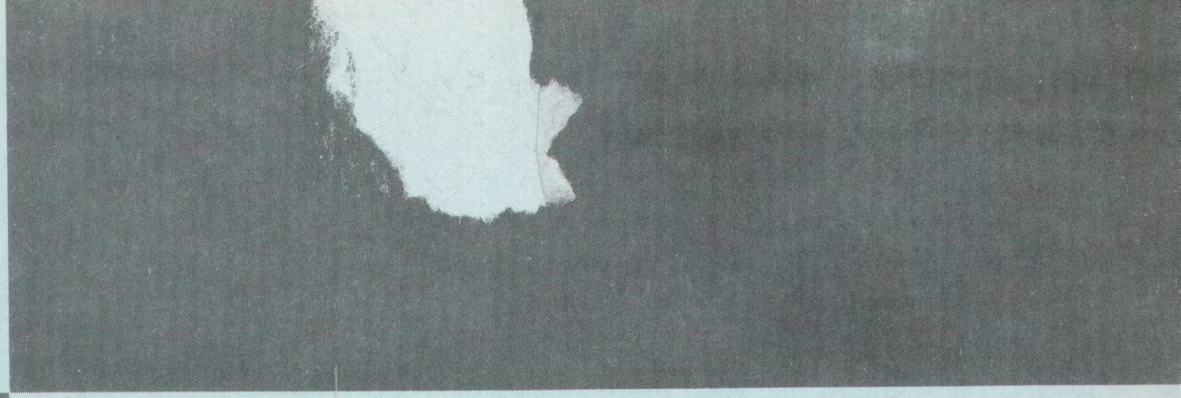
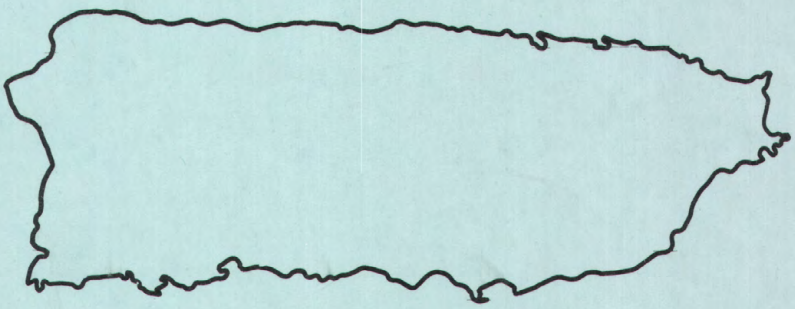


Water Resources Data for Puerto Rico

Water Years 1979-80



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT PR-79-80
Prepared in cooperation with the Commonwealth of Puerto Rico and with other agencies

CALENDAR FOR WATER YEAR 1979

1978

OCTOBER

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1	2	3	4	5	6	7
8	9	10	11	12	13	14
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1979

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CALENDAR FOR WATER YEAR 1980

1979

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JULY

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SEPTEMBER

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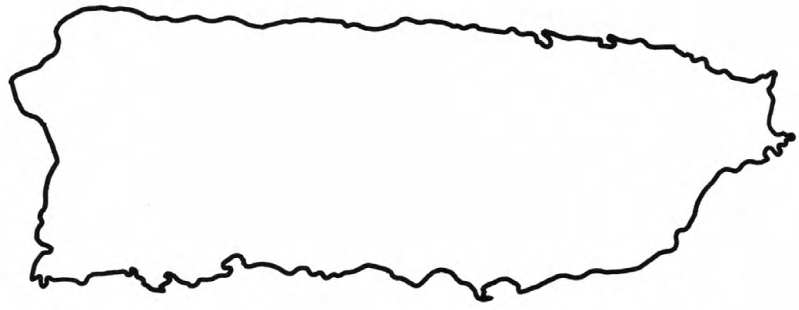
Water Resources Data for Puerto Rico

Water Years 1979-80



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT PR-79-80

Prepared in cooperation with the Commonwealth of Puerto Rico and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, SECRETARY

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:

District Chief, Water Resources Division
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G.P.O. Box 4424
San Juan, Puerto Rico 00936

1982

Preface

This report was prepared by the U.S. Geological Survey in cooperation with the Commonwealth of Puerto Rico and with other agencies by personnel of the Caribbean District of the Water Resources Division under the supervision of Ferdinand Quiñones, District Chief, and James L. Cook, Regional Hydrologist, Southeastern Region.

This report is one of a series issued State by State under the general direction of Philip Cohen, Chief Hydrologist, and Robert J. Dingman, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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13. Type of Report & Period Covered
Oct. 1, 1978 to Sept. 30, 1980

14.

15. Supplementary Notes

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16. Abstracts

Water-resources data for surface-water, quality-of-water, and ground-water records for 1979-80 water years for Puerto Rico consist of records of discharge, water quality of streams, and water levels of wells. This report contains discharge and water-quality records for 36 gaging stations, 109 water-quality stations, and water levels for 50 observation wells. Also included are data for 17 crest-stage partial-record stations. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and the Commonwealth of Puerto Rico.

17. Key Words and Document Analysis

17a. Descriptors *Puerto Rico, *Surface water, *Water quality, *Ground water, Aquifers, Chemical analysis, Gaging stations, Hydrologic data, Sediments, Streamflow, Water analysis, Water levels, Water quality.

17b. Identifiers/Open-Ended Terms

Commonwealth, Sampling sites

17c. COSATI Field/Group

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ILLUSTRATIONS

ILLUSTRATIONS--Continued

TABLES

INTRODUCTION

Water resources data for water years 1979-80, including records of streamflow at gaging stations and partial-record stations are given in this report, and their locations are shown in figures 1 to 19. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey under the direction of Craig B. Bentley, succeeded by Ferdinand Quiñones, District Chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating Commonwealth and Federal agencies in Puerto Rico.

Prior to the 1968 calendar year, water resources data for Puerto Rico have been released in a series of reports entitled "Water Records of Puerto Rico," and covered the period 1958-67. Included were records for streamflow stations, ground-water wells, and the chemical and physical characteristics of surface and ground water.

Beginning with the 1968 calendar year, surface-water records are being released separately on an annual basis. Ground-water records, and data on chemical and physical characteristics of surface and ground water are being released in companion reports covering periods of several years. Data for the 1973-74 reports were published under separate covers. Water resources data for 1975-76, 1977 and 1978 consist of one volume each containing surface-water, water-quality, and ground-water records.

COOPERATION

The U.S. Geological Survey and organizations of the Commonwealth of Puerto Rico have had cooperative agreements for the systematic collection of surface-water records since 1958. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Puerto Rico Environmental Quality Board
Puerto Rico Aqueduct and Sewer Authority
Puerto Rico Water Resources Authority
Puerto Rico Industrial Development Company
Puerto Rico Department of Public Works
Puerto Rico Department of Natural Resources

Assistance in the form of funds was also given by the Corps of Engineers, U.S. Army, in collecting records for 6 gaging stations published in this report.

ACKNOWLEDGMENTS

Caribbean District personnel who contributed significantly to the collection and preparation of the data in this report were: Russell Curtis, Chief, Hydrologic Records Unit assisted by Patrick McKinley, Héctor Colón-Ramos, Rafael Dacosta, Pedro Vázquez, Juan Ortiz-Medina, Angel Class-Cacho, Ralph González, Zaida Aquino de Díaz, Luis Santiago-Rivera, Senén Guzmán, Rafael Peña, Vicente Quiñones-Aponte, Felipe Hernández, Philip González, Gladys Lenway and Carmen García.

HYDROLOGIC CONDITIONS

As the 1979 water year began, streamflow was above normal owing to heavy precipitation in October (55% above normal), caused by a tropical wave stalling over the eastern Caribbean. Most streams began seasonally normal recessions in November, and flow was generally normal through April. May is usually one of the wettest months in Puerto Rico and this year was no exception. A series of tropical waves, storms, depressions and hurricanes passed over or near the island continuously from May to September causing abnormally heavy rainfall and generally excessive runoff. Hurricanes Claudette in July, David in August, and Frederick in September caused isolated severe flooding, but peak flows generally were not of record-breaking proportions. As a whole, the 1979, water year was extremely wet (more than 20 inches above the normal 65 inches) and average streamflow at most sites was at or near the highest for the period of record. The 1980 water year was very uneventful weatherwise and consequently, streamflow was near normal. Some streams were significantly above normal in November and May, but otherwise monthly-mean discharge varied in the normal seasonal pattern.

The rivers of Puerto Rico are used for transport of wastes from public and private facilities. The water quality suffers from this usage. Coliform bacteria, which are attributed to human and animal wastes are consistantly above 1,000 colonies per 100 mL and often over 100,000 colonies per 100 mL. Trace metal concentrations which are another waste product of human activity were found to be at background levels. Suspended sediment concentrations usually vary with streamflow. The highest concentrations were associated with Hurricanes David and Frederick. Río Portugués near Ponce, a daily sediment site, had the peak of record for sediment concentration (22,900 mg/L) and sediment load (95,900 tons) on August 31, 1979 as a result of rains associated with Hurricane David.

Ground-water levels continued to rise sustained by heavy rainfall caused by Hurricanes Claudette, David, and Frederick in July, August, and September 1979, respectively. The latter storms caused a new high ground-water level during the first quarter of 1980 throughout the island. Subsequently, levels kept declining steadily but maintained near or above average levels at the close of the 1980 year.

DEFINITION OF TERMS

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

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

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

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

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

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

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

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

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as the organisms

which produce colonies within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Bottom material: See Bed material.

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

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

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

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

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

Crest-stage station is a special form of partial-record station that records the highest stage of the stream that occurred between periodic visits to the station. A stage-discharge relation for each gage may be developed from discharge measurements made by indirect methods or by current meter.

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

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

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

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

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

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

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

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

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

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

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

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

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

Ground-water station is a well at which observations of ground-water level are made, either continuously by recorder, or periodically by hand. In addition, various chemical or physical parameters may be obtained, usually on a periodic basis.

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

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

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

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical consitutents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture. Conversion of chemical concentrations in Mg/L to milliequivalents per liter can be done by using the factors in table 1.

TABLE 1.--Factors for conversion of chemical constituents in milligrams per liter to milliequivalents per liter.

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

*Constituent reported in micrograms per liter; multiply by factor and divide results by 1,000.

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

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

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

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

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

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

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

Classification	Size (mm)	Method of analysis
Clay	0.00024 - 0.004	Sedimentation
Silt	.004 - .062	Sedimentation
Sand	.062 - 2.0	Sedimentation or sieve
Gravel	2.0 - 64.0	Sieve

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

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

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

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

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

> Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green often cause nuisance conditions in water.
>
> Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/mL of sample.
>
> Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells/mL of sample.

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

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

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

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

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

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

The suspended-sediment concentration (mg/L) and suspended-sediment discharge (tons/day) except in stations 50028000 and 50115000 are based on instantaneous discharge and do not necessarily represent the actual daily discharge of suspended sediment.

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

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

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

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

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

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

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

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

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

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

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

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

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

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

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

Water year in Geological Survey reports dealing with surface water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends. Thus, the water year beginning October 1, 1976 and ending September 30, 1977 is called the "1977 water year."

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

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

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

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations in first rank, second rank, and other ranks of tributaries.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station such as 50028000, which appears just to the left of the station name, includes the 2-digit part number "50" plus the 6-digit downstream order number "028000."

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

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

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. The numbers shown in the grid correspond to the local numbers assigned to each well as visited in the field. An example is well 16 (fig. 1, below).

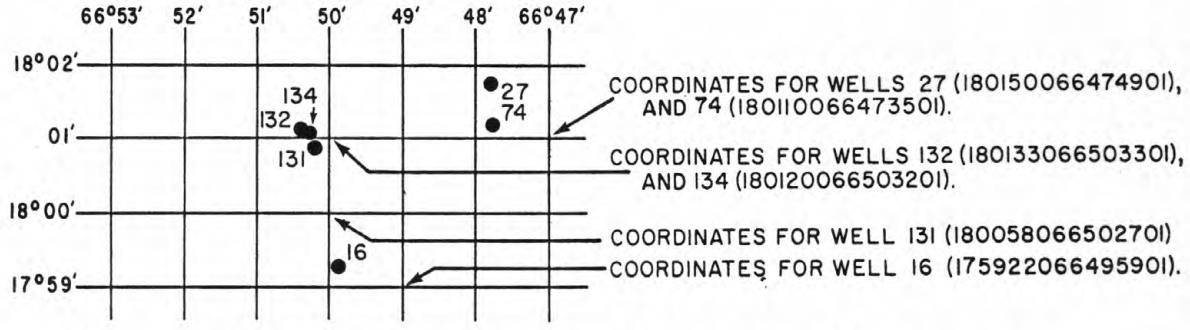

Figure 1.--System for numbering wells and miscellaneous sites (latitude and longitude).

SPECIAL NETWORKS AND PROGRAMS

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

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

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

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

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

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

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

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams a table showing the daily discharge and monthly and yearly discharge is given. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

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

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Period of backwater from an

unusual source, or indefinite stage-relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

Data collected at partial-record water-quality stations follows the information for continuous-record sites. Data for partial-record discharge stations are presented in one table. This table shows the annual maximum stage and discharge at crest-stage stations.

Accuracy of field data and computed results

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

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good," within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cu ft/s; to tenths between 1.0 and 10 cu ft/s; to whole numbers between 10 and 1,000 cu ft/s; and to 3 significant figures above 1,000 cu ft/s. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Other data available

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

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

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

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

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

Water analysis

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

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

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

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

Water temperature

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

Table 2.--Degrees Celsius (°C) to degrees Fahrenheit (°F)*
(Temperature reported to nearest 0.5°C)

°C	°F	°C	°F	°C	°F
15.0	59	21.0	70	27.0	81
15.5	60	21.5	71	27.5	82
16.0	61	22.0	72	28.0	82
16.5	62	22.5	72	28.5	83
17.0	63	23.0	73	29.0	84
17.5	64	23.5	74	29.5	85
18.0	64	24.0	75	30.0	86
18.5	65	24.5	76	30.5	87
19.0	66	25.0	77	31.0	88
19.5	67	25.5	78	31.5	89
20.0	68	26.0	79	32.0	90
20.5	69	26.5	80		

* °C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32.

Sediment

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

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

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

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

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

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

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

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

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

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

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Surface

and

Quality-of-Water Records

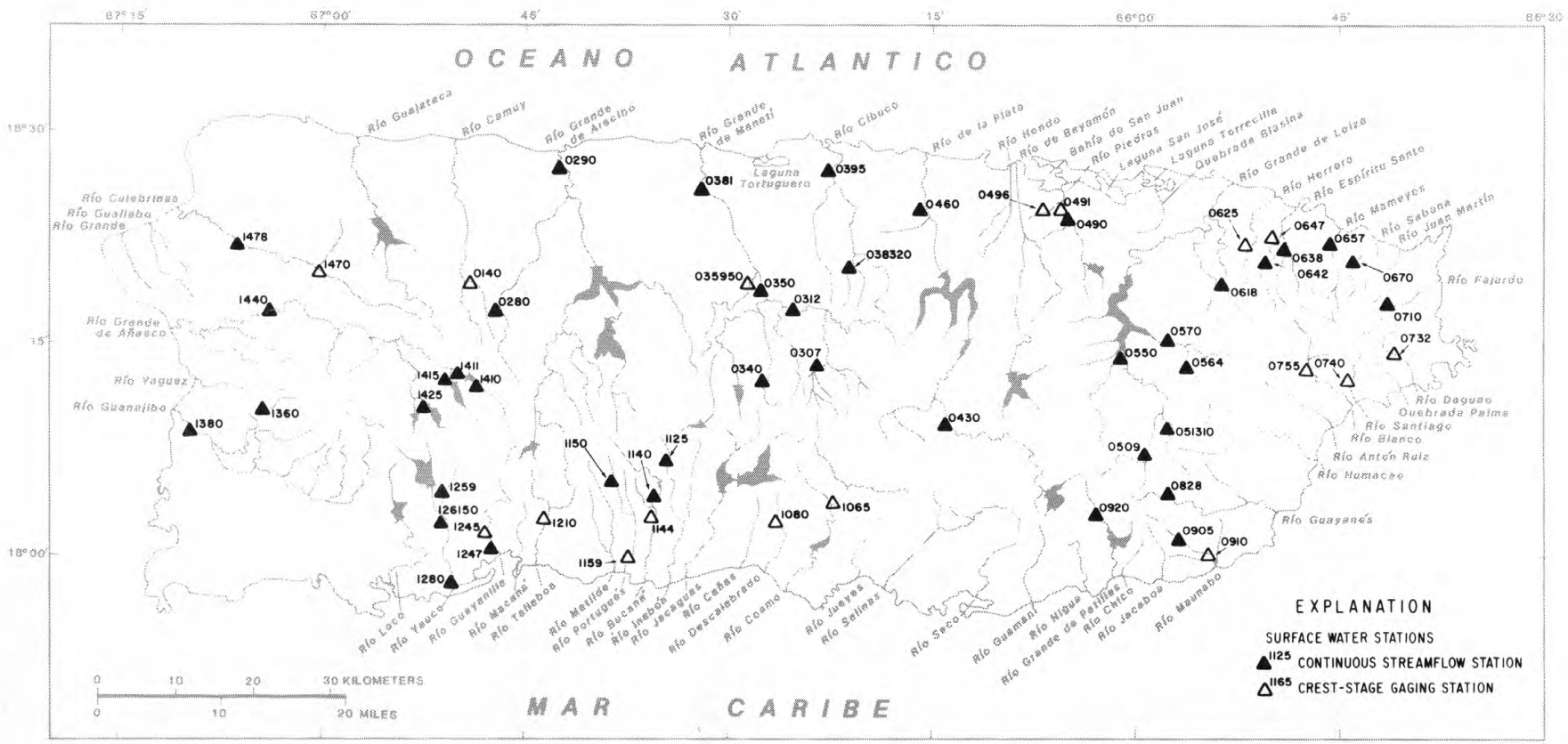

Figure 2.--Location of surface-water stations.

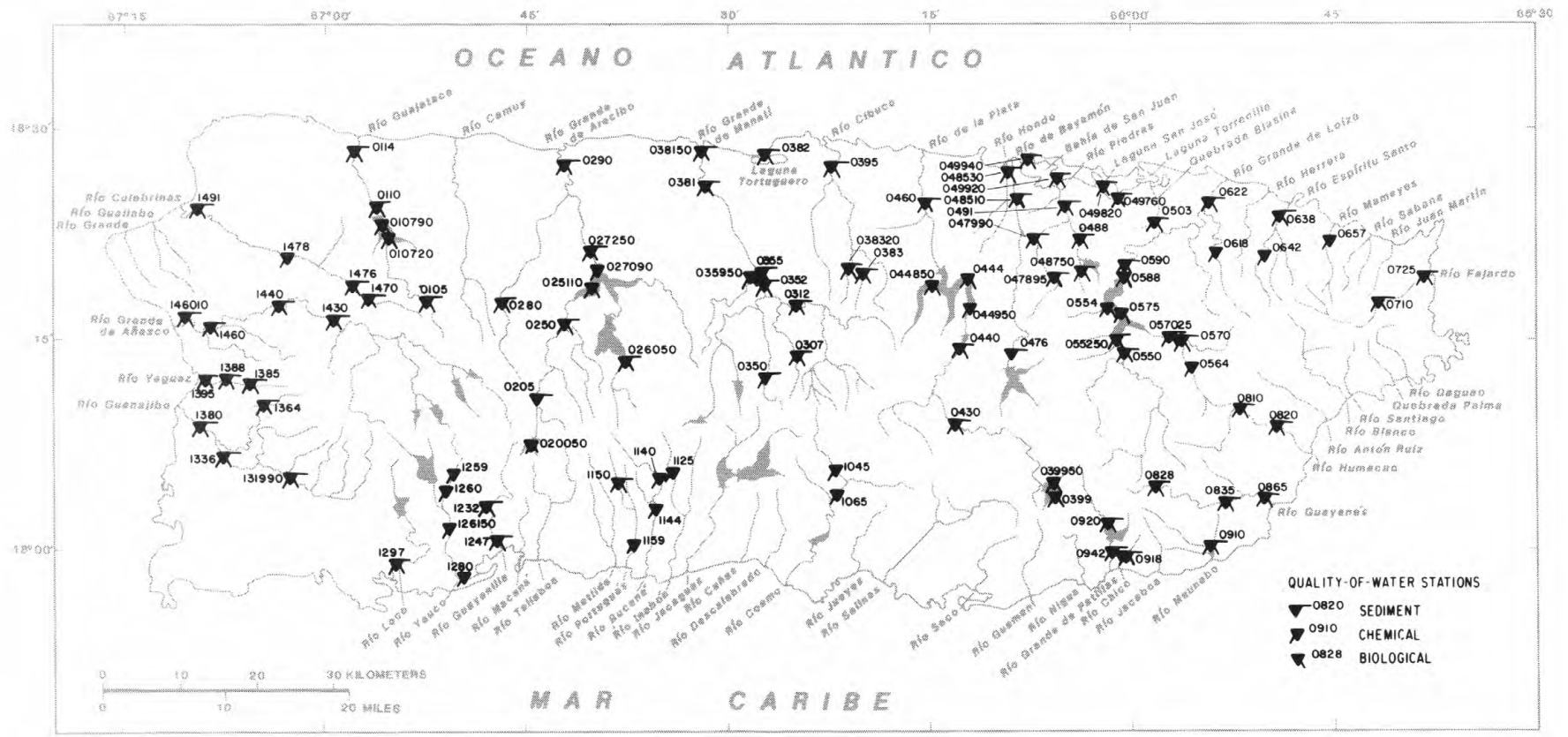

Figure 3.--Location of water-quality stations.

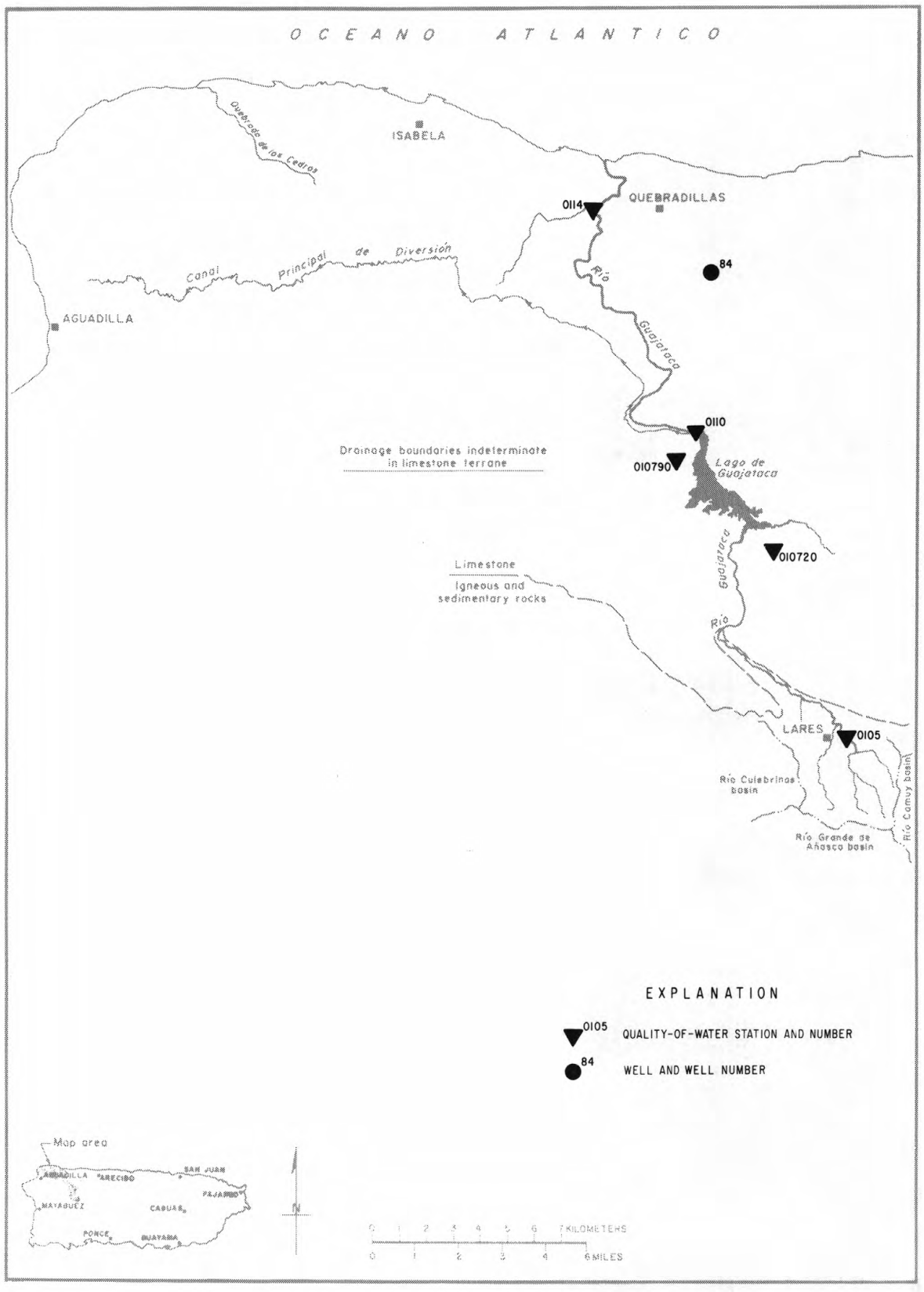

Figure 4.--Río Guajataca basin.

50010500 RIO GUAJATACA AT LARES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°18'01, long 66°52'24", at bridge on Highway 111 (km 32.9), 0.1 mi (0.2 km) upstream from Quebrada Anón, and 0.4 mi (0.6 km) northeast of Lares.

DRAINAGE AREA.--3.16 sq mi (8.18 sq km).

PERIOD OF RECORD.--Water years 1958-71, 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 to SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
11...	1150	7.9	249	7.6	25.0	--	8.4	--	1.0	16000	5100	3400
DEC												
13...	1300	1.8	240	7.5	22.0	--	5.0	--	7.5	320000	70000	41000
FEB , 1979												
01...	0900	E.50	210	7.2	19.5	--	4.3	--	2.8	190000	13000	70000
APR												
05...	0910	E1.5	268	7.3	21.0	--	8.0	--	.9	8200	1100	1600
JUN												
14...	1225	14	247	7.9	23.5	--	8.5	--	.6	27000	5000	5800
AUG												
08...	0915	3.3	294	7.9	23.0	--	7.6	--	2.7	70000	41000	11000
NOV												
28...	1540	5.1	210	7.8	22.5	2.0	8.3	50	.6	--	25000	4500
JAN , 1980												
15...	1445	E.70	241	7.8	22.5	.20	8.3	3	.9	--	3200	3700
MAR												
26...	1145	E.30	224	8.1	23.5	.15	9.0	16	2.1	--	3500	1700
MAY												
08...	0820	.63	260	7.7	23.0	2.6	8.6	11	3.3	--	700	1300
JUL												
15...	1015	2.4	269	7.8	24.0	1.2	8.4	2	10	--	1600	290
SEP												
04...	0805	4.5	256	7.6	23.0	3.7	8.4	--	3.1	--	12000	83000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
11...	100	3	31	5.8	11	.5	2.5	120	0	98	4.8
DEC											
13...	90	0	26	6.0	14	.6	2.9	128	0	105	6.5
FEB , 1979											
01...	94	0	27	6.5	13	.6	2.0	120	0	98	12
APR											
05...	110	0	31	7.0	15	.6	2.3	130	0	107	10
JUN											
14...	98	0	31	5.1	11	.5	2.0	120	0	98	2.4
AUG											
08...	120	0	37	6.1	12	.5	2.0	150	0	123	3.0
NOV											
28...	--	--	--	--	--	--	--	116	0	95	2.9
JAN , 1980											
15...	100	0	30	6.2	14	.6	2.1	133	0	110	3.4
MAR											
26...	--	--	--	--	--	--	--	120	0	98	1.5
MAY											
08...	--	--	--	--	--	--	--	140	0	110	4.5
JUL											
15...	--	--	--	--	--	--	--	138	0	110	3.5
SEP											
04...	110	5	33	6.4	12	.5	2.6	130	0	107	5.2

E Estimated.

50010500 RIO GUAJATACA AT LARES, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
11...	11	10	.2	29	165	160	3.5	--	1.4	.010	1.4
DEC											
13...	6.8	12	.2	34	165	165	.80	--	.84	.050	.89
FEB , 1979											
01...	12	9.7	.2	27	167	157	.23	--	.45	.050	.50
APR											
05...	14	11	.1	26	174	170	.70	--	.36	.010	.37
JUN											
14...	10	9.4	.1	26	261	154	9.6	--	1.6	.010	1.6
AUG											
08...	10	11	.2	29	--	181	1.6	--	.98	.020	1.0
NOV											
28...	--	--	--	--	--	--	--	--	1.5	.000	1.5
JAN , 1980											
15...	8.0	11	.1	32	--	169	.32	6	.97	.020	.99
MAR											
26...	--	--	--	--	--	--	--	--	.66	.010	.67
MAY											
06...	--	--	--	--	--	--	--	9	.49	.000	.49
JUL											
15...	--	--	--	--	--	--	--	--	1.2	.050	1.2
SEP											
04...	8.2	11	.2	30	--	166	2.0	--	1.4	.020	1.4

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
11...	.010	.19	.20	1.6	7.1	.050	.040	--	--	--	--
DEC											
13...	1.60	2.0	3.60	4.5	20	.230	.110	2	--	2	<20
FEB , 1979											
01...	.530	.46	.99	1.5	6.6	.090	.070	--	--	--	--
APR											
05...	.070	.18	.25	.62	2.7	.050	.030	--	--	--	--
JUN											
14...	.010	.13	.14	1.7	7.7	.060	.040	--	--	--	--
AUG											
08...	.350	.43	.78	1.8	7.9	.120	.050	3	--	<2	20
NOV											
28...	.060	.41	.47	2.0	8.7	.080	--	--	--	--	--
JAN , 1980											
15...	.020	.18	.20	1.2	5.3	.080	--	--	--	--	--
MAR											
26...	.060	.07	.13	.80	3.5	.010	--	3	<50	0	6
MAY											
08...	.010	.25	.26	.75	3.3	.040	--	--	--	--	--
JUL											
15...	.080	.05	.13	1.3	5.9	.070	--	--	--	--	--
SEP											
04...	.410	.33	.74	2.1	9.5	.100	--	--	--	--	--

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
11...	--	--	--	--	--	--	--	--	--	1	.02
DEC											
13...	ND	140	5	160	<.5	<1	ND	20	--	0	.00
FEB , 1979											
01...	--	--	--	130	--	--	--	--	2.2	4	.01
APR											
05...	--	--	--	250	--	--	--	--	4.5	7	.03
JUN											
14...	--	--	--	--	--	--	--	--	5.0	9	.33
AUG											
08...	4	280	7	110	<.5	<1	ND	30	2.7	9	.08
NOV											
28...	--	--	--	--	--	--	--	--	--	8	.11
JAN , 1980											
15...	--	--	--	--	--	--	--	--	--	1	--
MAR											
26...	--	--	1	--	.1	0	0	--	--	0	--
MAY											
08...	--	--	--	--	--	--	--	--	--	2	.00
JUL											
15...	--	--	--	--	--	--	--	--	--	4	.03
SEP											
04...	--	--	--	--	--	--	--	--	--	6	.07

ND Looked for but not detected.

50011000 CANAL PRINCIPAL DE DIVERSIONES AT LAGO GUAJATACA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'02", long 66°55'27", off Highway 476 at Lago Guajataca outlet, 3.0 mi (4.8 km) southwest of Segunda Unidad Baldorioty de Castro, and 5.3 mi (8.5 km) south of Quebradillas Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 19580-64, 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
11...	1500	45	290	6.8	27.0	--	3.7	--	1.8	100	28	16
DEC												
15...	0900	40	240	7.7	25.0	--	5.8	--	.9	19	6	8
FEB , 1979												
12...	1330	60	284	7.6	25.5	--	6.4	--	1.2	800	4	38
APR												
05...	1030	45	304	7.6	25.0	--	5.0	--	.9	28	0	5
JUN												
21...	0930	40	348	7.0	25.0	--	1.2	--	.8	590	44	14
AUG												
15...	1340	70	320	7.1	26.5	--	2.8	--	1.2	29	18	15
NOV												
29...	1450	50	294	7.2	24.0	1.0	7.0	14	1.9	--	110	280
JAN , 1980												
18...	1110	40	275	7.7	25.0	.20	8.5	13	4.0	--	10	6
MAR												
26...	1400	70	212	8.5	26.0	.20	9.6	9	1.8	--	2	6
MAY												
15...	1115	E45	288	7.5	27.0	--	7.0	--	2.2	--	54	13
JUL												
16...	1325	50	310	7.4	26.0	.90	6.8	18	2.3	--	9	8
SEP												
09...	1400	50	288	7.3	27.0	1.4	7.0	22	2.2	--	110	36

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
11...	130	1	46	3.4	5.0	.2	1.8	156	0	128	40
DEC											
15...	130	1	46	3.5	5.2	.2	1.7	162	0	133	5.2
FEB , 1979											
12...	140	8	50	3.5	5.4	.2	1.6	160	0	131	6.4
APR											
05...	140	2	50	4.1	6.7	.2	1.7	170	0	139	6.8
JUN											
21...	160	17	60	3.5	6.4	.2	1.5	180	0	148	29
AUG											
15...	160	11	58	3.3	5.0	.2	1.4	180	0	148	23
NOV											
29...	--	--	--	--	--	--	--	173	0	140	17
JAN , 1980											
18...	140	3	52	3.2	5.0	.2	1.5	171	0	140	5.5
MAR											
26...	--	--	--	--	--	--	--	160	2	136	.8
MAY											
15...	130	1	47	3.7	6.6	.3	1.5	160	0	130	8.1
JUL											
16...	--	--	--	--	--	--	--	172	0	140	11
SEP											
09...	150	13	55	3.6	4.9	.2	1.5	170	0	139	14

E Estimated.

50011000 CANAL PRINCIPAL DE DIVERSIONES AT LAGO GUAJATACA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
11...	8.6	7.4	.1	3.3	165	153	20.0	--	.00	.010	.01
DEC											
15...	9.2	7.8	.1	4.4	167	160	18.0	--	.03	<.010	.03
FEB , 1979											
12...	8.1	8.1	.1	7.1	168	163	27.2	--	.02	.020	.04
APR											
05...	10	9.1	.1	6.5	173	172	21.0	--	.02	<.010	.02
JUN											
21...	11	8.9	.1	6.5	223	187	24.1	--	.63	<.010	.63
AUG											
15...	12	8.3	.1	6.4	--	183	34.6	--	.14	.010	.15
NOV											
29...	--	--	--	--	--	--	--	--	.03	.030	.06
JAN , 1980											
18...	7.5	7.5	.1	6.5	--	168	18.1	6	.00	.000	.00
MAR											
26...	--	--	--	--	--	--	--	--	.00	.000	.00
MAY											
15...	12	9.1	.1	6.6	--	165	20.0	--	--	--	--
JUL											
16...	--	--	--	--	--	--	--	--	.12	.000	.12
SEP											
09...	7.8	7.5	.1	6.7	--	171	23.1	0	.03	.010	.04

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
11...	.220	.31	.53	.54	2.4	.020	<.010	--	--	--	--
DEC											
15...	.090	.24	.33	.36	1.6	.010	.010	1	--	<2	30
FEB , 1979											
12...	.030	.22	.25	.29	1.3	<.010	<.010	--	--	--	--
APR											
05...	.070	.21	.28	.30	1.3	.010	<.010	--	--	--	--
JUN											
21...	.010	.27	.28	.91	4.0	.010	<.010	--	--	--	--
AUG											
15...	.060	.14	.20	.35	1.6	.010	.010	2	--	12	20
NOV											
29...	.100	.24	.34	.40	1.8	.010	--	--	--	--	--
JAN , 1980											
18...	.020	.42	.44	.44	1.9	.010	--	--	--	--	--
MAR											
26...	.010	.00	.01	.01	.04	.030	--	2	<50	0	5
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
JUL											
16...	.060	.15	.21	.33	1.5	.030	--	--	--	--	--
SEP											
09...	.180	.69	.87	.91	4.0	.000	--	2	100	0	12

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
11...	--	--	--	--	--	--	--	--	--	1	.12
DEC											
15...	ND	40	6	30	<.5	<1	ND	20	--	2	.22
FEB , 1979											
12...	--	--	--	20	--	--	--	--	3.2	2	.32
APR											
05...	--	--	--	30	--	--	--	--	11	10	1.2
JUN											
21...	--	--	--	--	--	--	--	--	5.6	4	.43
AUG											
15...	3	90	2	40	<.5	<1	ND	20	4.0	2	.38
NOV											
29...	--	--	--	--	--	--	--	--	--	4	.54
JAN , 1980											
18...	--	--	--	--	--	--	--	--	--	0	.00
MAR											
26...	--	--	2	--	.1	0	0	--	--	5	.94
MAY											
15...	--	--	--	--	--	--	--	--	--	20	--
JUL											
16...	--	--	--	--	--	--	--	--	--	8	1.1
SEP											
09...	--	--	1	--	<.1	0	0	--	--	13	1.8

ND Looked for but not detected.

50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR

LOCATION.--Lat 18°28'31", long 66°57'46", at ford, 1.7 mi (2.7 km) upstream from bridge on Highway 2, 2.1 mi (3.4 km) from the Atlantic Ocean, 6.6 mi (10.6 km) downstream from Lago Guajataca, and 1.6 mi (2.6 km) west of Quebradillas.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
11...	1640	246	312	7.9	27.0	--	7.8	--	1.1	1500	320	490
DEC												
15...	1020	16	391	7.4	23.5	--	6.4	--	.4	2800	850	1800
FEB , 1979												
12...	1130	9.7	368	7.4	24.0	--	8.0	--	1.0	1400	20	126
APR												
05...	1200	8.4	402	7.1	25.0	--	5.0	--	.3	3500	26	110
JUN												
21...	1115	303	340	8.1	25.0	--	7.8	--	.2	5600	350	510
AUG												
15...	1120	21	382	7.3	27.0	--	8.6	--	.8	1200	70	330
NOV												
29...	1315	45	357	7.7	24.0	1.0	8.3	0	1.1	--	70	350
JAN , 1980												
18...	0900	14	394	7.3	21.0	.20	6.2	20	3.8	--	146	290
MAR												
27...	1355	E15	360	7.8	27.0	.10	7.0	91	1.5	--	300	320
MAY												
15...	0850	26	384	7.5	24.0	--	6.4	--	1.2	--	620	450
JUL												
16...	1200	21	416	7.7	26.0	.80	8.8	E	2.9	--	250	74
SEP												
09...	1130	19	402	7.5	26.0	.90	8.3	37	2.1	--	210	250

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
11...	150	10	54	3.5	5.1	.2	1.7	170	0	139	3.4
DEC											
15...	170	7	60	5.7	10	.3	1.4	203	0	167	13
FEB , 1979											
12...	180	9	63	5.8	9.0	.3	1.2	210	0	172	13
APR											
05...	220	19	72	8.8	17	.5	1.3	240	0	197	31
JUN											
21...	170	10	61	3.4	6.1	.2	1.4	190	0	156	2.4
AUG											
15...	180	20	65	5.3	9.4	.3	1.1	200	0	164	16
NOV											
29...	--	--	--	--	--	--	--	204	0	170	6.5
JAN , 1980											
18...	200	11	68	6.2	13	.4	1.1	225	0	180	18
MAR											
27...	--	--	--	--	--	--	--	220	0	180	5.6
MAY											
15...	170	30	62	4.7	9.7	.3	3.0	176	0	140	8.9
JUL											
16...	--	--	--	--	--	--	--	215	0	180	6.9
SEP											
09...	--	--	--	--	--	--	--	222	0	182	11

E Estimated.

50011400 RIO GUAJATACA ABOVE MOUTH NEAR QUEBRADILLAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 to SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
11...	11	8.1	.1	4.2	172	172	114	--	.30	.020	.32
DEC											
15...	8.2	17	.1	5.5	220	208	9.3	--	1.3	<.010	1.3
FEB , 1979											
12...	6.5	16	.1	5.3	218	210	5.7	--	1.0	<.010	1.0
APR											
05...	8.2	30	<.1	6.2	286	262	6.5	--	1.7	.010	1.7
JUN											
21...	11	9.9	.1	6.3	223	193	182	--	.59	<.010	.59
AUG											
15...	8.1	18	.1	6.3	--	212	12.0	--	1.1	.010	1.1
NOV											
29...	--	--	--	--	--	--	--	--	1.2	.040	1.2
JAN , 1980											
18...	8.0	21	.1	6.0	--	234	8.9	4	1.2	.000	1.2
MAR											
27...	--	--	--	--	--	--	--	--	.94	.010	.95
MAY											
15...	26	17	.1	6.4	--	216	15.4	--	--	--	--
JUL											
16...	--	--	--	--	--	--	--	--	1.3	.010	1.3
SEP											
09...	--	--	--	--	--	--	--	0	1.3	.010	1.3

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL, RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
11...	<.010	.26	.26	.58	2.6	.010	<.010	--	--	--	--
DEC											
15...	<.010	.04	.04	1.3	5.9	<.010	<.010	1	--	<2	<20
FEB , 1979											
12...	.050	.07	.12	1.1	5.0	<.010	<.010	--	--	--	--
APR											
05...	.010	.11	.11	1.8	8.0	<.010	<.010	--	--	--	--
JUN											
21...	.010	.26	.27	.86	3.8	.020	<.010	--	--	--	--
AUG											
15...	.010	.00	.01	1.1	4.9	<.010	--	1	--	2	20
NOV											
29...	.010	.27	.28	1.5	6.6	.010	--	--	--	--	--
JAN , 1980											
18...	.000	.27	.27	1.5	6.5	.010	--	--	--	--	--
MAR											
27...	.030	.10	.13	1.1	4.8	.020	--	1	50	0	4
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
JUL											
16...	.020	.03	.05	1.4	6.0	.010	--	--	--	--	--
SEP											
09...	.010	.12	.13	1.4	6.3	.000	--	1	<50	0	1

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
11...	--	--	--	--	--	--	--	--	--	3	2.0
DEC											
15...	ND	50	3	30	<.5	<1	ND	20	--	5	.21
FEB , 1979											
12...	--	--	--	<10	--	--	--	--	1.0	8	.21
APR											
05...	--	--	--	20	--	--	--	--	6.1	18	.41
JUN											
21...	--	--	--	--	--	--	--	--	7.6	31	25
AUG											
15...	3	160	2	20	<.5	<1	ND	<20	2.5	3	.17
NOV											
29...	--	--	--	--	--	--	--	--	--	8	.97
JAN , 1980											
18...	--	--	--	--	--	--	--	--	--	13	.49
MAR											
27...	--	--	0	--	.1	0	0	--	--	27	.00
MAY											
15...	--	--	--	--	--	--	--	--	--	20	1.4
JUL											
16...	--	--	--	--	--	--	--	--	--	15	.85
SEP											
09...	--	--	0	--	.1	0	0	--	--	4	.21

ND Looked for but not detected.

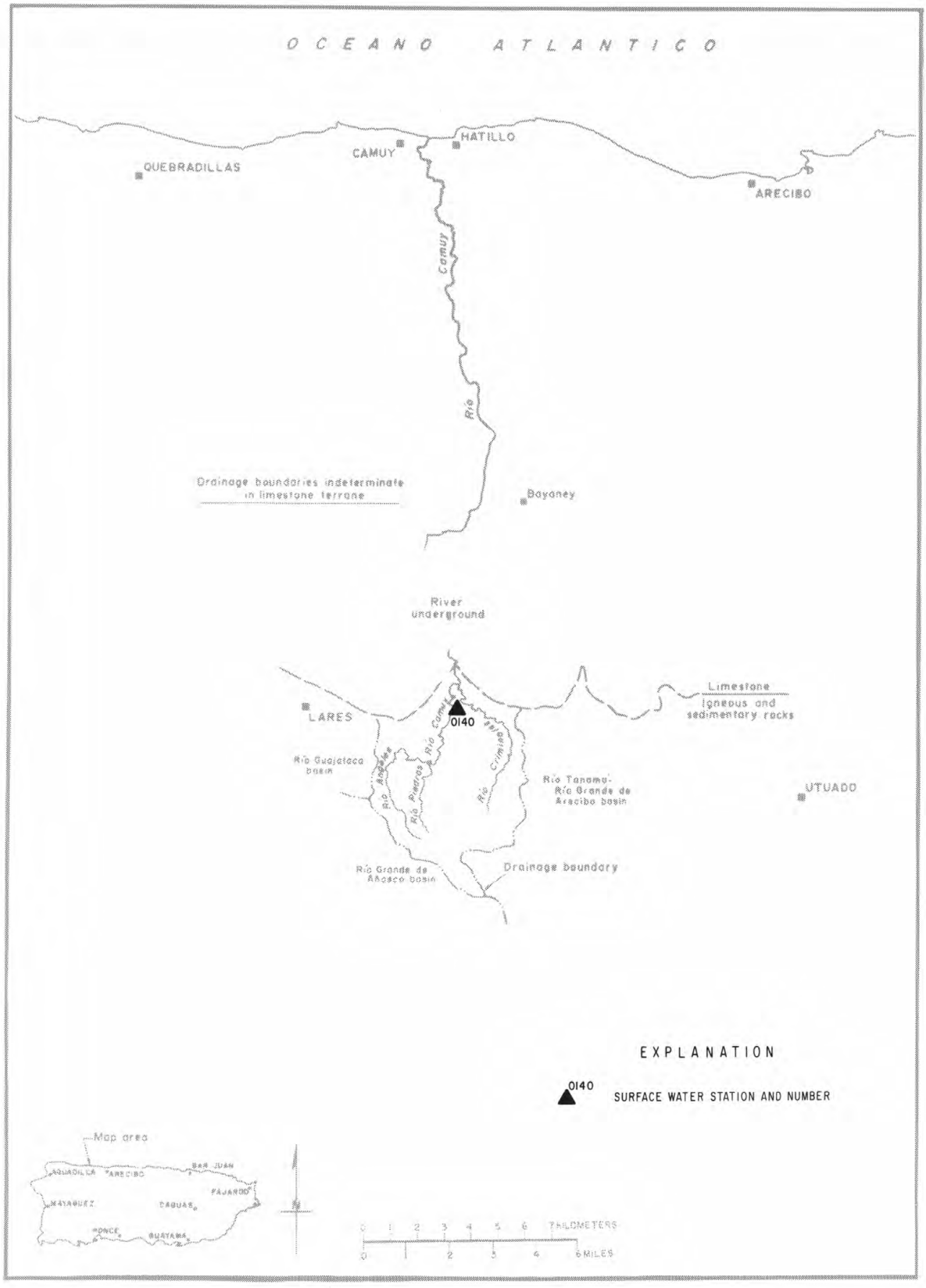

Figure 5.--Río Camuy basin.

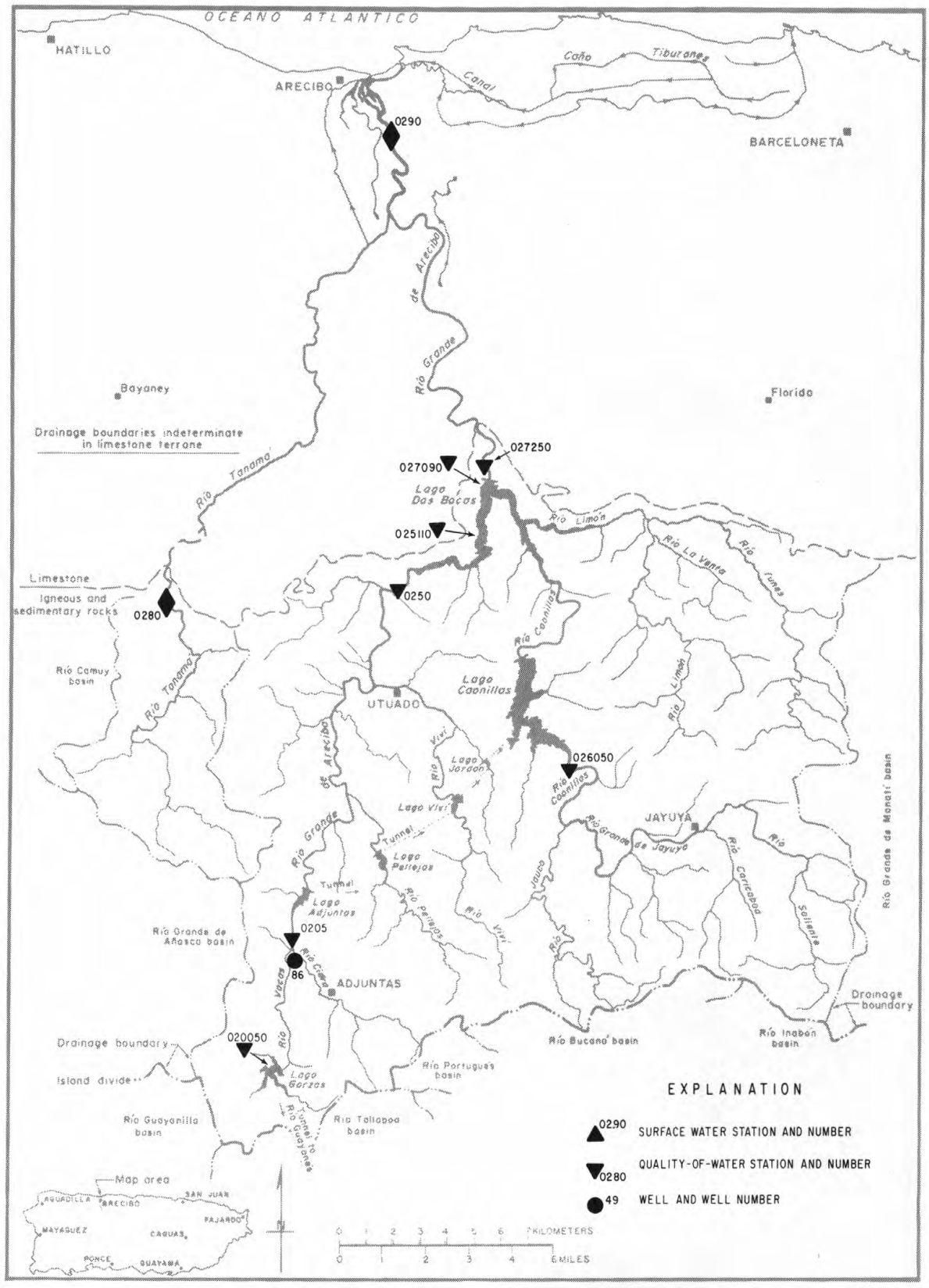

Figure 6.--Río Grande de Arecibo basin.

50020500 RIO GRANDE DE ARECIBO NEAR ADJUNTAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°10'54", long 66°44'12", at Highway 135 bridge, 1.0 mi (1.6 km) upstream from Lago Adjuntas, and 1.5 mi (2.4 km) northwest of Adjuntas.

DRAINAGE AREA.--12.7 sq mi (32.9 sq km) this does not include 6.03 sq mi (15.6 sq km) above Lago Garzas.

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: April 1969 to December 1974, November 1979 to current year.
SEDIMENT RECORDS: August 1969 to November 1972, November 1979 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
27...	1545	40	315	7.6	22.0	1.0	8.0	25	6.4	18000	3700	--
JAN , 1980												
16...	0815	18	245	7.5	16.0	.30	8.8	0	2.5	560	1500	110
MAR												
27...	1015	12	286	7.7	21.5	2.5	9.3	3	1.5	2100	520	--
MAY												
20...	1015	51	201	7.6	22.0	--	7.4	10	2.1	3000	700	73
JUL												
16...	1035	24	276	7.9	23.0	.55	7.8	8	3.2	3500	300	--
SEP												
10...	1015	23	288	8.3	24.5	1.0	8.0	--	3.0	2100	820	100

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
27...	--	--	--	--	--	--	113	0	93	4.5	--	--
JAN , 1980												
16...	2	28	9.3	15	.6	1.6	130	0	110	6.6	7.5	16
MAR												
27...	--	--	--	--	--	--	130	0	110	4.2	--	--
MAY												
20...	6	18	6.7	12	.6	1.8	81	0	66	3.3	6.2	13
JUL												
16...	--	--	--	--	--	--	107	0	88	2.2	--	--
SEP												
10...	10	26	9.5	20	.9	2.2	115	0	94	.9	7.5	27

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
27...	--	--	--	--	--	1.1	.070	1.2	.130	.44	.57	1.8
JAN , 1980												
16...	.1	27	169	8.2	16	1.0	.070	1.1	.110	.30	.41	1.5
MAR												
27...	--	--	--	--	--	.72	.030	.75	.050	.06	.11	.86
MAY												
20...	.1	25	123	17.0	--	--	--	--	--	--	--	--
JUL												
16...	--	--	--	--	--	.47	.020	.49	.000	.19	.19	.68
SEP												
10...	.1	35	184	11.3	--	1.1	.060	1.2	.080	.30	.38	1.6

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
27...	7.8	.110	--	--	--	--	--	--	--	--	252	27
JAN , 1980												
16...	6.7	.070	--	--	--	--	--	--	--	--	2	.10
MAR												
27...	3.8	.130	1	50	0	5	0	.8	0	0	2	.06
MAY												
20...	--	--	--	--	--	--	--	--	--	--	18	2.5
JUL												
16...	3.0	.080	--	--	--	--	--	--	--	--	5	.32
SEP												
10...	7.0	.080	1	100	0	1	1	<.1	0	0	4	.25

50025000 RIO GRANDE DE ARECIBO NEAR UTUADO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°18'11", long 66°41'59", at foot bridge near Highway 10 at km 56.4, 0.5 mi (0.8 km)) downstream from Río de Caguana, and 2.5 mi (4.0 km) north of Utuado.

DRAINAGE AREA.--66 sq mi (171 sq km) this excludes 6 sq mi (16 sq km) upstream from Lago Garzas, which is a diversion to Río Guayanés in the Río Tallaboa basin.

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: February 1959 to December 1974, November 1979 to current year.
SEDIMENT RECORDS: November 1959 to December 1966, February 1968 to April 1971, November 1979 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
28...	1305	135	253	7.9	26.0	10	7.8	31	1.3	68000	2400	--
JAN , 1980												
15...	1100	76	253	7.6	20.0	.60	8.6	36	4.1	100000	26000	100
MAR												
17...	1400	44	259	8.1	27.5	.45	9.2	3	1.7	1300	210	--
MAY												
07...	1410	60	252	8.4	33.0	6.1	8.6	16	3.7	860	170	--
JUL												
11...	1030	136	241	7.4	28.0	1500	7.8	220	8.0	600000	150000	--
SEP												
03...	1125	151	190	7.7	25.0	130	8.6	--	3.3	46000	27000	82

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
28...	--	--	--	--	--	--	98	0	80	2.0	--	--
JAN , 1980												
15...	15	27	8.3	15	.6	1.8	106	0	87	4.3	26	13
MAR												
17...	--	--	--	--	--	--	110	0	90	1.4	--	--
MAY												
07...	--	--	--	--	--	--	103	2	88	.7	--	--
JUL												
11...	--	--	--	--	--	--	140	0	110	8.9	--	--
SEP												
03...	28	21	7.2	5.1	.2	4.0	72	0	59	2.3	13	11

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
28...	--	--	--	--	--	1.3	.050	1.3	.030	.36	.39	1.7
JAN , 1980												
15...	.1	30	173	35.5	48	1.2	.040	1.2	.290	.27	.56	1.8
MAR												
17...	--	--	--	--	--	.99	.110	1.1	.130	.45	.58	1.7
MAY												
07...	--	--	--	--	17	.84	.070	.91	.030	.10	.13	1.0
JUL												
11...	--	--	--	--	--	.37	.830	1.2	.340	39	39.0	40
SEP												
03...	.1	21	127	51.8	--	1.5	.050	1.5	.120	.98	1.10	2.6

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
28...	7.5	.170	--	--	--	--	--	--	--	--	69	25
JAN , 1980												
15...	7.8	.060	--	--	--	--	--	--	--	--	68	14
MAR												
17...	7.4	.210	1	<50	1	10	0	<.1	0	0	16	1.9
MAY												
07...	4.6	.170	--	--	--	--	--	--	--	--	31	5.0
JUL												
11...	180	2.40	--	--	--	--	--	--	--	--	31200	11500
SEP												
03...	12	.940	0	300	0	30	34	.2	1	0	1160	473

50026050 RIO CAONILLAS ABOVE LAGO CAONILLAS NEAR JAYUYA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°13'26", long 66°38'22", 300 ft (91.4 m) off Highway 531, 700 ft (213 m) upstream from Lago Caonillas, 3.3 mi (5.3 km) northwest of Jayuya.

DRAINAGE AREA.--40.4 sq mi (105 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (CELS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
28...	1030	92	178	7.9	21.5	1.0	8.7	26	1.1	4200	450	--
JAN , 1980												
15...	1410	44	201	8.9	22.0	.21	9.3	6	2.9	150	140	80
MAR												
18...	0950	29	208	7.1	23.0	.55	9.3	7	1.6	390	100	--
MAY												
13...	1200	45	185	8.2	25.0	32	8.6	11	2.2	12000	1700	66
JUL												
22...	1315	48	153	8.1	28.5	1.4	8.0	11	2.0	590	150	--
SEP												
23...	1205	127	138	7.8	25.0	1.5	8.5	--	2.5	2600	560	49

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
28...	--	--	--	--	--	--	74	0	61	1.5	--	--
JAN , 1980												
15...	5	21	6.8	12	.6	1.3	70	11	76	.2	15	11
MAR												
18...	--	--	--	--	--	--	86	0	71	11	--	--
MAY												
13...	0	17	5.7	11	.6	1.7	80	0	66	.8	12	10
JUL												
22...	--	--	--	--	--	--	84	0	69	1.1	--	--
SEP												
23...	3	12	4.6	7.9	.5	1.2	56	0	46	1.4	10	7.6

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
28...	--	--	--	--	--	.84	.000	.84	.000	.40	.40	1.2
JAN , 1980												
15...	.1	9.6	122	14.5	20	.36	.010	.37	.030	.47	.50	.87
MAR												
18...	--	--	--	--	--	.63	.160	.79	1.40	1.0	2.40	3.2
MAY												
13...	.1	20	117	14.2	30	.34	.020	.36	.010	.25	.26	.62
JUL												
22...	--	--	--	--	--	.29	.010	.30	.010	.18	.19	.49
SEP												
23...	.1	23	94	32.2	16	.54	.000	.54	.020	.34	.36	.90

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
28...	5.5	.050	--	--	--	--	--	--	--	--	7	1.7
JAN , 1980												
15...	3.9	.040	--	--	--	--	--	--	--	--	4	.48
MAR												
18...	14	.610	1	<50	1	20	0	<.1	0	0	306	24
MAY												
13...	2.7	.090	--	--	--	--	--	--	--	--	51	6.2
JUL												
22...	2.2	.060	--	--	--	--	--	--	--	--	7	.91
SEP												
23...	4.0	.070	0	100	0	5	1	.1	0	0	16	5.5

50027250 RIO GRANDE DE ARECIBO BELOW LAGO DOS BOCAS NEAR FLORIDA, PR

LOCATION.--Lat 18°20'50", long 66°40'02", at pedestrian bridge, 0.7 mi (1.1 km) north of Lago Dos Bocas and 6.6 mi (10.6 km) west of Florida Plaza.

DRAINAGE AREA.--169 sq mi (436 sq km) does not include 6.03 sq mi (15.6 sq km) above Lago Garzas.

PERIOD OF RECORD.--
CHEMICAL ANALYSES: February 1970 to February 1971, January 1974 to current year.
SEDIMENT RECORDS: March 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
23...	1020	15	287	7.4	26.0	--	6.8	--	.8	2100	10	250
DEC												
20...	0950	E25	192	7.2	25.0	--	5.9	--	1.4	1600	200	370
JAN , 1979												
31...	0945	E475	194	7.2	24.0	--	6.1	--	2.3	540000	1600	1500
APR												
04...	1215	E15	182	7.1	24.5	--	8.0	--	1.6	270	32	62
JUN												
13...	1435	E800	156	7.2	24.5	--	8.6	--	1.5	190000	3500	8000
AUG												
07...	1400	E1200	196	7.2	26.0	--	3.0	--	.9	400	90	90
NOV												
29...	1425	E850	178	6.3	26.0	4.0	6.2	24	1.5	--	200	90
JAN , 1980												
29...	1415	31	198	7.8	25.5	.80	8.0	4	2.1	--	16	24
MAR												
14...	1040	E125	208	7.1	24.0	2.0	4.2	8	1.4	--	64	68
MAY												
07...	1140	18	197	8.0	28.0	18	8.9	3	3.1	--	126	34
JUL												
11...	1330	17	184	7.8	30.0	3.3	8.5	12	3.7	--	116	58
SEP												
16...	1015	E500	184	7.2	27.5	21	4.1	5	1.7	--	120	80

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
23...	75	13	20	6.0	5.8	.5	2.3	75	0	62	4.8
DEC											
20...	80	10	21	6.6	11	.5	2.2	85	0	70	8.6
JAN , 1979											
31...	86	17	22	7.6	11	.5	2.4	84	0	69	8.5
APR											
04...	69	13	19	5.2	9.6	.5	2.2	68	0	56	8.6
JUN											
13...	59	4	16	4.7	8.0	.5	2.0	68	0	56	6.9
AUG											
07...	68	0	18	5.5	9.6	.5	1.8	82	0	67	8.3
NOV											
29...	--	--	--	--	--	--	--	46	0	38	37
JAN , 1980											
29...	74	0	20	5.9	11	.6	1.8	90	0	74	2.3
MAR											
14...	--	--	--	--	--	--	--	88	0	72	11
MAY											
07...	--	--	--	--	--	--	--	82	0	67	1.3
JUL											
11...	--	--	--	--	--	--	--	81	0	66	2.1
SEP											
16...	62	0	16	5.3	10	.6	2.2	78	0	64	7.9

E Estimated.

50027250 RIO GRANDE DE ARECIBO BELOW LAGO DOS BOCAS NEAR FLORIDA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
23...	13	8.4	.1	19	121	116	4.9	--	.51	.010	.52
DEC											
20...	14	10	.1	18	132	125	8.9	--	.33	.020	.35
JAN , 1979											
31...	14	11	.1	22	134	132	163	--	.40	.010	.41
APR											
04...	11	10	.1	16	112	107	4.5	--	.71	.050	.76
JUN											
13...	11	7.9	.1	18	110	101	238	--	.90	.050	.95
AUG											
07...	12	10	.1	20	--	117	375	--	.39	<.010	.39
NOV											
29...	--	--	--	--	--	--	--	--	1.1	.020	1.1
JAN , 1980											
29...	12	12	.1	21	--	128	10.7	1	.34	.010	.35
MAR											
14...	--	--	--	--	--	--	--	--	--	--	--
MAY											
07...	--	--	--	--	--	--	--	16	.39	.010	.40
JUL											
11...	--	--	--	--	--	--	--	--	.41	.010	.42
SEP											
16...	12	10	.0	15	--	109	147	11	.43	.010	.44

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
23...	<.010	.10	.10	.62	2.7	.020	<.010	--	--	--	--
DEC											
20...	.060	.07	.13	.48	2.1	.010	.010	<1	--	<2	<20
JAN , 1979											
31...	.030	.19	.22	.63	2.8	.020	.010	--	--	--	--
APR											
04...	.070	.23	.30	1.1	4.7	.030	.010	--	--	--	--
JUN											
13...	.020	.60	.62	1.6	7.0	.110	.040	--	--	--	--
AUG											
07...	<.010	.18	.18	.57	2.5	.020	.010	1	--	ND	<20
NOV											
29...	.010	.35	.36	1.5	6.5	.040	--	--	--	--	--
JAN , 1980											
29...	.010	.11	.12	.47	2.1	.020	--	--	--	--	--
MAR											
14...	--	--	--	--	--	--	--	1	0	0	10
MAY											
07...	.000	.30	.30	.70	3.1	.040	--	--	--	--	--
JUL											
11...	.010	1.7	1.70	2.1	9.4	.030	--	--	--	--	--
SEP											
16...	.000	.22	.22	.66	2.9	.050	--	0	100	0	4

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
23...	--	--	--	--	--	--	--	--	--	4	.16
DEC											
20...	ND	230	6	120	<.5	<1	ND	40	--	2	.13
JAN , 1979											
31...	--	--	--	20	--	--	--	--	2.6	16	19
APR											
04...	--	--	--	30	--	--	--	--	2.6	11	.95
JUN											
13...	--	--	--	--	--	--	--	--	7.9	235	508
AUG											
07...	6	350	7	70	<.5	<1	ND	20	5.9	6	19
NOV											
29...	--	--	--	--	--	--	--	--	--	14	--
JAN , 1980											
29...	--	--	--	--	--	--	--	--	--	1	.08
MAR											
14...	--	--	0	--	<.1	0	0	--	--	6	--
MAY											
07...	--	--	--	--	--	--	--	--	--	16	.78
JUL											
11...	--	--	--	--	--	--	--	--	--	5	.23
SEP											
16...	--	--	5	--	.1	0	0	--	--	16	22

ND Looked for but not detected.

