7	0.1	13	3.1	8.3	0.1	0.1		55	32	16	5	61	6.5	84
Tons per day	--	37	0.91	68	17	83	1.5	200	44	122	2.2	1.5		796	476	--	--	--	--	1260



LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
 2-2730. KISSIMEE RIVER NEAR OKEECHOBEE, FLA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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	
81	81	81	81	81	81	81	81	80	81	81	81	81	82	82	82	82	81	--	78	77	79	80	79	77	80	77	80	77	78	78	
78	78	--	77	77	77	77	76	74	--	71	72	72	73	73	73	73	73	--	67	67	72	72	71	68	71	68	71	70	69	--	
58	60	59	59	59	59	59	59	59	60	60	60	62	62	62	64	64	65	72	70	65	65	64	65	64	65	66	66	65	65	63	
63	62	62	64	70	70	70	70	68	67	67	68	68	68	68	68	69	68	66	60	55	53	52	51	51	51	55	60	60	60	63	
59	59	61	63	65	63	63	63	65	68	68	68	65	62	63	64	63	63	64	64	64	66	65	67	68	72	72	69	--	--	65	
70	70	69	64	62	60	59	61	62	64	--	64	66	67	66	68	68	66	64	63	62	65	67	68	68	70	72	73	73	74	66	
71	77	77	74	74	72	72	72	71	71	69	70	71	72	72	73	74	74	74	74	73	75	74	75	76	76	77	77	80	--	74	
80	79	80	80	80	80	80	80	78	76	76	74	71	75	73	78	--	78	77	80	80	80	80	81	80	81	81	79	79	79	74	
78	78	78	78	80	80	80	80	81	80	80	77	77	78	79	82	80	80	80	79	80	80	81	80	84	82	80	82	83	--	80	
85	84	85	85	85	80	85	85	86	86	85	85	84	84	85	82	82	83	83	84	85	82	86	86	85	85	83	82	80	79	80	
80	81	83	84	83	84	83	84	84	--	85	85	85	81	83	83	83	84	83	--	84	84	84	84	84	84	81	83	83	84	83	
--	84	83	82	83	83	83	83	83	--	78	80	81	82	82	82	83	82	81	81	82	82	--	80	82	81	81	83	82	82	--	

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2748.5. WEST PALM BEACH CANAL ABOVE S-5A, NEAR LOXAHATCHEE, FLA.

LOCATION.--At gaging station near south bank, 500 feet upstream from pump station S-5A, 0.3 mile upstream from Levee 8 Canal, 1.1 miles downstream from bridge on U. S. Highway 441 and confluence with Cross Canal, and 6 miles west of Loxahatchee, Palm Beach County.  
RECORDS AVAILABLE.--Chemical analyses: November 1957 to September 1960.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 6, 1959.....	1,020	6.8	0.01	91	10	56	2.8	200	40	70		0.0	346	193	29	820	8.0	40
Nov. 9.....	783	26.1	.05	116	34	126	5.2	442	116	198		3.3	837	430	68	1,450	7.6	200
Dec. 9.....	554	4.5	.02	50	12	46	1.5	166	37	64		.1	297	174	38	542	7.7	43
Jan. 6, 1960.....																		
Mar. 8.....	564	4.9	.02	48	9.7	46	2.0	160	38	70		.8	298	160	29	547	7.4	40
Apr. 5.....	911	4.6	.15	52	.6	36	1.4	132	23	49		.2	232	132	24	426	7.9	45
June 7.....	434	13	.02	54	13	94	3.8	220	44	140		.6	470	188	8	871	8.5	100
July 6.....	300	14	.13	51	5.1	60	2.2	192	27	76		1.7	312	148	24	548	8.2	170
Aug. 22.....	641	10	.03	45	7.7	52	1.4	156	16	75		.0	284	144	16	503	7.8	80
Sept. 2.....	1,170	4.8	.04	27	.9	15	.3	78	5.2	23		.0	114	71	7	209	7.3	55

a Includes equivalent of 8 parts per million of Carbonate (CO<sub>3</sub>).

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2765. ST. LUCIE CANAL AT LAKE OKEECHOBEE, FLA.

LOCATION.--At bridge on U.S. Highways 98 and 441, at outlet of Lake Okeechobee, 0.8 mile west of Port Mayaca, Martin County.  
RECORDS AVAILABLE.--Chemical analyses: March 1940 to February 1942, November 1954 to September 1960.  
REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 5, 1959.....		3.8	0.00	40	3.9	22	2.0	120	22	28		0.0	181	116	18	318	8.0	20
Dec. 2.....		1.1	.02	58	2.6	22	1.0	144	34	39		.1	229	155	37	413	7.9	30
Jan. 6, 1960.....		3.7	.01	49	8.5	20	1.2	142	32	38		.0	222	158	41	412	7.6	35
Feb. 4.....		3.0	.01	49	7.9	26	1.0	140	32	38		.0	226	155	40	410	7.6	30
Mar. 4.....		5.4	.02	51	8.6	19	.8	160	27	33		.3	224	162	32	410	7.6	30
Apr. 5.....		3.6	.01	48	2.9	25	.9	132	24	29		.1	299	132	24	352	7.7	32
May 5.....		4.6	.01	30	7.1	16	1.1	108	20	28		.0	160	104	16	293	8.2	45
June 6.....		3.3	.02	30	6.3	14	1.4	100	21	25		.0	150	101	19	278	7.9	40
July 5.....		2.7	.02	30	2.2	12	.4	82	15	20		.1	122	84	17	229	7.6	48
Aug. 2.....		4.6	.05	24	4.9	13	.5	98	16	22		.0	123	80	16	221	7.8	55
Sept. 7.....		4.5	.02	28	5.6	16	.7	94	17	22		.0	140	93	16	232	7.8	50

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2777. SOUTHWEST FORK LOXAHATCHEE RIVER NEAR JUPITER, FLA.

LOCATION.--At bridge on State Highway 706, 2.4 miles upstream from mouth and 3 miles west of Jupiter, Palm Beach County.  
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960.  
REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos/cm at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 10, 1959.....		8.1	0.00	35	1.1	13	0.5	105	7.2	17		0.2	134	92	6	238	7.6	30
Nov. 13.....		3.7	.01	40	.0	8.0	.5	112	2.4	18		.2	128	100	8	252	7.6	35
Dec. 5.....		4.6	.00	35	3.0	7.5	.4	104	8.0	18		.2	128	100	15	239	7.5	30
Jan. 8, 1960.....		6.4	.01	57	3.2	18	.6	170	11	29		.1	209	155	16	380	7.8	30
Feb. 12.....		9.2	.03	89	4.4	26	.7	262	14	44		.3	317	240	26	564	8.0	42
Mar. 8.....		13.0	.02	86	3.6	26	1.4	236	18	74		.3	396	288	54	693	8.3	40
Apr. 1.....		13.0	.01	107	5.1	26	.8	204	13	42		.3	257	185	18	463	7.8	40
May 13.....		8.2	.02	70	2.6	20												
June 9.....		7.4	.02	66	3.2	18	.8	194	14	36		.4	242	178	16	444	7.5	45
July 14.....		5.0	.04	29	2.3	11	.1	90	6.8	16		.1	114	82	8	212	7.5	48
Aug. 11.....		8.7	.03	44	6.8	18	.0	160	9.6	28		.1	194	138	7	357	7.5	30

<sup>a</sup> Includes equivalent of 6 parts per million of Carbonate (CO<sub>3</sub>).

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

2-2785.5. LEVEE 8 CANAL AT WEST PALM BEACH CANAL, NEAR Loxahatchee, FLA.

LOCATION.--At gaging station at upstream side in center of span of bridge on U.S. Highway 441, 50 feet above mouth and confluence with West Palm Beach Canal, 1.2 miles west of Loxahatchee, Palm Beach County.

RECORDS AVAILABLE.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 6, 1959.....	489	8.4	0.02	45	0.9	25	1.3	120	11	34		0.0	185	116	18	335	7.4	80
Nov. 9.....	659	5.8	.02	39	4.5	31	1.9	128	18	42		0	205	116	11	378	8.0	40
Dec. 9.....	249	6.4	.03	60	1.3	40	1.4	168	21	72		.3	285	155	18	534	8.0	70
Jan. 6, 1960.....	136	8.2	.03	60	6.2	42	1.2	162	13	72		.3	283	175	42	511	7.7	70
Mar. 8.....	133	8.6	.01	66	9.2	58	2.5	210	29	96		.8	373	202	30	683	7.8	70
Apr. 5.....	159	3.9	.05	61	3.6	40	1.4	162	20	54		0	284	167	34	474	8.2	45
May 5.....	152	7.9	.02	62	7.2	38	2.2	158	28	58		.8	283	158	28	565	7.8	60
July 6.....	342	11.7	.03	62	9.9	48	2.2	158	15	78		.1	277	142	14	509	7.4	55
Aug. 22.....	299	9.3	.05	51	3.6	46	1.4	156	15	74		.0	119	73	8	213	7.4	60
Sept. 2.....	569	7.2	.04	26	1.9	15	.5	79	5.6	24		.0	119	73	8	213	7.4	60

a Includes equivalent of 4 parts per million of carbonate (CO<sub>3</sub>).

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

2-2805. HILLSBORO CANAL BELOW HGS-4, NEAR SOUTH BAY, FLA.

LOCATION.--At gaging station, 200 feet downstream from confluence with North New River Canal, 1,000 feet downstream from hurricane gate structure No. 4 and pump structure No. 2 at Lake Okeechobee, and 2.5 miles north of South Bay, Palm Beach County.

RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 5, 1959.....	211	0.0	0.03	84	18	50	2.6	288	50	87		0.0	414	284	48	727	8.0	120
Oct. 11.....	480	30	.04	226	32	159	6.7	439	90	130		2.1	878	466	43	1,470	8.2	220
Dec. 2.....	-361	18	.04	93	36	64	3.3	4314	129	106		2.3	605	380	122	1,010	8.3	180
Jan. 5, 1960.....	-274	27	.04	128	36	144	5.3	488	76	182		2.4	841	468	68	1,410	7.9	180
Feb. 3.....	-319	5.3	.03	50	10	27	1.4	156	34	40		.3	245	166	38	447	7.8	44
Mar. 3.....	-352	27	.04	93	27	168	5.8	412	62	244		2.7	833	343	6	1,480	7.7	160
May 5.....	-373	32	.06	184	12	148	6.1	535	122	196		1.7	968	508	70	1,550	8.5	200
June 8.....	0	5.0	.02	40	9.7	25	1.9	140	30	41		.0	222	140	26	408	7.9	50
July 5.....	-303	34	.07	206	6.4	150	6.9	5473	173	188		14	1,010	540	153	1,540	8.5	260
Aug. 3.....	-545	34	.10	155	37	140	6.9	544	135	190		2.1	968	538	92	1,550	7.5	220
Sept. 6.....	-319	43	.09	216	37	168	6.4	610	240	208		.6	1,220	691	191	1,860	7.4	280

a Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

b Includes equivalent of 28 parts per million of carbonate (CO<sub>3</sub>).

Note.--Negative figures indicate flow toward Lake Okeechobee.

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2835. NORTH NEW RIVER CANAL BELOW HGS-4, NEAR SOUTH BAY, FLA.

LOCATION.--At gaging station, 800 feet downstream from confluence with Hillsboro Canal, 1,600 feet downstream from hurricane gate structure No. 4 and pump structure No. 2 at Lake Okeechobee, and 2.5 miles north of South Bay, Palm Beach County.  
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1960. 1960 given in WSP 1704.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 5, 1959.....	211	9.7	0.05	86	13	40	2.2	282	35	58		0.0	383	268	37	664	8.0	180
Dec. 2, 1959.....	315	22	.02	118	37	84	3.6	394	133	122		.3	714	446	124	1,182	7.5	150
Jan. 5, 1960.....	274	28	.05	145	29	142	5.2	490	92	192		2.4	877	481	80	1,470	8.0	180
Feb. 3.....	317	3.8	.02	50	12	26	1.4	154	33	39		.2	241	174	48	436	7.9	42
Mar. 3.....	333	15	.03	74	22	115	4.4	314	49	170		1.6	606	275	18	1,090	7.5	150
May 5.....	373	32	.04	152	32	155	6.2	4537	130	194		.0	966	510	70	1,560	8.5	200
June 8.....	327	6.9	.02	50	11	28	2.2	176	30	144		.0	239	170	26	1,489	7.9	30
July 3.....	323	3.8	.03	138	18	138	6.3	532	134	170		1.7	929	538	102	1,510	7.9	240
Aug. 3.....	343	34	.12	138	47	135	6.8	532	92	73		.2	555	392	95	857	7.3	180
Sept. 6.....	-1,540	18	.08	114	26	51	2.5	362										

a Includes equivalent of 24 parts per million of carbonate (CO<sub>3</sub>).

Note.--Negative figures indicate flow toward Lake Okeechobee.

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2864. MIAMI CANAL AT HGS-3 AND S-3, AT LAKE HARBOR, FLA.

LOCATION.--At gaging station at hurricane gate structure No. 3 and pump structure No. 3, at Lake Okeechobee, and 0.4 mile north of U.S. Highway 27, in Lake Harbor, Palm Beach County.  
RECORDS.--Records of discharge for water year October 1959 to September 1960.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
															Calcium	Non-magnesium			
Oct. 5, 1959.....	0	24.9	0.02	85	22	66	3.7	272	93	82		0.0	510		302	78	841	8.4	100
Dec. 5, 1959.....	0	19.0	.02	98	18	74	1.6	324	79	56		1.3	348		336	56	913	7.8	80
Jan. 5, 1960.....	0	13.0	.01	98	20	74	2.6	273	79	56		1.3	348		336	56	913	7.8	80
Feb. 3.....	55	5.4	.01	50	7.9	26	.9	148	33	36		.0	232		158	36	422	7.7	42
Mar. 3.....	0	2.9	.01	43	9.1	19	.9	138	29	34		.2	206		145	32	386	7.7	50
Apr. 5.....	-87	10	.01	59	4.3	29	1.2	160	35	39		.2	257		164	34	443	7.8	45
May 4.....	-355	13	.02	79	23	51	2.6	273	82	78		1.6	464		292	68	790	8.7	80
June 6.....	-98	3.3	.01	38	7.5	20	1.6	126	28	32		.0	192		126	22	352	8.0	40
July 5.....	-261		.06	122	3.5	48	1.9	322	49	73		1.7	466		319	55	795	7.9	160
Aug. 2.....	-802	12	.14	115	22	58	2.4	348	90	83		2.7	558		378	92	930	7.5	150
Sept. 6.....	-892	14	.07	90	15	50	1.5	284	53	70		.0	434		286	54	727	8.0	200

a Includes equivalent of 8 parts per million of carbonate (CO<sub>3</sub>).

b Includes equivalent of 18 parts per million of carbonate (CO<sub>3</sub>).

Note.--Negative figures indicate flow toward Lake Okeechobee.



## LAKE OKECHOBEE AND THE EVERGLADES--Continued

## 2--2872. MIAMI CANAL EAST OF LEVEE 30, NEAR MIAMI, FLA.

LOCATION.--Approximately 200 feet downstream from Levee 30, 100 feet downstream from control structure 32, 0.5 mile upstream from gaging station at broken dam 18 miles upstream from mouth, and 18 miles northwest of Miami, Dade County.

RECORDS AVAILABLE.--Chemical analyses, in parts per million, water year October 1959 to September 1960.

Water temperatures: November 1959 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 356 ppm Feb. 11-20; minimum, 278 ppm Sept. 21-30.

Hardness: Maximum, 202 ppm Feb. 11-20; minimum, 176 ppm Mar. 1-10, Sept. 21-30.

Specific conductance: Maximum daily, 598 micromhos Apr. 24; minimum daily, 429 micromhos Sept. 23.

Water temperatures: Maximum, 88°F May 22, Aug. 25; minimum, 63°F Jan. 22.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 356 ppm Feb. 11-20, 1960; minimum, 250 ppm July 1-10, 1959.

Hardness: Maximum, 216 ppm May 21-31, 1959; minimum, 166 ppm Apr. 21-30, 1959.

Specific conductance: Maximum, 588 micromhos Apr. 24, 1959; minimum, 429 micromhos Feb. 4, 1959.

Water temperatures: Maximum, 88°F July 9-10, 17 Aug. 1, 1959, May 22, Aug. 26, 1960, minimum, 63°F Jan. 19, 1959, Jan. 22, 1960.

REMARKS.--No discharge records available for this station.

## Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> ) (B)	Dissolved solids (residue at 180°C)			Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color or pH				
														Parts per million	Tons per acre-foot	Tons per day							
Oct. 1-10, 1959		7.9	0.03	65	6.3	32	1.8	208	--	5.2	46	0.4	7.3		328	0.45		188	18	1.0	493	7.9	55
Oct. 11-20, 1959		6.9	0.03	63	7.5	34	1.2	216	--	4.8	50	0.4	1.8		316	.43		188	11	1.1	487	7.9	55
Oct. 21-31, 1959		6.4	.02	61	7.8	35	1.4	214	--	5.2	48	0.4	2.4		313	.43		184	8	1.1	494	7.9	55
Nov. 1-10, 1959		7.4	0.03	64	6.9	34	1.4	228	--	5.6	50	0.4	1.1		319	.43		188	1	1.1	510	7.9	55
Nov. 11-20, 1959		6.1	.02	66	6.2	32	1.4	220	--	4.8	51	0.4	1.4		316	.43		190	10	1.0	503	7.9	55
Nov. 21-30, 1959		7.2	.02	65	5.4	38	1.4	222	--	5.6	51	0.4	.8		312	.42		184	2	1.2	504	7.9	55
Dec. 1-10, 1959		6.4	.02	68	4.0	36	1.4	225	--	5.6	52	0.4	.4		320	.44		186	2	1.1	510	7.9	55
Dec. 11-20, 1959		9.2	.02	70	4.3	36	1.6	226	--	6.4	53	0.4	2.6		331	.45		192	7	1.1	527	7.9	55
Dec. 21-31, 1959		5.2	.02	97	6.6	37	1.4	230	--	6.8	54	0.4	1.1		334	.45		184	6	1.2	526	7.9	55
Jan. 1-10, 1960		8.4	.02	74	1.8	41	.6	236	--	6.8	56	0.3	.0		339	.46		192	0	1.3	536	7.8	55
Jan. 11-20, 1960		5.2	.02	74	2.8	42	.7	234	--	7.2	58	0.3	.8		340	.46		186	4	1.3	547	7.8	55
Jan. 21-31, 1960		10	.02	75	2.2	4.2	.7	234	--	6.8	60	0.3	2.9		350	.48		196	4	.1	553	8.0	55
Feb. 1-10, 1960		11	.02	66	8.1	41	1.4	232	4	6.8	59	0.3	5.3		350	.48		198	14	1.3	556	8.4	55
Feb. 11-20, 1960		2.4	0.02	72	5.5	45	1.2	242	--	5.4	62	0.3	3.2		356	.48		202	4	1.4	577	7.8	45
Feb. 21-29, 1960		13	.02	66	8.1	41	1.4	242	4	5.6	59	0.3	2.1		341	.46		198	6	1.3	555	8.4	55
Mar. 1-10, 1960		7.3	0.02	59	7.1	44	1.6	218	--	6.8	60	0.3	.1		337	.46		176	0	1.4	526	7.9	90
Mar. 11-18, 1960		8.1	.02	66	7.7	44	1.3	242	--	7.2	62	0.4	.0		352	.48		196	0	1.4	560	8.2	60
Mar. 24-31, 1960		6.2	.00	62	9.1	43	1.8	244	8	6.8	60	.4	1.0		345	.47		192	5	1.3	545	8.6	60

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
 2-2872. MIAMI CANAL EAST OF LEVEE 30, NEAR MIAMI, FLA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued																							
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonates (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Boron (B)	Dissolved solids (residue at 180°C)		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Col- or		
															Parts per million	Tons per acre-foot	Calcium, Mag- nesium	Non-car- bonate					
Apr. 1-10.....		4.6	0.04	68	6.0	39	1.3	246	--	4.0	58	0.3	1.3			342	47	194	0	1.2	564	7.8	55
Apr. 11-20.....		4.8	.03	66	7.7	46	1.4	244	--	4.0	58	.2	1.2			347	47	196	0	1.4	560	7.7	55
Apr. 21-30.....		3.9	.02	56	8.1	42	1.3	248	--	5.2	45	.3	1.4			344	47	198	0	1.3	553	8.0	55
May 1-10.....		2.9	.02	69	5.8	36	1.4	240	--	5.8	52	.3	1.3			340	47	196	0	1.2	534	8.1	50
May 11-20.....		2.0	.02	70	6.2	41	1.4	256	--	2.7	52	.3	.5			327	44	196	0	1.2	534	8.1	50
May 21-31.....		2.0	.02	70	6.2	41	1.4	256	--	2.7	52	.3	.5			339	46	200	0	1.3	547	8.1	55
June 1-10.....		4.2	.03	71	5.6	34	.5	242	--	5.2	48	.3	1.2			341	46	200	2	1.0	522	8.0	50
June 11-20.....		4.3	.03	67	6.1	31	.4	236	--	5.6	42	.4	1.0			315	43	192	0	1.0	500	7.8	40
June 21-30.....		3.8	.03	64	6.9	31	.6	234	--	4.8	40	.3	.5			315	43	188	0	1.0	492	8.0	40
July 1-10.....		4.0	.03	67	4.1	31	.6	236	--	5.6	40	.3	.4			306	42	184	0	1.0	487	8.1	45
July 11-20.....		3.4	.03	70	4.3	28	.5	236	--	5.6	38	.3	1.2			302	41	182	0	.9	482	8.2	50
July 21-31.....		4.1	.04	66	6.2	31	.3	228	--	6.0	42	.4	.4			301	41	186	1	1.0	473	8.0	50
Aug. 1-10.....		5.0	.02	62	7.2	31	1.3	216	--	7.2	42	.3	.6			307	42	184	7	1.0	465	7.9	50
Aug. 11-20.....		4.9	.02	63	6.1	30	1.3	218	--	7.2	39	.4	.3			306	42	182	4	1.0	461	7.8	50
Aug. 21-31.....		8.0	.03	65	6.3	30	1.3	232	0.2	4.4	42	.3	.3			305	41	188	1	1.0	469	8.3	40
Sept. 1-10.....		4.3	.04	62	7.2	29	.9	240	--	6	7.2	42	.3			306	42	184	0	.9	468	8.5	55
Sept. 11-20.....		7.4	.03	62	6.2	24	.8	222	--	5.2	34	.3	.3			280	38	180	0	.8	433	8.2	55
Sept. 21-30.....		6.1	.04	61	5.8	26	1.0	230	.6	5.2	44	.3	.1			278	38	176	0	.9	428	8.5	55
Time-weighted average....		6.0	0.02	66	6.0	35	1.2	232	0.8	5.4	50	0.3	1.3			324	--	190	3	1.1	512	8.0	53

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

2-2872. MIAMI CANAL EAST OF LEVEE 30, NEAR MIAMI, FLA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960																																	
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 .....		86	84	82	--	83	83	83	82	83	83	84	83	84	84	83	83	82	82	84	83	--	84	82	82	81	82	81	83	82	82	84	83
November .....		84	83	82	83	80	80	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	80	80	80	80	80	80	80	80	78	70	72
December .....		75	70	72	75	73	70	79	78	74	75	76	77	76	72	--	75	74	77	71	71	71	73	74	75	86	70	76	75	--	75	73	
January .....		74	74	77	76	75	75	74	72	70	75	76	77	76	69	68	68	74	70	70	64	63	72	71	73	74	74	69	75	75	70	72	
February .....		68	69	73	73	75	73	73	74	73	70	70	70	73	70	73	--	--	70	--	78	74	--	70	73	78	70	68	70	74	--	72	
March .....		70	70	71	69	70	65	70	69	71	77	75	70	72	71	73	--	--	68	--	--	--	--	--	72	--	73	73	76	78	75	--	
April .....		75	77	77	--	65	--	73	73	74	72	74	75	74	72	76	72	72	68	72	70	71	70	74	69	74	--	70	--	--	73		
May .....		75	74	72	75	76	75	82	--	77	81	82	80	76	75	78	76	76	--	86	88	75	76	77	76	76	76	76	76	75	77	73	
June .....		77	--	84	86	78	82	80	76	75	75	75	75	78	73	77	76	80	80	80	80	74	78	--	75	80	77	81	--	81	--	79	
July .....		82	--	81	83	--	80	84	82	81	82	82	--	82	81	80	84	--	--	82	83	81	80	80	84	83	77	81	84	--	--	--	
August .....		--	80	80	83	84	86	83	84	84	82	78	82	78	82	82	82	82	82	82	82	82	82	82	82	82	82	84	84	83	83	82	
September .....		82	85	86	86	84	80	--	--	82	85	84	82	86	84	86	82	84	86	82	82	84	80	76	80	82	84	81	84	83	81	--	

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
2-2890. TAMiami CANAL AT BRIDGE 45, 27 MILES WEST OF MIAMI, FLA.

LOCATION--At Bridge on U. S. Highway 41, 27 miles west of Miami, Dade County.  
RECORDS AVAILABLE--Chemical analyses, October 1959 to September 1960.  
REMARKS--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 29, 1959.....		2.0	0.02	23	1.6	4.4	0.0	74	1.6	8.5	0.1	0.0	96	64	4	147	7.7	30
Nov. 12.....		3.3	.02	25	1.1	4.6	.3	76	2.4	6.0	.1	.1	105	67	4	148	7.4	45
Dec. 30.....		7.6	.02	26	1.9	6.2	.3	86	2.8	8.0	.2	.5	119	73	2	169	7.7	40
Jan. 12, 1960.....		.8	.02	27	2.6	6.6	.3	94	2.4	8.0	.1	0	105	78	1	179	7.4	40
Feb. 11.....		1.4	.01	34	1.7	7.6	.4	108	2.8	10	.2	.0	141	92	4	208	7.6	40
Mar. 28.....		2.5	.02	40	2.9	8.4	.4	132	2.4	10	.2	.0	166	122	4	244	7.3	40
Apr. 28.....		4.6	.02	37	1.3	9.2	.5	138	2.8	16	.2	.2	185	126	6	280	7.4	16
June 16.....		5.6	.02	48	1.3	9.7	.4	147	.8	16	.2	.2	185	126	6	280	7.4	20
June 29.....		4.8	.02	41	1.6	7.7	.4	121	3.2	12	.2	3.4	159	109	10	239	7.5	25
July 15.....		9.8	.01	42	1.9	7.6	.4	128	2.4	13	.2	.1	161	113	8	242	7.3	22
Aug. 17.....		7.2	.02	38	1.9	7.2	.3	118	1.2	13	.2	.1	147	103	6	225	7.3	25
Sept. 19.....		4.9	.03	30	1.9	5.1	.3	97	2.0	9.0	.2	.1	111	83	4	182	6.8	22

## LAKE OKECHOBEE AND THE EVERGLADES--Continued

2-2908.2. EVERGLADES P-33, NEAR HOMESTEAD, FLA.

LOCATION.--Temperature recorder at gaging station in sec.11, T.56 S., R.36 E., in Everglades National Park, 13 miles southeast of 40 mile bend on U.S. Highway 1, 13 miles west of Homestead, Dade County, Florida, established July 1, 1960.  
 RECORDS AVAILABLE.--Water temperatures: April to September, 1960.  
 EXTREMES, April to September 1960.--Water temperatures: Maximum, 94°F June 23, 24, July 4.

REMARKS.--No discharge records available for this station.  
 Chemical analyses, parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	Color
														Residue at 180°C	Calculation	Calcium	Non-carbonate		
Dec. 24, 1959.		1.3	0.05	44	1.1	5.6	0.0	137	0.4	9.5	0.1	0.4	0.0	149	129	114	2	243	7.6
Apr. 7, 1960..		.4	.03	58	1.8	10	.0	176	.8	18	.3	1.1		198	177	152	8	318	7.5
July 28.....		2.6	.02	53	.5	7.3	.0	160	.4	11	.2	.2		168	154	134	3	280	7.1
Sept. 22.....		4.2	.05	47	.6	5.1	.1	142	.4	8.0	.2	.3		151	136	120	4	243	7.2

LAKE OKEECHOBEE AND THE EVERGLADES--Continued  
 2-2908 2. EVERGLADES P-33, NEAR HOMESTEAD, FLA.--Continued  
 Temperature (°F) of water, April to September 1960

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	
April	---	---	---	---	---	---	---	79	85	83	78	78	78	79	79	84	86	83	77	78	80	80	77	78	83	81	84	88	87	87	---	---
Maximum	---	---	---	---	---	---	---	71	71	72	65	68	69	70	72	71	73	73	72	71	71	72	72	71	72	74	74	76	74	75	---	---
Minimum	---	---	---	---	---	---	---	79	85	83	78	78	78	79	79	84	86	83	77	78	80	80	77	78	83	81	84	88	87	87	---	---
May	---	---	---	---	---	---	---	71	71	72	65	68	69	70	72	71	73	73	72	71	71	72	72	71	72	74	74	76	74	75	---	---
Maximum	89	89	90	85	85	85	86	79	82	84	82	82	80	82	86	85	88	90	91	89	88	85	86	84	86	84	79	81	77	74	84	
Minimum	75	76	77	77	75	74	72	72	65	67	69	70	69	66	70	72	71	73	75	75	75	75	74	73	74	74	75	73	72	71	72	
June	---	---	---	---	---	---	---	79	85	83	78	78	78	79	79	84	86	83	77	78	80	80	77	78	83	81	84	88	87	87	---	---
Maximum	89	82	83	86	87	92	92	87	92	84	84	86	89	89	88	86	93	86	84	86	89	93	94	94	89	91	90	93	86	92	---	
Minimum	72	75	74	76	76	79	79	72	75	72	74	74	76	78	78	80	81	78	78	79	80	82	82	81	79	81	80	81	79	---	---	
July	---	---	---	---	---	---	---	71	71	72	65	68	69	70	72	71	73	73	72	71	71	72	72	71	72	74	74	76	74	75	---	---
Maximum	90	93	90	94	91	91	90	90	88	91	90	91	87	90	93	88	88	87	90	93	91	90	91	92	91	86	83	82	84	83	83	
Minimum	81	81	81	79	82	81	82	81	82	82	83	81	82	82	83	82	82	82	85	85	85	85	84	83	80	79	79	80	79	80	79	
August	---	---	---	---	---	---	---	79	85	83	78	78	78	79	79	84	86	83	77	78	80	80	77	78	83	81	84	88	87	87	---	---
Maximum	88	90	87	88	89	89	90	90	90	91	89	89	89	85	86	86	86	87	86	85	86	86	85	86	84	84	86	87	85	83	80	
Minimum	78	83	84	84	82	82	82	84	84	84	85	85	84	80	79	82	82	82	81	81	80	83	82	81	80	82	82	83	80	78	82	
September	---	---	---	---	---	---	---	79	85	83	78	78	78	79	79	84	86	83	77	78	80	80	77	78	83	81	84	88	87	87	---	---
Maximum	80	83	83	82	80	82	84	85	85	77	84	88	90	92	90	91	87	86	91	90	88	84	82	81	88	90	89	91	89	88	---	
Minimum	77	78	80	79	79	78	79	80	77	75	76	80	83	85	85	84	84	82	85	83	81	79	80	80	84	85	85	86	86	---	---	

## LAKE OKEECHOBEE AND THE EVERGLADES--Continued

2-2908.3. EVERGLADES P-35, NEAR HOMESTEAD, FLA.

LOCATION.--Temperature recorder at gaging station in SE  $\frac{1}{4}$  sec. 36, T. 57 W., R. 34 E., in Everglades National Park, 100 feet north of Rookery Branch, 8 miles upstream from Shark River, 17 miles northwest of Royal Palm Ranger Station, and 24 miles west of Homestead, Dade County.

RECORDS AVAILABLE.--Water temperatures: March to September 1960.

EXTREMES, March to September 1960.--Water temperatures: Maximum, 98°F May 18, 19.