50028000 RIO TANAMA NEAR UTUADO, PR

LOCATION.--Lat 18°18'02", long 66°46'58", Hydrologic Unit 21010001, on downstream side of left abutment of bridge on Highway 111, 1.2 mi (1.9 km) upstream from natural tunnel, 1.5 mi (2.4 km) northeast of Angeles, and 5.8 mi (9.3 km) northwest of Utuado.

DRAINAGE AREA.--18.4 sq mi (47.7 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1944 to June 1958 (daily stage and two to four measurements per month by Puerto Rico Water Resources Authority), November 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 938.32 ft (286.000 m) above mean sea level. Prior to Nov. 17, 1966, non-recording gage and Nov. 17, 1966 to Sept. 30, 1978 recording gage, both at present site and datum 3.00 ft (0.914 m) higher.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--19 years (1961-79), 49.5 cu ft/s (1.402 cu m/s), 36.53 in/yr (928 mm/yr), 35,860 acre-ft/yr (44.2 cu hm/yr); median of yearly mean discharges, 48 cu ft/s (1.36 cu m/s), 34,800 acre-ft/yr (43 cu hm/yr).
--20 years (1961-80), 49.6 cu ft/s (1.405 cu m/s), 36.61 in/yr (897 mm/yr), 35,940 acre-ft/yr (44.3 cu hm/yr); median of yearly mean discharges, 48 cu ft/s (1.36 cu m/s), 34,800 acre-ft/yr (43 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,950 cu ft/s (253 cu m/s) May 17, 1963, gage height, 13.29 ft (4.051 m) datum then in use, from floodmark, from rating curve extended above 500 cu ft/s (14.2 cu m/s) on basis of slope-area measurement of peak flow; minimum, 6.6 cu ft/s (0.187 cu m/s) June 12, 1977, gage height, 0.12 ft (0.037 m) datum then in use.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,000 cu ft/s (85.0 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 3, 1978	1800	3,770	107	11.44	3.487
Oct. 4, 1978	1730	*6,060	172	13.85	4.221
May 12, 1979	1415	6,010	170	13.80	4.206
May 15, 1979	1630	4,960	140	12.77	3.892
June 11, 1979	1730	4,920	139	12.72	3.877
Aug. 31, 1979	0230	3,530	100	11.15	3.399
Sept. 14, 1979	1745	4,770	135	12.57	3.831
Sept. 29, 1979	1430	4,580	130	12.36	3.767
Oct. 8, 1979	1630	3,220	91.2	10.75	3.277
Apr. 25, 1980	1830	3,620	103	11.26	3.432
May 24, 1980	1645	*6,670	189	14.41	4.392
May 27, 1980	1630	6,150	174	13.94	4.249
Sept. 27, 1980	1645	4,210	119	11.95	3.642

Minimum discharges, 13 cu ft/s (0.368 cu m/s) Mar. 23-26, 1979; 16 cu ft/s (0.453 cu m/s) Mar. 24, 26-27, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	49	23	20	16	15	28	31	101	62	40	272
2	49	39	23	18	16	15	25	23	79	66	43	181
3	183	37	24	18	17	15	24	30	70	58	35	145
4	349	35	22	18	16	15	21	34	65	52	36	146
5	85	34	22	20	16	15	20	28	60	63	57	217
6	51	33	22	45	15	14	20	149	86	52	82	153
7	83	32	24	35	15	14	19	51	58	49	43	128
8	95	33	22	31	15	14	18	34	54	46	39	118
9	99	31	21	26	15	14	18	34	56	42	37	106
10	48	31	21	22	16	14	17	44	151	41	35	98
11	42	30	21	24	44	14	18	32	844	39	45	92
12	39	29	21	23	39	14	18	536	192	38	38	87
13	38	28	20	21	18	15	19	85	160	88	35	98
14	37	29	20	20	22	15	19	172	125	54	68	320
15	133	28	20	19	58	13	20	517	144	43	64	131
16	74	28	23	20	36	14	17	262	115	44	46	147
17	183	29	72	21	41	13	21	117	133	50	88	159
18	74	28	45	19	40	18	20	90	100	141	53	120
19	50	27	25	19	26	14	19	88	88	131	47	101
20	42	26	21	20	22	14	31	102	81	59	134	101
21	38	26	22	18	25	15	39	95	78	51	51	91
22	36	25	22	18	20	15	33	76	74	46	41	87
23	40	25	21	18	18	13	59	87	72	44	143	96
24	36	25	19	17	17	14	30	134	67	41	92	145
25	40	24	19	16	16	13	24	84	67	40	48	108
26	90	24	19	16	16	81	21	74	65	43	39	94
27	95	23	19	16	16	34	53	82	60	38	35	88
28	73	23	18	16	15	25	39	68	58	37	34	86
29	50	23	18	16	---	232	27	285	84	36	48	346
30	209	24	18	16	---	67	35	152	95	35	388	123
31	71	---	19	17	---	39	---	100	---	39	1440	---
TOTAL	2562	878	726	643	646	837	772	3696	3482	1668	3424	4184
MEAN	82.6	29.3	23.4	20.7	23.1	27.0	25.7	119	116	53.8	110	139
MAX	349	49	72	45	58	232	59	536	844	141	1440	346
MIN	30	23	18	16	15	13	17	23	54	35	34	86
CFSM	4.49	1.59	1.27	1.13	1.26	1.47	1.40	6.47	6.30	2.92	5.98	7.55
IN.	5.18	1.77	1.47	1.30	1.31	1.69	1.56	7.47	7.04	3.37	6.92	8.46
AC-FT	5080	1740	1440	1280	1280	1660	1530	7330	6910	3310	6790	8300

CAL YR 1978 TOTAL 14086 MEAN 38.6 MAX 349 MIN 14 CFSM 2.10 IN 28.48 AC-FT 27940
WTR YR 1979 TOTAL 23518 MEAN 64.4 MAX 1440 MIN 13 CFSM 3.50 IN 47.54 AC-FT 46650

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	53	36	33	22	19	18	29	83	44	130	39
2	144	51	36	31	21	19	18	27	74	38	46	61
3	137	45	57	30	21	19	17	26	67	37	35	46
4	106	46	54	29	21	21	18	25	64	41	52	80
5	112	64	39	29	36	89	18	25	59	42	40	53
6	98	56	36	28	46	50	23	24	57	42	32	39
7	139	114	35	29	28	53	19	24	58	38	30	47
8	229	61	34	29	24	31	105	50	55	47	29	159
9	154	50	34	29	55	24	123	33	51	56	37	54
10	113	46	35	32	43	22	73	25	68	47	31	40
11	98	45	35	29	28	21	75	23	110	38	27	53
12	103	43	33	30	25	21	80	23	71	35	54	45
13	87	43	33	29	23	20	50	26	67	34	38	40
14	80	40	34	27	22	20	37	27	50	34	29	52
15	76	41	33	27	21	19	33	27	45	33	27	85
16	74	39	33	27	20	19	29	28	42	53	44	52
17	71	47	33	26	20	19	28	44	41	38	32	157
18	68	51	34	26	19	19	27	65	40	96	30	65
19	74	44	33	25	19	19	27	111	38	50	54	47
20	68	59	55	25	19	19	27	72	37	38	34	69
21	90	88	38	26	19	18	24	47	94	42	28	90
22	70	51	33	24	19	17	24	38	55	34	37	55
23	61	71	36	24	23	17	26	87	104	31	28	120
24	59	72	69	24	25	17	26	326	69	31	60	90
25	69	49	52	28	20	17	199	122	51	30	46	86
26	56	47	36	26	19	17	96	71	46	29	34	60
27	56	42	34	24	20	54	58	787	42	30	64	439
28	55	40	33	23	21	33	44	255	41	28	158	156
29	52	39	33	23	20	20	33	211	39	27	70	158
30	55	37	33	23	---	19	30	130	66	27	46	180
31	52	---	32	22	---	18	---	100	---	28	44	---
TOTAL	2831	1574	1181	837	719	790	1405	2908	1784	1218	1446	2717
MEAN	91.3	52.5	38.1	27.0	24.8	25.5	46.8	93.8	59.5	39.3	46.6	90.6
MAX	229	114	69	33	55	89	199	787	110	96	158	439
MIN	52	37	32	22	19	17	17	23	37	27	27	39
CFSM	4.96	2.85	2.07	1.47	1.35	1.39	2.54	5.10	3.23	2.14	2.53	4.92
IN.	5.72	3.18	2.39	1.69	1.45	1.60	2.84	5.88	3.61	2.46	2.92	5.49
AC-FT	5620	3120	2340	1660	1430	1570	2790	5770	3540	2420	2870	5390

CAL YR 1979	TOTAL	24938	MEAN 68.3	MAX 1440	MIN 13	CFSM 3.71	IN 50.42	AC-FT	49460	
WTR YR 1980	TOTAL	19410	MEAN 53.0	MAX 787	MIN 17	CFSM 2.88	IN 39.24	AC-FT	38500	

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.—
CHEMICAL ANALYSIS: September 1958 to current year.
SEDIMENT RECORDS: August 1960 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: January 1968 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 20,400 mg/L November 27, 1968; minimum daily mean, 0.0 mg/L during many years.
SEDIMENT LOADS: Maximum daily, 110,000 tons (100,000 tonnes) November 27, 1968, minimum daily, 0.0 ton (0.0 tonne) during many years.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,670 mg/L August 31, 1979 and 3,190 mg/L May 27, 1980; minimum daily mean, 0.0 mg/L several days during 1979 and 1.0 mg/L January 4, 1980.
SEDIMENT LOADS: Maximum daily, 25,700 tons (23,300 tonnes) August 31, 1979 and 23,000 tons (20,900 tonnes) May 27, 1980; minimum daily, 0.0 ton (0.0 tonne) several days during 1979 and 0.08 ton (0.07 tonne) January 4, 1980.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
11...	1000	44	163	7.5	23.5	--	8.9	--	.9	3400	920	2100
DEC												
13...	1030	20	160	8.1	21.0	--	10.0	--	.6	600	230	290
JAN , 1979												
31...	1315	16	155	8.4	22.5	--	10.0	--	1.6	2000	50	180
APR												
04...	1400	22	167	7.9	25.0	--	9.0	--	1.3	440	90	230
JUN												
14...	1025	126	130	7.6	23.0	--	9.0	--	.2	28000	6900	2000
AUG												
07...	1545	41	167	8.1	26.0	--	8.0	--	.8	6400	1200	1300
NOV												
09...	1430	49	144	7.8	23.5	90	8.4	9	1.6	--	900	380
JAN , 1980												
15...	1205	21	149	8.1	21.0	1.2	9.2	11	2.2	--	60	130
MAR												
18...	1445	19	158	8.0	25.0	.60	9.4	5	1.8	--	70	250
APR												
30...	1445	31	156	8.3	25.0	5.4	8.6	14	3.4	--	370	280
JUL												
10...	1130	42	152	8.2	24.5	32	9.4	20	1.2	--	2100	2300
SEP												
03...	1550	43	132	7.5	25.0	36	8.5	--	3.0	--	10500	5800

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
11...	61	6	16	5.1	7.6	.4	2.3	67	0	55	3.4
DEC											
13...	62	3	15	6.0	8.3	.5	1.5	72	0	59	.9
JAN , 1979											
31...	70	11	18	6.2	8.4	.4	1.6	68	2	59	.5
APR											
04...	64	10	16	5.9	8.1	.4	1.9	66	0	54	1.3
JUN											
14...	48	7	12	4.3	7.2	.5	1.8	50	0	41	2.0
AUG											
07...	58	3	15	5.1	8.4	.5	1.6	68	0	56	.9
NOV											
09...	0	0	--	--	--	--	--	60	0	49	1.5
JAN , 1980											
15...	57	1	14	5.3	7.8	.5	1.4	68	0	56	.9
MAR											
18...	--	--	--	--	--	--	--	68	0	56	1.1
APR											
30...	--	--	--	--	--	--	--	68	0	56	.5
JUL											
10...	--	--	--	--	--	--	--	68	0	56	.7
SEP											
03...	--	--	--	--	--	--	--	50	0	41	2.5

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
11...	12	8.1	<.1	22	113	106	13.3	--	.86	.010	.87
DEC											
13...	13	7.2	.1	26	115	113	6.2	--	.57	<.010	.57
JAN , 1979											
31...	13	7.2	.1	24	117	114	5.1	--	.34	<.010	.34
APR											
04...	13	7.6	<.1	25	114	110	6.6	--	.57	<.010	.57
JUN											
14...	11	6.2	.1	21	191	88	65.0	--	.93	.010	.94
AUG											
07...	12	7.5	.1	24	--	107	11.9	--	.67	.010	.68
NOV											
09...	--	--	--	--	--	--	--	15	.86	.000	.86
JAN , 1980											
15...	20	10	.1	24	--	116	6.6	11	.57	.000	.57
MAR											
18...	--	--	--	--	--	--	--	--	.36	.010	.37
APR											
30...	--	--	--	--	--	--	--	1	.70	.010	.71
JUL											
10...	--	--	--	--	--	--	--	--	.67	.010	.68
SEP											
03...	--	--	--	--	--	--	--	--	.89	.010	.90

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
11...	<.010	.17	.17	1.0	4.6	.020	.020	--	--	--	--
DEC											
13...	<.010	.02	.02	.59	2.6	.010	.010	<1	--	<2	<20
JAN , 1979											
31...	.010	.00	.01	.35	1.6	.010	<.010	--	--	--	--
APR											
04...	.010	.08	.09	.66	2.9	.020	.010	--	--	--	--
JUN											
14...	.010	.11	.12	1.1	4.7	.040	.010	--	--	--	--
AUG											
07...	.030	.18	.21	.89	3.9	.020	.020	<1	--	ND	<20
NOV											
09...	.000	.11	.11	.97	4.3	.010	--	--	--	--	--
JAN , 1980											
15...	.000	.37	.37	.94	4.2	.030	--	--	--	--	--
MAR											
18...	.000	.14	.14	.51	2.3	.030	--	1	<50	0	10
APR											
30...	.000	.11	.11	.82	3.6	.020	--	--	--	--	--
JUL											
10...	.010	1.5	1.50	2.2	9.7	.010	--	--	--	--	--
SEP											
03...	.010	.15	.16	1.1	4.7	.050	--	--	--	--	--

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
11...	--	--	--	--	--	--	--	--	--	16	1.9
DEC											
13...	ND	110	10	<10	<.5	<1	ND	<20	--	4	.22
JAN , 1979											
31...	--	--	--	20	--	--	--	--	2.2	1	.04
APR											
04...	--	--	--	20	--	--	--	--	2.1	6	.35
JUN											
14...	--	--	--	--	--	--	--	--	4.5	104	35
AUG											
07...	11	1400	3	80	<.5	<1	ND	<20	6.1	62	6.9
NOV											
09...	--	--	--	--	--	--	--	--	--	26	3.4
JAN , 1980											
15...	--	--	--	--	--	--	--	--	--	10	.57
MAR											
18...	--	--	1	--	<.1	0	0	--	--	7	.36
APR											
30...	--	--	--	--	--	--	--	--	--	13	1.1
JUL											
10...	--	--	--	--	--	--	--	--	--	58	6.6
SEP											
03...	--	--	--	--	--	--	--	--	--	74	8.6

ND Looked for but not detected.

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	30	39	3.4	49	25	3.6	23	31	1.9
2	49	121	38	39	12	1.3	23	7	.43
3	183	1660	5680	37	4	.40	24	0	.00
4	349	1550	5880	35	8	.76	22	5	.30
5	85	75	17	34	5	.46	22	7	.42
6	51	25	3.6	33	2	.18	22	6	.36
7	83	160	88	32	7	.60	24	4	.26
8	95	248	117	33	5	.45	22	6	.36
9	99	276	111	31	4	.33	21	0	.00
10	48	125	16	31	37	3.1	21	41	2.3
11	42	17	1.9	30	1	.08	21	26	1.5
12	39	9	.95	29	1	.08	21	0	.00
13	38	25	2.6	28	2	.15	20	2	.11
14	37	24	2.4	29	2	.16	20	5	.27
15	133	466	476	28	2	.15	20	28	1.5
16	74	109	98	28	13	.98	23	16	1.6
17	183	818	2180	29	4	.31	72	176	84
18	74	350	70	28	2	.15	45	100	12
19	50	4	.54	27	0	.00	25	35	2.5
20	42	7	.79	26	39	2.7	21	8	.45
21	38	23	2.4	26	31	2.2	22	7	.42
22	36	8	.78	25	48	3.2	22	7	.42
23	40	2	.22	25	49	3.3	21	45	2.6
24	36	5	.49	25	37	2.4	19	9	.46
25	40	31	4.0	24	8	.52	19	0	.00
26	90	118	51	24	14	.91	19	6	.31
27	95	150	116	23	0	.00	19	6	.31
28	73	250	49	23	6	.37	18	3	.15
29	50	19	2.6	23	67	4.2	18	4	.19
30	209	1030	2030	24	26	1.7	18	36	1.7
31	71	71	14	---	---	---	19	0	.00
TOTAL	2562	---	17057.67	878	---	34.74	726	---	116.82

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	20	32	1.7	16	14	.60	15	1	.04
2	18	33	1.6	16	2	.09	15	5	.20
3	18	4	.19	17	0	.00	15	3	.12
4	18	6	.29	16	3	.13	15	0	.00
5	20	4	.22	16	2	.09	15	0	.00
6	45	60	7.3	15	69	2.8	14	0	.00
7	35	50	4.7	15	34	1.4	14	3	.11
8	31	22	2.0	15	6	.24	14	1	.04
9	26	0	.00	15	3	.12	14	2	.08
10	22	27	1.7	16	10	.43	14	11	.42
11	24	8	.60	44	85	27	14	1	.04
12	23	8	.50	39	164	24	14	4	.15
13	21	28	1.6	18	50	2.4	15	4	.16
14	20	6	.32	22	44	3.8	15	52	2.1
15	19	6	.31	58	94	15	13	7	.25
16	20	0	.00	36	60	6.6	14	14	.53
17	21	42	2.4	41	72	28	13	4	.14
18	19	43	2.2	40	177	23	18	6	.29
19	19	6	.31	26	91	7.7	14	7	.26
20	20	27	1.5	22	60	3.6	14	5	.19
21	18	26	1.3	25	50	3.4	15	6	.24
22	18	5	.24	20	53	2.9	15	5	.20
23	18	3	.15	18	30	1.5	13	5	.18
24	17	0	.00	17	9	.41	14	5	.19
25	16	3	.13	16	4	.17	13	5	.18
26	16	3	.13	16	0	.00	81	321	307
27	16	6	.26	16	0	.00	34	301	43
28	16	2	.09	15	5	.20	25	106	14
29	16	4	.17	---	---	---	232	590	617
30	16	4	.17	---	---	---	67	40	7.2
31	17	3	.14	---	---	---	39	12	1.3
TOTAL	643	---	32.22	646	---	155.58	837	---	995.61

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	28	9	.68	31	100	8.4	101	98	38
2	25	10	.68	23	38	2.4	79	49	10
3	24	11	.71	30	38	4.7	70	20	3.8
4	21	5	.28	34	76	9.0	65	47	8.2
5	20	14	.76	28	50	3.8	60	15	2.4
6	20	4	.22	149	678	1360	86	109	70
7	19	5	.26	51	128	18	58	63	9.9
8	18	1	.05	34	46	4.2	54	29	4.2
9	18	4	.19	34	26	2.4	56	17	2.6
10	17	2	.09	44	59	7.0	151	505	433
11	18	2	.10	32	10	.86	844	4030	18300
12	18	3	.15	536	1790	6980	192	181	112
13	19	5	.26	85	400	88	160	196	109
14	19	3	.15	172	842	1860	125	104	38
15	20	4	.22	517	1860	7000	144	177	92
16	17	3	.14	262	743	973	115	86	27
17	21	7	.40	117	163	57	133	124	71
18	20	19	1.0	90	55	13	100	39	7.8
19	19	41	2.1	88	52	14	88	50	12
20	31	74	13	102	104	33	81	15	3.3
21	39	92	19	95	50	13	78	12	2.5
22	33	101	9.0	76	18	3.7	74	10	2.0
23	59	126	25	87	70	19	72	12	2.3
24	30	50	4.1	134	710	723	67	9	1.6
25	24	13	.84	84	250	59	67	18	3.3
26	21	5	.28	74	43	8.6	65	60	11
27	53	124	54	82	75	17	60	12	1.9
28	39	150	16	68	20	3.7	58	7	1.1
29	27	50	3.6	285	1190	2050	84	63	30
30	35	80	9.7	152	289	289	95	177	51
31	---	---	---	100	50	13	---	---	---
TOTAL	772	---	162.96	3696	---	21637.76	3482	---	19460.9

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	62	70	12	40	10	1.1	272	198	202
2	66	51	9.1	43	19	2.2	181	30	15
3	58	44	4.2	35	21	2.0	145	23	9.0
4	52	20	2.8	36	13	1.3	146	19	7.5
5	63	41	9.1	57	85	28	217	235	208
6	52	56	7.9	82	201	109	153	22	9.1
7	49	31	4.1	43	45	5.2	128	17	5.9
8	46	14	1.7	39	31	3.3	118	15	4.8
9	42	16	1.8	37	22	2.2	106	11	3.1
10	41	11	1.2	35	24	2.3	98	11	2.9
11	39	13	1.4	45	25	4.1	92	8	2.0
12	38	14	1.4	38	43	4.4	87	6	1.4
13	88	243	243	35	12	1.1	98	105	33
14	54	215	31	68	165	60	320	2100	9440
15	43	30	3.5	64	126	33	131	180	71
16	44	34	4.0	46	60	7.5	147	204	161
17	50	51	6.9	88	194	146	159	303	206
18	141	365	226	53	124	18	120	119	43
19	131	119	71	47	90	8.0	101	22	6.0
20	59	21	3.3	134	606	546	101	20	5.5
21	51	14	1.9	51	67	9.2	91	17	4.2
22	46	11	1.4	41	25	2.8	87	13	3.1
23	44	10	1.2	143	538	987	96	60	22
24	41	10	1.1	92	348	105	145	527	559
25	40	10	1.1	48	60	6.0	108	95	28
26	43	13	1.5	39	30	3.2	94	30	7.6
27	38	12	1.2	35	22	2.1	88	12	2.9
28	37	13	1.3	34	15	1.4	86	14	3.3
29	36	10	.97	48	29	5.2	346	1610	6040
30	35	6	.57	388	1510	8300	123	74	27
31	39	8	.84	1440	4670	25700	---	---	---
TOTAL	1668	---	658.48	3424	---	36106.6	4184	---	17133.3
YEAR	23518		113552.64						

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	125	352	6.7	53	53	13	36	6	.58
2	144	605	331	51	126	17	36	4	.39
3	137	574	272	45	21	2.6	57	94	46
4	106	175	50	46	40	5.0	54	257	43
5	112	201	57	64	287	96	39	172	18
6	98	125	33	56	233	40	36	55	5.4
7	139	936	672	114	696	601	35	48	4.5
8	229	1100	2560	61	200	33	34	22	2.0
9	154	795	556	50	26	3.5	34	21	1.9
10	113	150	46	46	75	9.3	35	57	5.4
11	98	20	5.0	45	54	6.6	35	86	8.1
12	103	244	89	43	11	1.3	33	38	3.4
13	87	26	6.1	43	8	.93	33	39	3.5
14	80	18	3.9	40	7	.76	34	33	3.0
15	76	11	2.3	41	10	1.1	33	38	3.4
16	74	11	2.2	39	5	.53	33	32	2.9
17	71	13	2.5	47	101	19	33	27	2.4
18	68	10	1.8	51	154	27	34	14	1.3
19	74	122	1.6	44	144	17	33	28	2.5
20	68	150	28	59	72	14	35	137	28
21	90	333	7.4	88	267	93	38	80	8.2
22	70	360	3.2	51	27	3.7	33	14	1.3
23	61	34	5.6	71	294	95	36	40	3.9
24	59	18	2.9	72	178	45	69	259	131
25	69	125	31	49	25	3.3	52	196	40
26	56	140	21	47	26	3.3	36	19	1.8
27	56	29	4.4	42	10	1.1	34	13	1.2
28	55	20	3.0	40	7	.76	33	38	3.4
29	52	29	4.1	39	7	.74	33	17	1.5
30	55	75	11	37	6	.60	33	6	.53
31	52	22	3.1	---	---	---	32	5	.43
TOTAL	2831	---	4822.8	1574	---	1155.12	1181	---	378.93

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	33	6	.53	22	51	3.0	19	5	.26
2	31	6	.50	21	42	2.4	19	4	.21
3	30	4	.32	21	47	2.7	19	2	.10
4	29	1	.08	21	35	2.0	21	3	.17
5	29	2	.16	36	50	4.9	89	436	165
6	28	3	.23	46	64	8.0	50	60	8.1
7	29	3	.23	28	46	3.5	53	355	129
8	29	4	.31	24	30	1.9	31	450	38
9	29	4	.31	55	149	34	24	85	5.5
10	32	5	.43	43	100	12	22	51	3.0
11	29	3	.23	28	30	2.3	21	41	2.3
12	30	6	.49	25	20	1.4	21	19	1.1
13	29	3	.23	23	5	.31	20	31	1.7
14	27	2	.15	22	15	.89	20	11	.59
15	27	2	.15	21	4	.23	19	10	.51
16	27	50	3.6	20	5	.27	19	31	1.6
17	26	15	1.0	20	3	.16	19	8	.41
18	26	44	3.1	19	6	.31	19	7	.36
19	25	33	2.2	19	5	.26	19	6	.31
20	25	13	.88	19	79	4.0	19	7	.36
21	26	7	.49	19	7	.36	18	9	.44
22	24	32	2.1	19	19	.97	17	4	.18
23	24	15	.97	23	32	2.0	17	3	.14
24	24	9	.58	25	20	1.4	17	4	.18
25	28	37	3.4	20	4	.22	17	4	.18
26	26	51	3.9	19	2	.10	17	2	.09
27	24	20	1.3	20	4	.22	54	435	318
28	23	9	.56	21	30	1.7	33	404	48
29	23	28	1.7	20	8	.43	20	70	3.6
30	23	15	.93	---	---	---	19	45	2.3
31	22	27	1.6	---	---	---	18	13	.62
TOTAL	837	---	32.66	719	---	91.93	790	---	732.32

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	18	9	.44	29	52	4.1	83	11	2.5
2	18	8	.39	27	15	1.1	74	8	1.6
3	17	5	.23	26	12	.84	67	36	6.5
4	18	3	.15	25	14	.94	64	129	25
5	18	5	.24	25	8	.54	59	229	36
6	23	60	3.7	24	13	.84	57	75	12
7	19	44	285	24	8	.52	58	76	15
8	105	1290	1650	50	369	89	55	7	1.0
9	123	1290	776	33	200	18	51	28	3.9
10	73	379	101	25	23	1.6	68	201	60
11	75	327	104	23	10	.62	110	594	364
12	80	497	147	23	7	.43	71	237	58
13	50	250	34	26	40	2.8	67	242	88
14	37	40	4.0	27	55	4.0	50	40	5.4
15	33	38	3.4	27	13	.95	45	28	3.4
16	29	21	1.6	28	25	2.4	42	64	7.3
17	28	10	.76	44	265	65	41	9	1.0
18	27	9	.66	65	606	152	40	7	.76
19	27	11	.80	111	984	783	38	8	.82
20	27	9	.66	72	145	28	37	8	.80
21	24	7	.45	47	65	8.2	94	596	695
22	24	5	.32	38	18	1.8	55	300	45
23	26	5	.35	87	606	298	104	1030	817
24	26	7	.49	326	1840	8280	69	200	37
25	199	2080	5500	122	540	178	51	45	6.2
26	96	914	334	71	25	4.8	46	30	3.7
27	58	300	47	787	3190	23000	42	34	3.9
28	44	80	9.5	255	806	744	41	12	1.3
29	33	40	3.6	211	618	626	39	6	.63
30	30	12	.97	130	260	91	66	287	141
31	---	---	---	100	40	11	---	---	---
TOTAL	1405	---	9010.71	2908	---	34399.48	1784	---	2443.71

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	44	175	21	130	1650	2140	39	69	7.3
2	38	300	31	46	411	64	61	169	57
3	37	160	16	35	110	15	46	120	15
4	41	100	11	52	181	41	80	425	257
5	42	100	11	40	90	13	53	246	44
6	42	50	5.7	32	42	3.6	39	62	6.5
7	38	40	4.1	30	14	1.1	47	224	43
8	47	114	22	29	14	1.1	159	1560	3850
9	56	250	52	37	104	17	54	150	22
10	47	114	18	31	150	13	40	19	2.0
11	38	20	2.1	27	23	1.7	53	219	58
12	35	13	1.2	54	304	116	45	201	26
13	34	9	.83	38	180	18	40	90	9.7
14	34	17	1.6	29	55	4.3	52	152	31
15	33	5	.45	27	31	2.3	85	720	443
16	53	297	97	44	193	56	52	404	69
17	38	84	8.6	32	300	26	157	1830	3860
18	96	660	507	30	79	7.3	65	479	123
19	50	200	27	54	317	90	47	21	.11
20	38	61	6.3	34	291	27	69	265	77
21	42	209	42	28	68	5.1	90	523	228
22	34	60	5.5	37	260	50	55	156	26
23	31	13	1.1	28	75	5.7	120	1240	1450
24	31	11	.92	60	768	420	90	773	443
25	30	12	.97	46	526	89	86	476	144
26	29	8	.63	34	178	20	60	194	37
27	30	8	.65	64	633	378	439	2550	13600
28	28	8	.60	158	1550	2520	156	816	734
29	27	9	.66	70	369	115	158	1090	1170
30	27	6	.44	46	55	6.8	180	1480	1680
31	28	6	.45	44	112	9.3	---	---	---
TOTAL	1218	---	897.80	1446	---	6276.3	2717	---	28512.61
YEAR	19410		88754.37						

RIO GRANDE DE ARECIBO BASIN

50028000 RIO TANAMA NEAR UTUADO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
MAY , 1979											
12...	1415	7	14	20	32	44	74	85	94	97	100
12...	1430	12	15	22	28	36	60	75	90	98	100
12...	1500	7	22	31	42	59	77	90	96	99	99
14...	1750	9	15	22	30	42	64	81	94	98	100
15...	1630	10	16	25	34	45	69	81	92	98	100
15...	1645	7	11	16	22	30	53	67	81	92	97
JUN											
11...	0730	4	7	12	20	29	42	60	80	93	99
11...	0745	4	8	13	20	30	43	58	75	91	98
11...	0815	7	13	20	29	43	62	77	90	96	99
11...	1710	7	10	15	20	27	42	56	78	94	98
11...	1725	6	11	16	17	21	49	67	85	96	99
11...	1755	10	17	24	36	44	71	86	95	99	100
SEP											
14...	1730	8	13	18	24	30	50	66	82	93	98
14...	1743	12	18	23	29	39	64	77	91	98	100
14...	1800	8	12	18	26	34	64	79	91	98	100
29...	1415	4	8	12	17	23	42	60	82	94	99
29...	1430	6	11	17	23	33	53	73	89	97	99
MAY , 1980											
24...	1700	11	18	24	34	41	66	81	93	98	99
24...	1715	15	24	34	43	54	80	91	98	99	100
24...	1745	11	18	26	36	48	68	83	93	98	99
27...	1525	11	12	27	35	46	65	80	92	98	99
27...	1540	8	13	20	27	35	58	76	91	98	100
27...	1555	9	22	25	35	47	64	77	91	98	99
27...	1605	7	11	16	22	30	49	67	86	96	99
27...	1620	4	7	10	14	18	28	46	69	90	98
27...	1635	5	10	13	19	25	37	50	71	90	98
27...	1705	9	14	22	30	40	55	70	86	96	99
27...	1720	4	10	12	18	25	36	50	72	90	98
27...	1735	4	8	14	20	28	42	55	74	92	98
JUN											
23...	1815	1	1	4	10	18	45	68	92	99	100
23...	1830	6	11	17	27	39	63	80	94	99	100
JUL											
11...	1030	7	11	18	26	35	77	95	99	100	100
AUG											
01...	1715	16	25	36	48	67	84	93	98	99	100
AUG											
28...	1710	8	13	19	27	35	65	81	94	98	100
28...	1725	7	12	17	25	35	68	86	96	99	100
SEP											
17...	1725	4	6	10	14	20	43	66	90	98	99
17...	1740	3	5	8	13	19	38	56	85	95	99
17...	1755	6	9	14	20	25	58	69	88	98	99
27...	1705	9	16	21	35	51	77	81	93	98	99
27...	1720	6	7	13	19	26	45	54	81	95	99
29...	1445	8	15	21	31	43	67	83	94	99	100
29...	1720	1	1	3	8	9	24	35	62	93	99
29...	1735	4	5	8	14	20	36	50	79	97	99
29...	1750	5	10	14	27	40	57	69	92	98	100

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR

LOCATION.--Lat 18°27'20", long 66°42'10", Hydrologic Unit 21010002, at bridge on unimproved road, about 500 ft (152 m) upstream from Central Cambalache, near Highway 2, 8.3 mi (13.4 km) downstream from Dos Bocas Reservoir, 1.9 mi (3.1 km) downstream from Río Tanamá, and 1.6 mi (2.6 km) southeast of Arecibo.

DRAINAGE AREA. --200 sq mi (520 sq km), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1963 to January 1965 (monthly measurements only), February 1965 to April 1969 (occasional measurements only), May 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3.73 ft (1.137 m) above mean sea level.

REMARKS.--Records fair. Flow regulated by Lago Dos Bocas dam, 8.3 mi (13.4 km) upstream.

AVERAGE DISCHARGES.--10 years (1970-79), 484 cu ft/s (13.71 cu m/s), 350,700 acre-ft/yr (432 cu hm/yr); median of yearly mean discharges, 454 cu ft/s (12.86 cu m/s), 329,000 acre-ft/yr (406 cu hm/yr).
--11 years (1970-80). 496 cu ft/s (14.05 cu m/s), 359,400 acre-ft/yr (443 cu hm/yr); median of yearly mean discharges, 471 cu ft/s (13.34 cu m/s), 341,000 acre-ft/yr (421 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,100 cu ft/s (739 cu m/s) Aug. 31, 1979, gage height, 13.74 ft (4.188 m) from rating curve extended above 6,000 cu ft/s (170 cu m/s); minimum, 50 cu ft/s (1.416 cu m/s) Feb. 26, 1974, gage height, 4.25 ft (1.295 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations above mean sea level of major floods at valley cross sections along Expressway PR-22 about 1.0 mi (1.6 km) above gage site are as follows: Aug. 8, 1899, 195,000 cu ft/s (5,520 cu m/s), gage height, 24.4 ft (7.44 m); Sept. 13, 1928, 105,000 cu ft/s (2,970 cu m/s), gage height, 21.6 ft (6.58 m); Oct. 13, 1954, 76,000 cu ft/s (2,150 cu m/s), gage height, 19.1 ft (5.82 m); and Nov. 26, 1968, 21,000 cu ft/s (595 cu m/s) gage height, 16.6 ft (5.06 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 4,350 cu ft/s (123 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 16, 1979	0100	4,940	140	10.73	3.271	Sept. 5, 1979	2200	5,160	146	10.23	3.118
June 11, 1979	1730	7,860	223	11.46	3.493	May 24, 1980	2000	4,510	128	9.95	3.033
June 16, 1979	0045	4,470	127	9.93	3.027	May 28, 1980	0330	*10,200	289	11.67	3.557
July 19, 1979	1400	4,450	126	9.92	3.024	Sept.28, 1980	0630	8,740	248	11.35	3.459
Aug. 31, 1979	1630	*26,100	739	13.74	4.188						

Minimum discharges, 71 cu ft/s (2.011 cu m/s) Mar. 20, 1979; 68 cu ft/s (1.926 cu m/s) Mar. 16, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	710	586	489	202	347	114	132	250	777	569	837	11800
2	824	408	209	128	189	300	392	477	987	969	1220	4100
3	462	495	246	133	86	168	283	335	578	660	745	2540
4	820	436	307	141	150	152	413	509	794	573	394	2260
5	825	265	181	172	141	112	221	242	715	732	482	3270
6	1210	618	270	289	233	197	328	348	791	1280	1050	3650
7	413	463	237	355	183	169	131	239	646	397	1910	2150
8	769	454	205	416	187	190	140	287	252	467	810	2050
9	989	628	193	294	305	247	92	444	286	494	390	1650
10	621	683	157	312	292	149	170	666	300	727	470	1590
11	746	308	123	206	169	133	261	560	3120	786	224	1210
12	460	189	99	177	155	168	171	880	4040	533	245	1410
13	266	179	176	417	196	115	100	789	2170	795	387	1600
14	259	344	172	211	270	187	92	736	1740	315	213	1000
15	454	296	183	165	551	179	87	2430	2680	209	268	700
16	1050	301	241	309	400	626	275	2890	3060	747	453	500
17	939	386	423	255	151	285	218	2310	1110	568	418	1400
18	808	169	280	374	167	185	124	1920	2350	2100	577	900
19	301	200	650	268	91	138	393	910	1500	3120	476	1200
20	444	677	325	363	251	100	215	894	1200	1980	1570	1700
21	405	641	231	191	162	141	305	854	970	559	1330	1100
22	259	243	237	213	242	115	219	684	592	651	889	800
23	306	218	372	250	149	447	260	1060	543	777	928	700
24	282	310	293	412	160	322	183	996	445	683	719	1400
25	275	203	249	202	164	124	154	1350	1020	1390	443	900
26	626	214	476	163	87	133	120	570	1080	1140	691	700
27	1490	243	250	110	158	273	400	473	1130	638	838	800
28	1130	204	245	126	167	90	450	1150	690	848	1050	1200
29	356	300	204	120	---	438	364	987	674	335	1830	1000
30	673	488	309	228	---	275	452	771	374	807	1590	700
31	606	---	244	157	---	207	---	944	---	628	15900	---
TOTAL	19778	11149	8276	7359	5803	6479	7145	27955	36614	26477	39347	55980
MEAN	638	372	267	237	207	209	238	902	1220	854	1269	1866
MAX	1490	683	650	417	551	626	452	2890	4040	3120	15900	11800
MIN	259	169	99	110	86	90	87	239	252	209	213	500
AC-FT	39230	22110	16420	14600	11510	12850	14170	55450	72620	52520	78040	111000

CAL YR 1978 TOTAL 143011 MEAN 392 MAX 1490 MIN 89 AC-FT 283700
WTR YR 1979 TOTAL 252362 MEAN 691 MAX 15900 MIN 86 AC-FT 500600

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	600	680	208	204	216	436	1290	516	1040	300	199	512
2	550	760	242	725	190	144	1070	209	1100	200	388	554
3	500	390	808	693	166	688	760	380	1050	500	361	995
4	450	338	919	480	129	519	493	209	1120	1000	708	389
5	1200	453	821	265	133	398	246	137	942	500	1030	491
6	900	929	574	209	260	560	224	138	907	250	180	365
7	800	1030	587	117	404	400	182	496	511	350	138	361
8	600	842	296	417	394	245	786	994	283	400	125	557
9	500	1020	210	792	337	314	290	448	397	651	312	1320
10	1300	698	904	274	396	125	306	195	800	598	471	877
11	1000	391	337	136	615	335	241	142	516	217	613	377
12	800	475	764	218	346	336	746	233	831	377	593	230
13	700	373	690	260	248	187	338	1330	867	228	214	208
14	600	578	741	276	355	398	265	717	491	164	184	201
15	700	380	1090	517	859	134	134	674	250	253	217	341
16	540	265	397	749	301	104	197	450	1180	182	242	656
17	1800	644	626	765	382	361	294	377	712	303	258	567
18	1240	484	785	579	598	510	631	944	400	246	526	307
19	775	571	579	268	341	418	453	1920	350	377	361	313
20	501	553	562	242	267	542	313	1220	300	350	676	392
21	390	1360	438	149	371	811	764	1890	600	193	549	975
22	859	661	442	258	213	685	266	1060	1000	277	341	1280
23	502	778	214	526	266	928	760	1020	700	429	227	874
24	877	1200	247	511	209	872	371	2000	600	359	253	982
25	1050	1130	347	309	396	925	483	2320	400	190	534	1470
26	278	1290	622	338	416	1480	1700	568	300	327	316	1460
27	257	982	622	224	532	914	1100	1770	200	289	162	1540
28	371	296	218	221	436	1050	1880	7490	600	483	216	5910
29	853	672	149	377	679	612	1240	2880	1200	619	229	2870
30	645	394	247	222	---	571	603	2760	700	368	324	2960
31	365	---	177	166	---	729	---	1480	---	223	449	---
TOTAL	22503	20617	15863	11487	10455	16731	18426	36967	20347	11203	11396	30334
MEAN	726	687	512	371	361	540	614	1192	678	361	368	1011
MAX	1800	1360	1090	792	859	1480	1880	7490	1200	1000	1030	5910
MIN	257	265	149	117	129	104	134	137	200	164	125	201
AC-FT	44630	40890	31460	22780	20740	33190	36550	73320	40360	22220	22600	60170

CAL YR 1979 TOTAL 272142 MEAN 746 MAX 15900 MIN 86 AC-FT 539800
WTR YR 1980 TOTAL 226329 MEAN 618 MAX 7490 MIN 104 AC-FT 448900

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-66, 1969 to current year.

WATER-QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
23...	1250	200	345	7.5	26.0	--	7.2	--	.9	2500	280	290
DEC												
20...	1215	150	223	7.7	25.0	--	8.4	--	1.6	2100	560	460
JAN , 1979												
30...	1345	118	240	8.1	25.0	--	12.8	--	2.0	2600	170	200
APR												
04...	1045	164	226	7.4	24.5	--	8.2	--	1.4	1500	350	600
JUN												
13...	1010	2330	183	7.6	24.5	--	8.4	--	1.1	56000	8000	6000
AUG												
07...	1030	1930	194	7.1	26.0	--	6.8	--	.6	12000	1900	3400
NOV												
29...	1140	25	276	6.4	25.0	3.0	5.0	6	1.6	--	900	380
JAN , 1980												
30...	1120	153	245	7.9	23.0	1.5	8.6	--	.7	--	230	170
MAR												
13...	1245	136	250	7.7	25.5	.25	10.0	11	2.8	--	150	70
MAY												
12...	1340	107	283	8.2	27.0	4.7	9.2	13	1.7	--	2000	440
JUL												
08...	1215	161	254	8.0	27.0	2.8	8.6	7	2.4	--	530	190
SEP												
18...	1115	242	184	7.5	26.5	230	7.6	63	2.4	--	18000	37000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
23...	130	11	42	5.8	8.0	.3	1.8	143	0	117	7.2
DEC											
20...	95	5	28	6.1	9.0	.4	2.0	110	0	90	3.5
JAN , 1979											
30...	120	19	36	6.6	8.7	.4	1.6	120	0	98	1.5
APR											
04...	96	6	30	5.1	8.4	.4	2.0	110	0	90	7.0
JUN											
13...	76	8	23	4.5	7.5	.4	1.9	83	0	68	3.3
AUG											
07...	74	3	21	5.2	8.9	.5	1.9	86	0	71	11
NOV											
29...	--	--	--	--	--	--	--	109	0	89	69
JAN , 1980											
30...	110	0	36	5.2	9.0	.4	1.3	140	0	110	2.8
MAR											
13...	--	--	--	--	--	--	--	140	0	110	4.5
MAY											
12...	130	1	44	5.3	8.3	.3	1.2	159	0	130	1.6
JUL											
08...	--	--	--	--	--	--	--	140	0	110	2.2
SEP											
18...	71	0	22	3.8	6.3	.3	1.9	90	0	74	4.6

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
23...	11	8.6	.1	15	169	163	91.3	--	.63	.010	.64
DEC											
20...	12	9.8	.1	16	152	137	61.6	--	.62	.010	.63
JAN , 1979											
30...	11	10	.1	17	154	150	49.1	--	.47	<.010	.47
APR											
04...	9.7	10	.1	15	144	135	63.8	--	.73	.020	.75
JUN											
13...	10	7.9	.1	16	123	112	774	--	.90	.030	.93
AUG											
07...	12	11	.1	19	--	122	636	--	.44	.010	.45
NOV											
29...	--	--	--	--	--	--	--	--	.98	.020	1.0
JAN , 1980											
30...	11	10	.1	15	--	157	64.9	5	.44	.010	.45
MAR											
13...	--	--	--	--	--	--	--	--	--	--	--
MAY											
12...	9.7	10	.1	14	--	171	49.4	11	.46	.010	.47
JUL											
08...	--	--	--	--	--	--	--	--	.59	.010	.60
SEP											
18...	8.6	7.6	.0	25	--	120	78.4	541	.87	.040	.91

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3))	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
23...	<.010	.11	.11	.75	3.3	.030	.010	--	--	--	--
DEC											
20...	.020	.01	.03	.66	2.9	.010	.010	<1	--	<2	<20
JAN , 1979											
30...	.010	.03	.04	.51	2.3	.020	.010	--	--	--	--
APR											
04...	.020	.17	.19	.94	4.2	.030	.010	--	--	--	--
JUN											
13...	<.010	.59	.59	1.5	6.7	.130	.020	--	--	--	--
AUG											
07...	<.010	.28	.28	.73	3.2	.040	.020	1	--	2	<20
NOV											
29...	.020	.31	.33	1.3	5.9	.070	--	--	--	--	--
JAN , 1980											
30...	.040	.05	.09	.54	2.4	.020	--	--	--	--	--
MAR											
13...	--	--	--	--	--	--	--	1	0	1	10
MAY											
12...	.010	.18	.19	.66	2.9	.020	--	--	--	--	--
JUL											
08...	.090	.34	.43	1.0	4.6	.080	--	--	--	--	--
SEP											
18...	.060	.18	.24	1.2	5.1	.140	--	1	200	1	40

50029000 RIO GRANDE DE ARECIBO AT CENTRAL CAMBALACHE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
23...	--	--	--	--	--	--	--	--	--	10	5.4
DEC											
20...	ND	280	6	30	<.5	<1	ND	30	--	9	3.6
JAN , 1979											
30...	--	--	--	30	--	--	--	--	3.4	6	1.9
APR											
04...	--	--	--	40	--	--	--	--	2.5	13	5.8
JUN											
13...	--	--	--	--	--	--	--	--	9.6	357	2250
AUG											
07...	11	1500	3	170	<.5	<1	ND	20	3.4	86	448
NOV											
29...	--	--	--	--	--	--	--	--	--	53	3.6
JAN , 1980											
30...	--	--	--	--	--	--	--	--	--	1	.41
MAR											
13...	--	--	2	--	.1	0	0	--	--	11	4.0
MAY											
12...	--	--	--	--	--	--	--	--	--	10	2.9
JUL											
08...	--	--	--	--	--	--	--	--	--	17	7.4
SEP											
18...	--	--	12	--	<.1	1	0	--	--	705	461

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN							
13...	1010	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN						
13...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

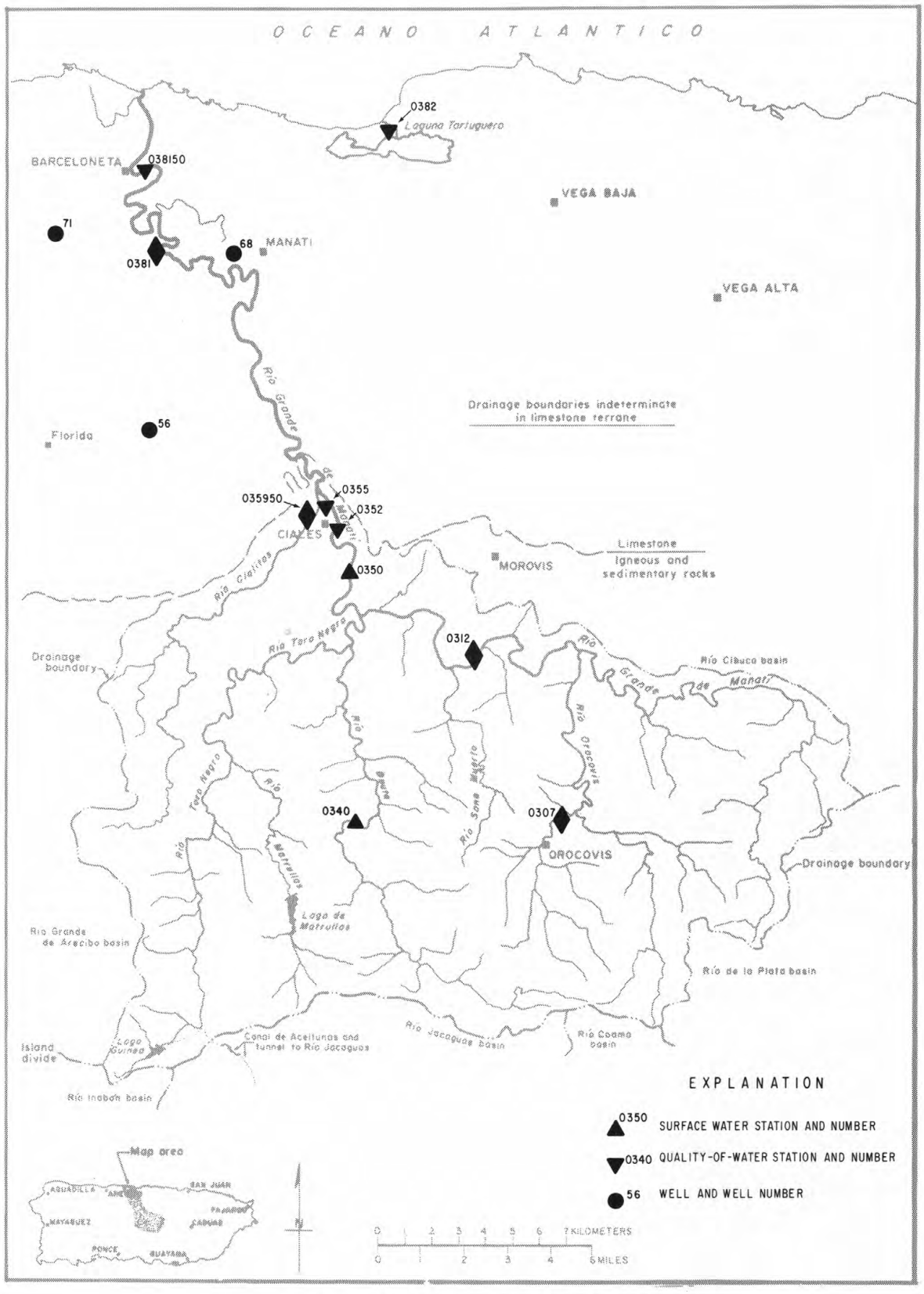

Figure 7.--Río Grande de Manatí basin.

50030700 RIO OROCOVIS NEAR OROCOVIS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°14'20", long 66°22'58", at flat low bridge about 300 ft (91.4 m) northwest of Highway 568, 1.0 mi (1.6 km) north of Orocovis.

DRAINAGE AREA.--10.1 sq mi (26.2 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
27...	1120	52	311	8.0	21.0	20	8.7	27	3.0	25000	7000	--
JAN , 1980												
16...	1520	15	257	8.7	22.0	.30	9.4	8	2.8	3600	820	120
MAR												
13...	1300	14	260	8.5	23.0	.30	10.1	11	4.1	14000	5600	--
MAY												
21...	0800	16	244	7.8	22.0	1.1	9.0	0	3.2	9800	300	100
JUL												
03...	0740	13	270	7.7	22.0	1.4	8.6	7	.7	890	340	--
SEP												
05...	0835	8.5	276	8.0	22.0	.90	9.2	2	2.5	10000	3400	130

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
27...	--	--	--	--	--	--	91	0	75	1.5	--	--
JAN , 1980												
16...	7	28	11	13	.5	1.9	116	8	110	.4	9.0	14
MAR												
13...	--	--	--	--	--	--	120	8	110	.7	--	--
MAY												
21...	0	22	11	14	.6	1.4	130	0	110	3.3	8.4	13
JUL												
03...	--	--	--	--	--	--	140	0	110	4.5	--	--
SEP												
05...	14	31	12	13	.5	1.8	142	0	116	2.3	8.9	14

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
27...	--	--	--	--	--	.98	.010	.99	.050	.15	.20	1.2
JAN , 1980												
16...	.1	37	179	7.3	18	1.1	.010	1.1	.010	.42	.43	1.5
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
21...	.1	34	168	7.3	23	--	--	--	--	--	--	--
JUL												
03...	--	--	--	--	--	.93	.010	.94	.000	.10	.10	1.0
SEP												
05...	.2	36	187	4.3	2	.97	.010	.98	.020	.03	.05	1.0

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
27...	5.3	.100	--	--	--	--	--	--	--	--	41	5.8
JAN , 1980												
16...	6.8	.060	--	--	--	--	--	--	--	--	2	.08
MAR												
13...	--	--	1	0	0	10	0	.5	0	0	2	.08
MAY												
21...	--	--	--	--	--	--	--	--	--	--	2	.09
JUL												
03...	4.6	.110	--	--	--	--	--	--	--	--	3	.11
SEP												
05...	4.6	.990	1	100	1	11	9	.3	0	0	10	.23

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR

LOCATION.--Lat 18°17'45", long 66°24'47", Hydrologic Unit 21010001, on left bank, 0.1 mi (0.2 km) downstream from Quebrada Perchas, 0.8 mi (1.3 km) upstream from Río Sana Muerto, and 2.2 mi (3.5 km) south of Morovis.

DRAINAGE AREA.--55.2 sq mi (143.0 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 440 ft (134.1 m), from topographic map. Feb. 2, 1966 to Apr. 27, 1967, staff gage read twice daily.

REMARKS.--Records fair. Public water-supply pumpage, about 300 ft (91 m) above the station, influences low-flow discharges.

AVERAGE DISCHARGES.--14 years (1966-79), 107 cu ft/s (3.030 cu m/s), 26.32 in/yr (669 mm/yr), 77,520 acre-ft/yr (95.6 cu hm/yr); median of yearly mean discharges 80 cu ft/s (2.27 cu m/s), 58,000 acre-ft/yr (72 cu hm/yr).
--15 years (1966-80), 108 cu ft/s (3.059 cu m/s), 26.57 in/yr (675 mm/yr), 78,250 acre-ft/yr (96.5 cu hm/yr); median of yearly mean discharges 84 cu ft/s (2.38 cu m/s), 60,900 acre-ft/yr (75 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 cu ft/s (991 cu m/s) Oct. 9, 1970, gage height, 20.3 ft (6.19 m), from flood-marks, from rating curve extended above 200 cu ft/s (5.7 cu m/s) on basis of computations of flow over broad-crested weir and indirect measurement of peak flow at 13.5 ft (4.11 m), 16.0 ft (4.88 m) and 20.3 ft (6.19 m); minimum daily, 13 cu ft/s (0.368 cu m/s) Aug. 26, 1974, Oct. 21-23, 1978.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,500 cu ft/s (99.1 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Mar. 29, 1979	0900	6,270	178	6.92	2.109
May 14, 1979	1445	5,850	166	6.66	2.030
May 16, 1979	1715	7,440	211	7.62	2.323
May 20, 1979	0315	7,650	217	7.74	2.359
July 18, 1979	2245	4,780	135	5.97	1.820
Aug. 30, 1979	2200	*12,900	365	10.54	3.213
Aug. 31, 1979	0800	10,800	306	9.41	2.868
Sept. 4, 1979	1815	3,980	113	5.41	1.649
Nov. 7, 1979	1645	3,820	108	5.29	1.612
Nov. 25, 1979	0230	*12,600	357	10.38	3.164
Apr. 25, 1980	1715	4,330	123	5.66	1.725
May 27, 1980	2115	3,750	106	5.24	1.597
Sept. 30, 1980	1700	4,930	140	6.07	1.850

Minimum discharges, 12 cu ft/s (0.340 cu m/s) Oct. 22-23, 1978; 24 cu ft/s (0.680 cu m/s) Sept. 13, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	148	57	55	42	38	175	122	151	325	268	458
2	60	93	54	49	42	36	134	104	128	169	179	423
3	300	69	73	37	43	35	116	114	138	127	118	323
4	100	51	45	34	39	45	100	100	127	108	196	1560
5	200	44	39	35	37	63	89	87	118	103	151	1860
6	100	39	38	615	35	57	83	84	123	160	111	709
7	70	34	50	376	35	40	77	200	109	130	101	433
8	65	32	50	222	34	37	73	157	104	143	92	353
9	350	33	41	172	33	36	69	95	137	104	87	399
10	43	43	37	107	32	34	66	97	168	95	83	300
11	32	45	36	134	32	35	66	90	227	87	85	262
12	24	67	34	132	46	34	67	110	169	81	82	240
13	28	57	34	98	33	32	93	106	128	80	79	224
14	31	46	34	71	36	31	107	838	111	78	81	217
15	23	37	33	54	135	31	73	485	156	75	84	210
16	45	33	32	49	169	31	78	1380	204	80	77	202
17	69	122	31	55	82	31	66	541	187	90	74	192
18	27	85	33	55	55	39	60	476	118	693	72	206
19	19	60	48	102	48	52	57	470	104	727	108	206
20	15	50	34	326	65	38	68	1400	97	179	121	182
21	13	48	153	145	137	36	250	349	93	140	355	173
22	13	46	70	104	83	63	468	235	91	120	311	173
23	13	44	50	81	65	44	1170	214	94	110	177	169
24	19	42	40	67	54	41	384	173	97	100	126	160
25	35	41	35	59	45	36	317	157	89	90	116	163
26	782	39	34	54	43	63	267	152	101	150	98	163
27	544	39	33	51	42	50	175	142	104	94	87	150
28	344	38	32	48	39	44	142	136	120	91	85	145
29	149	35	32	45	---	1840	240	145	256	89	249	444
30	91	48	34	45	---	733	156	178	378	86	2990	889
31	153	---	35	43	---	325	---	149	---	166	6650	---
TOTAL	3877	1608	1381	3520	1583	4050	5286	9086	4227	4870	13493	11588
MEAN	125	53.6	44.5	114	56.5	131	176	293	141	157	435	386
MAX	782	148	153	615	169	1840	1170	1400	378	727	6650	1860
MIN	13	32	31	34	32	31	57	84	89	75	72	145
CFSM	2.26	.97	.81	2.07	1.02	2.37	3.19	5.31	2.55	2.84	7.88	6.99
IN.	2.61	1.08	.93	2.37	1.07	2.73	3.56	6.12	2.85	3.28	9.09	7.81
AC-FT	7690	3190	2740	6980	3140	8030	10480	18020	8380	9660	26760	22980

CAL YR 1978 TOTAL 22391 MEAN 61.3 MAX 1290 MIN 13 CFSM 1.11 IN 15.09 AC-FT 44410
WTR YR 1979 TOTAL 64569 MEAN 177 MAX 6650 MIN 13 CFSM 3.21 IN 43.51 AC-FT 128100

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	279	134	143	104	58	58	49	66	115	45	115	32
2	194	109	139	102	58	55	48	61	101	45	93	32
3	166	104	137	100	58	56	46	56	91	46	42	31
4	151	132	135	97	77	60	45	54	86	51	104	32
5	154	148	132	97	116	320	45	54	82	56	83	51
6	151	201	126	93	261	500	45	49	74	54	55	75
7	157	688	124	93	151	150	46	50	74	54	41	34
8	140	483	121	93	97	120	50	50	71	51	41	30
9	129	260	129	93	320	100	134	51	70	49	35	27
10	124	163	119	102	280	90	127	47	69	47	35	28
11	208	140	114	90	136	80	127	46	72	44	38	46
12	166	134	111	136	105	74	190	116	68	45	32	32
13	132	129	111	108	91	72	144	141	70	44	33	26
14	124	116	107	92	80	70	83	66	62	48	50	31
15	121	111	107	87	75	65	63	71	57	47	41	178
16	119	109	104	83	70	65	55	54	56	40	35	151
17	114	126	102	81	70	65	51	61	69	45	34	49
18	109	204	102	80	67	65	50	64	54	52	66	36
19	111	151	102	77	66	62	49	64	51	55	154	39
20	240	349	490	77	64	62	47	52	49	45	66	39
21	188	635	221	86	64	60	49	45	48	38	38	38
22	129	263	140	73	64	56	48	46	46	37	42	33
23	116	292	168	72	70	56	63	44	45	36	42	297
24	124	267	450	71	80	54	64	188	44	35	30	408
25	109	1900	503	72	70	55	621	151	49	35	33	211
26	109	388	183	67	65	52	519	74	48	35	37	169
27	102	230	141	64	60	58	221	870	47	43	32	455
28	313	190	125	64	60	106	112	1070	45	37	46	577
29	191	165	116	62	60	59	86	359	46	38	41	208
30	119	151	113	60	---	54	72	213	48	34	51	894
31	116	---	109	60	---	51	---	139	---	32	35	---
TOTAL	4705	8472	5024	2636	2893	2850	3349	4472	1907	1363	1620	4289
MEAN	152	282	162	85.0	99.8	91.9	112	144	63.6	44.0	52.3	143
MAX	313	1900	503	136	320	500	621	1070	115	56	154	894
MIN	102	104	102	60	58	51	45	44	44	32	30	26
CFSM	2.75	5.11	2.94	1.54	1.81	1.67	2.03	2.61	1.15	.80	.95	2.59
IN.	3.17	5.71	3.39	1.78	1.95	1.92	2.26	3.01	1.29	.92	1.09	2.89
AC-FT	9330	16800	9970	5230	5740	5650	6640	8870	3780	2700	3210	8510

CAL YR 1979 TOTAL 75904 MEAN 208 MAX 6650 MIN 31 CFSM 3.77 IN 51.15 AC-FT 150600
WTR YR 1980 TOTAL 43580 MEAN 119 MAX 1900 MIN 26 CFSM 2.16 IN 29.37 AC-FT 86440

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC , 1978											
06...	1445	38	270	7.9	22.0	--	8.8	--	--	--	--
JUL , 1979											
17...	1130	90	240	8.0	26.5	--	--	--	--	--	--
DEC											
04...	1215	135	245	8.1	24.0	3.0	9.2	9	1.9	1000	90
JAN , 1980											
24...	0955	71	235	7.8	21.0	1.0	9.4	10	.4	90	10
MAR											
25...	1225	56	250	8.8	25.5	.40	10.2	5	1.7	24	60
MAY											
19...	1115	60	241	7.9	25.5	--	8.9	9	1.7	2000	300
JUL											
15...	1100	46	246	8.5	25.0	.40	9.6	2	4.4	90	36
SEP											
18...	1140	34	281	8.1	27.5	7.6	8.2	31	1.3	2400	360

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
DEC , 1978											
06...	120	--	28	11	12	.5	2.1	--	--	--	--
JUL , 1979											
17...	89	89	21	8.9	10	.5	1.8	--	--	--	--
DEC											
04...	--	--	--	--	--	--	--	106	0	87	1.3
JAN , 1980											
24...	100	2	24	9.8	13	.6	1.4	120	0	98	3.0
MAR											
25...	--	--	--	--	--	--	--	110	1	110	.3
MAY											
19...	92	3	21	9.6	13	.6	1.6	120	0	98	2.4
JUL											
15...	--	--	--	--	--	--	--	116	4	100	.6
SEP											
18...	81	0	19	8.2	11	.5	2.5	100	0	82	1.3

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
DEC , 1978											
06...	8.4	15	.1	27	--	--	--	--	--	--	--
JUL , 1979											
17...	7.0	13	.1	25	142	87	34.5	--	--	--	--
DEC											
04...	--	--	--	--	--	--	--	--	1.1	.000	1.1
JAN , 1980											
24...	6.7	15	.1	27	--	156	29.9	1	.77	.010	.78
MAR											
25...	--	--	--	--	--	--	--	--	.49	.000	.49
MAY											
19...	5.6	13	.1	27	--	150	24.3	--	--	--	--
JUL											
15...	--	--	--	--	--	--	--	--	.25	.010	.26
SEP											
18...	10	14	.0	26	--	140	12.9	8	1.1	.020	1.1

50031200 RIO GRANDE DE MANATI NEAR MOROVIS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
DEC , 1978										
06...	--	--	--	--	--	--	--	--	ND	20
JUL , 1979										
17...	--	--	--	--	--	--	1	--	<2	30
DEC										
04...	.010	.30	.31	1.4	6.2	.050	--	--	--	--
JAN , 1980										
24...	.110	.47	.58	1.4	6.0	.050	--	--	--	--
MAR										
25...	.000	.00	.00	.49	2.2	.040	2	100	0	5
MAY										
19...	--	--	--	--	--	--	--	--	--	--
JUL										
15...	.030	.11	.14	.40	1.8	.050	--	--	--	--
SEP										
18...	.040	.26	.30	1.4	6.2	.090	1	100	1	9

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1978										
06...	4	860	ND	40	--	--	--	20	--	--
JUL , 1979										
17...	13	5100	7	110	<.5	<1	ND	20	113	27
DEC										
04...	--	--	--	--	--	--	--	--	6	2.9
JAN , 1980										
24...	--	--	--	--	--	--	--	--	1	.19
MAR										
25...	--	--	0	--	<.1	0	0	--	1	.15
MAY										
19...	--	--	--	--	--	--	--	--	13	2.1
JUL										
15...	--	--	--	--	--	--	--	--	4	.50
SEP										
18...	--	--	4	--	.3	0	0	--	62	5.7

ND Looked for but not detected.

50034000 RIO BAUTA NEAR OROCOVIS, PR

LOCATION.--Lat 18°14'10", long 66°27'18", Hydrologic Unit 21010001, on left bank, at bridge on Highway 157 (km 12.1), and 4.2 mi (6.8 km) west of Orocovis.

DRAINAGE AREA.--16.7 sq mi (43.3 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to April 1966 (annual low-flow measurements only), February to September 1969 (occasional measurements only), October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 772.82 ft (235.556 m) above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--9 years (1971-79), 35.6 cu ft/s (1.008 cu m/s), 28.95 in/yr (735 mm/yr), 25,790 acre-ft/yr (31.8 cu hm/yr).
--10 years (1971-80), 37.0 cu ft/s (1.048 cu m/s), 30.09 in/yr (764 mm/yr), 26,810 acre-ft/yr (33.1 cu hm/yr); median of yearly mean discharges 26 cu ft/s (0.74 cu m/s), 18,800 acre-ft/yr (23.2 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,800 cu ft/s (504 cu m/s) Oct. 9, 1970, gage height, 21.9 ft (6.68 m), from floodmark, from rating curve extended above 100 cu ft (2.83 cu m/s) on basis of step-backwater analysis by U.S. Bureau of Reclamation; minimum, 2.8 cu ft/s (0.079 cu m/s) July 23, 1977, gage height, 6.31 ft (1.923 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 1,500 cu ft/s (42.5 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 2, 1978	1615	4,080	116	13.49	4.112
Oct. 26, 1978	1645	3,600	102	13.17	4.014
Jan. 19, 1979	1900	1,690	47.9	11.51	3.508
Mar. 29, 1979	1015	2,670	75.6	12.44	3.792
May 14, 1979	1415	7,590	215	15.89	4.843
May 15, 1979	1345	3,110	88.1	12.81	3.904
May 16, 1979	1730	4,800	136	14.01	4.270
May 20, 1979	0315	3,100	87.8	12.80	3.901
June 29, 1979	1815	1,920	54.4	11.75	3.581
July 8, 1979	2130	*11,400	323	18.39	5.605
Aug. 30, 1979	2130	5,480	155	14.49	4.417
Sept. 29, 1979	1330	5,760	163	14.68	4.474
Oct. 20, 1979	1815	3,650	103	13.20	4.023
Oct. 28, 1979	1645	3,280	92.9	12.94	3.944
Nov. 25, 1979	1200	3,380	95.7	13.01	3.965
Apr. 25, 1980	1630	*7,480	212	15.82	4.822
Apr. 26, 1980	1800	3,480	98.6	13.08	3.987
Apr. 27, 1980	1615	1,850	52.4	11.68	3.560
May 12, 1980	1715	1,670	47.3	11.49	3.502
May 27, 1980	1945	4,280	121	13.62	4.151
May 28, 1980	0545	2,210	62.6	12.03	3.667
Sept. 27, 1980	1530	4,120	117	13.52	4.121
Sept. 29, 1980	1545	1,560	44.2	11.38	3.469
Sept. 30, 1980	1545	2,770	78.4	12.53	3.819

Minimum discharges, 7.8 cu ft/s (0.221 cu m/s) Mar. 16-17, 1979; 8.3 cu ft/s (0.235 cu m/s) Aug. 28, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	67	12	11	11	9.2	36	125	25	230	85	535
2	580	51	11	9.6	11	9.0	26	42	25	72	50	101
3	157	41	11	9.2	11	9.0	21	27	25	48	30	61
4	57	35	11	9.2	11	9.7	18	22	20	25	25	297
5	37	31	11	9.3	10	13	16	19	20	20	24	929
6	32	27	11	185	10	11	15	18	20	40	23	230
7	21	25	9.7	58	10	9.5	15	16	20	70	21	117
8	186	23	11	35	9.9	9.2	14	20	30	20	20	100
9	129	21	10	27	9.5	9.0	14	27	200	15	18	92
10	60	19	9.7	20	9.5	8.7	14	29	500	15	18	79
11	31	16	9.7	27	11	8.3	13	18	260	15	18	67
12	22	19	9.7	25	12	8.2	13	41	81	15	17	60
13	18	17	9.8	20	10	8.0	14	22	40	15	17	57
14	17	16	9.7	17	14	8.0	13	654	32	15	17	53
15	15	16	9.7	15	35	8.4	12	560	42	15	16	49
16	122	15	9.7	14	27	8.1	12	1030	54	20	15	47
17	63	14	9.7	13	15	8.1	12	273	39	30	16	44
18	23	14	13	13	13	10	12	232	25	1470	15	42
19	16	14	11	214	12	9.9	12	211	21	567	30	41
20	14	14	12	92	16	8.6	12	657	19	112	42	39
21	13	14	16	29	17	8.6	15	144	17	63	107	37
22	12	13	10	20	14	12	82	82	16	48	68	36
23	32	13	9.9	16	13	9.4	266	40	16	40	36	34
24	148	13	9.7	14	12	9.2	59	30	15	35	28	32
25	214	12	9.6	13	11	8.5	37	25	15	35	23	32
26	1280	11	8.9	13	10	9.3	26	25	18	31	19	31
27	581	11	9.5	12	9.9	15	20	25	16	28	17	30
28	372	11	9.2	12	9.4	10	56	50	17	26	17	29
29	78	11	9.0	12	---	738	275	40	241	25	69	953
30	55	12	9.0	11	---	235	362	30	490	24	1180	224
31	74	---	9.0	11	---	69	---	30	---	35	2640	---
TOTAL	4488	616	321.2	986.3	364.2	1306.9	1512	4564	2359	3219	4721	4478
MEAN	145	20.5	10.4	31.8	13.0	42.2	50.4	147	78.6	104	152	149
MAX	1280	67	16	214	35	738	362	1030	500	1470	2640	953
MIN	12	11	8.9	9.2	9.4	8.0	12	16	15	15	15	29
CFSM	8.68	1.23	.62	1.90	.78	2.53	3.02	8.80	4.71	6.23	9.10	8.92
IN.	10.00	1.37	.72	2.20	.81	2.91	3.37	10.17	5.25	7.17	10.52	9.97
AC-FT	8900	1220	637	1960	722	2590	3000	9050	4680	6380	9360	8880

CAL YR 1978 TOTAL 10125.4 MEAN 27.7 MAX 1280 MIN 5.0 CFSM 1.66 IN 22.55 AC-FT 20080
WTR YR 1979 TOTAL 28935.6 MEAN 79.3 MAX 2640 MIN 8.0 CFSM 4.75 IN 64.45 AC-FT 57390

50034000 RIO BAUTA NEAR OROCOVIS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	65	36	24	17	13	10	30	44	15	13	17
2	74	59	35	24	16	13	10	20	36	15	11	17
3	59	56	34	23	17	12	10	18	31	15	11	18
4	53	152	37	23	17	12	10	17	28	14	14	38
5	50	82	34	23	21	58	11	16	26	14	11	45
6	46	74	32	22	32	30	10	15	25	15	10	30
7	45	127	31	23	22	17	11	15	24	15	10	18
8	44	262	29	22	18	15	24	15	24	14	9.8	16
9	47	147	28	22	37	14	19	15	23	14	10	15
10	69	75	27	21	32	13	26	15	23	14	9.8	97
11	81	61	26	22	21	13	135	15	24	14	9.5	45
12	74	57	26	25	18	13	50	240	22	13	9.4	20
13	57	55	26	22	17	12	32	84	22	13	9.8	17
14	48	52	25	21	16	12	21	34	22	13	12	16
15	46	51	25	21	16	12	17	30	21	13	9.7	24
16	44	49	25	20	15	11	16	58	20	13	9.0	22
17	44	50	24	20	15	11	15	55	20	13	9.0	17
18	44	57	24	20	15	11	15	36	19	13	16	16
19	45	51	27	20	15	11	14	30	19	13	16	15
20	304	63	118	19	14	11	14	28	19	12	9.9	17
21	126	278	45	20	14	11	14	23	18	12	9.0	18
22	79	134	31	19	14	11	14	21	18	12	8.7	17
23	97	84	29	19	15	11	15	20	18	11	8.6	21
24	75	140	191	20	15	11	14	169	17	12	8.6	28
25	56	503	119	20	14	11	800	89	17	11	8.4	36
26	51	103	40	18	13	11	532	38	17	11	8.5	30
27	49	58	32	18	13	11	381	1130	16	12	8.5	384
28	306	47	29	17	13	11	100	888	16	12	8.3	200
29	96	42	27	17	13	11	40	301	15	11	146	278
30	64	38	26	17	---	10	25	151	15	11	29	513
31	65	---	25	17	---	11	---	64	---	11	22	---
TOTAL	2450	3072	1263	639	515	434	2405	3680	659	401	485.5	2045
MEAN	79.0	102	40.7	20.6	17.8	14.0	80.2	119	22.0	12.9	15.7	68.2
MAX	306	503	191	25	37	58	800	1130	44	15	146	513
MIN	44	38	24	17	13	10	10	15	15	11	8.3	15
CFSM	4.73	6.11	2.44	1.23	1.07	.84	4.80	7.13	1.32	77	94	4.08
IN.	5.46	6.84	2.81	1.42	1.15	.97	5.36	8.20	1.47	89	1.08	4.56
AC-FT	4860	6090	2510	1270	1020	861	4770	7300	1310	795	963	4060

CAL YR 1979 TOTAL 30295.4 MEAN 83.0 MAX 2640 MIN 8.0 CFSM 4.97 IN 67.48 AC-FT 60090
WTR YR 1980 TOTAL 18048.5 MEAN 49.3 MAX 1130 MIN 8.3 CFSM 2.95 IN 40.20 AC-FT 35800

50034000 RIO BAUTA NEAR OROCOVIS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OR RECORD.--Water years 1958 to 1966, 1969 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
DEC , 1978										
06...	1640	11	200	8.1	21.0	--	8.2	85	--	21
MAR , 1979										
16...	1145	8.0	221	7.7	23.5	--	9.4	90	--	22
JUL										
17...	0900	24	200	8.2	25.0	--	--	75	--	18
SEP										
14...	0925	51	160	7.2	24.0	--	--	66	--	16
JAN , 1980										
16...	1240	20	194	8.4	20.5	.40	8.8	82	0	20

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
DEC , 1978										
06...	8.0	10	.5	1.5	--	--	--	--	6.3	9.8
MAR , 1979										
16...	8.6	11	.5	1.3	--	--	--	--	7.0	11
JUL										
17...	7.4	9.2	.5	1.2	--	--	--	--	6.3	9.8
SEP										
14...	6.3	9.4	.5	1.2	--	--	--	--	5.3	11
JAN , 1980										
16...	7.9	10	.5	1.2	98	2	84	.7	6.8	9.8

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
DEC , 1978										
06...	.1	26	--	--	--	--	--	ND	<20	2
MAR , 1979										
16...	--	23	145	--	3.1	--	--	--	--	--
JUL										
17...	.1	27	122	79	7.9	--	<1	ND	20	ND
SEP										
14...	.1	28	120	77	16.5	--	--	--	--	--
JAN , 1980										
16...	.1	28	--	134	7.2	20	--	--	--	--

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1978										
06...	250	--	<2	<10	--	--	--	<20	--	--
MAR , 1979										
16...	--	--	--	--	--	--	--	--	--	--
JUL										
17...	260	--	<2	<10	<.5	<1	ND	30	3	.19
SEP										
14...	200	20	--	<10	--	--	--	--	--	--
JAN , 1980										
16...	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50035000 RIO GRANDE DE MANATI AT CIALES, PR

LOCATION.--Lat 18°19'26", long 66°27'36", Hydrologic Unit 21010001, on left bank, 1.6 mi (2.6 km) upstream from Hwy 145 bridge, 0.8 mi (1.3 km) downstream from Quebrada Saliente, 0.9 mi (1.4 km) upstream from Quebrada Cojo Valés, and 1.2 mi (1.9 km) southeast of Ciales.

DRAINAGE AREA.--128 sq mi (332 sq km), excludes 6.0 sq mi (15.5 sq km), the runoff from which is diverted through Guineo and de Matrullas reservoirs.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1946 to September 1953, May 1956 to December 1957 (unpublished, available in files of Caribbean District Office and in the National Water Data Storage and Retrieval System, Washington, D.C.); February 1959 to September 1960 (monthly discharge measurements only); October 1960 to current year.
Equivalent record from January 1971 to December 1972 published as 50035200 Río Grande de Manatí at Highway 145 at Ciales at site 1.6 mi (2.6 km) downstream, drainage area 132 sq mi (342 sq km).

GAGE.--Water-stage recorder. Altitude of gage is 140 ft (42.7 m), from topographic map. Prior to Apr. 1, 1962 , staff gage, read twice daily, at site 100 ft (30.5 m) upstream at same datum. January 1971 to December 1972 at site 1.6 mi (2.6 km) downstream at different datum.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--19 years (1961-79), 256 cu ft/s (7.250 cu m/s) 27.16 in/yr (690 mm/yr), 185,500 acre-ft/yr (229 cu hm/yr); median of yearly mean discharges, 222 cu ft/s (6.29 cu m/s), 160,800 acre-ft/yr (198 cu hm/yr).
--20 years (1961-80), 259 cu ft/s (7.335 cu m/s), 27.48 in/yr (698 mm/yr), 187,600 acre-ft/yr (231 cu hm/yr); median of yearly mean discharges, 227 cu ft/s (6.43 cu m/s), 164,500 acre-ft/yr (203 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125,000 cu ft/s (3,540 cu m/s) Oct. 9, 1970, gage height, 24.0 ft (7.32 m), from floodmark, from rating curve extended above 3,000 cu ft/s (85.0 cu m/s) on basis of slope-area measurements of peak flow at gage heights 13.2 ft (4.02 m), 15.0 ft (4.57 m), 19.0 ft (5.79 m), and 24.0 ft (7.32 m), datum then in use; minimum daily, 24 cu ft/s (0.680 cu m/s) July 13-15, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate gage heights of major floods, pointed out by local residents are as follows: August 1899, 50 ft (15.2 m), September 1928, 36 ft (11.0 m), and September 1932, 34 ft (10.4 m) at site 1.6 mi (2.6 km) upstream.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 7,000 cu ft/s (198 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 12, 1979	1545	7,690	218	6.07	1.850
May 14, 1979	1600	27,400	776	11.30	3.444
May 16, 1979	1900	17,400	493	9.00	2.743
May 20, 1979	0500	11,400	323	7.30	2.225
July 18, 1979	2245	25,300	716	10.85	3.307
Aug. 30, 1979	2230	*36,200	1020	13.03	3.972
Sept. 4, 1979	2300	7,470	212	5.99	1.826
Sept. 5, 1979	1345	7,820	221	6.12	1.865
Sept. 29, 1979	1630	9,690	274	6.77	2.063
Nov. 7, 1979	1600	10,300	292	6.98	2.128
Nov. 25, 1979	1415	*28,000	793	11.43	3.484
Apr. 25, 1980	1745	13,400	379	7.90	2.908
May 27, 1980	1600	14,200	402	8.13	2.478
Sept. 27, 1980	1730	16,000	453	8.63	2.630
Sept. 30, 1980	1730	21,000	595	9.88	3.011

Minimum discharges, 53 cu ft/s (1.501 cu m/s) Dec. 15, 1978; 66 cu ft/s (1.869 cu m/s) July 30-31, Aug. 13, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	196	284	80	70	85	70	180	591	450	300	605	3510
2	521	247	80	80	80	69	170	279	420	250	507	1200
3	526	193	115	75	80	68	160	261	410	220	249	811
4	317	152	97	65	75	73	150	199	390	210	386	3440
5	386	133	68	60	75	103	140	160	380	200	339	5470
6	299	122	64	560	70	101	130	171	360	310	209	2150
7	193	110	76	1200	70	76	130	500	350	250	177	1140
8	600	100	85	400	67	70	120	437	340	220	165	900
9	898	105	70	350	67	66	115	417	500	200	149	996
10	332	107	62	200	65	67	103	413	1000	200	139	664
11	175	99	60	170	65	67	101	246	700	200	136	523
12	125	126	59	200	126	67	103	1180	500	260	136	448
13	118	115	57	190	79	67	122	580	405	1000	138	394
14	116	109	54	180	97	67	153	3910	346	300	143	341
15	94	103	53	170	339	67	108	2010	794	240	132	324
16	236	92	56	170	452	71	107	4240	671	225	174	304
17	318	161	56	160	161	68	104	2830	470	224	214	284
18	130	120	80	150	109	87	94	1280	420	3190	144	392
19	92	110	120	140	98	103	91	1300	390	2860	353	363
20	77	200	90	130	106	85	96	3090	360	324	578	314
21	72	140	100	140	253	79	412	864	340	250	1420	260
22	65	110	90	140	154	101	577	480	320	245	930	247
23	113	100	70	145	118	98	1960	1300	400	245	495	242
24	185	95	70	130	101	91	715	800	500	245	403	234
25	365	90	75	120	86	84	560	650	400	245	350	242
26	2530	90	70	105	79	155	439	600	370	230	210	238
27	2040	85	60	100	78	174	270	700	450	174	166	217
28	1650	80	60	100	73	104	237	800	400	159	149	201
29	577	80	60	95	---	740	1050	650	400	151	432	2130
30	352	90	65	90	---	280	984	550	500	146	7760	1840
31	284	---	70	90	---	120	---	500	---	313	20200	---
TOTAL	13982	3748	2272	5975	3308	3538	9681	31988	13736	13586	37582	29819
MEAN	451	125	73.3	193	118	114	323	1032	458	438	1212	994
MAX	2530	284	120	1200	452	740	1960	4240	1000	3190	20200	5470
MIN	65	80	53	60	65	66	91	160	320	146	132	201
CFSM	3.52	.98	57	1.51	.92	.89	2.52	8.06	3.58	3.42	9.47	7.77
IN.	4.06	1.09	.66	1.74	.96	1.03	2.81	9.30	3.99	3.95	10.92	8.67
AC-FT	27730	7430	4510	11850	6560	7020	19200	63450	27250	26950	74540	59150

CAL YR 1978 TOTAL 62426 MEAN 171 MAX 3760 MIN 28 CFSM 1.34 IN 18.14 AC-FT 123800
WTR YR 1979 TOTAL 169215 MEAN 464 MAX 20200 MIN 53 CFSM 3.63 IN 49.18 AC-FT 335600

50035000 RIO GRANDE DE MANATI AT CIALES, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	795	323	310	206	116	111	104	190	250	98	127	106
2	513	254	300	197	114	108	102	148	210	96	152	91
3	379	229	300	189	114	106	101	133	190	94	87	136
4	306	405	350	179	127	108	101	125	180	91	145	219
5	292	484	400	174	251	2150	101	122	180	96	152	289
6	277	605	300	170	743	1050	101	111	350	101	98	213
7	329	2230	270	167	386	324	101	108	270	116	82	122
8	315	1820	250	160	201	221	108	111	200	116	85	145
9	299	912	240	160	620	186	354	108	180	96	76	98
10	311	418	230	300	828	161	379	103	160	94	72	142
11	434	311	230	200	319	155	509	101	150	89	72	213
12	515	274	220	160	221	145	634	311	400	85	70	127
13	376	267	220	230	179	142	405	361	250	82	68	103
14	264	237	210	210	168	136	182	152	210	85	127	96
15	248	215	210	190	152	133	136	145	180	87	89	211
16	242	206	210	180	145	130	119	145	160	80	74	289
17	223	204	200	170	136	127	108	193	150	94	70	130
18	214	437	200	160	130	125	103	168	140	94	157	103
19	215	331	200	150	130	125	101	229	130	111	458	106
20	573	589	200	140	127	125	96	221	120	96	217	114
21	545	2580	600	140	127	119	96	150	120	82	116	335
22	292	1110	320	140	122	116	94	130	120	76	98	289
23	244	559	268	130	152	116	108	286	110	74	85	481
24	314	1170	578	130	165	114	116	1090	110	74	76	750
25	242	5110	2640	130	133	110	2140	622	110	70	74	498
26	227	1880	637	120	125	106	1680	234	110	70	82	387
27	230	1100	376	120	119	106	1130	3000	108	76	74	2750
28	859	600	285	120	114	183	550	1000	103	80	78	2440
29	636	400	254	120	111	122	234	700	101	80	390	1380
30	294	340	230	116	---	112	172	500	101	72	225	4290
31	352	---	221	114	---	107	---	300	---	68	161	---
TOTAL	11355	25600	11459	5072	6375	7179	10265	11297	5153	2723	3937	16653
MEAN	366	853	370	164	220	232	342	364	172	87.8	127	555
MAX	859	5110	2640	300	828	2150	2140	3000	400	116	458	4290
MIN	214	204	200	114	111	106	94	101	101	68	68	91
CFSM	2.86	6.66	2.89	1.28	1.72	1.81	2.67	2.84	1.34	.69	.99	4.34
IN.	3.30	7.44	3.33	1.47	1.85	2.09	2.98	3.28	1.50	.79	1.14	4.84
AC-FT	22520	50780	22730	10060	12640	14240	20360	22410	10220	5400	7810	33030

CAL YR 1979 TOTAL 197627 MEAN 541 MAX 20200 MIN 60 CFSM 4.23 IN 57.43 AC-FT 392000
WTR YR 1980 TOTAL 117068 MEAN 320 MAX 5110 MIN 68 CFSM 2.50 IN 34.02 AC-FT 232200

RIO GRANDE DE MANATI BASIN

50035200 RIO GRANDE DE MANATI AT HIGHWAY 145 AT CIALES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'15", long 66°27'49", near upstream side bridge on Highway 145, and about 0.3 mi (0.5 km) east of Ciales.

DRAINAGE AREA.--132 sq mi (342 sq km) this excludes the 6 sq mi (15.5 sq km) upstream from Lago El Guineo and Lago de Matrullas, flow from which is diverted to Río Jacaguas.

PERIOD OF RECOPD.--Water years 1970 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
25...	1030	E480	160	7.5	23.5	7.8	1.2	36000	17000	19000	55
DEC											
21...	1225	216	242	8.0	24.5	8.3	1.2	10000	1200	2000	93
FEB , 1979											
21...	1100	E350	210	7.4	24.5	8.1	1.3	23000	13000	5500	84
APR											
25...	0850	742	210	7.6	22.0	9.0	1.1	210000	60000	5500	75
JUL											
02...	1200	552	186	7.5	26.0	8.4	.8	8100	2000	2100	69
AUG											
29...	1030	180	240	8.1	27.0	8.0	2.1	17000	640	2200	97

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
25...	4	14	4.9	7.9	.5	1.4	62	0	51	3.1	7.2
DEC											
21...	0	23	8.6	12	.5	2.0	120	0	98	1.9	9.9
FEB , 1979											
21...	5	21	7.6	12	.6	1.9	96	0	79	6.1	9.6
APR											
25...	13	18	7.4	11	.6	1.9	76	0	62	3.1	13
JUL											
02...	6	17	6.4	9.6	.5	1.5	77	0	63	3.9	9.5
AUG											
29...	6	24	8.9	13	.6	1.8	110	0	90	1.4	10

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
25...	7.6	.1	20	95	94	123	.69	.040	.73	.040
DEC										
21...	13	.1	23	156	151	91.0	.47	.010	.48	.040
FEB , 1979										
21...	12	.1	22	141	134	133	.60	.010	.61	.040
APR										
25...	17	.1	24	128	130	256	1.2	<.010	1.2	.030
JUL										
02...	11	.1	24	124	117	--	.86	.010	.87	.010
AUG										
29...	14	.1	28	--	154	74.8	.69	<.010	.69	.010

E Estimated.

50035200 RIO GRANDE DE MANATI AT HIGHWAY 145 AT CIALES, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
25...	.47	.51	1.2	5.5	.120	.080	--	--	--	--
DEC										
21...	.16	.20	.68	3.0	.110	.060	1	<2	<20	12
FEB , 1979										
21...	.24	.28	.89	3.9	.110	.080	--	--	--	--
APR										
25...	.25	.28	1.5	6.6	.080	.050	--	--	--	--
JUL										
02...	.31	.32	1.2	5.3	.090	.030	--	--	--	--
AUG										
29...	.20	.21	.90	4.0	.050	.030	1	ND	<20	9

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
25...	--	--	--	--	--	--	--	--	197	--
DEC										
21...	3000	6	60	<.5	<1	ND	20	--	46	24
FEB , 1979										
21...	--	--	130	--	--	--	--	3.3	95	--
APR										
25...	--	--	70	--	--	--	--	2.8	50	100
JUL										
02...	--	--	--	--	--	--	--	4.1	60	85
AUG										
29...	430	<2	40	<.5	<1	ND	<20	2.3	13	6.3

ND Looked for but not detected.

50035500 RIO GRANDE DE MANATI AT HIGHWAY 149 AT CIALES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'46", long 66°28'06", at bridge on Highway 149, about 800 ft (244 m) upstream from confluence with Río Cialitos, 0.5 mi (0.8 km) north of Ciales.

DRAINAGE AREA.--136 sq mi (352 sq km) this excludes the 6 sq mi (15.5 sq km) upstream from Lago El Guineo and Lago de Matrullas, flow from which is diverted to Río Jacaguas.

PERIOD OF RECORD.--October 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
DEC , 1979												
04...	0900	271	213	8.6	23.0	2.0	9.4	11	2.0	520	240	--
JAN , 1980												
23...	0815	153	225	7.6	21.5	.02	8.2	10	.0	160	20	97
MAR												
28...	1115	189	236	8.4	25.5	1.5	9.4	2	--	150	200	--
MAY												
15...	1335	168	207	7.8	27.0	--	8.4	--	1.8	840	120	75
JUL												
16...	1030	73	238	7.7	27.5	1.1	8.0	10	1.4	230	130	--
SEP												
18...	0940	96	195	7.6	25.0	22	7.5	5	1.6	2300	500	68

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
DEC , 1979												
04...	--	--	--	--	--	--	96	2	82	.4	--	--
JAN , 1980												
23...	7	24	9.0	13	.6	1.3	110	0	90	4.4	9.3	13
MAR												
28...	--	--	--	--	--	--	120	2	100	.8	--	--
MAY												
15...	2	18	7.3	12	.6	1.6	89	0	73	2.3	5.6	13
JUL												
16...	--	--	--	--	--	--	107	0	88	3.4	--	--
SEP												
18...	0	17	6.3	10	.5	2.0	86	0	71	3.5	10	11

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRE-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
DEC , 1979												
04...	--	--	--	--	--	.86	.000	.86	.020	.23	.25	1.1
JAN , 1980												
23...	.1	22	146	60.3	29	.47	.020	.49	.070	.02	.09	.58
MAR												
28...	--	--	--	--	--	.49	.010	.50	.030	.30	.33	.83
MAY												
15...	.1	25	130	59.0	--	--	--	--	--	--	--	--
JUL												
16...	--	--	--	--	--	.14	.010	.11	.050	.03	.08	.19
SEP												
18...	.0	22	121	31.4	11	.84	.020	.86	.030	.41	.44	1.3

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1979												
04...	4.9	.050	--	--	--	--	--	--	--	--	7	5.1
JAN , 1980												
23...	2.6	.050	--	--	--	--	--	--	--	--	23	9.5
MAR												
28...	3.7	.070	1	50	0	4	0	.1	0	0	4	2.0
MAY												
15...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
16...	.84	.050	--	--	--	--	--	--	--	--	5	.99
SEP												
18...	5.8	.070	0	100	4	12	75	.5	0	0	45	12

50035950 RIO CIALITOS AT HIGHWAY 649 AT CIALES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'18", long 66°28'28", 100 ft (30.5 m) upstream from bridge on Highway 649, 0.7 mi (1.1 km) upstream from mouth, and about 0.4 mi (0.6 km) west of Ciales.

DRAINAGE AREA.--17.0 sq mi (44.0 sq km).

PERIOD OF RECORD.--Water years 1969-71, 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
25...	0920	17	237	7.5	24.5	--	9.0	--	.5	1900	410	460
DEC												
21...	1100	28	220	8.2	22.5	--	9.0	--	.1	25000	4800	5000
FEB , 1979												
21...	0930	72	207	7.7	23.5	--	9.4	--	1.4	19000	10000	7000
APR												
25...	0945	49	215	7.8	22.0	--	8.9	--	.9	19000	2100	8000
JUL												
02...	1310	38	202	8.3	26.5	--	8.4	--	.6	4200	510	370
AUG												
29...	1250	38	239	8.3	27.0	--	8.3	--	2.3	5300	870	900
NOV												
26...	1325	130	207	7.8	24.0	40	9.1	28	3.0	--	3800	3500
JAN , 1980												
23...	1200	23	218	8.1	21.0	.40	10.0	8	1.6	--	250	270
MAR												
04...	1150	15	220	8.6	22.0	1.0	9.7	--	1.7	--	250	270
MAY												
13...	1045	23	230	7.9	24.5	21	8.9	19	1.2	--	2300	2600
JUL												
16...	1255	13	229	8.2	28.5	2.0	8.5	6	3.3	--	330	310
SEP												
18...	1115	17	242	8.1	25.5	1.6	8.5	0	2.2	--	670	630

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
25...	100	--	29	7.4	11	.5	1.9	122	0	100	6.2
DEC											
21...	90	0	25	6.8	11	.5	1.8	110	0	90	1.1
FEB , 1979											
21...	94	7	29	5.3	10	.4	2.0	106	0	87	3.4
APR											
25...	84	5	24	5.8	10	.5	1.8	96	0	79	2.4
JUL											
02...	79	0	22	5.8	9.6	.5	1.5	100	0	82	.8
AUG											
29...	98	0	28	6.7	12	.5	1.7	120	0	98	1.0
NOV											
26...	--	--	--	--	--	--	--	98	0	80	2.5
JAN , 1980											
23...	98	0	28	6.9	12	.6	1.2	120	0	98	1.5
MAR											
04...	--	--	--	--	--	--	--	110	0	90	.4
MAY											
13...	87	0	25	6.0	11	.5	1.6	110	0	90	2.2
JUL											
16...	--	--	--	--	--	--	--	122	0	100	1.2
SEP											
18...	90	0	26	6.1	12	.6	1.8	122	0	100	1.6

50035950 RIO CIALITOS AT HIGHWAY 649 AT CIALES, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
25...	7.5	10	.1	25	154	156	7.1	--	.70	.010	.71
DEC											
21...	7.3	12	.1	27	159	145	12.0	--	1.1	.010	1.1
FEB , 1979											
21...	7.6	12	.1	22	148	140	28.9	--	.98	.020	1.0
APR											
25...	7.9	15	.1	26	138	138	18.3	--	.93	.010	.94
JUL											
02...	5.5	10	.1	28	139	132	14.3	--	.99	.010	1.0
AUG											
29...	7.5	11	.1	30	--	156	15.8	--	1.3	<.010	1.3
NOV											
26...	--	--	--	--	--	--	--	--	2.3	.020	2.3
JAN , 1980											
23...	5.8	12	.1	32	--	158	9.8	7	.99	.010	1.0
MAR											
04...	--	--	--	--	--	--	--	--	.38	.000	.38
MAY											
13...	8.8	12	.1	26	--	145	8.9	22	.72	.010	.73
JUL											
16...	--	--	--	--	--	--	--	--	.57	.010	.58
SEP											
18...	6.0	12	.0	25	--	149	6.8	8	.65	.010	.66

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
25...	.010	.31	.32	1.0	4.6	.070	.050	--	--	--	--
DEC											
21...	.020	.21	.23	1.3	5.9	.120	.090	1	--	ND	20
FEB , 1979											
21...	.030	.38	.41	1.4	6.2	.110	.090	--	--	--	--
APR											
25...	.010	.28	.29	1.2	5.4	.110	.070	--	--	--	--
JUL											
02...	.010	.13	.14	1.1	5.0	.070	.030	--	--	--	--
AUG											
29...	.010	.15	.16	1.5	6.5	.060	.050	1	--	ND	<20
NOV											
26...	.020	.59	.61	2.9	13	.100	--	--	--	--	--
JAN , 1980											
23...	.010	.18	.19	1.2	5.3	.080	--	--	--	--	--
MAR											
04...	.000	.23	.23	.61	2.7	.060	--	0	<50	0	17
MAY											
13...	.010	.16	.17	.90	4.0	.090	--	--	--	--	--
JUL											
16...	.060	.10	.16	.74	3.3	.110	--	--	--	--	--
SEP											
18...	.000	.12	.12	.78	3.5	.080	--	1	100	17	4

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
25...	--	--	--	--	--	--	--	--	--	8	.37
DEC											
21...	6	1600	3	40	<.5	<1	ND	30	--	34	2.6
FEB , 1979											
21...	--	--	--	100	--	--	--	--	5.9	100	20
APR											
25...	--	--	--	50	--	--	--	--	3.6	45	6.0
JUL											
02...	--	--	--	--	--	--	--	--	1.7	19	1.9
AUG											
29...	5	150	ND	20	<.5	<1	ND	20	1.7	5	.51
NOV											
26...	--	--	--	--	--	--	--	--	--	126	44
JAN , 1980											
23...	--	--	--	--	--	--	--	--	--	3	.19
MAR											
04...	--	--	6	--	<.1	0	0	--	--	3	.12
MAY											
13...	--	--	--	--	--	--	--	--	--	4	.25
JUL											
16...	--	--	--	--	--	--	--	--	--	4	.14
SEP											
18...	--	--	260	--	.1	0	0	--	--	14	.64

ND Looked for but not detected.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR

LOCATION.--Lat 18°25'52", long 66°31'37", Hydrologic Unit 21010002, at bridge on Highway 2, and 2.3 mi (3.7 km) west of Manatí.

DRAINAGE AREA.--197 sq mi (510 sq km), approximately, of which about 38 sq mi (98 sq km) is partly or entirely noncontributing, excludes 6.0 sq mi (15.5 sq km) upstream from Lago El Guineo and Lago de Matrullas.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1963-68 (annual maximum discharge only), February 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 14 ft (4.3 m), from topographic map. Prior to 1968 crest-stage gage at same site and datum 3.57 ft (1.088 m) lower.

REMARKS.--Records good.

AVERAGE DISCHARGES.--9 years (1971-79), 361 cu ft/s (10.22 cu m/s), 24.88 in/yr (632 mm/yr), 261,500 acre-ft/yr (322 cu hm/yr).
--10 years (1971-80), 368 cu ft/s (10.42 cu m/s), 25.37 in/yr (644 mm/yr), 266,600 acre-ft/yr (329 cu hm/yr); median of yearly mean discharges, 284 cu ft/s (8.04 cu m/s), 205,800 acre-ft/yr (254 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 119,000 cu ft/s (3,370 cu m/s) Oct. 9, 1970, gage height, 33.3 ft (10.15 m) from rating curve extended above 15,000 cu ft/s (425 cu m/s) on basis of slope-area measurement of peak flow; minimum, 50 cu ft/s (1.42 cu m/s) Sept. 4, 1977, Aug. 12-14, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate gage heights to gage datum of major floods, pointed out by local residents, are as follows: Sept. 13, 1928, 36.6 ft (11.16 m), Sept. 27, 1932, 36.3 ft (11.06 m), and Aug. 4, 1945, 34.3 ft (10.45 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 9,000 cu ft/s (255 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 14, 1979	2030	14,500	411	28.74	8.760
May 16, 1979	2315	13,500	382	28.55	8.702
July 19, 1979	0245	21,400	606	29.57	9.013
Aug. 31, 1979	0200	*46,500	1320	31.18	9.504
Nov. 25, 1979	2045	11,200	317	27.89	8.501
May 28, 1980	0030	*12,100	343	28.21	8.598
Sept. 28, 1980	Unknown	10,000	283	Unknown	

Minimum daily discharges, 92 cu ft/s (2.605 cu m/s) Dec. 29, 1978; 110 cu ft/s (3.115 cu m/s) July 31, Aug. 28, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	377	448	119	105	131	128	300	975	436	1160	720	6490
2	193	352	110	114	127	123	260	478	473	552	767	2000
3	859	271	145	102	131	120	230	370	395	384	419	1450
4	349	236	116	96	126	119	220	388	393	265	373	2450
5	589	205	106	93	120	150	213	285	333	285	609	6590
6	474	187	102	938	118	170	196	261	334	355	398	3250
7	284	174	107	1510	116	130	183	475	572	402	365	1570
8	277	161	118	676	110	115	174	690	422	383	294	1270
9	997	155	107	512	111	115	167	391	407	282	262	1260
10	599	180	101	342	110	110	161	747	593	248	241	1100
11	306	156	99	284	106	110	157	444	1020	232	233	897
12	233	172	99	440	160	107	145	826	848	229	227	790
13	194	173	98	330	130	104	153	1100	571	213	218	725
14	201	149	97	280	117	105	188	2810	429	211	219	675
15	183	145	94	250	2000	104	154	2900	655	198	223	626
16	201	133	94	220	600	105	136	3410	958	216	274	611
17	492	164	93	205	1000	101	177	5500	925	325	524	574
18	236	210	101	190	400	108	161	2500	480	788	271	540
19	166	145	183	180	250	121	228	2070	361	6350	431	520
20	143	132	122	170	300	116	183	3280	342	849	779	500
21	136	137	166	165	350	106	257	1480	315	540	1580	480
22	132	129	162	160	270	109	486	972	300	430	1330	460
23	128	119	118	158	220	119	2100	1030	294	374	883	440
24	231	117	107	155	230	117	981	745	302	341	579	420
25	341	115	102	155	180	115	646	646	279	324	773	410
26	1380	110	98	151	150	109	578	783	281	420	477	410
27	2690	108	97	149	140	119	382	582	312	352	391	400
28	1740	106	93	146	132	119	461	524	276	285	353	400
29	830	104	92	142	---	3000	841	486	391	273	359	2000
30	522	107	93	137	---	700	1310	673	1040	265	3480	6000
31	472	---	94	135	---	400	---	572	---	366	32900	---
TOTAL	15955	5100	3433	8690	8035	7374	11828	38393	14737	17897	50952	45308
MEAN	515	170	111	280	287	238	394	1238	491	577	1644	1510
MAX	2690	448	183	1510	2000	3000	2100	5500	1040	6350	32900	6590
MIN	128	104	92	93	106	101	136	261	276	198	218	400
CFSM	2.61	.86	.56	1.42	1.46	1.21	2.00	6.28	2.49	2.93	8.35	7.67
IN.	3.01	.96	.65	1.64	1.52	1.39	2.23	7.25	2.78	3.38	9.62	8.56
AC-FT	31650	10120	6810	17240	15940	14630	23460	76150	29230	35500	101100	89870

CAL YR 1978	TOTAL	81833	MEAN 224	MAX 3760	MIN 50	CFSM 1.14	IN 15.45	AC-FT 162300		
WTR YR 1979	TOTAL	227702	MEAN 624	MAX 32900	MIN 92	CFSM 3.17	IN 43.00	AC-FT 451600		

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3000	782	478	324	169	162	136	308	612	150	122	167
2	800	459	436	312	167	162	133	267	493	150	264	134
3	600	382	411	292	165	159	128	226	432	150	140	131
4	550	352	529	281	172	165	127	209	411	240	144	133
5	500	728	600	274	238	1190	130	195	360	190	291	602
6	468	564	418	268	726	1750	128	178	332	180	149	551
7	485	1800	382	277	566	490	125	166	328	175	129	200
8	515	2220	360	260	313	339	125	164	352	170	123	176
9	424	1380	358	256	537	285	334	184	294	160	118	159
10	507	648	338	288	1140	246	517	157	285	150	114	147
11	503	495	324	278	476	222	539	152	290	150	114	265
12	584	441	310	329	338	208	917	154	339	140	112	173
13	648	446	299	358	275	200	633	527	312	140	111	141
14	445	384	290	281	251	194	312	230	300	140	144	129
15	468	352	280	247	229	193	224	205	253	130	143	200
16	402	333	286	226	211	184	187	200	240	130	118	160
17	369	326	274	232	198	183	168	258	231	130	110	140
18	351	657	265	232	192	182	158	217	232	150	190	130
19	338	505	263	221	191	175	153	300	219	140	480	120
20	471	682	1630	226	184	175	146	341	210	130	472	120
21	809	2290	1110	228	185	168	138	221	202	130	194	150
22	431	1680	500	212	179	159	137	189	200	120	205	1000
23	373	822	398	201	200	155	146	212	196	120	166	2000
24	424	1380	830	203	250	155	182	724	188	119	126	700
25	408	3340	1700	214	200	153	921	1180	177	116	117	400
26	397	2770	611	196	184	149	2370	410	170	115	123	300
27	357	1240	512	188	183	149	1520	2970	170	119	114	250
28	500	837	425	183	171	198	1100	7170	160	123	110	5000
29	1040	654	376	179	168	165	447	1890	160	119	313	3000
30	467	551	361	173	---	148	323	1790	160	116	632	2000
31	659	---	342	169	---	140	---	850	---	110	249	---
TOTAL	18293	29500	15696	7608	8458	8603	12604	22244	8308	4402	5937	18778
MEAN	590	983	506	245	292	278	420	718	277	142	192	626
MAX	3000	3340	1700	358	1140	1750	2370	7170	612	240	632	5000
MIN	338	326	263	169	165	140	125	152	160	110	110	120
CFSM	3.00	4.99	2.57	1.24	1.48	1.41	2.13	3.65	1.41	.72	.98	3.18
IN.	3.45	5.57	2.96	1.44	1.60	1.62	2.38	4.20	1.57	.83	1.12	3.55
AC-FT	36280	58510	31130	15090	16780	17060	25000	44120	16480	8730	11780	37250

CAL YR 1979 TOTAL 266703 MEAN 731 MAX 32900 MIN 93 CFSM 3.71 IN 50.36 AC-FT 529000
WTR YR 1980 TOTAL 160431 MEAN 438 MAX 7170 MIN 110 CFSM 2.22 IN 30.29 AC-FT 318200

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT , 1978											
17...	0900	E644	252	7.6	26.0	45	7.4	--	1.0	36000	19000
NOV											
03...	1110	268	232	7.6	26.5	35	8.4	--	--	49000	35000
DEC											
12...	0925	98	296	7.6	25.0	4.0	7.2	--	.4	26000	7000
JAN , 1979											
12...	0850	395	235	7.3	23.0	10	6.8	--	--	--	22000
FEB											
08...	0850	117	290	7.5	24.5	2.0	7.6	--	3.6	36000	22000
MAR											
14...	0930	102	290	7.3	26.0	50	6.7	--	--	--	120000
APR											
11...	0940	153	288	7.3	26.0	3.0	8.7	--	.8	11000	8000
MAY											
03...	0935	351	257	7.4	25.0	20	7.1	--	--	39000	16000
JUN											
19...	0950	456	265	7.4	25.0	30	8.3	--	1.0	19000	15000
JUL											
12...	0900	219	277	7.6	27.5	2.0	7.0	--	--	19000	15000
AUG											
14...	0825	227	286	7.3	27.0	10	6.8	--	2.0	170000	20000
SEP											
17...	1020	574	267	7.2	26.5	10	7.9	--	--	11000	4300
OCT											
03...	1000	E680	281	7.1	26.0	30	7.9	--	1.3	--	7000
NOV											
05...	1150	534	228	7.6	25.0	100	8.1	10	2.2	--	19000
DEC											
10...	1340	E386	287	7.8	26.5	3.0	8.6	--	--	--	1000
JAN , 1980											
09...	1225	256	281	7.4	22.0	.20	8.7	8	--	--	2000
FEB											
06...	1400	752	213	7.9	23.0	5.0	7.7	--	--	--	16000
MAR											
11...	1250	220	258	6.9	26.5	2.0	8.4	--	1.0	--	18000
APR											
07...	1210	125	216	8.2	28.0	.20	9.6	--	--	--	3000
MAY											
06...	1245	181	284	7.9	30.0	--	7.7	10	--	--	9000
JUN											
03...	1550	418	239	7.5	30.0	20	7.4	--	--	--	28000
JUL , 1980											
07...	1320	173	279	7.8	30.0	--	8.2	13			23000
AUG											
07...	1125	131	279	7.5	27.5	6.5	7.6	--			13000
SEP											
02...	1440	133	239	7.6	30.0	.40	7.4	--			8000

E Estimated.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)
OCT , 1978											
17...	16000	100	5	29	7.1	10	.4	2.0	116	0	95
NOV											
03...	3400	97	15	27	7.2	15	.7	2.2	100	0	82
DEC											
12...	4100	130	2	37	8.1	12	.5	2.0	151	0	124
JAN , 1979											
12...	25000	100	12	28	7.9	11	.5	2.1	110	0	90
FEB											
08...	24000	127	0	37	8.4	12	.5	2.1	155	0	130
MAR											
14...	39000	130	2	37	8.3	13	.5	1.9	152	0	125
APR											
11...	2900	120	5	35	8.1	12	.5	1.9	140	0	115
MAY											
03...	5600	100	6	29	6.8	11	.5	2.3	115	0	94
JUN											
19...	2300	110	9	31	7.0	12	.5	2.3	119	0	98
JUL											
12...	2300	110	0	33	7.6	11	.4	1.8	141	0	116
AUG											
14...	22000	120	2	34	7.8	12	.5	1.9	140	0	115
SEP											
17...	700	110	3	32	7.2	10	.4	1.6	130	0	107
OCT											
03...	2400	110	12	32	6.2	5.6	.4	1.8	120	0	98
NOV											
05...	12000	88	0	25	6.2	11	.5	2.1	110	0	90
DEC											
10...	370	130	10	39	7.6	12	.5	1.7	146	0	120
JAN , 1980											
09...	300	130	15	37	8.0	11	.4	1.7	140	0	110
FEB											
06...	8100	87	5	25	6.0	10	.5	1.8	104	0	85
MAR											
11...	1300	120	13	35	7.8	11	.4	1.9	130	0	107
APR											
07...	14800	140	7	41	8.6	11	.4	1.9	160	0	131
MAY											
06...	1500	--	--	--	--	--	--	--	152	0	120
JUN											
03...	7300	96	0	28	6.3	9.6	.4	1.7	120	0	98
JUL , 1980											
07...	2400	--	--	--	--	--	--	--	150	0	120
AUG											
07...	825	130	10	39	7.8	10	.4	2.2	140	0	120
SEP											
02...	9100	120	23	38	6.9	9.4	.4	2.2	132	0	100

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978											
17...	4.7	9.8	12	.1	22	149	149	259	.67	--	.020
NOV											
03...	4.0	7.9	13	.1	22	146	144	106	.93	--	.040
DEC											
12...	6.1	8.1	12	.1	20	182	174	48.2	.76	--	.080
JAN , 1979											
12...	8.8	8.9	14	.1	23	159	149	170	1.2	--	.070
FEB											
08...	7.8	8.6	13	.1	20	185	178	58.4	.65	--	.190
MAR											
14...	12	9.1	14	.1	20	183	178	50.4	.50	--	.100
APR											
11...	11	10	14	.1	22	168	172	69.4	.69	--	.050
MAY											
03...	7.3	10	13	.1	22	157	152	149	.96	--	.060
JUN											
19...	7.6	8.1	11	.1	23	155	154	191	.90	--	.040
JUL											
12...	5.7	8.3	14	.1	24	169	169	99.9	.64	--	.070
AUG											
14...	11	8.3	13	.1	21	177	167	108	.56	--	.060
SEP											
17...	13	9.1	14	.1	24	162	167	251	1.0	--	.020
OCT											
03...	15	9.1	10	.1	21	169	155	315	1.3	1.3	.480
NOV											
05...	4.4	4.9	11	.1	23	141	141	203	.84	.84	.060
DEC											
10...	3.7	9.3	13	.1	22	188	180	193	--	.84	.030
JAN , 1980											
09...	8.9	8.2	11	.1	23	170	172	118	.78	.74	.000
FEB											
06...	2.1	13	14	.1	21	188	145	382	1.1	1.1	.080
MAR											
11...	26	10	13	.5	22	184	170	109	1.0	1.0	.060
APR											
07...	1.6	9.0	13	.1	22	188	189	63.4	.74	.74	.040
MAY											
06...	3.1	--	--	--	--	--	--	--	--	--	--
JUN											
03...	5.7	5.9	11	.1	22	157	145	177	.92	.92	.060
JUL , 1980											
07...	3.8	--	--	--	--	--	--	--	--	--	--
AUG											
07...	7.4	6.9	12	.0	22	178	176	63.0	.98	.98	.090
SEP											
02...	4.9	6.0	10	.1	17	127	155	45.6	1.0	1.1	.040

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN DIS-SOLVED (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)
OCT , 1978											
17...	--	.31	--	.33	<.10	1.0	--	4.4	.350	--	--
NOV											
03...	--	.52	--	.56	.22	1.5	--	6.6	.170	.090	--
DEC											
12...	--	.06	--	.14	.14	.90	--	4.0	.160	.120	1
JAN , 1979											
12...	--	.31	--	.38	.35	1.6	--	7.0	.200	.150	--
FEB											
08...	--	.91	--	1.10	.41	1.8	--	7.7	.320	.160	--
MAR											
14...	--	.70	--	.80	.32	1.3	--	5.8	.280	.150	1
APR											
11...	--	.22	--	.27	.20	.96	--	4.3	.110	.080	--
MAY											
03...	--	.35	--	.41	.23	1.4	--	6.1	.220	.130	--
JUN											
19...	--	.36	--	.40	.19	1.3	--	5.8	.140	.070	--
JUL											
12...	--	.46	--	.53	.25	1.2	--	5.2	.170	.100	1
AUG											
14...	--	.37	--	.43	.15	.99	--	4.4	.150	.110	--
SEP											
17...	--	.20	--	.22	.22	1.2	1.2	5.4	.060	.050	1
OCT											
03...	.480	.41	--	.89	.30	2.2	1.6	9.7	.120	.070	--
NOV											
05...	.050	.64	.15	.70	.21	1.5	1.1	6.8	.180	.120	--
DEC											
10...	.000	.14	.10	.17	.10	--	.94	--	.080	.050	0
JAN , 1980											
09...	.000	.38	.18	.38	.18	1.2	.92	5.1	.070	.060	1
FEB											
06...	.040	.50	.23	.58	.27	1.7	1.4	7.4	.350	.100	--
MAR											
11...	.060	.31	.19	.37	.25	1.4	1.2	6.1	.140	.090	--
APR											
07...	.040	.57	.28	.61	.32	1.4	1.1	6.0	.590	.120	1
MAY											
06...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	.060	.32	.24	.38	.30	1.3	1.2	5.8	.140	.090	--
JUL , 1980											
07...	--	--	--	--	--	--	--	--	--	--	--
AUG											
07...	.030	.11	.11	.20	.14	1.2	1.3	5.1	.210	.140	--
SEP											
02...	.040	.14	.13	.18	.17	1.2	1.3	5.2	.070	.110	--

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMER 1980

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED, (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)
OCT , 1978											
17...	--	--	--	--	--	--	--	--	--	--	--
NOV											
03...	1	--	<100	--	--	--	--	--	ND	--	4
DEC											
12...	1	<100	<100	2	--	<20	ND	ND	ND	4	3
JAN , 1979											
12...	--	--	--	--	--	--	--	--	--	--	--
FEB											
08...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	1	<100	<100	ND	--	<20	ND	ND	ND	7	5
APR											
11...	--	--	--	--	--	--	--	--	--	--	--
MAY											
03...	1	--	<100	--		--	<20	--	3	--	2
JUN											
19...	1	50	50	--		--	--	--	--	--	4
JUL											
12...	1	<100	50	7	2	30	<20	<2	ND	5	<2
AUG											
14...	--	--	--	--	--	--	--	--	--	--	--
SEP											
17...	1	<100	<100	ND	ND	20	<20		<2	6	2
OCT											
03...	--	--	--	--	--	--	--	--	--	--	--
NOV											
05...	--	--	--	--	--	--	--	--	--	--	--
DEC											
10...	0	60	60	0	0	20	10	0	0	5	4
JAN , 1980											
09...	1	100	60	0	0	30	20	1	0	4	2
FEB											
06...	--	--	--	--	--	--	--	--	--	--	--
MAR											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
07...	1	50	50	0	0	30	10	1	0	5	3
MAY											
06...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)
OCT , 1978											
17...	--	--	--	--	--	--	--	--	--	--	--
NOV											
03...	--	60	--	--	--	<10	--	.5	--	--	--
DEC											
12...	360	120	20	17	30	20	<.5	<.5	--	--	<1
JAN , 1979											
12...	--	--	--	--	--	--	--	--	--	--	--
FEB											
08...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	410	30	3	2	40	<10	<.5	<.5	--	--	<1
APR											
11...	--	--	--	--	--	--	--	--	--	--	--
MAY											
03...	--	50	--		--	30	--	<.5	--	--	--
JUN											
19...	--	80	--		--	20	--	<.5	--	--	--
JUL											
12...	1000	20	5	4	80	30	<.5	<.5	--	--	<1
AUG											
14...	--	--	--	--	--	--	--	--	--	--	--
SEP											
17...	1500	20	3	ND	80	20	<.5	<.5	--	--	<1
OCT											
03...	--	--	--	--	--	--	--	--	--	--	--
NOV											
05...	--	--	--	--	--	--	--	--	--	--	--
DEC											
10...	1100	20	2	2	50	20	.1	.1	4	2	0
JAN , 1980											
09...	500	20	2	0	40	10	.3	.1	1	0	0
FEB											
06...	--	--	--	--	--	--	--	--	--	--	--
MAR											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
07...	400	30	2	0	50	30	.1	.1	10	2	0
MAY											
06...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--

ND- Looked for but not detected.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
17...	--	--	--	--	--	4.4	--	--	113	196
NOV										
03...	0	--	--	--	20	--	4.9	--	45	33
DEC										
12...	<1	ND	ND	50	30	--	4.2	--	10	2.6
JAN , 1979										
12...	--	--	--	--	--	13	--	1.2	59	63
FEB										
08...	--	--	--	--	--	5.4	--	--	34	11
MAR										
14...	<1	ND	ND	20	<20	--	4.2	--	5	1.4
APR										
11...	--	--	--	--	--	--	3.5	.5	26	11
MAY										
03...	0	--	--	--	20	--	6.0	--	87	82
JUN										
19...	--	--	ND	--	20	--	--	.7	79	57
JUL										
12...	<1	ND	--	40	20	5.0	2.0	1.8	83	45
AUG										
14...	--	--	--	--	--	4.2	--	--	17	10
SEP										
17...	0	ND	ND	20	20	--	5.3	--	36	56
OCT										
03...	--	--	--	--	--	--	--	--	120	--
NOV										
05...	--	--	--	--	--	7.0	--	--	232	334
DEC										
10...	0	0	0	150	40	4.2	--	--	18	--
JAN , 1980										
09...	0	0	0	30	30	--	5.9	--	9	6.2
FEB										
06...	--	--	--	--	--	7.3	--	--	204	414
MAR										
11...	--	0	--	--	--	2.5	--	--	59	35
APR										
07...	0	0	0	10	10	--	2.0	.3	10	3.4
MAY										
06...	--	--	--	--	--	--	--	--	72	35
JUN										
03...	--	0	--	--	--	1.0	--	--	106	120
JUL , 1980										
07...		--				--			49	23
AUG										
07...		--				.5			25	8.8
SEP										
02...		0				5.0			105	38

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL (UG/L)
NOV										
03...	1110	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
14...	0930	ND	--	ND	--	ND	--	ND	--	ND
JUN										
19...	0950	ND	--	ND	--	ND	--	ND	--	ND
AUG										
14...	0825	ND	--	ND	--	ND	--	ND	--	ND

DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOTTOM MATERIAL (UG/KG)
NOV										
03...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
14...	--	ND	--	ND	ND	--	ND	--	ND	--
JUN										
19...	--	ND	--	ND	ND	--	ND	--	ND	--
AUG										
14...	--	ND	--	ND	ND	--	ND	--	ND	--

ND Looked for but not detected.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	MALATHION, TOTAL (UG/L)	MALATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	METHOXYCHLOR, TOTAL (UG/L)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARATHION, TOTAL (UG/L)
NOV 03...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 14...	--	ND	--	--	ND	--	ND	--	ND
JUN 19...	--	ND	--	--	ND	--	ND	--	ND
AUG 14...	--	ND	--	--	ND	--	ND	--	ND

DATE	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRITHION, TOTAL (UG/L)	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG)	PARATHION, TOTAL (UG/L)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL (UG/L)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG)
NOV 03...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 14...	--	ND	--	ND	--	ND	--	ND	--
JUN 19...	--	ND	--	ND	--	ND	--	ND	--
AUG 14...	--	ND	--	ND	--	ND	--	ND	--

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
NOV 05...	1150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 06...	1400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	HEPTACHLOR EPOXIDE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV 05...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 06...	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--

ND Looked for but not detected.

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 17,78	JAN 12,79	FEB 8,79	MAR 14,79	APR 11,79	JUN 19,79
TIME	0900	0850	0850	0930	0940	0950
TOTAL CELLS/ML	290	40	220	210	14	0
DIVERSITY: DIVISION	0.0	1.0	2.0	1.4	0.0	0.0
.CLASS	0.0	1.0	2.1	1.4	0.0	0.0
..ORDER	0.0	1.0	2.3	2.0	0.0	0.0
...FAMILY	0.0	1.0	2.3	2.6	0.0	0.0
....GENUS	0.4	1.0	2.3	2.6	0.0	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	15	7	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	25#	63	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
....CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....COSMARIUM	--	-	--	-	15	7	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	15#	38	30	14	55#	27	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	42#	20	--	-	--	-
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	--	-	14	7	--	-	--	-
...NITZSCHIACEAE												
....HANTZSCHIA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	--	-	--	-	5	2	28	13	14#	100	--	-
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	--	-
.CHRYSOPHYCEAE												
..CHRYSOMONADALES												
...OCHROMONADACEAE												
....OCHROMONAS	--	-	--	-	5	2	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	5	2	--	-	--	-	--	-
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	260#	91	--	-	--	-	14	7	--	-	--	-
....COCCOCHLORIS	25	9	--	-	10	5	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-	--	-
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

Continued....