REMARKS.--No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Residue at 180°C	Calculated	Calcium	Non-magnesium carbonate			
Jan. 22, 1960.		2.3	0.00	54	1.8	8.6	0.7	166	0.7	16	0.1	2.5	0.1	199	169	142	6	317	7.4	25
July 29, 1960.	4.8	.02	43	1.1	1.1	11	.2	132	.4	17	.2	1.5	--	161	144	112	4	261	7.3	18
Sept. 21, 1960.	3.2		.06	46	3.2	8.0	.4	144	.4	13	.2	.3	--	158	146	128	10	265	7.5	18

LAKE OKECHOBEE AND THE EVERGLADES--Continued  
 2-2908.3. EVERGLADES P-35, NEAR HOMESTEAD, FLA.--Continued  
 Temperature (°F) of water, March to September 1960

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			
March	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
Maximum	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
Minimum	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
April	84	83	84	81	79	76	75	74	80	81	81	78	78	81	81	85	90	88	81	73	77	77	75	78	80	81	82	85	86	85	---	81		
Maximum	84	83	84	81	79	76	75	74	80	81	81	78	78	81	81	85	90	88	81	73	77	77	75	78	80	81	82	85	86	85	---	81		
Minimum	74	76	75	76	74	67	63	66	66	61	62	64	65	67	60	67	70	70	70	70	72	73	72	74	75	77	79	78	79	---	---	71		
May	85	86	86	84	87	85	84	81	81	82	82	80	82	85	89	94	98	96	95	93	90	94	94	96	94	96	88	90	87	80	75	87		
Maximum	85	86	86	84	87	85	84	81	81	82	82	80	82	85	89	94	98	96	95	93	90	94	94	96	94	96	88	90	87	80	75	87		
Minimum	79	79	80	79	78	77	75	76	69	70	71	73	72	70	70	71	70	70	74	72	75	76	75	74	75	74	76	75	75	73	74	74		
June	84	82	81	84	86	89	87	84	86	85	82	84	86	88	88	86	89	88	85	82	85	89	90	90	87	88	86	88	86	84	---	86		
Maximum	84	82	81	84	86	89	87	84	86	85	82	84	86	88	88	86	89	88	85	82	85	89	90	90	87	88	86	88	86	84	---	86		
Minimum	73	76	76	77	80	80	82	81	81	82	77	78	79	81	83	83	83	84	82	80	81	83	85	84	84	82	83	82	83	81	---	81		
July	86	86	85	85	85	85	86	87	87	86	85	84	86	88	86	86	84	83	86	88	86	87	85	87	89	85	82	80	83	82	81	85		
Maximum	86	86	85	85	85	85	86	87	87	86	85	84	86	88	86	86	84	83	86	88	86	87	85	87	89	85	82	80	83	82	81	85		
Minimum	82	82	81	79	82	82	81	82	83	83	82	82	82	83	83	82	80	82	79	82	84	83	83	82	84	82	79	79	80	80	80	82		
August	85	87	85	86	87	87	90	89	88	89	89	86	84	85	87	86	90	86	88	88	86	85	85	83	84	86	86	85	85	82	86	86		
Maximum	85	87	85	86	87	87	90	89	88	89	89	86	84	85	87	86	90	86	88	88	86	85	85	83	84	86	86	85	85	82	86	86		
Minimum	79	82	84	83	82	84	83	85	86	85	84	85	84	81	80	82	83	82	82	84	83	84	83	81	81	81	83	84	82	79	83	83		
September	79	81	81	80	79	80	82	84	83	79	83	87	89	91	91	90	89	88	90	88	82	82	81	86	87	88	88	87	86	---	85			
Maximum	79	81	81	80	79	80	82	84	83	79	83	87	89	91	91	90	89	88	90	88	82	82	81	86	87	88	88	87	86	---	85			
Minimum	70	79	80	78	79	78	79	81	79	77	77	82	84	86	86	88	87	86	85	84	85	82	80	78	79	80	83	84	84	84	---	82		



## SUWANNEE RIVER BASIN

2-3175. ALAPHA RIVER AT STATENVILLE, GA.

LOCATION --At gaging station at downstream side of left bank pier of bridge on State Highway 94, 0.2 mile west of Statenville, Echols County.  
DRAINAGE AREA --1,400 square miles, approximately.  
RECORDS AVAILABLE --Chemical analyses: July 1958 to September 1960.

Water temperatures: July 1958 to September 1960.

EXTREMES, 1958-60 --Dissolved solids: Maximum, 63 ppm Sept. 1-10; minimum, 24 ppm June 1-10.

Hardness: Maximum, 11 ppm Oct. 11-20, Dec. 1-10; minimum, 4 ppm Mar. 1-10, 11-20, Apr. 1-10, 11-20.

Specific conductance: Maximum daily, 49 micromhos Oct. 25; minimum daily, 20 micromhos Apr. 18.

Water temperatures: Maximum, 90°F July 2, 3, 5; minimum, 41°F Jan. 26, 1960.

EXTREMES, 1955-56 --Dissolved solids: Maximum, 11 ppm Feb. 1-10, 1955; minimum, 4 ppm June 1-10, 1960.

Hardness: Maximum, 18 ppm Sept. 21-30, 1958; minimum, 4 ppm on several days during 1959 and 1960.

Specific conductance: Maximum daily, 88 micromhos Aug. 2, 1959; minimum daily, 20 micromhos Apr. 18, 1960.

Water temperatures: Maximum, 90°F July 2, 3, 5, 1960; minimum, 41°F Dec. 17, 1958, Jan. 26, 1960.

REMARKS --Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

## Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH or Col- or
														Residue at 180°C	Calculated	Calcium	Non-carbonate		
Oct. 1-10, 1959	127	7.4	0.29	2.8	0.7	2.6	0.3	8	1.2	4.5	0.3	0.1		35	24	10	4	36	6.1
Oct. 11-20, 1959	108	8.6	.17	2.8	1.0	2.6	.3	10	1.2	5.0	.3	.2		43	27	11	3	40	6.1
Oct. 21-31, 1959	148	5.3	.27	2.4	1.0	2.4	.3	7	2.0	4.3	.3	.3		33	26	10	2	36	5.2
Nov. 1-10, 1959	104	7.4	.18	1.8	.5	3.1	.6	6	1.2	3.5	.1	.8		39	22	6	2	35	5.5
Nov. 11-20, 1959	2025	7.9	.05	1.8	.5	3.1	.6	5	1.2	3.5	.1	.8		39	22	6	2	35	5.5
Nov. 21-30, 1959	721	9.9	.13	2.0	0.7	3.8	.6	6	1.4	4.5	.1	.7		49	27	7	2	37	5.6
Dec. 1-10, 1959	469	12	.18	2.0	1.5	3.1	.4	6	1.2	7.0	.1	.2		49	31	11	6	32	6.5
Dec. 11-20, 1959	454	11	.14	1.6	.7	3.1	.4	6	1.8	6.0	.1	.0		46	27	7	2	33	6.5
Dec. 21-31, 1959	1694	7.9	.05	1.6	.5	3.0	.8	4	1.6	5.0	.2	.2		49	23	6	2	31	6.1
Jan. 1-10, 1960	1553	8.8	.12	1.2	1.0	3.3	.6	4	1.2	7.0	.1	.1		54	25	7	4	33	5.8
Jan. 11-20, 1960	1425	8.7	.31	1.4	.6	3.5	.6	4	1.6	6.0	.3	.1		47	25	6	2	33	6.1
Jan. 21-31, 1960	1030	8.5	.19	1.4	.7	3.5	.4	6	1.8	7.0	.1	.1		53	26	6	2	33	6.3
Feb. 1-10, 1960	1272	8.7	.09	1.6	.9	3.2	.2	4	1.2	6.0	.2	.1		55	24	8	4	32	6.0
Feb. 11-20, 1960	2397	6.4	.10	1.4	.7	3.0	.4	4	1.2	5.0	.2	.2		48	21	7	3	31	5.5
Feb. 21-28, 1960	5509	5.7	.10	1.2	.5	2.4	.4	3	1.2	4.0	.2	.1		45	17	5	2	26	5.4
Mar. 1-10, 1960	4294	6.2	.03	1.2	.4	3.3	.4	4	.7	4.5	.1	.1		35	19	4	1	29	5.5
Mar. 11-20, 1960	2341	5.6	.06	1.4	.2	3.2	.4	5	1.6	4.5	.0	.2		34	20	5	1	30	5.7
Mar. 21-31, 1960	2145	4.6	.07	1.4	.2	2.8	.4	3	.8	3.5	.1	.3		47	16	4	2	26	5.8
Apr. 1-10, 1960	4787	4.6	.07	1.4	.2	2.8	.4	3	.8	3.5	.1	.3		47	16	4	2	26	5.8
Apr. 11-20, 1960	11008	5.5	.07	1.4	.1	2.2	.4	4	.8	3.0	.1	.3		48	16	4	0	22	5.6

SUWANNEE RIVER BASIN--Continued  
2-3175. ALAPAH RIVER AT STATENVILLE, GA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color or pH
														Residue at 180°C	Calculation			
Apr. 21-30, 1960	2613	4.1	0.17	1.6	0.2	2.5	0.5	5	0.4	4.5	0.1	0.3		51	17	5	25	6.2
May 1-11, 1960	1032	4.0	.12	1.6	.5	2.8	.4	6	1.0	5.0	.2	.3		49	19	6	31	5.9
May 27-31, 1960	292	6.2	.12	2.0	.4	2.8	.4	7	.6	4.8	.2	.1		42	21	6	33	6.1
June 1-10, 1960	177	7.0	.10	2.4	.7	3.6	.1	10	.0	4.0	.2	.3		24	23	9	38	6.4
June 11-20, 1960	116	5.8	.05	2.6	.7	3.4	.0	10	2.4	4.5	.2	.2		--	25	10	38	6.7
June 21-30, 1960	148	4.8	.04	2.2	.6	3.4	.0	9	2.0	4.2	.2	.3		--	22	8	36	6.6
July 1-10, 1960	220	5.4	.14	1.8	.8	2.6	.4	6	.8	4.0	.2	.3		48	20	9	30	6.3
July 11-20, 1960	544	6.4	.14	1.8	.8	2.6	.4	6	.8	4.0	.2	.3		57	20	7	30	5.9
July 21-31, 1960	292	7.5	.24	2.0	.7	3.0	.4	6	.8	5.5	.2	.4		55	24	8	33	5.8
Aug. 1-10, 1960	512	7.1	.32	2.0	.7	2.5	.2	6	.0	3.2	.2	.7		56	20	8	30	5.7
Aug. 11-20, 1960	149	6.5	.21	2.0	.7	2.5	.2	6	.0	3.5	.2	.6		45	19	8	30	6.2
Aug. 21-31, 1960	481	7.1	.31	2.0	.7	2.2	.2	6	.0	3.0	.2	.6		54	19	8	29	5.6
Sept. 1-10, 1960	265	9.4	.50	2.2	.5	2.6	.2	6	.8	4.5	.2	.5		63	24	8	32	5.8
Sept. 11-20, 1960	249	8.5	.38	2.2	.6	2.8	.4	7	.8	5.0	.2	.3		54	24	8	31	6.0
Sept. 21-30, 1960	205	10	.36	2.2	.5	2.8	.4	7	.8	5.5	.2	.3		51	21	8	31	6.2
Weighted average...	--	6.2	0.10	1.5	0.4	2.8	0.4	4	1.1	4.3	0.1	0.3		46	19	5	28	5.7
Time-weighted average...	a1462	7.2	0.16	1.9	0.6	3.0	0.4	6	1.2	4.8	0.2	0.3		47	22	7	32	5.8
Tons per day	--	25	0.40	6.0	1.6	11	1.8	18	4.4	17	0.5	1.1		194	78	--	--	332

a Mean discharge based on 365 days; mean discharge for 351 days of chemical analyses, 1495 cubic feet per second.

SUWANNEE RIVER BASIN--Continued  
2-3175. ALAPAH RIVER AT STATENVILLE, GA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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.....	77	77	79	78	77	77	78	76	75	75	76	76	75	76	75	73	72	71	69	69	71	70	70	70	66	63	53	65	65	68	72			
November.....	68	68	66	65	66	64	62	60	58	57	58	59	59	60	61	59	57	56	57	56	57	57	57	59	60	58	56	58	55	50	60			
December.....	47	48	48	47	49	49	47	45	43	47	47	51	51	50	51	53	54	56	56	53	53	51	51	51	50	51	52	58	54	53	52			
January.....	51	51	53	51	52	53	54	52	51	51	52	53	53	55	57	56	55	57	55	53	50	48	46	44	42	41	44	45	--	--	50			
February.....	50	51	53	54	59	56	54	53	53	54	56	55	55	53	50	49	48	50	49	48	49	50	48	49	51	52	52	51	51	--	--	52		
March.....	--	53	53	51	49	48	47	47	49	50	49	49	49	49	50	50	52	51	52	52	51	53	54	55	56	57	59	60	63	62	52	52		
April.....	63	65	64	64	63	63	64	65	66	64	64	64	64	65	67	68	69	70	70	71	70	70	70	70	71	72	72	73	72	71	--	67		
May.....	70	70	69	69	70	70	68	68	67	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	81		
June.....	84	79	77	77	78	77	77	77	77	75	73	74	77	--	85	86	79	79	82	83	80	84	86	88	87	88	85	85	87	83	--	81		
July.....	89	90	90	88	90	87	84	85	84	85	85	85	85	85	86	85	83	80	83	85	85	85	85	85	83	82	89	83	84	85	82	85		
August.....	81	82	79	80	82	81	83	84	86	86	82	87	84	83	84	82	86	87	86	86	85	81	80	83	80	79	79	79	82	82	82	83		
September.....	81	80	81	80	77	82	81	80	81	83	81	81	81	80	80	82	83	83	84	85	84	83	83	79	78	77	79	75	77	77	--	80		

## SUWANNEE RIVER BASIN--Continued

2-3215. SANTA FE RIVER AT WORTHINGTON, FLA.

LOCATION.--At gaging station near center of span on downstream side of bridge on State Highway 23, 0.5 mile south of Worthington, Union County, and 0.8 mile downstream from New River.

DRAINAGE AREA.--630 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: July 1957 to September 1960.

Water temperatures: July 1957 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 124 ppm July 21-31; minimum, 53 ppm Mar. 18-22.

Hardness: Maximum, 40 ppm Dec. 18; June 11-20; minimum, 12 ppm Mar. 18-22.

Specific conductance: Maximum, 433 micromhos daily, 435 micromhos Mar. 20.

Water temperatures: Maximum, 86°F, June 24-26; minimum, 43°F, Mar. 24-26.

EXTREMES, 1957-60.--Dissolved solids: Maximum, 137 ppm July 15-19, 21, 1957; minimum, 53 ppm Mar. 18-22, 1960.

Hardness: Maximum, 76 ppm June 1, 1959; minimum, 12 ppm Mar. 18-22, 1960.

Specific conductance: Maximum daily, 204 micromhos Oct. 24, 1957; minimum daily, 33 micromhos July 7, 1958.

Water temperatures: Maximum, 84°F June 17, 1958; minimum, 40°F Feb. 19, 1958.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	Col- or
														Residue at 180°C	Calculation	Calcium-magnesium	Carbonate		
Oct. 1-10, 1959	649	4.6	0.20	4.0	1.6	5.2	0.9	12	4.4	8.0	0.1	0.5		73	35	16	6	60	6 2
Oct. 11-16, 1959	1669	5.5	.23	4.4	1.0	4.4	.8	12	6.8	7.0	.0	.5		66	37	15	5	55	6 1
Oct. 17-20, 1959	3897	6.3	.25	4.0	2.5	3.2	.8	15	4.8	9.0	.0	.3		52	40	16	12	37	5 5
Oct. 21-31, 1959	589	5.7	.22	4.0	1.8	4.0	.6	14	4.0	8.2	.0	.3		75	37	18	6	63	5 5
Nov. 1-10, 1959	401	5.8	.22	4.0	1.9	5.0	.5	16	4.0	8.2	.0	.2		76	41	20	7	68	6 2
Nov. 11-20, 1959	294	6.1	.19	4.0	2.4	5.4	.5	16	4.8	9.2	.0	.4		76	41	20	7	68	6 4
Nov. 21-30, 1959	229	6.5	.21	5.0	2.8	5.6	.6	20	5.2	9.5	.3	.2		77	46	24	8	77	6 5
Dec. 1-4, 1959	177	6.2	.12	5.2	2.9	5.8	.5	21	6.8	10	.3	.1		80	48	25	8	77	7 0
Dec. 5-17, 1959	158	9.3	.15	6.8	3.2	7.2	.8	31	6.4	9.5	.3	.2		83	59	30	4	94	6 8
Dec. 18-31, 1959	152	21	.14	7.6	3.9	9.7	.8	50	--	10	.3	.1		106	--	40	0	110	7 1
Dec. 1-10, 1960	170	8.6	.14	9.6	2.4	6.5	1.0	36	6.4	11	.3	.2		96	63	33	8	100	5 7
Jan. 11-20, 1960	123	9.5	.14	10	3.2	7.2	.8	36	7.6	11	.3	.2		99	61	34	10	99	7 4
Jan. 21-31, 1960	105	11	.14	10	2.4	7.6	1.0	34	6.8	11	.2	.3		99	68	38	8	110	7 3
Feb. 1-10, 1960	302	11	.19	8.8	3.4	7.6	1.1	30	7.2	12	.3	.5		97	67	35	7	105	7 1
Feb. 11-20, 1960	285	6.8	.20	7.2	3.9	7.2	.8	23	6.0	12	.3	.4		93	67	36	12	106	7 4
Feb. 21-29, 1960	605	6.8	.16	6.6	2.3	7.1	1.0	22	6.4	13	.3	.6		85	56	34	15	94	7 3
Mar. 1-17, 1960	863	11	.15	5.2	1.5	5.9	.8	14	6.4	11	.3	.5		82	55	26	8	90	7 3
														75	50	19	8	69	6 9

Mar. 18-22, 1862-31.....	5900	4.3	.03	3.2	.9	3.7	.6	9	3.0	5.5	.2	.4	53	26	12	4	43	6.5	120
Mar. 21-31.....	1895	3.2	.03	4.3	1.2	5.8	.4	11	4.8	6.5	.2	.2	60	22	15	6	50	5.9	180
Apr. 1-10.....	1416	3.4	.13	4.4	1.0	5.1	.5	11	5.6	7.0	.2	.4	77	33	15	6	60	5.9	180
Apr. 11-20.....	505	2.8	.14	5.8	.9	6.4	.5	11	8.8	7.5	.2	.6	75	39	18	9	71	6.0	180
Apr. 21-30.....	295	3.3	.16	6.2	1.1	6.8	.5	14	8.0	8.0	.2	.7	82	42	20	8	78	6.0	160
May 1-10.....	233	7.7	.15	7.8	1.1	7.4	.4	20	8.0	9.0	.2	.4	85	52	24	8	87	6.4	150
May 11-20.....	131	5.9	.13	8.6	1.3	8.4	.4	22	9.2	9.0	.2	.3	78	54	27	9	96	6.5	120
May 21-31.....	70	6.5	.12	8.8	1.6	8.3	.7	25	12	8.0	.2	.4	83	61	31	10	108	6.6	110
June 1-10.....	76	7.9	.14	9.8	2.4	8.3	.2	30	13	8.0	.3	.3	91	69	40	12	123	6.8	100
June 11-20.....	71	7.9	.09	12	2.4	8.3	.2	33	13	8.0	.3	.3	97	69	40	12	123	6.8	80
June 21-30.....	459	4.4	.18	5.4	2.6	5.3	.0	18	3.6	5.5	.3	.3	82	36	24	9	72	6.5	180
July 1-10.....	246	7.0	.18	6.0	2.2	5.7	.2	27	4.0	7.0	.3	.7	83	46	24	2	76	7.0	200
July 11-20.....	1417	8.1	.34	3.6	1.7	4.2	.2	16	.4	3.8	.3	.6	78	31	16	3	51	6.4	210
July 21-31.....	1835	5.0	.23	4.4	1.7	3.7	.2	18	.8	5.0	.3	.3	124	31	18	3	57	6.6	200
Aug. 1-10.....	1903	5.3	.26	3.6	2.7	3.7	.2	15	4.0	4.2	.3	.6	74	32	15	2	49	6.4	210
Aug. 11-20.....	1028	5.5	.25	4.2	1.6	4.4	.2	15	.8	4.5	.3	.4	74	30	17	4	56	6.5	210
Aug. 21-31.....	900	5.1	.24	4.2	1.6	4.4	.3	10	.4	4.8	.3	.3	73	27	17	9	56	6.1	190
Sept. 1-10.....	888	4.9	.33	4.4	1.1	4.4	.5	12	3.6	6.5	.3	.6	80	33	16	6	53	6.2	220
Sept. 11-20.....	1936	4.7	.34	3.8	1.2	4.0	.5	12	3.2	6.5	.2	.7	78	31	14	4	49	6.2	200
Sept. 21-30.....	918	6.2	.31	4.2	1.2	5.0	.6	14	4.4	4.5	.2	.6	86	34	16	4	56	6.4	220
Weighted average....	--	5.7	0.20	4.5	1.6	4.9	0.5	14	4.0	6.7	0.2	0.5	77	36	18	5	60	6.3	174
Time-weighted average....	735	6.7	0.18	6.1	2.0	6.0	0.6	20	5.7	8.2	0.3	0.4	82	46	23	7	77	6.4	159
Tons per day	--	11	0.39	9.0	3.2	9.7	1.0	29	7.9	13	0.5	0.9	154	71	--	--	--	--	345

SUWANNEE RIVER BASIN--Continued  
2-3215. SANTA FE RIVER AT WORTHINGTON, FLA.--Continued  
Temperature (°F) of water, water year October 1959 to September 1960  
(Continuous ethyl alcohol-actuated thermograph)

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	76	75	75	74	74	74	74	74	74	74	74	74	73	73	72	72	72	72	70	70	70	70	70	70	70	65	63	64	66	68	69	71	
Maximum	75	75	75	73	74	74	73	73	73	74	74	73	73	72	72	72	70	69	69	70	70	70	70	70	65	62	63	64	66	68	71		
Minimum	69	69	68	66	67	67	61	58	58	58	60	62	64	64	64	64	61	58	56	58	60	60	62	65	62	60	58	59	58	52	--	62	
November	69	68	66	65	66	66	61	58	57	56	58	60	62	64	64	64	61	58	56	58	60	60	62	60	56	56	58	52	48	--	60		
Maximum	48	49	49	51	51	49	46	47	50	52	52	52	52	55	58	59	59	57	54	54	52	51	53	56	57	58	58	56	54	53	53		
Minimum	46	47	49	48	49	50	49	45	44	45	47	50	52	50	52	55	58	57	54	54	52	50	51	51	53	56	57	56	54	52	51		
January	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	59	55	51	48	48	46	43	44	48	53	55	55	--	--		
Maximum	51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	55	51	48	46	46	43	43	43	44	48	53	55	55	54	--		
Minimum	55	56	59	62	62	60	57	57	60	61	61	59	59	54	52	54	55	55	52	52	53	53	54	59	60	58	56	59	--	--	57		
February	53	53	54	56	59	60	56	52	52	54	60	57	57	54	50	48	50	54	50	48	49	53	51	52	53	58	55	55	56	--	--	54	
Maximum	60	61	63	63	57	53	52	54	56	60	60	58	56	57	60	60	59	59	58	58	59	59	59	62	63	64	67	68	67	60	60		
Minimum	59	59	61	57	53	51	50	52	52	56	58	55	53	55	55	59	58	58	57	56	56	59	59	59	61	63	64	67	67	66	58		
March	67	67	68	68	68	68	65	67	67	67	65	63	64	65	66	67	69	71	71	71	71	71	71	71	71	72	73	72	71	--	69		
Maximum	65	67	67	68	68	65	64	65	67	65	61	62	64	64	66	67	69	70	70	71	70	70	70	70	70	71	71	71	71	70	--	67	
Minimum	70	70	69	67	69	69	69	69	67	66	67	66	67	65	66	67	68	69	73	74	75	75	76	78	78	77	77	76	75	74	78	71	
April	70	69	67	65	67	69	68	67	64	65	65	65	62	62	64	65	67	69	71	72	72	72	74	75	74	73	72	71	70	74	69		
May	77	77	75	73	74	76	77	77	75	75	76	78	79	81	82	79	74	73	73	73	73	74	76	77	78	77	76	77	--	--	76		
June	75	75	73	70	71	72	74	75	73	72	69	70	71	73	74	74	72	72	72	73	73	74	75	76	76	75	75	76	--	--	73		
July	78	79	80	80	81	81	81	79	79	79	79	77	77	78	77	77	77	77	78	79	79	79	79	79	79	79	78	77	77	77	79		
Maximum	77	77	78	78	79	79	78	77	78	77	76	77	77	77	77	77	76	76	77	76	79	79	78	79	77	77	77	77	77	77	78		
Minimum	77	77	78	78	78	79	79	79	80	79	79	79	79	79	79	79	78	78	77	76	78	78	77	76	75	75	76	76	77	77	78		
August	77	77	78	78	78	78	77	77	77	79	79	79	79	79	79	79	78	77	76	78	78	77	76	75	75	75	76	76	77	77	78		
Maximum	77	77	78	78	78	78	77	77	77	79	79	79	79	79	79	79	78	77	76	78	78	77	76	75	75	75	76	76	77	77	78		
Minimum	77	76	76	75	76	75	76	76	76	76	76	75	75	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	74	--	75		
September	76	76	76	75	76	75	75	75	75	76	76	76	75	75	76	76	76	76	76	76	76	76	76	76	76	76	76	75	74	--	75		
Maximum	76	76	76	75	76	75	75	75	75	76	76	76	75	75	76	76	76	76	76	76	76	76	76	76	76	76	76	75	74	--	75		
Minimum	76	76	76	75	76	75	75	75	75	76	76	76	75	75	76	76	76	76	76	76	76	76	76	76	76	76	76	75	74	--	75		

## SUWANNEE RIVER BASIN--Continued

2-3220. SANTA FE RIVER NEAR HIGH SPRINGS, FLA.

LOCATION.--At gaging station near right bank at upstream side of bridge on U.S. Highway 27, 150 feet upstream from Atlantic Coast Line Railroad bridge, and 2 miles northwest of High Springs, Alachua County.

DRAINAGE AREA.--950 square miles, approximately.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 269 ppm Jan. 21-31; minimum, 62 ppm Mar. 19-27.

Hardness: Maximum, 192 ppm June 19; minimum, 19 ppm Mar. 19-27.

Specific conductance: Maximum, 400 micromhos/cm May 17; minimum daily, 41 micromhos/cm Mar. 22.

Remarks.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

## Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Col- or
														Residue at 180°C	Calculation			
Oct. 1-14, 1959	1414	10	0.12	33	4.3	5.8	0.5	90	21	9.0	0.4	0.4		165	--	100	227	7.2
Oct. 15-20, .....	2193	5.9	.17	9.2	1.7	3.5	.7	28	4.8	7.0	.3	.8		86	1	30	82	6.6
Oct. 21-25, .....	2416	7.0	.21	17	3.0	4.7	.3	49	12	8.0	.4	.2		119	--	55	133	7.1
Oct. 26-28, .....	1873	11	.18	28	4.4	6.6	.4	82	20	9.0	.4	.1		160	--	88	21	198
Oct. 29-31, .....																		
Nov. 1-3, .....	1530	12	.12	42	3.6	7.1	.4	109	30	11	.3	.6		190	--	120	30	270
Nov. 4-18, .....	1229	14	.10	49	3.0	6.6	.4	121	35	10	.3	.8		203	--	135	36	296
Nov. 19-30, .....	1000	14	.06	49	8.9	7.3	.4	140	41	11	.2	.7		224	--	159	44	331
Dec. 1-10, .....	883	18	.03	53	9.0	8.0	.4	153	43	11	.4	.1		232	--	169	44	356
Dec. 11-18, .....	822	17	.03	53	9.0	8.0	.4	154	44	12	.3	.1		240	--	169	43	360
Dec. 21-31, .....	756	17	.03	54	9.6	7.8	.7	152	43	12	.3	.0		252	--	174	43	363
Jan. 1-10, 1960	738	15	.03	52	9.4	8.0	.8	148	40	12	.3	.0		246	--	168	46	359
Jan. 11-20, .....	696	20	.03	54	9.1	8.7	.7	152	42	12	.3	.0		258	--	172	48	371
Jan. 21-31, .....	642	13	.02	58	9.1	9.9	.6	156	48	12	.3	.1		269	--	182	44	379
Feb. 1-7, .....	585	16	.03	57	7.1	7.4	.7	154	38	12	.3	.1		269	--	182	44	379
Feb. 8-14, .....	597	16	.03	57	7.1	7.4	.7	154	38	12	.3	.1		269	--	182	44	379
Feb. 15-22, .....	806	15	.08	45	6.7	7.9	1.0	124	40	13	.3	.6		207	--	140	38	313

a Includes equivalent of 4 parts per million of carbonate (CO<sub>3</sub>).

SUWANNEE RIVER BASIN--Continued  
2-3220. SANTA FE RIVER NEAR HIGH SPRINGS, FLA.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos/cm at 25°C)	Color
														Residue at 180°C	Calculated			
Feb. 24-29																		
Mar. 1-6, 1960	1318	7.5	0.13	15	2.3	5.6	1.0	41	10	9.5	0.3	0.6		103	--	47	121	6.8
Mar. 7-17	1387	14	.12	22	5.1	6.5	.9	86	29	10	.3	.5		170	--	101	30	140
Mar. 18-27	1740	8.8	.10	32	5.6	5.8	.9	66	6.0	10	.3	.3		120	--	78	24	95
Mar. 28-31	4353	3.9	.13	6.0	1.0	3.3	.9	16	5.2	3.0	.2	.4		62	32	19	6	100
Apr. 1-10	2597	7.3	.21	21	4.7	5.4	.9	60	18	7.5	.3	.5		120	--	72	23	150
Apr. 11-20	1809	10	.11	38	5.1	6.5	.9	104	30	10	.3	.8		174	--	116	31	140
Apr. 21-30	1370	13	.08	48	6.8	6.8	.7	134	40	11	.3	.9		209	--	148	38	85
May 1-10	1176	13	.05	54	3.8	7.6	.6	136	41	11	.2	.8		219	--	150	38	60
May 11-20	988	17	.03	37	6.3	8.6	.7	152	45	12	.1	1.1		243	--	168	44	48
May 21-25	882	18	.03	61	5.8	8.4	.7	158	48	12	.0	.9		254	--	176	46	40
June 19	696	17	.04	61	9.7	8.8	.6	168	9.6	11	.2	1.3		262	--	192	54	30
June 20-30	877	15	.08	39	5.5	8.5	.6	108	28	10	.2	.7		192	--	120	32	5
July 1-10	853	17	.08	50	5.1	7.8	.0	132	39	10	.3	.3		224	--	146	38	90
July 11-20	1278	9.3	.19	17	2.1	5.0	.0	46	8.0	6.0	.3	.7		118	--	51	14	70
July 21-31	2033	8.3	.27	14	2.7	5.3	.0	40	6.4	5.5	.4	.1		110	63	46	13	160
Aug. 1-10	2270	12	.25	18	1.9	5.6	.4	52	12	8.0	.3	.2		119	--	53	10	200
Aug. 11-20	1378	18	.21	23	4.3	7.6	.4	95	25	9.0	.3	.1		175	--	109	16	7.1
Aug. 21-30	1520	--	.21	23	4.3	7.6	.4	95	25	9.0	.3	.1		175	--	109	16	150
Aug. 22-31	1667	12	.22	42	2.2	8.7	.6	100	29	13	.3	--		132	--	114	32	180
Sept. 1-4	1792	9.2	.16	30	4.4	5.6	.7	74	18	8.0	.3	.3		136	--	72	20	180
Sept. 5-11	1674	13	.13	35	3.8	6.5	.7	93	25	10	.3	.6		136	--	93	32	130
Sept. 12-19	2179	8.9	.20	13	2.3	4.4	.6	37	7.2	8.0	.3	.9		159	--	103	27	150
Sept. 20-25	1852	12	.18	16	3.9	5.7	.8	94	28	10	.3	.5		88	--	42	12	160
Sept. 26-30	1562	6.8	.18	13	2.1	3.9	.6	36	6.8	8.0	.3	.4		163	--	106	29	160
Weighted average...	--	11	0.14	30	4.2	6.0	0.6	83	23	8.8	0.3	0.5		88	--	41	12	150
Time-weighted average	b1396	13	0.12	37	5.1	6.5	0.6	100	28	9.7	0.3	0.5		155	126	93	25	124
Tons per day	--	43	0.57	119	17	23	2.3	323	89	34	1.1	1.8		178	149	112	30	103
														604	490	--	--	485

b Mean discharge based on 365 days; mean discharge for 338 days of chemical analyses 1444 cubic feet per second.





APALACHICOLA RIVER BASIN  
2-3495. FLINT RIVER AT MONTEZUMA, GA.

LOCATION.--At gaging station near left bank on downstream end of pier of relocated bridge on State Highways 26 and 49, 1,000 feet upstream from Central of Georgia Railway bridge, 1,400 feet upstream from Atlanta, Birmingham and Coast Railroad bridge, just upstream from Buck Creek, 1 mile west of Montezuma, Macon County, and at mile 180.8.

DRAINAGE AREA.--2,900 square miles, approximately; includes that of Buck Creek.

RECORDS AVAILABLE.--Chemical analyses: October 19, 1944, to September 1959, to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 76 ppm Nov. 16; minimum, 29 ppm (sum) Feb. 12-20.

Hardness: Maximum, 14 ppm Mar. 11-20; minimum, 8 ppm Feb. 1-10, 12-20, 21-29.

Specific conductance: Maximum daily, 94 micromhos Nov. 16; minimum daily, 28 micromhos Apr. 8.

Water temperatures: Maximum, 78°F June 6, Aug. 26; minimum, freezing point Jan. 23, Mar. 4-6.

EXTREMES, 1943-44, 1958-60.--Dissolved solids: Maximum, 76 ppm Nov. 16, 1960; minimum, 26 ppm Feb. 21-29, 1944.

Hardness: Maximum, 76 ppm Aug. 15, 1958; minimum, 8 ppm during several periods in 1944, 1959, and 1960.