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 17,78		JAN 12,79		FEB 8,79		MAR 14,79		APR 11,79		JUN 19,79	
TIME	0900		0850		0850		0930		0940		0950	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	110#	51	14	7	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DESMOKONTAE												
..DESMOMONADALES												
...PROROCENTRACEAE												
....PROROCENTRUM	--	-	--	-	--	-	42#	20	--	-	--	-
.DINOPHYCEAE												
..PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	20	9	--	-	--	-	--	-

DATE	JUL 12,79	AUG 14,79	SEP 17,79	OCT 3,79	NOV 5,79
TIME	0900	0825	1020	1000	1150
TOTAL CELLS/ML	950	1000	260	200	560
DIVERSITY: DIVISION	1.3	0.5	0.0	0.7	1.0
.CLASS	1.3	0.5	0.0	0.7	1.0
..ORDER	2.1	0.6	0.0	1.4	1.0
...FAMILY	2.2	1.6	1.4	1.8	2.8
....GENUS	2.2	1.6	1.4	1.8	2.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	58	6	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	110#	57	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	26	2	--	-	43#	21	14	2
....CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	26	2	--	-	--	-	--	-
....MELOSIRA	170#	18	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	27	5
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	14	5	--	-	55	10
....CYMBELLA	--	-	--	-	--	-	14	7	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	14	5	--	-	14	2
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	82	15
...NAVICULACEAE	--	-	--	-	--	-	--	-	--	-
....NAVICULA	14	2	13	1	83#	32	14	7	120#	22
...NITZSCHIACEAE										
....HANTZSCHIA	--	-	--	-	--	-	--	-	14	2
....NITZSCHIA	58	6	39	4	150#	58	14	7	110#	20
...SURIRELLACEAE										

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE TIME	JUL 12,79 0900		AUG 14,79 0825		SEP 17,79 1020		OCT 3,79 1000		NOV 5,79 1150	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	220#	23	--	-	--	-	--	-	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	450#	43	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	400#	42	490#	47	--	-	--	-	110#	20
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	14	2	--	-	--	-	--	-	--	-
....TRACHELOMONAS	14	2	--	-	--	-	--	-	14	2
PYRRHOPHYTA (FIRE ALGAE)										
.DESMOKONTAE										
..DESMOMONADALES										
...PROROCENTRACEAE										
....PROROCENTRUM	--	-	--	-	--	-	--	-	--	-
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038100 RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	DEC 10,79	JAN 9,80	FEB 6,80	MAR 11,80	APR 7,80
TIME	1340	1225	1400	1250	1210
TOTAL CELLS/ML	140	430	190	540	5400
DIVERSITY: DIVISION	0.5	1.1	0.9	0.6	0.5
.CLASS	0.5	1.1	0.9	0.6	0.5
..ORDER	0.5	1.5	0.9	0.6	0.7
...FAMILY	0.9	2.7	1.8	0.6	0.7
....GENUS	0.9	2.7	0.0	0.0	0.7

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	300	6
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	55	1
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	14	10	.14	3	--	-	--	-	*	0
....CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	41	10	--	-	--	-	68	1
....MELOSIRA	--	-	--	-	--	-	--	-	*	0
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	27	6	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	27	6	14	8	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	41	10	--	-	--	-	--	-
...NAVICULACEAE	--	-	--	-	14	8	--	-	--	-
....NAVICULA	14	10	96#	23	29#	15	29	5	--	-
...NITZSCHIACEAE										
....HANTZSCHIA	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	110#	80	55	13	72#	38	14	3	27	1
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	14	3	27	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	55	1
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	490#	89	--	-
....LYNGBYA	--	-	120#	29	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	4800#	90
....PHORMIDIUM	--	-	--	-	57#	31	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DESMOKONTAE										
..DESMOMONADALES										
...PROROCENTRACEAE										
....PROROCENTRUM	--	-	--	-	--	-	--	-	--	-
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038100. RIO GRANDE DE MANATI AT HIGHWAY 2 NEAR MANATI, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	MAY 6,80		JUN 3,80		JUL 7,80		AUG 7,80		SEP 2,80	
TIME	1245		1550		1320		1125		1440	
TOTAL CELLS/ML	270		550		1500		1000		650	
DIVERSITY: DIVISION	1.0		1.3		0.8		0.7		0.3	
•CLASS	1.0		1.3		0.8		0.7		0.3	
••ORDER	1.0		1.3		0.9		0.8		0.3	
•••FAMILY	1.4		2.0		1.0		0.9		0.3	
••••GENUS	1.6		2.0		1.0		0.9		1.2	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
•CHLOROPHYCEAE										
••CHLOROCOCCALES										
•••OOCYSTACEAE										
••••ANKISTRODESMUS	--	-	120#	22	--	-	--	-	--	-
••••CHLORELLA	--	-	--	-	--	-	14	1	--	-
••••CHODATELLA	--	-	--	-	13	1	--	-	--	-
••••KIRCHNERIELLA	--	-	--	-	64	4	--	-	--	-
••••OOCYSTIS	--	-	--	-	--	-	--	-	--	-
•••SCENEDESMACEAE										
••••SCENEDESMUS	--	-	--	-	26	2	--	-	--	-
••••TETRASTRUM	--	-	--	-	--	-	--	-	--	-
••VOLVOCALES										
•••CHLAMYDOMONADACEAE										
••••CHLAMYDOMONAS	140#	53	--	-	--	-	--	-	--	-
••••CHLOROGONIUM	14	5	--	-	--	-	--	-	--	-
••ZYGNEMATALES										
•••DESMIDIACEAE										
••••COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
•BACILLARIOPHYCEAE										
••CENTRALES										
•••COSCINODISCACEAE										
••••CYCLOTELLA	--	-	--	-	100	7	55	5	--	-
••••MELOSIRA	--	-	--	-	--	-	--	-	--	-
••PENNALES										
•••ACHNANTHACEAE										
••••ACHNANTHES	43#	16	--	-	--	-	--	-	--	-
••••COCCONEIS	--	-	--	-	--	-	--	-	--	-
•••CYMBELLACEAE										
••••AMPHORA	--	-	--	-	--	-	--	-	--	-
••••CYMBELLA	--	-	--	-	--	-	--	-	--	-
•••FRAGILARIACEAE										
••••SYNEDRA	--	-	--	-	--	-	--	-	--	-
•••GOMPHONEMATACEAE										
••••GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
•••NAVICULACEAE	--	-	--	-	--	-	--	-	--	-
••••NAVICULA	--	-	14	2	13	1	28	3	--	-
•••NITZSCHIACEAE										
••••HANTZSCHIA	--	-	--	-	--	-	--	-	--	-
••••NITZSCHIA	72#	26	27	5	13	1	41	4	14	2
•••SURIRELLACEAE										
••••SURIRELLA	--	-	--	-	--	-	14	1	--	-
•CHRYSOPHYCEAE										
••CHRYSOMONADALES										
•••OCHROMONADACEAE										
••••OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
•CRYPTOPHYCEAE										
••CRYPTOMONADALES										
•••CRYPTOCHRYSIDACEAE										
••••CHROOMONAS	--	-	--	-	--	-	--	-	--	-
•••CRYPTOMONADACEAE										
••••CRYPTOMONAS	--	-	--	-	--	-	--	-	14	2
CYANOPHYTA (BLUE-GREEN ALGAE)										
•CYANOPHYCEAE										
••CHROOCOCCALES										
•••CHROOCOCCACEAE										
••••ANACYSTIS	--	-	--	-	--	-	--	-	--	-
••••COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
••HORMOGONALES										
•••NOSTOCACEAE										
••••ANABAENA	--	-	--	-	--	-	--	-	--	-
•••OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
••••LYNGBYA	--	-	--	-	--	-	--	-	190#	29
••••OSCILLATORIA	--	-	230#	42	1300#	84	870#	85	430#	67
••••PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
•••RIVULARIACEAE										
••••RAPHIDIOPSIS	--	-	140#	25	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
•EUGLENOPHYCEAE										
••EUGLENALES										
•••EUGLENACEAE										
••••EUGLENA	--	-	--	-	13	1	--	-	--	-
••••TRACHELOMONAS	--	-	14	2	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
•DESMOKONTAE										
••DESMOMONADALES										
•••PROROCENTRACEAE										
••••PROROCENTRUM	--	-	--	-	--	-	--	-	--	-
•DINOPHYCEAE										
••PERIDINIALES										
•••GLENODINIACEAE										
••••GLENODINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038150 RIO GRANDE DE MANATI ABOVE BARCELONETA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°27'25", long 66°32'07", at old railroad bridge, 0.5 mi (0.8 km) east of Highway 140, and 0.6 mi (1.0 km) southeast of Barceloneta Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1976 to September 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	SAMPLING DEPTH (FT)	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978											
31...	1210	8.00	446	20000	7.8	26.0	5.7	.9	13000	2600	1000
31...	1220	1.00	446	248	7.5	25.0	6.2	.8	17000	9700	2500
DEC											
22...	0950	8.00	180	39000	7.4	27.0	.0	3.1	120000	2300	330
22...	1010	1.00	180	1380	7.4	25.5	5.6	2.5	120000	3300	1600
MAR , 1979											
02...	1020	6.50	118	30000	7.4	25.5	2.0	1.5	5000	1100	200
02...	1030	1.00	118	1300	7.3	26.0	4.0	2.0	18000	3000	260
APR											
27...	1000	6.50	428	338	7.3	25.0	6.6	.7	12000	6700	5000
27...	1015	1.00	428	308	7.2	25.5	6.6	.5	23000	2000	4500
JUL											
03...	0815	6.50	510	3200	7.1	26.0	6.8	.6	21000	4100	1700
03...	0830	1.00	510	269	7.1	26.5	6.8	.6	14000	3700	1100
SEP											
11...	1010	6.50	920	291	7.1	26.0	6.5	2.3	29000	13000	210
11...	1025	1.00	920	283	7.1	27.0	6.5	2.0	31000	9000	4500

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
OCT , 1978											
31...	2700	2600	190	550	4800	40	68	118	0	97	3.0
31...	95	14	26	7.2	15	.7	2.4	98	0	80	5.0
DEC											
22...	--	--	--	--	--	--	--	169	0	139	--
22...	200	98	39	26	160	4.9	8.4	134	0	110	8.3
MAR , 1979											
02...	4100	3900	110	920	9500	65	360	170	0	139	11
02...	210	67	43	24	170	5.2	8.2	170	0	139	14
APR											
27...	100	13	27	8.8	23	1.0	2.5	110	0	90	8.8
27...	100	12	27	8.4	21	.9	2.5	110	0	90	11
JUL											
03...	110	37	27	10	37	1.5	2.8	87	0	71	11
03...	92	10	25	7.2	17	.8	2.0	100	0	82	13
SEP											
11...	110	7	31	6.9	14	.6	2.2	120	0	98	15
11...	100	4	30	6.6	12	.5	2.0	120	0	98	15

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978											
31...	1200	8400	.4	14	15700	15300	18900	.79	.020	.81	.340
31...	11	22	.1	22	160	154	193	.99	.010	1.0	.440
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
22...	51	300	.1	19	697	668	339	.93	.050	.98	.880
MAR , 1979											
02...	1900	14000	.5	7.1	27600	26900	--	.16	.050	.21	.650
02...	49	290	.1	20	696	688	222	.63	.070	.70	2.00
APR											
27...	14	37	.1	22	200	189	232	1.1	.020	1.1	.350
27...	13	33	.1	22	192	181	222	.98	.020	1.0	.310
JUL											
03...	29	68	.1	22	262	240	361	.50	.010	.51	1.00
03...	12	22	.1	23	175	158	241	.97	.020	.99	.250
SEP											
11...	8.9	18	.1	23	--	163	405	.98	.020	1.0	.340
11...	9.2	18	.1	23	--	160	397	.98	.020	1.0	.330

50038150 RIO GRANDE DE MANATI ABOVE BARCELONETA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
31...	.47	.81	1.6	7.2	.200	.110	--	--	--	--
31...	.48	.92	1.9	8.5	.220	.160	--	--	--	--
DEC										
22...	--	--	--	--	--	--	--	--	--	--
22...	.52	1.40	2.4	11	.230	.220	1	ND	<20	5
MAR , 1979										
02...	.31	.96	1.2	5.2	.180	.140	--	--	--	--
02...	.50	2.50	3.2	14	.310	.280	--	--	--	--
APR										
27...	.00	.31	1.4	6.2	.160	.120	--	--	--	--
27...	.27	.58	1.6	7.0	.180	.120	--	--	--	--
JUL										
03...	1.1	2.10	2.6	12	.320	.100	--	--	--	--
03...	.32	.57	1.6	6.9	.160	.100	--	--	--	--
SEP										
11...	.22	.56	1.6	6.9	.190	.070	1	ND	30	9
11...	.26	.59	1.6	7.0	.160	.080	1	ND	20	12

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
31...	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	29	35
DEC										
22...	--	--	--	--	--	--	--	--	--	--
22...	680	3	60	<.5	<1	ND	20	--	16	7.8
MAR , 1979										
02...	--	--	420	--	--	--	--	2.5	--	--
02...	--	--	80	--	--	--	--	3.1	31	9.9
APR										
27...	--	--	80	--	--	--	--	3.5	--	--
27...	--	--	100	--	--	--	--	5.6	64	19
JUL										
03...	--	--	--	--	--	--	--	7.5	--	--
03...	--	--	--	--	--	--	--	4.6	85	117
SEP										
11...	8000	3	320	<.5	<1	ND	<20	4.2	--	--
11...	4600	6	170	<.5	<1	ND	60	1.8	123	306

ND Looked for but not detected.

50038150 RIO GRANDE DE MANATI ABOVE BARCELONETA, PR--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)
JUL 03...	0815	0	.0	2	.5	1.9	.4

DATE	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)
JUL 03...	.0	.0	.0	.0	.0	0

PHYTOPLANKTON ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	DEC 22,78	JUL 3,79	SEP 11,79
TIME	1010	0830	1010
TOTAL CELLS/ML	370	320	62000
DIVERSITY: DIVISION	0.0	0.4	0.0
.CLASS	0.0	0.4	0.0
..ORDER	0.4	1.3	0.0
...FAMILY	0.4	1.3	0.0
....GENUS	0.8	1.8	0.0

ORGANISM	CELLS /ML	PERCENT	CELLS /ML	PERCENT	CELLS /ML	PERCENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....CHLORELLA	--	-	--	-	62000#	99
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	29	8	--	-	--	-
....SKELETONEMA	320#	85	--	-	--	-
..PENNALES						
...NAVICULACEAE						
....NAVICULA	29	8	--	-	330	1
...NITZSCHIACEAE						
....NITZSCHIA	--	-	29	9	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	--	-	120#	36	--	-
....ANACYSTIS	--	-	58#	18	--	-
..HORMOGONALES						
...OSCILLATORIACEAE						
....LYNGBYA	--	-	120#	36	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50038200 LAGUNA TORTUGUERO OUTLET NEAR VEGA BAJA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°28'29", long 66°26'50", at bridge on Highway 686, 4.2 mi (6.8 km) northeast of Manatí, and 4.4 mi (7.1 km) northwest of Vega Baja.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1964-66, 1969-71, 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
17...	1040	13	5000	7.8	29.5	--	7.0	--	1.3	180	10	170
DEC												
22...	1235	17	2550	8.0	28.0	--	8.8	--	1.7	2300	20	37
FEB , 1979												
23...	1250	21	2600	8.0	27.0	--	8.1	--	2.0	140	51	65
APR												
25...	1210	32	2250	7.9	25.0	--	8.1	--	1.2	100	25	55
JUN												
25...	1220	26	1650	8.1	30.0	--	7.0	--	1.4	80	8	14
AUG												
29...	0840	22	1780	8.2	29.0	--	6.7	--	2.5	800	200	38
OCT												
05...	1150	49	1310	7.8	29.0	--	7.3	16	1.6	--	18	2
NOV												
26...	1530	53	1242	7.8	26.5	1.0	8.6	11	2.5	--	23	21
JAN , 1980												
11...	1425	34	1410	8.0	23.0	.18	9.2	31	2.3	--	13	7
MAR												
12...	1210	22	1730	7.1	28.0	.65	8.4	36	1.7	--	15	5
MAY												
05...	1215	15	2130	8.1	32.0	1.8	9.8	60	.0	--	20	23
JUL												
02...	1045	12	2300	8.1	30.0	.70	7.9	55	1.9	--	35	27
SEP												
08...	1040	14	--	--	31.0	--	--	--	--	--	--	--
12...	1015	14	2310	8.0	30.5	1.2	9.1	--	.4	--	8	8

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
17...	630	480	110	86	1500	26	26	184	0	151	4.7
DEC											
22...	400	280	85	46	350	7.6	11	150	0	123	2.4
FEB , 1979											
23...	370	270	71	47	380	8.6	11	120	0	98	1.9
APR											
25...	340	250	67	41	320	7.6	10	110	0	90	2.2
JUN											
25...	300	160	72	28	230	5.8	6.0	160	0	131	2.0
AUG											
29...	330	170	81	32	230	5.5	6.2	200	0	164	2.0
OCT											
05...	--	--	--	--	--	--	--	200	0	160	5.1
NOV											
26...	--	--	--	--	--	--	--	177	0	150	4.5
JAN , 1980											
11...	290	150	74	26	190	4.8	6.0	170	0	140	2.7
MAR											
12...	--	--	--	--	--	--	--	130	0	110	17
MAY											
05...	330	220	79	37	280	6.7	8.0	130	0	110	1.7
JUL											
02...	--	--	--	--	--	--	--	130	0	110	1.7
SEP											
08...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	143	0	117	2.3

50038200 LAGUNA TORTUGUERO OUTLET NEAR VEGA BAJA, PR—Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
17...	220	1800	.1	11	2590	3840	105	--	.52	.020	.54
DEC											
22...	90	710	.1	7.6	1440	1370	64.2	--	.69	.010	.70
FEB , 1979											
23...	94	720	<.1	3.1	1470	1390	84.5	--	.40	.010	.41
APR											
25...	85	600	.1	2.5	1270	1180	108	--	.31	.010	.32
JUN											
25...	55	410	.1	5.5	1000	885	70.2	--	.30	.010	.31
AUG											
29...	54	440	<.1	9.7	--	952	56.5	--	.48	<.010	.48
OCT											
05...	--	--	--	--	--	--	--	--	.76	.050	.81
NOV											
26...	--	--	--	--	--	--	--	--	1.8	.020	1.8
JAN , 1980											
11...	43	370	.1	6.3	--	799	73.3	22	.90	.040	.94
MAR											
12...	--	--	--	--	--	--	--	--	.83	.020	.85
MAY											
05...	60	550	.1	6.3	--	1080	43.7	13	.57	.020	.59
JUL											
02...	--	--	--	--	--	--	--	8	.60	.020	.62
SEP											
08...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	.68	.020	.70

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3))	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
17...	1.10	.10	1.20	1.7	7.7	.010	--	--	--	--	--
DEC											
22...	.390	.81	1.20	1.9	8.4	<.010	<.010	1	--	ND	<20
FEB , 1979											
23...	.100	.90	1.00	1.4	6.2	.010	.010	--	--	--	--
APR											
25...	.190	1.3	1.50	1.8	8.1	.010	<.010	--	--	--	--
JUN											
25...	.210	.99	1.20	1.5	6.7	.010	<.010	--	--	--	--
AUG											
29...	.830	.87	1.70	2.2	9.7	<.010	<.010	<1	--	<2	<20
OCT											
05...	.190	.28	.47	1.3	5.7	.120	.080	--	--	--	--
NOV											
26...	.110	.81	.92	2.7	12	.000	--	--	--	--	--
JAN , 1980											
11...	.000	.83	.83	1.8	7.8	.010	--	--	--	--	--
MAR											
12...	.110	.68	.79	1.6	7.3	.040	--	0	0	0	9
MAY											
05...	.130	.77	.90	1.5	6.6	.010	--	--	--	--	--
JUL											
02...	.150	1.5	1.60	2.2	9.8	.010	--	--	--	--	--
SEP											
08...	--	--	--	--	--	--	--	--	--	--	--
12...	.290	.91	1.20	1.9	8.4	.010	--	2	<50	0	1

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
17...	--	--	--	--	--	--	--	--	--	3	.11
DEC											
22...	2	150	<2	20	<.5	<1	ND	20	--	0	.00
FEB , 1979											
23...	--	--	--	<10	--	--	--	--	7.3	6	.35
APR											
25...	--	--	--	<10	--	--	--	--	8.4	5	.43
JUN											
25...	--	--	--	--	--	--	--	--	7.8	3	.21
AUG											
29...	3	90	ND	90	<.5	<1	ND	ND	9.7	--	--
OCT											
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
26...	--	--	--	--	--	--	--	--	--	1	.14
JAN , 1980											
11...	--	--	--	--	--	--	--	--	--	1	.09
MAR											
12...	--	--	0	--	.1	0	0	--	--	2	.12
MAY											
05...	--	--	--	--	--	--	--	--	--	3	.12
JUL											
02...	--	--	--	--	--	--	--	--	--	4	.13
SEP											
08...	--	--	--	--	--	--	--	--	--	2	.08
12...	--	--	0	--	<.1	0	0	--	--	1	.04

ND Looked for but not detected.

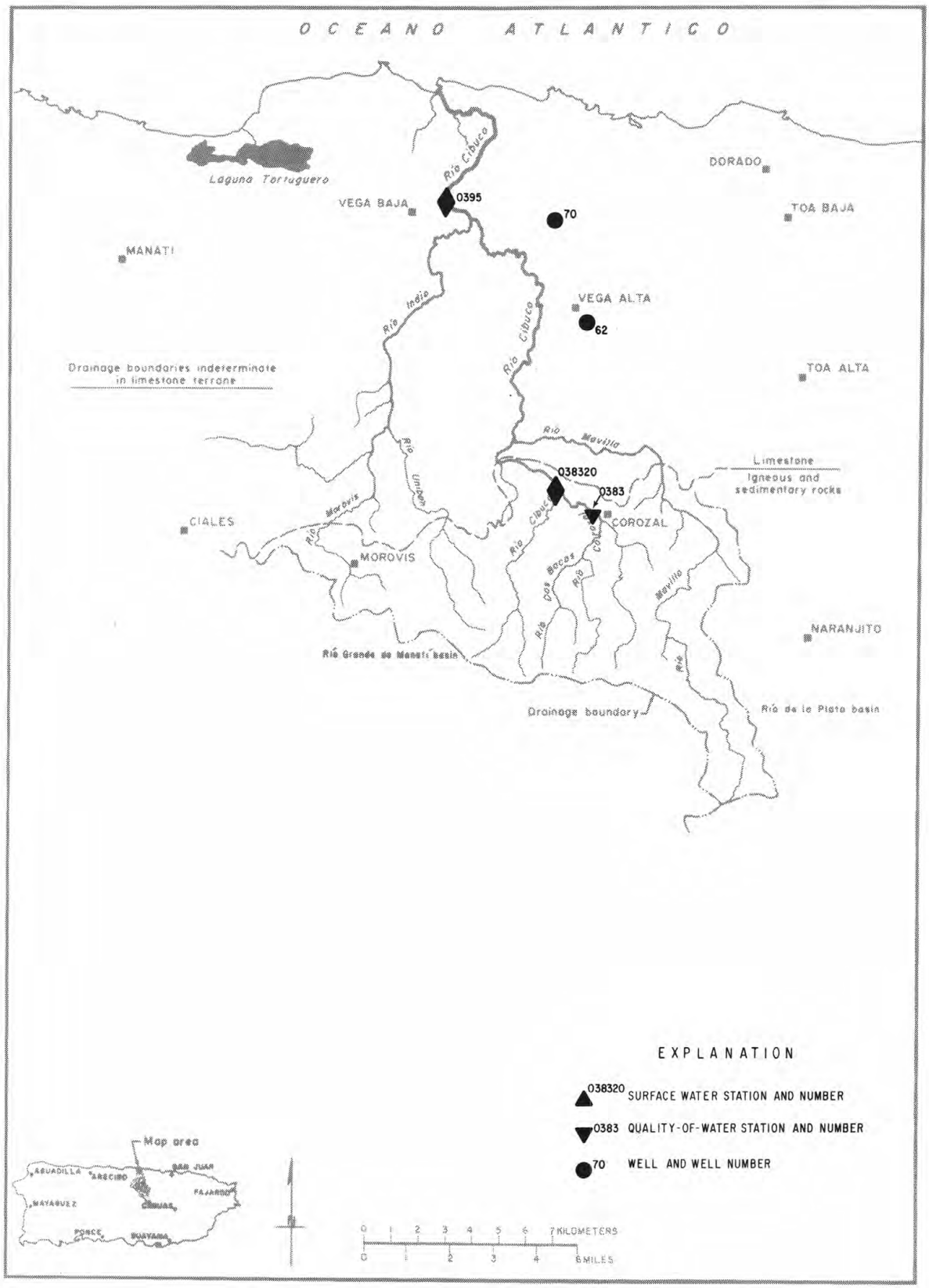

Figure 8.--Río Cibuco basin.

RIO CIBUCO BASIN

50038300 RIO COROZAL AT COROZAL, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'39", long 66°19'16", at bridge on Highway 159, and 0.3 mi (0.5 km) northwest of Corozal.

DRAINAGE AREA.--9.12 sq mi (23.6 sq km).

PERIOD OF RECORD.--Water years 1958, 1974 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
25...	1200	2.0	443	7.4	25.0	6.0	2.0	4000	1100	2400	190
DEC											
21...	1500	4.3	390	7.6	25.5	7.7	.6	75000	28000	4900	160
FEB , 1979											
21...	1400	64	235	7.3	24.5	8.4	1.9	24000	16000	15000	95
APR											
26...	1315	39	337	7.3	23.0	6.8	4.6	1200000	160000	36000	110
JUL											
02...	1020	16	357	7.3	26.5	8.7	1.0	34000	6600	1600	150
AUG											
29...	1515	10	363	7.7	28.5	6.8	2.6	41000	5500	2400	150

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
25...	14	50	16	21	.7	3.0	216	0	177	14	18
DEC											
21...	25	38	17	18	.6	3.0	170	0	139	6.8	19
FEB , 1979											
21...	32	20	11	12	.5	3.0	77	0	63	6.2	21
APR											
26...	15	24	13	17	.7	2.7	120	0	98	9.6	23
JUL											
02...	22	35	14	17	.6	2.2	150	0	123	12	22
AUG											
29...	15	37	15	18	.6	2.3	170	0	139	5.4	18

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
25...	29	.2	33	275	277	1.5	.52	.020	.54	.030
DEC										
21...	26	.1	31	239	236	2.8	.76	.030	.79	.100
FEB , 1979										
21...	17	.1	23	165	145	26.3	2.1	.030	2.1	.070
APR										
26...	24	.1	27	212	190	22.2	1.3	.020	1.3	.560
JUL										
02...	22	.1	28	247	214	10.9	.83	.020	.85	.070
AUG										
29...	24	.1	41	--	239	6.5	.87	<.010	.87	.070

50038300 RIO COROZAL AT COROZAL, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
25...	.25	.28	.82	3.6	.170	.130	--	--	--	--
DEC										
21...	.32	.42	1.2	5.4	.160	.160	2	ND	<20	4
FEB , 1979										
21...	.81	.88	3.0	13	.100	.070	--	--	--	--
APR										
26...	.14	1.10	2.4	11	.370	.260	--	--	--	--
JUL										
02...	.36	.43	1.3	5.7	.110	.060	--	--	--	--
AUG										
29...	.26	.33	1.2	5.3	.160	.060	1	ND	<20	14

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
25...	--	--	--	--	--	--	--	--	1	.01
DEC										
21...	310	3	70	<.5	<1	ND	30	--	8	.09
FEB , 1979										
21...	--	--	140	--	--	--	--	6.6	98	1.7
APR										
26...	--	--	90	--	--	--	--	6.5	55	5.7
JUL										
02...	--	--	--	--	--	--	--	8.5	77	3.4
AUG										
29...	2600	4	50	<.5	<1	ND	30	7.6	141	3.8

ND Looked for but not detected.

50038320 RIO CIBUCO BELOW COROZAL, PR

LOCATION.--Lat 18°21"13", long 66°20'07", Hydrologic Unit 21010001, on right bank, 150 ft (46 m) downstream from Río Corozal, and 1.4 mi (2.3 km) northwest of Corozal.

DRAINAGE AREA.--15.1 sq mi (39.1 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 195 ft (59.4 m), from topographic map.

REMARKS.--Records poor.

AVERAGE DISCHARGES.--10 years (1970-79), 27.8 cu ft/s (0.787 cu m/s), 25.00 in/yr (635 mm/yr), 20,140 acre-ft/yr (24.8 cu hm/s); median of yearly mean discharges, 27 cu ft/s (0.76 cu m/s), 19,600 acre-ft/yr (24 cu hm/yr).
--11 years (1970-80), 28.4 cu ft/s (0.804 cu m/s), 25.54 in/yr (649 mm/yr), 20,580 acre-ft/yr (25.4 cu hm/s); median of yearly mean discharges, 30 cu ft/s (0.85 cu m/s), 21,700 acre-ft/yr (27 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 cu ft/s (385 cu m/s) Nov. 7, 1979, gage height, 19.80 ft (6.025 m), from rating curve extended above 100 cu ft/s (2.83 cu m/s) on basis of float and slope-area measurements of peak flow; minimum daily discharge, 1.3 cu ft/s (0.037 cu m/s) July 24-26, 1977.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,500 cu ft/s (70.8 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 15, 1979	1445	6,920	196	15.29	4.660	Nov. 25, 1979	1400	11,700	331	18.66	5.688
May 16, 1979	1515	7,610	216	15.85	4.831	Dec. 20, 1979	0400	3,800	108	12.22	3.725
Aug. 31, 1979	Unknown	*10,000	283	Unknown		Sept. 23, 1980	1515	2,980	84.4	11.22	3.420
Nov. 7, 1979	1545	*13,600	385	19.80	6.035	Sept. 24, 1980	1445	4,370	124	12.86	3.920

Minimum daily discharges, 2.3 cu ft/s (0.065 cu m/s) Oct. 21, 1978; 6.6 cu ft/s (0.187 cu m/s) July 27, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	5.4	4.7	18	9.3	15	27	22	30	39	52	200
2	3.5	4.2	36	6.5	10	10	21	22	49	25	31	68
3	3.5	3.7	22	4.8	10	8.0	18	60	21	22	25	67
4	6.3	3.4	8.0	5.1	9.1	30	15	24	22	19	69	101
5	6.3	3.1	5.9	4.9	8.6	60	15	23	22	27	41	162
6	4.8	3.0	4.9	218	8.4	25	14	22	23	27	30	101
7	3.9	3.0	16	102	8.5	15	13	40	23	26	25	82
8	5.0	3.0	12	44	8.3	10	13	38	95	21	22	76
9	11	7.9	7.3	24	8.2	9.0	12	22	29	19	22	59
10	4.8	7.4	5.6	14	8.3	8.0	12	65	30	18	21	60
11	3.9	4.3	5.2	30	8.0	10	12	20	30	18	21	56
12	3.9	20	4.9	22	8.2	9.0	13	22	22	17	20	56
13	5.2	7.0	4.4	18	8.1	8.0	54	22	20	17	20	51
14	6.3	4.8	4.4	12	20	9.0	36	78	22	17	29	46
15	4.8	4.4	4.0	9.2	175	7.7	16	400	20	17	23	47
16	3.9	4.1	3.7	10	68	7.0	15	686	19	92	20	46
17	3.5	122	4.1	13	22	7.0	13	166	19	35	20	43
18	2.8	27	3.7	10	15	70	12	178	18	160	19	109
19	2.5	11	5.7	398	12	20	12	88	17	65	23	99
20	2.4	8.2	4.4	234	36	15	98	343	17	30	79	50
21	2.3	10	6.7	41	168	13	241	55	16	25	27	41
22	2.4	6.2	4.9	25	20	20	95	38	16	22	57	63
23	4.2	5.4	4.2	20	15	15	166	38	22	27	38	41
24	3.6	4.9	3.8	14	25	17	80	22	21	23	48	38
25	3.2	4.5	3.6	13	20	10	150	27	20	21	26	35
26	48	4.0	3.8	12	10	9.0	87	21	22	21	23	32
27	50	4.3	3.3	12	9.0	15	52	21	18	19	23	35
28	23	4.0	3.4	10	8.0	10	34	67	39	20	20	29
29	9.0	4.2	3.7	10	---	322	30	143	45	19	50	228
30	5.9	5.5	4.0	9.9	---	118	26	39	66	21	150	76
31	6.1	---	4.3	9.9	---	49	---	22	---	144	500	---
TOTAL	249.5	309.9	212.6	1374.3	736.0	950.7	1402	2834	833	1073	1574	2197
MEAN	8.05	10.3	6.86	44.3	26.3	30.7	46.7	91.4	27.8	34.6	50.8	73.2
MAX	50	122	36	398	175	322	241	686	95	160	500	228
MIN	2.3	3.0	3.3	4.8	8.0	7.0	12	20	16	17	19	29
CFSM	.53	.68	.45	2.93	1.74	2.03	3.09	6.05	1.84	2.29	3.36	4.85
IN.	.61	.76	.52	3.39	1.81	2.34	3.45	6.98	2.05	2.64	3.88	5.41
AC-FT	495	615	422	2730	1460	1890	2780	5620	1650	2130	3120	4360

CAL YR 1978 TOTAL 3646.6 MEAN 9.99 MAX 222 MIN 1.6 CFSM .66 IN 8.98 AC-FT 7230
WTR YR 1979 TOTAL 13746.0 MEAN 37.7 MAX 686 MIN 2.3 CFSM 2.50 IN 33.86 AC-FT 27270

50038320 RIO CIBUCO BELOW COROZAL, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	20	39	28	18	18	13	10	20	8.0	67	8.8
2	55	18	38	28	19	17	13	9.9	15	8.0	14	8.9
3	41	17	48	23	18	39	14	9.4	14	10	8.2	9.0
4	37	26	86	27	19	26	14	9.3	13	9.6	29	12
5	32	31	49	27	36	759	14	9.4	14	9.6	19	9.8
6	31	111	42	27	82	101	14	9.1	13	10	12	8.8
7	28	818	41	27	33	43	12	9.0	13	11	9.7	8.4
8	26	64	42	24	329	34	11	9.0	13	8.8	11	8.2
9	26	32	40	24	146	24	12	8.8	13	11	14	8.1
10	25	25	39	33	56	20	73	8.8	11	8.1	22	8.1
11	24	24	38	24	39	18	21	8.8	12	7.4	11	8.1
12	24	24	39	42	33	17	21	12	10	11	8.6	8.8
13	23	22	37	35	33	16	16	9.2	10	9.0	8.2	8.3
14	23	21	36	26	29	17	13	11	10	8.0	13	8.3
15	22	20	36	23	26	16	12	11	11	7.2	9.1	12
16	22	20	35	23	24	16	11	10	11	7.3	8.4	11
17	21	40	34	23	23	17	10	40	10	8.0	7.9	8.3
18	21	59	34	23	22	16	11	25	10	11	23	7.1
19	21	38	35	23	20	17	10	19	10	9.6	22	7.2
20	21	300	446	24	20	16	9.6	10	8.1	8.9	50	12
21	20	180	60	24	19	15	9.7	10	8.1	7.7	20	8.3
22	19	44	48	21	28	14	9.3	9.2	8.1	7.7	15	10
23	19	34	81	20	103	14	14	8.8	8.1	7.2	10	195
24	19	50	158	20	29	14	12	9.0	8.2	7.3	9.5	254
25	19	700	84	19	24	15	53	9.0	8.1	7.5	16	73
26	19	249	43	19	22	14	24	9.2	8.2	7.7	11	58
27	18	52	36	19	20	14	14	10	8.1	6.6	9.1	123
28	20	52	32	18	19	14	12	66	7.7	7.1	9.0	96
29	20	50	29	18	18	14	11	386	7.8	7.2	8.8	43
30	18	44	29	18	---	13	10	30	8.1	7.5	8.7	84
31	30	---	28	18	---	13	---	24	---	7.2	8.4	---
TOTAL	793	3185	1862	748	1307	1401	493.6	819.9	321.6	262.2	492.6	1125.5
MEAN	25.6	106	60.1	24.1	45.1	45.2	16.5	26.4	10.7	8.46	15.9	37.5
MAX	55	818	446	42	329	759	73	386	20	11	67	254
MIN	18	17	28	18	18	13	9.3	8.8	7.7	6.6	7.9	7.1
CFSM	1.70	7.02	3.98	1.60	2.99	2.99	1.09	1.75	.71	.56	1.05	2.48
IN.	1.95	7.85	4.59	1.84	3.22	3.45	1.22	2.02	.79	.65	1.21	2.77
AC-FT	1570	6320	3690	1480	2590	2780	979	1630	638	520	977	2230

CAL YR 1979 TOTAL 18814.0 MEAN 51.5 MAX 818 MIN 4.8 CFSM 3.41 IN 46.35 AC-FT 37320
WTR YR 1980 TOTAL 12811.4 MEAN 35.0 MAX 818 MIN 6.6 CFSM 2.32 IN 31.56 AC-FT 25410

50038320 RIO CIBUCO BELOW COROZAL, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-1976, 1979 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
30...	1120	43	337	6.6	24.0	50	8.9	40	3.3	6800	3000	--
JAN , 1980												
22...	1300	22	297	7.9	22.0	1.0	8.8	23	2.9	26000	500	120
MAR												
11...	1255	18	341	8.3	24.5	2.5	8.5	91	2.5	9200	3200	--
MAY												
16...	1145	9.6	331	8.0	29.0	--	8.6	--	4.9	140000	100000	130
JUL												
14...	1505	7.9	387	7.7	30.5	.75	6.9	9	4.3	1600	180	--
SEP												
17...	1320	7.7	357	7.8	29.0	1.0	7.0	40	1.5	7400	2800	120

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
30...	--	--	--	--	--	--	103	0	84	41	--	--
JAN , 1980												
22...	11	29	11	19	.8	2.2	130	0	110	2.6	15	23
MAR												
11...	--	--	--	--	--	--	130	0	110	1.0	--	--
MAY												
16...	0	31	12	20	.8	2.8	160	0	130	2.6	15	23
JUL												
14...	--	--	--	--	--	--	156	0	130	5.0	--	--
SEP												
17...	0	29	11	21	.8	3.8	146	0	121	3.8	19	25

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
30...	--	--	--	--	--	1.6	.090	1.7	.200	.53	.73	2.4
JAN , 1980												
22...	.1	30	193	11.5	4	1.9	.050	1.9	.190	.42	.61	2.5
MAR												
11...	--	--	--	--	--	1.9	.050	1.9	.180	.71	.89	2.8
MAY												
16...	.2	31	214	5.7	--	--	--	--	--	--	--	--
JUL												
14...	--	--	--	--	--	1.5	.170	1.7	.310	.54	.85	2.6
SEP												
17...	.2	28	210	4.4	2	1.2	.320	1.5	.580	.29	.87	2.4

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
30...	11	.240	--	--	--	--	--	--	--	--	160	19
JAN , 1980												
22...	11	.340	--	--	--	--	--	--	--	--	4	.24
MAR												
11...	12	.440	1	<50	1	10	0	.1	0	0	7	.35
MAY												
16...	--	--	--	--	--	--	--	--	--	--	8	.21
JUL												
14...	11	.470	--	--	--	--	--	--	--	--	6	.13
SEP												
17...	11	.710	1	100	0	7	2	.2	0	0	9	.19

50039500 RIO CIBUCO AT VEGA BAJA, PR

LOCATION.--Lat 18°26'53", long 66°22'29", Hydrologic Unit 21010002, 0.6 mi (1.0 km) downstream from Río Indio, and 0.8 mi (1.3 km) east of Vega Baja.

DRAINAGE AREA.--90 sq mi (233 sq km), approximately, of which about 24 sq mi (62 sq km) is partly or entirely noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 7.79 ft (2.374 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGES.--6 years (1974-79), 99.5 cu ft/s (2.818 cu m/s), 15.01 in/yr (381 mm/yr), 72,090 acre-ft/yr (88.9 cu hm/yr).
--7 years (1974-80), 106 cu ft/s (3.002 cu m/s), 15.99 in/yr (406 mm/yr), 76,800 acre-ft/yr (94.7 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 cu ft/s (566 cu m/s) Aug. 31, 1979, gage height, 18.1 ft (5.52 m), from floodmarks, from rating curve extended above 3,000 cu ft/s (85 cu m/s) on the basis of indirect measurements; minimum, 6.1 cu ft/s (0.173 cu m/s) July 24-25, 1977, gage height, 5.04 ft (1.536 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 11, 1965 reached a stage of 26.2 ft (7.99 m), datum unknown, discharge about 28,000 cu ft/s (793 cu m/s).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,200 cu ft/s (90.6 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 16, 1979	2115	4,600	130	16.28	4.962	Aug. 31, 1979	1300	*20,000	566	18.1	5.52
May 17, 1979	2230	4,250	120	16.19	4.935	Nov. 25, 1979	2200	*10,100	286	17.22	5.249

Minimum discharges, 14 cu ft/s (0.396 cu m/s) Oct. 22-23, Nov. 9, 1978; 26 cu ft/s (0.736 cu m/s) July 25-26, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	46	38	27	54	58	126	110	198	251	440	2900
2	18	33	30	51	52	55	98	84	183	143	160	679
3	62	26	108	32	58	52	83	85	173	118	130	291
4	58	21	54	25	54	55	73	143	137	101	400	200
5	47	18	36	24	48	80	63	81	153	100	200	900
6	74	16	27	256	47	87	60	70	126	159	150	600
7	41	15	30	443	46	55	55	64	126	154	130	430
8	25	15	64	202	44	51	51	157	449	213	120	400
9	33	14	42	150	41	47	50	101	260	114	120	300
10	44	37	30	91	41	45	45	104	183	101	110	300
11	28	32	26	109	42	55	44	152	248	91	100	280
12	20	35	23	126	41	51	49	80	174	83	110	270
13	18	58	20	96	41	45	92	118	128	81	120	270
14	46	38	18	71	41	42	174	172	118	80	160	260
15	34	31	18	60	352	41	77	678	110	78	120	250
16	63	23	17	52	382	37	55	1300	105	106	110	250
17	34	244	16	66	150	37	78	1840	114	302	110	230
18	24	202	16	77	114	50	52	899	95	369	100	600
19	18	88	29	162	109	61	47	458	89	467	120	550
20	16	56	31	1390	81	46	210	704	84	219	430	250
21	15	62	49	240	304	44	463	309	79	155	140	230
22	14	52	46	141	176	46	675	211	78	126	300	350
23	14	38	28	128	125	51	443	250	83	121	200	220
24	16	34	22	94	100	55	264	164	97	137	250	200
25	18	31	20	82	84	77	322	140	103	112	325	190
26	34	27	19	78	74	111	297	247	130	253	130	170
27	224	24	19	73	67	207	174	186	138	118	99	190
28	165	22	17	66	63	70	134	221	115	106	87	150
29	91	22	17	62	---	813	111	1100	168	104	77	1200
30	56	32	18	58	---	511	101	690	273	96	780	400
31	49	---	18	56	---	225	---	279	---	373	8460	---
TOTAL	1433	1392	946	4588	2831	3260	4566	11197	4517	5031	14288	13510
MEAN	46.2	46.4	30.5	148	101	105	152	361	151	162	461	450
MAX	224	244	108	1390	382	813	675	1840	449	467	8460	2900
MIN	14	14	16	24	41	37	44	64	78	78	77	150
CFSM	.51	.52	.34	1.64	1.12	1.17	1.69	4.01	1.68	1.80	5.12	5.00
IN.	.59	.58	.39	1.90	1.17	1.35	1.89	4.63	1.87	2.08	5.91	5.58
AC-FT	2840	2760	1880	9100	5620	6470	9060	22210	8960	9980	28340	26800

CAL YR 1978 TOTAL 19158 MEAN 52.5 MAX 730 MIN 11 CFSM .58 IN 7.92 AC-FT 38000
WTR YR 1979 TOTAL 67559 MEAN 185 MAX 8460 MIN 14 CFSM 2.06 IN 27.92 AC-FT 134000

50039500 RIO CIBUCO AT VEGA BAJA, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	254	207	128	83	69	52	53	210	60	70	47
2	300	154	203	125	80	69	52	50	151	55	160	50
3	262	141	204	120	78	66	52	48	115	48	54	50
4	213	137	234	118	84	100	58	46	91	63	58	70
5	225	277	210	114	111	344	59	46	95	75	138	60
6	204	399	167	108	228	403	58	45	80	53	76	50
7	187	955	157	108	171	155	51	42	75	53	49	45
8	186	954	150	106	106	128	53	42	153	44	51	45
9	171	295	167	109	278	111	58	42	85	43	41	40
10	168	214	151	164	323	94	169	42	77	47	97	40
11	164	191	146	118	151	83	149	39	74	38	74	40
12	160	196	140	218	118	79	114	40	74	31	42	45
13	160	210	142	163	103	74	99	77	78	32	35	40
14	160	173	128	129	101	73	68	58	105	42	53	37
15	150	163	126	113	95	70	59	56	62	38	44	35
16	150	154	140	106	91	69	56	51	61	36	35	71
17	140	195	124	100	86	68	52	58	55	46	31	35
18	140	368	119	101	82	69	50	69	54	52	75	30
19	134	326	121	99	81	65	52	98	51	67	221	27
20	134	919	1280	100	80	68	49	86	50	48	188	37
21	129	1390	416	102	78	58	47	54	47	40	173	53
22	127	391	214	96	76	58	47	47	46	35	153	92
23	160	308	188	94	102	56	59	44	43	30	75	326
24	161	415	405	110	143	56	64	163	46	28	56	403
25	133	3030	465	105	89	58	149	161	62	27	50	215
26	135	2280	213	92	82	55	217	71	61	27	102	240
27	125	387	178	89	78	55	91	125	60	28	60	226
28	124	319	160	85	73	54	70	437	57	31	50	326
29	133	264	149	84	72	55	61	575	57	34	48	163
30	165	230	144	84	---	55	55	300	57	35	46	326
31	223	---	136	83	---	53	---	147	---	37	45	---
TOTAL	5203	15689	6984	3471	3323	2870	2270	3212	2332	1323	2450	3264
MEAN	168	523	225	112	115	92.6	75.7	104	77.7	42.7	79.0	109
MAX	300	3030	1280	218	323	403	217	575	210	75	221	403
MIN	124	137	119	83	72	53	47	39	43	27	31	27
CFSM	1.87	5.81	2.50	1.24	1.28	1.03	.84	1.16	.86	.47	.88	1.21
IN.	2.15	6.48	2.89	1.43	1.37	1.19	.94	1.33	.96	.55	1.01	1.35
AC-FT	10320	31120	13850	6880	6590	5690	4500	6370	4630	2620	4860	6470

CAL YR 1979	TOTAL 91664	MEAN 251	MAX 8460	MIN 24	CFSM 2.79	IN 37.89	AC-FT 181800			
WTR YR 1980	TOTAL 52391	MEAN 143	MAX 3030	MIN 27	CFSM 1.59	IN 21.65	AC-FT 103900			

50039500 RIO CIBUCO AT VEGA BAJA, PR--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 to SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
31...	0820	49	397	7.7	25.5	--	3.2	--	1.0	12000	2300	730
DEC												
21...	0815	31	418	7.5	24.0	--	3.6	--	.7	18000	2000	2900
FEB , 1979												
23...	1100	117	368	7.4	23.0	--	7.1	--	1.8	10000	4400	2500
APR												
26...	1030	303	335	7.6	24.0	--	7.6	--	1.2	35000	5400	3100
JUN												
25...	1000	92	405	7.7	27.0	--	6.8	--	.9	35000	3700	1700
AUG												
27...	0930	109	417	7.6	26.5	--	6.2	--	.7	58000	9000	1100
DEC												
03...	1230	696	398	6.2	24.0	20	8.0	11	1.5	--	100000	400
JAN , 1980												
11...	1055	115	362	7.7	20.0	2.0	7.7	12	1.2	--	100000	3500
MAR												
20...	1250	70	385	7.9	25.0	.30	8.3	6	--	--	1600	250
MAY												
14...	1045	69	343	7.0	26.0	17	7.3	16	--	--	9500	1500
JUL												
10...	1045	49	379	7.4	27.5	6.1	4.0	10	1.5	--	4200	2200
SEP												
15...	1350	35	391	7.8	30.0	20	4.9	13	.4	--	3000	190

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
31...	190	24	58	10	15	.5	3.5	198	0	162	6.3
DEC											
21...	190	16	60	9.4	16	.5	3.4	210	0	172	11
FEB , 1979											
23...	160	11	48	9.5	14	.5	3.3	180	0	148	11
APR											
26...	140	19	44	7.9	12	.4	3.5	150	0	123	6.0
JUN											
25...	170	10	56	8.2	15	.5	2.6	200	0	164	6.4
AUG											
27...	200	24	64	8.9	13	.4	3.0	210	0	172	8.4
DEC											
03...	--	--	--	--	--	--	--	90	0	74	91
JAN , 1980											
11...	160	16	53	7.6	13	.4	3.1	180	0	150	5.7
MAR											
20...	--	--	--	--	--	--	--	190	0	160	3.8
MAY											
14...	--	--	--	--	--	--	--	160	0	130	26
JUL											
10...	--	--	--	--	--	--	--	181	0	150	12
SEP											
15...	160	0	52	8.2	17	.6	2.6	206	0	169	5.2

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
31...	23	24	.1	19	266	250	35.2	--	1.4	.050	1.4
DEC											
21...	15	24	.1	17	259	248	21.5	--	1.4	.050	1.4
FEB , 1979											
23...	21	22	.1	20	244	227	77.1	--	1.6	.040	1.6
APR											
26...	19	21	.1	18	222	199	182	--	1.4	.040	1.4
JUN											
25...	15	22	.1	20	257	238	63.5	--	.97	.030	1.0
AUG											
27...	18	19	.1	19	--	249	69.9	--	1.1	.030	1.1
DEC											
03...	--	--	--	--	--	--	--	--	1.3	.030	1.3
JAN , 1980											
11...	15	19	.1	19	--	219	69.2	30	.62	.160	.78
MAR											
20...	--	--	--	--	--	--	--	--	.34	.040	.38
MAY											
14...	12	19	.2	--	--	110	20.5	23	--	--	--
JUL											
10...	--	--	--	--	--	--	--	--	.99	.010	1.0
SEP											
15...	21	25	.0	15	--	242	22.9	8	1.2	.060	1.3

50039500 RIO CIBUCO AT VEGA BAJA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)(3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT , 1978											
31...	.170	.31	.48	1.9	8.3	.340	.310	--	--	--	--
DEC											
21...	.200	.22	.42	1.8	8.1	.380	.380	1	--	ND	20
FEB , 1979											
23...	.090	.33	.42	2.0	8.9	.180	.130	--	--	--	--
APR											
26...	.080	.43	.51	1.9	8.5	.230	.120	--	--	--	--
JUN											
25...	.060	.17	.23	1.2	5.4	.170	.130	--	--	--	--
AUG											
27...	.090	.41	.50	1.6	7.1	.170	.120	2	--	ND	<20
DEC											
03...	.080	.34	.42	1.7	7.6	.120	--	--	--	--	--
JAN , 1980											
11...	.000	.45	.45	1.2	5.4	.120	--	--	--	--	--
MAR											
20...	.080	.42	.50	.88	3.9	.160	--	1	<50	0	9
MAY											
14...	--	--	--	--	--	--	--	--	--	--	--
JUL											
10...	.010	.28	.29	1.3	5.7	.190	--	--	--	--	--
SEP											
15...	.060	.33	.39	1.7	7.5	.290	--	1	100	0	5

DATE	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978											
31...	--	--	--	--	--	--	--	--	--	6	.79
DEC											
21...	3	200	<2	30	<.5	<1	ND	20	--	0	.00
FEB , 1979											
23...	--	--	--	70	--	--	--	--	5.9	26	8.2
APR											
26...	--	--	--	110	--	--	--	--	5.3	142	116
JUN											
25...	--	--	--	--	--	--	--	--	3.5	13	3.2
AUG											
27...	6	940	8	80	<.5	<1	ND	<20	3.9	30	8.4
DEC											
03...	--	--	--	--	--	--	--	--	--	69	130
JAN , 1980											
11...	--	--	--	--	--	--	--	--	--	12	3.7
MAR											
20...	--	--	9	--	.1	0	0	--	--	11	2.1
MAY											
14...	--	--	--	--	--	--	--	--	--	20	3.7
JUL											
10...	--	--	--	--	--	--	--	--	--	16	2.1
SEP											
15...	--	--	1	--	.2	0	0	--	--	12	1.1

ND Looked for but not detected.

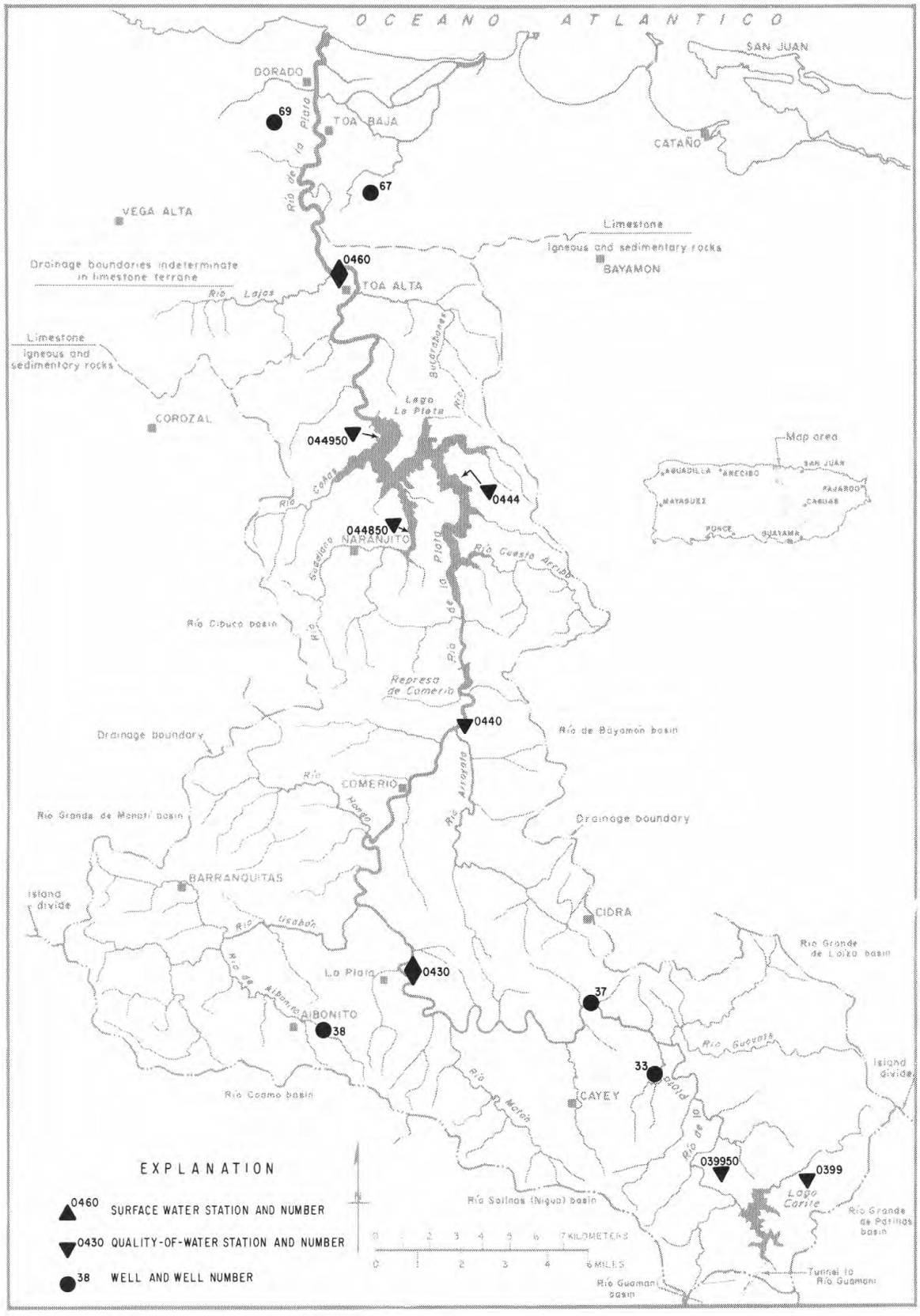

Figure 9.--Río de la Plata basin.

50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR

LOCATION.--Lat 18°09'37", long 66°13'44", Hydrologic Unit 21010005, at upstream side of bridge on Highway 173, 0.4 mi (0.6 km) northeast of Proyecto La Plata, and 2.5 mi (4.0 km) upstream from Río Usabón.

DRAINAGE AREA.--54.8 sq mi (142 sq km), excludes 8.2 sq mi (21.1 sq km) upstream from Carite Reservoir, the flow of which is diverted to Río Guamaní.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1958 (occasional measurements only), February 1959 to March 1960 (monthly measurements only), April 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259 m), from topographic map. Prior to Mar. 29, 1961, wire-weight gage read twice daily at same site and datum.

REMARKS.--Records fair. The Puerto Rico Aqueduct and Sewer Authority operates a pumping plant about 5 mi (8 km) upstream which can divert as much as 23 cu ft/s (0.65 cu m/s) into Cidra Reservoir.

AVERAGE DISCHARGES.--19 years (1961-79), 122 cu ft/s (3.455 cu m/s), 30.23 in/yr (768 mm/yr), 88,390 acre-ft/yr (109 cu hm/yr); median of yearly mean discharges 95 cu ft/s, (2.69 cu m/s), 68,800 acre-ft/yr (85 cu hm/yr).
--20 years (1961-80), 119 cu ft/s (3.370 cu m/s), 29.49 in/yr (749 mm/yr), 86,220 acre-ft/yr (106 cu hm/yr); median of yearly mean discharges 91 cu ft/s (2.58 cu m/s), 65,900 acre-ft/yr (81 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,600 cu ft/s (1,688 cu m/s) Aug. 27, 1961, gage height, 32.21 ft (9.818 m), from rating curve extended above 7,000 cu ft/s (198 cu m/s) on basis of slope-area measurement; minimum daily, 2.6 cu ft/s (0.074 cu m/s) July 25, 1974.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 4,000 cu ft/s (113 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 26, 1978	1800	*13,200	374	15,29	4.660	July 5, 1979	2230	4,410	125	10.88	3.316
Oct. 27, 1978	0545	7,480	212	12.34	3.761	Aug. 30, 1979	1845	11,500	326	14.43	4.398
June 3, 1979	1830	4,060	115	10.77	3.283	Sept. 4, 1979	1415	11,000	312	14.15	4.313
June 27, 1979	1115	4,260	121	10.86	3.310	Sept. 5, 1979	1715	8,130	230	12.54	3.822
June 28, 1979	0900	8,250	234	12.78	3.895	Sept. 29, 1979	1630	11,500	326	14.42	4.395
June 29, 1979	2200	8,590	243	12.97	3.953	Oct. 28, 1979	1845	* 6,840	194	11.75	3.581
June 30, 1979	1730	7,910	224	12.58	3.834	Nov. 25, 1979	1900	6,220	176	11.37	3.466

Minimum discharges, 5.8 cu ft/s (0.164 cu m/s) Apr. 20, 1979; 9.3 cu ft/s (0.263 cu m/s) Aug. 23-24, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	538	36	28	12	11	18	10	120	1880	323	1500
2	13	364	40	25	12	11	13	9.6	123	516	185	370
3	14	217	55	14	12	8.9	13	9.1	722	324	103	255
4	16	142	38	13	12	8.3	12	8.6	284	241	83	3920
5	14	114	31	13	11	10	9.7	8.6	79	893	75	6470
6	11	93	32	32	9.8	10	8.9	8.6	151	880	70	1960
7	9.7	79	46	72	10	8.7	8.3	8.1	64	320	73	698
8	10	73	58	72	11	8.9	8.6	8.1	43	91	66	712
9	16	68	48	52	9.8	9.1	8.1	8.5	60	60	60	583
10	45	79	43	31	9.3	9.7	9.2	32	591	66	52	392
11	24	71	39	24	9.9	8.7	9.6	19	329	50	46	293
12	20	79	33	27	10	13	9.7	24	192	44	47	249
13	14	65	27	22	11	11	11	19	98	60	49	220
14	12	54	23	20	14	9.7	11	46	68	50	224	210
15	11	60	22	27	13	10	10	194	145	170	109	195
16	10	80	27	20	15	11	8.6	322	85	160	85	176
17	9.5	59	28	21	14	12	8.7	44	71	150	66	161
18	12	226	25	18	12	11	8.2	61	61	270	91	154
19	10	108	22	19	12	12	7.0	179	48	1500	151	140
20	8.3	69	21	22	12	13	6.0	641	42	306	219	134
21	8.3	65	22	22	9.1	10	12	117	42	207	150	127
22	11	53	21	18	9.3	14	11	45	41	170	95	261
23	334	51	17	16	9.8	14	52	29	44	154	112	283
24	830	53	18	14	9.5	12	36	23	41	125	87	170
25	795	45	30	13	8.5	12	21	20	41	115	181	157
26	4640	43	31	14	8.7	12	56	21	299	104	99	167
27	5150	40	18	14	13	13	25	20	1330	93	76	133
28	1260	33	15	16	12	9.6	15	27	3260	86	56	121
29	347	33	14	19	---	21	12	323	3160	81	62	3100
30	190	44	24	19	---	54	11	477	3590	72	4050	796
31	249	---	22	14	---	44	---	394	---	84	6670	---
TOTAL	14109.8	3098	926	751	311.7	422.6	449.6	3156.2	15224	9322	13815	24107
MEAN	455	103	29.9	24.2	11.1	13.6	15.0	102	507	301	446	804
MAX	5150	538	58	72	15	54	56	641	3590	1880	6670	6470
MIN	8.3	33	14	13	8.5	8.3	6.0	8.1	41	44	46	121
CFSM	8.30	1.88	.55	.44	.20	.25	.27	1.86	9.25	5.49	8.14	14.7
IN.	9.58	2.10	.63	.51	.21	.29	.31	2.14	10.33	6.33	9.38	16.36
AC-FT	27990	6140	1840	1490	618	838	892	6260	30200	18490	27400	47820

CAL YR 1978 TOTAL 34301.7 MEAN 94.0 MAX 5150 MIN 8.3 CFSM 1.72 IN 23.28 AC-FT 68040
WTR YR 1979 TOTAL 85692.9 MEAN 235 MAX 6670 MIN 6.0 CFSM 4.29 IN 58.17 AC-FT 170000

50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	371	72	99	48	22	18	16	11	22	12	10	12
2	339	69	88	44	22	18	16	10	19	11	9.8	12
3	336	310	131	43	22	19	16	10	17	9.6	9.7	13
4	1120	147	119	41	36	23	15	10	15	13	9.5	18
5	754	88	94	40	28	134	16	10	14	44	15	101
6	383	124	82	39	41	77	16	9.8	14	191	48	87
7	305	222	75	38	45	40	16	9.8	13	80	16	26
8	236	127	69	36	26	28	15	9.8	13	30	21	17
9	187	117	116	40	27	24	15	9.8	44	20	29	15
10	166	98	82	41	72	22	21	9.8	34	18	82	32
11	150	77	71	36	32	21	26	9.6	35	19	91	19
12	136	67	62	36	26	27	34	9.5	27	21	27	14
13	128	57	59	46	24	28	38	10	20	14	18	13
14	123	55	56	39	23	26	22	18	17	12	16	15
15	140	52	54	35	24	30	16	36	14	20	17	29
16	129	49	53	32	23	23	15	19	22	17	17	19
17	114	62	50	30	22	22	15	14	86	311	15	14
18	105	54	61	30	22	24	15	14	37	330	13	13
19	96	49	70	29	25	22	14	22	19	236	11	11
20	91	55	198	28	22	19	13	17	16	58	11	16
21	96	103	151	28	21	18	12	13	13	35	10	24
22	90	64	139	27	20	20	12	14	11	24	9.9	15
23	83	70	130	26	20	21	12	16	11	19	9.7	12
24	84	298	130	28	24	21	23	25	10	16	9.5	27
25	81	2000	241	26	23	19	23	22	10	15	10	19
26	72	1450	92	25	21	17	19	15	11	14	14	12
27	74	338	69	25	20	17	17	110	11	15	17	16
28	926	211	59	24	19	17	14	1180	12	16	13	118
29	222	147	55	24	19	17	13	144	11	19	11	25
30	86	151	57	22	---	17	11	48	10	14	15	19
31	74	---	57	22	---	16	---	27	---	11	14	---
TOTAL	7297	6783	2869	1028	771	845	526	1883.1	608	1664.6	619.1	783
MEAN	235	226	92.5	33.2	26.6	27.3	17.5	60.7	20.3	53.7	20.0	26.1
MAX	1120	2000	241	48	72	134	38	1180	86	330	91	118
MIN	72	49	50	22	19	16	11	9.5	10	9.6	9.5	11
CFSM	4.29	4.12	1.69	.61	.49	.50	.32	1.11	.37	.98	.37	.48
IN.	4.95	4.60	1.95	.70	.52	.57	.36	1.28	.41	1.13	.42	.53
AC-FT	14470	13450	5690	2040	1530	1680	1040	3740	1210	3300	1230	1550

CAL YR 1979 TOTAL 84508.1 MEAN 232 MAX 6670 MIN 6.0 CFSM 4.23 IN 57.37 AC-FT 167600
WTR YR 1980 TOTAL 25676.8 MEAN 70.2 MAX 2000 MIN 9.5 CFSM 1.28 IN 17.43 AC-FT 50930

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
16...	1050	10	423	8.1	28.0	--	10.8	--	1.0	600	50	770
DEC												
18...	1050	25	355	8.2	24.5	--	10.2	--	1.6	11000	800	270
FEB , 1979												
22...	0845	9.7	430	7.7	24.0	--	8.4	--	1.2	840	53	540
APR												
12...	0815	10	590	7.6	25.0	--	8.2	--	1.1	4100	50	1000
JUN												
18...	1100	54	362	8.0	28.0	--	8.9	--	1.8	2600	800	330
AUG												
22...	0945	88	289	7.8	25.5	--	7.9	--	1.9	160000	32000	1000
SEP												
05...	1440	6020	--	--	22.0	--	--	--	--	--	--	--
NOV												
21...	0930	92	347	8.1	24.0	--	8.6	--	2.1	--	48000	5100
JAN , 1980												
22...	1400	26	430	8.1	23.0	--	8.7	--	4.7	--	510	10
MAR												
10...	1240	22	385	7.8	25.0	1.5	8.4	98	.5	--	360	60
MAY												
20...	0950	18	405	7.8	26.0	--	8.8	--	4.1	--	510	380
JUL												
02...	1000	10	480	8.3	27.0	--	8.6	--	.5	--	160	500
SEP												
04...	1035	14	461	8.3	27.0	.90	8.6	10	2.0	--	106	170

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
16...	150	4	36	14	28	1.0	2.9	175	0	144	2.2
DEC											
18...	140	0	34	14	28	1.0	2.3	177	0	145	1.8
FEB , 1979											
22...	150	0	37	15	32	1.1	2.6	200	0	164	6.4
APR											
12...	200	2	49	19	47	1.4	4.8	242	0	198	9.7
JUN											
18...	130	0	32	12	26	1.0	2.8	160	0	131	2.6
AUG											
22...	98	0	25	8.6	15	.7	1.6	140	0	115	3.6
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
21...	--	--	--	--	--	--	--	162	0	133	2.1
JAN , 1980											
22...	--	--	--	--	--	--	--	190	0	156	2.4
MAR											
10...	--	--	--	--	--	--	--	168	0	138	4.3
MAY											
20...	--	--	--	--	--	--	--	183	0	150	4.6
JUL											
02...	--	--	--	--	--	--	--	216	0	177	1.7
SEP											
04...	170	0	42	16	38	1.3	3.0	210	0	172	1.7

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
16...	21	32	.2	23	258	243	7.0	--	1.8	.020	1.8
DEC											
18...	18	29	.2	23	245	236	16.8	--	1.9	.080	2.0
FEB , 1979											
22...	16	32	.2	22	271	257	7.1	--	2.0	.020	2.0
APR											
12...	23	52	.2	22	354	336	9.8	--	3.2	.180	3.4
JUN											
16...	16	24	.1	25	--	217	--	--	--	--	--
AUG											
22...	12	17	.1	20	--	168	39.7	--	1.1	.130	1.2
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
21...	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980											
22...	--	--	--	--	--	--	--	--	--	--	--
MAR											
10...	--	--	--	--	--	--	--	--	1.8	.090	1.9
MAY											
20...	--	--	--	--	--	--	--	--	--	--	--
JUL											
02...	--	--	--	--	--	--	--	--	--	--	--
SEP											
04...	19	36	.3	26	--	264	10.8	0	1.6	.040	1.6

50043000 RIO DE LA PLATA AT PROYECTO LA PLATA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
16...	.020	.24	.26	2.1	9.1	.740	.710	--	--	--	--
DEC											
18...	.050	.50	.55	2.6	11	.390	.390	1	--	ND	<20
FEB , 1979											
22...	.040	.30	.34	2.3	10	.800	.800	--	--	--	--
APR											
12...	.230	.87	1.10	4.5	20	1.60	1.50	1	--	--	--
JUN											
18...	--	--	.53	--	--	.380	--	--	--	--	--
AUG											
22...	.130	.53	.66	1.9	8.2	.320	.190	1	--	ND	<20
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
21...	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980											
22...	--	--	--	--	--	--	--	--	--	--	--
MAR											
10...	.050	4.3	4.80	2.4	11	.530	--	1	<50	0	10
MAY											
20...	--	--	--	--	--	--	--	--	--	--	--
JUL											
02...	--	--	--	--	--	--	--	--	--	--	--
SEP											
04...	.020	.37	.39	2.0	8.8	.020	--	--	--	--	--

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
16...	--	--	--	--	--	--	--	--	--	2	.05
DEC											
18...	ND	110	5	20	<.5	<1	ND	20	--	4	.27
FEB , 1979											
22...	--	--	--	30	--	--	--	--	3.4	0	.00
APR											
12...	--	--	--	30	.5	<1	--	--	8.4	0	.00
JUN											
18...	--	--	--	--	--	--	--	--	5.8	11	1.6
AUG											
22...	6	2100	<2	90	<.5	<1	ND	<20	4.7	70	17
SEP											
05...	--	--	--	--	--	--	--	--	--	881	14300
NOV											
21...	--	--	--	--	--	--	--	--	--	7	1.7
JAN , 1980											
22...	--	--	--	--	--	--	--	--	--	1	.07
MAR											
10...	--	--	2	--	.8	0	0	--	--	3	.18
MAY											
20...	--	--	--	--	--	--	--	--	--	2	.10
JUL											
02...	--	--	--	--	--	--	--	--	--	1	.03
SEP											
04...	--	--	--	--	--	--	--	--	--	2	.08

ND Looked for but not detected.