Specific conductance (1958-60): Maximum daily, 94 micromhos Nov. 16, 1960; minimum daily, 28 micromhos Apr. 8, 1960.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-10, 1959.....	1275	10	0.00	2.6	0.9	4.1	1.0	22	2.4	2.0	0.1	0.1	38	10	0	48	7.0	7
Oct. 11-20.....	3255	11	.03	3.0	0.6	4.1	1.6	13	1.5	3.0	0.1	0.1	38	10	0	44	6.8	15
Oct. 21-30.....	3966	10	.02	2.8	.7	4.1	1.6	19	3.2	3.2	0.1	0.0	42	10	0	45	6.7	10
Nov. 1-10.....	3131	12	.15	2.4	1.2	4.8	1.1	23	2.4	3.0	0.1	0.3	a38	11	0	47	6.9	9
Nov. 11-15, 17-20.....	2218	12	.16	3.0	1.1	6.0	1.2	27	2.0	3.2	0.1	0.2	44	12	0	56	7.0	15
Nov. 16.....	2170	13	--	4.0	.5	--	--	44	3.9	3.0	--	--	76	12	0	94	7.7	--
Nov. 21-30.....	2214	12	.07	2.8	.7	5.8	1.2	25	2.4	3.0	0.1	0.1	41	10	0	53	6.7	8
Dec. 1-10.....	2241	11	.01	2.4	1.1	3.8	1.2	24	2.0	3.0	0.1	0.0	40	10	0	49	6.8	5
Dec. 11-20.....	2550	11	.03	2.4	.7	4.6	1.1	22	2.4	3.2	0.1	0.0	38	10	0	46	6.9	9
Dec. 21-31.....	4689	9.7	.04	3.2	1.0	5.1	1.4	18	2.8	3.5	0.1	0.7	43	10	0	48	7.1	7
Jan. 1-10, 1960.....	5337	11	.05	2.8	.5	4.1	1.3	17	3.2	2.5	0.1	0.5	37	9	0	41	7.2	22
Jan. 21-31.....	6522	12	.09	2.8	.5	3.8	1.3	16	2.4	2.5	0.1	0.7	42	9	0	40	7.2	35
Feb. 1-10.....	1897	16	.00	2.4	.5	3.2	1.3	14	3.2	1.0	0.3	0.7	a36	8	0	34	6.8	7
Feb. 11.....	10800	--	.04	3.2	.5	10	1.3	28	--	--	0.2	0.2	72	10	0	62	7.4	--
Feb. 12.....	1846	9.5	.02	2.6	.5	3.6	.8	15	2.8	1.0	0.1	0.8	a29	8	0	37	7.0	5
Feb. 21-29.....	1840	12	.05	2.6	.5	3.6	1.0	15	2.4	1.6	0.0	0.2	42	13	0	37	7.0	5
Mar. 1-10.....	7366	10	.05	2.4	.5	3.6	1.0	18	2.4	1.6	0.0	0.2	42	13	0	38	7.4	0

Mar. 11-20, 1960.....	7287	8.1	.05	2.4	.6	3.6	1.1	18	3.2	2.2	.0	.1	36	14	0	38	7.5	--
Mar. 21-31.....	2854	5.3	.03	2.6	.6	3.5	1.1	18	3.2	2.6	.1	.6	37	9	0	33	7.7	60
Apr. 1-10.....	2619	5.3	.03	2.6	.6	3.5	1.1	18	3.2	2.6	.1	.6	37	9	0	33	7.7	60
Apr. 11-20.....	2619	8.9	.05	3.2	.8	3.8	1.9	18	2.8	2.0	.0	.1	40	10	0	46	7.1	7
Apr. 21-23.....	5107	9.7	.02	4.8	.2	--	--	21	--	1.5	.1	.6	44	13	0	48	6.8	0
May 1-10.....	3588	9.6	.00	3.2	1.0	4.4	1.0	22	2.5	2.5	.1	.2	37	12	0	48	6.8	0
May 11-20.....	2978	9.4	.02	3.2	.6	3.3	1.0	20	1.1	2.5	.1	.1	36	10	0	43	6.7	0
May 21-31.....	2054	10	.00	3.2	.7	4.0	1.0	22	.8	2.5	.1	.2	37	11	0	46	6.6	0
June 1-10.....	1954	10	.00	3.2	.7	4.9	.7	23	1.6	2.2	.2	.6	34	11	0	46	6.9	4
June 11-20.....	1969	8.3	.00	3.0	.4	4.7	.6	22	1.2	2.2	.2	.3	32	9	0	42	7.2	5
July 1-10.....	1820	9.4	.01	2.6	.9	3.6	1.1	19	2.0	2.0	.1	.0	30	10	0	41	6.7	3
July 11-20.....	1559	9.9	.00	2.8	.9	4.0	1.0	20	.8	2.5	.1	.1	33	10	0	43	6.8	2
July 21-31.....	1482	11	.01	2.8	.7	4.8	1.2	22	.8	2.5	.1	.1	35	10	0	47	7.0	4
Aug. 1-10.....	1469	9.9	.01	2.8	.6	5.2	.9	24	.8	2.5	.1	.2	54	10	0	45	7.2	3
Aug. 11-20.....	2495	9.9	.02	2.8	.5	4.0	1.4	20	1.6	2.5	.0	.2	57	9	0	42	7.1	6
Aug. 21-31.....	1384	10.8	.01	2.8	1.1	4.6	1.9	22	1.6	2.0	.2	.2	36	12	0	46	6.8	5
Sept. 1-10.....	1172	9.3	.01	2.6	.9	5.6	.8	22	1.6	2.0	.1	.0	34	10	0	49	6.9	5
Sept. 11-20.....	1638	12	.03	2.6	.9	5.5	.8	21	1.6	2.0	.1	.2	42	10	0	46	6.8	7
Sept. 21-30.....	---	10	0.03	2.7	0.6	3.9	1.1	18	2.5	2.2	0.1	0.3	38	10	0	41	6.9	16
Time-weighted average.....	b4191	10	0.03	2.8	0.7	4.4	1.1	20	2.0	2.4	0.1	0.3	39	10	0	44	6.9	9
Tons per day.....	--	113	0.44	31	7.1	44	--	203	28	34	1.1	3.8	436	--	--	--	--	173

a. Calculated from determined constituents.

b. Represents more than 98 percent of runoff.

Temperature (°F) of water, water year October 1959 to September 1960

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.....	74	76	74	76	74	75	76	75	76	75	76	75	76	75	72	71	73	72	76	68	68	66	64	67	60	58	70	68	72	67	69		
November.....	44	45	44	45	44	45	46	45	46	45	46	45	46	45	46	45	46	45	46	45	46	45	46	45	46	45	46	45	46	45	46		
December.....	44	45	39	48	40	38	38	48	40	46	50	46	50	46	47	44	44	46	46	46	37	34	32	32	28	25	25	25	51	54	49	46	
January.....	40	39	--	--	52	43	50	48	53	55	54	56	57	57	55	57	50	46	36	37	34	32	36	39	43	47	49	51	50	43	47		
February.....	45	48	50	39	42	37	40	37	48	43	44	47	48	49	39	45	42	46	36	38	44	46	47	42	45	47	40	45	45	--	--		
March.....	44	45	43	32	32	37	36	38	35	37	36	37	38	--	38	39	45	47	48	50	51	56	54	55	54	55	54	59	59	59	43		
April.....	66	66	68	60	54	60	66	65	68	67	49	54	60	61	57	62	70	68	--	68	74	72	77	--	--	--	--	67	60	62	66	73	72
May.....	28	60	63	--	72	78	76	76	77	75	79	82	81	86	93	77	70	76	73	73	71	73	67	66	67	60	62	66	72	70	--	--	
June.....	66	68	64	71	72	78	76	76	77	75	75	76	77	75	76	77	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	
July.....	67	71	72	71	71	70	69	70	72	70	71	71	72	73	72	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	
August.....	75	73	70	70	72	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	
September.....	74	74	72	75	--	75	73	74	75	73	72	73	70	70	68	--	73	73	73	72	77	71	68	70	68	69	71	72	72	72	--	--	

## APALACHICOLA RIVER BASIN--Continued

## 2-3570. SPRING CREEK NEAR IRON CITY, GA.

LOCATION.--At gaging station, 125 feet downstream from highway bridge, 1.5 miles downstream from Aycock Creek, 1.5 miles upstream from Dry Creek, 5 miles north of Brinson, and 5.5 miles northeast of Iron City, Seminole County.

DRAINAGE AREA.--485 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1960.

TEMPERATURES.--Maximum daily, 224 microhmhos Oct. 12; minimum daily, 120 microhmhos Oct. 12; maximum Sept. 1-10; minimum, 60 ppm Apr. 1-10.

HARDNESS.--Maximum daily, 106 ppm June 11-20; minimum, 33 ppm Apr. 1-10.

Specific conductance: Maximum daily, 224 microhmhos Oct. 11; minimum daily, 219 microhmhos Apr. 6.

Water temperatures: Maximum, 87°F July 6, Sept. 14; minimum, 43°F Jan. 24, 25.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (microhmhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-10, 1959, .....	82	5.2	0.01	39	0.6	2.4	0.4	124	1.6	2.0	0.1	0.1	112	100	0	199	7.8	7
Oct. 11, .....	152	--	--	27	1.1	--	--	123	8.0	3.0	--	--	68	68	0	224	8.2	--
Oct. 12-29, .....	191	7.3	0.02	34	1.5	2.8	0.6	104	3.2	3.0	1.1	1.3	113	87	2	182	7.1	15
Oct. 30-31, .....	375	7.8	0.02	30	2.2	1.8	0.5	90	2.7	2.0	1.1	1.3	116	76	2	155	8.0	20
Nov. 1-5, .....	1053	6.5	0.06	18	1.5	1.8	0.6	54	3.6	4.0	2.1	2.1	84	47	2	100	7.7	49
Nov. 6-7, .....	791	7.0	0.05	24	1.9	1.6	0.4	76	3.5	5.0	3.0	3.0	108	88	6	134	7.9	44
Nov. 8-20, .....	479	8.8	0.02	31	1.6	3.0	0.4	96	2.4	4.0	1.1	1.1	109	80	0	169	7.4	23
Nov. 21-30, .....	332	7.5	0.01	36	0.5	2.2	0.4	115	1.2	3.0	0.2	1.1	118	92	0	187	8.2	15
Dec. 1-10, .....	285	6.7	0.02	37	0.4	2.4	0.4	116	1.4	2.5	0.2	1.1	115	94	0	191	7.9	8
Dec. 11-20, .....	304	8.1	0.01	35	0.4	2.4	0.4	110	0.8	3.0	1.1	1.1	112	89	0	184	7.6	8
Dec. 21-31, .....	392	6.4	0.02	30	2.2	2.8	0.5	94	1.4	3.5	1.1	1.2	103	76	0	162	7.6	15
Jan. 1-10, 1960, .....	516	5.3	0.00	28	0.5	2.8	1.1	86	0.0	3.0	1.1	1.2	91	72	2	146	7.5	7
Jan. 11-20, .....	535	5.3	0.00	30	2.7	2.5	1.1	92	0.4	3.0	1.1	1.2	102	86	10	159	7.2	7
Jan. 21-31, .....	461	4.7	0.00	31	1.1	2.6	1.1	96	0.4	3.0	1.1	1.1	101	78	0	163	7.6	4
Feb. 1-10, .....	790	4.7	0.01	27	1.1	2.5	1.1	82	0.8	2.5	1.1	1.1	92	68	1	144	7.4	12
Feb. 11-19, .....	2212	3.1	0.02	16	0.2	2.0	0.2	48	4.1	2.5	1.1	1.3	72	41	2	91	7.3	15
Feb. 20-29, .....	1541	3.3	0.00	20	0.0	2.4	0.2	61	0.8	3.0	1.1	1.1	78	50	0	110	7.1	15
Mar. 1-10, .....	1296	3.3	0.00	22	0.0	2.3	1.1	66	0.4	2.5	1.1	1.2	79	55	1	117	7.3	15
Mar. 11-20, .....	1157	2.2	0.12	23	0.1	2.6	0.2	69	0.4	2.5	1.1	1.2	78	58	2	123	7.3	15

Mar. 21-31, 1960.....	834	2.4	.00	28	.5	2.3	.2	86	.4	2.5	.1	.4	85	72	2	148	7.3	15
Apr. 1-10.....	4718	2.6	.04	14	.2	1.8	.4	42	2.4	3.0	.2	.1	60	36	2	80	7.1	45
Apr. 11-20.....	1390	3.7	.02	24	.3	2.7	.4	74	3.2	3.0	.2	.1	89	62	2	132	7.0	25
May 1-10.....	452	4.9	.01	36	.2	2.5	.0	112	.0	2.5	.0	.4	108	91	0	186	7.9	4
May 11-20.....	380	5.3	.00	37	.0	2.2	.0	114	.6	3.0	.0	.6	109	92	0	189	7.9	2
May 21-31.....	253	4.3	.01	40	.0	2.0	.0	124	.6	2.4	.0	.7	114	100	0	204	7.6	3
June 1-10.....	190	5.4	.00	41	.1	2.0	.0	127	.4	2.2	.1	.8	115	103	0	207	7.7	2
June 11-20.....	142	5.6	.00	42	.2	2.0	.0	130	.8	2.5	.1	.9	118	106	0	216	7.8	3
June 21-30.....	139	5.6	.00	40	.5	2.0	.0	128	.4	2.2	.1	.9	115	102	0	207	7.7	3
July 1-10.....	112	7.0	.01	41	.4	2.1	.1	127	.4	2.0	.1	.7	117	104	0	209	7.5	3
July 11-20.....	149	8.5	.01	35	.1	2.3	.1	106	3.2	3.0	.1	.4	107	88	1	182	7.4	4
July 21-31.....	125	6.0	.01	36	.5	2.6	.1	113	.8	2.5	.1	.4	108	92	0	191	7.5	7
Aug. 1-10.....	104	4.8	.01	38	.7	2.3	.0	124	.4	2.5	.1	.1	124	98	0	194	8.3	3
Aug. 11-20.....	103	5.4	.00	36	1.0	2.8	.0	116	.4	2.5	.1	.5	118	94	0	185	7.9	2
Aug. 21-31.....	93	5.4	.00	38	.7	2.3	.0	120	.4	3.0	.1	.3	122	98	0	196	8.0	2
Sept. 1-10.....	86	6.1	.01	38	.2	2.2	.0	116	1.2	2.0	.0	.3	125	96	1	193	7.5	7
Sept. 11-23.....	62	5.0	.01	39	.6	2.3	.0	120	.4	2.5	.1	.6	124	100	2	198	7.5	5
Sept. 24-30.....	209	10	.03	28	1.5	2.2	.0	75	8.0	3.0	.1	.2	115	76	14	149	7.5	25
Weighted average..	--	4.2	0.02	24	0.3	2.3	0.3	74	1.4	2.9	0.1	0.2	86	62	2	130	7.3	22
Time-weighted average.....	c575	5.5	0.01	32	0.4	2.4	0.2	101	1.2	2.8	0.1	0.3	105	83	1	170	7.5	11
Tons per day.....	--	6.5	0.03	38	0.5	3.5	0.4	115	2.2	4.5	0.2	0.3	133	--	--	--	--	34

a Calculated from determined constituents.

b Includes equivalent of 4 parts per million of carbonate (CO<sub>3</sub>).

c Represents 97 percent of runoff for water year.

## APALACHICOLA RIVER BASIN--Continued

2-3570. SPRING CREEK NEAR IRON CITY, GA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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.....	77	77	--	--	74	73	76	77	78	75	77	75	76	--	71	72	70	70	71	71	71	71	72	64	61	62	61	62	62	64	71	
November.....	64	64	63	59	68	64	61	54	53	54	55	58	--	65	64	66	60	55	53	54	63	62	63	60	57	54	57	54	56	--	59	
December.....	47	45	49	51	56	53	54	--	55	--	59	55	54	52	54	54	--	61	53	54	52	50	48	49	50	53	55	59	57	54	51	53
January.....	50	50	54	54	52	53	50	53	49	50	51	55	56	59	64	60	54	56	54	49	45	48	45	43	43	44	48	57	57	54	54	52
February.....	55	55	54	55	53	54	57	56	59	53	48	--	--	46	48	50	48	53	54	47	48	51	52	51	54	53	52	52	--	--	52	
March.....	48	54	54	--	47	47	45	46	49	54	52	46	50	54	47	55	54	56	53	55	53	56	58	61	60	65	65	66	69	66	55	
April.....	66	66	65	65	60	63	65	66	60	61	68	61	64	66	65	68	69	68	70	--	--	--	--	--	--	--	--	--	--	--	--	--
May.....	68	64	67	64	68	63	64	64	64	63	64	64	67	58	61	64	64	72	64	72	72	72	72	73	72	72	71	69	66	72	67	
June.....	76	74	71	71	71	70	74	71	71	70	69	68	73	75	75	74	75	--	76	74	76	74	75	76	75	76	73	78	78	76	--	74
July.....	76	76	78	72	78	87	80	73	74	76	78	77	75	71	81	76	77	76	76	78	80	75	80	79	78	77	79	80	80	78	77	77
August.....	78	76	76	75	76	80	75	76	76	81	77	77	76	78	78	76	74	76	72	75	76	75	74	71	72	78	74	76	75	75	76	76
September.....	70	76	74	79	80	80	79	79	75	75	75	75	83	87	85	73	75	74	80	82	77	73	72	74	84	74	83	76	79	80	--	78

## BLACKWATER RIVER BASIN

2-3705. BIG COLDWATER CREEK NEAR MILTON, FLA.

LOCATION.--At gaging station on downstream side of bridge on State Highway 191, 2.8 miles upstream from mouth and 6.5 miles northeast of Milton, Santa Rosa County.

DRAINAGE AREA.--237 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1960.

Water temperatures: October 1959 to September 1960.

WATER TEMPERATURES: Maximum, 92°F; minimum, 42°F; July 15; minimum, 13 ppm Apr. 1-10.

Hardness: 1959-60--Dissolved solids: Maximum, 475 mg/l. Feb. 1-10; 11-20, 21-29 Apr. 1-10, 21-30.

Hardness: 1959-60--Dissolved solids: Maximum, 475 mg/l. Feb. 1-10; 11-20, 21-29 Apr. 1-10, 21-30.

Specific conductance: Maximum daily, 67 micromhos Aug. 29; minimum daily, 16 micromhos Apr. 1, 2.

Water temperatures: Maximum, 89°F Sept. 2, 14; minimum, 43°F Mar. 5.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Oct. 1-10, 1959.....	572	9.0	0.04	1.4	0.5	2.9	0.4	7	1.6	3.0	0.1	0.3	25	6	0	22	6.0	15
Oct. 11-20.....	1254	7.8	.04	1.2	.5	2.2	.4	5	1.6	2.5	.1	.1	27	5	1	18	6.0	30
Oct. 21-29.....	587	8.2	.04	1.0	.9	2.8	.4	8	2.0	1.0	.1	.0	33	6	0	23	6.3	20
Oct. 30-31.....	1645	16	--	3.2	1.0	5.3	.4	18	1.6	3.0	.1	.0	44	12	0	37	6.6	30
Nov. 1-10.....	580	9.1	.03	1.4	.6	2.3	.4	6	2.4	3.0	.1	.0	31	6	1	21	6.2	15
Nov. 11-20.....	408	8.5	.02	1.0	.6	2.3	.4	6	.8	2.8	.1	.1	30	5	0	21	6.2	20
Nov. 21-30.....	509	7.9	.01	1.2	.5	2.3	.4	6	.8	2.8	.1	.0	20	5	0	19	6.0	15
Dec. 1-3.....	394	9.2	.01	1.6	.5	2.9	.4	8	2.0	3.0	.1	.2	a 24	6	0	25	6.2	13
Dec. 4.....	395	21	--	3.2	1.0	4.6	--	18	2.0	3.0	.1	.5	a 44	12	0	37	6.7	18
Dec. 11-20.....	685	8.2	.03	1.6	.4	3.0	.4	8	1.2	2.8	.1	.6	26	6	0	24	6.2	18
Dec. 21-31.....	432	8.6	.04	1.6	.6	3.0	.4	10	.8	3.0	.1	.0	25	6	0	25	6.3	18
Jan. 1-10, 1960.....	600	8.4	.02	2.0	.5	3.4	.3	11	1.6	3.0	.1	.1	25	7	0	31	6.8	7
Jan. 11-20.....	561	6.4	.02	1.6	.4	2.2	.3	7	.8	3.0	.1	.2	25	6	0	23	6.2	5
Jan. 21-23, 25-31.....	480	11	.01	2.2	.4	3.2	.3	12	1.6	3.0	.1	.2	30	7	0	30	6.5	5
Jan. 24.....	435	--	--	4.8	1.5	7.9	.7	32	1.6	8.0	--	--	60	18	0	55	7.3	5
Feb. 1-10.....	794	7.4	.01	1.2	.4	2.4	.2	8	.4	2.8	.0	.0	26	4	0	21	6.5	7
Feb. 11-20.....	541	8.6	.01	1.0	.4	2.2	.2	6	.4	3.5	.0	.1	21	4	0	21	6.5	7
Feb. 21-29.....	670	6.7	.01	.8	.5	2.0	.2	5	.8	3.0	.0	.1	20	4	0	18	6.4	7
Mar. 1-10.....	701	12	.02	1.6	.7	3.3	.2	12	1.2	3.0	.1	.1	23	7	0	29	6.5	7
Mar. 11-20.....	630	7.7	.01	1.4	.4	2.7	.3	16	1.2	3.0	.1	.1	25	6	0	24	6.5	7
Mar. 21.....	630	7.7	.01	1.6	.4	2.7	.3	16	1.2	3.0	.1	.1	25	6	0	24	6.5	7
Apr. 1-10.....	2465	4.5	.06	1.2	.2	1.8	.3	4	1.4	2.0	.1	.7	a 13	4	0	22	5.6	40

a Calculated from determined constituents.

BLACKWATER RIVER BASIN--Continued  
 2-3705. BIG COLDWATER CREEK NEAR MILTON, FLA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960.--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Apr. 11-20, 1960....	599	5.8	0.05	1.3	0.5	2.3	0.2	6	0.6	2.0	0.1	0.7	22	5	0	22	6.1	15
Apr. 21-30.....	465	6.5	0.00	1.2	.2	2.2	.2	6	.2	2.2	.0	.8	23	4	0	22	6.1	15
May 1-10.....	480	8.4	0.02	2.2	.1	2.8	.2	8	1.6	3.0	.1	.6	23	6	0	29	6.2	12
May 11-20.....	449	9.1	.03	1.8	.4	2.9	.2	8	.8	3.0	.1	.5	30	6	0	27	6.3	9
May 21, 24-31.....																		
May 22.....	379	24	.22	5.6	.5	4.0	.2	22	--	5.0	.1	--	--	16	0	45	6.8	13
May 23.....	393	19	.10	3.2	.5	5.2	.3	16	--	6.0	.1	1.2	23	10	0	42	6.8	18
June 1-10.....	440	9.1	.05	1.6	.5	2.8	.0	10	.4	3.0	.1	.6	a 23	6	0	27	6.6	8
June 11-20.....	360	12	.01	2.0	.5	3.3	.0	13	.4	3.0	.1	.9	a 29	7	0	33	6.6	3
June 21-30.....	379	11	.05	1.8	.5	3.6	.0	12	.4	3.2	.1	1.9	a 28	6	0	32	6.8	2
July 1-10.....	892	8.4	.05	2.0	.5	2.8	.4	8	1.2	2.5	.1	.2	39	7	0	32	6.0	27
July 11-14, 16-20.....	898	9.4	.04	1.8	.4	2.8	.1	10	1.8	3.0	.1	.5	32	6	0	29	6.4	10
July 15.....	852	34	.08	5.6	.5	8.3	.4	34	--	8.0	.1	1.6	92	16	0	60	7.5	10
July 21-31.....	425	10	.05	1.8	.5	3.3	.3	11	1.8	2.5	.1	1.2	32	6	0	33	6.3	13
Aug. 1-11.....	426	12	.03	2.4	.6	4.2	.3	15	.8	4.0	.1	.9	48	8	0	38	6.9	7
Aug. 12-20.....	564	6.9	.02	1.4	.4	2.4	.0	9	.4	3.0	.0	.3	a 19	5	0	23	6.6	7
Aug. 21-30.....	444	8.4	.05	1.6	.7	4.4	.0	18	.4	2.5	.1	.9	a 38	15	0	33	6.4	7
Sept. 1-10.....	1808	9.4	.06	1.8	.2	2.7	.0	8	.4	2.5	.1	.9	32	5	0	24	6.4	10
Sept. 11-20.....	601	9.3	.07	1.4	.9	2.6	.0	8	.4	2.5	.1	.6	31	7	0	25	6.4	15
Sept. 21-30.....																		
Weighted average..	--	8.7	0.03	1.6	0.4	2.7	0.2	8	0.9	2.8	0.1	0.4	27	6	0	26	6.2	16
Time-weighted average.....	662	9.1	0.03	1.6	0.5	2.9	0.2	9	0.9	2.9	0.1	0.4	28	6	0	26	6.3	13
Tons per day.....	--	15	0.06	2.8	0.8	4.9	0.4	15	1.6	4.9	0.2	0.8	49	--	--	--	--	29

a Calculated from determined constituents.



BLACKWATER RIVER BASIN--Continued  
2-3705. BIG COLDWATER CREEK NEAR MILTON, FLA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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	71	74	75	71	76	74	78	75	75	77	77	75	73	69	65	69	75	68	68	67	70	64	65	67	67	67	79	79	69	79	72	
November.....	72	71	71	72	74	66	69	76	73	72	76	67	67	66	69	69	67	68	66	67	66	67	67	67	66	67	68	68	66	67	69	69	
December.....	56	58	61	62	66	66	68	70	62	68	69	65	67	67	64	64	69	65	69	65	67	65	66	67	67	66	64	65	65	66	66	65	
January.....	67	66	65	58	58	61	56	58	65	66	68	69	71	--	69	68	65	64	59	57	57	58	--	57	57	55	65	68	58	67	63	63	
February.....	51	53	54	55	52	51	50	49	53	57	51	54	53	53	48	52	54	55	52	54	54	53	52	54	52	53	49	53	47	--	52	52	
March.....	54	53	54	53	43	46	46	48	52	51	51	52	54	52	56	56	53	54	54	55	52	57	58	--	49	52	53	53	52	53	52	52	52
April.....	57	53	--	53	52	53	52	54	59	62	57	56	55	54	61	62	62	63	65	65	66	68	68	70	65	65	68	69	75	72	--	61	61
May.....	72	69	69	66	71	68	72	73	72	74	65	66	--	68	68	67	68	68	68	65	68	58	61	66	68	62	64	68	62	68	65	67	67
June.....	86	86	82	85	87	86	86	85	79	72	80	--	81	82	80	82	84	81	79	82	78	80	79	80	82	80	79	79	78	--	81	81	
July.....	98	80	78	--	82	80	77	79	81	82	79	79	87	82	79	78	79	80	78	83	80	78	78	79	81	77	80	79	78	79	79	80	80
August.....	79	78	80	80	79	79	78	80	79	79	85	84	83	79	80	79	79	87	87	86	83	83	77	78	77	77	80	84	79	79	85	81	85
September.....	77	69	88	86	86	87	84	87	87	87	85	86	86	89	85	85	85	85	86	86	83	85	83	84	83	83	85	83	83	82	--	83	83

## BLACKWATER RIVER BASIN--Continued

2-3707.5. HURRICANE BRANCH NEAR MILTON, FLA.

LOCATION.--Temperature recorder at gaging station at bridge, 0.6 mile upstream from Pond Creek and 7 miles northwest of Milton, Santa Rosa County.  
 DRAINAGE AREA.--3 square miles, approximately.  
 RECORDS AVAILABLE.--Water temperatures: March to September 1960.  
 EXTREMES, March to September 1960.--Water temperatures: Maximum, 82°F July 3, 1960.

Temperature (°F) of water, March to September 1960																																	Average		
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			
March		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	58	57	58	59	63	63	63	63	66	67	69	66	--	
Maximum		64	65	64	66	64	64	68	69	66	63	62	64	65	67	67	69	68	66	69	70	71	71	71	70	72	71	71	73	72	71	--	68		
Minimum		59	62	61	62	58	54	61	62	62	57	53	54	57	59	60	62	63	60	62	63	64	64	64	64	64	64	65	63	65	65	68	--	61	
April		72	68	69	69	68	70	69	68	70	71	69	67	67	69	71	73	74	74	75	76	74	74	75	77	77	73	74	75	75	76	77	72	66	
Maximum		68	64	64	67	66	66	66	63	60	66	64	62	59	60	62	66	65	67	67	69	68	69	69	69	69	70	68	66	67	69	66	--	66	
Minimum		76	76	74	77	78	78	77	77	76	76	76	76	78	79	79	76	77	77	74	78	78	78	78	78	78	77	77	79	80	78	80	76	--	71
May		80	80	82	80	79	80	81	78	78	79	80	80	80	80	80	80	78	80	80	80	81	80	80	80	80	81	81	81	80	80	79	77	77	
Maximum		73	73	74	75	74	74	75	75	75	75	74	74	75	74	74	75	74	74	75	74	74	74	74	74	74	74	74	75	74	73	75	74	--	78
Minimum		79	76	77	77	79	78	79	80	78	78	80	79	78	77	78	77	78	80	76	78	76	76	79	79	79	77	76	79	80	79	78	75	78	
June		74	75	74	74	74	74	74	75	74	74	73	74	74	74	74	74	73	73	74	74	74	74	74	74	73	73	73	73	73	73	73	76	--	74
Maximum		78	76	79	79	79	80	79	76	75	78	79	77	73	70	72	73	75	76	76	76	75	76	75	74	72	73	73	74	72	74	--	75	75	
Minimum		73	73	73	72	72	72	73	74	73	74	72	67	68	68	71	71	71	70	69	70	71	70	71	71	70	71	70	70	68	--	71	71		

## MOBILE RIVER BASIN

## 2-3885. OOSTANAULA RIVER AT ROME, GA.

LOCATION.--Intake of filtration plant of Rome Water Works, just below Southern Railway bridge in Rome, Floyd County, 1.2 miles downstream from Dry Creek, 2.5 miles upstream from mouth and 2.9 miles downstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: October 1941 to September 1960.

Water temperatures: October 1941 to September 1942, July 1958 to September 1960.

EXTREMES, 1959-60.--Dissolved solids: Maximum, 91 ppm Sept. 11-20; minimum, 48 ppm Mar. 1-10.

Hardness: Maximum, 57 ppm May 30; minimum, 24 ppm Nov. 29-30, Dec. 1.

Specific conductance: Maximum daily, 177 micromhos July 31; minimum daily, 46 micromhos Mar. 6.

Water temperatures: Maximum, 86°F July 4; minimum, 35°F Mar. 2, 3, 6, 7, 20, 1960; minimum, 43 ppm Mar. 21-31, 1942.

EXTREMES, 1941-42, 1958-60.--Dissolved solids: Maximum, 91 ppm Sept. 11-20; minimum, 48 ppm Mar. 1-10.

Hardness: Maximum, 57 ppm May 30; minimum, 24 ppm Nov. 29-30, Dec. 1.

Specific conductance: Maximum daily, 177 micromhos July 31; minimum daily, 46 micromhos Mar. 6, 1960.

Water temperatures: Maximum, 86°F July 4; minimum, 35°F Mar. 2, 3, 6, 7, 20, 1960; minimum, 43 ppm Mar. 21-31, 1942.