50044000 RIO DE LA PLATA NEAR COMERIO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°14'33", long 66°12'28", at bridge on Highway 156, 0.56 mi (0.9 km) upstream from dam, about 2.0 mi (3.2 km) northeast of Comerio.

DRAINAGE AREA.--139 sq mi (360 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
20...	1125	134	350	8.3	25.0	1.0	8.5	4	2.3	6800	900	--
JAN , 1980												
14...	1350	116	375	8.3	22.5	.05	8.4	11	2.0	3100	410	150
MAR												
12...	1405	74	373	8.0	25.0	1.5	8.9	96	1.2	2100	330	--
MAY												
27...	1310	78	358	7.7	25.0	1.3	7.7	18	2.8	9000	3200	130
JUL												
08...	1100	90	294	7.9	26.0	4.5	8.1	16	1.8	11700	480	--
SEP												
16...	1125	150	304	7.8	25.5	36	7.9	51	1.6	47000	16000	98

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SURP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
20...	--	--	--	--	--	--	171	0	140	1.4	--	--
JAN , 1980												
14...	0	36	15	22	.8	2.1	190	0	160	1.5	19	23
MAR												
12...	--	--	--	--	--	--	170	0	140	2.7	--	--
MAY												
27...	0	30	13	23	.9	2.1	170	0	140	5.4	16	22
JUL												
08...	--	--	--	--	--	--	130	0	110	2.6	--	--
SEP												
16...	0	21	11	20	.9	2.7	128	0	105	3.2	17	21

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
20...	--	--	--	--	12	.80	.010	.81	.000	.48	.48	1.3
JAN , 1980												
14...	.2	27	238	74.5	13	1.2	.030	1.2	.000	.40	.40	1.6
MAR												
12...	--	--	--	--	--	1.2	.020	1.2	.060	.08	.14	1.3
MAY												
27...	.2	27	217	45.4	0	--	--	--	--	--	--	--
JUL												
08...	--	--	--	--	--	.70	.030	.73	.050	.70	.75	1.5
SEP												
16...	.0	18	174	70.5	631	1.4	.040	1.4	.030	.22	.25	1.7

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
20...	5.7	.150	--	--	--	--	--	--	--	--	7	2.5
JAN , 1980												
14...	7.1	.220	--	--	--	--	--	--	--	--	1	.31
MAR												
12...	5.9	.180	1	0	0	9	0	.8	0	0	5	1.0
MAY												
27...	--	--	--	--	--	--	--	--	--	--	8	1.7
JUL												
08...	6.6	.300	--	--	--	--	--	--	--	--	12	2.9
SEP												
16...	7.3	.340	1	300	5	36	78	.4	0	0	688	279

50044850 RIO GUADIANA NEAR NARANJITO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°18'39", long 66°13'28", at steel-cross-bridge 0.75 mi (1.2 km) northwest of Highway 164, 1.2 mi (1.9 km) upstream from mouth and about 2.0 mi (3.2 km) northeast of Naranjito.

DRAINAGE AREA.--3.97 sq mi (10.3 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
20...	0920	52	258	8.0	24.0	30	8.6	25	2.7	56000	15000	--
JAN , 1980												
22...	0840	16	266	7.7	18.5	.20	9.6	9	.2	1600	410	120
MAR												
13...	0915	14	286	7.7	21.0	2.0	9.3	9	2.4	1800	560	--
MAY												
21...	1145	9.5	306	8.0	26.5	85	7.8	12	3.0	4900	520	120
JUL												
03...	1150	6.9	310	7.9	26.5	28	8.0	12	.7	21000	1300	--
SEP												
05...	1300	6.4	312	8.3	27.0	3.2	8.3	7	1.7	3500	160	140

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
20...	--	--	--	--	--	--	102	0	84	1.6	--	--
JAN , 1980												
22...	12	26	13	15	.6	1.3	130	0	110	4.2	15	19
MAR												
13...	--	--	--	--	--	--	120	0	98	3.8	--	--
MAY												
21...	3	24	14	19	.8	1.6	140	0	110	2.2	15	21
JUL												
03...	--	--	--	--	--	--	136	1	110	2.8	--	--
SEP												
05...	31	31	14	16	.6	2.3	133	0	109	1.1	14	22

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
20...	--	--	--	--	55	1.6	.010	1.6	.000	.62	.62	2.2
JAN , 1980												
22...	.1	28	181	7.8	4	1.3	.010	1.3	.010	.31	.32	1.6
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
21...	.2	28	192	4.9	180	--	--	--	--	--	--	--
JUL												
03...	--	--	--	--	--	1.4	.020	1.4	.070	.29	.36	1.8
SEP												
05...	.2	29	194	3.4	16	1.8	.010	1.8	.040	.18	.22	2.0

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
20...	9.8	.170	--	--	--	--	--	--	--	--	70	9.8
JAN , 1980												
22...	7.2	.120	--	--	--	--	--	--	--	--	3	.13
MAR												
13...	--	--	1	0	0	10	1	.5	0	0	10	.38
MAY												
21...	--	--	--	--	--	--	--	--	--	--	204	5.2
JUL												
03...	7.8	.290	--	--	--	--	--	--	--	--	93	1.7
SEP												
05...	8.9	.130	1	100	1	12	10	.3	0	0	55	.95

50046000 RIO DE LA PLATA AT TOA ALTA, PR

LOCATION.--Lat 18°23'50", long 66°15'17", Hydrologic Unit 21010005, on left bank, at upstream side of bridge on Highway 165, 800 ft (244 m) downstream from Río Lajas, and 0.6 mi (1.0 km) northwest of Toa Alta, 10 mi (16 km) downstream from Puerto Rico Aqueduct and Sewer Authority reservoir.

DRAINAGE AREA.--200 sq mi (518 sq km), excludes 8.2 sq km (21.2 sq km) upstream from Lago Carite, flow from which is diverted to Río Guamaní.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1959 (measurement only), January 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 8.55 ft (2.606 m) above mean sea level (levels by Puerto Rico Department of Public Works). Prior to Feb. 25, 1960, wire-weight gage at same site and datum.

REMARKS.--Records fair. Regulation at all stages by Puerto Rico Aqueduct and Sewer Authority reservoir upstream from gage.

AVERAGE DISCHARGES.--19 years (1961-79), 289 cu ft/s (8.184 cu m/s), 19.62 in/yr (498 mm/yr), 209,400 acre-ft/yr (258 cu hm/yr); median of yearly mean discharges 266 cu ft/s (7.53 cu m/s), 192,700 acre-ft/yr (238 cu hm/yr).
--20 years (1961-80), 284 cu ft/s (8.043 cu m/s), 19.28 in/yr (490 mm/yr), 205,800 acre-ft/yr (254 cu hm/yr); median of yearly mean discharges 243 cu ft/s (6.88 cu m/s), 176,100 acre-ft/yr (217 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,500 cu ft/s (2,704 cu m/s) Sep. 6, 1960, gage height, 36.35 ft (11.079 m), from floodmark, from rating curve extended above 12,000 cu ft/s (340 cu m/s) on basis of contracted-opening measurement of peak flow; minimum, 3.1 cu ft/s (0.088 cu m/s) Mar. 12, 1974, gage height, 6.51 ft (1.984 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges and elevations to gage datum of major floods, as pointed out by local residents are as follows: Sept. 13, 1928, 120,000 cu ft/s (3,400 cu m/s), gage height, 37.4 ft (11.4 m); June 16, 1943, 82,000 cu ft/s (2,320 cu m/s), gage height, 34.4 ft (10.48 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 6,000 cu ft/s (170 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 26, 1978	2245	12,500	354	22.65	6.904
Oct. 27, 1978	1315	6,240	177	18.42	5.614
May 20, 1979	1130	6,000	170	18.21	5.550
June 30, 1979	0500	8,020	227	19.80	6.035
July 1, 1979	0130	9,010	255	20.55	6.264
Aug. 31, 1979	0845	*55,600	1,580	31.72	9.668
Sept. 4, 1979	2015	18,600	527	24.65	7.513
Sept. 29, 1979	2015	10,700	303	21.73	6.623
Nov. 25, 1979	1900	* 7,170	203	19.16	5.840

Minimum discharges, 11 cu ft/s (0.312 cu m/s) Oct. 22, 1978; 11 cu ft/s (0.312 cu m/s) Aug. 31, Sept. 1-2, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	736	68	23	31	34	181	60	516	4010	565	4250
2	14	691	85	24	30	35	108	65	337	1420	587	1540
3	91	469	125	30	28	32	88	65	296	738	335	1180
4	75	287	101	28	26	35	71	74	594	454	262	5480
5	151	207	82	26	25	39	53	66	382	554	375	11300
6	173	168	68	121	23	32	42	54	248	1610	375	4170
7	123	142	100	334	21	29	36	44	274	684	224	1470
8	65	117	108	300	19	25	32	41	328	424	174	1160
9	48	114	83	302	18	23	27	39	353	349	167	1110
10	40	133	69	179	16	22	23	69	591	294	157	998
11	34	269	63	190	16	22	19	166	748	252	160	839
12	26	351	54	173	15	20	20	102	604	229	154	752
13	26	231	51	144	14	18	30	119	377	212	145	638
14	38	152	45	103	27	19	25	173	249	188	353	573
15	35	119	40	80	1910	17	22	527	193	230	354	532
16	29	107	35	70	544	16	20	1550	209	346	214	639
17	24	409	31	85	181	15	20	1930	207	1250	176	510
18	20	165	28	83	153	21	20	568	176	764	157	468
19	17	243	33	297	107	17	30	1250	139	465	174	446
20	15	182	38	1250	83	16	520	3060	111	365	333	384
21	13	170	47	233	291	17	300	1300	98	321	788	346
22	11	134	59	138	170	16	200	609	91	278	542	383
23	12	106	46	112	98	18	150	378	95	325	421	556
24	239	93	39	86	85	25	120	317	105	290	548	510
25	438	84	32	68	69	27	100	372	119	253	384	399
26	3270	74	29	58	56	78	90	251	472	632	280	361
27	5950	66	26	47	49	80	80	182	1630	275	190	328
28	2640	56	26	42	43	30	70	280	2320	229	169	293
29	834	56	24	39	---	1000	90	1640	4600	199	157	3350
30	463	71	22	38	---	965	65	937	2150	183	6780	2260
31	529	---	19	33	---	390	---	831	---	539	36300	---
TOTAL	15466	6202	1676	4736	4148	3133	2652	17119	18612	18362	52000	47225
MEAN	499	207	54.1	153	148	101	88.4	552	620	592	1677	1574
MAX	5950	736	125	1250	1910	1000	520	3060	4600	4010	36300	11300
MIN	11	56	19	23	14	15	19	39	91	183	145	293
CFSM	2.50	1.04	.27	.77	.74	.51	.44	2.76	3.10	2.96	8.39	7.87
IN.	2.88	1.15	.31	.88	.77	.58	.49	3.18	3.46	3.42	9.67	8.78
AC-FT	30680	12300	3320	9390	8230	6210	5260	33960	36920	36420	103100	93670

CAL YR 1978 TOTAL 55163.7 MEAN 151 MAX 5950 MIN 8.3 CFSM .76 IN 10.26 AC-FT 109400
WTR YR 1979 TOTAL 191331.0 MEAN 524 MAX 36300 MIN 11 CFSM 2.62 IN 35.59 AC-FT 379500

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	864	324	367	178	76	58	51	47	151	32	20	11
2	796	191	336	169	87	62	50	41	169	22	55	18
3	685	178	353	163	82	85	47	35	119	21	82	28
4	637	574	388	157	80	144	42	31	83	26	75	21
5	1120	484	328	151	140	663	39	32	70	31	113	26
6	630	359	265	152	298	891	36	23	54	33	74	29
7	595	719	232	144	269	246	31	21	55	45	56	19
8	495	808	219	139	150	194	32	25	71	103	57	21
9	423	551	297	144	439	168	35	25	51	109	61	35
10	390	333	300	205	479	114	132	24	55	91	86	42
11	336	245	256	158	221	89	209	22	481	56	96	31
12	310	209	240	247	146	85	123	23	194	42	87	28
13	296	191	220	206	133	86	179	34	90	36	78	28
14	276	461	210	162	125	92	146	63	67	36	86	27
15	265	162	200	148	111	97	108	83	52	34	76	27
16	265	154	190	134	129	95	79	78	41	30	52	63
17	249	509	180	127	91	80	56	168	37	33	41	105
18	226	565	175	122	98	74	63	84	34	138	44	108
19	217	625	153	140	78	72	59	128	49	339	39	71
20	215	790	1510	111	82	77	51	99	56	169	28	139
21	215	855	775	122	83	73	43	58	53	90	24	131
22	233	603	381	113	80	70	36	46	45	80	24	75
23	230	354	436	106	114	70	39	41	35	58	19	43
24	205	649	688	112	151	68	43	363	38	44	15	90
25	191	1850	1350	98	104	66	224	235	33	36	23	565
26	190	2890	503	99	95	59	770	103	31	30	31	232
27	179	885	317	93	90	59	259	100	27	26	18	147
28	170	636	245	93	83	56	139	1540	25	22	16	489
29	899	516	211	85	65	59	81	759	23	19	17	235
30	366	402	205	94	---	59	55	330	28	19	14	759
31	278	---	192	86	---	54	---	164	---	18	11	---
TOTAL	12446	17772	11722	4258	4179	4165	3257	4825	2317	1868	1518	3643
MEAN	401	592	378	137	144	134	109	156	77.2	60.3	49.0	121
MAX	1120	2890	1510	247	479	891	770	1540	481	339	113	759
MIN	170	154	153	85	65	54	31	21	23	18	11	11
CFSM	2.01	2.96	1.89	.69	.72	.67	.55	.78	.39	.30	.25	.61
IN	2.31	3.31	2.18	.79	.78	.77	.61	.90	.43	.35	.28	.68
AC-FT	24690	35250	23250	8450	8290	8260	6460	9570	4600	3710	3010	7230

CAL YR 1979 TOTAL 209927 MEAN 575 MAX 36300 MIN 14 CFSM 2.88 IN 39.05 AC-FT 416400
WTR YR 1980 TOTAL 71970 MEAN 197 MAX 2890 MIN 11 CFSM .99 IN 13.39 AC-FT 142800

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT , 1978											
17...	1300	23	600	7.2	30.0	3.0	3.2	--	1.8	2100	370
NOV											
03...	1420	442	255	7.4	27.0	40	7.0	--	--	39000	6800
DEC											
12...	1220	60	359	7.3	27.5	6.0	5.0	--	1.0	6900	800
JAN , 1979											
12...	1330	171	290	7.1	25.0	20	6.2	--	--	--	17000
FEB											
08...	1240	19	580	7.4	26.5	3.0	7.6	--	3.2	1400	110
MAR											
14...	1225	19	590	7.2	27.5	1.0	7.6	--	--	--	53
APR											
11...	1245	19	457	7.1	29.0	2.0	7.3	--	2.5	430	220
MAY											
03...	1325	67	428	7.2	29.5	5.0	4.5	--	--	21000	1900
JUN											
19...	1245	136	356	6.9	30.0	7.0	4.8	--	.8	38000	4000
JUL											
12...	1225	226	311	7.6	25.0	8.0	6.2	--	--	--	14000
AUG											
14...	1210	188	344	7.0	28.5	20	4.4	--	6.4	53000	11000
SEP											
17...	1430	470	310	7.3	28.0	20	6.9	--	--	52000	24000
OCT											
03...	1245	E1200	267	7.1	27.0	35	7.8	--	--	--	8100
NOV											
05...	1530	469	317	7.6	27.0	21	7.3	7	2.4	--	13000
DEC											
10...	1330	620	288	7.6	25.0	5.0	5.4	--	--	--	23000
JAN , 1980											
10...	1030	223	213	7.8	22.5	.50	6.8	--	--	--	16000
FEB											
05...	1115	170	345	7.7	27.0	.50	5.5	--	--	--	3000
MAR											
04...	1145	164	352	7.3	25.0	.50	7.8	--	5.7	--	2700
APR											
01...	1210	49	423	7.9	28.0	1.4	9.3	--	--	--	280
MAY											
01...	1300	47	382	8.2	30.0	--	11.4	--	--	--	620
JUN											
03...	1100	115	310	7.2	28.0	80	4.3	--	--	--	14000
JUL , 1980											
01...	1200	29	516	7.3	30.0	1.5	5.7				1100
AUG											
05...	1125	113	397	7.5	28.0	7.9	3.8				3000
SEP											
03...	1030	29	557	7.3	27.0	.20	5.4				340
30...	1235	459	340	7.3	27.5	1.4	4.6				9000

E Estimated.

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)
OCT , 1978											
17...	190	200	24	57	14	28	.9	2.8	214	0	176
NOV											
03...	2000	79	8	20	7.0	14	.7	2.9	86	0	71
DEC											
12...	40	150	16	42	12	22	.8	3.0	168	0	138
JAN , 1979											
12...	1600	130	19	34	10	18	.7	2.8	130	0	107
FEB											
08...	110	217	0	64	14	32	.9	2.9	227	0	190
MAR											
14...	340	230	23	70	13	25	.7	2.5	250	0	205
APR											
11...	32	190	22	53	13	23	.7	2.4	200	0	164
MAY											
03...	84	170	12	49	12	21	.7	2.5	193	0	158
JUN											
19...	100	140	17	39	11	18	.7	3.0	153	0	125
JUL											
12...	2000	120	6	33	9.0	16	.6	2.1	138	0	113
AUG											
14...	5500	130	10	37	9.9	15	.7	2.4	150	0	123
SEP											
17...	3700	120	15	33	9.5	15	.6	2.2	130	0	107
OCT											
03...	1400	90	6	23	8.0	15	.7	2.0	102	0	84
NOV											
05...	900	120	3	29	11	20	.8	2.2	140	0	115
DEC											
10...	800	120	5	34	9.7	17	.7	2.0	140	0	110
JAN , 1980											
10...	5300	120	0	34	9.6	20	.8	2.4	160	0	131
FEB											
05...	500	140	0	38	11	20	.7	2.0	169	0	139
MAR											
04...	430	160	8	43	13	22	.8	2.3	186	0	150
APR											
01...	10	160	0	41	13	22	.8	2.0	190	0	156
MAY											
01...	40	--	--	--	--	--	--	--	186	0	150
JUN											
03...	290	120	10	38	6.2	13	.5	3.6	140	0	110
JUL , 1980											
01...	10	210	17	63	12	25	.8	2.3	231	0	190
AUG											
05...	280	160	24	46	12	20	.7	3.2	179	0	140
SEP											
03...	180	240	51	75	13	27	.8	1.7	244	0	190
30...	640	120	3	31	11	19	.7	3.1	154	0	120

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978											
17...	22	15	53	.1	21	312	296	19.4	.20	--	.430
NOV											
03...	5.5	13	19	.1	20	148	139	177	1.0	--	.080
DEC											
12...	13	16	34	.1	15	241	231	39.2	.44	--	.260
JAN , 1979											
12...	17	13	28	.1	16	197	186	91.0	.40	--	.130
FEB											
08...	14	18	62	.2	17	361	322	18.5	.64	--	.300
MAR											
14...	25	19	46	.1	18	335	317	16.9	.50	--	.180
APR											
11...	25	17	37	.1	15	269	263	13.7	.34	--	.170
MAY											
03...	19	18	31	.1	15	254	248	45.9	.32	--	.200
JUN											
19...	31	15	25	.1	18	227	206	83.4	.32	--	.120
JUL											
12...	5.5	15	21	.1	21	184	185	112	.52	--	.100
AUG											
14...	24	15	25	.1	18	206	200	105	.33	--	.130
SEP											
17...	10	14	22	.1	21	190	185	241	--	--	.070
OCT											
03...	13	12	13	.1	17	149	140	483	--	--	--
NOV											
05...	5.6	8.1	21	.1	15	182	176	230	.15	.14	.090
DEC											
10...	5.6	16	20	.1	22	197	194	330	.84	.80	.110
JAN , 1980											
10...	4.1	13	20	.1	15	190	200	114	.69	.69	.010
FEB											
05...	3.4	16	29	.2	18	227	220	104	.29	.29	.230
MAR											
04...	15	17	33	.2	15	249	243	110	.31	.31	.260
APR											
01...	3.8	15	30	.1	15	248	236	32.7	.07	--	.010
MAY											
01...	1.9	--	--	--	--	--	--	--	--	--	--
JUN											
03...	14	14	20	.2	12	210	176	65.2	.56	.56	.250
JUL , 1980											
01...	18	16	41	.2	20	345	296	27.0	.45	.45	.140
AUG											
05...	8.8	14	30	.1	23	240	234	73.2	.40	.40	.420
SEP											
03...	15	17	46	.2	22	318	317	25.1	.15	.15	.070
30...	12	14	23	.2	23	225	199	279	.54	.43	.040

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN DIS-SOLVED (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)
OCT , 1978											
17...	--	.16	--	.59	.54	.79	--	3.5	.440	.220	--
NOV											
03...	--	.54	--	.62	.34	1.6	--	7.2	.150	.090	--
DEC											
12...	--	.25	--	.51	.55	.95	--	4.2	.130	.100	2
JAN , 1979											
12...	--	.27	--	.40	.32	.80	--	3.5	.130	.080	--
FEB											
08...	--	.49	--	.79	.68	1.4	--	6.3	.180	.160	--
MAR											
14...	--	.53	--	.71	.47	1.2	--	5.4	.150	.120	2
APR											
11...	--	.40	--	.57	.53	.91	--	4.0	.140	.110	1
MAY											
03...	--	1.5	--	1.70	.58	2.0	--	8.9	.120	.080	--
JUN											
19...	--	.38	--	.50	.38	.82	--	3.6	.080	.050	--
JUL											
12...	--	.41	--	.51	.50	1.0	--	4.6	.100	.050	1
AUG											
14...	--	.50	--	.63	.38	.96	--	4.3	.130	.060	--
SEP											
17...	--	.41	--	.48	.48	--	1.7	--	.090	.050	1
OCT											
03...	--	--	--	.45	.37	--	1.2	--	.080	.040	--
NOV											
05...	.050	.42	.14	.51	.19	.66	.33	2.9	.040	.010	--
DEC											
10...	.090	.24	.18	.35	.27	1.2	1.1	5.3	.110	.070	1
JAN , 1980											
10...	.010	.69	--	.70	--	1.4	2.1	6.2	.110	.090	1
FEB											
05...	.230	.62	.62	.85	.85	1.1	1.2	5.0	.150	.130	--
MAR											
04...	.250	.41	.41	.67	.66	.98	1.3	4.3	.130	.110	--
APR											
01...	.010	.77	.46	.78	.47	.85	.66	3.8	.140	.060	2
MAY											
01...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	1.4	--	1.60	1.0	2.2	1.6	9.6	.250	.110	--
JUL , 1980											
01...	.140	.55	.55	.65	.69	1.1	1.3	5.0	.190	.180	3
AUG											
05...	.370	.00	--	.42	--	.82	--	3.6	.280	.280	--
SEP											
03...	.070	.27	.07	.34	.14	.49	.29	2.2	.170	.170	--
30...	--	.35	--	.39	.43	.93	.86	4.1	.150	.120	3

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 to SEPTEMBER 1980

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)
OCT , 1978											
17...	--	--	--	--	--	--	--	--	--	--	--
NOV											
03...	1	--	<100	--	--	--	--	--	ND	--	5
DEC											
12...	1	<100	<100			<20	ND	ND	ND	3	2
JAN , 1979											
12...	--	--	--	--	--	--	--	--	--	--	--
FEB											
08...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	2	<100	<100	2	2	<20	ND	<2	ND	4	2
APR											
11...	--	--	--	--	--	--	--	--	--	--	--
MAY											
03...	3	--	<100	--	<2	--	<20	--	3	--	2
JUN											
19...	--	--	60	--	--	--	--	--	--	--	--
JUL											
12...	<1	<100	50	2	2	30	20	2	2	5	<2
AUG											
14...	--	--	--	--	--	--	--	--	--	--	--
SEP											
17...	1	<100	--	ND	--	20	<20	<2	<2	6	2
OCT											
03...	--	--	--	--	--	--	--	--	--	--	--
NOV											
05...	--	--	--	--	--	--	--	--	--	--	--
DEC											
10...	1	100	50	2	2	20	10	0	0	5	3
JAN , 1980											
10...	1	100	50	2	2	30	20	1	0	6	6
FEB											
05...	--	--	--	--	--	--	--	--	--	--	--
MAR											
04...	--	--	--	--	--	--	--	--	--	--	--
APR											
01...	2	50	50	0	0	10	<10	0	0	5	3
MAY											
01...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--
JUL											
01...	3	50	50	0	0	<10	10	0	0	2	2
AUG											
05...	--	--	--	--	--	--	--	--	--	--	--
SEP											
03...	--	--	--	--	--	--	--	--	--	--	--
30...	2	100	100	--	7	20	10	0	0	4	4

ND Looked for but not detected.

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)
OCT , 1978											
17...	--	--	--	--	--	--	--	--	--	--	--
NOV											
03...	--	70	--	--	--	20	--	.5	--	--	--
DEC											
12...	590	30			230	200	<.5	<.5	--	--	<1
JAN , 1979											
12...	--	--	--	--	--	--	--	--	--	--	--
FEB											
08...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	250	<10	6	2	--	320	.5	.5	--	--	<1
APR											
11...	--	--	--	--	--	--	.5	--	--	--	<1
MAY											
03...	--	20	--	6	--	230	--	.5	--	--	--
JUN											
19...	--	30	--	--	--	130	--	<.5	--	--	--
JUL											
12...	1200	<10	7	4	130	80	<.5	<.5	--	--	<1
AUG											
14...	--	--	--	--	--	--	--	--	--	--	--
SEP											
17...	1600	20	3	ND	110	40	<.5	<.5	--	--	<1
OCT											
03...	--	--	--	--	--	--	--	--	--	--	--
NOV											
05...	--	--	--	--	--	--	--	--	--	--	--
DEC											
10...	860	20	2	2	100	40	.2	.1	3	1	0
JAN , 1980											
10...	760	70	3	0	120	60	.3	.3	1	1	0
FEB											
05...	--	--	--	--	--	--	--	--	--	--	--
MAR											
04...	--	--	--	--	--	--	--	--	--	--	--
APR											
01...	320	0	0	0	160	50	.5	.5	3	1	0
MAY											
01...	--	--	--	--	--	--	--	--	--	--	--
JUN											
03...	--	--	--	--	--	--	--	--	--	--	--
JUL											
01...	270	20	6	6	280	200	.7	.7	2	1	0
AUG											
05...	--	--	--	--	--	--	--	--	--	--	--
SEP											
03...	--	--	--	--	--	--	--	--	--	--	--
30...	550	30	--	220	70	20	.9	.9	3	1	0

ND Looked for but not detected.

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
17...	--	--	--	--	--	5.5	--	--	19	1.2
NOV										
03...	<1	--	--	--	ND	--	17	--	25	30
DEC										
12...	<1	ND	ND	<20	ND	--	5.9	--	28	4.6
JAN , 1979										
12...	--	--	--	--	--	6.3	--	.7	67	31
FEB										
08...	--	--	--	--	--	5.4	--	--	76	3.9
MAR										
14...	<1	ND	ND	20	<20	--	4.6	--	4	.20
APR										
11...	--	--	--	--	--	--	3.8	.6	57	2.9
MAY										
03...	<1	--	--	--	<20	3.8	3.8	--	51	9.2
JUN										
19...	--	--	ND	--	<20	--	6.0	.5	11	4.0
JUL										
12...	<1	ND	--	40	20	6.2	3.3	--	58	35
AUG										
14...	--	--	--	--	--	4.4	--	--	79	40
SEP										
17...	<1	ND	ND	30	20	--	4.4	--	56	74
OCT										
03...	--	--	--	--	--	--	--	--	70	--
NOV										
05...	--	--	--	--	--	2.6	--	--	13	16
DEC										
10...	0	0	0	10	10	4.9	--	--	44	74
JAN , 1980										
10...	0	0	0	10	10	--	4.8	.4	20	12
FEB										
05...	--	--	--	--	--	8.4	--	--	10	4.6
MAR										
04...	--	0	--	--	--	2.4	--	--	128	57
APR										
01...	0	0	0	16	6	--	3.0	2.2	55	7.3
MAY										
01...	--	--	--	--	--	--	--	--	58	7.3
JUN										
03...	--	0	--	--	--	5.8	--	--	129	40
JUL										
01...	0	0	--	10	0	--	4.8	.9	65	5.1
AUG										
05...	--	--	--	--	--	4.9	--	--	14	4.3
SEP										
03...	--	0	--	--	--	8.1	--	--	2	.16
30...	0	0	0	20	10	--	5.8	.7	23	29

ND Looked for but not detected.

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 17,78		JAN 12,79		FEB 8,79		MAR 14,79		APR 11,79		JUL 12,79	
TIME	1300		1330		1240		1225		1245		1225	
TOTAL CELLS/ML	430		720		2900		1500		6200		1700	
DIVERSITY: DIVISION	0.5		1.6		1.7		0.9		1.3		0.8	
.CLASS	0.5		1.6		1.7		0.9		1.3		0.8	
..ORDER	1.0		1.8		2.4		0.9		1.4		1.1	
...FAMILY	1.9		2.6		2.6		1.2		1.6		1.2	
....GENUS	2.3		2.9		2.6		1.4		2.4		1.5	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHLOROCOCCACEAE												
....CHLOROCOCCUM	--	-	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE												
....COELASTRUM	--	-	16	2	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE												
....PEDIASTRUM	--	-	22	3	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	--	-	--	-	--	-	--	-	*	0	--	-
....MICRACTINIUM	--	-	13	2	--	-	1100#	69	360	6	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	35	8	8	1	250	9	83	5	950#	15	43	3
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	110#	25	160#	22	--	-	--	-	140	2	--	-
....FRANCEIA	--	-	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	14	1	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
....QUADRIGULA	--	-	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	22	3	--	-	--	-	--	-	29	2
....TETRAEDRON	--	-	*	0	--	-	--	-	--	-	--	-
....TREUBARIA	14	3	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	11	1	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	200#	47	86	12	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	200	7	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	68	1	170	10
..TETRASPORALES												
...TETRASPORACEAE	--	-	--	-	--	-	--	-	--	-	--	-
....TETRASPORA	28	7	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	7	2	--	-	150	5	--	-	--	-	57	3
...PHACOTACEAE												
....PTEROMONAS	--	-	--	-	--	-	--	-	--	-	--	-
...VOLVOCACEAE												
....PANDORINA	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	14	3	--	-	1100#	36	14	1	290	5	1200#	73
....MELOSIRA	--	-	230#	31	--	-	--	-	200	3	72	4
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	*	0	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	*	0	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	*	0	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	34	1	--	-
...NAVICULACEAE												
....CALONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	7	2	8	1	--	-	--	-	--	-	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	7	2	8	1	150	5	--	-	--	-	43	3
.XANTHOPHYCEAE												
..HETEROCOCCALES												
...CENTRITRACTACEAE												
....CENTRITRACTUS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

Continued....

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 17,78		JAN 12,79		FEB 8,79		MAR 14,79		APR 11,79		JUL 12,79	
TIME	1300		1330		1240		1225		1245		1225	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE												
....CRYPTOMONAS	7	2	--	-	25	1	--	-	--	-	29	2
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	--	-	1400#	22	--	-
....ANACYSTIS	--	-	11	1	530#	18	--	-	2700#	43	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	110	15	500#	17	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	5	1	--	-	220	14	120	2	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	50	2	140	9	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DINOPHYCEAE												
..GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-	--	-
..PERIDINIALES	--	-	--	-	--	-	--	-	--	-	--	-
...GLENODINIACEAE												
....GLENODINIUM	--	-	*	0	--	-	--	-	--	-	--	-
...PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	AUG 14,79	SEP 17,79	OCT 3,79	NOV 5,79	DEC 10,79	JAN 10,80
TIME	1210	1430	1245	1530	1330	1030
TOTAL CELLS/ML	2300	8100	4300	2100	10000	2900
DIVERSITY: DIVISION	0.8	0.9	1.1	1.6	1.1	1.1
.CLASS	0.8	0.9	1.1	1.6	1.1	1.1
..ORDER	1.2	1.4	1.6	2.3	1.4	1.5
...FAMILY	1.2	1.7	2.1	2.6	1.6	0.0
....GENUS	1.4	2.1	2.4	0.0	1.7	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHLOROCOCCACEAE												
....CHLOROCOCCUM	--	-	220	3	--	-	--	-	--	-	--	-
...COELASTRACEAE												
....COELASTRUM	--	-	--	-	--	-	110	5	--	-	--	-
...HYDRODICTYACEAE												
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	160	4	--	-	430	4	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	590	7	27	1	--	-	190	2	250	9
....CHLORELLA	--	-	220	3	--	-	--	-	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	230	11	--	-	290	10
....FRANCEIA	--	-	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	520	6	190	4	--	-	330	3	--	-
....OOCYSTIS	--	-	150	2	--	-	57	3	--	-	--	-
....QUADRIGULA	--	-	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	150	2	--	-	57	3	--	-	19	1
....TETRAEDRON	--	-	--	-	27	1	--	-	*	0	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	650#	15	--	-	380	4	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	300	4	320	8	86	4	*	0	--	-
..TETRASPORALES												
...TETRASPORACEAE	--	-	--	-	--	-	570#	27	--	-	--	-
....TETRASPORA	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	54	1	--	-	740	7	150	5
...PHACOTACEAE												
....PTEROMONAS	--	-	74	1	--	-	--	-	--	-	--	-
...VOLVOCACEAE												
....PANDORINA	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	310	13	5000#	62	2200#	51	86	4	260	3	1900#	65
....MELOSIRA	210	9	--	-	81	2	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	380	9	420#	20	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	*	0	--	-
...NAVICULACEAE												
....CALONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	52	2	74	1	27	1	--	-	--	-	19	1
....PINNULARIA	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	52	2	740	9	54	1	--	-	--	-	77	3
.XANTHOPHYCEAE												
..HETEROCOCCALES												
...CENTRITRACTACEAE												
....CENTRITRACTUS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
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Continued....

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE / TIME	AUG 14,79 1210		SEP 17,79 1430		OCT 3,79 1245		NOV 5,79 1530		DEC 10,79 1330		JAN 10,80 1030	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	130	3	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	52	2	--	-	--	-	--	-	7600#	73	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....APHANIZOMENON	--	-	--	-	--	-	430#	21	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	1700#	71	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	*	0	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	74	1	--	-	--	-	72	1	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DINOPHYCEAE												
..GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	--	-	--	-	--	-	--	-	190	2	--	-
..PERIDINIALES	--	-	--	-	--	-	--	-	--	-	190	7
...GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	--	-	14	1	*	0	--	-
...PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	29	1	--	-	--	-

DATE / TIME	FEB 5,80 1115	MAR 4,80 1145	MAR 12,80 1115	APR 1,80 1210	MAY 1,80 1300
TOTAL CELLS/ML	7700	42000	560	24000	66000
DIVERSITY: DIVISION	1.3	0.2	1.2	0.8	1.5
.CLASS	1.3	0.2	1.2	0.8	1.6
..ORDER	2.1	0.6	1.3	1.6	1.9
...FAMILY	2.3	0.6	2.5	1.8	2.0
....GENUS	2.5	0.6	2.7	1.8	2.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHLOROCOCCACEAE										
....CHLORococcum	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	5000#	21	3200	5
...OOCYSTACEAE										
....ANKISTRODESMUS	200	3	--	-	30	5	--	-	2200	3
....CHLORELLA	--	-	--	-	20	4	--	-	--	-
....CHODATELLA	67	1	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	270	3	--	-	--	-	--	-	--	-
....FRANCEIA	--	-	--	-	--	-	--	-	1100	2
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....QUADRIGULA	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	530	7	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	470	6	3100	7	--	-	1400	6	--	-
..TETRASPORALES										
...TETRASPORACEAE	--	-	--	-	--	-	--	-	--	-
....TETRASPORA	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	3900#	51	37000#	90	--	-	14000#	58	9700	15
...PHACOTACEAE										
....PTEROMONAS	--	-	--	-	--	-	--	-	--	-
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	--	.	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

Continued....

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE TIME	FEB 5,80 1115		MAR 4,80 1145		MAR 12,80 1115		APR 1,80 1210		MAY 1,80 1300	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	1100	14	380	1	--	-	160	1	19000#	28
....MELOSIRA	--	-	--	-	5	1	1200	5	14000#	21
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	130#	23	--	-	--	-
....COCCONEIS	--	-	--	-	20	4	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	15	3	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	15	3	160	1	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	10	2	--	-	--	-
...NAVICULACEAE										
....CALONEIS	--	-	--	-	--	-	--	-	360	1
....NAVICULA	--	-	--	-	160#	29	--	-	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	270	3	--	-	25	5	--	-	--	-
.XANTHOPHYCEAE										
..HETEROCOCCALES										
...CENTRITRACTACEAE										
....CENTRITRACTUS	--	-	--	-	--	-	--	-	1100	2
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	67	1	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	270	3	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	8600	13
....ANACYSTIS	--	-	--	-	--	-	--	-	4300	7
....COCCOCHLORIS	--	-	--	-	--	-	--	-	2900	4
..HORMOGONALES										
...NOSTOCACEAE										
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	130#	23	2300	10	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	380	1	--	-	--	-	--	-
....LEPOCINCLIS	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	130	2	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-
..PERIDINIALES	--	-	--	-	--	-	--	-	--	-
...GLENODINIACEAE										
....GLENODINIUM	470	6	380	1	--	-	--	-	--	-
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUN 3,80		JUL 1,80		AUG 5,80		SEP 3,80		SEP 30,80	
TIME	1100		1200		1125		1030		1235	
TOTAL CELLS/ML	3900		3600		2900		750		4600	
DIVERSITY: DIVISION	0.6		1.5		1.0		0.6		1.0	
.CLASS	0.6		1.5		1.0		0.6		1.0	
..ORDER	0.8		1.8		1.4		1.4		1.5	
...FAMILY	0.8		1.9		2.0		1.8		2.3	
....GENUS	0.9		2.2		2.6		2.1		2.6	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	29	1	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	29	1	--	-	34	1	--	-	190	4
....CHLORELLA	--	-	--	-	430#	15	14	2	--	-
....CHODATELLA	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	85	2
....FRANCEIA	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	29	1	--	-	--	-	--	-
....QUADRIGULA	--	-	120	3	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	42	1
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	120	3	340	12	350#	46	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	1300#	45	58	8	130	3
..TETRASPORALES										
...TETRASPORACEAE	--	-	--	-	--	-	--	-	--	-
....TETRASPORA	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	140	4	260	7	190	7	120#	15	85	2
...PHACOTACEAE										
....PTEROMONAS	--	-	--	-	--	-	--	-	--	-
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	120#	15	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	3300#	87	1600#	44	17	1	--	-	380	8
....MELOSIRA	86	2	--	-	140	5	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	29	1	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....CALONEIS	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	34	1	--	-	--	-
....PINNULARIA	--	-	--	-	17	1	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	29	1	58	2	86	3	--	-	64	1
.XANTHOPHYCEAE										
..HETEROCOCCALES										
...CENTRITRACTACEAE										
....CENTRITRACTUS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

Continued....

50046000 RIO DE LA PLATA AT TOA ALTA, PR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1980

DATE TIME	JUN 3,80 1100		JUL 1,80 1200		AUG 5,80 1125		SEP 3,80 1030		SEP 30,80 1235	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	29	1	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	1100#	31	170	6	--	-	400	9
....COCCOCHLORIS	--	-	260	7	100	4	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....APHANIZOMENON	--	-	--	-	--	-	--	-	2000#	44
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	620	13
....OSCILLATORIA	--	-	--	-	--	-	--	-	550	12
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	100	13	--	-
....LEPOCINCLIS	--	-	29	1	--	-	--	-	--	-
....TRACHELOMONAS	140	4	--	-	--	-	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	--	-	--	-	--	-	--	-
..PERIDINIALES	--	-	--	-	--	-	--	-	--	-
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	17	1	--	-	--	-
...PERIDINIACEAE										
....PERIDINIUM	29	1	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

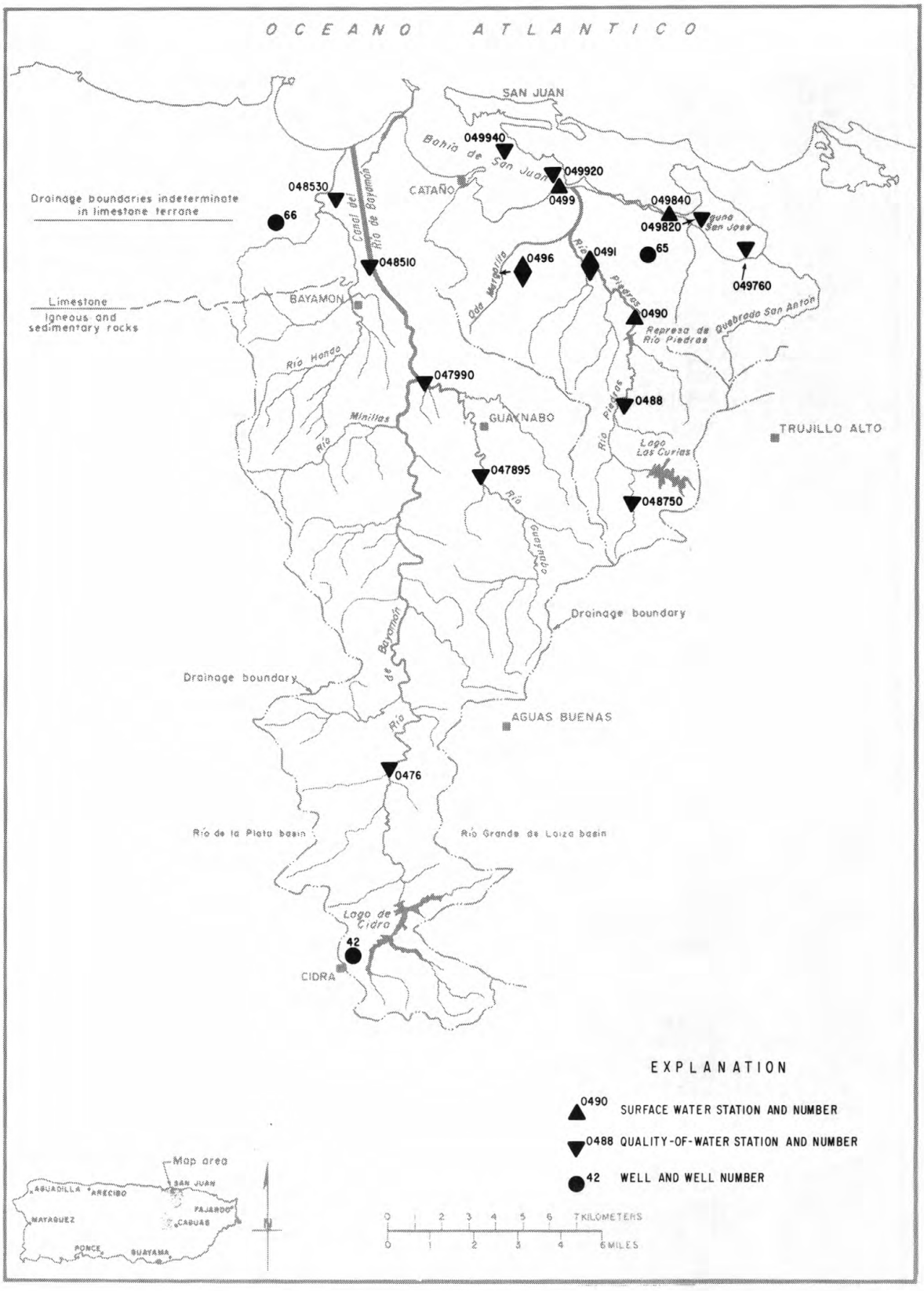

Figure 10.--Río de Bayamón and Río Piedras basins.

RIO DE BAYAMON BASIN

50047600 RIO DE BAYAMON NEAR AGUAS BUENAS, PR

WATER-QUAILTY RECORDS

LOCATION.--Lat 18°14'39", long 66°08'39", at bridge on Highway 156, and 2.9 mi (4.7 km) west of Aguas Buenas.

DRAINAGE AREA.--18.5 sq mi (47.9 sq km).

PERIOD OF RECORD.--Water years 1958-65, 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
16...	1320	13	286	8.1	27.0	--	5.1	--	1.0	800	680	590
DEC												
18...	1345	26	220	8.2	23.5	--	9.4	--	1.3	700	270	280
FEB , 1979												
22...	1135	15	267	7.9	23.0	--	9.5	--	.9	2000	180	710
APR												
12...	1050	17	265	7.8	24.0	--	9.7	--	1.8	4700	340	140
JUN												
18...	1330	19	269	8.1	27.5	--	8.7	--	1.4	19000	730	1000
AUG												
22...	1300	27	233	7.6	26.5	--	8.3	--	1.1	19000	3500	1700
NOV												
20...	1345	48	209	7.9	24.0	20	8.0	9	.9	--	10000	6800
JAN , 1980												
14...	1110	31	213	7.9	21.0	.30	8.5	11	3.8	--	640	450
MAR												
12...	1120	35	243	7.7	23.5	5.5	8.7	98	.9	--	1900	2100
MAY												
27...	1020	50	224	7.7	24.0	5.0	8.4	14	2.1	--	5100	4900
JUL												
08...	0815	23	250	7.8	23.0	.75	8.1	16	1.4	--	210	490
SEP												
16...	0930	22	250	7.8	24.0	3.8	9.1	32	1.1	--	360	340

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
16...	110	4	23	12	15	.6	2.8	125	0	103	1.6
DEC											
18...	86	2	19	9.4	14	.7	3.2	102	0	84	1.0
FEB , 1979											
22...	110	0	25	12	15	.6	2.5	140	0	115	2.8
APR											
12...	100	2	22	11	17	.7	2.0	120	0	98	3.0
JUN											
18...	100	2	22	11	16	.7	2.9	120	0	98	1.5
AUG											
22...	80	0	19	8.0	10	.5	2.2	110	0	90	4.4
NOV											
20...	--	--	--	--	--	--	--	93	0	76	1.9
JAN , 1980											
14...	84	2	19	8.9	11	.5	2.3	100	0	82	2.0
MAR											
12...	--	--	--	--	--	--	--	110	0	90	3.5
MAY											
27...	77	0	17	8.4	15	.7	2.0	110	0	90	3.5
JUL											
08...	--	--	--	--	--	--	--	120	0	98	3.0
SEP											
16...	80	0	17	9.0	17	.8	2.9	113	0	93	2.9

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
16...	8.3	18	.1	27	169	168	5.9	--	.58	.010	.59
DEC											
18...	9.1	17	.1	24	155	146	11.0	--	.99	.010	1.0
FEB , 1979											
22...	9.0	18	.1	28	183	179	7.3	--	.77	<.010	.77
APR											
12...	8.4	19	.1	25	166	164	7.4	--	.43	<.010	.43
JUN											
18...	8.8	17	.1	27	--	164	--	--	--	--	--
AUG											
22...	8.6	14	.1	21	--	137	10.0	--	.57	.020	.59
NOV											
20...	--	--	--		--	--	--	53	.68	.020	.70

50047600 RIO DE BAYAMON NEAR AGUAS BUENAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
JAN , 1980											
14...	9.8	13	.1	25	--	138	11.2	28	.75	.010	.76
MAR											
12...	--	--	--	--	--	--	--	--	.72	.010	.73
MAY											
27...	7.9	15	.1	22	--	142	15.2	6	--	--	--
JUL											
08...	--	--	--	--	--	--	--	--	.55	.010	.56
SEP											
16...	6.3	17	.0	22	--	147	8.9	0	.69	.010	.70

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
18...	.030	.07	.10	.69	3.1	.060	.050	--	--	--	--
DEC											
18...	<.010	.18	.18	1.2	5.2	.000	.050	1	--	<2	<20
FEB , 1979											
22...	.010	.12	.13	.90	4.0	.070	.050	--	--	--	--
APR											
12...	.010	.31	.32	.75	3.3	.040	.040	--	--	--	--
JUN											
18...	--	--	.30	--	--	.000	--	--	--	--	--
AUG											
22...	.020	.46	.48	1.1	4.7	.000	.040	1	--	ND	20
NOV											
20...	.150	.53	.68	1.4	6.1	.140	--	--	--	--	--
JAN , 1980											
14...	.000	.34	.34	1.1	4.9	.000	--	--	--	--	--
MAR											
12...	.000	.30	.30	1.1	4.8	.090	--	1	0	0	10
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
JUL											
08...	.020	.25	.27	.83	3.7	.050	--	--	--	--	--
SEP											
16...	.010	.07	.08	.78	3.5	.010	--	3	100	1	5

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
18...	--	--	--	--	--	--	--	--	--	1	.04
DEC											
18...	ND	1300	<2	20	<.5	<1	ND	20	--	3	.21
FEB , 1979											
22...	--	--	--	40	--	--	--	--	7.5	2	.08
APR											
12...	--	--	--	30	--	--	--	--	2.4	5	.22
JUN											
18...	--	--	--	--	--	--	--	--	5.0	8	.40
AUG											
22...	4	550	<2	50	<.5	<1	ND	20	7.6	--	--
NOV											
20...	--	--	--	--	--	--	--	--	--	67	8.7
JAN , 1980											
14...	--	--	--	--	--	--	--	--	--	8	.67
MAR											
12...	--	--	1	--	1.1	0	0	--	--	406	38
MAY											
27...	--	--	--	--	--	--	--	--	--	47	6.3
JUL											
08...	--	--	--	--	--	--	--	--	--	3	.19
SEP											
16...	--	--	3	--	1.2	0	0	--	--	2	.12

ND Looked for but not detected.

50047895 RIO GUAYNABO AT HIGHWAY 836 NEAR GUAYNABO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'05", long 66°06'10", at bridge on Highway 836, 0.45 mi (0.72 km) west of Highway 20, and 1.7 mi (2.7 km) south of Guaynabo Plaza.

DRAINAGE AREA.--8.71 sq mi (22.6 sq km).

PERIOD OF RECORD.--Water years 1974 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
16...	1510	5.4	390	7.9	28.0	7.2	2.0	81000	7500	3600	130
NOV											
29...	1330	8.3	330	7.8	26.0	8.0	.4	65000	4600	4000	130
FEB , 1979											
22...	1330	16	327	7.5	25.5	6.5	5.0	59000	23000	21000	110
APR											
10...	1320	5.5	321	8.3	25.5	9.8	1.4	8400	2400	700	110
JUN											
06...	1400	12	317	8.0	25.5	7.1	1.4	34000	10000	6000	110
AUG											
24...	1230	30	304	7.5	27.0	7.0	2.1	90000	43000	25000	110

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
16...	5	34	12	22	.8	3.3	158	0	130	3.2	11
NOV											
29...	11	33	11	21	.8	3.0	142	0	116	3.6	12
FEB , 1979											
22...	0	28	9.5	22	.9	4.7	150	0	123	7.6	12
APR											
10...	7	29	10	23	.9	3.2	130	0	107	1.0	11
JUN											
06...	0	28	9.5	20	.8	4.0	140	0	115	2.2	9.7
AUG											
24...	0	27	9.2	20	.8	4.2	130	0	107	6.6	16

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
16...	32	.1	29	230	221	3.4	.49	.060	.55	.100
NOV										
29...	30	.1	29	213	209	4.8	.60	.040	.64	.170
FEB , 1979										
22...	29	.1	26	207	205	9.1	.49	.040	.53	.550
APR										
10...	28	.1	29	196	197	2.9	.24	.040	.28	.090
JUN										
06...	28	.1	29	206	197	6.6	.33	.090	.42	.350
AUG										
24...	25	.1	26	--	192	15.8	.64	.030	.67	.190

50047895 RIO GUAYNABO AT HIGHWAY 836 NEAR GUAYNABO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
16...	.07	.17	.72	3.2	.110	.100	--	--	--	--
NOV										
29...	.30	.47	1.1	4.9	.100	.090	1	<2	<20	3
FEB , 1979										
22...	.55	1.10	1.6	7.2	.130	.030	--	--	--	--
APR										
10...	.24	.33	.61	2.7	.090	.070	--	--	--	--
JUN										
06...	.31	.66	1.1	4.8	.070	.050	<1	--	--	--
AUG										
24...	1.1	1.30	2.0	8.7	.160	.010	1	<2	<20	20

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
16...	--	--	--	--	--	--	--	--	22	.32
NOV										
29...	240	5	60	<.5	<1	ND	ND	5.0	0	.00
FEB , 1979										
22...	--	--	170	--	--	--	--	10	115	5.0
APR										
10...	--	--	40	--	--	--	--	3.1	3	.04
JUN										
06...	--	--	--	<.5	<1	--	--	5.7	42	1.3
AUG										
24...	3400	21	190	<.5	<1	<2	30	8.0	139	11

ND Looked for but not detected.

50047990 RIO GUAYNABO NEAR BAYAMON, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°22'32", long 66°07'59", at bridge on Highway 833, 0.2 mi (0.3 km) upstream from Río de Bayamón, and 2.3 mi (3.7 km) southeast of Bayamón Plaza.

DRAINAGE AREA.--73.2 sq mi (189.6 sq km).

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: March and September 1958, April 1964, March 1971 to December 1973, May to June 1976, November 1979 to September 1980.
SEDIMENT RECORDS: November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
13...	0950	38	323	7.4	24.5	60	6.6	30	5.0	30000	11000	--
JAN , 1980												
11...	1150	31	359	7.3	23.0	2.2	5.2	16	2.9	7000	150	130
MAR												
11...	1310	24	415	7.1	24.5	3.0	5.0	110	7.3	860	240	--
MAY												
19...	1310	64	335	7.2	25.0	--	6.1	27	5.3	3300	400	110
JUN												
24...	1100	21	557	7.1	27.0	1.2	4.3	28	8.3	3500	360	--
SEP												
08...	1230	21	405	7.2	27.0	.40	4.1	27	4.9	6600	1000	150

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
13...	--	--	--	--	--	--	140	0	110	8.9	--	--
JAN , 1980												
11...	0	35	11	26	1.0	3.9	170	0	140	14	15	29
MAR												
11...	--	--	--	--	--	--	180	0	150	23	--	--
MAY												
19...	4	30	8.6	24	1.0	3.5	130	0	110	13	17	26
JUN												
24...	--	--	--	--	--	--	203	0	170	26	--	--
SEP												
08...	10	41	11	26	.9	4.4	168	0	138	17	17	33

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
13...	--	--	--	--	98	.62	.080	.70	.560	.30	.86	1.6
JAN , 1980												
11...	.3	28	232	19.4	23	.20	.190	.39	.050	1.6	1.60	2.0
MAR												
11...	--	--	--	--	--	.45	.120	.57	1.90	1.0	2.90	3.5
MAY												
19...	.2	22	195	33.7	--	--	--	--	--	--	--	--
JUN												
24...	--	--	--	--	--	.04	.030	.07	3.30	.00	3.30	3.4
SEP												
08...	.3	28	244	13.9	0	.29	.060	.35	1.70	.30	2.00	2.4

50047990 RIO GUAYNABO NEAR BAYAMON, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
13...	6.9	.390	--	--	--	--	--	--	--	--	132	14
JAN , 1980												
11...	8.8	.440	--	--	--	--	--	--	--	--	9	.75
MAR												
11...	15	.970	2	<50	0	10	2	.5	0	0	57	3.7
MAY												
19...	--	--	--	--	--	--	--	--	--	--	290	50
JUN												
24...	15	1.40	--	--	--	--	--	--	--	--	50	2.8
SEP												
09...	10	.580	2	100	0	9	3	.3	0	0	70	4.0

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)
JUN										
24...	1100	.00	.00	.0	.00	.00	.00	.00	.00	.00

DATE	ETHION, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)
JUN									
24...	.00	.00	.00	.00	.00	.00	.00	0	.00

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°25'01", long 66°09'26", 0.8 mi (1.3 km) north of Highway 167, and 1.1 mi (1.8 km) north of Bayamón Plaza.

DRAINAGE AREA.--71.9 sq mi (186.2 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 to SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
25...	1405	76	500	7.2	26.0	--	1.2	--	7.8	760000	660000	28000
DEC												
20...	1530	32	412	7.4	27.0	--	6.6	--	3.3	550000	370000	2700
MAR , 1979												
02...	1340	30	450	7.3	27.0	--	5.5	--	3.3	640000	500000	70
APR												
26...	1520	200	276	7.1	24.5	--	6.9	--	6.9	45000	7100	4400
JUN												
25...	1430	42	385	7.4	28.0	--	6.9	--	1.9	25000	3500	300
AUG												
13...	1400	56	412	7.3	30.0	--	6.9	--	2.4	44000	13000	70
OCT												
05...	1425	216	--	7.4	25.0	--	7.4	30	2.2	--	66000	2600
DEC												
03...	1240	E160	327	6.9	24.5	70	6.7	37	4.9	--	78000	13000
JAN , 1980												
11...	0835	72	348	7.3	22.0	1.1	5.5	15	3.6	--	33000	1700
MAR												
11...	0915	40	396	7.0	23.5	2.5	5.3	14	1.3	--	120000	880
MAY												
19...	0950	215	290	7.1	24.0	--	7.0	23	3.0	--	50000	3200
JUN												
24...	0930	23	435	6.9	27.5	.50	4.8	14	3.8	--	66000	400
SEP												
02...	1230	23	442	7.4	28.5	.50	7.4	22	2.7	--	420000	2800

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
25...	170	9	45	13	23	.8	3.8	202	0	166	20
DEC											
20...	150	3	39	12	24	.9	3.6	180	0	148	11
MAR , 1979											
02...	170	3	42	15	27	.9	3.5	200	0	164	16
APR											
26...	95	12	23	9.0	15	.7	2.8	100	0	82	13
JUN											
25...	140	2	37	12	23	.8	3.0	170	0	139	11
AUG											
13...	150	3	39	13	27	1.0	3.1	180	0	148	14
OCT											
05...	--	--	--	--	--	--	--	120	0	98	7.6
DEC											
03...	--	--	--	--	--	--	--	134	0	110	27
JAN , 1980											
11...	130	3	34	12	25	.9	3.4	170	0	140	14
MAR											
11...	--	--	--	--	--	--	--	180	0	150	29
MAY											
19...	110	6	28	8.5	20	.9	2.6	120	0	98	15
JUN											
24...	--	--	--	--	--	--	--	200	0	160	40
SEP											
02...	170	8	45	14	30	1.0	4.7	198	0	162	13

E Estimated.

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO OCTOBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
25...	22	28	.3	17	254	252	52.2	--	.00	.140	.13
DEC											
20...	18	30	.2	25	255	242	21.8	--	.43	.150	.58
MAR , 1979											
02...	22	50	.2	24	295	282	23.7	--	.49	.200	.69
APR											
26...	14	21	.2	23	175	157	94.5	--	1.0	.080	1.1
JUN											
25...	17	27	.2	26	237	229	26.9	--	.51	.130	.64
AUG											
13...	17	29	.2	26	--	243	36.9	--	.51	.200	.71
OCT											
05...	--	--	--	--	--	--	--	--	.59	.020	.61
DEC											
03...	--	--	--	--	--	--	--	--	.67	.100	.77
JAN , 1980											
11...	18	27	.2	25	--	228	44.3	20	.00	.190	.17
MAR											
11...	--	--	--	--	--	--	--	--	.64	.170	.81
MAY											
19...	17	20	.2	20	--	175	102	--	--	--	--
JUN											
24...	--	--	--	--	--	--	--	--	.08	.090	.17
SEP											
02...	18	36	.4	31	--	277	17.4	0	.63	.190	.82

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
25...	1.90	1.2	3.10	3.2	14	.330	.070	--	--	--	--
DEC											
20...	1.50	.70	2.20	2.8	12	.760	.690	2	--	3	<20
MAR , 1979											
02...	.580	.62	1.20	1.9	8.4	.380	.320	--	--	--	--
APR											
26...	.190	.20	.39	1.5	6.6	.220	.140	--	--	--	--
JUN											
25...	.470	.32	.79	1.4	6.3	.250	.180	--	--	--	--
AUG											
13...	.600	.59	1.10	1.8	8.0	.440	.380	1	--	4	<20
OCT											
05...	.710	.59	1.30	1.9	8.5	.010	--	--	--	--	--
DEC											
03...	.310	.79	1.10	1.9	8.3	.500	--	--	--	--	--
JAN , 1980											
11...	.020	1.6	1.60	1.8	7.8	.410	--	--	--	--	--
MAR											
11...	.980	.62	1.60	2.4	11	.560	--	1	100	0	10
MAY											
19...	--	--	--	--	--	--	--	--	--	--	--
JUN											
24...	.130	.19	.32	.49	2.2	.180	--	--	--	--	--
SEP											
02...	1.90	.10	2.00	2.8	12	.360	--	2	100	0	180

50048510 RIO DE BAYAMON AT FLOOD CHANNEL AT BAYAMON, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO OCTOBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
25...	--	--	--	--	--	--	--	--	--	50	10
DEC											
20...	ND	540	12	330	<.5	<1	ND	50	--	54	4.6
MAR , 1979											
02...	--	--	--	260	--	--	--	--	6.5	53	4.3
APR											
26...	--	--	--	160	--	--	--	--	5.9	128	69
JUN											
25...	--	--	--	--	--	--	--	--	--	56	6.4
AUG											
13...	6	500	ND	270	<.5	<1	ND	20	5.9	10	1.5
OCT											
05...	--	--	--	--	--	--	--	--	--	136	79
DEC											
03...	--	--	--	--	--	--	--	--	--	257	--
JAN , 1980											
11...	--	--	--	--	--	--	--	--	--	14	2.7
MAR											
11...	--	--	4	--	.6	0	0	--	--	52	5.7
MAY											
15...	--	--	--	--	--	--	--	--	--	227	132
JUN											
24...	--	--	--	--	--	--	--	--	--	31	1.9
SEP											
02...	--	--	8	--	.7	0	0	--	--	64	4.0

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN 25...	1430	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN 25...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

50048530 RIO HONDO BELOW RIO HONDO NR BAYAMON, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°26'13", long 66°09'50", at Río Hondo Channel, 200 ft (61.0 m) downstream from Río Hondo's confluence, 1.2 mi (1.9 km) upstream from mouth, and 2.5 mi (4.0 km) north of Bayamón, P.R.