REMARKS.--Records of specific conductance of daily samples available in district office at Ocala, Fla. Records of discharge (for gaging station near Rome) for water year October 1959 to September 1960 given in WSP 1704. 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 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
													Calcium	Non-carbonate			
Oct. 1-7, 10, 1959..	735	5.6	0.00	14	2.7	13	1.5	60	15	0.3	0.0	85	46	0	155	7.1	5
Oct. 8-9.....	1290	9.2	.02	9.6	2.4	6.5	1.7	36	4.0	.1	1.0	--	30	0	186	6.8	5
Oct. 10-11.....	1290	6.3	.00	10	3.0	6.6	1.1	48	4.0	.1	1.2	62	34	2	103	6.8	10
Oct. 21-31.....	1495	6.3	.00	12	3.4	6.1	1.6	50	8.5	.1	1.2	64	40	2	117	6.8	10
Nov. 1-6.....	1887	7.8	.02	12	3.4	6.1	1.6	50	8.5	.1	1.1	72	44	3	117	7.3	8
Nov. 7-11.....	3740	8.2	.01	8.8	2.2	3.2	1.2	39	4.0	.1	1.1	61	31	0	83	7.5	12
Nov. 12-24.....	1378	8.8	.02	12	3.4	6.1	1.2	55	8.5	.1	1.4	76	44	0	124	7.2	5
Nov. 25-28.....	5505	6.2	.03	10	2.4	3.0	2.1	41	7.0	.2	2.2	65	35	2	88	7.6	20
Nov. 29-30, Dec. 1..	10073	6.0	.03	5.6	2.4	2.0	1.6	25	3.0	.2	2.2	56	24	4	60	7.3	20
Dec. 2-3.....	3157	8.3	.01	10	3.4	6.1	1.2	50	4.0	.1	1.2	74	38	4	117	7.4	12
Dec. 4-15.....	5850	7.4	.04	9.6	2.4	2.0	1.2	38	5.5	.1	1.2	68	34	4	74	7.5	20
Dec. 17-31.....	3249	10	.01	13	2.6	2.8	.9	52	4.4	.1	.5	67	43	0	101	7.3	7
Jan. 1-10, 1960.....	4727	8.6	.01	13	1.8	3.4	1.1	49	4.5	.0	.2	63	40	0	98	7.5	7
Jan. 11-20.....	4009	7.9	.04	14	1.7	3.4	.9	51	4.0	.0	.2	64	42	0	101	7.5	7
Jan. 21-31.....	4693	7.8	.00	13	2.3	3.6	1.0	49	4.4	.1	.6	70	42	2	101	7.1	7
Feb. 1-10.....	6997	7.2	.01	10	2.3	3.0	.9	42	3.0	.1	.4	56	34	0	83	7.5	7
Feb. 11-20.....	6750	8.4	.01	11	1.9	3.4	.8	44	3.8	.0	.2	62	36	0	89	7.5	5

MOBILE RIVER BASIN--Continued  
 2-3885. OOSTANAULA RIVER AT ROME, GA.--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesian			
Feb. 21-29, 1960....	6531	7.1	0.01	10	2.3	3.1	0.7	42	4.4	3.2	0.0	0.2	55	34	0	85	7.5	5
Mar. 1-10.....	12653	7.8	.05	10	1.2	2.2	1.0	32	4.4	2.0	.0	.6	48	25	0	65	7.6	--
Mar. 11-20.....	7150	9.0	.01	10	2.1	2.6	.8	42	4.8	2.8	.1	.5	57	34	0	84	8.1	--
Mar. 21-31.....	4884	9.0	.00	11	1.1	3.0	.9	48	3.6	3.5	.0	.4	356	32	0	93	6.8	7
Apr. 1-10.....	6398	8.1	.01	11	1.5	4.4	.7	43	3.6	3.2	.1	.4	62	37	0	103	7.2	3
Apr. 11-20.....	2984	11	.01	13	1.1	4.6	.7	30	3.2	4.8	.0	.4	64	37	0	103	7.2	3
Apr. 21-30.....	3604	8.1	.01	13	1.2	5.8	.8	50	4.0	5.0	.1	.4	69	38	0	105	7.1	3
May 1-10.....	2752	8.7	.03	13	1.8	4.8	.7	51	3.6	6.0	.1	.3	70	40	0	103	7.5	5
May 11-20.....	1876	7.3	.01	13	1.8	5.0	.9	53	3.4	5.8	.1	.3	64	40	0	106	7.7	0
May 21-29, 31.....	1438	7.4	.01	13	2.3	5.8	.9	54	2.9	7.0	.1	.2	67	42	0	115	7.6	3
May 30.....	1770	6.7	--	16	4.1	7.2	1.1	71	1.6	12	--	.3	383	57	0	132	8.1	4
June 1-10.....	1253	8.7	.00	12	2.2	5.4	1.0	53	3.2	5.8	.1	.5	365	39	0	110	7.5	2
June 11-20.....	1114	8.2	.00	13	2.3	6.0	.8	55	3.2	7.0	.1	.4	368	42	0	116	7.5	2
June 21-30.....	1076	7.5	.00	13	2.8	6.4	1.0	58	3.2	7.8	.1	.4	371	44	0	122	7.4	4
July 1-10.....	886	9.6	.01	14	2.4	7.1	1.2	62	3.2	7.0	.1	.2	376	45	0	125	7.1	2
July 11-20.....	922	9.1	.02	14	2.2	6.7	1.2	57	4.0	7.0	.1	.4	373	44	0	121	7.3	3
July 21-31.....	831	8.1	.02	14	2.4	9.7	1.4	62	3.6	12	.1	.4	383	45	0	145	7.4	2
Aug. 1-10.....	697	6.3	.01	14	2.7	9.5	1.2	61	4.0	12	.2	.0	380	46	0	138	8.0	5
Aug. 11-12, 18-20.....	1155	6.7	.01	13	2.3	6.3	1.2	51	4.0	7.5	.2	.0	366	42	0	111	7.7	5
Aug. 21-31.....	1455	6.7	.01	13	2.3	5.6	1.2	52	4.4	5.0	.2	.4	35	32	4	83	7.1	5
Sept. 1-10.....	1715	7.4	.01	14	3.2	8.6	1.8	60	3.2	9.0	.2	.0	369	42	0	115	7.5	5
Sept. 11-20.....	902	7.1	.01	14	2.7	9.6	1.0	58	3.6	12	.1	.1	391	46	0	138	7.2	5
Sept. 21-30.....	1749	7.4	.02	12	2.4	6.9	1.0	49	4.0	9.0	.1	.4	82	40	0	117	7.1	5
Weighted average..	--	8.0	0.01	11.0	2.0	4.0	1.0	45	4.3	4.6	0.1	0.4	63	36	0	95	7.3	7
Time-weighted average.....	3183	8.0	0.01	12.0	2.3	5.4	1.0	50	4.0	6.5	0.1	0.3	68	40	0	108	7.3	6
Tons per day.....	--	69	0.14	96	17	34	8.5	389	37	39	0.7	3.0	540	--	--	--	--	50

a Calculated from determined constituents.

MOBILE RIVER BASIN--Continued  
 2-3885. OOSTANULA RIVER AT ROME, GA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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.....	75	80	75	75	75	75	75	75	75	75	75	75	70	70	65	65	65	65	60	60	60	60	60	60	60	60	60	60	60	60	60	67	
November.....	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	53	
December.....	41	42	45	45	45	45	45	45	45	45	45	45	49	49	--	--	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	
January.....	45	45	45	45	45	45	45	45	45	45	50	50	50	55	55	55	50	49	45	45	40	40	48	48	40	45	45	45	45	45	45	47	
February.....	50	50	45	45	45	45	50	45	55	50	50	50	45	40	40	40	45	45	45	45	40	45	45	45	45	45	45	45	45	45	45	46	
March.....	45	35	40	40	35	35	40	45	40	45	40	45	40	45	40	45	40	45	45	45	45	45	50	50	45	50	55	55	55	55	55	45	
April.....	60	60	60	60	55	55	60	60	50	60	55	60	60	60	--	65	65	65	65	65	65	65	65	70	70	75	70	65	65	70	65	--	63
May.....	65	65	65	65	65	65	65	60	60	60	60	60	60	60	60	65	65	70	75	75	75	75	75	75	75	75	75	75	75	75	75	75	68
June.....	75	75	75	75	75	80	80	75	75	75	75	75	75	75	75	75	75	75	80	80	80	85	80	75	80	75	75	75	80	80	--	77	
July.....	80	83	85	86	84	82	82	83	82	82	82	83	82	83	85	85	85	85	80	85	80	85	85	85	85	85	80	80	80	80	85	83	
August.....	85	85	80	75	85	85	80	85	80	78	80	75	75	75	75	80	80	80	80	80	85	80	80	75	75	75	75	80	80	80	80	80	
September.....	80	80	85	85	80	85	83	80	80	80	80	80	72	73	70	70	75	75	85	75	75	75	75	75	75	75	70	67	72	--	77	--	

MOBILE RIVER BASIN--Continued  
2-3920, ETOWAH RIVER AT CANTON, GA.

LOCATION.--At Canton Water Treatment Plant intake in Canton, Cherokee County, 0.5 mile upstream from gaging station, 1.2 miles upstream from Canton Creek, and 1.2 miles downstream from Hickory Log Creek.

DRAINAGE AREA.--605 square miles upstream from gaging station.

RECORDS AVAILABLE.--Chemical analyses: July 1958 to September 1960.

EXTREMES: Maximum, 60° F Aug. 23, 1959; minimum, 33° F Mar. 4.

EXTREMES: Maximum, 42 ppm July 29; minimum, 12 ppm Dec. 21-31, May 1-10, 11-20.

Hardness: Maximum, 42 ppm July 29; minimum, 12 ppm Dec. 21-31, May 1-10, 11-20.

Specific conductance: Maximum daily, 74 micromhos Nov. 28; minimum daily, 30 micromhos Jan. 25, June 9.

Water temperatures: Maximum, 80° F July 25; minimum, 33° F Mar. 4.

EXTREMES: 1958-60.--Dissolved solids: Maximum, 52 ppm Feb. 11-20, 21-28, 1959; minimum, 28 ppm June 21-30, 1960.

Hardness: Maximum, 58 ppm Sept. 13, 1959; minimum, 12 ppm Dec. 21-31, 1959, May 1-10, 11-20, 1960.

Specific conductance: Maximum daily, 252 micromhos May 16, 1959; minimum daily, 30 micromhos Jan. 25, June 9, 1960.

Water temperatures: Maximum, 80° F Aug. 23, 1959, July 25, 1960; minimum, freezing point Jan. 5, 1959.

REMARKS: Records of specific conductance and water temperatures were discontinued at Canton, Ga., in 1959. Records of discharge for water year October 1959 to September 1960 given in WSP 1704. No appreciable inflow between sampling point and gaging station except during periods of heavy local rain.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (residue at 180°C)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 1-10, 1959.....	784	9.0	0.00	5.0	0.9	2.8	1.0	25	1.2	0.5	0.1	0.2	38	16	0	46	7.0	5
Oct. 11-13, 15-20....	1019	8.8	.00	5.0	.6	4.1	1.0	26	1.2	1.0	.1	.1	37	15	0	49	7.2	5
Oct. 14.....	1390	8.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	10
Oct. 21-31.....	685	8.6	.00	4.8	.5	3.1	1.0	22	1.2	1.0	.1	.1	43	14	0	41	7.1	3
Nov. 1-10.....	649	8.6	.00	4.2	.9	2.8	1.0	22	1.2	1.0	.1	.1	32	14	0	42	7.0	3
Nov. 11-20.....	562	8.6	.00	4.2	.9	2.8	1.0	21	1.2	1.0	.1	.1	36	14	0	40	6.7	5
Nov. 21-30.....	610	10	.00	4.0	.7	2.2	1.0	19	1.6	1.0	.1	.0	31	13	0	38	6.4	5
Dec. 1-10.....	552	9.6	.00	4.0	.7	2.1	.8	20	.8	1.5	.1	.0	30	13	0	37	7.3	5
Dec. 11-20.....	1032	7.9	.00	6.0	.7	2.1	.8	24	2.0	.5	.1	.0	32	18	0	45	7.2	5
Dec. 21-31.....	803	9.1	.00	4.0	.6	2.1	.8	20	1.2	.5	.1	.0	30	12	0	37	7.2	3
Jan. 1-10, 1960.....	1369	8.3	.00	5.2	.5	2.1	.8	22	2.0	1.5	.1	.0	35	15	0	41	7.1	3
Jan. 11-20.....	1058	8.5	.00	4.8	.7	2.0	.8	22	2.0	1.5	.1	.0	35	15	0	40	6.8	3
Feb. 1-10.....	1299	8.3	.00	5.6	.5	2.1	.8	24	1.6	1.5	.1	.3	34	16	0	43	7.0	7
Feb. 11-20.....	1846	8.0	.00	6.0	.7	2.1	.8	24	2.4	.5	.1	.3	33	18	0	47	7.1	3
Feb. 21-30.....	1965	7.8	.00	5.8	.6	1.5	.6	23	2.4	.5	.1	.3	33	17	0	44	7.0	3
Feb. 21-29.....	1508	8.3	.00	4.4	1.0	1.4	.5	23	1.6	.5	.1	.1	33	15	0	39	7.0	3
Mar. 1-10.....	1387	9.7	.00	5.4	.5	1.5	.6	22	2.0	1.0	.0	.0	41	16	0	41	7.3	--

Mar. 11-20, 1960....	1918	8.9	.00	5.8	.4	1.5	.6	24	2.4	.8	.0	.0	36	16	0	43	7.5	--	
Mar. 21-31.....	1942	8.4	.00	6.0	.5	1.4	.8	24	1.6	1.0	.0	.2	37	17	0	44	7.3	--	
Apr. 1-10.....	2774	8.4	.00	5.4	.7	2.4	.6	24	2.2	1.0	.0	.2	34	16	0	48	6.8	0	
Apr. 11-20.....	1593	9.6	.00	4.8	.2	2.0	.5	20	1.8	1.6	.1	.1	30	13	0	39	6.8	0	
Apr. 21-30.....	1361	9.8	.01	4.4	.2	1.7	.7	18	.8	1.0	.0	.0	31	12	0	40	7.1	0	
May 1-10.....	1366	9.8	.01	4.4	.2	1.7	.7	18	.8	1.0	.0	.0	31	12	0	36	6.7	4	
May 11-20.....	1052	9.2	.00	4.4	.2	2.1	.7	19	2.4	1.0	.1	.1	30	12	0	36	7.0	3	
May 21-23, 24, 26-31..	856	9.4	.00	4.8	.4	2.0	.7	20	.4	1.0	.1	.1	29	14	0	39	6.8	4	
May 22, 25.....	870	10	.05	5.6	.5	7.4	.6	20	2.4	1.0	.0	.1	37	16	0	68	7.2	4	
June 1-10.....	864	9.3	.00	5.2	.5	2.1	.7	22	1.2	1.0	.1	.0	30	13	0	42	6.8	4	
June 11-20.....	702	9.7	.00	4.6	.4	1.7	.7	20	.8	1.0	.1	.1	32	13	0	36	7.9	4	
June 21-30.....	682	9.3	.00	4.4	.5	1.6	.8	22	.0	1.0	.1	.0	32	14	0	39	6.9	2	
July 1-10.....	636	10	.01	4.8	.5	1.9	.8	21	.8	1.0	.1	.1	32	14	0	41	6.7	2	
July 11-20.....	592	9.0	.00	4.6	.7	2.0	.8	22	.4	1.5	.1	.1	34	14	0	41	6.7	2	
July 21-28, 30-31..	542	8.8	.01	7.0	.6	2.0	.8	29	3.2	1.0	.1	.2	40	20	0	66	7.0	2	
July 29.....	870	7.8	.01	16	.5	3.2	1.0	54	--	1.0	.1	--	57	42	0	98	7.6	4	
Aug. 1-10.....	476	8.7	.00	5.0	.7	1.4	.6	24	.8	1.5	.1	.1	47	16	0	40	7.2	4	
Aug. 11-20.....	703	8.5	.01	4.8	.6	1.4	.9	26	.8	1.0	.1	.2	41	14	0	40	7.3	5	
Aug. 21-31.....	613	9.2	.00	4.6	.7	1.5	.8	22	.8	2.0	.1	.0	31	14	0	39	7.2	2	
Sept. 1-10.....	504	8.5	.01	5.6	.0	2.5	.7	24	.4	.5	.1	.0	36	14	0	44	7.0	3	
Sept. 11-20.....	633	8.5	.01	5.2	.7	1.9	.7	22	.4	.8	.1	.2	34	16	0	43	7.1	5	
Sept. 21-30.....	1180	9.6	.03	4.6	1.1	1.9	.8	22	.8	.5	.1	.1	35	16	0	40	7.1	10	
Weighted average..	--	--	8.8	0.00	5.1	0.6	2.0	0.7	23	1.5	0.9	0.1	0.1	34	15	0	42	7.0	4
Time-weighted average.....	1062	8.9	0.00	5.0	0.6	2.1	0.8	22	1.3	0.9	0.1	0.1	34	15	0	42	7.0	4	
Tons per day.....	--	25	0.00	15	1.7	5.8	2.1	65	4.4	2.6	0.2	0.3	97	89	--	--	--	10	
a. Calculated from determined constituents.																			

a Calculated from determined constituents.

MOBILE RIVER BASIN--Continued  
 2-3920. ETOWAH RIVER AT CANTON, GA.--Continued

Temperature (°F) of water, water year October 1959 to September 1960

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	
68	67	70	69	69	70	70	69	69	68	63	67	66	64	63	65	62	63	60	57	59	57	57	57	62	58	55	57	54	55	62	63
52	59	54	55	57	57	53	50	46	49	45	46	46	48	52	53	42	47	47	43	42	49	48	49	47	49	48	44	40	38	--	48
36	37	45	47	42	43	41	38	42	38	43	47	48	45	47	47	47	48	45	45	43	41	45	43	45	47	49	48	49	42	44	44
42	43	41	43	44	44	42	44	44	43	46	47	46	48	52	54	57	48	46	43	40	36	35	35	35	36	36	43	46	48	47	44
47	46	46	45	46	47	46	44	43	44	47	46	42	40	40	39	42	45	42	42	42	42	42	42	42	43	43	43	43	44	--	44
45	41	34	33	36	36	37	37	36	41	38	42	38	41	42	43	43	41	44	43	42	43	44	46	46	47	46	52	54	55	55	43
54	54	55	54	52	52	55	54	52	51	52	54	57	58	61	61	69	58	56	58	59	61	64	65	61	65	64	61	61	61	--	58
62	61	60	61	61	61	--	60	59	57	57	54	53	57	40	60	62	65	67	69	68	68	66	67	68	69	67	67	67	67	67	63
67	68	69	68	69	69	69	70	68	68	70	69	69	70	70	70	70	72	73	74	74	75	75	75	73	70	70	70	71	72	--	70
73	76	75	74	72	74	72	--	73	74	72	73	75	75	74	74	74	75	75	75	75	75	75	75	80	77	77	76	72	74	76	75
75	76	79	77	77	78	78	78	76	75	74	75	74	75	74	75	74	74	74	73	73	74	74	73	72	71	70	74	75	76	75	70
76	72	73	74	74	75	75	75	76	77	76	74	70	66	65	66	66	67	67	68	68	70	69	68	68	67	65	63	63	64	--	70



## MOBILE RIVER BASIN--Continued

## 2-4018. TALLAHATCHEE CREEK NEAR WELLINGTON, ALA.

LOCATION.--Temperature recorder at gaging station at upstream side of abandoned covered bridge, 100 feet upstream from bridge on County Road 23, 0.4 mile downstream from Angel Creek, and 1 mile east of Wellington. .  
 DRAINAGE AREA--86 square miles.  
 RECORDS AVAILABLE.--Water temperatures: August 1958 to September 1960.  
 EXTREMES, 1959-60.--Water temperatures: Maximum, 76°F July 2, 13, 14; minimum, 40°F Jan. 23, 31.  
 EXTREMES, 1958-60.--Water temperatures: Maximum, 77°F June 30, July 29, 1959; minimum, 40°F Jan. 6, 1959, Jan. 23, 31, 1960.  
 REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Temperature (°F) of water, water year October 1959 to September 1960

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	72	72	73	73	73	73	73	73	72	72	72	69	68	62	62	62	61	60	61	62	62	62	60	58	58	58	57	57	60	66			
Maximum	70	68	69	71	71	72	72	72	72	72	72	68	67	68	62	62	61	58	58	60	61	62	60	58	54	58	56	56	57	64				
Minimum	62	62	60	60	62	62	57	51	51	52	53	54	56	58	57	57	52	48	50	54	55	58	59	58	53	54	53	48	44	--	55			
November	60	59	56	56	60	55	51	48	48	48	50	51	52	56	56	56	52	48	45	46	50	52	54	58	52	50	53	48	44	42	--	52		
Maximum	46	47	48	48	50	50	48	45	48	51	52	53	53	50	50	52	55	59	56	51	49	48	48	50	51	54	57	58	54	50	48	51		
Minimum	42	46	46	45	47	48	45	42	44	48	50	52	50	48	48	50	52	55	51	48	48	46	47	49	52	54	54	50	48	44	48			
December	46	47	48	47	46	47	47	48	48	52	55	56	57	59	59	58	52	51	50	47	45	45	42	44	44	46	49	52	52	52	51	50		
Maximum	44	46	47	46	46	46	47	47	46	48	52	54	56	57	58	52	50	47	45	44	42	40	41	42	42	46	49	42	41	40	47			
Minimum	52	52	53	53	51	51	50	48	50	54	52	50	45	44	44	46	50	48	46	46	47	47	48	49	51	49	48	48	51	--	49			
January	50	50	52	51	50	51	50	48	50	54	52	50	45	44	44	46	50	48	46	46	47	47	48	48	50	55	55	56	60	60	60	51		
Maximum	49	41	41	42	44	44	46	46	46	47	47	48	48	45	46	49	50	50	49	49	51	52	53	52	55	55	55	58	57	57	49			
Minimum	61	61	60	60	60	58	62	62	59	58	58	61	63	65	66	66	65	64	63	64	65	66	68	69	69	68	66	64	65	65	--	63		
February	57	60	59	59	57	55	58	59	54	57	59	61	59	61	63	62	64	62	59	62	64	64	65	66	66	66	64	62	63	65	--	61		
March	65	63	63	65	65	64	63	62	64	63	60	60	63	66	68	69	70	72	73	72	70	71	72	72	71	69	68	69	70	70	67			
Maximum	63	60	60	62	64	63	60	61	60	58	60	58	56	58	61	65	66	67	68	68	70	66	65	68	69	68	67	66	67	68	64			
Minimum	70	70	71	72	72	73	72	73	72	72	71	72	72	72	72	72	70	70	72	73	74	74	74	73	73	72	71	72	72	73	--	72		
April	67	68	68	69	69	70	71	70	69	68	68	69	68	68	68	67	68	70	71	72	72	72	72	72	72	71	70	71	71	--	70			
May	75	76	75	75	75	74	74	74	74	74	75	76	76	74	74	74	74	74	74	74	75	75	74	75	75	75	74	73	74	74	75			
June	72	73	73	73	73	72	72	72	72	72	73	73	73	71	72	72	72	72	73	73	73	73	73	72	73	73	73	72	72	70				
July	74	75	75	75	74	75	75	74	73	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	71	71	72				
August	72	73	73	73	73	73	73	73	73	72	72	70	68	66	68	69	69	69	69	69	69	69	69	68	68	67	66	66	66	--	70			
September	72	70	71	72	72	72	72	72	72	72	72	70	68	66	68	69	69	69	69	69	69	69	68	68	67	66	66	66	--	69				
Maximum	73	72	73	73	73	73	73	73	73	73	72	72	70	68	66	68	69	69	69	69	69	69	68	68	67	66	66	66	--	69				
Minimum	72	70	71	72	72	72	72	72	72	72	72	70	67	64	65	66	67	69	68	68	68	68	68	67	66	66	66	66	--	69				



MOBILE RIVER BASIN--Continued

LOCATION.--Temperature recorder at gaging station on downstream side of pier near center of bridge on U.S. Highway 231, 2 miles north of Cleveland, and 2.5 miles downstream from Graves Creek.

**DRAINAGE AREA.**--309 square miles.

RECORDS AVAILABLE, --Water temperatures: October 1959 to September 1960.

**EXTREMES, 1959-60.**--Water temperatures: Maximum, 90°F Aug. 7-9; minimum, 44°F Jan. 25, 26.

REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

(°F) of water, water year October 1959 to September 1960.

Month		Continuous early afternoon activated energy gap																																	
		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		
October	Maximum	77	77	77	78	78	77	77	77	76	76	77	75	73	73	68	68	67	65	66	66	66	66	66	66	63	62	62	61	60	60	62	70		
	Minimum	72	72	71	73	74	75	75	76	75	75	75	70	70	68	66	67	67	64	61	62	65	65	65	63	61	59	61	58	60	60	60	67		
November	Maximum	63	63	63	66	66	61	56	54	52	53	54	54	54	54	54	54	55	52	50	50	52	52	50	50	50	50	50	50	50	50	50	56		
	Minimum	62	61	57	61	56	53	51	50	51	52	54	54	53	54	53	54	52	49	48	48	50	51	52	55	56	54	55	52	50	48	---	---	54	
December	Maximum	48	49	50	50	50	50	49	48	50	51	54	53	52	52	54	56	54	52	50	50	52	51	50	50	50	51	53	55	53	52	50	51		
	Minimum	48	48	49	50	49	49	47	48	48	50	51	53	52	51	52	54	54	52	51	50	50	50	50	50	50	50	51	53	55	53	52	50	51	
January	Maximum	50	49	50	50	49	50	50	50	50	52	54	55	57	59	59	56	54	54	52	48	47	45	45	45	46	49	51	52	52	50	51	51		
	Minimum	48	49	49	49	49	49	49	49	50	50	52	54	55	57	59	56	54	52	50	48	47	45	45	45	44	46	49	51	52	50	51	52	50	
February	Maximum	52	52	52	52	52	52	52	51	54	54	54	52	48	46	45	46	48	49	48	48	48	48	49	49	50	50	49	48	---	---	---	50		
	Minimum	52	51	52	52	52	52	50	50	50	51	54	52	48	46	45	45	48	47	48	48	48	48	49	49	50	50	49	48	---	---	---	49		
March	Maximum	50	49	46	46	46	46	47	47	48	48	48	48	48	48	48	50	50	50	50	50	50	50	50	51	52	52	53	55	57	58	59	58	49	
	Minimum	49	46	45	45	45	46	46	47	47	48	48	48	48	47	47	48	50	50	50	50	50	50	50	50	51	52	51	52	53	55	57	58	49	
April	Maximum	59	60	60	61	60	60	60	60	60	59	61	63	65	66	66	66	66	65	66	66	65	66	66	68	70	71	72	72	70	70	70	70	64	
	Minimum	59	60	60	60	59	58	60	58	60	58	57	59	61	63	65	66	66	64	65	66	64	65	66	68	70	71	72	70	66	68	---	---	63	
May	Maximum	69	68	69	69	68	67	66	65	64	61	62	65	68	71	73	75	76	77	78	77	78	78	79	78	79	78	77	76	77	78	80	72	80	
	Minimum	67	65	64	65	67	67	65	62	62	62	61	59	57	59	62	65	67	71	71	73	71	71	72	74	75	74	72	72	72	74	75	67		
June	Maximum	79	78	76	78	80	81	82	82	81	82	83	83	82	83	82	80	78	76	74	85	87	86	85	82	79	78	82	84	87	88	77	87	82	77
	Minimum	75	73	74	76	77	77	77	77	77	76	77	77	77	77	75	73	70	70	70	78	79	81	81	78	79	77	76	77	76	77	78	79	77	77
July	Maximum	89	88	87	85	87	87	86	86	86	86	88	88	88	88	85	83	84	82	83	83	87	86	87	88	89	88	84	85	85	86	86	86	86	
	Minimum	81	82	80	81	80	81	80	80	81	82	81	82	81	82	83	80	80	80	80	80	82	80	81	82	82	81	82	82	82	82	81	81	81	81
August	Maximum	87	88	87	89	87	90	90	90	86	85	81	81	83	86	86	86	85	81	84	83	81	80	80	80	81	83	84	85	86	85	86	85	86	
	Minimum	80	80	84	82	82	82	83	84	84	83	80	79	78	78	79	80	82	82	81	78	79	80	75	76	77	77	77	78	79	80	80	80	80	80
September	Maximum	87	86	86	87	87	87	87	87	85	83	81	79	77	75	73	75	77	77	77	79	79	80	79	78	77	76	75	72	69	70	72	72	72	
	Minimum	81	80	80	81	81	82	83	82	81	78	76	73	72	73	73	73	73	73	74	74	75	74	76	75	75	75	74	72	69	68	68	---	---	76



MOBILE RIVER BASIN--Continued  
2--4654. BIG SANDY CREEK AT DUNCANVILLE, ALA.

LOCATION.--Temperature recorder at gaging station on downstream side of bridge on U.S. Highway 82, 0.4 mile upstream from Bear Creek, 0.5 mile southeast of Duncanville, and 2.8 miles downstream from Lye Branch.  
DRAINAGE AREA.--56.0 square miles.  
RECORDS AVAILABLE.--Water temperatures: July 1958 to September 1960. Maximum, 77° Aug. 9; minimum, 42° Jan. 22, 23, Feb. 14, 1959. Minimum, 60°--61° Aug. 5, 1960; minimum, 38° Jan. 6, 1959.  
EXTREMES, 1958--1960.--Water temperatures: Maximum, 77° Aug. 9, 1958; minimum, 42° Jan. 22, 23, Feb. 14, 1959.  
REMARKS.--Records of discharge for water year October 1959 to September 1960 given in WSP 1704.

Temperature (°F) of water, water year October 1959 to September 1960  
(Continuous ethyl alcohol-actuated thermometer)

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	70	69	69	69	69	69	69	70	69	69	69	69	68	66	63	62	62	62	60	62	63	63	63	63	62	58	60	60	58	59	61	65
Maximum	68	67	67	68	69	69	69	69	69	68	68	67	66	66	63	62	62	59	59	60	62	63	62	62	58	56	58	57	57	58	59	63
November	62	62	60	64	57	52	50	51	54	54	56	56	56	55	55	52	49	50	55	56	56	56	56	60	54	53	54	49	46	--	--	56
Maximum	61	62	59	58	60	57	52	50	50	51	53	54	56	54	52	49	48	48	50	54	56	59	54	52	54	50	46	45	--	--	53	
Minimum	46	48	48	48	50	50	48	46	50	52	53	54	51	50	53	55	56	56	51	48	49	48	48	49	50	54	52	49	47	49	51	
December	45	46	48	47	47	50	48	46	46	50	51	53	51	49	49	50	53	55	51	48	48	48	48	49	50	54	52	49	47	49	51	
Maximum	47	49	50	50	48	48	48	47	52	54	55	57	58	58	56	52	50	50	48	45	44	43	43	44	48	50	52	50	49	50	50	50
Minimum	47	47	49	48	48	48	47	46	47	52	54	55	57	56	52	50	48	45	44	43	42	43	43	44	48	50	49	49	48	48	48	48
January	49	50	52	53	53	53	52	50	54	57	54	52	48	44	43	46	49	50	48	46	46	48	48	50	50	48	48	50	--	--	50	50
Maximum	49	50	52	53	52	49	48	49	54	52	48	44	42	43	43	46	48	44	44	45	45	47	47	48	48	47	47	48	--	--	48	48
Minimum	50	48	46	45	45	44	44	47	50	50	51	48	48	47	51	52	50	50	50	50	50	53	54	54	56	56	58	58	60	51	51	51
February	48	46	45	44	44	44	44	44	47	48	48	47	46	46	46	50	49	49	49	48	48	50	53	54	52	56	56	58	58	57	49	49
Maximum	60	60	60	60	60	58	62	62	61	58	56	60	61	63	64	64	64	63	62	65	66	66	67	67	67	67	66	65	66	--	--	63
Minimum	58	60	60	60	58	55	58	61	58	56	54	56	59	61	63	63	64	63	60	62	64	65	66	66	66	64	63	64	--	--	61	61
March	66	64	61	63	63	63	63	62	60	62	62	61	58	59	61	65	66	67	68	68	68	68	68	69	69	68	66	68	69	65	65	65
Maximum	64	61	59	61	63	63	62	60	58	60	61	58	56	57	59	61	64	65	66	66	67	66	65	66	67	67	65	64	66	67	63	63
Minimum	69	67	67	68	69	69	70	70	70	70	70	69	69	70	70	70	70	69	71	72	72	72	72	72	72	72	73	74	--	70	70	70
Maximum	67	66	66	67	68	68	68	68	68	68	67	67	67	68	68	67	67	66	68	69	70	71	71	71	71	71	71	71	72	--	68	68
July	74	75	74	75	74	73	73	74	74	74	74	74	74	73	72	72	72	73	73	74	74	75	75	75	75	76	75	75	74	74	74	74
Maximum	72	72	72	72	72	72	72	72	72	72	72	72	72	71	70	71	71	71	72	73	73	73	73	73	74	74	73	72	72	72	72	72
Minimum	75	75	74	74	74	75	76	77	76	75	74	74	74	74	74	74	74	73	72	72	73	73	73	73	72	71	70	70	70	70	70	70
August	72	73	73	73	73	73	73	75	75	74	73	73	73	73	73	72	71	70	71	71	71	71	71	71	71	70	70	70	70	70	72	70
Maximum	73	72	72	72	73	73	73	73	72	72	70	69	67	65	68	70	70	69	69	70	70	70	70	70	69	68	67	67	67	67	70	70
Minimum	71	71	71	71	71	71	71	71	72	72	70	68	66	64	64	65	68	69	68	67	68	67	68	67	68	67	67	67	67	--	--	68

## PASCAGOULA RIVER BASIN

## 2-4790.2. PASCAGOULA RIVER NEAR BENNDALE, MISS.

LOCATION.--At bridge on State Highway 26, 2 miles east of Benndale, George County, about 5 miles downstream from Whiskey Creek, 5 miles upstream from Big Creek, and at mile 67.2.

RECORDS AVAILABLE.--Chemical analyses: August 1958 to September 1960.

Water temperatures: August 1958 to September 1960.

Water hardness: Maximum, 28 ppm June 1-10; minimum, 14 ppm Oct. 1-31.

Hardness: Maximum, 28 ppm June 1-10; minimum, 14 ppm Oct. 1-31.

Specific conductance: Maximum daily, 581 microhos Aug. 3; minimum daily, 33 microhos Oct. 23.

Water temperatures: Maximum, 91°F July 1; minimum, 38°F Nov. 30, Dec. 1.

EXTREMES, 1958-60.--Dissolved solids: Maximum, 262 ppm Aug. 1-6, 1960; minimum, 41 ppm Feb. 1-29, 1960.

Hardness: Maximum, 28 ppm June 1-10, 1960; minimum, 11 ppm Sept. 18-30, 1958.

Specific conductance: Maximum daily, 581 microhos Aug. 3, 1960; minimum daily, 30 microhos June 2, 1959.

Water temperatures: Maximum, 91°F July 1, 1960; minimum, 38°F Nov. 30, Dec. 1, 1959.

REMARKS.--Records of specific conductance of daily samples available in district office at Little Rock, Ark. Records of discharge for gaging station at Morrill, Miss. for water year October 1959 to September 1960 given in WSP 1704. No appreciable inflow between gaging station and sampling site.

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Alumina (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>			Specific conductance (microhmhos at 25°C)	pH	Col. or
																Calcium	Non-carbonate	Total acidity as H <sup>+</sup>			
Oct. 1-31, 1959	8,314	2.7		0.07	0.00	3.8	1.2	10	0.2	13	3.6	16	0.2	1.9	46	14	4		87	6.1	40
Nov. 1-30, 1959	10,550	3.9		.12	.00	4.0	1.8	9.5		18	4.4	13		1.6	48	18	2		82	7.9	40
Dec. 1-31, 1959	6,743	5.9		.12	.00	5.4	1.7	12	.2	16	4.6	18	.2	2.0	58	20	8		99	6.7	40
Jan. 1-31, 1960	10,820	1.2		.00	.00	5.7	1.2	8.8	1.1	16	5.4	15	.0	.7	47	19	6		86	6.5	12
Feb. 1-29, 1960	19,320	4.8		.04	.00	5.6	1.4	6.5	1.2	13	4.4	11	.0	.8	41	16	5		72	6.4	15
Mar. 1-31, 1960	17,850	4.5		.00	.00	5.9	.8	7.2	1.0	14	5.0	12	.0	1.0	44	18	6		78	6.7	20
Apr. 1-30, 1960	17,430	2.4		.04	.00	5.7	1.8	11	.7	22	3.8	16	.0	.9	53	20	4		143	6.8	16
May 1-31, 1960	12,860	2.6		.00	.00	5.5	1.0	32	2.0	30	5.0	15	.0	.5	75	19	4		143	6.8	16
June 1-10, 1960	2,901	2.5		.00	.00	9.5	1.0	32	2.0	30	5.0	15	.0	.5	118	28	3		223	7.0	10
June 11-20, 1960	1,960	2.1		.01	.00	7.9	1.0	58	2.6	24	5.8	90	.0	.6	180	24	4		353	6.6	8
June 21-30, 1960	1,926	1.9		.02	.00	7.7	1.3	73	2.8	24	6.0	115	.0	.6	220	24	5		438	6.8	8
July 1-10, 1960	1,913	3.2		.01	.00	7.9	.6	58	2.5	24	5.0	91	.0	.5	181	22	2		358	6.9	8
July 11-31, 1960	2,259	2.5		.00	.00	7.9	.6	43	2.1	20	6.4	67	.0	.8	140	22	6		273	6.5	8
Aug. 1-6, 1960	2,147	1.2		.00	.00	7.2	1.7	90	2.6	20	4.2	145	.0	.6	282	23	8		449	6.7	8
Aug. 7-10, 1960	3,070	.7		.00	.00	5.2	3.0	30	2.0	14	5.2	47	.0	1.2	99	16	5		200	6.6	10
Aug. 11-15, 1960	2,974	2.1		.04	.00	6.2	.4	53	2.1	18	5.6	81	.0	.7	160	17	2		309	6.9	15
Aug. 16-20, 1960	5,296	.5		.02	.00	6.4	.2	28	1.8	10	5.2	46	.0	1.6	95	17	9		190	6.5	18
Aug. 21-31, 1960	9,045	.9		.02	.00	4.8	.7	12	1.5	10	6.8	18	.0	2.1	52	15	7		103	6.5	18
Sept. 1-30, 1960	3,220	1.6		.00	.00	7.7	.3	23	1.5	18	4.4	38	.0	.5	86	20	5		161	6.8	15
Time-weighted average	9,760	3.1		0.04	0.00	6.0	1.0	21	1.4	17	4.7	33	0.1	1.1	79	19	5		148	--	21

PASCAGOULA RIVER BASIN—Continued  
2-4790.2. PASCAGOULA RIVER NEAR BENDEALE, MISS.—Continued

Temperature (°F) of water, water year October 1959 to September 1960																																		
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	--	71	70	--	--	65	--	66	65	66	65	67	55	56	55	54	56	56	55	58	54	50	52	51	51	50	49	51	51	50	49	51	
November.....	68	51	53	55	56	51	49	47	44	43	42	43	44	45	43	44	43	42	40	39	43	44	43	44	45	44	45	46	43	40	38	--	56	
December.....	38	45	45	44	49	50	50	51	58	55	56	55	46	54	55	56	55	46	54	54	53	53	52	52	55	55	55	56	50	53	52	--	51	
January.....	--	--	51	53	51	--	53	49	48	50	51	54	55	58	60	58	56	56	52	50	48	46	46	45	44	44	47	55	51	50	48	--	51	
February.....	52	49	50	52	54	53	54	44	54	56	55	53	51	48	47	47	48	49	48	49	47	49	49	48	50	--	46	47	43	--	50			
March.....	49	51	50	48	47	46	46	46	47	48	50	50	48	51	52	54	51	51	50	52	52	51	50	53	58	57	58	61	61	60	60	--	52	
April.....	59	59	65	64	65	65	66	64	65	65	65	65	67	67	67	68	67	68	67	68	69	70	72	78	77	78	77	78	77	78	--	69		
May.....	--	70	73	72	70	67	67	67	67	67	66	65	64	66	67	69	70	74	75	76	79	78	81	83	81	80	80	80	79	84	73	--	73	
June.....	--	85	80	81	82	83	81	82	84	83	84	83	82	81	82	83	84	83	82	83	83	84	84	85	84	85	84	86	90	88	--	83		
July.....	91	90	89	88	88	89	89	87	88	87	88	89	88	89	88	89	90	89	90	84	--	87	87	89	87	87	89	89	88	88	87	88	--	88
August.....	87	87	85	85	83	85	87	86	88	87	87	86	84	85	83	83	84	85	82	83	82	80	82	83	80	81	83	81	84	85	85	84	--	88
September.....	84	85	83	85	84	86	78	83	84	86	87	83	81	82	77	75	78	77	79	79	78	83	85	83	79	78	80	77	76	77	--	81		

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS

## STREAMS IN NORTH CAROLINA

Chemical analyses, in parts per million, water year October 1959 to September 1960

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sium (K)	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Dissolved solids (calcu- lated)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color	
													Calcium	Non-carbon- ate				
CROWAN RIVER BASIN																		
2-532. POTECAZI CREEK NEAR UNION																		
Mar. 18, 1960.....	597	2.5	0.16	2.8	1.0	3.3	1.6	9	2.0	6.5	0.0	1.0	a49	11	4	46	6.0	80
Aug. 17.....	481	10	.81	2.6	1.4	3.3	1.3	8	11	3.0	.2	1.8	40	12	6	40	6.7	75
2-535. AKOSKIE CREEK AT AKOSKIE																		
Mar. 18, 1960.....	131	3.2	0.06	2.5	0.8	3.3	1.4	8	2.7	5.5	0.0	0.8	b37	9	3	43	6.0	45
Aug. 17.....	40.3	12	1.4	2.7	1.5	2.2	1.7	14	1.8	4.0	.2	1.2	36	13	2	43	6.1	140
ROANOKE RIVER BASIN																		
2-685. DAN RIVER NEAR FRANCISCO																		
Jan. 20, 1960.....	173	10	0.03	2.6	1.0	1.8	0.8	14	1.3	2.0	0.0	0.8	b27	10	0	31	6.5	5
June 22.....	171	10	.04	2.9	.6	2.0	1.0	14	1.6	1.5	.1	1.4	28	9	0	31	6.7	35
2-705. MAYO RIVER NEAR PRICE																		
Feb. 9, 1960.....	460	15	0.06	3.1	1.0	2.0	0.9	18	1.9	1.7	0.0	0.8	b38	12	0	36	7.2	30
2-710. DAN RIVER NEAR WENTWORTH																		
Feb. 9, 1960.....	1,870	14	0.07	4.2	0.6	2.9	1.4	16	1.7	4.0	0.0	0.8	.38	13	0	45	6.3	25
2-740. SMITH RIVER AT SPRAY																		
Feb. 9, 1960.....	620	14	0.06	5.3	1.4	3.3	1.3	26	1.9	2.5	0.2	1.0	b47	19	0	55	6.6	30
2-805. ROANOKE RIVER AT ROANOKE RAPIDS																		
Mar. 1, 1960.....	23,800	12	0.04	5.5	2.1	4.2	1.7	24	7.3	3.5	0.2	1.9	50	22	3	70	6.7	20
Aug. 31.....	68,390	9.2	.00	7.1	2.2	4.4	1.5	38	4.3	3.2	.1	.5	52	26	0	84	7.0	5
2-810. ROANOKE RIVER NEAR SCOTLAND NECK																		
Aug. 31, 1960.....		9.5	0.01	9.5	3.0	6.8	1.4	50	8.0	1.0	0.1	0.4	65	36	0	98	7.0	10



## PAMLICO RIVER BASIN

## 2-815. TAR RIVER NEAR TAR RIVER

Feb. 23, 1960.....	269	12	0.14	3.2	1.8	3.5	0.6	16	2.2	3.0	0.2	0.6	35	16	2	50	6.7	20
Aug. 9.....	7.6	12	.00	5.4	2.2	3.9	1.8	29	4.5	3.0	.3	.6	48	22	0	66	6.9	20

## 2-818. CEDAR CREEK NEAR LOUISBURG

Feb. 23, 1960.....	86.8	18	0.33	2.9	1.1	4.0	1.3	18	1.5	2.5	0.0	0.7	41	12	0	45	6.9	15
Aug. 9.....	26.0	24	.47	4.2	1.4	5.3	1.5	30	1.9	3.2	.1	.8	58	16	0	64	6.9	25

## 2-820. TAR RIVER NEAR NASHVILLE

Mar. 17, 1960.....	c3 050	11	0.13	3.1	1.5	4.6	1.3	16	3.2	4.2	0.1	1.1	b48	14	1	52	6.9	55
Aug. 16.....	517	14	.08	3.0	1.0	3.9	1.7	17	1.2	3.3	.1	1.3	38	12	0	47	6.3	40

## 2-825. SAPONY CREEK NEAR NASHVILLE

Mar. 17, 1960.....	280	5.1	0.09	3.8	1.6	3.7	1.0	16	2.5	5.0	0.1	1.7	b42	16	3	54	7.0	50
Aug. 16.....	154	9.6	.27	4.2	1.0	3.4	.9	18	1.8	3.0	.2	1.1	34	14	0	48	6.1	110

## 2-829.5. LITTLE FISHING CREEK NEAR WHITE OAK

Mar. 1, 1960.....	260	15	0.23	3.0	1.5	4.1	1.1	21	2.3	4.0	0.0	0.6	42	14	0	49	6.8	15
Mar. 17.....	944	10	.20	3.0	1.2	2.5	1.2	14	2.2	3.0	0	1.0	b50	12	1	44	6.9	110
Aug. 17.....	240	9.3	.29	3.9	1.9	4.2	1.5	26	3.4	4.0	.2	.6	42	18	0	56	7.2	65

## 2-838. CONETOE CREEK NEAR BETHEL

Mar. 16, 1960.....	174	12	0.00	6.1	2.4	5.1	1.1	12	11	8.2	0.1	3.1	b62	25	15	84	6.3	20
Aug. 16.....	52.9	11	.31	5.8	1.3	4.1	1.5	9	10	5.5	.1	2.4	46	20	12	76	6.0	35

## 2-840. TAR RIVER AT GREENVILLE

Aug. 17, 1960.....		12	0.48	4.0	1.3	3.8	1.7	16	3.8	4.0	0.1	1.4	41	16	2	52	6.7	80
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## 2-845. HERRING RUN NEAR WASHINGTON

Mar. 1, 1960.....	19.8	10	0.41	2.2	1.3	3.8	0.5	4	5.0	9.5	0.2	0.7	36	11	8	46	5.0	50
Aug. 18.....	2.3	31	.63	7.1	1.4	6.9	.6	16	14	6.0	.1	.6	77	24	10	82	6.7	30

## 2-845.4. DURHAM CREEK AT EDWARD

June 25, 1960.....	2.9	9.2	0.26	3.2	0.5	3.7	0.3	3	3.8	7.0	0.2	0.3	29	10	8	43	5.2	300
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a Organic matter present: sum of mineral constituents, 25 parts per million.

b Residue at 180°C.

c Daily mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued  
STREAMS IN NORTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potas- sium (K)	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Nit- rate (NO <sub>3</sub> )	Dissolved solids (calcu- lated)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color	
													Calcium	Non-carbon- ate				
NEUSE RIVER BASIN																		
2-850. ENO RIVER AT HILLSBORO																		
Feb. 25, 1960.....	433	14	0.12	3.9	1.6	3.8	0.5	21	2.5	4.0	0.0	0.7	41	16	0	53	6.8	12
Aug. 10.....	21	13	.14	5.2	1.8	4.5	1.6	24	4.0	4.2	.1	2.3	49	20	1	71	6.8	50
2-855. FLAT RIVER AT BAHAMA																		
Feb. 25, 1960.....	580	13	0.12	3.5	1.3	2.3	0.7	17	1.0	3.0	0.0	0.8	34	14	0	47	6.9	15
Aug. 9.....	19	11	.04	3.4	2.0	3.5	1.5	21	3.6	2.7	.1	2.0	40	17	0	55	6.3	10
2-860. DIAL CREEK NEAR BAHAMA																		
Feb. 24, 1960.....	7.8	16	0.18	2.9	1.0	3.8	0.5	16	1.8	3.0	0.0	0.2	37	11	0	42	6.9	10
Sept. 22.....	.84	24	.31	3.8	1.7	5.4	1.2	26	1.6	4.2	.1	.0	55	16	0	57	6.8	18
2-870. NEUSE RIVER NEAR NORTHSIDE																		
Feb. 24, 1960.....	994	11	0.10	4.2	1.3	4.0	1.0	18	2.6	3.0	0.0	1.1	37	16	1	55	6.5	28
Aug. 9.....	97	14	.01	13	4.4	17	5.6	41	1.7	22	.3	11	127	50	16	200	7.0	20
2-875. NEUSE RIVER NEAR CLAYTON																		
Mar. 1, 1960.....	2,010	13	0.19	4.2	1.6	6.0	1.1	20	3.3	5.5	0.0	1.4	46	17	0	64	7.0	25
Sept. 1.....	618	16	.04	5.4	1.9	9.4	2.2	30	5.2	9.5	.3	1.6	67	22	0	96	6.6	30
2-880. MIDDLE CREEK NEAR CLAYTON																		
Mar. 1, 1960.....	143	10	0.28	2.2	1.0	3.4	0.7	13	0.6	2.5	0.0	0.7	27	10	0	38	7.2	20
Aug. 10.....	328	8.5	.04	2.7	.4	3.1	1.3	12	2.4	3.0	.2	.8	28	9	0	35	6.9	50
2-885. LITTLE RIVER NEAR PRINCETON																		
Mar. 6, 1960.....	865	7.2	0.25	1.9	1.2	3.7	1.1	10	1.1	6.0	0.0	0.5	28	10	1	40	6.4	30
Aug. 15.....	1,450	8.4	.17	1.8	.9	1.8	1.4	9	2.4	2.0	.1	1.2	24	8	1	34	5.8	70
2-910. NAHUNTA SWAMP NEAR SHINE																		
Mar. 15, 1960.....	153	8.9	0.03	3.8	1.2	5.4	1.2	8	4.6	7.8	0.0	2.6	b51	15	8	66	6.6	25
Aug. 16.....	62.0	11	.08	4.4	.7	5.0	1.4	12	2.7	6.0	.1	1.7	40	14	4	62	6.2	50

## 2-915. CONTENTEA CREEK AT HOOKERTON

Mar. 2, 1960.....	1,830	5.9	0.27	2.8	1.1	4.7	1.1	10	4.0	6.0	0.1	1.4	30	12	3	53	6.2	35
Aug. 19.....	1,960	6.9	.41	2.2	1.1	2.8	1.7	7	3.0	3.7	.1	1.1	26	10	4	37	6.6	80

## 2-917. LITTLE CONTENTEA CREEK NEAR FARMVILLE

Mar. 2, 1960.....	131	5.4	0.16	4.8	1.1	6.0	1.3	10	7.5	9.1	0.0	2.0	b58	17	8	69	6.3	60
Aug. 17.....	51.9	10	.83	4.5	1.4	5.7	2.1	14	5.2	7.0	.1	1.8	46	16	5	67	6.3	80

## 2-920. 2. PALMETTO SWAMP NEAR VANCEBORO

June 25, 1960.....	3.05	12	0.06	7.1	1.1	4.9	1.3	22	7.2	6.0	0.3	0.7	52	22	4	72	6.6	60
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## NEW RIVER BASIN

## 2-930. NEW RIVER NEAR GUM BRANCH

Mar. 1, 1960.....	245	4.7	0.23	14	0.9	3.6	0.4	36	4.6	5.0	0.1	1.4	53	38	8	96	7.2	90
Aug. 23.....	55.7	8.0	.35	31	.9	4.2	.7	91	5.3	4.0	.2	3.5	103	82	8	170	7.1	100

## CAPE FEAR RIVER BASIN

## 2-933. 28. TROUBLESOME CREEK NEAR MIDWAY

July 25, 1960.....	8.4	18	0.10	3.9	2.7	3.8	1.4	29	3.8	2.8	0.2	0.6	51	21	0	64	6.7	
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## 2-933. 36. TROUBLESOME CREEK NEAR MONROETON

July 25, 1960.....	11.2	18	0.04	3.7	2.4	3.4	1.3	30	2.4	2.5	0.2	2.3	51	19	0	63	6.7	
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## 2-938. REEDY FORK NEAR OAK RIDGE

Feb. 10, 1960.....	32	15	0.07	4.5	1.6	3.2	1.8	20	4.3	3.0	0.1	1.7	45	18	1	56	6.4	10
Sept. 8.....	10.3	20	.32	4.8	2.3	4.6	1.7	32	3.0	3.3	.2	.9	57	22	0	69	7.6	10

## 2-945. REEDY FORK CREEK NEAR GIBSONVILLE

Feb. 8, 1960.....	c456	9.1	0.06	4.5	1.2	2.3	2.2	17	3.6	3.2	0.1	0.8	35	16	2	52	6.1	30
Sept. 7.....	14.8	8.7	.13	5.9	3.4	4.6	2.2	38	2.0	5.1	.1	.7	52	29	0	85	6.5	20

## 2-955. NORTH BUFFALO CREEK NEAR GREENSBORO

Feb. 10, 1960.....	54.6	20	0.11	17	6.7	86	8.7	194	44	29	0.3	3.0	339	70	0	550	6.6	20
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## 2-959. 8. STONY CREEK NEAR STONY CREEK

July 25, 1960.....	1.4	22	0.49	9.1	6.2	6.7	1.7	70	1.4	4.1	0.2	0.4	87	48	0	128	7.1	
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## 2-959. 83. STONY CREEK NEAR UNION RIDGE

July 25, 1960.....	2.0	25	0.02	16	8.1	8.8	2.0	103	5.8	4.1	0.2	0.7	122	74	0	180	7.1	
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b Residue at 180°C.  
c Daily mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued  
STREAMS IN NORTH CAROLINA--Continued

Date of collection	Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued											Specific conductance (micro-mhos at 25°C)	pH	Color
	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (labeled)	Hardness as CaCO <sub>3</sub> Calcium-magnesium sum
CAPE FEAR RIVER BASIN--Continued														
2-965.24. STAGG CREEK NEAR PLEASANT GROVE														
July 25, 1960.....	2.4	21	0.05	6.2	3.3	5.7	1.0	44	2.8	4.0	0.2	0.7	67	29 0 81 6.8
2-965.36. QUAKER CREEK NEAR WEBANE														
July 25, 1960.....	2.0	22	0.09	7.7	5.3	7.8	1.2	52	1.4	6.5	0.2	1.4	80	40 0 117 6.8
2-966.04. LITTLE ALAMANCE CREEK NEAR GREENSBORO														
July 25, 1960.....	5.4	16	0.02	7.0	4.4	7.9	1.4	47	4.2	7.9	0.1	1.5	73	36 0 110 6.6
2-967. ALAMANCE CREEK NEAR ELON COLLEGE														
Feb. 10, 1960.....	164	19	0.13	5.8	3.2	4.8	1.1	30	4.6	4.0	0.0	1.3	664	27 3 74 7.3 10
2-967.86. STINKING QUARTER CREEK NEAR KIMESVILLE														
July 25, 1960.....	1.0	16	0.47	6.3	3.5	7.1	1.1	49	1.0	3.4	0.2	1.4	64	30 0 90 6.7
2-968.17. HAW CREEK NEAR WEBANE														
July 25, 1960.....	1.4	20	0.13	8.5	4.9	9.4	1.4	58	9.0	5.4	0.2	2.2	90	41 0 120 7.1
2-968.18. ROCK CREEK NEAR WEBANE														
July 25, 1960.....	0.2	20	0.03	6.4	3.6	6.0	0.8	50	1.2	4.0	0.1	0.9	68	31 0 87 6.7
2-968.22. HAW CREEK NEAR SWEPSONVILLE														
July 25, 1960.....	3.9	17	0.10	6.6	4.1	6.1	2.1	46	7.6	5.3	0.1	1.4	73	34 0 100 6.6
2-968.24. VARNAL'S CREEK NEAR SWEPSONVILLE														
July 25, 1960.....	1.3	25	0.23	5.6	2.6	6.2	2.0	33	1.0	5.2	0.3	2.1	66	25 0 84 6.6
2-968.31. MATES CREEK AT SAXAPAHAW														
July 25, 1960.....	0.8	23	0.04	7.7	4.5	7.9	0.8	52	2.4	6.5	0.2	0.9	81	42 0 102 7.0

## 2-968.41. MARY'S CREEK NEAR SAXAPAHAW

July 25, 1960.....	1.5	18	0.04	5.6	4.0	6.5	1.1	35	3.8	7.5	0.2	1.1	65	30	2	91	6.4
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## 2-968.5. CANE CREEK NEAR TEAR

Feb. 25, 1960.....	228	9.7	0.06	3.2	1.4	2.8	0.7	15	1.5	2.0	0.1	1.0	29	14	2	44	6.5
Aug. 10.....	11.2	12	.06	5.3	1.3	3.2	2.8	7	16	3.5	.2	1.2	49	18	12	58	6.9

## 2-968.86. CANE CREEK NEAR SNOW CAMP

July 25, 1960.....	2.5	20	0.07	5.5	2.7	6.0	1.3	36	0.6	4.4	0.2	1.9	61	25	0	78	6.7
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## 2-969.29. TERRELLS CREEK NEAR PITTSBORO

July 26, 1960.....	0.3	19	0.09	8.6	3.4	6.2	1.2	49	4.0	5.1	0.3	1.4	73	36	0	97	6.8
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## 2-970. HAW RIVER NEAR PITTSBORO

Mar. 17, 1960.....	6,890	12	0.12	5.1	2.0	6.3	1.2	25	6.0	5.2	0.1	2.2	52	22	1	77	6.8
Aug. 31.....	800	15	.20	6.4	2.6	16	2.8	38	11	12	.4	2.9	89	26	0	140	6.8

## 2-973.59. BOLIN CREEK AT CHAPEL HILL

July 26, 1960.....	1.6	22	0.04	11	5.5	9.1	1.7	60	11	8.5	0.2	2.3	101	52	2	148	6.8
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## 2-974.64. MORGAN CREEK NEAR WHITE CROSS

July 26, 1960.....	0.7	14	0.02	6.2	3.1	5.3	1.8	37	4.8	4.6	0.1	3.2	61	28	0	84	6.6
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## 2-974.77. PHIL'S CREEK NEAR WHITE CROSS

July 26, 1960.....	1.2	19	0.17	5.4	2.3	5.6	1.9	34		4.9	0.2	1.2		23	0	70	6.6
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## 2-980. NEW HOPE RIVER NEAR PITTSBORO

Mar. 17, 1960.....	2,060	6.7	0.02	4.8	1.1	4.1	1.4	16	7.9	5.0	0.1	0.4	40	16	4	61	6.5
Aug. 31.....	41.0	16	.10	9.1	2.7	13	3.5	44	7.8	12	.3	3.8	90	34	0	140	7.2

b Residue at 180°C.

MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued  
STREAMS IN NORTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued																		
Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (calculated)	Hardness as CaCO <sub>3</sub>		Specific conductance (micro- mhos at 25°C)	pH	Color	
													Calcium	Non- magne-carbon- sum ate				
CAPE FEAR RIVER BASIN--Continued																		
2-990. EAST FORK DEEP RIVER NEAR HIGH POINT																		
Feb. 10, 1960.....	663	21	0.07	6.4	2.9	3.8	1.4	37	5.4	2.0	0.1	0.9	62	28	0	87	6.4	25
Sept. 8.....	3.9	27	.04	7.5	3.9	5.6	1.4	49	4.8	2.0	.1	.5	77	35	0	90	7.0	20
2-995. DEEP RIVER NEAR RANDLEMAN																		
Feb. 10, 1960.....	105	14	0.03	6.6	2.8	9.4	0.8	26	7.6	11	0.0	3.7	69	28	7	104	6.3	10
Sept. 8.....	30.7	21	.03	10	5.4	14	3.0	56	10	14	.2	7.3	113	48	2	175	6.7	15
2-1005. DEEP RIVER AT RAMSEUR																		
Mar. 19, 1960.....	2,560	9.6	0.04	4.9	1.8	3.8	1.4	20	5.6	4.0	0.1	1.6	43	20	3	62	6.3	20
Aug. 30.....	183	13	.10	5.9	1.8	7.0	2.2	30	5.5	4.5	.1	2.3	58	22	0	83	6.7	30
2-1010. BEAR CREEK AT ROBINS																		
Mar. 19, 1960.....	516	7.9	0.43	2.7	0.9	2.4	0.7	11	4.3	2.0	0.1	0.6	27	10	2	37	6.3	40
Aug. 30.....	76	9.2	.16	3.2	.7	6.5	1.5	18	2.1	6.0	.1	1.0	40	11	0	57	6.9	60
2-1018. TICK CREEK NEAR MOUNT VERNON SPRINGS																		
Mar. 17, 1960.....	121	7.7	0.03	4.6	1.7	2.7	0.6	16	6.0	3.7	0.1	0.8	36	18	6	54	6.5	30
Aug. 30.....	1.0	11	.00	10	3.7	4.8	1.5	50	4.0	4.5	.2	1.6	66	41	0	106	7.6	15
2-1020. DEEP RIVER AT MONCURE																		
Mar. 16, 1960.....	11,200	9.8	0.12	4.3	1.1	4.6	0.9	18	2.0	5.0	0.0	1.2	b53	15	0	57	7.0	70
Aug. 31.....	222	7.7	.04	3.2	1.6	3.4	2.2	17	3.8	4.0	.1	2.8	37	14	0	52	6.3	20
2-1035. LITTLE RIVER AT LINDEN																		
Mar. 7, 1960.....	1,530	4.6	0.00	1.4	0.4	1.8	0.8	3	5.4	2.5	0.1	1.1	19	6	3	24	5.3	15
Aug. 29.....	202	5.3	.23	1.5	.1	3.2	.6	2	3.2	3.0	.0	3.0	22	4	3	32	5.0	25

## 2-1040. CAPE FEAR RIVER AT FAYETTEVILLE

Aug. 29, 1960.....	8.2	0.10	3.0	1.4	5.1	1.3	12	6.4	5.2	0.1	2.7	40	14	4	56	5.9	80
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## LITTLE CROSS CREEK AT FAYETTEVILLE

Sept. 14, 1960.....	3.4	0.27	1.8	0.8	1.8	0.9	8	2.4	2.0	0.1	0.9	b26	8	2	30	6.2	25
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## BIG CROSS CREEK AT FAYETTEVILLE

Sept. 14, 1960.....	3.7	0.17	1.2	0.1	1.2	0.5	3	1.8	2.0	0.0	0.8	b23	5	2	19	5.5	20
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## 2-1055. CAPE FEAR RIVER AT LOCK 3 NEAR TARBEE

Mar. 7, 1960.....	9.490	10	0.08	3.0	1.0	4.0	1.0	12	2.5	4.2	0.0	1.8	b48	11	2	47	7.4	50
Aug. 29.....	1.900	7.6	.35	2.7	.7	4.3	1.6	10	3.2	4.0	.2	.5	30	10	2	47	5.9	50

## 2-1059. HOOD CREEK NEAR LELAND

Mar. 9, 1960.....	47.0	4.4	0.11	4.6	0.1	2.7	0.5	10	1.6	5.7	0.0	1.0	b41	12	4	40	6.4	110
Aug. 30.....	14.4	6.7	.30	5.6	1.0	2.7	.2	14	.5	4.8	.2	2.1	31	18	6	47	8.2	130

## 2-1060. LITTLE COHARIE CREEK NEAR ROSEBORO

Mar. 10, 1960.....	310	2.1	0.07	1.0	0.3	4.5	0.8	4	2.8	5.8	0.0	1.3	21	4	0	36	5.3	30
Aug. 31.....	36.4	8.7	.45	1.1	.4	5.9	1.1	6	2.1	7.5	.1	1.2	32	4	0	42	6.0	120

## 2-1065. BLACK RIVER NEAR TOMAHAWK

Mar. 10, 1960.....	2,200	2.6	0.01	2.1	0.4	4.2	0.9	4	5.6	4.7	0.0	1.6	24	6	3	40	5.5	30
Aug. 31.....	327	11	.20	2.1	.8	5.3	1.0	8	2.6	6.5	.2	.0	35	8	2	44	6.1	80

## 2-1070. SOUTH RIVER NEAR PARKERSBURG

Mar. 10, 1960.....	1,330	1.3	0.18	1.2	0.4	3.6	0.9	4	1.8	5.3	0.0	0.8	b28	5	1	33	5.5	50
Aug. 31.....	297	8.9	.21	1.1	.7	4.1	1.1	4	1.0	6.0	.1	1.1	26	6	2	37	5.2	160

## 2-1075. COLLY CREEK NEAR KELLY

Mar. 9, 1960.....	339	3.1	0.17	0.8	0.5	1.6	0.3	0	5.4	3.5	0.1	0.3	16	4	4	38	4.4	240
Aug. 30.....	83.5	8.9	.87	2.7	.8	2.7	.7	0	4.3	.3			10	10	50	4.5		

## 2-1076. NORTHEAST CAPE FEAR RIVER NEAR SEVEN SPRINGS

Feb. 29, 1960.....	126	2.7	0.20	3.0	0.7	15	1.0	6	4.9	22	0.0	1.1	54	11	6	105	6.1	45
Aug. 26.....	31.8	10	.74	3.0	1.3	51	2.1	9	1.7	79	.2	3.0	156	13	6	300	5.6	100

## 2-1085. ROCKFISH CREEK NEAR WALLACE

Mar. 10, 1960.....	143	2.3	0.20	2.4	1.0	3.2	0.7	6	2.8	5.9	0.1	1.1	b38	10	5	41	6.0	70
Aug. 30.....	14.0	9.6	.51	3.3	.7	3.5	.5	7	3.4	4.5	.1	2.6	32	11	6	38	6.6	100

b Residue at 180°C.

c Daily mean discharge.