DRAINAGE AREA.--10.2 sq mi (26.4 sq km).

PERIOD OF RECORD.--December 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
DEC , 1979												
06...	1315	1.00	26000	8.3	28.5	2.0	10.6	420	8.4	100000	2000	--
FEB , 1980												
01...	1130	1.00	24900	7.5	28.0	2.0	2.4	440	12	680000	23000	2500
MAR												
31...	1320	1.00	31600	7.5	32.0	.30	4.8	290	16	46000	400	--
MAY												
27...	1415	1.00	16500	7.6	28.0	--	2.6	--	10	1600000	10000	--
JUL												
23...	1415	1.00	30450	8.4	31.5	--	11.0	--	13	7000	3000	--
SEP												
19...	1310	1.00	27000	8.4	31.5	.60	3.2	69	7.6	400000	320000	1200

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
DEC , 1979												
06...	--	--	--	--	--	--	182	0	150	1.5	--	9200
FEB , 1980												
01...	2300	170	510	4500	39	200	230	0	190	12	1000	8100
MAR												
31...	--	--	--	--	--	--	210	0	170	11	--	--
MAY												
27...	--	--	--	--	--	--	200	0	160	8.0	--	--
JUL												
23...	--	--	--	--	--	--	170	6	149	1.2	--	--
SEP												
19...	1000	88	250	2400	30	85	180	6	158	1.2	570	4200

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)
DEC , 1979											
06...	--	--	--	--	.06	.050	.11	2.30	.00	2.30	2.4
FEB , 1980											
01...	.7	11	14000	5	.03	.020	.05	1.10	.00	1.10	1.1
MAR											
31...	--	--	--	--	.00	.020	.02	5.00	1.5	6.50	6.5
MAY											
27...	--	--	--	--	.20	.030	.23	4.00	.10	4.10	4.3
JUL											
23...	--	--	--	14	.04	.040	.08	2.90	1.0	3.90	4.0
SEP											
19...	.0	6.5	7690	7	.03	.040	.07	5.10	4.8	9.90	10

DATE	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SEDIMENT, SUSPENDED (MG/L)
DEC , 1979											
06...	11	.770	--	--	--	--	--	--	--	--	10
FEB , 1980											
01...	5.1	.320	--	--	--	--	--	--	--	--	4
MAR											
31...	25	2.10	4	200	0	10	2	.3	0	0	85
MAY											
27...	15	1.60	--	--	--	--	--	--	--	--	14
JUL											
23...	18	1.00	--	--	--	--	--	--	--	--	20
SEP											
19...	44	1.10	3	200	0	8	2	.4	0	0	10

50048750 QUEBRADA LAS CURIAS TRIBUTARY NEAR RIO PIEDRAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'19", long 66°03'33", at bridge on unnumbered road, 0.3 mi (0.5 km) from Highway 176, and 4.8 mi (7.7 km) south of Río Piedras.

DRAINAGE AREA.--1.65 sq mi (4.27 sq km).

PERIOD OF RECORD.--Water years 1972 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
02...	1025	2.0	370	7.9	25.0	8.4	.8	13000	1600	3200	150
NOV											
28...	0945	1.7	360	8.0	23.0	8.2	.8	9000	1300	2000	170
FEB , 1979											
06...	0830	1.4	390	7.7	20.0	9.3	.5	2000	520	550	160
APR											
02...	0940	1.8	384	7.7	22.0	9.4	2.4	8000	6400	5600	150
JUN											
05...	0925	3.2	386	7.8	25.5	8.5	.4	5000	3000	720	150
AUG											
02...	1200	4.5	352	7.5	25.0	7.7	1.0	22000	2400	1700	130

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
02...	25	37	15	20	.7	2.0	158	0	130	3.2	29
NOV											
28...	25	42	15	20	.7	1.7	173	0	142	2.8	63
FEB , 1979											
06...	17	41	15	21	.7	1.4	180	0	148	5.7	21
APR											
02...	20	36	15	20	.7	1.8	160	0	131	5.1	26
JUN											
05...	12	36	15	22	.8	1.9	170	0	139	4.3	25
AUG											
02...	6	32	12	18	.7	1.6	150	0	123	7.6	21

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, LIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
02...	27	.1	32	240	240	1.3	.74	.010	.75	.020
NOV										
28...	28	.1	36	243	291	1.1	.95	<.010	.95	<.010
FEB , 1979										
06...	27	.1	34	251	249	.93	.94	<.010	.94	<.010
APR										
02...	27	.1	33	246	238	1.2	.98	<.010	.98	<.010
JUN										
05...	26	.1	34	248	244	2.2	.93	<.010	.93	<.010
AUG										
02...	24	.1	33	221	216	2.7	.93	.010	.94	<.010

50048750 QUEBRADA LAS CURIAS TRIBUTARY NEAR RIO PIEDRAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
02...	.04	.06	.81	3.6	.050	.040	--	--	--	--
NOV										
28...	.00	.10	.95	4.2	.060	.060	1	ND	<20	<2
FEB , 1979										
06...	.12	.13	1.1	4.7	.050	.050	--	--	--	--
APR										
02...	.19	.20	1.2	5.2	.050	.050	--	--	--	--
JUN										
05...	.09	.09	1.0	4.5	.040	.020	--	--	40	2
AUG										
02...	.26	.26	1.2	5.3	.110	.040	1	ND	20	13

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
02...	--	--	--	--	--	--	--	5.4	2	.01
NOV										
28...	180	<2	<10	<.5	<1	ND	ND	32	4	.02
FEB , 1979										
06...	--	--	20	--	--	--	--	3.9	1	.00
APR										
02...	--	--	<10	--	--	--	--	--	3	.01
JUN										
05...	260	--	30	--	--	--	70	2.2	2	.02
AUG										
02...	4100	12	240	<.5	<1	ND	40	2.3	135	1.7

ND Looked for but not detected.

50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°22'15", long 66°03'40", at bridge on unnumbered road, 0.5 mi (0.8 km) west of Highway 176, and 2.5 mi (4.0 km) southwest of Río Piedras (unnumbered road is Winston Churchill Avenue in the El Señorial Housing area).

DRAINAGE AREA.--8.07 sq mi (20.9 sq km).

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

WATER QUAILTY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
02...	1120	7.1	360	7.8	27.5	--	4.6	--	1.2	107000	4000	22000
NOV												
28...	1120	8.6	353	8.3	25.5	--	5.1	--	1.1	6000	1000	300
FEB , 1979												
06...	1010	6.0	330	7.6	21.0	--	10.0	--	1.8	3000	570	360
APR												
02...	1115	7.8	366	7.2	25.0	--	7.0	--	5.7	220000	66000	36000
JUN												
05...	1130	12	320	7.5	27.0	--	8.2	--	1.0	17000	1800	750
AUG												
02...	0940	19	298	7.6	25.0	--	7.9	--	.6	200000	3600	2300
NOV												
13...	1120	15	277	7.8	25.5	40	8.7	14	1.4	--	31000	19000
JAN , 1980												
10...	1245	17	270	8.0	25.0	2.5	8.2	15	2.8	--	170000	47000
MAR												
06...	1455	13	299	7.8	26.0	--	8.7	--	2.7	--	22000	2200
MAY												
16...	0900	7.9	335	7.6	24.0	--	8.2	--	1.7	--	2300	6800
JUN												
25...	0910	8.3	358	7.5	25.0	1.3	8.4	13	3.4	--	9550	1300
SEP												
17...	0910	13	272	7.6	25.5	.50	8.4	7	2.9	--	5200	830

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
02...	130	13	34	12	22	.8	3.0	148	0	121	3.8
NOV											
28...	140	9	38	12	22	.8	2.4	165	0	135	1.3
FEB , 1979											
06...	140	0	36	12	23	.8	2.0	170	0	139	6.8
APR											
02...	130	2	32	11	25	1.0	2.9	150	0	123	15
JUN											
05...	120	3	29	11	21	.8	2.5	140	0	115	7.1
AUG											
02...	100	0	26	9.4	18	.8	2.2	130	0	107	5.2
NOV											
13...	--	--	--	--	--	--	--	120	0	98	3.0
JAN , 1980											
10...	98	3	25	8.6	20	.9	2.4	120	0	98	1.9
MAR											
06...	--	--	--	--	--	--	--	130	0	130	3.3
MAY											
16...	120	3	31	11	24	.9	2.1	160	0	130	6.4
JUN											
25...	--	--	--	--	--	--	--	158	0	130	8.0
SEP											
17...	87	0	21	8.3	19	.9	2.2	124	0	102	5.0

50048800 RIO PIEDRAS NEAR RIO PIEDRAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
02...	20	24	.1	28	222	216	4.3	--	.71	.010	.72
NOV											
28...	17	28	.1	34	228	235	5.3	--	.87	.010	.88
FEB , 1979											
06...	13	26	.2	34	231	230	3.7	--	.80	<.010	.80
APR											
02...	23	27	.1	30	233	225	4.9	--	.67	.070	.74
JUN											
05...	15	24	.1	32	207	204	6.7	--	.88	.010	.89
AUG											
02...	14	21	.1	30	184	185	9.5	--	.78	.010	.79
NOV											
13...	--	--	--	--	--	--	--	51	.77	.020	.79
JAN , 1980											
10...	11	20	.2	30	--	176	8.1	94	.20	.150	.35
MAR											
06...	--	--	--	--	--	--	--	--	.76	.010	.77
MAY											
16...	16	26	.2	33	--	222	4.8	--	--	--	--
JUN											
25...	--	--	--	--	--	--	--	--	.85	.150	1.0
SEP											
17...	8.2	21	.0	27	--	168	5.9	1	.48	.010	.49

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
02...	.020	.08	.10	.82	3.6	.080	.070	--	--	--	--
NOV											
28...	.030	.13	.16	1.0	4.6	.180	.150	1	--	ND	<20
FEB , 1979											
06...	.020	.15	.17	.97	4.3	.070	.070	--	--	--	--
APR											
02...	.410	.51	.92	1.7	7.3	.570	.260	--	--	--	--
JUN											
05...	<.010	.39	.39	1.3	5.7	.070	.020	--	--	--	30
AUG											
02...	<.010	.26	.26	1.1	4.6	.070	.020	1	--	2	<20
NOV											
13...	.040	.21	.25	1.0	4.6	.100	--	--	--	--	--
JAN , 1980											
10...	.000	1.2	1.20	1.6	6.9	.270	--	--	--	--	--
MAR											
06...	.020	.36	.38	1.2	5.1	.150	--	--	100	0	10
MAY											
16...	--	--	--	--	--	--	--	--	--	--	--
JUN											
25...	.140	.35	.49	1.5	6.6	.190	--	--	--	--	--
SEP											
17...	.000	.09	.09	.58	2.6	.050	--	2	100	5	5

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
02...	--	--	--	--	--	--	--	--	3.6	3	.06
NOV											
28...	9	3500	3	190	<.5	<1	ND	30	3.7	63	1.5
FEB , 1979											
06...	--	--	--	140	--	--	--	--	3.4	5	.08
APR											
02...	--	--	--	190	--	--	--	--	--	414	8.7
JUN											
05...	4	1100	--	1400	--	--	--	40	2.3	54	1.7
AUG											
02...	6	1000	5	70	<.5	<1	ND	30	4.0	20	1.0
NOV											
13...	--	--	--	--	--	--	--	--	--	74	3.0
JAN , 1980											
10...	--	--	--	--	--	--	--	--	--	97	4.5
MAR											
06...	--	--	5	--	1.0	0	0	--	--	68	2.4
MAY											
16...	--	--	--	--	--	--	--	--	--	46	.98
JUN											
25...	--	--	--	--	--	--	--	--	--	52	1.2
SEP											
17...	--	--	95	--	.7	0	0	--	--	8	.28

ND Looked for but not detected.

50049000 RIO PIEDRAS AT RIO PIEDRAS, PR

LOCATION.--Lat 18°23'48", long 66°03'24", Hydrologic Unit 21010005, on left bank, at bridge on Highway 1, 0.3 mi (0.5 km) southwest of the plaza in Río Piedras, and 0.4 mi (0.6 km) downstream from diversion for water supply.

DRAINAGE AREA.--12.5 sq mi (32.4 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 (maximum discharge measurement only), 1959-64 (annual low-flow measurements only), July 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 50 ft (15.2 m), from topographic map.

REMARKS.--Records fair. Low flows affected by diversions for water supply.

AVERAGE DISCHARGES. [illegible]79), 26.5 cu ft/s (0.750 cu m/s), 28.79 in/yr (731 mm/yr), 19,200 acre-ft/yr (23.7 cu hm/yr).
--9 years (1972-80), 27.0 cu ft/s (0.765 cu m/s), 29.33 in/yr (745 mm/yr), 19,560 acre-ft/yr (24.1 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 10,000 cu ft/s (283 cu m/s), revised, Dec. 11, 1975, gage height, 21.02 ft (6.407 m), from rating curve extended above 3,000 cu ft/s (85.0 cu m/s) on basis of slope-area measurement; minimum daily, 0.26 cu ft/s (0.007 cu m/s) May 19, 1977.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,800 cu ft/s (79.3 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Feb. 15, 1979	0115	*8,870	251	20.20	6.157	Aug. 31, 1979	0415	6,530	185	17.86	5.444
May 14, 1979	0830	4,570	129	15.50	4.724	Sept. 29, 1979	1300	4,470	127	15.36	4.682
May 17, 1979	1915	2,880	81.6	12.92	3.938	Oct. 9, 1979	1300	*7,390	209	18.77	5.721
Aug. 30, 1979	2115	4,060	115	14.79	4.508	Nov. 25, 1979	Unknown	3,500	100	Unknown	

Minimum discharges, 2.9 cu ft/s (0.082 cu m/s) Apr. 17-18, 1979; 0.54 cu ft/s (0.015 cu m/s) May 3, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	24	10	31	7.9	9.9	8.4	5.4	21	29	126	93
2	21	12	14	9.5	10	9.5	8.0	5.1	16	13	34	50
3	139	11	9.5	9.0	10	9.5	7.6	5.0	16	15	29	49
4	44	10	13	7.9	10	9.9	7.4	5.4	15	14	40	204
5	14	9.0	8.6	9.5	9.2	9.5	7.3	23	15	13	135	478
6	9.1	7.9	70	66	9.4	9.0	7.5	4.6	60	200	84	70
7	8.0	7.5	8.8	30	9.9	8.6	7.3	4.8	18	20	25	41
8	7.6	6.5	15	31	9.8	8.6	5.3	4.6	15	49	19	36
9	166	20	7.8	13	9.7	8.2	5.6	33	22	14	16	52
10	15	16	7.8	20	9.4	8.6	4.5	160	20	14	16	28
11	7.8	21	8.8	29	9.9	8.6	6.0	26	190	15	22	23
12	8.9	184	7.8	18	11	8.2	5.1	224	19	14	18	20
13	23	26	7.8	15	9.6	11	24	147	12	18	17	23
14	6.8	43	7.8	11	167	9.9	6.4	710	11	15	142	23
15	8.6	36	8.0	9.9	2030	9.0	4.3	71	243	16	180	19
16	6.5	8.1	8.0	11	79	7.9	4.1	38	82	43	152	49
17	5.9	213	8.6	12	29	9.0	3.2	339	32	27	49	56
18	6.3	120	23	9.9	48	37	3.2	168	22	338	37	43
19	5.9	15	40	19	20	7.9	3.6	60	19	103	34	18
20	7.1	41	13	102	38	8.4	6.4	196	17	39	50	17
21	6.2	24	12	13	152	9.7	6.5	47	18	35	64	16
22	5.9	9.5	10	11	16	9.5	5.5	35	16	32	30	26
23	24	12	10	9.1	13	12	5.6	20	19	31	21	17
24	9.7	9.5	11	8.6	11	9.6	9.8	35	27	34	25	16
25	19	8.2	15	9.4	10	9.8	41	83	61	34	36	52
26	399	7.9	9.5	9.2	9.9	9.5	6.5	29	250	132	17	20
27	253	6.2	8.6	9.0	10	10	5.3	84	14	35	17	17
28	34	8.1	7.9	8.0	10	9.8	4.6	281	27	27	23	18
29	48	10	9.0	8.7	---	276	6.4	575	25	25	46	601
30	32	35	11	7.8	---	16	5.3	292	230	23	619	69
31	22	---	14	8.2	---	10	---	40	---	182	1590	---
TOTAL	1387.3	961.4	415.3	565.7	2768.7	590.1	231.7	3750.9	1552	1599	3713	2244
MEAN	44.8	32.0	13.4	18.2	98.9	19.0	7.72	121	51.7	51.6	120	74.8
MAX	399	213	70	102	2030	276	41	710	250	338	1590	601
MIN	5.9	6.2	7.8	7.8	7.9	7.9	3.2	4.6	11	13	16	16
CFSM	3.58	2.56	1.07	1.46	7.91	1.52	.62	9.68	4.14	4.13	9.60	5.98
IN.	4.13	2.86	1.24	1.68	8.24	1.76	.69	11.16	4.62	4.76	11.05	6.68
AC-FT	2750	1910	824	1120	5490	1170	460	7440	3080	3170	7360	4450

CAL YR 1978 TOTAL 7840.5 MEAN 21.5 MAX 424 MIN 1.8 CFSM 1.72 IN 23.33 AC-FT 15550
WTR YR 1979 TOTAL 19779.1 MEAN 54.2 MAX 2030 MIN 3.2 CFSM 4.34 IN 58.86 AC-FT 39230

50049000 RIO PIEDRAS AT RIO PIEDRAS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	36	16	17	17	6.2	2.2	2.6	14	11	9.5	17
2	73	28	22	18	18	4.9	1.8	1.2	13	12	9.4	20
3	62	26	28	18	20	5.5	1.8	1.2	12	16	9.0	17
4	52	26	32	17	18	8.7	2.3	1.3	12	31	23	30
5	47	50	20	17	22	56	2.4	1.6	12	35	12	80
6	50	78	17	16	84	18	1.7	2.2	12	24	9.0	25
7	55	34	16	17	25	7.6	2.3	1.8	13	23	10	20
8	103	25	21	20	19	11	74	2.3	13	42	13	36
9	616	32	25	19	101	10	13	7.4	23	23	12	16
10	38	25	28	24	36	4.6	4.5	4.2	16	16	13	27
11	24	25	21	17	17	3.9	94	3.2	228	14	10	17
12	72	25	18	76	13	3.7	33	6.9	37	13	11	30
13	25	41	17	28	13	3.6	10	30	17	14	12	18
14	24	19	17	21	15	5.0	3.3	50	14	17	23	19
15	25	15	21	19	12	3.4	2.9	13	14	13	13	16
16	24	16	38	18	12	4.0	2.3	4.0	14	86	13	14
17	24	147	20	19	11	4.8	1.9	30	20	25	13	19
18	24	42	18	19	11	7.8	2.3	3.0	15	19	13	22
19	24	101	18	18	11	8.0	1.6	520	14	16	102	55
20	24	134	377	21	11	4.9	1.6	250	9.8	14	18	37
21	24	59	41	18	9.3	2.9	2.0	120	5.5	16	12	178
22	19	260	24	17	9.3	2.8	2.0	30	6.2	13	12	26
23	17	30	37	17	44	2.9	23	45	6.2	12	12	14
24	17	25	106	18	9.2	2.7	3.4	16	6.7	12	13	42
25	16	590	40	17	7.3	2.5	7.0	13	8.3	9.8	23	40
26	16	80	26	17	6.0	2.3	2.8	11	9.4	10	18	62
27	26	37	20	17	6.5	2.5	75	92	8.7	18	16	178
28	14	30	19	18	5.8	2.8	6.7	128	8.5	12	17	89
29	17	20	19	17	5.9	2.8	3.0	22	9.1	11	22	26
30	16	17	18	18	---	2.8	1.9	17	9.9	11	17	85
31	95	---	18	20	---	2.4	---	15	---	10	16	---
TOTAL	1771	2073	1158	633	589.3	211.0	385.7	1444.9	601.3	598.8	525.9	1275
MEAN	57.1	69.1	37.4	20.4	20.3	6.81	12.9	46.6	20.0	19.3	17.0	42.5
MAX	616	590	377	76	101	56	94	520	228	86	102	178
MIN	14	15	16	16	5.8	2.3	1.6	1.2	5.5	9.8	9.0	14
CFSM	4.57	5.53	2.99	1 63	1.62	.55	1.03	3.73	1.60	1.54	1.36	3.40
IN.	5.27	6.17	3.45	1.88	1.75	.63	1.15	4.30	1.79	1.78	1.56	3.79
AC-FT	3510	4110	2300	1260	1170	419	765	2870	1190	1190	1040	2530

CAL YR 1979 TOTAL 22017.1 MEAN 60.3 MAX 2030 MIN 3.2 CFSM 4.82 IN 65.52 AC-FT 43670
WTR YR 1980 TOTAL 11266.9 MEAN 30.8 MAX 616 MIN 1.2 CFSM 2.46 IN 33.53 AC-FT 22350

50049100 RIO PIEDRAS AT HATO REY, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'34", long 66°04'10", at bridge on Avenida Piñero at Las Américas Expressway, and 0.8 mi (1.3 km) southwest of Hato Rey.

DRAINAGE AREA.--15.4 sq mi (39.9 sq km).

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

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
02...	1245	E250	420	7.7	30.5	--	5.4	--	12	210C000	68CC00	82000
NOV												
28...	1245	15	478	7.9	29.0	--	7.2	--	6.6	49C000	19CCCO	21000
FEB , 1979												
06...	1125	15	402	7.5	24.0	--	8.5	--	3.3	23C000	12CCCO	25000
APR												
02...	1310	17	422	7.5	27.0	--	6.1	--	2.5	17000	7CC0	700
JUN												
05...	1340	22	405	7.9	29.0	--	6.6	--	1.9	45000	6CC0	4000
AUG												
13...	1200	20	387	8.4	29.5	--	8.3	--	2.0	16C000	6ECCO	4200
NOV												
13...	1235	24	295	7.7	27.5	7C	7.4	26	3.0	--	26CC00	41000
JAN , 1980												
09...	1310	26	342	7.9	26.5	2.5	8.1	15	3.2	--	26CCCO	1000
MAR												
06...	1225	25	328	7.5	26.0	--	7.2	--	7.3	--	48CCCO	72000
MAY												
16...	1145	23	374	7.4	28.0	--	6.7	--	2.1	--	30CCCO	160000
JUN												
25...	1135	16	392	8.0	30.0	.80	10.2	12	3.1	--	13CCCO	2600
SEP												
15...	1205	22	331	7.7	29.0	3.5	7.4	80	3.0	--	19CC00	3800

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
02...	140	7	40	10	25	.5	4.0	164	0	135	5.2
NOV											
28...	170	0	48	12	34	1.1	3.4	214	0	176	4.3
FEB , 1979											
06...	160	0	46	12	25	1.0	3.0	200	0	164	10
APR											
02...	150	0	42	12	26	.9	3.3	190	0	156	9.6
JUN											
05...	150	0	40	11	25	1.0	3.4	180	0	148	3.6
AUG											
13...	140	0	39	11	26	.9	2.7	180	4	154	1.2
NOV											
13...	--	--	--	--	--	--	--	130	0	110	4.2
JAN , 1980											
09...	130	0	37	9.7	25	.9	3.4	170	0	140	3.4
MAR											
06...	--	--	--	--	--	--	--	146	0	120	7.4
MAY											
16...	130	0	37	9.4	25	1.0	2.8	160	0	130	10
JUN											
25...	--	--	--	--	--	--	--	185	0	150	3.0
SEP											
15...	110	0	30	8.6	22	.9	2.7	152	0	125	4.9

E Estimated.

50049100 RIO PIEDRAS AT HATO REY, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
02...	24	28	.2	22	241	234	16.3	--	.42	.080	.50
NOV											
28...	20	36	.5	33	291	292	11.8	--	1.1	.140	1.2
FEB , 1979											
06...	18	31	.2	31	275	269	10.8	--	.79	.080	.87
APR											
02...	19	31	.1	28	264	255	11.8	--	.73	.060	.79
JUN											
05...	23	27	.0	28	255	251	15.1	--	.72	.040	.76
AUG											
13...	20	30	.2	29	--	257	14.2	--	.65	.030	.68
NOV											
13...	--	--	--	--	--	--	--	92	.76	.050	.81
JAN , 1980											
09...	14	26	.2	28	--	227	15.9	13	.16	.130	.29
MAR											
06...	--	--	--	--	--	--	--	--	.54	.060	.60
MAY											
16...	28	32	.2	25	--	238	14.8	--	--	--	--
JUN											
25...	--	--	--	--	--	--	--	--	.53	.050	.58
SEP											
15...	13	25	.0	26	--	202	12.0	10	.49	.030	.52

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3))	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
02...	.910	.59	1.50	2.0	8.9	.680	.320	--	--	--	--
NOV											
28...	.720	2.0	2.70	3.9	17	.520	.410	1	--	ND	<20
FEB , 1979											
06...	.590	2.5	3.10	4.0	18	.350	.310	--	--	--	--
APR											
02...	.250	.25	.50	1.3	5.7	.200	.160	--	--	--	--
JUN											
05...	.360	.63	.99	1.8	7.7	1.30	.040	--	--	ND	50
AUG											
13...	.180	.33	.51	1.2	5.3	.200	.150	2	--	<2	<20
NOV											
13...	.320	.29	.61	1.4	6.3	.200	--	--	--	--	--
JAN , 1980											
09...	.000	.92	.92	1.2	5.4	.280	--	--	--	--	--
MAR											
06...	.660	.94	1.60	2.2	9.7	.400	--	--	100	4	10
MAY											
16...	--	--	--	--	--	--	--	--	--	--	--
JUN											
25...	.160	.35	.51	1.1	4.8	.280	--	--	--	--	--
SEP											
15...	.270	.03	.25	.77	3.4	.190	--	2	100	0	5

ND Looked for but not detected.

50049100 RIO PIEDRAS AT HATO REY, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
02...	--	--	--	--	--	--	--	--	26	76	--
NOV											
28...	3	340	7	100	<.5	<1	<2	40	5.4	2	.08
FEB , 1979											
06...	--	--	--	170	--	--	--	--	5.2	47	1.9
APR											
02...	--	--	--	80	--	--	--	--	--	9	.40
JUN											
05...	110	34000	--	1100	--	--	--	150	16	--	--
AUG											
13...	5	370	<2	50	<.5	<1	ND	<20	6.6	5	.28
NOV											
13...	--	--	--	--	--	--	--	--	--	193	13
JAN , 1980											
09...	--	--	--	--	--	--	--	--	--	10	.70
MAR											
06...	--	--	12	--	1.0	0	1	--	--	114	7.7
MAY											
16...	--	--	--	--	--	--	--	--	--	79	4.9
JUN											
25...	--	--	--	--	--	--	--	--	--	6	.26
SEP											
15...	--	--	6	--	.5	0	0	--	--	18	1.1

ND Looked for but not detected.

50049760 SAN JOSE LAGOON NO. 1 AT SAN JUAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°25'04", long 66°01'00", 0.4 mi (0.6 km) west of Quebrada San Antón, and 0.6 mi (1.0 km) southwest of mouth of Canal Suárez.

DRAINATE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1974 to September 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978										
30...	1245	1.00	21000	8.2	28.0	.0	22	14000	3900	500
30...	1300	18.0	30000	7.5	27.5	.0	23	41000	6700	1500
DEC										
19...	1225	1.00	15800	9.4	27.0	10.8	20	--	370	260
19...	1240	18.0	25400	8.0	27.0	.0	19	--	6300	3300
MAR , 1979										
01...	1220	1.00	28200	8.6	26.0	15.3	16	700	570	20
01...	1230	18.0	28500	7.7	25.0	6.5	22	23000	3700	2600
MAY										
01...	1210	18.0	22100	8.0	29.0	.0	13	26000	2700	1000
01...	1215	1.00	33600	8.7	29.0	.0	11	1200	80	69
JUL										
06...	1230	1.00	4900	9.5	30.0	10.0	4.8	8000	710	380
06...	1240	18.0	23400	7.6	29.5	.0	17	120000	19000	710
SEP										
12...	1240	18.0	20600	6.9	18.0	.0	11	80000	44000	900
12...	1245	1.00	12200	8.4	29.0	12.3	4.8	260	190	70

DATE	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS C(2)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
OCT , 1978									
30...	228	0	187	2.3	--	--	<.10	1.80	2.0
30...	390	0	320	20	.00	.020	.01	6.20	2.7
DEC									
19...	55	53	133	.1	.00	.010	.10	.380	1.8
19...	190	0	156	3.0	.00	.010	.01	.820	.98
MAR , 1979									
01...	170	20	173	.8	.08	.100	.18	.200	3.1
01...	210	0	172	6.7	.00	.010	<.10	1.70	2.2
MAY									
01...	210	0	172	3.4	.01	.010	.02	1.30	.90
01...	170	30	189	.7	.02	.040	.06	.690	1.9
JUL									
06...	84	45	144	.1	.00	<.010	<.10	.070	1.3
06...	248	0	203	10	.05	.020	.07	2.30	1.1
SEP									
12...	180	0	150	36	--	.010	--	2.50	.80
12...	110	6	100	.8	.03	.020	.05	.540	1.9

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
OCT , 1978									
30...	3.80	3.8	17	.820	.660	--	--	--	--
30...	8.90	8.9	39	1.30	1.20	--	--	--	--
DEC									
19...	2.20	2.2	9.7	.600	.480	1	2	<20	ND
19...	1.80	1.8	8.0	.400	.350	1	2	30	ND
MAR , 1979									
01...	3.30	3.5	15	.770	.600	--	--	--	--
01...	3.90	3.9	17	.740	.670	--	--	--	--
MAY									
01...	2.20	2.2	9.8	.770	.670	--	--	--	--
01...	2.60	2.7	12	1.30	.840	--	--	--	--
JUL									
06...	1.40	1.4	6.2	.450	.350	--	--	--	--
06...	3.40	3.5	15	.760	.750	--	--	--	--
SEP									
12...	3.30	--	--	.570	.480	--	--	--	--
12...	2.40	2.5	11	.290	.120	--	--	--	--

ND Looked for but not detected.

50049760 SAN JOSE LAGOON NO. 1 AT SAN JUAN, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)
OCT , 1978									
30...	--	--	--	--	--	--	--	--	3
30...	--	--	--	--	--	--	--	--	--
DEC									
19...	90	27	110	<.5	<1	ND	30	--	11
19...	100	8	180	.6	<1	ND	50	--	--
MAR , 1979									
01...	--	--	--	--	--	--	--	13	15
01...	--	--	--	--	--	--	--	9.6	--
MAY									
01...	--	--	--	--	--	--	--	9.2	--
01...	--	--	--	--	--	--	--	13	6
JUL									
06...	--	--	--	--	--	--	--	16	51
06...	--	--	--	--	--	--	--	13	--
SEP									
12...	--	--	--	--	--	--	--	5.9	--
12...	--	--	--	--	--	--	--	6.0	11

ND Looked for but not detected.

RIO PIEDRAS BASIN

50049820 SAN JOSE LAGOON NO. 2 AT SAN JUAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°25'46", long 66°02'10", 0.2 mi (0.3 km) east of Caño de Martín Peña, and 650 ft (200 m) south of Isla Guachinango.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT , 1978											
30...	1210	1.00	13000	7.7	25.5	--	.2	--	12	1200000	180000
DEC											
19...	1200	1.00	15500	8.3	27.0	--	.0	--	23	--	760000
MAR , 1979											
01...	1145	1.00	27000	8.5	26.0	--	12.4	--	21	90000	44000
MAY											
01...	1145	1.00	24900	9.5	25.0	--	2.0	--	18	280000	42000
JUL											
06...	1150	1.00	9660	9.4	25.0	--	11.5	--	8.1	400000	63000
SEP											
12...	1310	1.00	11500	8.8	30.5	--	13.8	--	9.4	50000	8000
OCT											
15...	1235	1.00	9180	9.2	30.0	--	13.6	51	9.0	--	10000
DEC											
06...	1040	1.00	7760	8.1	26.5	--	6.2	--	9.7	--	41000
JAN , 1980											
31...	1025	1.00	12500	9.3	26.0	--	9.8	--	5.8	--	710
MAR											
31...	1320	1.00	26400	8.3	29.0	.22	7.2	--	9.4	--	21000
MAY											
22...	1515	1.00	27000	--	28.0	--	--	--	15	--	8500
JUL											
23...	1050	1.00	27192	8.8	31.0	--	8.4	--	18	--	8500
SEP											
19...	1120	1.00	27300	8.8	29.5	3.0	8.2	50	9.7	--	2300

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	CHLORIDE, DISSOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
30...	39000	178	0	146	5.7	--	--	--	--	--	<.10
DEC											
19...	360000	180	0	148	1.4	--	--	--	.00	.010	.01
MAR , 1979											
01...	10000	180	14	171	1.1	--	--	--	.07	.100	.17
MAY											
01...	800	230	44	262	.2	--	--	--	.02	.030	.05
JUL											
06...	600	82	47	146	.1	--	--	--	.00	<.010	<.01
SEP											
12...	<100	56	34	100	.3	--	--	--	.03	.040	.07
OCT											
15...	300	76	32	110	.1	--	176	--	.01	.000	.01
DEC											
06...	3800	112	0	92	1.4	--	--	110	.07	.050	.12
JAN , 1980											
31...	170	133	40	190	.2	--	--	--	--	--	--
MAR											
31...	3000	213	0	170	1.7	--	--	--	.02	.010	.03
MAY											
22...	500	166	18	168	--	--	--	--	--	--	--
JUL											
23...	1400	140	1	117	.4	--	--	36	.01	.000	.01
SEP											
19...	800	139	30	163	.5	7000	--	48	.02	.000	.02

50049820 SAN JOSE LAGOON NO.2 AT SAN JUAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
30...	2.10	1.8	3.90	3.9	17	.930	.760	--	--	--	--
DEC											
19...	2.00	2.9	4.90	5.0	22	1.10	.850	2	--	<2	<20
MAR , 1979											
01...	.580	3.7	4.30	4.5	20	.800	.630	--	--	--	--
MAY											
01...	1.90	2.2	4.10	4.2	18	1.50	1.10	--	--	--	--
JUL											
06...	.040	2.0	2.00	2.0	8.9	.540	.340	--	--	--	--
SEP											
12...	.160	2.4	2.60	2.7	12	.310	.130	--	--	--	--
OCT											
15...	.120	1.4	1.50	1.5	6.7	.320	.210	--	--	--	--
DEC											
06...	.800	2.5	3.30	3.4	15	.630	--	--	--	--	--
JAN , 1980											
31...	--	--	--	--	--	--	--	--	--	--	--
MAR											
31...	.380	.92	1.30	1.3	5.9	1.30	--	--	--	--	--
MAY											
22...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	.340	2.7	3.00	3.0	13	.890	--	--	--	--	--
SEP											
19...	.370	1.6	2.00	2.0	8.9	.830	--	2	100	0	7

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)
OCT , 1978										
30...	--	--	--	--	--	--	--	--	--	8
DEC										
19...	ND	630	17	370	<.5	<1	ND	50	--	20
MAR , 1979										
01...	--	--	--	--	--	--	--	--	17	30
MAY										
01...	--	--	--	--	--	--	--	--	14	21
JUL										
06...	--	--	--	--	--	--	--	--	24	--
SEP										
12...	--	--	--	--	--	--	--	--	11	--
OCT										
15...	--	--	--	--	--	--	--	--	--	--
DEC										
06...	--	--	--	--	--	--	--	--	--	84
JAN , 1980										
31...	--	--	--	--	--	--	--	--	--	9
MAR										
31...	--	--	--	--	--	--	--	--	15	20
MAY										
22...	--	--	--	--	--	--	--	--	--	13
JUL										
23...	--	--	--	--	--	--	--	--	--	26
SEP										
19...	--	--	15	--	.2	0	0	--	--	32

ND Looked for but not detected.

50049820 SAN JOSE LAGOON NO.2 AT SAN JUAN, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUL 6,79		SEP 12,79		JAN 31,80		MAY 22,80		SEP 19,80	
TIME	1150		1310		1025		1515		1120	
TOTAL CELLS/ML	680000		7		250000		1100000		1200000	
DIVERSITY: DIVISION	0.1		1.6		0.1		0.3		0.1	
.CLASS	0.1		1.6		0.1		0.3		0.1	
..ORDER	1.1		1.6		0.8		0.9		0.6	
...FAMILY	1.1		1.8		0.8		0.9		0.6	
....GENUS	1.6		2.8		2.0		1.0		1.0	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....KIRCHNERIELLA	--	-	1	14	--	-	--	-	--	-
....OOCYSTIS	*	0	1	14	*	0	10000	1	7800	1
....TETRAEDRON	--	-	--	-	--	-	--	-	*	0
....TREUBARIA	--	-	1	14	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	*	0	*	0
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	*	0
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...CHAETOCERACEAE										
....CHAETOCEROS	--	-	1	14	--	-	--	-	--	-
...COSCINODISCACEAE										
....COSCINODISCUS	3800	1	--	-	2400	1	--	-	*	0
....CYCLOTELLA	--	-	1	14	*	0	36000	3	*	0
....STEPHANODISCUS	--	-	--	-	*	0	--	-	--	-
..PENNALES										
...NAVICULACEAE										
....NAVICULA	*	0	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	3500	1	--	-	--	-	*	0	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	64000	5
....ANACYSTIS	430000#	64	--	-	7700	3	--	-	1000000#	82
....GOMPHOSPHAERIA	--	-	--	-	39000#	16	930000#	82	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	58000	9	--	-	13000	5	--	-	--	-
....OSCILLATORIA	130000#	19	1	14	89000#	36	77000	7	34000	3
....PHORMIDIUM	50000	7	1	14	94000#	38	67000	6	100000	8
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	*	0	--	-	*	0	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)										
.DESMOKONTAE										
..DESMOMONADALES										
...PROROCENTRACEAE										
....EXUVIAELLA	*	0	--	-	--	-	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50049920 SAN JUAN BAY NO. 5 AT SAN JUAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°26'37", long 66°05'11", 0.4 mi (0.6 km) west of Puente de la Constitución, and 0.5 mi (0.8 km) south from U.S. Naval Reservation.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT , 1978											
30...	1020	1.00	30500	8.0	28.5	--	2.2	--	2.7	170000	32000
DEC											
19...	1015	1.00	49400	7.7	26.0	--	.0	--	5.1	--	1580000
MAR , 1979											
01...	1025	1.00	46500	7.7	26.0	--	3.0	--	10	640000	64000
MAY											
01...	1000	1.00	37000	7.9	27.0	--	.6	--	8.1	3900000	250000
JUL											
06...	0925	1.00	45600	7.9	28.5	--	2.9	--	10	13000000	1500000
SEP											
12...	1045	1.00	25400	7.8	28.0	--	6.2	--	8.2	1400000	220000
OCT											
15...	1115	1.00	39600	8.0	25.0	--	3.6	1500	4.6	--	110000
DEC											
06...	0915	1.00	38000	7.5	27.5	--	4.8	--	3.4	--	48000
FEB , 1980											
01...	0935	1.00	41900	7.6	26.0	--	1.3	--	5.2	--	420000
MAR											
25...	0920	1.00	49300	7.5	26.0	--	2.0	--	6.5	--	140000
MAY											
22...	1345	1.00	41000	8.0	29.0	--	4.0	--	8.0	--	260000
JUL											
23...	1255	1.00	40000	7.9	32.0	--	2.6	--	11	--	93000
SEP											
19...	0940	1.00	39900	7.9	27.5	.50	1.1	73	8.2	--	500000

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	CHLORIDE, DISSOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
30...	6900	150	0	123	2.4	--	--	--	.04	<.010	.04
DEC											
19...	150000	160	0	131	5.1	--	--	--	.12	.050	.17
MAR , 1979											
01...	6000	150	0	123	4.8	--	--	--	.02	.020	.04
MAY											
01...	35000	160	0	131	3.2	--	--	--	.02	.010	.03
JUL											
06...	76000	146	0	120	2.9	--	--	--	.05	.010	.06
SEP											
12...	6000	150	0	120	3.8	--	--	--	.12	.040	.16
OCT											
15...	1600	164	0	130	2.6	--	96	--	.17	.040	.21
DEC											
06...	2900	139	0	110	7.0	--	--	179	.07	.010	.08
FEB , 1980											
01...	17000	155	0	130	6.2	--	--	--	.02	.020	.04
MAR											
25...	11000	160	0	130	5.1	--	--	38	.03	.010	.04
MAY											
22...	27000	159	0	130	2.5	--	--	--	--	--	--
JUL											
23...	84500	190	0	156	3.8	--	--	53	.01	.010	.02
SEP											
19...	27000	170	0	139	3.4	5700	--	2	.11	.030	.14

50049920 SAN JUAN BAY NO. 5 AT SAN JUAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N(3))	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT , 1978											
30...	.480	.21	.69	.73	3.2	.190	--	--	--	--	--
DEC											
19...	1.20	.60	1.80	2.0	8.7	.460	.410	1	--	<2	30
MAR , 1979											
01...	.580	.30	.88	.92	4.1	.200	.160	--	--	--	--
MAY											
01...	.980	.42	1.40	1.4	6.3	.320	.270	--	--	--	--
JUL											
06...	.360	.49	.85	.91	4.0	.140	.100	--	--	--	--
SEP											
12...	.850	1.3	2.10	2.3	10	.320	.220	--	--	--	--
OCT											
15...	1.00	.10	1.10	1.3	5.8	.320	.260	--	--	--	--
DEC											
06...	.010	.73	.74	.82	3.6	.160	--	--	--	--	--
FEB , 1980											
01...	5.00	.00	5.00	5.0	22	1.70	--	--	--	--	--
MAR											
25...	.840	.26	1.10	1.1	5.0	.370	--	--	--	--	--
MAY											
22...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	1.20	1.1	2.30	2.3	10	.610	--	--	--	--	--
SEP											
19...	.790	.00	.79	.93	4.1	.660	--	2	100	0	5

DATE	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)
OCT , 1978										
30...	--	--	--	--	--	--	--	--	--	15
DEC										
19...	ND	170	7	100	<.5	<1	ND	50	--	5
MAR , 1979										
01...	--	--	--	--	--	--	--	--	4.4	15
MAY										
01...	--	--	--	--	--	--	--	--	3.8	11
JUL										
06...	--	--	--	--	--	--	--	--	2.8	11
SEP										
12...	--	--	--	--	--	--	--	--	4.4	14
OCT										
15...	--	--	--	--	--	--	--	--	--	--
DEC										
06...	--	--	--	--	--	--	--	--	--	4
FEB , 1980										
01...	--	--	--	--	--	--	--	--	--	5
MAR										
25...	--	--	--	--	--	--	--	--	6.5	--
MAY										
22...	--	--	--	--	--	--	--	--	--	71
JUL										
23...	--	--	--	--	--	--	--	--	--	20
SEP										
19...	--	--	8	--	.2	0	0	--	8.5	18

ND Looked for but not detected.

50049920 SAN JUAN BAY NO. 5 AT SAN JUAN, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUL 6,79	SEP 12,79	FEB 1,80	MAY 22,80	SEP 19,80
TIME	0925	1045	0935	1345	0940
TOTAL CELLS/ML	47000	12	6400	53000	150000
DIVERSITY: DIVISION	0.6	1.8	0.6	1.0	0.3
.CLASS	0.6	1.8	0.6	1.0	0.3
..ORDER	1.1	2.4	1.1	1.2	1.1
...FAMILY	1.1	2.6	1.1	1.9	1.1
....GENUS	1.2	3.6	1.8	2.4	1.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	1	8	*	0	--	-	--	-
....KIRCHNERIELLA	--	-	1	8	--	-	--	-	--	-
....OOCYSTIS	--	-	1	8	--	-	620	1	980	1
....TREUBARIA	--	-	1	8	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	1200	2	*	0
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	--	-	--	-	310	1	--	-
....CHLAMYDOMONAS	--	-	1	8	--	-	--	-	1200	1
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...CHAETOCERACEAE										
....CHAETOCEROS	--	-	1	8	--	-	8400#	16	--	-
...COSCINODISCACEAE										
....COSCINODISCUS	*	0	--	-	--	-	--	-	1100	1
....CYCLOTELLA	1100	2	1	8	480	7	22000#	42	1600	1
....MELOSIRA	--	-	--	-	58	1	--	-	--	-
....SKELETONEMA	680	1	--	-	4000#	63	4700	9	--	-
....THALASSIOSIRA	2600	6	1	8	220	3	2500	5	--	-
...RHIZOSOLENIACEAE										
....RHIZOSOLENIA	--	-	--	-	--	-	310	1	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	1600	3	--	-	710	11	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	--	-	*	0	--	-	*	0
....PLEUROSIGMA	--	-	--	-	--	-	310	1	--	-
...NITZSCHIACEAE										
....NITZSCHIA	340	1	--	-	58	1	1200	2	1200	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	85000#	56
....ANACYSTIS	37000#	79	1	8	--	-	--	-	26000#	17
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	3100	7	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	1	8	790	12	11000#	20	16000	10
....PHORMIDIUM	--	-	1	8	--	-	--	-	20000	13
....SPIRULINA	*	0	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	1	8	--	-	310	1	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50049940 SAN JUAN BAY NO. 3 AT SAN JUAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°27'09", long 66°06'36", 0.3 (0.5 km) northeast of Punta Cataño, and 0.6 mi (1.0 km) southwest of Isla Grande Airport.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1974 to September 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978										
30...	0930	18.0	37000	8.2	28.0	4.6	.9	1300	310	78
30...	0945	1.00	33000	8.1	28.5	4.0	1.8	19000	5300	500
DEC										
19...	0900	1.00	48200	7.5	28.0	3.4	3.4	--	180000	13000
19...	0915	18.0	48500	7.6	28.0	2.6	2.4	--	3000	390
MAR , 1979										
01...	0940	18.0	38500	7.9	25.0	5.2	3.3	4000	1500	280
01...	0950	1.00	47300	7.8	26.0	4.1	4.1	33000	11000	1400
MAY										
01...	0900	18.0	39400	8.0	27.0	1.0	2.3	64000	16000	2500
01...	0910	1.00	42200	8.1	27.0	1.3	2.3	24000	7300	1500
JUL										
06...	0845	18.0	46300	8.1	28.0	5.6	1.3	13000	2000	200
06...	0900	1.00	46600	8.1	28.5	5.7	1.9	270000	28000	2300
SEP										
12...	0945	18.0	44000	7.7	28.0	5.0	2.1	3000	1200	150
12...	0955	1.00	44400	7.7	28.0	5.7	3.6	60000	39000	2700

DATE	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
OCT , 1978									
30...	148	0	121	1.5	.03	.010	.04	--	--
30...	150	0	123	1.9	.05	<.010	.05	--	--
DEC									
19...	140	0	115	7.1	.03	.010	.04	.620	.18
19...	150	0	123	6.0	.03	.010	.04	.410	.58
MAR , 1979									
01...	160	0	131	3.2	.04	.020	.06	.350	.25
01...	160	0	131	4.1	.02	.020	.04	.530	.36
MAY									
01...	150	0	123	2.4	.02	.010	.03	.270	.02
01...	150	0	123	1.9	.02	.010	.03	.280	.00
JUL									
06...	154	0	126	2.0	.04	.010	.05	.150	.07
06...	152	0	125	1.9	.04	.010	.05	.300	.45
SEP									
12...	150	0	120	4.8	.03	.010	.04	.310	.34
12...	140	0	110	4.5	.04	.030	.07	.490	.61

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
OCT , 1978									
30...	.17	.21	.93	.080	.060	--	--	--	--
30...	.42	.47	2.1	.170	--	--	--	--	--
DEC									
19...	.80	.84	3.7	.180	.180	1	<2	30	ND
19...	.99	1.0	4.6	.290	.120	2	<2	20	7
MAR , 1979									
01...	.60	.66	2.9	.110	.110	--	--	--	--
01...	.89	.93	4.1	.170	.150	--	--	--	--
MAY									
01...	.29	.32	1.4	.100	.100	--	--	--	--
01...	.28	.31	1.4	.100	.100	--	--	--	--
JUL									
06...	.22	.27	1.2	.030	.030	--	--	--	--
06...	.75	.80	3.5	.110	.090	--	--	--	--
SEP									
12...	.65	.69	3.1	.070	--	--	--	--	--
12...	1.10	1.2	5.2	.170	.150	--	--	--	--

ND Looked for but not detected.

50049940 SAN JUAN BAY NO. 3 AT SAN JUAN, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)
OCT , 1978									
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	10
DEC									
19...	100	6	70	<.5	<1	ND	60	--	0
19...	7400	15	260	<.5	<1	ND	100	--	--
MAR , 1979									
01...	--	--	--	--	--	--	--	3.3	--
01...	--	--	--	--	--	--	--	6.3	7
MAY									
01...	--	--	--	--	--	--	--	2.0	--
01...	--	--	--	--	--	--	--	1.8	6
JUL									
06...	--	--	--	--	--	--	--	5.4	--
06...	--	--	--	--	--	--	--	5.9	13
SEP									
12...	--	--	--	--	--	--	--	1.3	--
12...	--	--	--	--	--	--	--	2.1	35

PHYTOPLANKTON ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	OCT 30,78		JUL 6,79		SEP 12,79	
TIME	0945		0900		0955	
TOTAL CELLS/ML	15000		20000		7	
DIVERSITY: DIVISION	0.0		0.4		1.1	
.CLASS	0.0		0.4		1.1	
..ORDER	0.1		1.2		1.8	
...FAMILY	0.1		1.2		2.1	
....GENUS	0.3		1.8		2.8	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	180	1	--	-
....OOCYSTIS	--	-	--	-	1	14
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....COSCINOSIRA	--	-	1100	5	--	-
....CYCLOTELLA	430	3	1300	6	1	14
....SKELETONEMA	14000#	96	--	-	1	14
....THALASSIOSIRA	--	-	11000#	56	1	14
..PENNALES						
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	5100#	25	1	14
...NITZSCHIACEAE						
....NITZSCHIA	120	1	180	1	1	14
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..HORMOGONALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	990	5	--	-
....PHORMIDIUM	--	-	--	-	1	14

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
ND - Looked for but not detected.

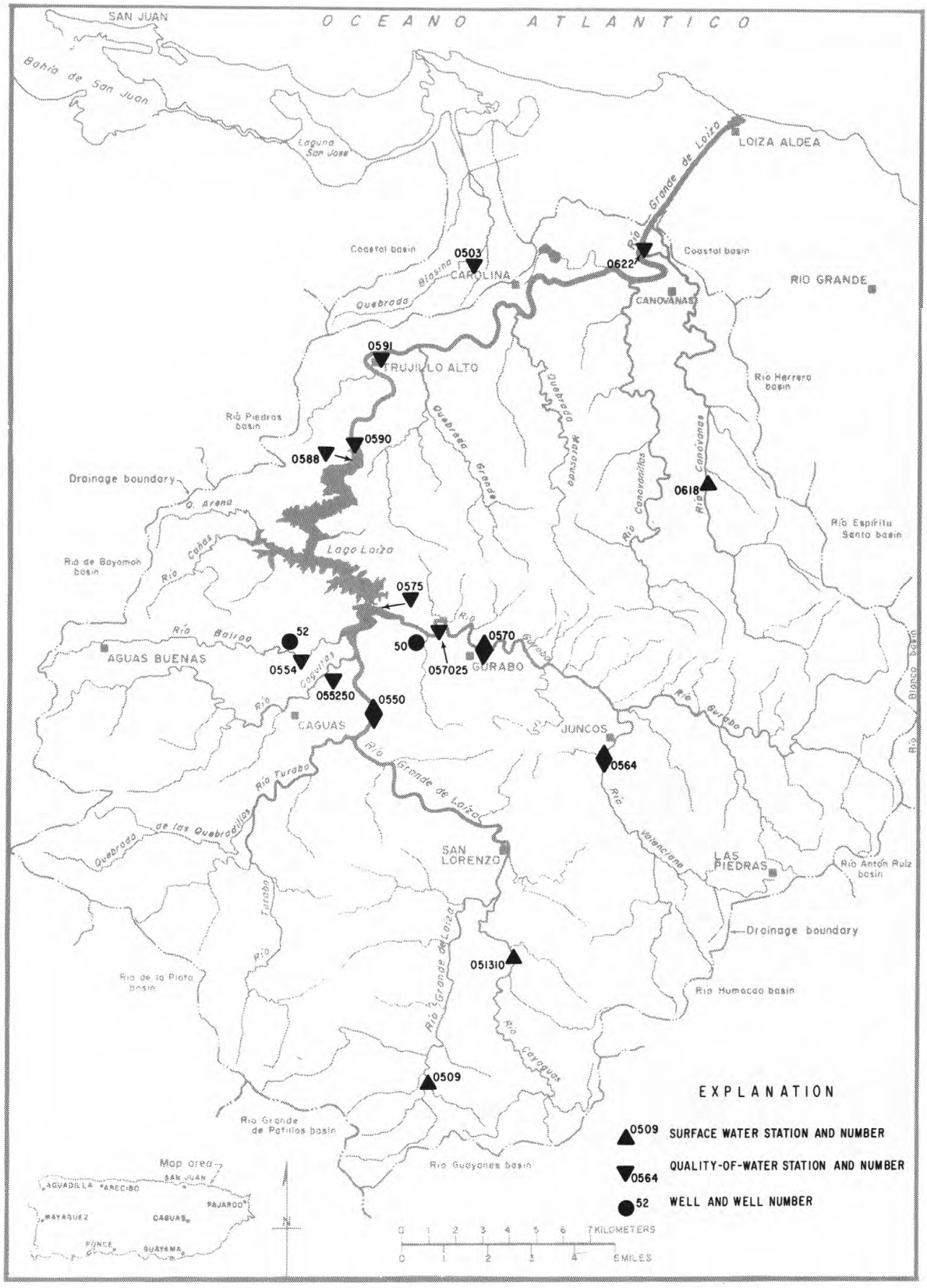

Figure 11.--Río Grande de Loíza basin.

50050300 QUEBRADA BLASINA NEAR CAROLINA, PR

LOCATION.--Lat 18°23'27", long 65°58'28", at bridge on Highway 3, 1.4 mi (2.3 km) south of Valle Arriba Heights, and 1.2 mi (1.9 km) west-southwest of Carolina.

DRAINAGE AREA.--2.96 sq mi (7.67 sq km).

PERIOD OF RECORD.--Water years 1973 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
10...	1045	7.5	550	7.3	27.0	--	3.0	--	35	6000000	2600000	290000
NOV												
29...	0835	7.7	680	7.0	29.0	--	.4	--	50	11000000	2800000	5900000
FEB , 1979												
20...	0950	13	580	7.2	25.0	--	1.2	--	76	3600000	2800000	90000
APR												
16...	1040	6.6	576	7.0	27.0	--	2.4	--	14	6000000	310000	35000
JUN												
06...	0900	7.7	572	7.1	26.5	--	.6	--	43	17000000	1700000	830000
AUG												
24...	0610	8.3	563	7.0	26.5	--	.6	--	40	29000000	5700000	190000
OCT												
09...	1215	E300	301	6.7	27.5	--	4.3	94	31	--	4500000	340000
09...	1300	E400	--	--	27.5	--	--	--	--	--	--	--
NOV												
06...	0830	6.4	430	7.5	25.0	5.0	1.8	45	44	--	2400000	70000
JAN , 1980												
10...	0900	13	366	7.1	23.5	2.6	3.2	67	5.9	--	680000	54000
MAR												
07...	0810	6.3	504	6.9	23.0	--	1.6	--	21	--	915000	1600000
MAY												
22...	0800	5.9	475	7.1	25.5	1.0	.6	58	23	--	4600000	130000
JUN												
26...	0755	6.2	620	7.0	25.0	4.0	.0	67	25	--	4800000	6500000
SEP												
09...	0830	6.2	735	7.0	25.5	2.4	1.4	110	79	--	2700000	440000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
10...	160	4	49	9.1	40	1.4	5.4	190	0	156	15
NOV											
29...	180	10	56	8.7	42	1.4	5.4	202	0	166	32
FEB , 1979											
20...	180	0	54	11	49	1.6	6.2	234	0	192	24
APR											
16...	170	0	52	9.9	39	1.3	5.6	235	0	193	38
JUN											
06...	180	6	58	8.1	33	1.1	5.2	210	0	172	27
AUG											
24...	180	0	58	9.4	34	1.1	4.9	240	0	197	38
OCT											
09...	0	0	--	--	--	--	--	130	0	110	42
09...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	0	0	--	--	--	--	--	182	0	150	9.2
JAN , 1980											
10...	120	0	38	6.6	28	1.1	4.7	170	0	140	22
MAR											
07...	--	--	--	--	--	--	--	230	0	190	46
MAY											
22...	140	0	43	7.7	38	1.4	4.4	210	0	170	27
JUN											
26...	--	--	--	--	--	--	--	237	0	190	38
SEP											
09...	190	6	59	10	69	2.2	6.0	222	0	182	36

E Estimated.

50050300 QUEBRADA BLASINA NEAR CAROLINA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
10...	29	52	.3	19	303	297	6.1	--	.56	.150	.73
NOV											
29...	23	58	.2	26	338	319	7.0	--	.00	.010	.01
FEB , 1979											
20...	34	54	.4	25	355	349	12.7	--	.12	.160	.28
APR											
16...	28	53	.5	28	348	333	6.2	--	.23	.100	.33
JUN											
06...	50	42	.3	22	337	322	7.0	--	.02	.050	.07
AUG											
24...	36	40	.2	28	--	329	7.4	--	.04	.010	.05
OCT											
09...	--	--	--	--	--	--	--	--	.28	.070	.35
09...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	--	--	--	--	--	--	--	15	.11	.200	.31
JAN , 1980											
10...	19	29	.2	18	--	227	8.0	87	.47	.190	.66
MAR											
07...	--	--	--	--	--	--	--	--	.29	.170	.46
MAY											
22...	19	41	.3	23	--	280	4.5	4	--	--	--
JUN											
26...	--	--	--	--	--	--	--	--	.00	.010	.01
SEP											
09...	14	110	.4	31	--	409	6.8	1	.00	.010	.00

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
10...	5.00	2.9	7.90	8.6	38	.810	.530	--	--	--	--
NOV											
29...	2.60	4.9	7.50	7.5	33	1.80	1.20	2	--	ND	<20
FEB , 1979											
20...	5.70	5.3	11.0	11	50	1.40	1.40	--	--	--	--
APR											
16...	6.40	.00	6.40	6.7	30	1.80	1.40	--	--	--	--
JUN											
06...	3.90	1.5	5.40	5.5	24	1.20	.820	1	--	--	--
AUG											
24...	1.90	5.4	7.30	7.4	33	1.60	.830	2	--	<2	<20
OCT											
09...	1.60	2.1	3.70	4.1	18	.870	.410	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	3.90	.50	4.40	4.7	21	.830	--	--	--	--	--
JAN , 1980											
10...	1.20	48	49.0	50	220	.900	--	--	--	--	--
MAR											
07...	3.90	.90	4.80	5.3	23	1.20	--	--	<50	0	10
MAY											
22...	--	--	--	--	--	--	--	--	--	--	--
JUN											
26...	5.30	34	39.0	39	170	1.60	--	--	--	--	--
SEP											
09...	4.50	5.5	10.0	10	44	1.60	--	2	100	0	10

ND Looked for but not detected.

50050300 QUEBRADA BLASINA NEAR CAROLINA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
10...	--	--	--	--	--	--	--	--	--	18	.36
NOV											
29...	9	2800	12	470	<.5	<1	ND	40	5.2	72	1.5
FEB , 1979											
20...	--	--	--	450	--	--	--	--	15	123	4.4
APR											
10...	--	--	--	350	--	--	--	--	14	74	1.3
JUN											
06...	--	--	--	--	<.5	<1	--	--	17	71	1.5
AUG											
24...	6	930	9	440	<.5	<1	<2	20	25	84	1.9
OCT											
09...	--	--	--	--	--	--	--	--	--	1030	--
09...	--	--	--	--	--	--	--	--	--	2190	--
NOV											
06...	--	--	--	--	--	--	--	--	--	43	.75
JAN , 1980											
10...	--	--	--	--	--	--	--	--	--	149	5.2
MAR											
07...	--	--	3	--	1.4	0	0	--	--	68	1.1
MAY											
22...	--	--	--	--	--	--	--	--	--	62	.99
JUN											
26...	--	--	--	--	--	--	--	--	--	65	1.1
SEP											
09...	--	--	1	--	.6	0	0	--	--	12	.20

ND Looked for but not detected.

50051310 RIO CAYAGUAS AT CERRO GORDO, PR

LOCATION.--Lat 18°09'27", long 65°57'29", Hydrologic Unit 21010005, on top of pumphouse at dam off Highway 912, at Barrio Cerro Gordo, 2.0 mi (3.2 km) south of San Lorenzo.

DRAINAGE AREA.--10.2 sq mi (26.4 sq km), revised.

WATER DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 150 ft (46 m), from topographic map.