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

## STREAMS IN NORTH CAROLINA--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Cal- cium (Ca)	Mag- ne- sium (Mg)	Sodium (Na)	Po- tas- sate sum (K)	Bicar- bonate sum (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluo- ride (F)	Ni- trate (NO <sub>3</sub> )	Dissolved solids (calcu- lated)	Hardness as CaCO <sub>3</sub>		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium	Non-carbon- ate			
PEE DEE RIVER BASIN																		
2-1110. YADKIN RIVER AT PATTERSON																		
Dec. 17, 1959.....	50.8	12	0.03	3.0	0.4	1.7	0.6	14	0.3	1.0	0.0	0.3	26	9	0	27	6.7	5
June 21, 1960.....	41.9	12	.00	2.6	.8	1.4	.7	13	.5	1.3	.1	.4	26	10	0	29	6.6	10
2-1115. REDDIES RIVER AT NORTH WILKESBORO																		
Dec. 30, 1959.....	143	14	0.02	7.1	1.2	2.0	0.8	8	1.0	1.3	0.1	0.9	b56	22	16	64	6.1	20
June 29, 1960.....	140	13	.02	2.4	.7	1.8	.9	14	2.1	2.0	.1	.0	30	9	0	28	6.9	15
2-1130. FISHER RIVER NEAR COPELAND																		
Jan. 20, 1960.....	166	10	0.04	2.4	0.6	1.9	0.8	11	1.0	3.8	0.0	0.8	b27	8	0	29	6.3	7
June 17.....	141	11	.01	2.2	.6	1.0	.4	12	1.2	1.0	.1	.3	24	8	0	24	6.7	10
LOVILLS CREEK AT MOUNT AIRY																		
Sept. 30, 1960.....		13	0.04	3.6	0.6	1.8	1.0	20	0.8	1.5	0.0	0.0	b32	12	0	40	6.8	3
2-1144.5. LITTLE YADKIN RIVER AT DALTON																		
July 18, 1960.....		20	0.00	3.8	1.2	4.1	1.5	23	2.8	2.5	0.3	1.0	48	14	0	48	7.6	35
2-1155. FORBUSH CREEK NEAR YADKINVILLE																		
Jan. 20, 1960.....	22.4	15	0.16	3.4	1.5	2.2	0.8	20	0.5	1.5	0.1	0.3	35	14	0	38	7.3	10
June 17.....	19.6	15	.04	3.2	1.4	2.6	1.1	22	1.2	2.0	.2	.0	38	14	0	39	7.2	15



## 2-1175. ROCKY CREEK AT TURNERSBURG

Dec. 31, 1959.....	157	14	0.04	3.0	1.0	2.0	1.2	14	0.3	2.0	0.0	0.8	12	0	36	6.5	20
June 24, 1960.....	116	14	.01	3.4	1.0	2.3	1.4	14	5.2	2.0	.2	.1	37	1	39	6.9	15

## 2-1185. HUNTING CREEK AT HARMONY

Dec. 31, 1959.....	250	7.6	0.03	1.4	1.3	2.0	1.1	13	0.8	3.3	0.0	0.7	9	0	31	6.2	25
June 24, 1960.....	169	13	.03	2.6	.6	2.1	1.2	14	2.1	1.7	.2	.1	31	9	30	6.7	15

## 2-1190. SOUTH YADKIN RIVER AT COOLEEMEE

Feb. 24, 1960.....	1,430	12	0.14	3.2	1.0	17	1.8	48	4.1	3.4	0.0	0.4	67	12	0	98	7.2	15
June 24, 1960.....	580	16	.09	3.3	1.1	21	2.0	62	5.2	4.0	.2	.0	84	12	0	115	7.5	40

## 2-1194. THIRD CREEK SUBWATERSHED NO. 7A NEAR STONY POINT (INFLOW)

Feb. 5, 1960.....	b37	2.7	0.04	2.2	0.2	1.0	1.7	4	1.8	2.8	0.0	1.7	16	6	3	26	5.6	8
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## 2-1194. THIRD CREEK SUBWATERSHED NO. 7A NEAR STONY POINT (OUTFLOW)

Nov. 9, 1959.....	b5.7	--	--	--	--	3.6	1.7	20	--	4.6	--	--	--	10	0	44	7.0	--
Dec. 30.....	7.7	9.5	0.06	3.8	0.5	2.7	1.5	12	5.8	2.3	0.0	1.3	33	12	2	47	6.0	10
Feb. 5, 1960.....	c37	8.4	.01	2.6	.7	1.9	1.6	7	2.2	4.2	.0	1.2	26	10	4	33	6.1	7
June 21.....	4.3	13	.01	2.2	1.3	2.9	1.6	9	1.2	2.0	.1	9.2	38	11	4	45	6.2	8

## 2-1205. THIRD CREEK AT CLEVELAND

Dec. 31, 1959.....	91.5	22	0.06	5.9	2.6	4.4	1.5	34	1.2	4.0	0.1	1.7	60	26	0	77	6.7	30
July 19, 1960.....	58.6	22	.00	6.8	2.6	4.6	1.6	41	2.2	3.0	.1	1.0	64	28	0	80	7.0	5

## 2-1225. YADKIN RIVER AT HIGH ROCK

Jan. 6, 1960.....	7,680	13	0.14	4.6	1.0	3.4	1.4	21	1.1	2.0	0.0	1.2	38	15	0	51	6.7	5
June 28.....	4,590	12	.03	4.4	1.8	4.7	1.4	28	2.6	3.5	.1	.9	45	18	0	62	6.7	15

b Residue at 180°C.

c Daily mean discharge.



## SANTÉE RIVER BASIN

## 2-1370. OLD FORT AT MILL CREEK

July 26, 1960.....	71.3	10	0.00	2.9	1.1	1.1	0.7	13	4.0	0.5	0.1	0.6	27	12	1	33	6.6	5
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## 2-1380. CATAWBA RIVER NEAR MARION

Dec. 22, 1959.....	444	13	0.02	2.1	0.9	5.8	0.9	16	0.7	4.1	0.1	0.9	b41	9	0	46	7.1	10
June 27, 1960.....	358	13	.01	2.7	1.1	2.6	1.1	18	1.2	2.0	.1	.0	33	12	0	38	6.8	10

## 2-1385. LINVILLE RIVER AT BRANCH

Dec. 22, 1959.....	237	7.7	0.03	2.1	0.2	1.2	0.6	10	0.1	1.4	0.1	0.8	b20	6	0	19	6.4	10
June 27, 1960.....	160	8.0	.00	2.4	.5	1.5	.8	13	2.4	1.3	.1	.2	23	8	0	23	6.7	15

## CATAWBA RIVER AT VALDESE

Sept. 8, 1960.....		10	0.00	3.0	1.4	2.8	1.4	20	2.6	2.5	0.1	0.0	34	13	0	44	6.7	3
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## MICOL CREEK AT VALDESE

Sept. 8, 1960.....		7.0	0.00	2.6	0.6	1.1	1.7	12	2.4	1.5	0.0	1.5	24	9	0	32	6.5	3
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## 2-1420. LOWER LITTLE RIVER NEAR ALL HEALINGS SPRINGS

Dec. 17, 1959.....	36.6	12	0.08	2.3	1.0	1.6	1.0	14	0.2	1.5	0.0	0.3	27	10	0	29	6.6	7
June 21, 1960.....		27	.02	2.0	1.3	1.4	.7	13	1.2	.3	.1	1.2	28	10	0	29	6.7	10

## 2-1425. CATAWBA RIVER AT CATAWBA

Feb. 29, 1960.....	4,620	7.8	0.00	2.5	0.5	1.8	1.3	10	2.4	1.5	0.1	0.4	23	8	0	29	7.0	10
July 1,.....	4,110	10	.01	2.8	1.1	2.5	1.0	16	2.4	2.0	.2	.5	31	12	0	39	6.6	8

## 2-1426. MOUNTAIN CREEK AT TERRELL

Dec. 31, 1959.....	40.0	21	0.08	5.3	2.6	3.1	1.1	32	0.9	2.0	0.1	0.5	b53	24	0	64	6.7	10
July 1, 1960.....	37.6	20	.03	4.6	2.8	3.7	1.4	33	3.4	2.5	.3	.0	55	23	0	63	7.0	10

b Residue at 180°C.

c Daily mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued  
STREAMS IN NORTH CAROLINA--Continued

Date of collection	Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued											Specific conductance (micro-mhos at 25°C)	pH	Color
	Discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids (unfiltered)	Hardness as CaCO <sub>3</sub> Calcium Non-carbonate
Santee River Basin--Continued														
Barr Creek at Mooresville														
Oct. 12, 1959.....	26			7.4	2.7			43	4.2	3.5				30 0 78 7.3
2-1430. Henry Fork near Henry River														
Dec. 17, 1959.....	93.6	11	0.04	2.3	0.3	1.4	0.9	10	0.3	1.3	0.0	0.4	b24	7 0 26 6.6
June 21, 1960.....	105	10	.04	1.8	.8	1.8	1.2	12	1.4	1.3	.1	.0	b24	8 0 24 7.6
July 21, 1960.....	84.6	12	.01	2.2	.7	1.8	1.1	12	3.0	2.0	.2	.3	30	8 0 32 6.8
2-1440. Long Creek near Bessemer City														
Oct. 8, 1959.....	21	21	0.06	5.7	2.6	3.5	2.0	32	0.3	3.0	0.1	1.1	b55	25 0 69 6.5
Dec. 21, 1959.....	46	18	.15	4.8	2.1	3.1	1.3	28	.4	2.7	.1	1.0	b49	21 0 59 7.2
July 8, 1960.....	20.2	18	.07	5.5	1.9	3.2	1.4	32	2.8	2.7	.1	.1	32	22 0 59 7.1
2-1450. South Fork Catawba River at Lowell														
Dec. 21, 1959.....	1,490	13	0.18	3.1	1.6	2.6	1.6	16	1.0	3.9	0.1	1.5	b49	14 1 46 7.2
July 8, 1960.....	616	15	.01	4.2	1.4	3.9	1.7	24	3.6	4.0	.2	.7	47	16 0 56 7.2
2-1465. Little Sugar Creek near Charlotte														
Jan. 7, 1960.....	778	8.4	0.05	7.8	2.8	7.5	2.6	35	13	5.7	0.2	0.7	66	31 2 108 6.2
June 20, 1960.....	10.5	27	.03	20	5.1	17	2.4	101	8.6	13	.4	.3	144	71 0 204 7.0
2-1469. Twelve Mile Creek near Waxhaw														
Dec. 22, 1959.....	56.4	17	0.18	6.3	3.3	6.6	1.6	32	2.6	8.2	0.0	3.0	b68	29 3 94 6.8
June 20, 1960.....	7.2	23	.07	7.3	3.3	7.1	1.5	48	2.8	5.5	.3	.1	75	32 0 95 7.3

## 2-1490. COVE CREEK NEAR LAKE LURE

Dec. 16, 1959.....	114	7.3	0.00	2.5	1.1	2.7	0.9	20	0.9	1.3	0.0	0.4	b33	11	0	36	7.4	10
July 27, 1960.....	150		.07	2.4	.9	3.1	.9	16	5.0	1.0	.1	.8	39	10	0	32	6.8	20

## 2-1521. FIRST BROAD RIVER NEAR CASAR

Dec. 15, 1959.....	91.9	14	0.06	2.0	1.1	1.8	0.8	16	0.5	0.5	0.0	0.2	29	10	0	29	7.0	5
July 21, 1960.....	56.5	15	.03	2.9	.8	2.4	1.2	18	2.4	1.2	.2	.2	35	10	0	34	7.2	15

## 2-1525. FIRST BROAD RIVER NEAR LAWDALE

Dec. 15, 1959.....	284	12	0.11	2.5	1.0	2.6	1.1	16	0.1	3.0	0.0	0.6	31	10	0	35	7.0	10
Aug. 15, 1960.....	222	12	.17	2.3	.8	1.6	1.3	15	.5	.5	.0	1.0	27	10	0	32	6.9	8

## JAKE'S BRANCH AT GROVER

May 2, 1960.....		18	0.01	1.4	0.4	3.7	1.3	10	1.9	3.0	0.0	2.0	37	6	0	35	6.9	5
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## TRIBUTARY TO JAKE'S BRANCH AT GROVER

Apr. 20, 1960.....		14	0.04	1.1	0.4	2.8	1.0	8	2.2	2.5	0.0	0.7	29	5	0	32	6.2	5
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a Dissolved solids (residue at 180°C).

## KANAWHA RIVER BASIN

## 2-1610. SOUTH FORK NEW RIVER NEAR JEFFERSON

Jan. 21, 1960.....	420	9.0	0.01	2.7	0.9	1.8	0.7	14	0.8	3.1	0.0	1.5	b29	11	0	34	6.2	8
June 23.....	535	9.3	.02	3.0	1.0	1.3	.8	15	.8	2.0	.1	.3	26	12	0	29	7.0	10

b Residue at 180°C.

MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued  
Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	Col- or pH	
													Residue at 180°C	Calcium carbonate	Calcium	Non-magnesium carbonate			
ST. JOHNS RIVER BASIN																			
2-2332. LITTLE ECONLOCHATCHEE RIVER NEAR UNION PARK, FLA.																			
Jan. 14, 1960.	3.3	8.3	0.06	11	1.6	8.3	0.8	31	4.4	15	0.2	0.7	88	65	34	8	107	7.2	300
Feb. 29, .....	20	5.9	.18	6.8	.6	8.1	.5	15	3.2	15	.2	.4	101	48	20	7	83	6.7	125
May 19, .....	14	5.1	.03	14	1.0	8.4	.2	41	3.6	12	.2	.0	83	65	39	6	116	6.9	30
July 13, .....	14	7.5	.07	7.4	.9	6.6	1.1	17	4.4	12	.2	.1	97	49	22	8	77	8.4	20
Sept. 8, .....	35	5.6	.07	5.4	.7	5.2	1.2	11	1.2	9.5	.2	.3	78	35	16	8	58	8.0	170
2-2333. LITTLE ECONLOCHATCHEE RIVER AT UNION PARK, FLA.																			
Nov. 19, 1959.	11.7	11	0.20	8.0	1.7	5.8	1.1	23	2.8	12	0.2	0.8	88	55	27	8	88	6.3	140
Jan. 14, 1960.	3.2	3.9	.11	13	.9	7.4	.6	45	3.2	14	.1	.3	102	66	36	0	111	7.9	140
MAYLAND LAKE AT WINTER PARK, FLA.																			
Oct. 28, 1959.	37.0	0.0	0.01	18	4.9	9.3	3.7	52	24	17	0.5	0.2	128	104	65	22	195	7.6	10
Oct. 19, 1960.	3.9	0.5	.00	19	5.5	9.4	4.8	52	27	15	.2	2.8	137	110	70	28	199	7.3	10
2-2365. BIG CREEK NEAR CLEMONT, FLA.																			
Oct. 13, 1959.	122	2.3	0.09	2.2	0.5	3.8	0.5	7.0	0.4	502	0.2	0.5	66	19	8	2	38	5.4	200
Dec. 8, .....	62	.8	.14	3.2	1.0	4.6	.2	6.0	1.2	9.5	.2	.4	78	24	12	7	52	5.6	200
2-2367. LITTLE CREEK NEAR CLEMONT, FLA.																			
Oct. 13, 1959.	37.0	1.3	0.22	1.2	0.7	3.8	0.7	3.0	0.8	7.0	0.2	0.1	72	18	6	4	44	4.7	280
Dec. 8, .....	3.9	2.0	.38	1.6	1.5	4.1	.3	3.0	2.8	6.0	.2	.4	78	19	10	0	58	4.2	220
2-2409. NEWMANS LAKE NEAR GAINESVILLE, FLA.																			
Jan. 1, 1960..		2.3	0.05	3.2	1.1	3.9	0.5	4	2.8	5.8	0.2	4.4	67	26	12	9	52	5.3	95
June 22, .....		1.6	.03	3.2	1.3	5.0	1.0	7	3.2	7.0	.2	.0	53	26	14	8	53	6.2	80

## 2-2410. CAMPS CANAL NEAR ROCHELLE, FLA.

Jan. 1, 1960..	2.6	0.66	3.2	1.1	3.9	0.5	4	2.4	5.8	0.2	4.5	0.5	64	26	12	9	52	5.5	110
June 21,.....	1.1	.03	3.6	.7	4.8	.2	10	.8	6.0	.1	.1	.0	29	24	12	4	48	5.9	60

## ORANGE LAKE NEAR BOARDMAN, FLA.

Jan. 1, 1960..	3.4	0.02	6.0	1.6	4.7	0.8	18	2.0	7.0	0.2	1.3	0.6	66	36	22	6	68	6.5	80
June 21,.....	2.3	.03	6.0	1.2	4.6	.1	20	.8	8.2	.1	.2	.0	49	33	20	4	61	6.3	55

## ORANGE LAKE AT HEAGEY'S FISHING CAMP, FLA.

Jan. 4, 1960..	2.0	0.03	7.0	1.1	4.8	0.8	20	2.4	9.0	0.2	0.3	0.0	46	38	22	6	70	6.4	65
June 21,.....	1.6	.03	6.0	1.7	5.0	.9	20	1.2	7.5	.3	.2	0.0	58	34	22	6	65	6.4	45

## 2-2419. LOCHLOOSA CREEK AT GROVE PARK, FLA.

Jan. 4, 1960..	11	0.03	4.4	2.7	7.1	0.9	14	1.6	12	0.3	0.2	0.0	92	47	22	10	78	6.1	150
June 21,.....	6.1	.06	4.4	1.9	4.3	.4	9	2.4	8.5	.2	.1	.0	72	33	19	12	57	5.6	220

## 2-2425. LOCHLOOSA LAKE NEAR LOCHLOOSA, FLA.

Jan. 4, 1960..	5.7	0.02	9.4	3.0	6.2	1.0	33	6.0	10	0.2	1.0	1.0	90	60	36	9	103	6.8	75
June 21,.....	.0	.03	8.0	2.2	5.8	.4	29	3.2	10	.2	.0	.0	49	44	29	5	83	6.7	45

## 2-2438. DEEP CREEK NEAR RUDMAN, FLA.

Dec. 30, 1959.	11	0.00	19	5.7	3.8	0.5	82	3.2	6.5	0.1	0.0	0.3	94	80	71	4	154	7.6	35
June 21, 1960.	17	.07	17	5.3	3.4	1.6	68	6.0	5.5	.2	.0	.0	104	89	65	10	135	7.1	75

## 2-2440. OKLAWAHA RIVER AT RIVERSIDE LANDING, NEAR ORANGE SPRINGS, FLA.

Oct. 16, 1959.	3,510	4.4	0.07	35	7.9	18	1.5	114	23	34	0.4	0.2	215	180	120	26	328	8.0	60
Dec. 16, 1959.	2,530	6.4	.03	32	4.7	16	1.5	136	31	31	.2	.0	249	210	149	38	376	9.1	40
Feb. 4, 1960..	2,320	5.8	.12	48	7.3	20	1.6	122	35	32	.1	1.0	287	321	196	50	441	7.7	45

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960.—Continued																				
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color		
														Residue at 180°C	Calculated					
ST. JOHNS RIVER BASIN.—Continued																				
2-2440. OKLAHAWA RIVER AT RIVERSIDE LANDING, NEAR ORANGE SPRINGS, FLA.—Continued																				
Apr. 1, 1960.	4,160	0.9	0.05	32	5.4	15	1.2	86	21	25	0.3	0.2		265	143	102	32	265	7.4	110
June 1, 1960.	2,860	6.8	.06	41	7.7	22	1.4	118	28	36	.3	.1		237	201	134	38	368	7.7	40
July 25, 1960.	3,660	7.4	.04	34	5.6	18	1.2	92	22	30	.3	.2		207	164	108	32	292	7.8	110
2-2446. SAND HILL LAKE NEAR KEYSTONE HEIGHTS, FLA.																				
Dec. 31, 1959.		1.3	0.00	1.2	0.5	3.4	0.0	2	2.4	4.2	0.1	0.2	0.0	16	14	5	4	24	5.3	5
June 22, 1960.		2.4	.01	1.0	.4	2.8	.1	3	2.4	4.2	.0	.0	.0	12	15	4	2	24	5.3	5
2-2446.5. MAGNOLIA LAKE NEAR KEYSTONE HEIGHTS, FLA.																				
Dec. 31, 1959.		1.6	0.02	1.2	0.1	2.6	0.2	4	2.4	4.0	0.1	0.0		28	14	4	0	26	6.1	17
June 22, 1960.		.9	.01	1.2	.2	2.9	.0	3	2.4	4.2	.0	.0	0.0	15	13	4	2	24	5.4	3
CRYSTAL LAKE NEAR KEYSTONE HEIGHTS, FLA.																				
Dec. 30, 1959.		0.0	0.00	2.0	0.5	2.8	0.0	7	1.6	4.2	0.0	0.1	0.0	18	15	7	2	30	6.4	5
June 23, 1960.		.7	.01	2.2	.6	2.7	1.0	6	2.4	3.5	.0	.0	.0	19	16	8	3	31	6.3	15
BROOKLYN LAKE NEAR KEYSTONE HEIGHTS, FLA.																				
Dec. 30, 1959.		1.4	0.00	1.0	0.6	2.6	0.3	4	3.2	4.8	0.1	0.2	0.0	11	16	5	2	28	5.6	10
June 22, 1960.		.5	.00	1.4	.2	2.9	.0	3	2.8	5.0	.0	.0	.0	19	14	4	2	26	5.5	2
GENEVA LAKE NEAR KEYSTONE HEIGHTS, FLA.																				
Dec. 30, 1959.		0.2	0.02	1.4	1.1	6.3	0.9	2	6.0	9.0	0.1	0.1	0.0	34	26	8	6	53	5.6	10
June 21, 1960.		.0	.01	1.4	1.2	5.9	1.0	2	6.8	8.5	.1	.1	.0	32	26	8	7	52	5.5	9
2-2448.5. PEBBLE LAKE NEAR KEYSTONE HEIGHTS, FLA.																				
Dec. 30, 1959.		1.6	0.00	0.8	0.2	3.4	0.5	2	0.8	3.5	0.1	0.4	0.0	15	12	3	2	22	5.9	5
June 22, 1960.		1.4	.00	0.8	0.4	2.1	.0	2	.8	3.5	.0	.0	.0	9	10	4	2	19	5.2	0



## 2-2449. JOHNSON LAKE NEAR KEYSTONE HEIGHTS, FLA.

Dec. 30, 1959.		3.8	0.00	0.6	0.4	2.4	0.1	4	0.0	4.0	0.0	0.1	0.1	19	13	3	0	22	5.9	25
June 22, 1960.		3.1	.03	1.2	.4	2.4	.0	2	.8	3.5	.0	.1	.0	14	13	4	3	21	5.3	10

## HALL LAKE NEAR KEYSTONE HEIGHTS, FLA.

Dec. 30, 1959.		0.1	0.00	2.2	1.8	6.1	0.6	2	11	12	0.1	0.0	0.0	38	35	13	12	79	5.1	2
June 23, 1960.		.0	.01	2.4	1.9	8.4	.6	1	14	12	.1	.0	.0	37	40	14	13	83	4.8	5

## SMITH LAKE NEAR KEYSTONE HEIGHTS, FLA.

Dec. 30, 1959.		0.2	0.00	2.8	1.9	11	1.4	2	16	16	0.2	0.1	0.0	63	51	15	14	100	5.2	6
June 23, 1960.		.0	.00	3.0	1.9	9.8	1.2	3	15	16	.0	.0	.0	62	48	16	13	94	5.2	8

## 2-2449.5. GRANDIN LAKE NEAR INTERLACHEN, FLA.

Dec. 30, 1959.		0.0	0.00	1.8	1.3	6.2	0.0	4	6.4	10	0.1	0.2	0.0	32	28	10	6	57	5.6	7
June 21, 1960.		1.5	.02	2.2	1.0	5.5	.0	4	6.0	9.5	.0	.1	.0	34	28	10	6	51	5.5	5

## 2-2450.3. ATES CREEK NEAR PENNEY FARMS, FLA.

Dec. 31, 1959.		7.9	0.06	2.4	0.6	4.8	0.4	4	2.4	10	0.2	0.1	0.4	57	31	8	5	40	5.5	150
June 22, 1960.		5.7	.11	2.4	.5	3.9	.0	3	.8	6.5	.2	.3	.0	39	22	8	6	37	5.1	100

## 2-2454.7. GREENS CREEK NEAR PENNEY FARMS, FLA.

Dec. 31, 1959.		11	0.06	5.8	0.5	6.2	0.4	17	0.8	12	0.2	0.0	0.0	70	45	16	2	68	6.5	70
June 22, 1960.		7.1	.03	4.0	.7	6.0	.1	8	.8	11	.1	.2	.0	50	34	13	6	54	5.8	90

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued																				
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	pH or Col.			
													Residue at 180°C	Calculation						
ST. JOHNS RIVER BASIN--Continued																				
2-2455. SOUTH FORK BLACK CREEK NEAR PENNEY FARMS, FLA.																				
Nov. 12, 1959.	77	5.7	0.10	2.4	1.0	3.4	0.0	8	2.0	6.0	0.1	0.5	--	49	25	10	4	41	5.9	95
Jan. 7, 1960.	68	3.5	.11	3.4	.9	4.1	.2	14	2.0	6.8	.2	.2	0.3	53	28	12	0	43	6.8	60
Mar. 16, 1960.	238	4.6	.13	3.4	.6	4.6	.2	10	3.2	8.5	.2	.4	.4	52	31	11	3	40	6.1	100
Apr. 27, 1960.	115	4.9	.18	3.0	.9	4.1	.0	8	2.0	6.5	.2	.3	.3	53	26	11	4	40	6.4	105
June 23, 1960.	107	5.3	.03	3.0	.6	3.2	.7	4	1.6	6.0	.2	.0	.2	51	23	10	6	40	5.7	95
Aug. 18, 1960.	103	4.7	.05	3.0	.4	3.1	.2	6	.8	5.5	.2	.0	.1	36	21	9	4	35	5.7	130
2-2456. BULL CREEK NEAR MIDDLEBURG, FLA.																				
Dec. 31, 1959.		7.8	0.08	4.4	1.1	3.8	0.3	16	1.6	7.5	0.2	0.0		57	35	16	2	52	6.5	110
June 22, 1960.		6.5	.06	4.4	1.6	3.9	1.0	14	2.4	7.0	.2	.0	0.3	55	34	18	6	52	6.6	90
2-2457. KINGSLEY LAKE AT CAMP BLANDING, FLA.																				
Dec. 31, 1959.		1.9	0.00	3.0	0.9	4.7	0.6	8	5.2	8.2	0.1	0.1	0.0	31	29	11	4	53	6.6	7
June 22, 1960.		.3	.00	3.4	.7	5.1	.2	8	5.6	8.5	.0	.0	.0	17	28	12	5	53	5.9	5
2-2458. NORTH FORK BLACK CREEK NEAR HIGHLAND, FLA.																				
Nov. 11, 1959.	37	7.6	0.04	16	2.7	17	0.5	0	91	7.0	0.1	0.6	--	170	143	51	51	255	4.1	15
Dec. 31, 1959.	16	7.1	.04	18	1.5	12	.6	3	67	7.0	.2	.0	--	136	115	51	48	194	5.1	25
Jan. 6, 1960.	42	8.3	.01	24	2.4	17	.2	2	93	9.0	.1	1.8	0.0	170	156	70	68	263	4.7	7
Mar. 2, 1960.	58	6.0	.04	17	2.1	18	.2	5	74	7.5	.3	1.0	.0	153	129	51	47	225	5.0	20
Apr. 26, 1960.	66	5.3	.20	12	1.5	16	.2	7	47	6.5	.2	.2	.1	119	92	36	30	169	5.1	28
June 22, 1960.	30	6.8	.05	28	2.4	22	1.9	6	106	6.0	.2	.2	.1	192	171	60	75	280	5.8	20
Aug. 17, 1960.	22	6.4	.00	6.4	1.5	12	.5	6	20	6.0	.2	.3	.1	81	56	22	17	103	5.6	100
2-2459. YELLOW WATER CREEK NEAR MAXVILLE, FLA.																				
Dec. 31, 1959.		15	0.00	15	3.0	12	1.8	56	3.2	18	0.1	0.0	0.0	104	96	50	4	154	7.0	30
June 22, 1960.		7.0	.06	9.6	2.2	8.9	4.9	33	8.0	14	.2	1.7	1.1	103	74	33	6	124	6.4	65

2-2460. NORTH FORK BLACK CREEK NEAR MIDDLEBURG, FLA.

Nov. 18, 1959.	61	8.6	0.37	0.8	1.5	3.2	0.0	1	0.8	9.0	0.2	0.2	91	25	8	7	41	4.7	330
Jan. 22, 1960.	46	7.9	.60	16	3.7	16	1.2	15	48	8.5	.1	.5	119	106	52	38	171	6.8	7
Apr. 19, 1960.	152	5.3	.07	16	1.7	16	.2	14	54	7.5	.1	.5	117	106	47	38	179	6.6	23
May 31, 1960.	25	5.1	.01	28	3.9	20	1.9	22	96	7.5	.2	.5	.0	184	86	68	279	6.5	5
July 26, 1960.	297	5.1	.08	5.8	1.0	4.4	.7	10	7.6	6.0	.3	1.7	.0	79	38	18	60	5.8	90
Sept. 23, 1960.	133	7.0	.13	5.8	.7	5.2	.4	10	5.6	7.5	.2	.1	.0	59	38	18	61	6.5	125

## INDIAN RIVER BASIN

2-2525. NORTH CANAL NEAR VERO BEACH, FLA.

Feb. 9, 1960.	16	8.7	0.02	57	3.8	32	1.6	136	26	62		0.0		268	158	46	475	7.6	40
Mar. 22, 1960.	26	9.1	.02	39	5.0	27	2.4	102	24	54		.0		211	118	34	387	8.0	50
May 3, 1960.	160	7.9	.02	43	8.4	33	3.8	112	33	64		.0		248	142	50	450	8.2	60
June 21, 1960.	148	8.2	.10	46	8.0	35	4.1	108	42	74		.0		270	148	60	484	7.3	80
July 28, 1960.	224	8.3	.10	47	8.7	31	4.7	104	36	63		.3		283	160	38	483	7.3	100
Sept. 28, 1960.	224	8.5	.23	32	9.7	25	2.7	100	28	46		.3		199	120	38	374	7.0	90

2-2530. MAIN CANAL AT VERO BEACH, FLA.

Feb. 9, 1960.	61	10	0.02	88	13	67	3.9	194	66	129		0.3		468	273	114	846	7.7	45
Mar. 22, 1960.	143	7.5	.03	58	8.6	36	3.3	140	47	78		.0		307	180	66	564	8.0	60
May 3, 1960.	244	7.9	.03	38	8.8	25	3.6	93	36	46		.1		284	139	43	304	7.9	100
June 21, 1960.	254	7.9	.03	38	8.8	25	3.6	93	36	46		.1		284	139	43	304	7.9	100
July 28, 1960.	378	6.9	.38	42	6.6	29	3.7	106	39	55		.0		231	132	45	415	7.4	120
Sept. 28, 1960.	479	6.0	.54	22	7.5	16	1.9	72	17	28		.1		134	86	27	258	6.7	110

2-2535. SOUTH CANAL NEAR VERO BEACH, FLA.

Feb. 9, 1960.	14	7.5	0.04	44	9.7	34	1.7	116	23	60		0.0		237	150	55	431	7.6	55
Mar. 22, 1960.	30	7.7	.03	34	6.6	27	2.7	90	29	57		.0		208	112	38	389	7.9	60
May 3, 1960.	118	7.3	.03	51	10	44	4.7	132	42	86		.0		310	168	60	576	8.3	75
June 21, 1960.	273	7.4	.07	44	8.8	34	3.8	102	42	71		.0		281	146	62	484	7.2	80
July 28, 1960.	161	7.8	.35	62	10	52	4.7	144	51	104		.0		363	196	78	659	7.4	60
Sept. 28, 1960.	152	15	.10	44	12	36	2.3	128	37	66		.1		276	160	54	493	7.2	90

a Includes equivalent of 4 parts per million of carbonate (CO<sub>2</sub>).



## 2-2595. INDIAN PRAIRIE CANAL NEAR OKEECHOBEE, FLA.

Oct. 22, 1959.	4.9	0.12	17	2.3	6.3	1.1	25	23	10		0.1		77	52	32	139	6.6	180
Nov. 16, 1959.	9.1	.31	18	1.9	6.2	.9	33	18	9.5		.0		80	53	26	134	6.9	350
Dec. 30, 1959.	4.0	.06	32	3.6	7.0	1.0	16	76	17		.2		145	95	82	266	6.4	180
Feb. 10, 1960.	4.2	.08	42	4.9	8.9	2.4	16	82	20		2.5		175	125	112	333	6.2	180
Mar. 22, 1960.	2.4	.29	24	2.9	8.0	.9	12	55	13		.2		113	72	62	199	6.5	180
May 4, 1960.	10.1	.54	54	6.2	16	1.4	32	189	23		2.3		251	170	124	409	6.0	450
June 4, 1960.	7.6	1.10	19	3.0	7.2	1.6	20	33	15		.0		230	183	124	430	6.0	450
Aug. 5, 1960.	7.6	1.1	19	3.0	7.2	1.6	20	33	15		.0		98	60	44	159	6.4	400

## 2-2629. BOGGY CREEK NEAR TAFT, FLA.

Nov. 3, 1959.	48	3.4	0.03	4.8	1.0	5.5	1.3	14	1.2	10	0.1	0.5	80	35	16	4	92	6.9	140
Dec. 16, 1959.	32	2.3	.03	4.4	1.7	8.7	1.5	12	4.9	15		.2	86	45	18	8	72	1.1	160
Feb. 16, 1960.	49	1.8	.02	3.6	1.0	5.5	1.2	9	3.6	19.0	.2	.1	62	29	13	6	55	6.6	190
Mar. 30, 1960.	25	1.9	.01	5.6	1.2	10	1.2	11	3.2	15		.3	59	44	19	10	98	6.4	110
May 16, 1960.	30	6.9	.03	4.4	1.2	6.3	1.7	13	1.2	12	.7	.0	61	41	16	6	68	6.4	120
July 12, 1960.	280	4.7	.03	4.8	1.2	5.6	1.4	12	3.2	10	.2	.1	67	37	17	7	65	7.9	110
Sept. 8, 1960.																			

## 2-2637. SHINGLE CREEK NEAR VINELAND, FLA.

Nov. 3, 1959.	13.7	0.3	0.07	6.0	0.5	8.0	1.3	20	3.7	14	0.1	0.3	82	44	17	0	81	7.1	140
Dec. 20, 1959.	1.7	.0	.03	9.2	1.7	16	2.5	30	7.2	28	.2	.3	110	80	30	6	158	7.2	100
Feb. 16, 1960.	15.4	.8	.04	2.8	1.2	8.6	.3	5	2.8	14	.2	.1	75	33	12	8	68	5.7	115
Mar. 30, 1960.	--	--	.0	.07	3.2	1.2	1.2	9	4.4	10	.2	.4	58	31	13	6	61	6.2	200
May 16, 1960.	--	--	.0	.09	7.6	1.7	20	28	8.8	26	.5	.1	118	80	26	3	155	6.7	100
July 10, 1960.	4.8	2.9	.12	7.2	1.0	13	.7	24	1.2	15	.3	1.4	75	55	22	2	101	6.7	120
Sept. 6, 1960.	101	4.1	.05	5.0	1.2	5.4	.3	15	.8	8.5	.2	.1	15	33	18	5	61	7.7	110

## 2-2660. CYPRESS LAKE NEAR ST. CLOUD, FLA.

Mar. 25, 1960.		2.3	0.03	2.8	1.0	4.4	0.8	6	5.2	8.0		0.0	28	11	6	48	6.8	80
Aug. 4, 1960.		1.0	.21	3.6	.5	4.1	.5	9	3.2	8.0		.0	25	11	4	47	6.5	80
Sept. 16, 1960.		1.4	.07	3.2	.4	3.2	.0	7	2.4	6.0		.3	20	10	4	46	6.2	100

b Includes equivalent of 16 parts per million of carbonate (C)<sub>3</sub>.  
 c Includes equivalent of 3 parts per million of carbonate (C)<sub>3</sub>.

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued																			
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	Color or pH
														Residue at 180°C	Calculation	Calcium	Non-magnesium		
LAKE OKEECHOBEE AND THE EVERGLADES--Continued																			
2-2667. HORSE CREEK AT DAVENPORT, FLA.																			
Nov. 13, 1959.		6.1	0.41	12	1.6	4.1	0.6	35	6.0	9.2	0.1	1.3		58	36	8	93	6.7	70
Aug. 4, 1960..		6.6	--	11	1.8	3.5	.7	28	4.8	8.0	.3	.0		91	51	35	12	81	7.1
Sept. 26, .....		7.6	.71	10	1.8	3.7	1.0	24	4.8	8.2	.4	.3		118	50	32	13	79	6.4
2-2674. LAKE HATCHINEHA NEAR HAINES CITY, FLA.																			
Mar. 25, 1960.		3.0	0.05	6.0	1.0	4.1	1.1	13	5.2	8.5		0.0		35	19	8	61	6.8	100
Aug. 4, .....		1.8	.27	4.8	1.5	3.6	.4	15	4.0	9.0		.0		33	18	6	55	6.7	120
Sept. 16, .....		3.7	.06	4.4	.1	3.6	.0	10	2.0	6.0		.3		25	12	4	45	6.1	90
2-2685. WEOTYAPAKA-ROSLIE CANAL NEAR LAKE WALES, FLA.																			
Mar. 25, 1960.		2.8	0.07	4.0	1.2	4.9	0.7	12	5.2	8.0		0.0		33	15	5	58	7.4	70
Aug. 8, .....		5.2	.04	4.2	1.1	4.2	.1	12	4.0	7.2		.1		32	15	5	58	6.4	50
2-2689. LAKE KISSIMEE NEAR LAKE WALES, FLA.																			
Mar. 25, 1960.		1.6	0.04	4.4	1.0	4.2	0.9	12	4.8	8.5		0.0		31	15	5	58	6.6	90
Aug. 4, .....		1.4	.15	4.8	1.0	3.7	.4	13	3.6	8.0		.0		29	16	6	52	6.6	90
Sept. 16, .....		2.4	.07	4.8	.7	3.6	.0	12	3.2	5.5		.2		26	15	5	50	6.2	80
2-2720. ISTOKOGEA CANAL NEAR CORNWELL, FLA.																			
Oct. 13, 1959.	1,460	0.8	0.02	3.6	1.5	5.0	0.6	10	4.0	8.5		0.1		27	15	7	55	6.6	150
Feb. 9, 1960..	419	2.0	.03	7.0	1.6	5.1	2.1	10	9.6	11		.0		43	24	16	78	6.5	85
Mar. 10, .....	500	.8	.04	4.2	1.6	4.8	1.4	8	7.2	9.5		.0		33	17	10	69	7.0	80
June 7, .....	342	2.2	.03	4.8	1.5	4.9	.8	8	9.6	9.5		.0		37	18	12	70	6.0	50
July 19, .....	352	1.3	.04	4.8	1.7	5.1	.7	10	10	8.0		.0		38	19	11	73	6.2	100
Aug. 4, .....	1,230	2.2	.13	5.2	1.7	4.5	.7	12	8.8	8.5		.0		38	20	10	68	6.2	90

2-2745. TAYLOR CREEK ABOVE ONECHOBEE, FLA.

Oct. 22, 1959.	1,030	3.1	0.07	7.2	0.5	6.0	1.6	22	2.4	10		0.2	42	20	2	74	6.7	150
Nov. 10.....	40	2.3	.05	10	1.7	5.0	4.3	34	26.2	14		.1	33	22	4	114	7.4	35
Dec. 10.....	40	2.3	.05	20	1.7	5.0	4.3	34	26.2	14		.1	33	22	4	114	7.4	35
Feb. 10, 1960.	505	2.5	.04	10	1.8	12	3.4	23	7.6	22		.0	23	130	63	467	7.4	100
Mar. 23.....	701	1.3	.06	9.6	.7	6.7	1.2	20	8.8	12		.0	50	37	10	98	6.7	140
May 4.....	14	4.2	.03	40	9.7	79	2.5	72	47	149		.0	366	140	81	710	8.0	60
June 24.....	671	2.9	.11	8.0	1.2	7.3	.8	22	4.8	12		.0	48	25	7	88	6.6	120
July 29.....	543	1.8	.14	9.2	1.2	7.0	.3	25	4.4	13		.0	49	28	8	91	6.6	100
Aug. 4.....	593	4.1	.29	13	1.8	9.3	.6	30	13	16		.0	73	40	16	129	7.0	180

2-2770. ST. LUCIE CANAL AT LOCK, NEAR STUART, FLA.

Dec. 5, 1959..	6,690	14	0.01	56	9.8	14	0.7	186	24	29		0.2	241	180	28	417	7.8	40
Jan. 9, 1960..	2,340	4.7	.01	50	8.5	25	1.0	146	31	38		.0	230	160	49	416	7.7	40
Feb. 13.....	1,220	3.6	.02	41	6.7	21	1.7	114	21	33		.1	184	130	36	334	7.9	90
Mar. 2.....	3,380	1.4	.02	44	5.6	19	1.0	127	27	33		.4	204	160	36	334	7.9	90
Apr. 9.....	3,380	5.3	.01	42	5.6	20	1.1	127	26	31		.0	194	128	24	354	7.8	40
May 14.....	3,230	1.1	.03	26	6.7	10	.6	84	15	21		.8	122	92	24	238	7.1	55
June 10.....	2,100	3.8	.02	34	8.5	14	1.0	100	18	27		.2	156	120	38	280	7.2	45
July 15.....	2,200	4.1	.04	34	2.4	17	.6	98	17	23		.2	146	95	14	263	7.4	48
Aug. 12.....	5,650	4.9	.04	27	5.5	13	.2	92	15	20		.3	131	90	14	244	7.4	25

2-2778. LEVEE 8 CANAL AT S-76, NEAR CANAL POINT, FLA.

Feb. 9, 1960..		9.8	0.01	57	6.8	38	2.0	164	33	56		0.0	284	170	36	502	7.7	45
Apr. 1.....		2.9	.02	43	4.5	22	.9	112	22	32		.1	182	126	34	335	8.0	40
May 13.....		3.5	.04	38	3.6	21	.8	112	19	26		.5	167	110	18	301	7.8	45
June 24.....		18	.04	46	17	98	3.9	213	40	130		.5	458	185	10	817	7.4	45
Aug. 8.....		11	.07	30	14	51	1.5	140	18	77		.9	272	132	18	503	7.4	90
Sept. 9.....		6.6	.06	24	1.2	13	.1	66	4.8	23		1.7	107	65	11	198	7.0	70

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color	
														Residue at 180°C	Calcium				
LAKE OKEECHOBEE AND THE EVERGLADES--Continued																			
2-2780. WEST PALM BEACH CANAL AT CANAL POINT, FLA.																			
Oct. 6, 1959..	716	3.0	0.00	48	5.4	24	2.2	140	28	32		0.0		212	142	28	390	7.7	25
Dec. 3.....	0	9.4	.02	66	14	40	2.0	202	55	56		.7		343	222	56	601	7.8	60
Jan. 6, 1960..	666	2.7	.01	47	9.1	23	1.4	138	32	39		0.1		222	155	42	399	7.8	27
Feb. 4.....	730	4.4	.01	50	9.1	26	1.2	152	33	37		0.0		236	162	38	419	7.6	30
Mar. 4.....	522	5.8	.02	52	8.6	19	1.0	168	27	33		.2		230	165	28	413	7.7	30
June 7.....	496	3.8	.01	36	4.9	17	1.4	99	28	28		.0		168	110	29	309	8.1	40
July 6.....	135	4.7	.02	34	5.8	16	1.5	98	26	22		.1		155	99	18	266	7.7	42
Aug. 2.....	0	2.9	.05	28	5.4	16	.7	94	19	26		.1		144	94	17	264	7.8	50
Sept. 7.....	0	4.0	.02	34	5.6	17	.2	110	20	26		.3		161	108	18	301	7.3	20
2-2813. HILLSBORO CANAL AT S-39, NEAR DEERFIELD BEACH, FLA.																			
Oct. 7, 1959..	1,140	3.4	0.03	41	2.8	27	2.2	116	20	34		0.0		187	114	19	343	7.9	100
Nov. 10.....	170	4.0	.05	25	2.3	13	1.9	74	7.2	16		.1		106	72	12	188	7.4	80
Dec. 10.....	28	2.7	.05	30	2.4	17	.9	8.0	3.0	43		.2		137	85	8	268	7.4	60
Jan. 7, 1960..	18	3.8	.04	44	3.0	28	1.8	128	9.6	43		.2		195	122	18	366	7.5	140
Mar. 9.....	d10	4.5	.02	85	15	118	3.2	290	45	188		.5		602	274	36	1,120	7.7	80
Apr. 5.....	d10	8	0.03	89	20	165	5.0	366	48	220		2.3		730	304	4	1,320	8.1	100
June 7.....	355	9.1	.07	66	7.2	54	5.5	e224	22	80		.1		356	194	10	635	8.6	120
July 7.....	137	9.2	.13	94	3.3	55	1.8	f889	20	80		.1		415	272	64	748	8.4	85
2-2860.5. SOUTH NEW RIVER CANAL AT S-13A, NEAR DAVIE, FLA.																			
Dec. 15, 1959.	274	10	0.02	93	6.8	32	0.6	288	11	50		0.1		346	260	24	612	8.0	55
Feb. 5, 1960.	301	5.7	.02	94	6.2	42	0.7	298	8.0	62		.5		366	260	16	654	8.1	70
Mar. 21.....	326	8.2	.01	91	3.2	45	.9	272	6.3	63		.5		334	240	17	633	8.2	75
Apr. 13.....	482	1.1	.01	78	14	48	1.4	e302	6.0	70		.4		377	252	4	670	8.5	80
June 6.....	340	9.5	.03	89	4.9	30	5.1	196	18	45		.9		321	180	20	449	8.1	120
Aug. 27.....	282	8.4	.02	86	6.7	44	1.0	294	7.6	64		.4		326	242	19	579	8.1	80
July 21.....	282	8.4	.02	86	6.7	44	1.0	294	7.6	64		.4		363	242	1	652	7.8	60
Aug. 22.....	290	10	.03	83	9.0	46	1.0	g292	9.6	60		.0		363	244	4	627	8.4	70



2-2863.2. BISCAYNE CANAL AT RED ROAD, NEAR OPA-LOCKA, FLA.

Feb. 2, 1960..	6.4	0.01	91	5.6	15	1.1	4278	11	26	0.4	0.1	340	250	22	516	8.3	80
Apr. 4.....	2.7	.02	90	6.2	17	1.0	284	9.6	29	.4	.0	345	250	18	532	8.1	60
May 4.....	7.1	.04	88	2.1	16	2.0	264	6.4	24	.3	.0	322	228	12	470	7.7	65
June 2.....	9.7	.02	90	6.2	13	1.7	284	10.4	20	.4	1.3	335	250	18	498	7.6	50
July 5.....	3.7	.01	85	5.9	13	2.4	266	18.4	20	.3	.1	313	232	14	467	7.5	50
Aug. 1.....	4.4	.02	84	5.5	12	1.4	266	18.4	18	.3	.1	313	232	14	467	7.5	50
Sept. 1.....	9.0	.03	92	3.3	12	1.3	288	9.6	18	.3	.1	329	244	8	491	7.5	50

2-2885. MIAMI CANAL AT WATER PLANT, HIALEAH, FLA.

Nov. 6, 1959..	4.5	0.02	62	5.2	22	0.5	204	1.2	33	0.4	0.1	268	176	9	422	8.0	45
Dec. 1.....	4.7	.01	74	7.2	30	1.6	248	3.8	44	.4	.0	268	206	6	443	8.1	40
Jan. 15, 1960.	4.7	.01	74	7.2	30	1.6	248	3.8	44	.4	.0	268	206	6	443	8.1	40
Feb. 12.....	2.4	.01	73	7.3	33	1.0	256	1.6	47	.4	.0	337	214	1	512	8.1	45
May 13.....	4.1	.02	79	6.1	26	1.0	264	2.0	37	.4	.5	339	222	6	521	8.1	45
June 15.....	2.8	.02	66	20	30	1.4	240	1.6	42	.4	.0	316	196	0	505	8.2	50
July 14.....	7.3	.03	77	5.4	26	1.1	262	3.2	35	.4	.6	324	214	0	500	7.7	50
Aug. 11.....	6.0	.03	70	6.2	27	1.1	244	6.0	37	.4	.2	320	200	0	479	7.8	50
Sept. 21.....	8.6	.04	70	4.3	17	1.0	228	2.4	24	.4	.2	275	192	5	421	7.4	50

2-2907. SNAPPER CREEK CANAL AT MILLER DRIVE, NEAR SOUTH MIAMI, FLA.

Jan. 6, 1960..	4.3	0.02	62	4.3	14	2.2	200	0.8	23	0.3	0.0	238	172	8	378	8.2	32
Feb. 2.....	4.1	.01	75	4.6	14	1.5	240	.8	24	.4	.0	273	206	10	443	8.2	47
Apr. 4.....	5.6	.02	75	6.1	12	1.0	248	3.2	22	.4	5.1	298	212	9	449	8.2	41
May 4.....	6.5	.03	83	3.1	14	.8	236	7.2	22	.3	6.7	310	212	9	454	7.5	30
July 5.....	5.8	.02	79	3.2	12	1.4	252	4.0	20	.3	2.8	286	210	4	443	7.5	40
Aug. 1.....	7.5	.02	76	4.0	14	.8	242	4.0	20	.3	3.1	281	206	8	425	7.7	40
Sept. 1.....	3.3	.03	83	4.1	13	1.1	270	2.4	19	.3	.2	294	224	2	454	7.2	30

EVERGLADES STATION 1-5 - NW $\frac{1}{4}$  sec. 4, T. 44 S., R. 40 E., FLA.

Dec. 7, 1959.	24	0.04	90	28	134	4.4	372	72	190	0.3		726	340	34	1,280	7.6	200
Feb. 16, 1960.	6.1	.02	59	12	60	2.3	192	36	83	.2		354	196	39	1,643	7.9	55

a Includes equivalent of 4 parts per million of carbonate (CO<sub>3</sub>).  
 b Leakage of 10 cubic feet per second based on 4 discharge measurements and records of dam operation.  
 c Includes equivalent of 12 parts per million of carbonate (CO<sub>3</sub>).  
 d Includes equivalent of 18 parts per million of carbonate (CO<sub>3</sub>).  
 e Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).  
 f Includes equivalent of 12 parts per million of carbonate (CO<sub>3</sub>).  
 g Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> ) (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color or pH		
													Residue at 180°C	Calcium carbonate					
LAKE OKECHOBEE AND THE EVERGLADES--Continued																			
EVERGLADES STATION 1-5 - NW 1/4 sec. 4, T. 44 S., R. 40 E., FLA.--Continued																			
May 5, 1960....	23	0.03	75	23	145	4.6	320	53	185			2.0		669	282	20	1,130	8.2	150
July 20.....	39	.01	99	26	154	4.8	358	89	200			.0		788	354	60	1,270	7.8	250
EVERGLADES STATION 1-7 - sec. 26, T. 45 S., R. 40 E., FLA.																			
Dec. 22, 1959.	6.7	0.02	6.0	0.6	8.2	0.4	8	2.4	12	12		6.7		47	18	11	87	5.9	55
Feb. 11, 1960.	1.0	.01	16	2.7	10	.4	12	2.8	18	18		.0		46	26	16	94	6.3	45
May 5.....	1.1	.01	6.4	.5	9.6	.5	14	1.6	17	17		.6		44	18	6	91	6.8	40
July 16.....	2.6	.02	7.2	.5	8.4	.4	16	.8	14	14		1.2		43	20	7	82	7.2	55
Sept. 2.....	3.5	.02	4.8	.1	6.8	.3	14		11	11		.0		34	12	1	63	6.7	35
EVERGLADES STATION 1-8 - SW 1/4 sec. 35, T. 45 S., R. 41 E., FLA.																			
Dec. 7, 1959..	8.7	0.05	56	5.0	49	2.1	174	22	77			0.4		306	160	18	554	7.7	160
Feb. 15, 1960.	12	.03	100	22	230	5.0	342	97	362			2.1		988	340	60	1,810	7.8	80
May 4.....	13	.05	62	15	126	3.3	218	56	175			1.4		559	216	38	966	7.8	180
July 20.....	4.3	.11	51	4.1	60	1.7	124	18	100			2.4		303	144	42	556	7.7	250
Sept. 1.....	19	.14	74	18	101	3.8	262	62	135			1.9		544	258	44	907	7.8	250
EVERGLADES STATION 1-9 - sec. 19, T. 46 S., R. 41 E., FLA.																			
Dec. 22, 1959.	0.0	0.02	4.5	0.4	6.5	0.4	9	0.8	10			0.1		27	12	5	57	6.3	50
Feb. 11, 1960.	1.0	.02	6.0	3.0	7.3	.1	11	1.6	12			.2		36	28	18	68	6.6	45
May 5.....	1.1	.01	4.5	.7	7.2	.2	12	.8	14			1.8		38	17	8	78	6.7	20
Sept. 2.....	6.5	.02	4.8	.5	5.1	.6	18		8.5			.0		36	14	0	63	6.6	25
EVERGLADES STATION 1-11 - sec. 24, T. 46 S., R. 39 E., FLA.																			
Dec. 18, 1959.	0.0	0.03	6.0	2.2	8.8	0.3	20	1.6	14			1.0		44	24	8	92	6.7	50
Feb. 24, 1960.	1.6	.02	16	3.0	16	.9	42	3.6	29			2.7		94	52	18	180	7.0	75
Apr. 29.....	2.6	.03	13	2.1	15	.4	40	3.6	24			1.1		82	41	8	151	7.0	120
July 16.....	8.4	.05	18	3.2	17	.8	62	3.2	26			.9		109	58	7	192	7.1	80

## EVERGLADES STATION 2-16 - sec. 15, T. 47 S., R. 40 E., FLA.

Nov. 10, 1959.		6.7	0.03	40	1.0	32	2.2	116	13	40			192	104	9	350	7.7	100
Mar. 7, 1960..		13	.02	82	21	210	5.8	330	70	290			859	291	20	1,490	7.8	100

## EVERGLADES STATION 2-17 - sec. 11, T. 48 S., R. 39 E., FLA.

Mar. 9, 1960..		10	0.03	70	25	125	9.2	336	23	170			600	278	2	1,080	7.4	100
July 13.....		4.7	.02	37	7.2	44	1.5	158	10	52			236	122	0	415	7.8	60

EVERGLADES STATION 2-19 - SE $\frac{1}{4}$  sec. 24, T. 48 S., R. 40 E., FLA.

Nov. 10, 1959.		7.6	0.05	37	5.7	34	2.6	160	22	42			230	116	0	375	7.9	120
Mar. 7, 1960..		0.0	.13	57	11	94	4.0	234	17	132			430	187	0	766	7.8	80
July 14.....		9.9	.03	58	9.6	120	3.2	200	39	168			507	184	20	881	7.8	95

EVERGLADES STATION 2-21 - SE $\frac{1}{4}$  sec. 32, T. 49 S., R. 40 E., FLA.

Jan. 19, 1960.		0.0	0.04	30	3.6	24	1.3	96	10	33			150	90	12	290	7.3	90
Mar. 5.....		0.0	.02	44	9.7	48	1.8	168	14	65			266	150	12	489	7.7	55
July 13.....		0.5	.00	33	8.1	49	1.4	146	9.6	60			235	116	0	430	7.4	55

EVERGLADES STATION 2-22 - NE $\frac{1}{4}$  sec. 27, T. 49 S., R. 39 E., FLA.

Mar. 5, 1960..		1.5	0.04	96	35	104	4.6	372	80	138			656	384	78	1,100	8.0	100
July 13.....		9.6	.02	43	12	54	2.1	188	15	75			305	157	3	529	7.9	50

## 2-2808 .1. EVERGLADES P-37 NEAR HOMESTEAD, FLA.

Jan. 8, 1960..		2.6	0.00	53	3.4	25	1.2	166	0.4	44				146	10	405	7.6	5
Mar. 24.....		3.5	.01	90	8.6	74	1.5	242	2.8	136	.2	0.2	229	260	62	822	7.5	10
Aug. 10.....		1.8	.05	28	2.9	18	1.1	92	.0	30	.3	.8	134	82	6	243	7.2	10



## 2-2930. ORANGE RIVER NEAR FORT MYERS, FLA.

Oct. 5, 1959..		10	0.01	92	3.5	23	0.9	254	26	35		0.0		244	36	551	7.9	40
Nov. 17, 1959..		10	.01	94	3.8	18	.5	260	26	38		.0		230	37	563	7.8	45
Dec. 1, 1960...		8.0	.01	95	6.2	22	.4	272	22	38		.0		328	40	572	8.1	47
Jan. 4, 1960...		7.6	.02	94	6.2	18	.4	274	18	39		.2		318	260	571	7.9	45
Feb. 15, 1960...		9.0	.03	98	3.6	25	.2	264	22	42		.2		330	260	586	8.2	39
Apr. 5, 1960...																		

## PEACE RIVER BASIN

## 2-2970. PEACE RIVER AT ARCADIA, FLA.

Jan. 26, 1960.	432	11	0.04	38	9.5	17	2.2	69	63	15	2.5	2.2	14	236	134	78	331	6.6	30
Mar. 8, 1960...	1,280	9.0	.08	27	5.7	12	2.0	31	49	15	2.4	1.4	16	178	91	66	253	6.9	90
Apr. 16, 1960...	1,160	7.9	.13	24	4.4	11	2.0	37	39	12	1.6	1.1	10	159	78	48	224	6.7	90
June 3, 1960...	1,581	2.2	.02	30	7.1	12	1.4	34	60	12	2.6	1.1	8.3	181	104	76	267	7.3	40
July 26, 1960...	1,800	1.3	.11	19	3.8	8.8	1.0	29	37	11	.6	.1	5.9	127	63	39	171	6.6	100
Aug. 30, 1960...	3,440	3.5	.22	16	3.6	6.5	1.0	28	28	12	.4	.7	5.7	108	55	32	140	6.6	140

## LITTLE MANATEE RIVER BASIN

## 2-3005. LITTLE MANATEE RIVER NEAR WIMADMA, FLA.

Oct. 28, 1959.	177	6.9	0.22	3.0	1.2	3.7	0.3	8	2.0	7.0	0.2	0.4	1.0	54	30	12	6	49	5.7	120
Nov. 17, 1959.	377	3.5	.04	3.4	1.5	5.7	.5	7	4.6	13	.3	.6	1.8	69	38	16	9	92	5.9	105
Feb. 26, 1960.	244	3.6	.04	3.4	1.5	5.7	.5	7	4.6	13	.3	.6	1.8	69	38	16	9	92	5.9	105
Apr. 20, 1960.	25	6.6	.01	5.4	1.8	4.2	.4	18	3.6	7.2	.3	.1	1.2	49	40	21	6	66	7.3	30
May 17, 1960...	18	5.0	.00	6.0	1.8	4.1	.2	20	3.6	7.5	.3	.1	1.3	50	40	22	6	71	6.8	28
July 6, 1960...	196	4.5	.24	2.6	1.3	3.8	.1	2	1.8	6.0	.4	.8	1.2	70	26	12	7	46	5.7	220
Aug. 30, 1960...	104	5.6	.05	3.8	1.0	3.5	.4	9	2.8	6.5	.3	.0	.9	43	29	14	6	48	6.5	140
Sept. 11, 1960...	11,100	1.6	.04	1.4	.1	1.0	.5	3	6.0	3.2	.2	.0	.5	21	16	4	2	18	5.6	110

## ALAFIA RIVER BASIN

## 2-3015. ALAFIA RIVER AT LITHIA, FLA.

Oct. 28, 1959.	589	18	0.08	26	0.2	10	1.1	19	40	18	1.3	0.7	9.3	174	66	50	226	6.4	90
Dec. 30, 1959.	388	20	.10	37	7.7	17	.8	10	55	28	5.5	.7	45	237	124	116	311	6.4	50



## 2-3115. WITHLACOCHEE RIVER NEAR DADE CITY, FLA.

Oct. 14, 1959.	2.3	0.13	5.2	0.7	3.0	0.1	15	0.0	4.8	0.2	0.4		62		16	4	44	6.1	200
Nov. 15, .....	1.6	.35	5.6	1.0	3.8	.1	16	.4	9.2	.1	.5		88		18	5	50	6.2	170
Dec. 10, .....	1.1	.11	9.6	1.2	4.0	.2	26	.8	10	.2	.9		83		29	8	75	6.8	200

## 2-3130. WITHLACOCHEE RIVER NEAR HOLDER, FLA.

Oct. 20, 1959.	3,950	6.7	0.05	2.1	2.3	3.7	0.2	70	3.2	5.5	0.2	0.6		97		62	4	130	6.9	60
Dec. 15, .....	1,790	4.5	.09	4.4	2.4	4.6	.4	131	12	9.0	.2	.2		152		120	12	244	7.6	60
Feb. 5, 1960..	1,370	8.4	.01	47	2.8	4.8	.8	133	17	8.5	.2	.4		175		129	20	274	7.2	30
Apr. 6, .....	8,620	2.2	.08	16	1.7	2.9	.4	49	4.8	6.5	.2	.1		78		47	7	102	6.9	105
Apr. 19, .....	6,770	.3	.10	22	2.4	3.6	.4	66	5.6	6.5	.2	.1		94		65	11	138	7.0	100
May 31, .....	2,020	4.9	.03	30	3.2	4.2	.3	122	10	7.5	.2	.1		147		113	13	231	7.7	40
July 22, .....	2,020	4.9	.03	34	2.7	3.5	.7	97	11	7.5	.2	.1		137		96	16	198	6.0	40

## SUWANNEE RIVER BASIN

## 2-3190. WITHLACOCHEE RIVER NEAR PINETTA, FLA.

Oct. 6, 1959..	268	14	0.20	34	4.6	18	1.5	148	16	6.0	0.6	1.1		172		104	0	273	8.0	60
Dec. 1, .....	464	13	.27	18	2.4	9.8	1.1	70	8.8	8.0	.9	1.1		118		55	0	158	7.2	110
Jan. 1, 1960..	1,940	5.2	.26	8	1.9	6.7	.6	35	4.2	8.5	.3	.2		72		28	0	90	6.9	65
Mar. 29, .....	1,380	6.1	.10	6.6	1.1	5.3	.8	22	8.4	7.2	.3	.0		51		21	3	71	6.6	110
July 19, .....	294	14	.15	29	3.8	16	.9	114	18	7.0	.3	.3		169		88	0	238	7.3	47
Sept. 20, .....																				

## 2-3205. SUWANNEE RIVER AT BRANFORD, FLA.

Oct. 8, 1959..	4,570	0.5	0.04	45	7.2	3.9	0.0	160	14	4.0	0.3	0.1		164		142	18	275	8.5	40
Jan. 26, .....	5,870	3.3	.03	32	2.4	3.9	.3	103	10	6.0	.2	1.1		127		190	16	184	7.7	40
Mar. 31, .....	14,600	3.3	.11	22	2.2	3.0	.1	65	5.6	5.0	.1	.5		116		64	10	137	7.3	140
May 26, .....	8,070	6.7	.03	39	6.4	4.6	.7	136	11	2.8	.0	.4		152		124	12	249	7.4	38
July 17, .....	8,170	5.7	.07	17	2.1	3.2	.8	55	4.8	6.0	.2	.0		96		51	6	110	6.8	240
Sept. 20, .....	6,900	5.9	.37	31	6.0	3.0	.3	107	11	5.0	.2	.1		134		102	14	203	7.4	145

a Includes equivalent of 4 parts per million of carbonate (CO<sub>2</sub>).

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN FULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Col. or pH
														Residue at 180°C	Calculated	Calcium, Non-magnesium		

## SUWANNEE RIVER BASIN--Continued

2-3207. SANTA FE RIVER NEAR GRAHAM, FLA.