REMARKS.--Record poor.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,500 cu ft/s (70.8 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 23, 1978	1600	4,140	117	6.47	1.972
Oct. 26, 1978	1815	6,890	195	7.64	2.329
May 29, 1979	0415	3,180	90.1	5.97	1.820
June 1, 1979	0830	5,380	152	7.05	2.149
June 29, 1979	2330	3,200	90.6	5.98	1.823
July 18, 1979	1915	9,120	258	8.37	2.551
Aug. 30, 1979	1800	11,500	326	9.02	2.749
Aug. 31, 1979	Unknown	*13,200	374	9.44	2.877
Sept. 4, 1979	1945	7,260	206	7.77	2.368
Sept. 5, 1979	0815	6,300	178	7.42	2.262
Sept. 29, 1979	1700	3,080	87.2	5.91	1.801
May 14, 1980	1900	6,020	170	7.31	2.228

Minimum daily discharges, 9.1 cu ft/s (0.258 cu m/s) Apr. 24, 1979; 7.6 cu ft/s (0.215 cu m/s) Sept. 8, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	128	52	27	20	17	11	9.8	632	252	36	156
2	17	453	64	25	18	16	10	9.8	82	102	34	95
3	15	98	46	24	16	15	11	10	219	67	31	80
4	16	78	44	25	16	14	11	10	70	61	30	1270
5	17	72	41	26	15	13	12	10	61	79	30	1760
6	18	67	47	33	15	13	13	11	59	243	28	203
7	18	63	67	25	15	13	13	11	46	62	28	155
8	17	62	43	24	12	14	12	15	41	54	25	130
9	18	65	40	24	11	14	11	22	94	48	25	300
10	25	67	33	22	12	14	12	20	63	45	24	160
11	36	59	34	20	15	14	13	111	211	44	24	110
12	26	60	34	20	19	13	12	22	56	44	25	97
13	30	58	32	20	19	16	12	18	45	43	23	120
14	32	73	29	22	17	19	12	17	77	42	40	92
15	19	62	29	20	25	16	11	57	56	46	25	84
16	22	50	32	21	24	16	11	21	40	54	23	78
17	19	49	32	23	16	16	11	17	46	44	22	74
18	16	75	26	25	15	19	10	20	36	1690	45	72
19	17	51	24	24	16	14	10	31	32	120	35	69
20	22	53	24	25	17	14	11	26	31	61	30	74
21	18	48	22	21	21	14	11	20	30	56	28	67
22	21	44	25	22	20	14	11	20	28	52	27	248
23	577	45	26	21	19	14	9.8	18	28	61	27	95
24	602	40	29	20	18	13	9.1	17	28	46	83	70
25	390	41	30	22	18	14	13	19	97	40	171	69
26	1900	46	28	22	20	11	13	18	180	37	44	67
27	820	38	26	22	18	11	11	19	78	36	31	60
28	196	40	24	22	17	11	9.6	28	336	36	27	56
29	88	47	25	21	---	12	9.2	411	832	32	27	468
30	86	42	24	20	---	13	9.4	301	558	30	2300	91
31	297	---	23	21	---	11	---	199	---	37	2900	---
TOTAL	5416	2174	1055	709	484	438	335.1	1538.6	4192	3664	6248	6470
MEAN	175	72.5	34.0	22.9	17.3	14.1	11.2	49.6	140	118	202	216
MAX	1900	453	67	33	25	19	13	411	832	1690	2900	1760
MIN	15	38	22	20	11	11	9.1	9.8	28	30	22	56
CFSM	17.2	7.11	3.33	2.25	1.70	1.38	1.10	4.86	13.7	11.6	19.8	21.2
IN.	19.75	7.93	3.85	2.59	1.77	1.60	1.22	5.61	15.29	13.36	22.78	23.59
AC-FT	10740	4310	2090	1410	960	869	665	3050	8310	7270	12390	12830

CAL YR 1978 TOTAL 20004.0 MEAN 54.8 MAX 1900 MIN 12 CFSM 5.37 IN 72.95 AC-FT 39680
WTR YR 1979 TOTAL 32723.7 MEAN 89.7 MAX 2900 MIN 9.1 CFSM 8.79 IN 119.33 AC-FT 64910

50051310 RIO CAYAGUAS AT CERRO GORDO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	215	49	110	22	18	14	10	10	22	15	17	10
2	130	47	100	23	19	14	11	10	18	16	17	9.3
3	121	48	85	22	26	15	11	10	17	21	17	15
4	121	54	67	20	23	19	10	10	18	19	18	11
5	140	45	49	23	19	25	10	10	17	58	18	20
6	115	69	53	24	21	20	10	9.1	16	35	17	15
7	92	54	45	21	19	19	9.3	9.0	16	23	18	8.5
8	86	51	49	25	18	17	11	9.5	22	22	32	7.6
9	100	119	60	25	19	16	11	8.7	24	24	18	12
10	91	82	59	20	20	15	12	8.0	24	27	87	23
11	203	67	40	21	18	16	13	9.0	28	28	25	13
12	95	50	41	28	18	20	15	13	29	18	20	30
13	91	52	43	33	17	16	18	27	29	16	18	25
14	85	46	40	34	16	19	11	657	21	24	17	18
15	140	37	42	25	16	17	12	64	21	19	18	14
16	86	32	39	23	16	17	12	22	20	20	17	13
17	81	35	35	22	16	16	9.3	24	19	140	17	14
18	78	32	31	21	16	14	9.4	21	16	98	16	12
19	78	28	32	21	16	15	8.8	25	16	55	16	12
20	77	31	38	21	15	14	9.2	14	15	34	16	33
21	77	32	33	21	15	13	9.2	12	15	27	16	17
22	73	26	30	20	15	13	9.2	22	14	26	17	19
23	73	81	35	24	16	12	9.2	17	13	24	16	17
24	58	120	30	23	15	12	9.7	13	12	22	13	24
25	53	50	27	21	14	11	11	11	19	20	13	23
26	73	200	22	19	14	11	11	14	19	19	17	16
27	56	80	25	18	14	11	9.8	34	17	20	11	16
28	56	80	24	18	14	11	9.5	280	14	21	9.7	21
29	49	45	20	18	14	10	9.5	42	12	20	24	23
30	50	50	23	18	---	9.5	10	29	12	19	16	15
31	49	---	23	17	---	8.5	---	24	---	18	12	---
TOTAL	2892	1792	1350	691	497	460.0	321.1	1468.3	555	948	603.7	506.4
MEAN	93.3	59.7	43.5	22.3	17.1	14.8	10.7	47.4	18.5	30.6	19.5	16.9
MAX	215	200	110	34	26	25	18	657	29	140	87	33
MIN	49	26	20	17	14	8.5	8.8	8.0	12	15	9.7	7.6
CFSM	9.15	5.85	4.27	2.19	1.68	1.45	1.05	4.65	1.81	3.00	1.91	1.66
IN.	10.55	6.53	4.92	2.52	1.81	1.68	1.17	5.35	2.02	3.46	2.20	1.85
AC-FT	5740	3550	2680	1370	986	912	637	2910	1100	1880	1200	1000

CAL YR 1979 TOTAL 30112.7 MEAN 82.5 MAX 2900 MIN 9.1 CFSM 8.09 IN 109.81 AC-FT 59730
WTR YR 1980 TOTAL 12084.5 MEAN 33.0 MAX 657 MIN 7.6 CFSM 3.24 IN 44.07 AC-FT 23970

50050900 RIO GRANDE DE LOIZA AT QUEBRADA ARENAS, PR

LOCATION.--Lat 18°07'10", long 65°59'22" Hydrologic Unit 21010005, at intersection of Highways 181 and 9990, 0.2 mi (0.3 km) above confluence with Río Emajagua and about 7.1 mi (11.4 km) southwest of San Lorenzo.

DRAINAGE AREA.--6.00 sq mi (15.54 sq mi), revised.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 175 ft (53.3 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,950 cu ft/s (253 cu m/s) July 18, 1979, gage height 13.4 ft (4.08 m) from floodmark, from rating curve extended above 500 cu ft/s (14.2 cu m/s) on basis of step-backwater analysis; minimum, 2.8 cu ft/s (0.079 cu m/s) May 5-6, 1979.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,000 cu ft/s (56.6 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 23, 1978	1500	2,240	63.4	8.47	2.582
Oct. 26, 1978	0630	3,600	102	9.80	2.987
Oct. 31, 1978	1245	2,090	59.2	8.31	2.533
May 29, 1979	0200	2,800	79.3	9.06	2.761
July 18, 1979	Unknown	*8,950	253	13.4	4.08
Aug. 24, 1979	1830	2,300	65.1	8.54	2.603
Aug. 30, 1979	1745	2,830	80.1	9.09	2.771
Aug. 31, 1979	0430	7,030	199	Unknown	
Sept. 4, 1979	1900	2,280	64.6	8.52	2.597
May 14, 1980	1600	2,780	78.7	9.04	2.755
May 27, 1980	Unknown	2,500	70.8	Unknown	
July 17, 1980	1230	*2,820	79.9	9.08	2.768

Minimum discharges, 2.8 cu ft/s (0.079 cu m/s) May 5-6, 1979; 4.5 cu ft/s (0.127 cu m/s) May 10, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	102	32	11	6.9	5.2	4.0	4.0	350	300	100	113
2	11	115	34	10	6.7	4.8	4.0	3.8	100	90	30	90
3	12	58	21	9.8	6.4	4.8	4.0	3.9	250	55	25	71
4	15	49	19	9.6	6.1	4.8	3.5	3.6	70	50	20	456
5	15	42	19	9.4	6.1	4.7	3.6	3.2	40	120	22	520
6	15	36	33	28	6.1	4.6	3.6	3.5	45	170	23	110
7	15	33	40	12	6.0	4.6	3.5	3.1	33	50	20	83
8	14	31	23	18	6.4	4.7	3.7	16	50	40	19	95
9	21	40	20	12	6.1	4.6	3.8	34	80	30	18	89
10	46	35	18	10	5.9	4.6	4.5	65	75	25	17	80
11	30	31	18	9.6	5.9	5.4	4.5	102	160	23	17	61
12	26	29	16	9.4	5.9	5.6	4.7	34	60	22	19	50
13	18	28	16	8.9	6.4	5.7	5.1	45	35	21	17	52
14	15	51	16	10	5.9	5.9	4.9	25	70	20	40	43
15	12	29	15	8.9	11	5.0	3.8	45	100	20	20	41
16	39	24	15	8.6	8.2	4.6	3.8	22	35	25	18	37
17	13	23	15	8.5	6.2	4.8	3.8	13	30	24	17	36
18	12	68	15	8.2	5.9	6.5	3.6	47	25	1000	45	34
19	11	38	15	8.2	5.7	4.9	3.7	33	20	87	30	34
20	19	26	13	14	5.7	4.5	5.6	22	18	46	25	41
21	12	25	13	8.9	7.2	4.8	4.2	16	17	43	22	34
22	14	22	14	8.6	6.3	5.7	4.2	13	16	40	20	141
23	451	24	13	7.8	6.2	4.8	4.7	11	16	35	20	47
24	241	21	18	7.5	5.4	4.8	4.3	9.0	15	30	150	35
25	201	20	18	7.3	5.1	5.7	12	12	44	25	70	54
26	700	20	14	7.3	7.4	4.8	10	10	160	23	27	52
27	288	19	12	7.3	5.6	4.5	5.5	16	85	22	19	33
28	107	19	12	7.0	5.5	4.4	4.7	23	300	21	16	30
29	66	24	14	7.0	---	6.8	4.0	195	700	20	15	210
30	65	22	12	7.0	---	6.2	4.0	202	650	20	893	57
31	182	---	12	7.0	---	4.5	---	99	---	50	996	---
TOTAL	2698	1104	565	306.8	178.2	157.3	139.3	1134.1	3649	2547	2790	2829
MEAN	87.0	36.8	18.2	9.90	6.36	5.07	4.64	36.6	122	82.2	90.0	94.3
MAX	700	115	40	28	11	6.8	12	202	700	1000	996	520
MIN	11	19	12	7.0	5.1	4.4	3.5	3.1	15	20	15	30
CFSM	14.5	6.13	3.03	1.65	1.06	.85	.77	6.10	20.3	13.7	15.0	15.7
IN.	16.72	6.84	3.50	1.90	1.10	.98	.86	7.03	22.62	15.79	17.30	17.54
AC-FT	5350	2190	1120	609	353	312	276	2250	7240	5050	5530	5610

CAL YR 1978 TOTAL 11499.0 MEAN 31.5 MAX 700 MIN 8.9 CFSM 5.25 IN 71.28 AC-FT 22810
WTR YR 1979 TOTAL 18097.7 MEAN 49.6 MAX 1000 MIN 3.1 CFSM 8.27 IN 112.19 AC-FT 35900

50050900 RIO GRANDE DE LOIZA AT QUEBRADA ARENAS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	18	31	14	7.8	5.4	5.0	7.9	15	10	13	10
2	74	18	44	14	7.6	5.6	5.0	7.0	13	9.3	13	9.6
3	68	18	58	14	11	5.9	5.0	6.2	11	13	13	12
4	84	17	42	13	9.2	9.6	5.5	6.2	10	11	14	15
5	70	16	33	17	8.1	15	5.5	6.2	9.0	49	17	31
6	51	18	33	14	11	13	5.0	5.9	8.0	67	15	15
7	61	17	30	13	8.9	10	5.0	5.4	9.0	19	18	11
8	46	19	32	18	8.1	8.6	4.9	5.1	10	16	37	9.8
9	56	59	42	15	9.1	7.3	5.4	5.1	11	16	17	79
10	66	30	31	13	9.0	6.7	5.4	5.1	13	21	80	19
11	57	23	28	13	8.6	6.7	7.0	5.4	50	20	21	13
12	47	18	27	22	8.4	11	11	4.9	55	15	16	16
13	40	17	27	26	7.6	7.3	16	16	30	14	15	14
14	47	16	24	18	7.6	12	7.3	376	20	24	15	11
15	40	15	23	14	7.3	8.9	7.0	43	35	18	14	10
16	34	15	23	13	7.2	8.6	7.6	20	15	24	13	9.4
17	31	30	22	12	7.0	7.9	6.7	19	45	200	12	8.6
18	30	18	22	12	8.3	7.3	9.2	40	20	99	12	8.4
19	28	16	21	11	7.9	7.1	7.6	26	13	45	12	8.8
20	26	16	24	11	7.0	6.6	7.3	17	12	32	11	18
21	28	15	20	10	6.2	6.2	6.7	15	11	24	11	10
22	26	14	27	10	6.2	6.4	6.2	35	10	22	10	8.8
23	29	43	25	13	10	6.4	8.6	12	9.5	20	10	8.8
24	24	66	23	12	7.6	6.5	8.6	10	9.3	18	11	19
25	23	206	21	11	6.4	6.5	30	9.0	13	16	12	12
26	37	74	17	10	6.4	6.0	13	8.0	11	16	21	10
27	22	64	16	9.4	5.9	5.5	8.6	40	10	15	12	12
28	40	41	16	8.9	5.9	5.5	8.6	400	9.0	17	10	15
29	25	33	15	8.4	5.6	5.0	7.6	80	8.6	15	17	11
30	21	51	15	8.2	---	5.5	7.3	30	9.0	15	11	11
31	19	---	14	8.2	---	5.0	---	20	---	14	12	---
TOTAL	1314	1021	826	406.1	226.9	235.0	243.6	1286.4	504.4	914.3	515	446.2
MEAN	42.4	34.0	26.6	13.1	7.82	7.58	8.12	41.5	16.8	29.5	16.6	14.9
MAX	84	206	58	26	11	15	30	400	55	200	80	79
MIN	19	14	14	8.2	5.6	5.0	4.9	4.9	8.0	9.3	10	8.4
CFSM	7.07	5.67	4.43	2.18	1.30	1.26	1.35	6.92	2.80	4.92	2.77	2.48
IN.	8.15	6.33	5.12	2.52	1.41	1.46	1.51	7.97	3.13	5.67	3.19	2.77
AC-FT	2610	2030	1640	805	450	466	483	2550	1000	1810	1020	885

CAL YR 1979 TOTAL 16891.7 MEAN 46.3 MAX 1000 MIN 3.1 CFSM 7.72 IN 104.71 AC-FT 33500
WTR YR 1980 TOTAL 7938.9 MEAN 21.7 MAX 400 MIN 4.9 CFSM 3.62 IN 49.21 AC-FT 15750

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR

LOCATION (REVISED).--Lat 18°14'33", long 66°00'34", Hydrologic Unit 21010005, on right bank 250 ft (76 m) upstream from bridge on Highway 189, 1.2 mi (1.9 km) downstream from Río Turabo, and 1.8 mi (2.9 km) east of the plaza de Caguas.

DRAINAGE AREA.--89.8 sq mi (232.6 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1959 (low-flow measurement only), February to November 1959 (monthly measurements only), December 1959 to current year.

GAGE.--Water-stage recorder.--Datum of gage is 143.28 ft (43.672 m) above mean sea level (datum of 1941).

REMARKS.--Records fair.

AVERAGE DISCHARGES.--19 years (1961-79), 218 cu ft/s (6.174 cu m/s), 32.97 in/yr (837 mm/yr), 157,900 acre-ft/yr (195 cu hm/yr); median of yearly mean discharges, 200 cu ft/s (5.66 cu m/s), 144,900 acre-ft/yr (179 cu hm/yr).
--20 years (1961-80), 218 cu ft/s (6.174 cu m/s), 32.97 in/yr (837 mm/yr), 157,900 acre-ft/yr (195 cu hm/yr); median of yearly mean discharges 205 cu ft/s (5.80 cu m/s), 148,500 acre-ft/yr (183 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 cu ft/s (2,025 cu m/s) Sep. 6, 1960, gage height, 31.17 ft (9.501 m), from rating curve extended above 6,000 cu ft/s (170 cu m/s) on basis of slope-area measurement; minimum daily discharge, 10 cu ft/s (0.283 cu m/s) Apr. 5, 10, 29, 1968.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 8,000 cu ft/s (227 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 23, 1978	1700	11,500	326	13.39	4.081
Oct. 27, 1978	Unknown	19,200	544	16.4	5.00
May 29, 1979	0500	8,330	236	11.87	3.618
June 1, 1979	0945	20,500	581	16.86	5.139
June 11, 1979	0900	11,400	323	13.35	4.069
June 14, 1979	2300	9,240	262	12.32	3.755
June 26, 1979	0145	8,410	238	11.91	3.630
June 29, 1979	2030	26,800	759	19.02	5.797
July 18, 1979	1100	17,900	507	15.93	4.856
Aug. 31, 1979	0330	*37,100	1050	22.12	6.742
Sept. 4, 1979	Unknown	17,000	480	Unknown	
Sept. 29, 1979	1500	18,700	530	16.23	4.947
Oct. 28, 1979	1730	8,020	227	11.72	3.572
Nov. 25, 1979	Unknown	9,600	272	Unknown	
May 14, 1980	1800	*13,200	374	14.08	4.292
July 18, 1980	1730	8,540	242	11.97	3.648

Minimum daily discharges, 19 cu ft/s (0.538 cu m/s) Apr. 18, 1979; 28 cu ft/s (0.793 cu m/s) July 2, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	945	188	109	76	59	34	42	4040	2950	954	2500
2	101	1830	313	98	73	57	30	39	939	927	297	940
3	96	627	218	90	72	55	31	34	2400	547	222	250
4	91	445	157	88	70	52	26	28	690	506	205	4000
5	90	379	151	86	68	54	25	23	478	1120	219	1600
6	86	307	139	261	68	52	24	22	571	1660	233	900
7	86	287	169	222	67	49	23	21	351	530	215	400
8	85	254	198	188	66	45	22	35	256	420	191	300
9	136	274	163	160	65	43	22	195	830	332	185	800
10	176	283	145	116	64	43	26	215	787	276	175	500
11	166	245	142	111	65	42	25	518	2570	252	175	390
12	122	260	130	108	64	44	29	222	605	241	188	310
13	134	228	124	103	63	42	28	249	360	215	172	260
14	143	297	118	99	63	52	35	301	710	201	395	230
15	118	309	116	97	127	43	26	507	1140	201	226	205
16	86	272	114	107	144	40	21	276	377	252	185	190
17	81	305	113	108	84	43	21	201	370	241	172	175
18	79	653	115	97	75	67	19	163	272	3960	460	170
19	75	321	121	95	73	58	20	374	219	1230	297	155
20	89	299	113	120	66	44	26	285	181	609	276	150
21	92	437	147	102	73	41	36	178	157	480	264	145
22	78	294	109	91	78	42	45	134	148	441	260	700
23	3160	332	107	87	77	44	145	103	142	334	250	450
24	4000	253	115	84	70	43	46	94	139	291	547	380
25	8800	222	150	80	64	39	81	81	134	289	883	450
26	10700	215	120	79	80	37	178	94	1630	233	401	394
27	9970	208	113	77	84	33	75	86	868	226	250	332
28	5170	201	101	75	63	32	54	191	3500	222	202	314
29	811	195	111	74	---	69	47	1440	7030	212	217	4350
30	451	244	118	74	---	87	43	2270	6610	198	9210	980
31	2090	---	107	76	---	54	---	1420	---	237	11500	---
TOTAL	47476	11421	4345	3362	2102	1505	1263	9841	38504	19833	29426	22920
MEAN	1531	381	140	108	75.1	48.5	42.1	317	1283	640	949	764
MAX	10700	1830	313	261	144	87	178	2270	7030	3960	11500	4350
MIN	75	195	101	74	63	32	19	21	134	198	172	145
CFSM	17.0	4.24	1.56	1.20	.84	.54	.47	3.53	14.3	7.13	10.6	8.51
IN.	19.67	4.73	1.80	1.39	.87	.62	.52	4.08	15.95	8.22	12.19	9.49
AC-FT	94170	22650	8620	6670	4170	2990	2510	19520	76370	39340	58370	45460

CAL YR 1978 TOTAL 123106 MEAN 337 MAX 10700 MIN 75 CFSM 3.75 IN 51.00 AC-FT 244200
WTR YR 1979 TOTAL 191998 MEAN 526 MAX 11500 MIN 19 CFSM 5.86 IN 79.54 AC-FT 380800

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2060	237	319	93	69	47	43	45	200	29	74	61
2	1610	219	289	96	61	46	40	42	170	28	72	61
3	981	201	698	105	147	57	38	40	140	29	72	61
4	943	560	360	105	224	170	38	38	120	30	71	126
5	792	222	280	124	122	1160	67	36	110	764	71	309
6	524	237	260	111	190	214	67	34	105	658	70	105
7	462	226	226	93	135	85	64	33	100	173	100	65
8	389	211	226	96	68	85	66	32	98	98	85	61
9	437	600	692	96	498	96	70	31	96	119	78	347
10	389	332	304	71	194	83	85	31	95	162	200	144
11	616	285	215	69	88	73	113	31	140	220	150	80
12	454	330	175	65	70	95	263	33	300	142	110	319
13	293	250	208	158	61	94	331	211	200	98	90	143
14	289	220	208	117	74	110	125	4800	170	113	90	95
15	351	200	198	80	69	101	90	1560	220	116	105	59
16	252	190	205	120	65	73	95	327	130	86	80	46
17	226	220	175	105	63	81	97	224	102	966	83	42
18	212	300	159	98	63	81	92	229	78	2110	71	37
19	205	230	163	92	67	72	117	346	57	766	67	39
20	198	180	451	90	59	69	98	290	54	224	65	64
21	385	260	310	88	64	66	87	230	65	151	59	46
22	208	400	166	150	78	65	84	300	52	120	59	38
23	175	220	661	110	111	66	112	230	46	112	63	37
24	246	180	666	98	146	69	146	180	42	102	73	40
25	297	2000	677	91	57	67	210	150	39	86	73	91
26	506	1000	194	83	59	59	100	120	37	86	105	87
27	323	600	127	77	55	57	76	220	35	89	71	98
28	1500	575	111	74	59	51	60	2000	33	101	69	149
29	577	374	120	86	46	49	54	1100	31	89	83	177
30	306	702	111	84	---	51	50	500	30	77	88	122
31	294	---	105	72	---	44	---	300	---	76	63	---
TOTAL	16500	11761	9059	2997	3062	3536	2978	13743	3095	8020	2610	3149
MEAN	532	392	292	96.7	106	114	99.3	443	103	259	84.2	105
MAX	2060	2000	698	158	498	1160	331	4800	300	2110	200	347
MIN	175	180	105	65	46	44	38	31	30	28	59	37
CFSM	5.92	4.37	3.25	1.08	1.18	1.27	1.11	4.93	1.15	2.88	.94	1.17
IN.	6.84	4.87	3.75	1.24	1.27	1.46	1.23	5.69	1.28	3.32	1.08	1.30
AC-FT	32730	23330	17970	5940	6070	7010	5910	27260	6140	15910	5180	6250

CAL YR 1979 TOTAL 166076 MEAN 455 MAX 11500 MIN 19 CFSM 5.07 IN 68.80 AC-FT 329400
WTR YR 1980 TOTAL 80510 MEAN 220 MAX 4800 MIN 28 CFSM 2.45 IN 33.35 AC-FT 159700

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
20...	0815	95	270	7.3	28.5	--	6.4	--	1.7	120000	29000	3100
DEC												
11...	0955	142	225	7.4	24.5	--	7.2	--	1.0	270000	44000	3900
FEB , 1979												
26...	1000	63	272	7.1	26.0	--	7.2	--	2.3	13000	7600	490
APR												
10...	0930	661	302	6.9	25.5	--	6.4	--	1.5	7000	3500	1000
JUN												
20...	0915	153	225	7.2	28.0	--	7.4	--	.7	220000	45000	4100
AUG												
23...	0815	235	178	6.9	25.0	--	7.8	--	2.0	250000	83000	45000
OCT												
12...	0915	362	162	7.4	25.5	--	8.2	25	2.1	--	41000	23000
NOV												
27...	1445	E150	142	7.2	26.0	60	7.7	50	1.8	--	63000	21000
JAN , 1980												
24...	1330	98	230	7.5	26.5	1.2	8.0	26	2.6	--	20000	500
MAR												
17...	1330	70	273	7.7	26.5	.85	7.8	--	--	--	--	--
MAY												
12...	1430	31	332	6.9	32.5	--	6.9	18	2.1	--	25000	560
JUL												
09...	0915	129	216	7.2	27.0	150	7.7	12	2.9	--	83000	4700
SEP												
09...	1210	57	281	7.5	28.5	70	6.9	--	3.5	--	93000	2900

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
20...	70	0	17	6.8	21	1.1	2.4	93	0	76	7.5
DEC											
11...	69	0	17	6.5	19	1.0	2.1	91	0	75	5.8
FEB , 1979											
26...	76	0	18	7.5	27	1.4	2.6	104	0	85	13
APR											
10...	88	0	22	8.1	27	1.3	1.7	110	0	90	22
JUN											
20...	67	0	17	5.9	19	1.0	1.9	86	0	70	8.7
AUG											
23...	50	0	12	4.8	19	.9	2.1	66	0	54	13
OCT											
12...	--	--	--	--	--	--	--	60	0	49	3.8
NOV											
27...	--	--	--	--	--	--	--	50	0	41	5.0
JAN , 1980											
24...	69	0	16	7.0	24	1.3	1.3	98	0	80	5.0
MAR											
17...	--	--	--	--	--	--	--	100	0	82	3.2
MAY											
12...	90	0	22	8.5	31	1.4	2.3	110	0	90	22
JUL											
09...	--	--	--	--	--	--	--	81	0	66	8.2
SEP											
09...	81	12	19	8.1	23	1.1	2.2	84	0	69	4.3

E Estimated.

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
20...	15	19	.1	34	166	161	42.6	--	.81	.070	.88
DEC											
11...	14	18	.1	34	162	156	62.1	--	.67	.050	.72
FEB , 1979											
26...	16	23	.1	31	179	176	30.5	--	.70	.070	.77
APR											
10...	20	25	.1	35	200	193	32.9	--	.77	.040	.81
JUN											
20...	15	18	.1	33	160	152	83.4	--	.39	.030	.42
AUG											
23...	15	12	.1	25	--	119	88.4	--	.36	.060	.42
OCT											
12...	--	--	--	--	--	--	--	--	.45	.020	.47
NOV											
27...	--	--	--	--	--	--	--	--	.64	.030	.67
JAN , 1980											
24...	15	22	.2	32	--	166	43.8	73	.34	.130	.47
MAR											
17...	--	--	--	--	--	--	--	--	.48	.060	.54
MAY											
12...	31	31	.2	34	--	214	18.0	--	.61	.070	.68
JUL											
09...	--	--	--	--	--	--	--	--	.46	.030	.49
SEP											
09...	16	21	.2	39	--	170	25.9	--	.67	.070	.74

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
20...	.240	.50	.74	1.6	7.2	.330	.260	--	--	--	--
DEC											
11...	.240	.33	.57	1.3	5.7	.220	.180	1	--	<2	<20
FEB , 1979											
26...	.200	.29	.49	1.3	5.6	.270	.230	--	--	--	--
APR											
10...	.130	.21	.34	1.2	5.1	.270	.220	--	--	--	--
JUN											
20...	.060	.38	.44	.86	3.8	.150	.100	--	--	--	--
AUG											
23...	<.010	.62	.62	1.0	4.6	.270	.070	1	--	ND	<20
OCT											
12...	.060	.68	.74	1.2	5.4	.200	.060	--	--	--	--
NOV											
27...	.070	.61	.68	1.4	6.0	.140	--	--	--	--	--
JAN , 1980											
24...	.510	.69	1.20	1.7	7.4	.260	--	--	--	--	--
MAR											
17...	.180	.42	.60	1.1	5.0	.250	--	1	<50	1	10
MAY											
12...	.230	.65	.88	1.6	6.9	.490	--	--	--	--	--
JUL											
09...	.040	.34	.38	.87	3.9	.350	--	--	--	--	--
SEP											
09...	.230	.46	.69	1.4	6.3	.380	--	1	--	--	--

ND Looked for but not detected.

50055000 RIO GRANDE DE LOIZA AT CAGUAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
20...	--	--	--	--	--	--	--	--	--	51	13
DEC											
11...	4	1500	19	260	<.5	<1	ND	20	--	213	82
FEB , 1979											
26...	--	--	--	370	--	--	--	--	4.0	87	15
APR											
10...	--	--	--	340	--	--	--	--	2.9	56	--
JUN											
20...	--	--	--	--	--	--	--	--	12	342	178
AUG											
23...	22	10000	6	810	<.5	<1	<2	40	7.6	365	271
OCT											
12...	--	--	--	--	--	--	--	--	--	243	238
NOV											
27...	--	--	--	--	--	--	--	--	--	363	--
JAN , 1980											
24...	--	--	--	--	--	--	--	--	--	754	200
MAR											
17...	--	--	0	--	.1	0	0	--	--	48	9.1
MAY											
12...	--	--	--	--	--	--	--	--	--	101	8.5
JUL											
09...	--	--	--	--	--	--	--	--	--	375	131
SEP											
09...	--	--	--	--	<.1	0	--	--	--	192	29

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN							
20...	0915	0	.0	9	.7	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN						
20...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

50055250 RIO CAGUITAS AT HIGHWAY 30 AT CAGUAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'11", long 66°01'26", at Highway 30 bridge, and 0.8 mi (1.3 km) east of Caguas.

DRAINAGE AREA.--14.1 sq mi (36.5 sq km).

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

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 80

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
19...	1200	9.4	710	7.3	31.0	--	.0	--	82	50000000	27000000	1600000
NOV												
30...	1230	42	437	7.2	26.5	--	5.2	--	21	5900000	830000	400000
FEB , 1979												
28...	1225	11	720	7.1	27.0	--	.0	--	125	4900000	1600000	800000
APR												
10...	1140	10	639	7.2	29.0	--	.0	--	28	600000	260000	80000
JUN												
20...	1240	22	668	7.1	30.5	--	.0	--	64	25000000	8700000	560000
SEP												
10...	1430	65	371	7.1	31.0	--	5.4	--	9.0	4900000	2500000	35000
OCT												
09...	1500	82	290	7.3	29.0	--	5.6	43	25	--	520000	90000
NOV												
21...	1315	53	348	7.5	27.0	50	6.3	8	16	--	670000	32000
JAN , 1980												
17...	1315	17	539	7.4	26.0	50	4.3	34	29	--	36000	19000
MAR												
07...	1240	30	542	7.1	27.5	--	3.9	--	13	--	800000	69000
MAY												
23...	1150	13	537	7.4	31.0	.40	.0	34	8.4	--	1500000	68000
JUL												
07...	1240	14	541	7.5	29.5	1.5	4.3	30	8.4	--	3000000	170000
SEP												
10...	1140	18	543	7.4	29.0	18	4.4	--	13	--	1090000	87000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
19...	180	12	46	16	55	1.8	5.5	206	0	169	17
NOV											
30...	130	23	32	12	33	1.3	4.8	130	0	107	13
FEB , 1979											
28...	210	46	58	15	52	1.6	4.8	196	0	161	25
APR											
10...	210	66	61	14	46	1.4	4.2	175	0	144	18
JUN											
20...	170	2	46	14	51	1.7	6.3	208	0	171	26
SEP											
10...	140	22	35	12	22	.8	2.9	140	0	110	18
OCT											
09...	0	0	--	--	--	--	--	100	0	82	8.0
NOV											
21...	0	0	--	--	--	--	--	122	0	100	6.2
JAN , 1980											
17...	180	34	48	15	41	1.3	4.1	180	0	150	11
MAR											
07...	--	--	--	--	--	--	--	160	0	130	20
MAY											
23...	180	24	49	14	38	1.2	3.8	190	0	160	12
JUL											
07...	--	--	--	--	--	--	--	170	0	140	8.6
SEP											
10...	190	39	50	15	34	1.1	6.7	180	0	148	11

50055250 RIO CAGUITAS AT HIGHWAY 30 AT CAGUAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
19...	57	71	.4	35	401	367	10.2	--	.18	.140	.32
NOV											
30...	34	39	.1	25	422	244	47.9	--	.81	.190	1.0
FEB , 1979											
28...	110	59	.5	33	432	429	12.7	--	.39	.150	.54
APR											
10...	100	47	.3	32	398	391	10.7	--	.19	.120	.31
JUN											
20...	70	61	.4	32	388	383	23.5	--	.01	.010	.02
SEP											
10...	32	27	.1	30	--	230	40.1	--	.91	.070	.98
OCT											
09...	--	--	--	--	--	--	--	--	.63	.100	.73
NOV											
21...	--	--	--	--	--	--	--	152	.89	.080	.97
JAN , 1980											
17...	61	47	.3	31	--	336	15.4	61	1.3	.240	1.5
MAR											
07...	--	--	--	--	--	--	--	--	1.0	.100	1.1
MAY											
23...	66	40	.3	31	--	336	12.0	10	--	--	--
JUL											
07...	--	--	--	--	--	--	--	--	.62	.130	.75
SEP											
10...	55	37	.3	36	--	323	15.6	--	.94	.160	1.1

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N03)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
19...	4.30	6.7	11.0	11	50	3.60	3.10	--	--	--	--
NOV											
30...	1.30	2.6	3.90	4.9	22	2.10	.220	2	--	<2	40
FEB , 1979											
28...	3.00	1.2	4.20	4.7	21	1.50	1.50	--	--	--	--
APR											
10...	3.40	1.0	4.40	4.7	21	1.50	.960	--	--	--	--
JUN											
20...	9.80	5.2	15.0	15	67	3.60	2.80	--	--	--	--
SEP											
10...	.380	1.0	1.40	2.4	11	.580	.300	1	--	<2	30
OCT											
09...	.350	.95	1.30	2.0	9.0	.500	.300	--	--	--	--
NOV											
21...	.840	1.9	2.70	3.7	16	.850	--	--	--	--	--
JAN , 1980											
17...	1.20	1.2	2.40	3.9	17	1.40	--	--	--	--	--
MAR											
07...	2.60	.40	3.00	4.1	18	2.10	--	--	100	0	10
MAY											
23...	--	--	--	--	--	--	--	--	--	--	--
JUL											
07...	2.20	1.1	3.30	4.1	18	.840	--	--	--	--	--
SEP											
10...	2.10	1.7	3.80	4.9	22	.740	--	1	100	3	20

50055250 RIO CAGUITAS AT HIGHWAY 30 AT CAGUAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
19...	--	--	--	--	--	--	--	--	--	14	.36
NOV.											
30...	24	12000	19	590	<.5	<1	ND	110	25	286	32
FEB , 1979											
28...	--	--	--	300	--	--	--	--	20	85	2.5
APR											
10...	--	--	--	640	--	--	--	--	8.9	124	3.3
JUN											
20...	--	--	--	--	--	--	--	--	29	80	4.8
SEP											
10...	16	4700	5	200	<.5	<1	<2	110	8.8	134	23
OCT											
09...	--	--	--	--	--	--	--	--	--	--	--
NOV											
21...	--	--	--	--	--	--	--	--	--	266	38
JAN , 1980											
17...	--	--	--	--	--	--	--	--	--	344	16
MAR											
07...	--	--	4	--	.4	0	1	--	--	84	6.8
MAY											
23...	--	--	--	--	--	--	--	--	--	80	2.9
JUL											
07...	--	--	--	--	--	--	--	--	--	80	3.0
SEP											
10...	--	--	3	--	.3	0	3	--	--	26	1.3

ND Looked for but not detected.

50055400 RIO BAIROA NEAR CAGUAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'28", long 66°02'13", at bridge on Highway 1, about 2.5 mi (4.0 km) upstream from Río Grande de Loíza, and 1.4 mi (2.3 km) north of Caguas.

DRAINAGE AREA.--5.4 sq mi (14.0 sq km).

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: March 1958, February 1962 to April 1966, November 1973 to October 1974, November 1979 to September 1980.
SEDIMENT RECORDS: January to October 1974, November 1979 to September 1980.

WATER QUALITY DATA, WATER YEARS OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (CELLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
21...	1130	21	218	7.5	25.0	200	7.5	7	3.8	89000	42000	--
JAN , 1980												
17...	1030	5.7	440	7.6	22.0	.50	6.6	68	29	1800000	210000	150
MAR												
12...	0830	7.6	418	7.2	24.0	6.0	.0	97	58	3100000	900000	--
MAY												
22...	1240	3.7	361	7.3	28.5	.35	6.0	21	3.6	150000	33000	130
JUN												
26...	1130	2.0	434	7.7	28.0	2.5	7.6	16	2.5	11000	4600	--
SEP												
09...	1345	2.6	430	7.4	26.5	4.0	6.5	--	3.3	33000	8100	160

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
21...	--	--	--	--	--	--	85	0	70	4.3	--	--
JAN , 1980												
17...	0	35	14	31	1.1	5.6	185	0	150	7.4	25	44
MAR												
12...	--	--	--	--	--	--	190	0	160	19	--	--
MAY												
22...	0	31	13	27	1.0	4.0	160	0	130	13	16	35
JUN												
26...	--	--	--	--	--	--	168	0	140	5.4	--	--
SEP												
09...	25	36	17	28	1.0	5.7	164	0	135	10	20	42

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
21...	--	--	--	--	387	1.2	.070	1.3	.150	1.5	1.60	2.9
JAN , 1980												
17...	.3	30	276	4.3	7	1.1	.370	1.5	4.90	.10	5.00	6.5
MAR												
12...	--	--	--	--	--	.75	.250	1.0	5.00	36	41.0	42
MAY												
22...	.3	27	232	2.3	29	--	--	--	--	--	--	--
JUN												
26...	--	--	--	--	--	.79	.020	.81	.180	.67	.85	1.7
SEP												
09...	.3	37	267	1.9	--	1.6	.030	1.6	.110	.38	.49	2.1

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
21...	13	.590	--	--	--	--	--	--	--	--	478	27
JAN , 1980												
17...	29	1.60	--	--	--	--	--	--	--	--	8	.12
MAR												
12...	190	1.60	2	100	0	12	3	1.3	0	0	83	1.7
MAY												
22...	--	--	--	--	--	--	--	--	--	--	92	.91
JUN												
26...	7.3	.580	--	--	--	--	--	--	--	--	20	.11
SEP												
09...	9.3	.630	4	100	0	2	0	.3	0	0	7	.05

50056400 RIO VALENCIANO NEAR JUNCOS, PR

LOCATION.--Lat 18°12'58", long 65°55'34", Hydrologic Unit 21010005, on left bank at Highway 919, 0.5 mi (0.8 km) upstream from Quebrada Don Victor, 1.7 mi (2.7 km) upstream from Río Gurabo and 1.0 mi (1.6 km) south of Juncos.

DRAINAGE AREA.--16.4 sq mi (42.5 sq km).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 320 ft (98 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--8 years (1972-79), 51.9 cu ft/s (1.470 cu m/s), 42.98 in/yr (1,092 mm/yr), 37,600 acre-ft/yr (46.4 cu hm/yr).
--9 years (1972-80), 49.7 cu ft/s (1.408 cu m/s), 41.15 in/yr (1,045 mm/yr), 36,010 acre-ft/yr (44.4 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,300 cu ft/s (660 cu m/s) Aug. 31, 1979, gage height, 20.17 ft (6.148 m), from rating curve extended above 100 cu ft/s (2.83 cu m/s) on basis of slope-area measurement and step-backwater analysis; minimum, 2.3 cu ft/s (0.065 cu m/s) July 10, 1977, gage height, 0.29 ft (0.088 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Approximate discharges (no stages were recorded) of major floods are as follows: Sept. 6, 1960, 37,100 cu ft/s (1,050 cu m/s); Oct. 9, 1970, 18,200 cu ft/s (515 cu m/s).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,400 cu ft/s (96.3 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 15, 1979	0400	4,000	113	8.24	2.512	Sept. 4, 1979	1930	7,870	223	11.63	3.545
June 11, 1979	0745	3,960	112	8.20	2.499	Sept. 5, 1979	0845	8,340	236	11.98	3.652
Aug. 31, 1979	0315	*23,300	660	20.17	6.148	Nov. 25, 1979	1800	*3,820	108	8.07	2.460

Minimum discharges, 3.8 cu ft/s (0.108 cu m/s) May 6, 1979; 3.6 cu ft/s (0.102 cu m/s) May 10-11, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	170	28	20	10	8.9	7.5	5.2	352	400	91	200
2	21	140	141	19	10	8.2	6.2	5.0	118	150	50	100
3	21	80	51	18	11	8.2	5.9	5.0	513	125	43	80
4	17	70	38	17	11	7.8	5.6	4.4	101	105	38	1460
5	17	50	33	17	10	8.2	5.5	4.0	71	130	43	2610
6	16	40	35	22	9.2	7.5	5.7	3.8	94	200	46	275
7	14	70	35	21	9.2	6.9	5.2	3.9	83	100	38	151
8	13	51	30	22	9.2	7.5	5.6	32	61	120	31	239
9	23	49	28	20	9.2	7.4	5.9	72	281	85	28	669
10	17	56	26	17	10	7.2	7.3	26	245	70	28	183
11	16	46	25	18	8.5	8.4	6.7	315	546	60	28	107
12	21	58	25	18	10	9.0	6.1	159	125	55	27	86
13	16	67	22	17	8.8	8.4	6.0	66	70	50	26	82
14	156	83	22	19	8.5	11	5.9	36	50	50	26	70
15	25	59	22	14	18	10	4.3	582	400	45	25	63
16	22	45	21	14	15	6.9	4.0	255	450	45	25	57
17	18	40	21	14	10	6.5	4.3	58	90	45	30	53
18	16	40	24	13	9.6	12	4.0	82	70	700	32	49
19	15	39	22	13	8.9	8.1	5.0	102	59	300	30	45
20	20	48	23	19	9.2	6.6	39	58	52	150	28	43
21	15	49	23	13	10	6.7	45	42	46	140	25	39
22	16	32	21	12	9.7	7.3	18	40	43	130	27	157
23	402	34	21	13	11	6.9	14	29	42	100	27	74
24	300	32	28	12	9.0	7.0	9.6	24	40	80	36	46
25	500	29	35	12	8.9	6.3	18	22	39	65	56	53
26	1500	28	28	11	13	5.8	18	22	168	50	37	47
27	1000	27	22	11	9.2	5.8	7.6	29	77	45	28	36
28	250	28	19	11	8.5	5.7	6.6	244	450	45	25	32
29	100	30	21	10	---	12	7.9	408	400	40	25	438
30	60	44	20	11	---	16	6.3	707	500	38	2440	115
31	200	---	20	10	---	11	---	169	---	46	3730	---
TOTAL	4851	1634	930	478	284.6	255.2	296.7	3610.3	5636	3764	7169	7659
MEAN	156	54.5	30.0	15.4	10.2	8.23	9.89	116	188	121	231	255
MAX	1500	170	141	22	18	16	45	707	546	700	3730	2610
MIN	13	27	19	10	8.5	5.7	4.0	3.8	39	38	25	32
CFSM	9.51	3.32	1.83	.94	.62	.50	.60	7.07	11.5	7.38	14.1	15.5
IN.	11.00	3.71	2.11	1.08	.65	.58	.67	8.19	12.78	8.54	16.26	17.37
AC-FT	9620	3240	1840	948	565	506	589	7160	11180	7470	14220	15190

CAL YR 1978	TOTAL	19554.0	MEAN	53.6	MAX	1500	MIN	10	CFSM	3.27	IN	44.35	AC-FT	38790
WTR YR 1979	TOTAL	36567.8	MEAN	100	MAX	3730	MIN	3.8	CFSM	6.10	IN	82.94	AC-FT	72530

50056400 RIO VALENCIANO NEAR JUNCOS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	268	44	43	18	11	9.8	5.9	8.0	18	18	14	11
2	291	28	39	18	10	9.5	5.9	5.6	13	16	13	9.7
3	144	26	81	17	18	9.5	5.7	4.4	10	12	14	19
4	110	48	42	17	17	12	5.7	4.8	8.7	24	18	43
5	74	32	37	21	13	26	5.3	4.8	8.0	121	15	81
6	62	34	47	19	14	16	5.4	5.3	6.8	82	14	25
7	59	29	39	17	13	14	5.0	5.1	7.4	37	13	16
8	45	25	38	21	12	12	5.2	4.5	9.7	33	45	14
9	108	54	62	18	13	12	4.9	4.3	11	30	17	17
10	59	45	48	17	14	12	4.9	3.8	15	40	26	14
11	73	43	37	16	12	11	14	4.0	80	51	17	17
12	142	31	30	20	11	12	7.9	5.4	86	27	14	195
13	58	27	30	20	11	12	15	8.7	60	21	13	99
14	49	26	28	20	11	12	5.4	247	28	28	15	51
15	113	24	28	18	11	11	4.9	68	46	25	15	21
16	52	24	28	17	11	10	6.5	20	22	30	13	16
17	44	24	27	16	10	11	5.5	17	74	174	11	14
18	39	24	27	16	10	8.7	8.7	14	38	386	11	13
19	37	22	26	15	10	8.3	7.3	20	21	129	11	15
20	34	22	51	14	10	7.6	9.2	14	19	64	10	25
21	32	23	34	14	10	7.0	5.4	12	17	43	9.7	14
22	32	24	28	14	10	7.4	6.8	46	13	32	9.6	12
23	31	49	28	16	12	7.4	6.5	19	12	27	11	10
24	30	147	28	18	11	7.3	7.9	17	10	22	12	11
25	29	625	23	16	10	7.3	7.6	10	14	19	11	13
26	39	223	22	14	11	6.8	7.8	8.3	13	18	25	9.8
27	30	81	20	13	10	6.9	6.1	57	22	20	12	9.7
28	36	62	19	13	9.9	7.3	6.1	653	12	31	9.7	33
29	34	48	18	12	9.7	7.4	5.3	95	9.7	21	35	16
30	29	76	18	12	---	6.9	5.0	38	18	17	16	10
31	41	---	18	12	---	6.3	---	22	---	15	12	---
TOTAL	2224	1990	1044	509	335.6	314.4	202.8	1446.0	722.3	1613	482.0	854.2
MEAN	71.7	66.3	33.7	16.4	11.6	10.1	6.76	46.6	24.1	52.0	15.5	28.5
MAX	291	625	81	21	18	26	15	653	86	386	45	195
MIN	29	22	18	12	9.7	6.3	4.9	3.8	6.8	12	9.6	9.7
CFSM	4.37	4.04	2.06	1.00	.71	.62	.41	2.84	1.47	3.17	.95	1.74
IN.	5.04	4.51	2.37	1.15	.76	.71	.46	3.28	1.64	3.66	1.09	1.94
AC-FT	4410	3950	2070	1010	666	624	402	2870	1430	3200	956	1690

CAL YR 1979 TOTAL 34410.8 MEAN 94.3 MAX 3730 MIN 3.8 CFSM 5.75 IN 78.05 AC-FT 68250
WTR YR 1980 TOTAL 11737.3 MEAN 32.1 MAX 653 MIN 3.8 CFSM 1.96 IN 26.62 AC-FT 23280

50056400 RIO VALENCIANO NEAR JUNCOS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971 to September 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
DEC , 1978										
15...	0950	21	290	7.6	21.5	9.6	78	20	6.7	23
MAR , 1979										
08...	1025	7.4	381	7.6	20.5	9.7	80	21	6.8	25
JUL										
30...	1120	38	227	8.2	27.5	9.2	61	16	5.1	18
SEP										
18...	1350	50	--	8.0	31.0	7.6	54	14	4.5	19

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	ARSENIC TOTAL (UG/L AS AS)
DEC , 1978										
15...	1.1	2.9	14	23	.1	36	--	--	--	--
MAR , 1979										
08...	1.2	2.2	14	23	--	35	189	--	3.8	--
JUL										
30...	1.0	1.7	13	18	.1	35	--	107	11.0	1
SEP										
18...	1.1	1.9	10	17	.3	34	--	101	13.6	--

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
DEC , 1978									
15...	ND	<20	2	490	ND	80	--	--	30
MAR , 1979									
08...	--	--	--	--	--	--	--	--	--
JUL									
30...	ND	<20	5	1300	2	170	<.5	<1	20
SEP									
18...	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50057000 RIO GURABO AT GURABO, PR

LOCATION.--Lat 18°15'30", long 65°58'05", Hydrologic Unit 21010005, on left bank, at bridge on Highway 181, 0.3 mi (0.5 km) east of Gurabo, and 4.5 mi (7.6 km) upstream from Río Grande de Loíza.

DRAINAGE AREA.--60.2 sq mi (155.9 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1958 (occasional low-flow measurements only), January to September 1959 (monthly measurements only), October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 136.58 ft (41.630 m) above mean sea level.

REMARKS.--Records good.

AVERAGE DISCHARGES.--20 years (1960-79), 135 cu ft/s (3.823 cu m/s), 30.45 in/yr (773 mm/yr), 97,810 acre-ft/yr (121 cu hm/yr); median of yearly mean discharges, 126 cu ft/s (3.57 cu m/s), 91,300 acre-ft/yr (113 cu hm/yr).
--21 years (1960-80), 133 cu ft/s (3.766 cu m/s), 30.00 in/yr (762 mm/yr), 96,360 acre-ft/yr (119 cu hm/yr); median of yearly mean discharges, 125 cu/ft/s (3.54 cu m/s), 90,600 acre-ft/yr (112 cu hm/yr).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,000 cu ft/s (85.0 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 25, 1978	1000	5,420	153	12.43	3.789
Oct. 26, 1978	2300	24,000	679	20.56	6.267
Oct. 27, 1978	1730	8,960	254	14.97	4.563
June 9, 1979	1630	3,380	95.8	10.28	3.133
June 11, 1979	1030	3,620	103	10.59	3.228
June 15, 1979	1845	3,430	97.1	10.34	3.152
June 29, 1979	2030	7,050	200	13.54	4.127
June 30, 1979	2330	7,140	202	13.61	4.148
July 18, 1979	1230	9,620	196	15.34	4.676
Aug. 31, 1979	0530	*36,500	1,030	23.08	7.035
Sept. 4, 1979	2200	15,400	435	18.00	5.486
Sept. 29, 1979	1745	8,740	248	14.82	4.517
Nov. 29, 1979	2030	*8,700	246	14.79	4.508

Minimum discharges, 11 cu ft/s (0.312 cu m/s) May 6, 7, 1979; 12 cu ft/s (0.340 cu m/s) May 11, 12, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	670	66	40	23	21	22	15	471	1590	288	731
2	37	516	107	35	23	20	19	13	600	367	145	383
3	35	283	95	35	23	20	18	12	330	263	103	352
4	33	251	61	30	22	19	16	12	880	197	100	4150
5	32	191	59	30	22	20	15	12	150	346	111	8050
6	31	148	60	50	22	19	15	11	150	817	112	935
7	31	134	86	45	22	19	15	11	193	393	115	415
8	30	117	66	40	21	19	15	291	124	366	91	528
9	150	123	54	35	21	19	14	159	827	227	83	1040
10	100	321	50	35	21	19	14	90	634	168	80	516
11	70	256	50	30	21	19	14	771	1120	145	79	283
12	60	384	46	30	21	20	14	269	343	136	77	227
13	65	312	43	30	27	20	14	323	195	119	80	204
14	80	238	47	25	25	20	16	160	176	111	180	178
15	65	208	46	25	77	21	17	693	1370	105	100	162
16	50	130	42	35	84	21	16	616	320	118	84	151
17	40	128	41	35	33	22	15	183	385	111	80	140
18	35	139	40	35	26	28	15	280	182	3130	77	135
19	30	108	42	30	25	35	14	371	130	1100	210	129
20	45	104	40	59	23	24	14	195	111	252	120	129
21	35	163	52	42	24	21	77	94	100	208	96	136
22	22	97	47	30	27	20	43	79	92	190	86	335
23	657	106	44	30	28	20	92	57	86	155	83	261
24	568	84	42	65	25	19	39	49	87	138	81	149
25	2020	73	46	30	23	18	58	48	78	130	118	143
26	7210	69	48	25	22	17	75	66	203	112	104	152
27	5350	67	46	25	24	16	27	52	126	106	85	131
28	949	65	40	60	22	16	19	489	810	100	70	119
29	368	63	40	30	---	24	17	612	1000	94	89	2100
30	228	80	40	25	---	64	16	961	1920	83	3770	551
31	713	---	40	23	---	39	---	420	---	111	12000	---
TOTAL	19179	5628	1626	1094	777	699	775	7414	13993	11488	18897	22915
MEAN	619	188	52.5	35.3	27.8	22.5	25.8	239	466	371	610	764
MAX	7210	670	107	65	84	64	92	961	1920	3130	12000	8050
MIN	22	63	40	23	21	16	14	11	78	83	70	119
CFSM	10.3	3.12	.87	.59	.46	.37	.43	3.97	7.74	6.16	10.1	12.7
IN.	11.85	3.48	1.00	.68	.48	.43	.48	4.58	8.65	7.10	11.68	14.16
AC-FT	38040	11160	3230	2170	1540	1390	1540	14710	27760	22790	37480	45450

CAL YR 1978 TOTAL 54527 MEAN 149 MAX 7210 MIN 22 CFSM 2.48 IN 33.69 AC-FT 108200
WTR YR 1979 TOTAL 104485 MEAN 286 MAX 12000 MIN 11 CFSM 4.75 IN 64.56 AC-FT 207200

50057000 RIO GURABO AT GURABO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	584	181	117	53	35	22	16	16	44	31	30	32
2	433	88	105	53	35	22	16	19	37	29	29	31
3	416	78	161	51	36	22	16	17	33	31	29	30
4	496	101	141	49	40	26	15	15	30	30	30	40
5	339	92	119	51	38	125	15	15	29	77	38	123
6	223	84	98	50	100	58	15	14	28	87	37	44
7	420	83	91	50	40	35	14	14	26	58	36	34
8	292	77	89	52	35	28	14	13	28	50	56	29
9	308	253	196	53	59	26	17	13	34	49	44	27
10	235	107	100	50	120	25	17	13	39	42	78	26
11	220	111	86	49	40	24	150	12	52	46	52	30
12	271	78	78	54	37	24	56	12	122	35	40	57
13	178	83	70	65	39	24	50	19	105	29	36	122
14	167	120	66	51	38	23	26	254	44	33	41	59
15	454	76	80	46	31	23	21	197	66	48	41	45
16	220	68	68	43	28	23	20	44	50	34	37	33
17	160	149	74	42	28	23	19	29	43	80	32	28
18	139	146	68	41	27	27	18	26	48	239	30	27
19	130	101	65	41	29	24	18	30	29	166	30	25
20	124	146	109	40	28	23	20	37	26	63	29	29
21	122	104	114	39	27	22	18	28	26	52	29	33
22	118	78	68	39	26	21	17	35	27	45	28	27
23	116	94	128	38	26	20	17	43	24	41	28	25
24	120	427	165	37	27	19	19	38	58	38	34	24
25	113	1830	110	37	25	19	20	31	29	35	33	25
26	115	795	72	37	27	19	22	27	29	32	33	41
27	108	186	65	36	26	18	21	49	34	34	32	24
28	146	143	60	36	24	18	17	1370	30	49	30	31
29	110	116	57	36	23	17	17	155	26	43	56	44
30	100	194	56	35	---	17	15	75	28	35	60	34
31	232	---	54	35	---	17	---	53	---	32	35	---
TOTAL	7209	6189	2930	1389	1094	834	736	2713	1224	1693	1173	1179
MEAN	233	206	94.5	44.8	37.7	26.9	24.5	87.5	40.8	54.6	37.8	39.3
MAX	584	1830	196	65	120	125	150	1370	122	239	78	123
MIN	100	68	54	35	23	17	14	12	24	29	28	24
CFSM	3.87	3.42	1.57	.74	.63	.45	.41	1.45	.68	.91	.63	.65
IN.	4.45	3.82	1.81	.86	.68	.52	.45	1.68	.76	1.05	.72	.73
AC-FT	14300	12280	5810	2760	2170	1650	1460	5380	2430	3360	2330	2340

CAL YR 1979 TOTAL 94380 MEAN 259 MAX 12000 MIN 11 CFSM 4.30 IN 58.32 AC-FT 187200
WTR YR 1980 TOTAL 28363 MEAN 77.5 MAX 1830 MIN 12 CFSM 1.29 IN 17.53 AC-FT 56260

50057000 RIO GURABO AT GURABO, PR--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to October 1979 (discontinued)

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978											
20...	1045	6.1	370	7.1	28.0	4.8	--	.7	2800	330	370
DEC											
11...	1300	50	278	7.2	26.0	5.4	--	1.0	47000	4900	370
FEB , 1979											
26...	1200	21	362	6.9	25.5	4.9	--	3.2	6500	700	310
APR											
10...	1040	20	398	7.0	26.5	4.2	--	1.5	1600	76	260
JUN											
20...	1040	110	299	7.2	28.0	5.3	--	.2	27000	5300	390
AUG											
23...	1230	84	318	7.1	28.5	5.6	--	1.9	41000	16000	3600
SEP											
05...	1830	8700	--	--	25.0	--	--	--	--	--	--
OCT											
12...	1235	232	200	7.1	27.5	7.3	30	2.5	--	45000	21000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
20...	120	2	25	13	23	.9	4.0	139	0	114	18
DEC											
11...	110	0	25	11	26	1.1	3.3	137	0	112	14
FEB , 1979											
26...	110	0	26	12	29	1.2	3.5	153	0	125	31
APR											
10...	130	0	28	14	34	1.3	3.5	160	0	131	26
JUN											
20...	92	0	21	9.7	23	1.0	3.4	130	0	107	13
AUG											
23...	99	0	23	10	22	1.0	4.1	130	0	107	17
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
OCT											
12...	--	--	--	--	--	--	--	76	0	62	9.7

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978											
20...	21	26	.1	31	218	212	3.6	.95	.030	.98	.040
DEC											
11...	19	26	.1	32	218	210	29.4	1.3	.110	1.4	.240
FEB , 1979											
26...	18	29	.1	30	230	223	13.3	.96	.140	1.1	.240
APR											
10...	20	33	.1	34	249	245	13.4	1.1	.120	1.2	.220
JUN											
20...	17	23	.1	30	190	191	56.4	.91	.080	.99	.120
AUG											
23...	25	22	.1	28	--	198	44.7	.97	.130	1.1	.150
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
OCT											
12...	--	--	--	--	--	--	--	.50	.060	.56	.110

50057000 RIO GURABO AT GURABO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
20...	.64	.68	1.7	7.3	.180	.130	--	--	--	--
DEC										
11...	.43	.67	2.1	9.2	.190	.170	1	<2	<20	5
FEB , 1979										
26...	.43	.67	1.8	7.8	.270	.210	--	--	--	--
APR										
10...	.36	.58	1.8	7.9	.270	.220	--	--	--	--
JUN										
20...	.48	.60	1.6	7.0	.180	.140	--	--	--	--
AUG										
23...	.72	.87	2.0	8.7	.330	.250	1	<2	<20	4
SEP										
05...	--	--	--	--	--	--	--	--	--	--
OCT										
12...	.73	.89	1.4	6.2	.160	.120	--	--	--	--

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
20...	--	--	--	--	--	--	--	--	14	.23
DEC										
11...	1500	6	530	<.5	<1	ND	30	--	67	5.0
FEB , 1979										
26...	--	--	1200	--	--	--	--	3.7	88	5.1
APR										
10...	--	--	940	--	--	--	--	4.0	52	2.8
JUN										
20...	--	--	--	--	--	--	--	5.3	68	20
AUG										
23...	1000	5	350	<.5	<1	ND	<20	4.5	58	13
SEP										
05...	--	--	--	--	--	--	--	--	3010	70700
OCT										
12...	--	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN							
20...	1040	0	.0	0	.1	.0	.2

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN						
20...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

50057025 RIO GURABO NEAR GURABO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'56", long 65°59'04", at bridge on Highway 941, 1.2 mi (1.9 km) west-northwest from gaging station 50057000, and 1.0 mi (1.6 km) northwest of Gurabo.

DRAINAGE AREA.--62.8 sq mi (162.7 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
27...	1300	229	220	7.0	25.0	40	7.7	41	2.0	49000	7200	--
JAN , 1980												
18...	1315	40	368	7.5	26.0	.40	5.8	21	5.6	1400	600	120
MAR												
18...	1305	30	418	7.3	26.5	.35	4.3	22	2.5	5000	1400	--
MAY												
23...	0840	61	335	7.0	25.5	1.8	5.3	--	2.5	3500	270	94
JUN												
30...	1220	35	405	7.1	30.0	1.5	4.2	25	4.2	3800	420	--
SEP												
10...	0855	36	394	7.2	27.0	18	4.2	--	2.4	22000	2100	130

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
27...	--	--	--	--	--	--	88	0	72	14	--	--
JAN , 1980												
18...	0	28	13	30	1.2	3.7	157	0	130	7.9	24	30
MAR												
18...	--	--	--	--	--	--	170	0	140	14	--	--
MAY												
23...	0	21	10	31	1.4	4.4	120	0	98	19	22	30
JUN												
30...	--	--	--	--	--	--	164	0	130	21	--	--
SEP												
10...	8	28	15	32	1.2	5.8	151	0	124	15	23	32

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
27...	--	--	--	--	--	.79	.040	.83	.280	.59	.87	1.7
JAN , 1980												
18...	.2	29	235	25.4	24	1.3	.090	1.4	.250	.63	.88	2.3
MAR												
18...	--	--	--	--	--	1.6	.140	1.7	.290	.91	1.20	2.9
MAY												
23...	.2	30	208	34.3	30	--	--	--	--	--	--	--
JUN												
30...	--	--	--	--	--	1.3	.120	1.4	.220	.78	1.00	2.4
SEP												
10...	.2	39	249	24.3	--	1.6	.140	1.7	.440	.56	1.00	2.7

50057025 RIO GURABO NEAR GURABO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
NOV , 1979												
27...	7.5	.240	--	--	--	--	--	--	--	--	91	56
JAN , 1980												
18...	10	.470	--	--	--	--	--	--	--	--	52	5.6
MAR												
16...	13	.930	1	<50	1	10	6	<.1	0	0	65	5.3
MAY												
23...	--	--	--	--	--	--	--	--	--	--	71	12
JUN												
30...	11	.540	--	--	--	--	--	--	--	--	69	7.9
SEP												
10...	12	.680	1	100	0	9	1	.3	0	0	69	6.7

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)
JUN										
30...	1220	.00	.00	.0	.00	.00	.00	.07	.00	.00

DATE	ETHION, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)
JUN									
30...	.00	.00	.00	.00	.00	.00	.00	0	.00

RIO GRANDE DE LOIZA BASIN

50059000 LAGO LOIZA AT DAMSITE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°19'49", long 66°01'00", at pumphouse at damsite, and 1.9 mi (3.1 km) south of Trujillo Alto Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
02...	0910	124	269	7.0	27.5	--	.5	--	4.6	4300	1000	430
NOV												
29...	1215	124	233	6.9	26.0	--	.2	--	.3	140	50	19
FEB , 1979												
20...	1300	170	306	6.8	26.0	--	1.8	--	3.4	520	460	310
APR												
16...	1350	140	341	6.9	26.5	--	5.0	--	2.4	6000	18	19
JUN												
06...	1240	124	144	6.3	27.5	--	.5	--	1.4	3200	860	380
AUG												
24...	1120	170	251	6.5	28.5	--	2.2	--	1.5	4000	1200	480
OCT												
09...	1345	170	173	7.4	27.5	--	2.6	25	1.7	--	560	50
DEC												
05...	1015	170	175	6.7	24.0	60	3.8	4	1.6	--	330	116
JAN , 1980												
10...	1040	170	250	6.9	24.5	.80	4.3	14	2.9	--	24	30
MAR												
07...	1000	170	319	6.6	25.5	--	4.9	--	3.7	--	1240	960
MAY												
22...	1010	124	250	6.6	27.0	.70	.4	24	2.7	--	1500	910
JUN												
26...	0930	124	260	6.4	28.5	4.5	.0	24	2.8	--	44	126
SEP												
09...	1110	124	307	6.6	27.0	.70	.0	22	4.2	--	1900	590

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
02...	78	0	18	8.1	15	.9	3.1	105	0	86	17
NOV											
29...	77	7	18	7.9	18	.9	3.0	86	0	71	17
FEB , 1979											
20...	96	1	23	9.3	26	1.2	2.7	115	0	94	29
APR											
16...	100	0	25	10	27	1.2	2.5	130	0	107	26
JUN											
06...	41	2	10	3.9	10	.7	2.8	48	0	39	39
AUG											
24...	82	0	20	7.8	15	.9	2.4	100	0	82	51
OCT											
09...	--	--	--	--	--	--	--	82	0	67	5.2
DEC											
05...	--	--	--	--	--	--	--	60	0	49	19
JAN , 1980											
10...	84	0	20	8.3	15	.9	2.5	110	0	90	22
MAR											
07...	--	--	--	--	--	--	--	120	0	98	48
MAY											
22...	72	0	17	7.1	21	1.1	2.4	90	0	74	36
JUN											
26...	--	--	--	--	--	--	--	94	0	77	60
SEP											
09...	87	0	21	8.4	22	1.0	3.3	111	0	91	45

50059000 LAGO LOIZA AT DAMSITE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
02...	14	20	.1	25	158	159	52.9	--	.03	.010	.04
NOV											
29...	15	20	.1	24	156	148	52.2	--	.45	.010	.46
FEB , 1979											
20...	18	25	.1	26	194	187	89.0	--	.17	.010	.18
APR											
16...	22	28	.2	26	214	205	80.9	--	.14	.010	.15
JUN											
06...	12	12	.1	17	103	91	34.5	--	.61	.040	.65
AUG											
24...	26	18	.1	25	--	168	77.1	--	.27	.050	.32
OCT											
09...	--	--	--	--	--	--	--	--	.66	.010	.67
DEC											
05...	--	--	--	--	--	--	--	--	.86	.030	.89
JAN , 1980											
10...	16	18	.2	25	--	163	74.8	18	.00	.000	.00
MAR											
07...	--	--	--	--	--	--	--	--	.40	.090	.49
MAY											
22...	17	21	.2	20	--	150	50.2	31	--	--	--
JUN											
26...	--	--	--	--	--	--	--	--	.02	.050	.07
SEP											
09...	13	23	.2	31	--	177	59.3	0	.00	.010	.01

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
02...	.740	.23	.97	1.0	4.5	.320	.150	--	--	--	--
NOV											
29...	.140	.34	.48	.94	4.2	.120	.100	1	--	ND	<20
FEB , 1979											
20...	.260	.65	.93	1.1	4.9	.250	.220	--	--	--	--
APR											
16...	.060	.43	.49	.64	2.8	.260	.230	--	--	--	--
JUN											
06...	.180	.49	.67	1.3	5.8	.190	.170	<1	--	--	--
AUG											
24...	.220	.43	.65	.97	4.3	.180	.120	1	--	ND	<20
OCT											
09...	.090	.67	.76	1.4	6.3	.140	.090	--	--	--	--
DEC											
05...	.040	.59	.63	1.5	6.7	.170	--	--	--	--	--
JAN , 1980											
10...	.000	.61	.61	.61	2.7	.140	--	--	--	--	--
MAR											
07...	.330	.51	.84	1.3	5.9	.310	--	--	<50	0	20
MAY											
22...	--	--	--	--	--	--	--	--	--	--	--
JUN											
26...	.250	.48	.73	.80	3.5	.230	--	--	--	--	--
SEP											
09...	.530	.57	1.10	1.1	4.9	.380	--	2	100	0	12

ND Looked for but not detected.