Jan. 19, 1960.	18	1.9	0.16	3.6	1.7	6.6	0.0	16	0.4	12	0.2	0.6	--	97	35	16	3	63	6.4	185
Mar. 29, 1960.	124	3.3	.21	2.4	1.5	5.5	0.0	10	.4	8.0	.2	.4	--	69	23	8	0	46	5.5	190
May 25, 1960.	13	1.1	.15	2.6	1.3	5.3	.7	3	.8	12	.2	.3	0.1	84	26	12	10	56	5.2	350
July 18, 1960.	798	1.8	.18	1.8	.6	2.0	.5	0	1.2	4.5	.2	.2	0	60	13	7	7	30	4.8	175
Sept. 14, 1960.	491	2.4	.24	2.0	.5	3.3	.6	2	.4	11	.2	.1	.0	44	22	7	6	38	4.9	290

## SAMPSON LAKE NEAR STARKE, FLA.

Dec. 31, 1959.		1.2	0.00	5.0	1.6	11	0.9	6	22	7.5	0.2	0.3	0.0	75	53	19	14	97	6.2	63
June 22, 1960.		.7	.01	6.4	1.2	11	.7	5	21	8.0	.2	.0	.0	68	52	21	17	99	5.9	45

## SAMPSON RIVER AT GRAHAM, FLA.

Dec. 31, 1959.		3.6	0.03	6.8	2.6	9.6	0.9	18	20	7.2	0.2	0.2	0.1	81	60	28	12	106	6.6	70
June 22, 1960.		2.9	.04	5.2	1.8	6.5	1.2	16	11	6.0	.3	.0	.0	70	43	20	8	70	6.3	90

## HATCHET CREEK NEAR GRAHAM, FLA.

Jan. 1, 1960.		5.1	0.12	3.6	1.1	3.6	0.0	10	1.6	7.2	0.3	0.1	1.1	50	29	14	6	42	6.9	80
June 22, 1960.		2.9	.36	1.4	1.0	3.9	.9	0	.8	8.0	.3	.1	.4	76	20	8	8	45	4.4	270

## ROCKY CREEK NEAR LACHOSS, FLA.

Jan. 4, 1960.		7.0	0.07	8.0	1.9	6.9	2.4	16	6.4	18	0.4	0.0	0.0	111	59	28	15	102	6.3	130
June 22, 1960.		6.7	.08	6.6	2.7	6.2	2.2	11	7.6	12	.4	.0	.0	93	51	28	18	91	6.0	90

## 2-3210. NEW RIVER NEAR LAKE BUTLER, FLA.

Nov. 17, 1959.	33	5.8	0.26	6.8	2.9	5.2	0.5	23	1.2	8.0	0.2	1.0	--	100	43	29	10	80	6.0	350
Jan. 19, 1960.	19	7.8	.23	13	4.7	8.7	.6	55	4.0	12	.3	2.8	1.0	116	81	52	7	137	7.6	115
Apr. 5, 1960.	1,690	2.6	.16	4.8	.2	4.9	.4	12	2.8	5.5	.2	.5	.4	73	28	13	3	45	6.4	115
May 25, 1960.	3.6	9.3	.10	14	6.8	8.3	2.4	62	4.8	13	.4	2.6	1.2	123	94	63	12	159	6.9	190
July 18, 1960.	818	3.2	.06	4.4	.9	2.0	.7	6	.8	5.0	.3	.3	.1	78	21	14	10	38	5.9	175
Sept. 23, 1960.	120	3.4	.18	3.6	1.7	4.0	.6	10	.4	15	.3	.0	.2	69	34	16	8	49	5.8	280



## 2-3212. BUTLER CREEK NEAR LAKE BUTLER, FLA.

Jan. 4, 1960..	3.8	0.13	3.2	0.5	3.3	0.1	4	0.4	7.5	0.2	0.2	94	21	10	6	47	4.8	130	
June 22.....	3.0	.15	2.6	1.0	3.1	.2	3	.4	10	.1	.1	0.0	69	22	10	8	38	4.9	350

## 2-3213. LAKE BUTLER AT LAKE BUTLER, FLA.

Jan. 4, 1960..	1.7	0.01	2.4	0.5	3.5	0.5	7	1.6	6.0	0.2	0.0	53	20	8	2	40	5.8	60	
June 22.....	1.1	.03	2.4	.6	3.6	.4	6	.8	7.0	.0	.0	0.0	41	19	8	4	40	5.6	65

## SANTA FE LAKE NEAR MELROSE, FLA.

Dec. 30, 1959.	6.0	0.00	2.2	1.5	7.6	0.6	4	5.2	12	0.1	0.2	0.5		54	12	8	62	5.7	45
June 23, 1960.	.0	.01	3.0	.6	7.5	.4	5	1.6	12	.1	.0	.1		33	10	6	69	5.7	40

## LITTLE SANTA FE LAKE NEAR MELROSE, FLA.

Jan. 20, 1960.	7.5	0.03	2.0	1.0	6.0	0.4	5	4.4	11	0.1	0.2	0.1		50	9	5	56	5.8	50
June 23.....	.4	.03	2.4	1.0	6.2	.1	4	2.0	11	.0	.0	.0		42	10	6	56	5.4	55

## HAMPTON LAKE AT HAMPTON BEACH, FLA.

Dec. 31, 1959.	2.7	0.00	1.4	1.6	5.9	0.5	4	6.0	8.2	0.1	0.1	0.4		45	10	6	53	5.5	40
June 23, 1960.	1.1	.01	2.0	1.0	4.3	.0	2	1.6	8.0	.0	.0	.1		37	9	8	46	5.2	30

## SWIFT CREEK NEAR PROVIDENCE, FLA.

Jan. 4, 1960..	8.7	0.12	3.8	2.6	5.1	0.4	10	1.2	11	0.3	0.1	0.0	85	38	20	12	62	6.0	180
June 22.....	6.1	.05	3.8	1.2	3.3	.0	8	.8	6.2	.2	.1	.9	64	27	14	8	42	5.8	160

## 2-3218. OLUSTEE CREEK NEAR PROVIDENCE, FLA.

Nov. 16, 1959.	1.2	0.20	2.0	1.5	3.5	0.0	5	0.0	8.0	0.2	0.2	--	82	19	11	7	43	5.1	350
Jan. 19, 1960.	21	5.1	23	5.6	4.6	.0	17	2.0	8.8	.3	.5	0.5	102	37	21	7	60	6.6	155
Apr. 7.....	217	1.5	23	3.6	3.7	.0	10	.8	7.2	.2	.6	--	73	23	10	2	38	5.8	180
May 26.....	3.4	4.2	.10	4.4	3.6	.7	10		6.5	.3	1.8	.5	70	29	18	10	49	5.8	200

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

[illegible]

TSUWANNEE RIVER BASIN--Continued

## 2-3218. OLUSTEE CREEK NEAR PROVIDENCE, FLA.--Continued

[illegible]

**OCHLOCKONEE RIVER BASIN**

2-3290. OCHLOCKONEE RIVER NEAR HAVANA, FLA.

[illegible]

APALACHICOLA RIVER BASIN

2-3395. CHATTAHOOCHEE RIVER AT WEST POINT, GA.

[illegible]

HALAWAKEE CREEK NEAR OPELIKA, ALA.

11	0.13	3.1	1.1	4.1	1.0	20	0.8	2.0	0.1	0.0	33	12	0	41	6.9
13	.00	3.8	1.1	3.5	1.2	24	.0	2.8	.1	.4	38	14	0	45	6.7
APR. 27, 1960.															
AUG. 30.....															

2-3415, CHATTAHOOCHEE RIVER AT COLUMBUS, GA.

Apr. 27, 1860.	2.5	0.09	3.2	1.0	4.2	20	1.2	2.0	1.0	0.0	25	12	0	44	6.8
Aug. 30.....	8.4	.01	3.2	1.3	4.4	20	3.6	3.0	.2	.8	36	14	0	52	6.7

CHATTAHOOCHEE RIVER AT EUFAULA, ALA.

May 1, 1960...	7.5	0.18	4.6	1.0	4.4	1.1	19	4.0	2.1	0.2	0.7		35		16	0	51	6.7	3
Aug. 30.....	9.2	.01	4.6	1.1	4.2	1.5	21	4.4	3.0	.3	1.1		39		16	0	58	6.7	3

## BARBOUR CREEK NEAR EUFaula, ALA.

May 1, 1960...	8.4	0.04	11	1.0	2.8	0.8	31	7.6	2.8	0.2	0.1	50	32	6	78	7.3	7
Aug. 30.....					2.5	1.0	32						32	6	76	6.9	3

## 2-3435. CHATTAHOOCHEE RIVER AT COLUMBIA, ALA.

May 1, 1960...	9.1	0.01	5.2	0.9	4.3	1.1	22	4.0	2.4	0.1	0.6	39	16	0	54	6.8	4
Aug. 29.....	7.9	.02	5.6	.9	3.9	1.4	25	4.4	2.8	.1	.8	40	18	0	59	7.3	7

## BRYANS CREEK NEAR CROSBY, ALA.

May 1, 1960...	4.7	0.48	13	0.0	2.6	0.2	28	1.2	8.8	0.1	0.2	50	32	0	72	7.5	22
Aug. 28.....					1.6	.2	96						80	2	161	7.4	8

## 2-3587. APALACHICOLA RIVER NEAR BLOUNTSTOWN, FLA.

Nov. 10, 1959.	18	0.06	10	1.2	3.1	0.9	36	3.2	3.5	0.3	0.8	57	30	0	74	7.0	40
Jan. 23, 1960..	4.7	.04	11	1.2	3.0	1.9	32	3.2	3.0	.2	1.0	59	19	0	52	6.8	50
Apr. 19.....	7.5	.04	5.6	1.2	2.0	.8	34	2.8	1.8	.1	1.0	46	27	0	65	6.9	8
June 14.....	6.5	.00	7.4	2.1	3.2	2.7	67	2.6	3.5	.1	1.1	69	55	0	123	7.5	5
Aug. 9.....	6.3	.00	20	1.2	3.2	1.0	52	3.2	3.0	.2	.1	64	40	0	97	7.2	3
	7.5	.00	15	.6	3.2												

## 2-3590. CHIPOLA RIVER NEAR ALTHA, FLA.

Nov. 10, 1959.	1,820	8.2	0.02	25	3.3	3.5	86	0.4	5.0	0.2	1.4	101	76	0	163	7.3	10
Jan. 5, 1960..	1,560	6.0	.01	33	3.9	2.6	104	2.4	6.0	.0	.6	105	66	1	182	7.7	10
Feb. 23.....	2,820	2.6	.09	21	2.3	2.8	75	2.0	5.0	.0	.9	82	62	0	135	7.3	30
Apr. 19.....	2,720	5.1	.00	28	2.7	2.6	4	8.8	4.0	.1	.7	101	81	2	169	7.3	8
June 14.....	975	4.6	.01	28	4.4	2.1	3	106	1.6	3.0	.1	107	88	1	175	8.5	15
Aug. 9.....	995	5.4	.00	28	4.1	1.8	105	.4	3.0	.1	.7	101	87	1	170	7.4	3

a Includes equivalent of 4 parts per million of carbonate (CO<sub>2</sub>).

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued																					
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>		Specific conductance (micro-mhos at 25°C)	pH or Col.		
														Residue at 180°C	Calculated	Calcium	Non-magnesium carbonate				
CHOCTAWHATCHEE RIVER BASIN																					
2-3602.75. JUDY CREEK NEAR OZARK, ALA.																					
Apr. 30, 1960.		8.0	0.13	2.6	0.6	2.9	0.8	11	0.8	2.8	0.1	0.5					9	0	31	6.6	8
Aug. 30, 1960.		12	.22	3.8	.7	2.8	.9	16	.0	5.0	.1	.0	24	33			12	0	37	6.7	5
PEA RIVER NEAR CLIO, ALA.																					
Apr. 30, 1960.		6.0	0.22	6.0	1.0	2.8	0.8	22	2.0	2.5	0.2	0.5	33			19	1	51	6.7	12	
Aug. 30, 1960.		9.2	.03	6.0	.6	2.4	1.0	22	2.0	3.5	.2	.0	36			18	0	47	6.7	4	
BIG CREEK NEAR BRUNIDGE, ALA.																					
Apr. 30, 1960.		12	0.17	8.5	1.0	2.4	0.5	30	0.4	2.5	0.1	0.4	43			25	0	60	7.1	3	
Aug. 30, 1960.		10	.00	15	.5	2.2	.9	48	.0	4.0	.5	.0	57			40	0	87	7.3	2	
CHOCTAWHATCHEE RIVER NEAR IZAGORA, FLA.																					
Oct. 5, 1959.		8.4	0.02	11	1.5	3.3	0.5	646	2.4	3.5	0.2	0.1	56	54		34	6	84	9.0	5	
Nov. 16, 1959.		8.2	.14	8.0	.7	2.5	.5	26	.8	3.5	.1	.7	50	38		23	2	62	6.1	25	
Dec. 28, 1959.		8.0	.15	6.8	1.7	2.4	.5	23	1.6	4.0	.1	.8	43	36		20	1	56	6.4	20	
Jan. 8, 1960.		6.0	.09	4.4	1.2	1.9	.6	17	2.4	3.0	.0	.5	37	28		16	2	42	5.8	50	
May 1, 1960.		6.7	.00	7.0	1.0	2.1	.6	26	2.4	2.2	.1	.2	38	35		22	0	54	7.2	10	
May 27, 1960.		6.9	.01	8.0	1.3	2.6	.6	30	2.8	3.0	.1	.1	37	40		26	1	63	7.3	16	
Aug. 22, 1960.		7.2	.08	8.4	1.1	3.0	.7	31	2.0	3.2	.1	.1	48	41		25	0	65	6.9	28	
YELLOW RIVER BASIN																					
2-3674.8. LIGHTWOOD KNOT CREEK NEAR OPP, ALA.																					
Apr. 30, 1960.		5.2	0.10	1.2	0.7	1.3	0.4	8	0.8	2.0	0.0	0.2				6	0	20	6.9	8	
Sept. 30, 1960.		7.2		1.0	.9	2.4	.4	7	.0	3.2	.2	.0	16	19		6	0	23	6.4	30	
FIVE RUNS CREEK NEAR ANDALUSIA, ALA.																					
Apr. 30, 1960.		3.6	0.19	4.3	0.9	2.4	0.8	17	0.8	3.5	0.1	0.4				14	0	44	7.3	8	
Aug. 29, 1960.		6.7	.02	5.4	.9	4.9	.5	24	.8	6.2	.0	.0	25	37		17	0	58	6.5	8	

## 2-3678. YELLOW RIVER NEAR WING, ALA.

Apr. 30, 1960.	742	7.8	0.03	11	1.2	1.9	0.3	30	0.8	2.5	0.0	0.0		46	25	0	59	7.0	22
Aug. 29, .....	288							40							32	0	74	7.1	5

## BLACKWATER CREEK NEAR BRADLEY, ALA.

Apr. 30, 1960.		3.8	0.31	0.9	0.1	1.9	0.1	1	0.8	2.5	0.1	0.0		11	2	2	18		37
Sept. 30, .....		7.7		.8	.5	1.7	.1	2	3.2	3.2	.2	.0		18	4	2	43	5.0	40

## 2-3680. YELLOW RIVER AT MILLIGAN, FLA.

Oct. 27, 1959.	850	7.5	0.07	5.6	1.2	2.1	0.3	24	1.6	3.0	0.1	0.3		39	19	0	50	6.7	40
Dec. 8, .....	787	6.5	.07	3.6	1.7	1.9	.2	21	.8	2.0	.1	.7		30	20	3	50	5.5	15
Jan. 20, .....	1,370	5.4	.03	3.6	.7	2.1	.3	16	.0	3.0	.0	.2		30	12	0	37	7.0	15
Mar. 1, .....	1,400	4.7	.05	4.6	.7	1.9	.1	18	1.6	3.0	.0	.9		30	14	0	44	7.0	15
Apr. 26, .....	1,670	9.1	.01	4.6	.7	2.1	.6	18	.4	1.5	.0	.2		30	14	0	40	7.0	7
June 7, .....	1,380	5.6	.00	4.8	1.5	1.7	.3	17	2.4	3.0	.1	.1		59	18	4	40	7.0	5
July 19, .....	1,130	5.9	.01	4.4	.7	1.8	.5	16	2.4	3.0	.1	.0		29	14	1	38	6.8	40
Sept. 17, .....	1,090	6.6	.02	6.2	.5	1.8	.4	20	2.0	3.0	.1	.2		38	18	1	44	6.8	45

## BLACKWATER RIVER BASIN

## 2-3701. BLACKWATER RIVER NEAR HOLT, FLA.

Oct. 8, 1959..		3.6	0.02	0.6	0.2	1.5	0.0	3	0.0	2.5	0.1	0.1		26	10	2	0	19	5.2	20
Dec. 8, .....		6.2	.04	.6	.2	1.3	.0	3	.8	2.5	.1	.5		25	14	2	0	18	5.3	15
Dec. 30, .....		6.4	.05	.0	1.0	1.8	.1	4	4.0	2.5	.0	.4		23	18	4	0	20	5.2	15
Feb. 5, 1960.		2.1	.03	.6	.2	1.9	.3	4	.4	1.0	.1	.0		20	18	3	0	20	5.2	20
Mar. 19, .....		6.9	.04	.6	.4	1.6	.4	4	.8	2.2	.0	.2		25	18	2	0	16	5.1	45
May 19, .....		6.9	.04	.6	.4	1.6	.4	4	.8	2.2	.0	.2		25	19	3	0	16	5.1	45
June 30, .....		5.7	.04	.6	.6	1.8	.2	4	.4	2.5	.0	.0		17	14	2	0	16	6.0	15
Aug. 25, .....		6.3	.10	.8	.1	1.7	.4	4	.4	2.5	.1	.1		20	14	2	0	16	6.0	7
																		16	5.9	18

g Includes equivalent of 6 parts per million of carbonate (CO<sub>3</sub>).

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color		
														Residue at 180°C	Calculated					
BLACKWATER RIVER BASIN--Continued																				
2-3702-7. BIG JUNIPER CREEK NEAR HAROLD, FLA.																				
Oct. 8, 1959...		3.8	0.02	0.6	0.2	1.4	0.0	3	0.4	3.2	0.1	0.1		31	11	2	0	18	5.2	40
Dec. 8.....		5.5	.05	.8	.2	1.2	.2	4	.8	2.5	.0	.4		18	14	3	0	16	6.3	5
Dec. 30.....		5.4	.02	1.2	.5	1.1	.1	4	.4	2.8	.1	.2		14	14	4	0	20	5.9	10
Feb. 30, 1960..		5.2	.02	.2	.5	1.5	.0	2	.4	2.5	.1	.2		21	12	2	1	19	5.7	10
Apr. 5.....		5.4	.03	.8	.1	1.2	.3	2	.8	1.0	.0	.0		21	7	3	1	17	6.3	5
Apr. 19.....		5.4	.03	.4	.4	1.6	.2	4	.4	2.0	.0	.1		17	19	2	0	14	6.3	5
June 30.....		7.3	.04	.4	.2	1.7	.4	4	2.4	2.2	.1	.1		19	18	4	0	15	6.1	9
Aug. 25.....		6.5	.08	.8	.2	1.4	.2	3	.4	2.0	.1	.1		20	14	3	0	16	5.7	18
ESCAMBIA RIVER BASIN																				
OLUSTEE CREEK AT SHADY GROVE, ALA.																				
Apr. 30, 1960..		6.2		6.2	0.6	2.7	0.8	22	2.0	3.0	0.1	0.1			33	18	0	48	7.3	28
Sept. 30.....		7.3		4.4	1.0	1.8	1.0	14	.8	3.5	.2	.4			27	15	4	40	6.4	30
PATSAUGA CREEK AT LUVERNE, ALA.																				
Apr. 30, 1960..		8.4	0.00	11	0.7	2.2	0.8	31	2.0	3.5	0.1	0.0			47	37	12	63	7.3	8
Aug. 30.....								36								30	1	70	6.8	3
CONECH RIVER NEAR BROOKLYN, ALA.																				
Apr. 30, 1960..		8.6		10	1.5	2.1	0.8	33	1.6	2.2	0.2	0.1			44	28	0	69	7.5	8
Sept. 30.....								35								31	2	71	6.7	5
2-3755. ESCAMBIA RIVER NEAR CENTURY, FLA.																				
Oct. 6, 1959...	2,240	9.5	0.05	12	1.5	6.9	0.7	36	3.6	13	0.3	0.5		83	65	36	6	108	6.8	25
Nov. 17.....	4,360	9.8	.14	10	.7	4.6	.3	36	3.6	7.5	.0	.3		67	53	28	4	84	6.3	30
Dec. 29.....	5,020	8.4	.01	10	.2	4.0	.8	32	2.4	7.5	.0	.6		58	50	26	0	78	7.3	40
Feb. 9, 1960...	18,200	9.7	.03	4.4	1.5	2.6	.9	16	2.4	4.2	.0	.3		61	34	17	4	48	6.7	75
Mar. 17.....	11,100	8.7	.00	6.4	1.0	3.1	.0	20	2.8	7.5	.0	.3		56	40	20	4	60	6.9	20
May 17.....	5,290	8.5	.05	9.0	1.0	4.4	.8	28	2.4	6.5	.0	.2		60	47	26	4	75	7.0	10
June 28.....	2,630	7.9	.03	10	.9	5.6	.7	31	2.8	8.5	.1	.0		56	52	28	3	84	7.0	8
Aug. 23.....	3,790	7.8	.00	9.2	.7	7.8	.8	23	4.4	16	.0	.1		73	58	26	7	82	6.9	8

## 2-3760. PINE BARREN CREEK NEAR BARTH, FLA.

Nov. 17, 1959.	109	5.9	0.07	0.4	0.4	1.4	0.1	2	0.4	2.5	0.1	0.4	24	13	2	1	18	5.5
Dec. 29.....	123	5.8	.10	.8	1.0	1.1	.1	6	.4	3.0	.0	.6	21	16	6	1	19	6.2
Feb. 10, 1960.	137	.8	.08	.4	.7	1.5	.2	5	.4	2.5	.0	.1	16	9	4	0	19	6.5
Mar. 16.....	210	5.3	.03	.8	.4	1.4	.1	4	.0	2.8	.0	.4	16	13	4	0	19	5.7
May 18.....	125	6.0	.06	.4	.4	1.9	.4	5	.4	2.5	.0	.1	18	15	2	0	17	6.6
June 28.....	125	7.7	.06	1.0	.2	1.6	.4	4	.4	2.3	.0	.1	15	12	3	0	17	6.6
Aug. 23.....	155	7.6	.13	.8	.2	1.9	.4	5	.8	2.2	.2	.1	20	17	3	0	17	6.0

## PERDIDO RIVER BASIN

## 2-3765. PERDIDO RIVER AT BARRINEAU PARK, FLA.

Oct. 7, 1959..	947	2.9	0.03	1.0	0.1	1.5	0.4	4	0.8	3.0	0.1	0.1	20	12	3	0	18	5.3
Nov. 18.....	468	5.7	.06	.6	.2	1.7	.0	2	.4	3.0	.1	.2	20	12	2	0	17	6.0
Dec. 30.....	622	7.2	.08	.3	.4	1.9	.0	2	.0	2.5	.1	.5	25	15	2	1	20	5.3
Feb. 10, 1960.	650	4.6	.03	.3	.4	1.9	.0	2	.0	2.5	.1	.2	20	11	2	0	18	5.2
Mar. 16.....	1,360	5.6	.02	.8	.1	1.4	.1	2	1.6	2.5	.1	.6	19	14	2	1	21	5.1
May 18.....	1,508	6.9	.03	.6	.4	1.9	.4	4	.4	3.0	.0	.1	30	16	3	0	17	6.2
June 28.....	428	6.7	.02	.8	.2	3.2	.4	4	.4	4.5	.0	.1	26	18	3	0	22	5.8
Aug. 24.....	879	7.9	.13	.8	.2	3.0	.4	3	.8	3.0	.1	.0	32	18	3	0	24	5.8

## MOBILE RIVER BASIN

## COOSA RIVER NEAR COOSA, GA.

Apr. 26, 1960.		6.5	0.09	15	3.0	7.4	1.0	58	14	3.0	0.2	0.0		79	50	2	133	7.3
Aug. 31.....		8.3	.01	12	3.0	8.2	1.0	49	13	5.8	.7	.6		77	42	2	119	6.9

## COOSA RIVER NEAR LEESBURG, ALA.

Apr. 26, 1960.		3.5	0.08	16	2.3	6.6	1.0	61	9.2	3.7	0.2	0.0		72	50	0	129	7.3
Aug. 31.....		9.3	.02	15	3.5	8.7	1.0	64	9.6	5.5	.3	.0		85	52	0	131	6.8

## MISCELLANEOUS ANALYSES OF STREAMS IN SOUTH ATLANTIC SLOPE AND EASTERN GULF OF MEXICO BASINS--Continued

Chemical analyses, in parts per million, water year October 1959 to September 1960--Continued																		
Date of collection	Mean discharge (cfs)	Silica (SiO <sub>2</sub> )	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Dissolved solids		Hardness as CaCO <sub>3</sub>	Specific conductance (micro-mhos at 25°C)	Color	
													Residue at 180°C	Calculation				
MOBILE RIVER BASIN--Continued																		
BIG WILLS CREEK NEAR COLLINSVILLE, ALA.																		
Apr. 26, 1960.		6.2	0.10	41	4.7	1.7	0.7	142	4.8	2.5	0.1	0.6		132	122	6	243	5
Aug. 31.....		6.9	.01	36	9.8	5.3	.7	158	4.4	6.5	.3	1.3		149	130	1	249	7.9
BIG WILLS CREEK AT GADSDEN, ALA.																		
Apr. 26, 1960.		4.2	1.14	30	4.6	4.7	1.8	85	21	5.2	0.3	3.7		118	94	24	212	7.4
Aug. 31.....					5.5	5.5	2.2	94							99	22	226	7.7
COOSA RIVER NEAR SOUTHSIDE, NEAR GADSDEN, ALA.																		
Apr. 26, 1960.		4.3	0.10	8.4	6.8	5.6	1.0	58	7.6	3.5	0.1	0.3		67	49	2	120	7.4
Aug. 31.....		7.5	.01	16	2.8	6.0	1.2	61	9.6	4.5	.2	1.1		79	52	2	127	6.9
2-4014. BIG CANOE CREEK NEAR ASHVILLE, ALA.																		
Apr. 26, 1960.		5.2	0.16	30	3.4	2.2	0.6	106	4.8	1.6	0.1	0.1		100	89	2	179	7.6
Aug. 31.....		7.2	.10	33	7.2	1.4	.8	130	4.0	2.0	.1	.1		120	112	6	207	7.3
2-4015. BIG CANOE CREEK NEAR GADSDEN, ALA.																		
Apr. 26, 1960.	187	7.8	0.02	34	6.7	1.8	0.7	135	4.0	1.8	0.1	0.4		124	88	2	174	7.9
Aug. 31.....	28														112	2	207	7.3
2-4025. COOSA RIVER AT RIVERSIDE, ALA.																		
Apr. 26, 1960.		7.3	0.08	17	2.3	5.6	0.9	59	7.6	3.2	0.2	0.3		73	52	4	125	7.9
Aug. 30.....		6.7	.02	19	2.8	8.2	1.1	73	12	6.2	.2	.1		92	59	0	148	6.9
2-4045. CHOCOLOCO CREEK NEAR LINCOLN, ALA.																		
Apr. 26, 1960.														124	90	6	207	7.8
Aug. 31.....		7.8	0.03	31	16	14	3.5	124	8.4	48	0.2	0.7		191	144	42	342	7.4



## KELLY CREEK AT LOWLEY, ALA.

Apr. 28, 1960.	8.0	0.24	6.4	1.0	1.6	0.7	25	2.0	1.0	0.0	0.4		33	20	0	52	7.9
Aug. 30.....	7.5	.03	8.2	1.3	2.6	1.0	32	6.0	1.8	.1	.6		45	26	0	63	6.9

## 2-4070. COOSA RIVER AT CHILDERSBURG, ALA.

Apr. 28, 1960.	11,100	6.3	0.07	16	3.6	4.6	1.0	64	8.4	3.8	0.1	0.5		76	55	2	135	8.1
Aug. 30.....	4,530	8.9	.05	20	3.6	14	1.4	84	18	13	.1	.5		122	73	4	202	7.3

## 2-4083.5. HATCHET CREEK NEAR GOODWATER, ALA.

Apr. 28, 1960.		9.4	0.09	3.0	0.9	1.3	0.8	15	2.8	1.2	0.1	0.1		27	11	0	32	7.5
Aug. 29.....		8.1	.04	4.8	1.1	2.1	.6	23	2.4	2.0	.1	.0		32	16	0	41	6.9

## TOPUSKE CREEK NEAR GOODWATER, ALA.

Apr. 28, 1960.		9.5	0.14	3.0	0.5	2.2	0.6	10	3.2	1.2	0.1	0.0		25	10	2	28	7.0
Aug. 29.....		14	.08	3.4	1.3	2.3	.6	16	5.6	4.0	.1	.5		40	14	1	38	6.6

## 2-4085. HATCHET CREEK NEAR ROCKFORD, ALA.

Apr. 28, 1960.	309	11	0.06	3.0	0.6	3.2	0.6	14	6.8	1.3	0.1	0.0		34	10	0	32	7.4
Aug. 29.....	47	12	.02	3.6	1.0	3.2	.9	22	2.4	1.8	.1	.2		36	13	0	39	6.8

## 2-4116. COOSA RIVER AT WETUMPKA, ALA.

Apr. 27, 1960.	14,300	5.8	0.16	11	3.6	4.4	1.0	47	6.8	2.8	0.1	0.2		59	42	4	100	7.6
Aug. 29.....	5,460	4.7	.01	17	5.5	11	1.3	76	12	13	.1	.6		102	65	2	162	7.2

## CARULGA CREEK NEAR HEFLIN, ALA.

Apr. 26, 1960.		9.0	0.14	4.6	1.1	7.4	0.5	20	0.8	11	0.2	0.0		44	16	0	66	6.8
Aug. 30.....						7.7	1.1	28						17	0	0	73	7.1



## CAHABA RIVER NEAR LOCICK, ALA.

Apr. 28, 1960.		5.4	0.27	22	6.3	25	1.3	63	70	2.1	0.1	0.2			163	81	30	272	7.3	3
Aug. 31.....		11	.03	20	9.2	29	21	76	79	2.5	.2	1.0			191	88	26	310	7.3	5

## CAHABA RIVER NEAR HOMEWOOD, ALA.

Apr. 28, 1960.		1.7	0.17	32	3.9	6.4	1.4	104	22	2.1	0.1	0.6			121	96	11	222	7.7	3
Aug. 31.....		7.4	.02	30	7.1	7.6	1.7	114	18	3.0	.3	1.2			132	104	10	230	7.4	3

## CAHABA RIVER NEAR ACTON, ALA.

Apr. 29, 1960.		5.4	0.02	26	7.5	27	2.5	96	60	3.5	0.3	0.5			180	85	16	226	7.7	4
Aug. 31.....																96	18	296	7.5	5

## 2-4240. CAHABA RIVER NEAR CENTERVILLE, ALA.

Apr. 29, 1960.	634	2.4	0.09	25	6.0	6.6	1.0	102	18	1.8	0.2	0.0			111	87	4	203	7.9	4
Aug. 31.....	222	8.8	.02	28	7.8	4.3	1.7	117	11	2.0	.2	.1			122	102	10	208	7.9	2

## 2-4245. CAHABA RIVER NEAR SPOTT, ALA.

Apr. 29, 1960.	948	4.7	0.11	20	5.2	4.6	1.0	81	12	2.4	0.2	0.0			90	72	5	151	7.4	3
Aug. 31.....	371	9.3	.02	23	6.7	4.8	1.5	96	10	3.0	.2	.0			106	85	6	178	7.4	2

## OAKMULGEE CREEK NEAR AUGUSTIN, ALA.

Apr. 29, 1960.		11	0.01	2.2	0.9	0.8	0.9	10	0.8	1.8	0.1	0.0			23	10	4	39	6.6	7
Aug. 31.....							8									9	1	24	6.5	5

## CAHABA RIVER NEAR BELOIT, ALA.

Apr. 29, 1960.		10	0.00	22	5.1	4.6	1.9	86	9.6	2.5	0.2	0.0			98	65	6	146	7.7	4
Sept. 1.....																76	6	171	8.0	2



## CHICKASAW BOGUE NEAR LINDEN, ALA.

Apr. 30, 1960.		8.7	0.02	52	0.7	3.9	0.9	148	12	4.2	0.2	0.1		156	132	11	272	7.7	3
Aug. 31.....						6.3	3.3	136							120	8	260	7.9	3
Aug. 31.....						4.4	1.1	209							180	8	346	8.1	--

## DUCK CREEK NEAR BERLIN, ALA.

Apr. 28, 1960.		5.0	0.04	2.1	0.5	2.2	1.0	10	2.4	3.0	0.0	1.7		23	7	0	33	6.9	0
Aug. 29.....		4.8	.00	4.2	.5	3.6	.9	18	2.8	4.0	.1	.5		30	12	0	47	6.7	2

## CLIFTY FORK NEAR ADDISON, ALA.

Apr. 28, 1960.		6.7	0.11	1.6	0.9	0.8	0.7	10	0.8	0.8	0.0	0.3		18	8	0	24	7.1	3
Aug. 30.....		4.2	.00	4.2	.9	1.0	1.1	17	3.2	1.0	.1	.2		24	14	0	36	6.6	3

## BLACKWATER CREEK NEAR JASPER, ALA.

Apr. 29, 1960.		7.3	0.07	2.9	1.9	1.3	1.0	10	10	0.8	0.1	0.2		30	15	7	45	6.8	2
Aug. 30.....		7.5	.01	4.2	2.4	2.2	1.2	13	15	1.5	.2	.0		41	20	10	59	6.6	2

## BIG YELLOW CREEK NEAR WHITSON, ALA.

Apr. 26, 1960.		7.8	0.09	1.5	0.5	1.3	0.8	8	2.4	1.0	0.1	0.2		20	6	0	22	7.0	8
Aug. 30.....		6.7	.00	4.2	1.5	2.2	1.3	21	3.2	1.5	.1	.3		31	16	0	44	7.2	8

## 2-4635. HURRICANE CREEK NEAR HOLT, ALA.

Apr. 29, 1960.	52	8.4	0.06	6.8	7.5	2.0	1.5	2	48	1.8	0.2	0.2		77	26	24	78	6.1	4
Aug. 29.....	17														48	46	139	5.1	0

## 2-4650. BLACK WARRIOR RIVER AT TUSCALOOSA, ALA.

Apr. 30, 1960.	4,310	5.6	10	2.4	8.1	1.5	24	28	3.1	0.2	1.8			73	35	16	125	7.3	4
Aug. 30.....	751	3.2	0.01	26	.5	19	2.2	49	62	5.8	.3	1.4		144	67	27	211	7.0	3



## TOMBIGBEE RIVER NEAR BUTLER, ALA.

May 1, 1960...		6.4	0.01	16	1.0	6.3	1.4	44	14	5.5	0.2	0.7		74	44	8	131	7.6	8
Sept. 1.....		5.8	.02	17	1.1	13	1.7	56	14	14	.1	.6		95	47	1	173	7.3	10

## 2-4695.5. HORSE CREEK NEAR SWEETWATER, ALA.

May 1, 1960...	21	13.0	0.04	5.0	1.7	3.9	1.1	21	6.8	4.5	0.1	0.4		46	20	2	65	6.5	12
Sept. 1.....	8.6	15	.02	6.4	2.8	5.0	1.5	32	7.2	4.8	.0	.6		59	28	2	83	6.9	8

## 2-4697. OKATUPPA CREEK AT GILBERTOWN, ALA.

May 1, 1960...	97	19	0.01	26	1.7	24	1.4	70	10	40	0.1	0.3		156	72	14	267	8.2	7
Sept. 1.....	23						3.3	64						130	130	78	1,140	7.3	8

## 2-4700.4. TOMBIGBEE RIVER NEAR JACKSON, ALA.

May 1, 1960...	13,700	8.0	0.01	14	1.5	6.7	1.1	44	12	7.8	0.2	0.2		74	41	5	125	7.3	3
Sept. 1.....	2,920	6.2	.03	17	1.8	11	1.8	56	13	13	.1	.0		92	50	4	158	7.1	10

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