50059000 LAGO LOIZA AT DAMSITE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
02...	--	--	--	--	--	--	--	--	6.0	9	3.0
NOV											
29...	37	1400	4	170	<.5	<1	ND	20	13	0	.00
FEB , 1979											
20...	--	--	--	180	--	--	--	--	4.2	5	2.3
APR											
16...	--	--	--	120	--	--	--	--	5.2	5	1.9
JUN											
06...	--	--	--	--	<.5	<1	--	--	6.0	92	31
AUG											
24...	12	410	3	440	<.5	<1	<2	<20	6.9	39	18
OCT											
09...	--	--	--	--	--	--	--	--	--	51	23
DEC											
05...	--	--	--	--	--	--	--	--	--	47	22
JAN , 1980											
10...	--	--	--	--	--	--	--	--	--	4	1.8
MAR											
07...	--	--	1	--	.5	0	0	--	--	52	24
MAY											
22...	--	--	--	--	--	--	--	--	--	79	26
JUN											
26...	--	--	--	--	--	--	--	--	--	40	13
SEP											
09...	--	--	0	--	.4	0	0	--	--	34	11

ND Looked for but not detected.

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR

LOCATION.--Lat 18°19'08", long 65°53'21", Hydrologic Unit 21010005, at center pier on downstream side of bridge, on paved secondary road, 0.4 mi (0.6 km) northeast of junction of Highways 185 and 186, 1.5 mi (2.4 km) south of Campo Rico, and 4.4 mi (7.1 km) south of Loíza.

DRAINAGE.--9.84 sq mi (25.48 sq km).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 225 ft (68.6 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--12 years (1968-79), 29.2 cu ft/s (0.827 cu m/s), 40.30 in/yr (1,024 mm/yr), 21,160 acre-ft/yr (26.1 cu hm/yr); median of yearly mean discharges 26 cu ft/s (0.74 cu m/s), 18,800 acre-ft/yr (23 cu hm/yr).
--13 years (1968-80), 28.6 cu ft/s (0.810 cu m/s), 39.47 in/yr (1,003 mm/yr), 20,720 acre-ft/yr (25.5 cu hm/yr); median of yearly mean discharges 22 cu ft/s (0.62 cu m/s), 15,900 acre-ft/yr (20 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 cu ft/s (300 cu m/s) Nov. 9, 1969 and Oct. 9, 1970, gage height, 12.0 ft (3.668 m), from floodmarks, from rating curve extended above 350 cu ft/s (9.91 cu m/s) on basis of slope-area measurements of peak flow; minimum daily discharge, 0.80 cu ft/s (0.023 cu m/s) July 24, 1977.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,500 cu ft/s (70.8 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 26, 1978	2030	5,290	150	8.68	2.646	Nov. 25, 1979	1730	*3,320	94.0	7.13	2.173
Aug. 31, 1979	Unknown	*8,870	251	Unknown		Dec. 23, 1979	1900	2,620	74.2	6.48	1.975
Sept. 29, 1979	1315	4,830	137	8.34	2.542						

Minimum discharges, 7.5 cu ft/s (0.212 cu m/s) Oct. 7, 1978; 4.5 cu ft/s (0.127 cu m/s) Aug. 3-4, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	40	19	23	16	16	18	14	37	93	50	200
2	8.4	25	25	19	17	16	16	13	30	35	40	100
3	13	20	21	15	16	15	14	13	45	30	30	200
4	9.6	22	17	14	15	17	13	12	33	26	100	700
5	10	24	16	13	15	16	13	12	26	58	70	110
6	8.1	26	16	162	14	15	12	12	31	69	90	100
7	7.5	35	57	47	14	14	12	11	25	34	60	90
8	8.6	20	23	65	14	14	12	12	23	49	40	80
9	10	28	18	31	14	13	12	14	189	29	25	100
10	20	88	16	24	14	13	12	14	67	25	20	70
11	30	47	16	33	14	13	11	44	154	22	30	65
12	50	174	15	31	14	13	12	17	40	21	50	58
13	100	87	15	22	14	13	14	15	31	22	25	55
14	8.0	67	14	19	14	13	14	25	31	21	70	51
15	20	55	14	18	630	12	12	52	258	20	15	48
16	12	34	14	24	76	12	11	56	75	30	16	46
17	10	40	14	21	32	12	10	28	73	60	15	44
18	9.0	49	14	18	28	24	10	80	34	500	19	42
19	8.0	32	23	117	24	18	10	49	30	150	18	41
20	15	37	17	91	22	12	11	37	27	30	16	39
21	9.0	37	26	26	31	11	10	24	25	40	68	38
22	50	26	15	22	23	11	24	20	24	60	46	126
23	100	25	14	21	25	11	126	20	25	45	26	51
24	140	23	14	20	21	11	42	18	22	30	19	40
25	200	21	15	18	19	11	59	26	23	50	18	44
26	2200	20	15	18	18	11	30	22	38	20	18	41
27	300	19	15	18	18	10	19	24	25	30	16	35
28	60	19	13	18	17	10	16	46	41	40	15	36
29	30	19	14	17	---	96	15	216	92	20	52	340
30	25	20	14	17	---	150	14	158	152	17	1170	100
31	20	---	14	17	---	29	---	54	---	300	2000	---
TOTAL	3499.8	1179	553	1019	1189	652	604	1158	1726	1976	4247	3090
MEAN	113	39.3	17.8	32.9	42.5	21.0	20.1	37.4	57.5	63.7	137	103
MAX	2200	174	57	162	630	150	126	216	258	500	2000	700
MIN	7.5	19	13	13	14	10	10	11	22	17	15	35
CFSM	11.5	3.99	1.81	3.34	4.32	2.13	2.04	3.80	5.84	6.47	13.9	10.5
IN.	13.23	4.46	2.09	3.85	4.49	2.46	2.28	4.38	6.52	7.47	16.05	11.68
AC-FT	6940	2340	1100	2020	2360	1290	1200	2300	3420	3920	8420	6130

CAL YR 1978 TOTAL 11362.0 MEAN 31.1 MAX 2200 MIN 5.0 CFSM 3.16 IN 42.95 AC-FT 22540
WTR YR 1979 TOTAL 20892.8 MEAN 57.2 MAX 2200 MIN 7.5 CFSM 5.81 IN 78.98 AC-FT 41440

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	31	28	22	13	10	9.2	8.0	7.7	5.6	4.8	4.7
2	40	20	27	21	13	10	8.9	7.5	7.3	5.6	4.9	5.0
3	100	18	29	21	14	10	8.8	7.1	6.8	6.1	4.6	4.8
4	70	60	50	21	15	10	8.8	7.1	6.5	6.0	8.1	26
5	60	50	31	20	21	150	8.8	6.8	6.5	9.6	7.8	21
6	50	37	25	21	69	50	8.7	6.8	6.4	9.4	5.7	12
7	45	111	24	20	20	30	8.6	6.7	6.2	6.5	5.2	6.7
8	40	31	23	20	16	20	8.6	6.5	6.7	6.3	6.6	5.6
9	33	85	38	20	113	15	8.6	6.3	7.5	6.6	7.2	5.4
10	33	30	24	20	37	15	8.8	6.3	7.6	6.2	26	6.2
11	32	25	23	19	23	15	18	6.1	8.2	5.5	10	9.1
12	31	22	25	27	18	13	14	6.1	17	5.1	6.9	5.9
13	28	33	23	23	17	13	13	6.3	21	5.0	6.4	5.2
14	30	23	21	20	17	13	9.6	12	8.6	6.7	15	5.3
15	60	20	23	18	16	12	8.5	19	9.5	9.5	12	5.4
16	35	25	21	18	15	12	8.2	8.5	10	5.8	8.3	5.3
17	27	195	19	17	14	14	8.1	7.4	11	7.4	6.0	5.0
18	25	43	19	17	14	13	8.2	6.8	8.2	18	5.4	5.0
19	24	30	18	17	14	12	7.9	9.8	7.0	9.6	5.3	5.8
20	23	94	115	16	14	12	7.8	10	6.7	7.3	5.1	6.9
21	22	46	31	17	12	11	8.9	7.2	6.9	6.2	4.9	8.0
22	22	28	22	16	15	11	9.6	7.2	6.9	5.7	4.8	5.3
23	22	29	235	16	70	11	8.4	7.1	6.1	5.4	4.9	5.0
24	23	75	171	16	40	11	60	6.8	5.8	5.3	4.8	5.4
25	21	338	72	17	20	11	20	6.6	6.1	5.1	4.8	5.3
26	21	78	33	15	15	10	40	6.3	6.1	4.9	5.0	5.2
27	21	45	28	15	15	10	20	20	6.1	7.0	4.7	5.2
28	21	41	25	14	10	10	15	134	5.8	8.8	4.7	6.9
29	20	34	24	14	10	9.7	10	16	5.7	6.5	8.7	34
30	18	31	24	14	---	9.6	9.0	10	5.8	5.2	9.1	11
31	53	---	22	13	---	9.4	---	8.5	---	4.9	5.4	---
TOTAL	1085	1728	1293	565	700	562.7	392.0	390.8	237.7	212.8	223.1	247.6
MEAN	35.0	57.6	41.7	18.2	24.1	18.2	13.1	12.6	7.92	6.86	7.20	8.25
MAX	100	338	235	27	113	150	60	134	21	18	26	34
MIN	18	18	18	13	10	9.4	7.8	6.1	5.7	4.9	4.6	4.7
CFSM	3.56	5.85	4.24	1.85	2.45	1.85	1.33	1.28	.81	.70	.73	.84
IN.	4.10	6.53	4.89	2.14	2.65	2.13	1.48	1.48	.90	.80	.84	.94
AC-FT	2150	3430	2560	1120	1390	1120	778	775	471	422	443	491

CAL YR 1979 TOTAL 19767.0 MEAN 54.2 MAX 2000 MIN 10 CFSM 5.51 IN 74.72 AC-FT 39210
WTR YR 1980 TOTAL 7637.7 MEAN 20.9 MAX 338 MIN 4.6 CFSM 2.12 IN 28.87 AC-FT 15150

RIO GRANDE DE LOIZA BASIN

50061800 RIO CANOVANAS NEAR CAMPO RICO, PR

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: April 1967 to November 1968 (partial-record station), July and August 1969, March 1970, January and March 1971, January, July and August 1972, January and September 1973 (miscellaneous-record station), April 1974 to September 1977, December 1978 and June 1979 (discontinued).
SEDIMENT RECORDS: July 1968, December 1970, March to December 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACL3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
DEC , 1978												
11...	1245	16	205	7.7	22.5	9.8	76	18	7.5	14	.7	.9
JUN , 1979												
19...	1255	30	189	7.8	26.5	8.2	63	15	6.3	13	.7	1.6

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
DEC , 1978												
11...	5.0	16	.1	31	--	ND	<20	2	530	ND	30	<20
JUN , 1979												
19...	4.8	16	.1	28	128	--	--	--	--	--	--	--

ND Looked for but not detected.

50062200 RIO GRANDE DE LOIZA AT CENTRAL CANOVANAS, PR

WATER-QUALITY DATA

LOCATION.--Lat 18°23'40", long 65°54'49", at bridge on Highway 951, 200 ft (61 m) west of Central Canóvanas, 11.2 mi (18.0 km).

DRAINAGE AREA.--267 sq mi (692 sq km).

PERIOD OF RECORD.--Water years 1973 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
OCT , 1978										
10...	1210	1100	7.2	28.0	6.0	1.5	80000	56000	26000	150
NOV										
29...	1030	2650	7.6	27.5	7.1	.9	76000	8000	3100	330
FEB , 1979										
20...	1140	2220	7.3	26.0	7.0	1.3	6700	4400	510	280
APR										
16...	1230	2330	8.2	29.5	16.0	3.9	9000	2200	7500	310
JUN										
06...	1050	576	7.0	27.0	4.8	1.9	38000	11000	1400	100
AUG										
24...	1000	1530	7.1	27.0	5.4	1.0	100000	21000	1500	200

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
OCT , 1978										
10...	79	23	23	160	5.6	8.0	89	0	73	9.0
NOV										
29...	230	39	56	400	9.6	11	120	0	98	4.8
FEB , 1979										
20...	150	36	46	370	9.6	14	106	0	87	6.5
APR										
16...	200	37	53	370	9.1	17	130	0	107	1.3
JUN										
06...	38	21	12	63	2.7	5.1	78	0	64	12
AUG										
24...	110	30	30	250	7.7	10	110	0	90	14

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
10...	41	250	.1	25	597	574	.68	.050	.73	.100
NOV										
29...	110	680	.1	27	1420	1380	.67	.040	.71	.140
FEB , 1979										
20...	91	570	.1	26	1240	1210	.59	.030	.62	.220
APR										
16...	100	610	.3	22	1280	1270	.40	.060	.46	.080
JUN										
06...	32	120	.1	19	327	311	.83	.060	.89	.180
AUG										
24...	62	380	.1	23	--	849	.41	.060	.47	.130

50062200 RIO GRANDE DE LOIZA AT CENTRAL CANOVANAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
10...	1.1	1.20	1.9	8.5	.250	.120	--	--	--	--
NOV										
29...	.43	.57	1.3	5.7	.150	.130	1	3	<20	3
FEB , 1979										
20...	.88	1.10	1.7	7.6	.100	.080	--	--	--	--
APR										
16...	.70	.76	1.2	5.4	.170	.120	--	--	--	--
JUN										
06...	.61	.79	1.7	7.4	.160	.070	<1	--	--	--
AUG										
24...	.81	.94	1.4	6.2	.180	.090	1	ND	<20	8

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)
OCT , 1978									
10...	--	--	--	--	--	--	--	--	150
NOV									
29...	610	10	200	<.5	<1	ND	ND	5.6	14
FEB , 1979									
20...	--	--	260	--	--	--	--	6.2	21
APR									
16...	--	--	120	--	--	--	--	4.8	15
JUN									
06...	--	--	--	<.5	<1	--	--	7.3	125
AUG									
24...	1300	6	310	<.5	<1	<2	20	5.1	35

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
NOV							
29...	1030	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
NOV						
29...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

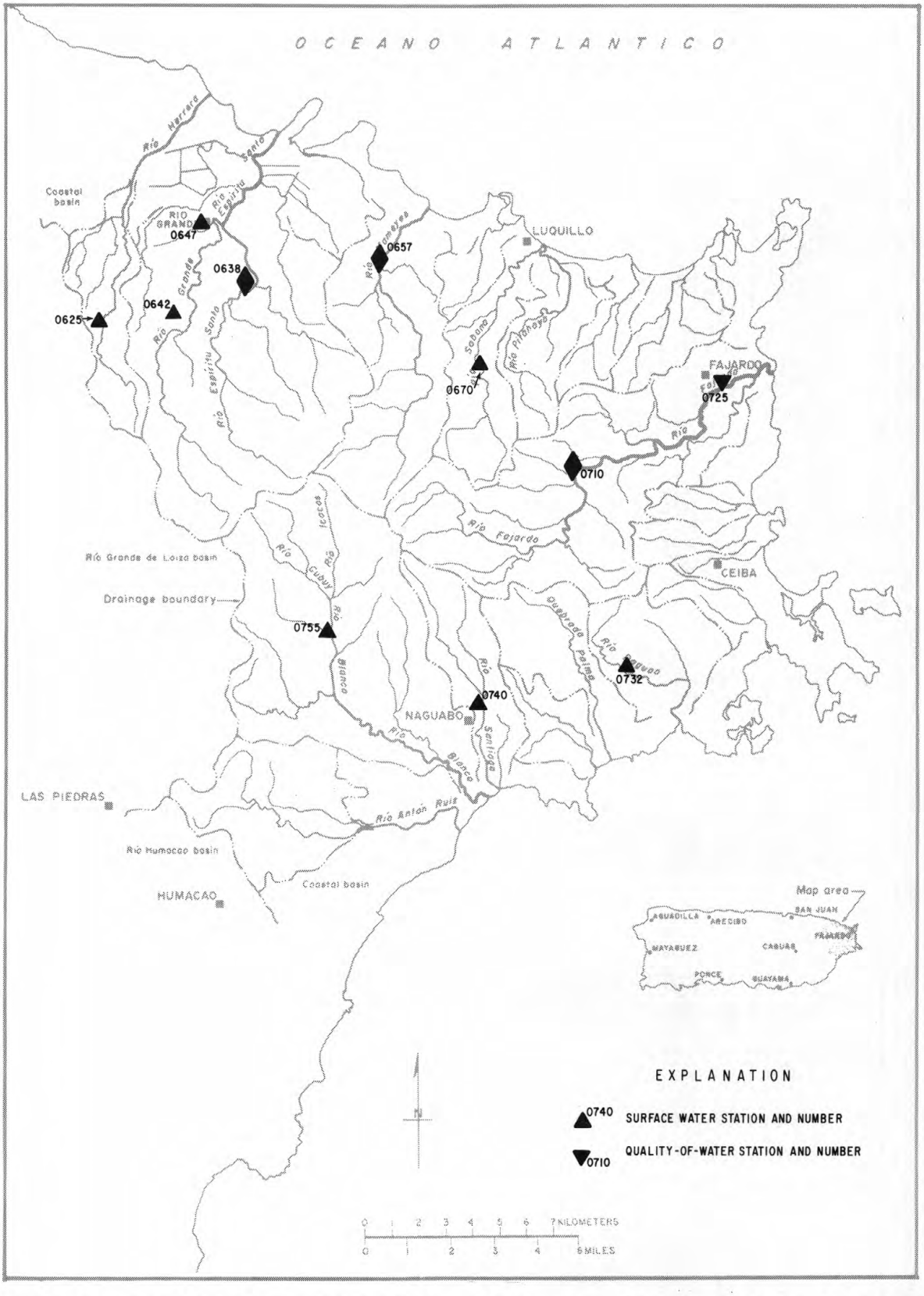

Figure 12.--Northeastern rivers basin--Río Herrera to Río Antón Ruiz basins.

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR

LOCATION.--Lat 18°21'37", long 65°48'49", Hydrologic Unit 21010005, at left abutment, on downstream side of bridge on Highway 966, 0.1 mi (0.2 km) upstream from Quebrada Jiménez, and 1.9 mi (3.1 km) southeast of Río Grande.

DRAINAGE AREA.--8.62 sq mi (22.33 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to April 1963 (annual low flow and occasional measurements only), August 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--13 years (1967-79), 56.2 cu ft/s (1.592 cu m/s), 88.54 in/yr (2,249 mm/yr), 40,720 acre-ft/yr (50.2 cu hm/yr); median of yearly mean discharges, 52 cu ft/s (1.47 cu m/s), 37,700 acre-ft/yr (46 cu hm/yr).
--14 years (1967-80), 56.1 cu ft/s (1.589 cu m/s), 88.38 in/yr (2,245 mm/yr), 40,640 acre-ft/yr (50.1 cu hm/yr); median of yearly mean discharges, 52 cu ft/s (1.47 cu m/s), 37,700 acre-ft/yr (46 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 cu ft/s (334 cu m/s) Oct. 26, 1978, gage height, 11.85 ft (3.612 m), from rating curve extended above 600 cu ft/s (17.0 cu m/s) on basis of step-backwater analysis; minimum, 4.0 cu ft/s (0.113 cu m/s) July 3-5, 1975, gage height 2.43 ft (0.741 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,200 cu ft/s (62.3 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 26, 1978	1930	*11,800	334	11.85	3.612
Nov. 18, 1978	0200	3,780	107	7.81	2.380
Jan. 19, 1979	2315	3,490	98.8	7.59	2.313
Feb. 15, 1979	1215	4,440	126	8.27	2.521
Mar. 29, 1979	0830	3,750	106	7.79	2.374
May 13, 1979	1800	3,860	109	7.87	2.399
May 29, 1979	0400	3,510	99.4	7.61	2.320
May 30, 1979	1200	6,530	185	9.50	2.896
June 9, 1979	1245	2,760	78.2	7.05	2.149
July 18, 1979	0915	2,470	70.0	6.86	2.091
Aug. 30, 1979	Unknown	6,000	170	Unknown	
Sept. 29, 1979	1300	5,300	150	8.81	2.685
Sept. 30, 1979	1600	3,550	101	7.64	2.329
Nov. 7, 1979	1415	2,900	82.1	7.14	2.176
Nov. 17, 1979	0030	4,160	118	8.08	2.463
Nov. 25, 1979	1200	4,800	136	8.50	2.591
Dec. 23, 1979	1815	2,390	67.7	6.80	2.073
May 14, 1980	1015	*7,880	223	10.17	3.100

Minimum discharges, 9.4 cu ft/s (0.266 cu m/s) Oct. 8, 1978; 6.2 cu ft/s (0.176 cu m/s) May 11, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	58	60	98	16	20	100	35	88	145	138	60
2	11	37	133	35	16	19	45	28	75	83	56	30
3	11	28	50	20	17	18	20	26	139	67	30	80
4	13	29	40	18	15	35	20	23	62	45	124	800
5	14	50	32	17	14	29	20	22	64	215	70	200
6	29	34	33	319	13	25	15	21	75	174	98	50
7	14	45	277	93	13	18	15	20	50	61	59	40
8	11	33	62	175	13	16	15	25	74	67	30	35
9	22	124	36	65	13	15	15	84	331	39	24	40
10	22	129	29	37	12	15	34	71	138	32	22	30
11	39	74	24	96	12	28	42	212	71	30	32	30
12	65	424	22	185	12	19	33	321	44	27	56	25
13	138	271	21	65	13	23	245	266	35	26	27	25
14	111	113	20	32	12	33	96	313	34	25	75	20
15	23	116	19	28	1630	35	27	359	83	27	52	20
16	15	107	19	68	167	14	20	357	134	81	25	20
17	13	441	18	41	138	19	19	136	125	53	40	20
18	12	379	17	32	42	215	18	194	31	507	56	21
19	11	56	80	297	46	33	17	90	27	149	36	22
20	18	177	41	301	30	16	17	179	25	37	84	36
21	12	88	91	38	163	12	36	52	23	39	55	38
22	20	32	20	29	46	12	102	77	22	64	220	126
23	179	35	19	26	135	12	393	68	31	43	60	38
24	184	25	20	23	45	12	390	42	42	31	40	37
25	230	20	49	22	28	14	619	55	165	52	73	127
26	1380	18	29	21	48	13	214	50	174	25	80	32
27	432	16	25	20	26	12	93	205	119	22	30	20
28	85	16	18	19	22	12	94	296	204	43	28	24
29	43	23	18	18	---	730	68	1050	582	28	81	629
30	33	49	19	18	---	350	38	910	366	27	1500	338
31	155	---	26	17	---	200	---	155	---	316	200	---
TOTAL	3357	3047	1367	2273	2757	2024	2880	5742	3433	2580	3501	3013
MEAN	108	102	44.1	73.3	98.5	65.3	96.0	185	114	83.2	113	100
MAX	1380	441	277	319	1630	730	619	1050	582	507	1500	800
MIN	11	16	17	17	12	12	15	20	22	22	22	20
CFSM	12.5	11.8	5.12	8.50	11.4	7.58	11.1	21.5	13.2	9.65	13.1	11.6
IN.	14.49	13.15	5.90	9.81	11.90	8.73	12.43	24.78	14.81	11.13	15.11	13.00
AC-FT	6660	6040	2710	4510	5470	4010	5710	11390	6810	5120	6940	5980

CAL YR 1978 TOTAL 19310.4 MEAN 52.9 MAX 1380 MIN 9.3 CFSM 6.14 IN 83.33 AC-FT 38300
WTR YR 1979 TOTAL 35974.0 MEAN 98.6 MAX 1630 MIN 11 CFSM 11.4 IN 155.23 AC-FT 71350

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	37	30	24	14	13	8.6	11	21	23	14	16
2	64	19	30	22	13	12	8.2	12	19	31	14	32
3	157	165	30	22	31	12	8.1	9.4	18	44	13	21
4	127	93	50	30	28	13	8.0	8.9	17	31	41	98
5	86	53	40	43	52	340	7.8	8.6	16	115	29	238
6	53	38	30	23	302	51	7.7	8.1	15	80	16	35
7	77	334	30	33	50	21	7.5	7.7	15	36	14	17
8	39	95	25	50	22	17	7.7	7.3	15	27	131	15
9	33	320	45	53	331	17	21	7.3	15	25	78	19
10	29	119	35	108	136	15	66	7.1	20	28	150	21
11	37	54	35	28	37	18	150	6.9	20	19	36	19
12	41	33	30	153	24	42	65	34	35	16	19	14
13	26	110	30	118	20	18	86	53	45	18	27	14
14	55	26	30	54	31	30	15	984	30	77	86	14
15	34	21	30	28	35	16	11	72	45	30	35	13
16	58	27	30	24	19	15	11	31	27	128	19	13
17	26	643	30	22	17	55	15	53	54	119	17	14
18	21	173	30	21	16	25	37	77	31	229	33	15
19	20	175	26	20	15	48	13	103	19	38	40	71
20	18	312	203	19	14	30	9.9	35	37	226	16	42
21	19	125	49	21	14	16	9.8	56	38	59	14	27
22	18	149	29	19	13	13	9.4	199	20	31	13	15
23	18	119	353	44	102	12	162	33	16	34	14	14
24	26	209	232	36	52	12	30	28	15	31	16	22
25	18	1360	79	29	19	12	58	22	26	21	21	15
26	22	100	36	19	21	11	20	21	19	19	28	34
27	19	50	30	18	16	10	15	465	28	31	15	53
28	17	45	28	17	14	10	39	151	17	49	13	23
29	16	40	26	16	13	9.7	14	37	14	23	185	19
30	16	35	25	15	---	9.3	10	27	13	17	34	24
31	106	---	23	15	---	9.2	---	24	---	16	17	---
TOTAL	1391	5079	1729	1144	1471	932.2	930.7	2599.3	720	1671	1198	987
MEAN	44.9	169	55.8	36.9	50.7	30.1	31.0	83.8	24.0	53.9	38.6	32.9
MAX	157	1360	353	153	331	340	162	984	54	229	185	238
MIN	16	19	23	15	13	9.2	7.5	6.9	13	16	13	13
CFSM	5.21	19.6	6.47	4.28	5.88	3.49	3.60	9.72	2.78	6.25	4.48	3.82
IN.	6.00	21.92	7.46	4.94	6.35	4.02	4.02	11.22	3.11	7.21	5.17	4.26
AC-FT	2760	10070	3430	2270	2920	1850	1850	5160	1430	3310	2380	1960

CAL YR 1979 TOTAL 36402.0 MEAN 99.7 MAX 1630 MIN 12 CFSM 11.6 IN 157.08 AC-FT 72200
WTR YR 1980 TOTAL 19852.2 MEAN 54.2 MAX 1360 MIN 6.9 CFSM 6.29 IN 85.66 AC-FT 39380

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: September 1958,1961-66, 1968 to current year.
SEDIMENT ANALYSIS: March 1968 to March 1969, March to June 1976, June and September 1977, November 1979 to September 1980.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC , 1978											
15...	1600	20	122	7.7	23.5	--	8.5	--	--	--	--
NOV , 1979											
06...	1010	25	66	7.6	23.0	20	8.8	25	1.5	2300	1500
JAN , 1980											
17...	1000	23	115	7.2	20.0	1.0	8.9	4	4.8	410	460
MAR											
13...	1235	18	95	7.6	24.5	1.5	8.2	9	2.1	9400	2000
MAY											
09...	0835	7.2	27	7.1	27.5	--	8.7	--	2.8	1000	660
JUL											
08...	0845	26	80	6.8	26.0	2.7	8.0	5	2.3	2800	1700
SEP											
16...	1000	13	101	7.5	27.0	.40	8.2	23	2.3	760	260

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACL3)
DEC , 1978										
15...	0	--	8.9	4.9	8.9	.6	.4	--	--	--
NOV , 1979										
06...	--	--	--	--	--	--	--	26	0	21
JAN , 1980										
17...	41	0	9.0	4.6	9.3	.6	.4	50	0	41
MAR										
13...	--	--	--	--	--	--	--	54	0	44
MAY										
09...	--	--	--	--	--	--	--	73	0	60
JUL										
08...	--	--	--	--	--	--	--	25	0	21
SEP										
16...	31	0	6.5	3.5	7.6	.6	.5	40	0	33

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)
DEC , 1978										
15...	--	1.7	11	<.1	23	--	--	--	--	--
NOV , 1979										
06...	1.0	--	--	--	--	--	--	15	.04	.010
JAN , 1980										
17...	5.0	3.1	11	.0	20	82	5.1	6	.06	.000
MAR										
13...	2.2	--	--	--	--	--	--	--	--	--
MAY										
09...	9.3	--	--	--	--	--	--	--	--	--
JUL										
08...	6.3	--	--	--	--	--	--	--	.03	.010
SEP										
16...	2.0	1.4	9.2	.0	25	73	2.6	0	.07	.000

50063800 RIO ESPIRITU SANTO NEAR RIO GRANDE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
DEC , 1978										
15...	--	--	--	--	--	--	--	--	--	0
NOV , 1979										
06...	.05	.010	.27	.28	.33	1.5	.010	--	--	--
JAN , 1980										
17...	.06	.010	.25	.26	.32	1.4	.030	--	--	--
MAR										
13...	--	--	--	--	--	--	--	1	0	0
MAY										
09...	--	--	--	--	--	--	--	--	--	--
JUL										
08...	.04	.010	.02	.03	.07	.31	.010	--	--	--
SEP										
16...	.07	.000	.07	.07	.14	.62	.000	0	100	0

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1978										
15...	<20	2	140	3	20	--	--	--	--	--
NOV , 1979										
06...	--	--	--	--	--	--	--	--	14	.94
JAN , 1980										
17...	--	--	--	--	--	--	--	--	0	.00
MAR										
13...	10	--	--	1	--	<.1	0	0	2	.10
MAY										
09...	--	--	--	--	--	--	--	--	4	.08
JUL										
08...	--	--	--	--	--	--	--	--	3	.21
SEP										
16...	3	--	--	2	--	.1	0	0	1	.04

50064200 RIO GRANDE NEAR EL VERDE, PR

LOCATION.--Lat 18°20'43", long 65°50'30", Hydrologic Unit 21010005, on left bank 400 ft (120 m) upstream from bridge on Highway 960, 500 ft (150 m) southwest of junction of Highways 956 and 960, 1.1 mi (1.8 km) west of El Verde, and 2.7 mi (4.3 km) south of Río Grande.

DRAINAGE AREA.--7.31 sq mi (18.93 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1967 to December 1970, January 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 125 ft (38.1 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--10 years (1968-70, 1973-79), 51.0 cu ft/s (1.444 cu m/s), 94.74 in/yr (2,406 mm/yr), 36,950 acre-ft/yr (45.6 cu hm/yr); median of yearly mean discharges, 46 cu ft/s (1.30 cu m/s), 33,300 acre-ft/yr (42 cu hm/yr).
--11 years (1968-70, 1973-80), 49.1 cu ft/s (1.391 cu m/s), 91.21 in/yr (2,317 mm/yr), 35,570 acre-ft/yr (43.9 cu hm/yr); median of yearly mean discharges, 44 cu ft/s (1.25 cu m/s), 31,900 acre-ft/yr (39 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 cu ft/s (493 cu m/s), Sept. 16, 1975, gage height, 15.5 ft (4.72 m), but may have been exceeded by flood of Dec. 9, 1975, from rating curve extended above 100 cu ft/s (2.83 cu m/s) on basis of slope-area measurement of peak flow; minimum, 1.6 cu ft/s (0.045 cu m/s) Mar. 13, 1977, gage height, 1.50 ft (0.457 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,000 cu ft/s (85.0 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 26, 1978	1730	*5,710	162	11.52	3.511
May 30, 1979	1145	3,160	89.5	9.17	2.795
Sept. 4, 1980	2030	*1,070	30.3	5.81	1.771

Minimum discharges, 6.2 cu ft/s (0.176 cu m/s) Oct. 8, 1978; 4.0 cu ft/s (0.113 cu m/s) Sept. 24-26, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	43	30	80	14	19	25	29	45	200	40	191
2	8.8	44	85	24	14	18	22	26	40	60	55	138
3	7.8	31	35	15	16	17	22	24	50	50	50	159
4	12	27	20	11	13	26	18	21	40	45	45	677
5	12	24	17	11	12	28	16	21	50	130	40	569
6	9.9	22	17	259	12	25	16	20	60	90	40	296
7	9.9	28	194	80	11	17	15	18	40	60	40	120
8	7.4	18	44	137	11	15	20	18	40	45	35	80
9	27	90	26	41	11	14	16	54	190	40	30	229
10	15	154	20	25	10	13	17	53	160	40	30	70
11	18	75	18	83	9.5	15	20	219	130	40	30	50
12	27	265	17	101	9.8	14	19	39	400	40	30	45
13	53	137	15	41	11	18	109	78	70	40	30	40
14	57	91	14	25	12	29	65	97	60	35	30	35
15	19	77	14	21	727	27	20	111	50	35	30	30
16	14	45	13	53	130	15	15	130	50	30	30	30
17	12	150	13	27	67	12	14	93	45	30	30	30
18	8.4	197	12	20	36	168	13	172	45	130	30	30
19	7.8	45	40	149	38	39	12	91	40	500	30	25
20	15	81	20	169	27	18	12	104	40	300	30	25
21	8.6	78	64	34	112	14	12	43	40	160	60	60
22	8.1	32	16	26	50	13	69	48	40	100	30	238
23	50	30	13	23	76	13	331	45	35	75	45	60
24	34	27	12	21	39	12	186	34	35	65	40	40
25	108	23	22	20	26	11	289	58	35	55	35	30
26	779	20	16	19	26	9.9	122	41	60	50	35	50
27	293	19	15	18	23	9.8	51	116	35	45	30	40
28	74	19	11	17	20	9.1	60	170	70	45	30	35
29	37	20	11	16	---	297	51	471	40	30	198	30
30	31	30	12	15	---	240	33	455	500	30	482	200
31	123	---	15	15	---	52	---	58	---	30	489	---
TOTAL	1896.7	1942	871	1596	1563.3	1227.8	1690	2957	2535	2625	2179	3652
MEAN	61.2	64.7	28.1	51.5	55.8	39.6	56.3	95.4	84.5	84.7	70.3	122
MAX	779	265	194	259	727	297	331	471	500	500	489	677
MIN	7.4	18	11	11	9.5	9.1	12	18	35	30	30	25
CFSM	8.37	8.85	3.84	7.05	7.63	5.42	7.70	13.1	11.6	11.6	9.62	16.7
IN.	9.65	9.88	4.43	8.12	7.95	6.25	8.60	15.05	12.90	13.36	11.09	18.58
AC-FT	3760	3850	1730	3170	3100	2440	3350	5870	5030	5210	4320	7240

CAL YR 1978 TOTAL 18535.0 MEAN 50.8 MAX 779 MIN 4.8 CFSM 6.95 IN 94.31 AC-FT 36760
WTR YR 1979 TOTAL 24734.8 MEAN 67.8 MAX 779 MIN 7.4 CFSM 9.29 IN 125.86 AC-FT 49060

50064200 RIO GRANDE NEAR EL VERDE, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	39	35	20	8.8	13	7.0	13	23	9.0	10	11
2	50	16	37	19	8.5	13	7.0	7.4	16	13	9.5	13
3	70	20	56	18	10	13	7.1	6.4	13	20	9.5	9.5
4	30	59	71	17	19	13	7.1	6.0	10	15	9.0	166
5	30	35	37	17	42	256	7.6	8.9	9.0	70	9.0	77
6	25	36	27	17	214	94	7.0	9.4	14	20	8.5	30
7	25	152	27	18	33	24	7.0	8.7	13	15	8.6	15
8	20	38	25	19	15	21	7.0	6.5	12	10	31	10
9	20	206	25	24	203	19	7.0	7.2	12	9.0	21	10
10	20	59	25	46	117	16	16	7.6	15	9.0	68	20
11	19	33	20	18	29	15	103	6.6	13	20	22	10
12	23	24	20	78	17	16	44	7.3	12	15	13	10
13	24	91	20	64	15	17	64	9.3	11	11	27	70
14	38	22	20	39	14	18	16	68	10	10	71	15
15	39	18	20	19	15	14	12	62	10	15	41	9.0
16	37	36	20	16	12	12	10	12	15	12	22	7.5
17	24	253	20	15	11	31	8.6	13	20	10	17	5.8
18	22	143	20	14	11	19	8.0	8.1	15	40	15	5.8
19	20	125	27	13	11	18	8.0	7.5	13	15	14	17
20	20	237	168	13	11	18	7.5	7.0	15	9.0	15	21
21	18	121	50	14	10	13	7.5	7.0	12	17	13	11
22	18	74	29	13	9.9	11	7.5	7.0	11	13	15	5.7
23	17	64	223	12	32	9.5	79	15	10	11	15	4.5
24	20	160	236	18	24	9.0	30	9.0	10	10	13	6.8
25	15	294	101	18	22	8.5	21	8.4	12	9.0	13	4.9
26	15	187	36	13	19	8.0	49	9.2	10	11	31	9.5
27	15	86	29	11	18	8.0	33	14	13	15	13	6.1
28	14	138	25	11	15	7.5	22	21	10	20	12	6.4
29	13	56	24	10	15	7.0	14	38	9.5	13	48	9.4
30	12	41	22	9.3	---	7.0	12	53	9.0	11	30	9.0
31	84	---	21	8.8	---	7.0	---	63	---	10	38	---
TOTAL	897	2863	1516	642.1	981.2	755.5	635.9	526.5	377.5	487.0	682.1	605.9
MEAN	28.9	95.4	48.9	20.7	33.8	24.4	21.2	17.0	12.6	15.7	22.0	20.2
MAX	100	294	236	78	214	256	103	68	23	70	71	166
MIN	12	16	20	8.8	8.5	7.0	7.0	6.0	9.0	9.0	8.5	4.5
CFSM	3.95	13.1	6 69	2.83	4.62	3.34	2.90	2.33	1.72	2.15	3.01	2.76
IN.	4.56	14.57	7.71	3.27	4.99	3.84	3.24	2.68	1.92	2.48	3.47	3.08
AC-FT	1780	5680	3010	1270	1950	1500	1260	1040	749	966	1350	1200

CAL YR 1979 TOTAL 25301.1 MEAN 69.3 MAX 727 MIN 9.1 CFSM 9.48 IN 128.74 AC-FT 50180
WTR YR 1980 TOTAL 10969.7 MEAN 30.0 MAX 294 MIN 4.5 CFSM 4.10 IN 55.82 AC-FT 21760

50064200 RIO GRANDE NEAR EL VERDE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL ANALYSIS: January to November 1963, March 1969 to September 1977, December 1978 (discontinued).
SEDIMENT RECORDS: January to December 1975, September 1976, June and September 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACL3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
DEC , 1978											
11...	1520	125	7.7	24.0	8.5	43	9.1	5.0	8.8	.6	.5

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
DEC , 1978											
11...	1.7	11	<.1	25	ND	<20	<2	220	<2	20	20

ND Looked for but not detected.

50065700 RIO MAMEYES AT HIGHWAY 191 AT MAMEYES, PR

LOCATION.--Lat 18°22'03", long 65°46'14", Hydrologic Unit 21010005, on left bank, 0.2 mi (0.3 km) upstream from Quebrada Anón, 0.3 mi (0.5 km)
downstream from Quebrada Tabonuco, and 0.3 mi (0.5 km) south of Mameyes.

DRAINAGE AREA.--11.8 sq mi (30.6 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 22 ft (6.7 m), from topographic map. Prior to Jan. 1, 1974 at datum 4.88 ft (1.487 m) higher and Jan. 1, 1974 to Mar. 25, 1976 at datum 4.00 ft (1.219 m) higher.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--13 years (1967-79), 72.6 cu ft/s (2.056 cu m/s), 83.55 in/yr (2,122 mm/yr), 52,600 acre-ft/yr (64.9 cu hm/yr); median of yearly mean discharges, 70 cu ft/s (1.98 cu m/s), 50,700 acre-ft/yr (63 cu hm/yr).
--14 years (1967-80), 72.6 cu ft/s (2.056 cu m/s), 83.55 in/yr (2,122 mm/yr), 52,600 acre-ft/yr (64.9 cu hm/yr); median of yearly mean discharges 70 cu ft/s (1.98 cu m/s), 50, 700 acre-ft/yr (63 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,200 cu ft/s (742 cu m/s), Oct. 24, 1974, gage height, 18.79 ft (5.727 m), present datum, from rating curve extended above 200 cu ft/s (5.66 cu m/s) on basis of slope-area measurement of peak flow; minimum, 5.0 cu ft/s (0.142 cu m/s) Apr. 28, 1975.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 5,300 cu ft/s (150 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Nov. 17, 1978	0345	5,790	164	13.22	4.029	Sept. 4, 1979	Unknown	*9,000	260	Unknown	
May 15, 1979	Unknown	6,000	170	Unknown		May 14, 1980	1945	*7,610	216	14.30	4.359
Aug. 30, 1979	Unknown	7,000	200	Unknown							

Minimum daily discharges, 12 cu ft/s (0.340 cu m/s) Feb. 7-8, 1979; 12 cu ft/s (0.340 cu m/s) Apr. 8, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	131	69	86	13	24	30	270	150	217	200	160
2	200	84	99	40	13	23	25	200	125	118	100	163
3	45	63	50	32	15	20	40	300	200	85	80	200
4	70	73	55	29	14	60	45	100	125	65	90	1000
5	91	101	50	28	13	55	35	120	120	145	140	500
6	158	76	50	181	13	50	30	110	130	275	100	200
7	41	78	310	97	12	30	30	110	110	129	80	120
8	46	77	120	164	12	20	35	500	130	191	70	100
9	143	157	70	64	14	15	40	80	400	82	60	90
10	97	160	50	43	16	20	40	125	200	61	60	100
11	97	102	40	62	15	20	47	307	150	52	90	70
12	122	298	40	84	16	20	40	212	100	49	130	100
13	148	207	40	56	18	25	160	422	60	53	70	80
14	295	152	40	39	15	31	109	1210	40	54	150	60
15	63	137	35	36	604	47	187	1430	150	64	70	50
16	48	113	35	63	147	22	206	860	200	120	34	40
17	36	638	35	52	120	19	302	413	150	94	55	60
18	36	250	35	39	49	156	350	254	70	604	40	40
19	49	105	110	137	46	42	200	206	50	380	30	35
20	40	187	72	162	34	23	300	235	47	140	200	30
21	39	122	103	27	126	20	200	144	43	140	70	30
22	294	65	38	22	49	27	100	127	40	140	150	100
23	390	79	34	20	89	30	500	119	46	120	100	70
24	260	53	35	17	46	30	300	108	87	85	80	50
25	470	49	74	17	33	25	500	170	128	80	120	60
26	830	52	45	16	47	26	1000	170	124	60	150	40
27	380	49	38	15	30	24	200	200	81	40	70	45
28	160	49	32	14	27	25	250	300	179	60	60	30
29	100	53	33	14	---	36	400	250	390	40	100	100
30	70	64	35	14	---	40	300	200	427	40	500	60
31	318	---	41	13	---	50	---	200	---	170	200	---
TOTAL	5166	3824	1913	1683	1646	1055	6001	9452	4252	3953	3449	3783
MEAN	167	127	61.7	54.3	58.8	34.0	200	305	142	128	111	126
MAX	830	638	310	181	604	156	1000	1430	427	604	500	1000
MIN	30	49	32	13	12	15	25	80	40	40	30	30
CFSM	14.2	10.8	5.23	4.60	4.98	2.88	16.9	25.8	12.0	10.8	9.41	10.7
IN.	16.28	12.05	6.03	5.31	5.19	3.33	18.92	29.80	13.40	12.46	10.87	11.93
AC-FT	10250	7580	3790	3340	3260	2090	11900	18750	8430	7840	6840	7500

CAL YR 1978 TOTAL 26158 MEAN 71.7 MAX 830 MIN 18 CFSM 6.08 IN 82.46 AC-FT 51880
WTR YR 1979 TOTAL 46177 MEAN 127 MAX 1430 MIN 12 CFSM 10.8 IN 145.56 AC-FT 91590

50065700 RIO MAMEYES AT HIGHWAY 191 AT MAMEYES, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	100	74	45	23	20	15	38	42	40	107	25
2	50	40	89	80	23	20	15	34	35	34	44	40
3	200	43	140	45	51	20	15	24	32	47	27	45
4	100	78	127	60	44	20	15	23	30	29	46	30
5	150	104	85	90	28	170	15	23	27	88	35	40
6	80	118	60	50	181	46	15	21	25	72	26	30
7	300	150	54	40	59	26	15	21	27	41	23	30
8	120	272	52	60	32	22	12	20	31	34	219	30
9	80	285	97	40	169	22	39	20	48	29	86	35
10	60	196	58	88	111	20	177	19	48	36	222	79
11	60	68	78	39	48	19	315	19	79	28	56	55
12	400	46	284	87	35	27	127	147	260	24	37	52
13	90	66	112	93	31	22	113	65	87	25	45	56
14	150	37	64	59	41	45	39	798	46	136	83	49
15	200	32	65	39	41	30	32	271	69	54	53	37
16	70	37	53	34	29	25	33	71	37	104	33	32
17	80	306	52	33	26	25	34	107	34	125	38	30
18	70	171	50	31	25	30	61	97	30	146	91	29
19	50	173	42	30	26	45	29	161	30	49	80	90
20	45	241	185	30	25	35	27	65	36	132	33	55
21	40	94	66	30	24	25	23	71	33	74	28	45
22	100	289	45	28	23	20	21	339	26	43	27	43
23	60	185	178	41	74	20	135	77	23	38	26	217
24	90	222	146	40	51	20	135	56	22	38	25	163
25	50	691	76	44	29	25	175	46	45	29	25	92
26	120	244	49	29	29	25	52	40	28	33	30	106
27	100	126	45	28	27	30	34	317	31	55	20	105
28	60	245	40	28	22	25	55	551	23	54	25	136
29	50	101	40	26	21	20	36	89	21	30	150	64
30	45	85	40	24	---	20	39	57	20	26	50	64
31	50	---	50	24	---	15	---	46	---	23	30	---
TOTAL	3190	4845	2596	1415	1348	934	1848	3733	1325	1716	1820	1904
MEAN	103	162	83.7	45.6	46.5	30.1	61.6	120	44.2	55.4	58.7	63.5
MAX	400	691	284	93	181	170	315	798	260	146	222	217
MIN	40	32	40	24	21	15	12	19	20	23	20	25
CFSM	8.73	13.7	7.09	3.86	3.94	2.55	5.22	10.2	3.75	4.70	4.98	5.38
IN.	10.06	15.27	8.18	4.46	4.25	2.94	5.83	11.77	4.18	5.41	5.74	6.00
AC-FT	6330	9610	5150	2810	2670	1850	3670	7400	2630	3400	3610	3780

CAL YR 1979 TOTAL 45905 MEAN 126 MAX 1430 MIN 12 CFSM 10.7 IN 144.71 AC-FT 91050
WTR YR 1980 TOTAL 26674 MEAN 72.9 MAX 798 MIN 12 CFSM 6.18 IN 84.08 AC-FT 52910

50065700 RIO MAMEYES AT HIGHWAY 191 AT MAMEYES, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
NOV , 1978										
30...	1320	54	147	7.1	21.5	8.3	54	16	3.5	8.4
MAR , 1979										
13...	0825	22	156	6.9	22.5	8.0	54	16	3.4	8.8
JUN										
19...	0810	52	121	8.2	26.5	8.4	45	13	3.0	8.5
AUG										
15...	0830	82	78	7.3	25.0	8.1	--	--	--	--

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	ARSENIC TOTAL (UG/L AS AS)
NOV , 1978									
30...	.5	1.2	3.4	12	.1	22	--	--	--
MAR , 1979									
13...	.5	1.1	3.8	12	--	22	100	5.9	--
JUN									
19...	.6	.8	3.6	9.9	.1	22	94	--	--
AUG									
15...	--	--	--	--	--	--	--	--	<1

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
NOV , 1978									
30...	ND	<20	2	<10	ND	20	--	--	30
MAR , 1979									
13...	--	--	--	--	--	--	--	--	--
JUN									
19...	--	--	--	--	--	--	--	--	--
AUG									
15...	ND	20	3	530	ND	<10	<.5	<1	<20

ND Looked for but not detected.

50067000 RIO SABANA AT SABANA, PR

LOCATION.--Lat 18°19'52", long 65°43'52", Hydrologic Unit 21010005, on right bank along Highway 988, 0.3 mi (0.5 km) north of junction of Highway 988 and 983 in Sabana, and 3.3 mi (5.3 km) south of Luquillo.

DRAINAGE AREA.--3.96 sq mi (10.26 cu km).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 260 ft (80 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR WATER YEAR 1980.--Peak discharges above base of 1,500 cu ft/s (42.5 cu m/s) and maximum (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
May 14, 1980	1900	1,520	43.0	12.16	3.706	May 22, 1980	0800	*1,760	49.8	12.55	3.825

Minimum discharge, 1.5 cu ft/s (0.042 cu m/s) Apr. 4-7, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	13	24	10	4.9	3.4	1.9	3.5	13	6.2	22	5.0
2	10	8.5	22	10	5.0	3.0	1.8	4.8	10	5.7	9.1	5.2
3	30	8.7	34	11	10	3.0	1.9	2.9	9.6	7.0	4.0	4.6
4	20	43	34	10	9.5	3.8	1.7	2.7	9.3	5.2	7.1	15
5	35	12	20	9.7	5.2	21	1.6	2.5	8.2	9.5	5.7	17
6	15	33	19	9.5	20	6.0	1.5	2.3	7.5	10	3.9	6.9
7	50	15	17	13	10	4.0	1.6	2.3	8.9	6.2	4.6	4.8
8	20	114	16	11	5.3	3.2	1.9	2.2	8.6	4.8	66	5.7
9	15	70	19	13	27	3.4	2.0	1.9	10	3.9	20	4.6
10	10	84	16	19	13	2.9	2.2	1.9	8.7	6.1	45	32
11	10	18	21	9.2	6.5	2.9	37	1.9	9.7	4.1	9.9	18
12	70	13	110	11	5.5	2.8	26	26	85	3.3	6.6	8.9
13	20	13	27	15	4.6	2.7	15	18	17	4.9	7.0	7.7
14	30	10	20	10	6.2	3.2	4.0	202	11	29	15	9.2
15	40	9.2	15	7.9	5.0	2.7	3.0	74	15	13	8.9	5.8
16	20	8.7	15	7.6	4.0	3.0	2.5	13	8.5	20	5.8	4.9
17	15	101	15	7.3	3.8	6.7	2.5	19	6.7	20	14	4.4
18	10	65	14	7.3	3.8	5.0	4.7	12	5.9	16	26	4.0
19	10	53	13	7.0	4.4	5.7	2.8	27	5.8	7.7	15	12
20	10	41	54	7.0	3.6	3.9	2.4	10	6.2	14	6.3	8.0
21	10	21	19	6.8	3.4	2.9	2.0	9.1	6.2	12	5.1	8.7
22	20	102	14	6.7	3.6	2.4	1.7	192	5.7	7.4	5.0	6.0
23	15	69	55	7.0	6.5	2.4	45	16	5.2	5.4	5.0	30
24	20	90	28	8.4	6.0	3.2	16	26	5.0	4.8	5.3	20
25	15	39	17	9.5	4.0	2.8	46	14	8.2	4.3	5.7	15
26	13	40	14	6.3	3.4	2.0	11	11	6.5	5.1	9.8	15
27	14	32	13	6.4	3.6	2.0	5.3	108	4.8	8.9	4.9	10
28	9.9	55	11	6.1	3.2	1.9	5.1	233	4.6	9.5	10	20
29	9.2	31	11	5.7	3.0	1.8	4.7	23	4.8	5.0	51	15
30	9.2	26	11	5.3	---	1.7	3.8	16	4.8	4.4	8.6	15
31	24	---	11	5.2	---	1.8	---	13	---	3.2	5.9	---
TOTAL	614.3	1238.1	729	278.9	194.0	117.2	258.6	1091.0	320.4	266.6	418.2	338.4
MEAN	19.8	41.3	23.5	9.00	6.69	3.78	8.62	35.2	10.7	8.60	13.5	11.3
MAX	70	114	110	19	27	21	46	233	85	29	66	32
MIN	9.2	8.5	11	5.2	3.0	1.7	1.5	1.9	4.6	3.2	3.9	4.0
AC-FT	1220	2460	1450	553	385	232	513	2160	636	529	829	671

WTR YR 1980 TOTAL 5864.7 MEAN 16.0 MAX 233 MIN 1.5 AC-FT 11630

50071000 RIO FAJARDO NEAR FAJARDO, PR

LOCATION.--Lat 18°17'56", long 65°41'42", Hydrologic Unit 21010005, on left bank off Highway 976, 0.1 mi (0.2 km) upstream from Highway 977 bridge, 0.3 mi (0.5 km) downstream from Quebrada Peñón, 1.1 mi (1.8 km) northeast of Colonia Paraíso, and 3.3 mi (5.3 km) southwest of Fajardo.

DRAINAGE AREA.--14.9 sq mi (38.6 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1960-61 (occasional low- and peak-flow measurements only), March 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 137.60 ft (41.940 m) above mean sea level. Due to flood damage, gage datum has had changes as follows: Mar. 24, 1961 to May 5, 1969, 138.95 ft (42.352 m); May 6, 1969 to Mar. 16, 1972, 135.05 ft (41.163 m); Mar. 17, 1972 to Mar 25, 1975, 138.60 ft (42.245 m).

REMARKS.--Records fair. Low flow affected by diversions for water supply.

AVERAGE DISCHARGES.--18 years (1962-79), 67.8 cu ft/s (1.920 cu m/s), 61.79 in/yr (1,569 mm/yr), 49,120 acre-ft/yr (60.6 cu hm /yr); median of yearly mean discharges, 67 cu ft/s, (1.90 cu m/s), 48,500 acre-ft/yr (60 cu hm/yr).
--19 years (1962-80), 68.6 cu ft/s (1.943 cu m/s), 62.52 in/yr (1,588 mm/yr), 49,700 acre-ft/yr (61.3 cu hm/yr); median of yearly mean discharges, 69 cu ft/s (1.95 cu m/s), 50,000 acre-ft/yr (62 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 cu ft/s (555 cu m/s), Oct. 24, 1974, gage height, 13.62 ft (4.151 m), datum then in use, from rating curve extended above 100 cu ft/s (2.83 cu m/s) on basis of step-backwater analyses and slope-area measurements of peak discharges; minimum, 1.5 cu ft/s (0.042 cu m/s) Apr. 3, May 13-14, 1977, gage height 1.57 ft (0.479 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 3,500 cu ft/s (99.1 cu m/s), revised, and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 24, 1978	1215	4,670	132	8.72	2.658	May 16, 1979	1245	4,520	128	8.60	2.621
Oct. 26, 1978	0545	4,210	119	8.35	2.545	May 17, 1979	2230	5,990	170	9.71	2.960
Oct. 27, 1978	1500	3,660	104	7.98	2.432	Aug. 31, 1979	0045	*19,400	549	16.70	5.090
May 11, 1979	0730	5,330	151	9.23	2.813	Sept. 4, 1979	1800	15,000	425	14.74	4.493
May 13, 1979	1945	6,590	187	10.12	3.085	Nov. 9, 1979	0700	3,740	106	7.95	2.423
May 14, 1979	2245	7,520	213	10.73	3.270	Nov. 25, 1979	1500	3,870	110	8.06	2.457
May 15, 1979	1430	4,980	141	8.96	2.731	May 14, 1980	1900	* 7,340	208	10.62	3.237

Minimum daily discharges, 11 cu ft/s (0.312 cu m/s) Apr. 17-20, 1979; 3.4 cu ft/s (0.096 cu m/s) Apr. 8, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	110	60	74	15	16	16	21	251	181	106	137
2	39	90	361	30	16	15	14	20	153	86	60	136
3	29	77	90	25	15	15	15	19	161	72	43	158
4	63	80	71	22	14	27	13	18	117	65	89	2040
5	234	78	63	22	14	31	13	17	103	134	54	2180
6	244	68	58	124	14	23	13	17	110	223	49	662
7	45	69	146	69	13	16	12	17	98	85	47	569
8	99	106	66	96	12	16	13	234	175	72	38	512
9	137	226	54	42	13	16	14	502	441	72	36	532
10	59	374	50	30	13	16	15	121	159	65	43	397
11	49	130	45	57	12	19	14	738	107	59	44	206
12	47	511	44	52	12	19	13	219	89	56	51	134
13	53	348	40	35	12	21	18	616	76	54	38	107
14	178	186	38	27	12	24	23	1400	70	51	48	90
15	49	177	38	25	195	30	14	1300	91	52	70	80
16	45	84	50	38	47	16	12	1860	178	69	48	70
17	39	606	39	39	45	14	11	611	156	61	47	65
18	36	146	34	28	31	80	11	377	72	598	35	60
19	35	74	36	33	27	27	11	535	65	215	140	55
20	49	115	59	77	20	16	11	329	61	65	341	50
21	38	241	67	26	55	15	15	219	58	61	61	50
22	54	87	36	22	29	14	31	166	56	71	52	300
23	256	78	32	28	26	31	38	138	57	57	51	200
24	822	57	33	21	21	17	33	119	82	51	44	150
25	484	45	66	19	18	15	519	110	89	48	74	100
26	1670	43	42	19	18	14	71	96	69	43	53	100
27	920	36	35	18	17	15	35	384	60	41	36	70
28	290	39	29	17	17	13	28	579	156	50	34	60
29	121	40	30	16	---	363	29	502	396	41	124	200
30	80	42	29	17	---	39	23	770	456	38	1260	170
31	413	---	28	16	---	20	---	328	---	95	1700	---
TOTAL	6749	4363	1869	1164	753	1013	1098	12382	4212	2931	4916	9640
MEAN	218	145	60.3	37.5	26.9	32.7	36.6	399	140	94.5	159	321
MAX	1670	606	361	124	195	363	519	1860	456	598	1700	2180
MIN	29	36	28	16	12	13	11	17	56	38	34	50
CFSM	14.6	9.73	4.05	2.52	1.81	2.20	2.46	26.8	9.40	6.34	10.7	21.5
IN.	16.85	10.89	4.67	2.91	1.88	2.53	2.74	30.91	10.52	7.32	12.27	24.07
AC-FT	13390	8650	3710	2310	1490	2010	2180	24560	8350	5810	9750	19120

CAL YR 1978 TOTAL 31940 MEAN 87.5 MAX 1670 MIN 14 CFSM 5.87 IN 79.74 AC-FT 63350
WTR YR 1979 TOTAL 51090 MEAN 140 MAX 2180 MIN 11 CFSM 9.40 IN 127.54 AC-FT 101300

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	303	60	36	13	8.3	4.7	18	55	25	85	9.0
2	105	84	55	34	12	7.8	4.6	18	42	24	32	8.8
3	249	207	65	35	49	7.4	4.3	13	39	22	15	16
4	538	208	227	34	36	7.6	4.2	10	35	21	36	77
5	192	88	66	42	18	214	4.1	8.9	31	67	25	57
6	119	91	52	66	118	39	4.7	8.6	26	43	19	23
7	462	263	50	58	53	17	3.9	8.8	28	32	20	15
8	366	710	47	40	21	14	3.4	8.7	34	22	143	55
9	203	909	142	43	132	19	112	6.6	71	21	142	15
10	127	402	55	54	85	11	161	6.6	40	19	123	38
11	256	179	68	27	34	11	710	6.2	80	14	40	42
12	196	85	163	53	22	18	146	311	180	12	24	26
13	125	149	74	34	19	11	61	146	60	37	19	30
14	391	67	62	24	18	20	24	1080	40	194	60	66
15	394	55	48	20	17	9.9	20	367	70	52	42	18
16	304	52	43	22	15	8.3	23	89	30	43	20	14
17	124	424	50	20	14	25	21	66	35	78	21	13
18	101	323	41	18	14	14	52	57	29	80	66	13
19	89	377	38	18	13	22	17	178	25	46	52	34
20	83	194	222	18	12	18	15	52	36	50	16	39
21	122	114	66	18	11	9.7	11	55	26	50	13	21
22	89	216	45	17	10	7.8	8.9	341	18	33	12	40
23	81	329	138	19	32	7.0	68	80	15	24	13	50
24	80	486	185	22	23	7.3	78	216	14	31	12	248
25	72	833	90	111	13	7.0	271	66	21	18	9.2	201
26	111	281	46	21	17	6.7	49	55	21	19	14	106
27	110	118	41	20	14	6.9	26	271	27	38	10	163
28	82	246	38	18	12	6.5	30	742	15	46	9.0	120
29	70	82	37	17	9.8	6.2	24	113	12	19	146	200
30	68	73	36	16	---	5.8	20	73	13	17	26	100
31	184	---	37	11	---	5.4	---	59	---	15	12	---
TOTAL	5604	7948	2387	986	856.8	578.6	1981.8	4530.4	1168	1212	1276.2	1857.8
MEAN	181	265	77.0	31.8	29.5	18.7	66.1	146	38.9	39.1	41.2	61.9
MAX	538	909	227	111	132	214	710	1080	180	194	146	248
MIN	68	52	36	11	9.8	5.4	3.4	6.2	12	12	9.0	8.8
CFSM	12.1	17.8	5.17	2.13	1.98	1.26	4.44	9.80	2.61	2.62	2.77	4.15
IN.	13.99	19.84	5.96	2.46	2.14	1.44	4.95	11.31	2.92	3.03	3.19	4.64
AC-FT	11120	15760	4730	1960	1700	1150	3930	8990	2320	2400	2530	3680

CAL YR 1979 TOTAL 54048.0 MEAN 148 MAX 2180 MIN 11 CFSM 9.93 IN 134.93 AC-FT 107200
WTR YR 1980 TOTAL 30386.6 MEAN 83.0 MAX 1080 MIN 3.4 CFSM 5.57 IN 75.86 AC-FT 60270

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978											
03...	1210	30	133	7.7	25.5	1.0	8.7	.8	5000	500	480
NOV											
02...	1220	108	125	7.4	26.0	15	8.9	--	2900	890	720
DEC											
01...	1200	63	125	8.0	27.0	2.0	8.9	1.1	8000	3600	390
JAN , 1979											
09...	1235	42	115	6.8	26.0	200	8.2	--	--	200	310
FEB											
07...	1130	13	135	8.0	26.0	2.0	10.5	1.1	4100	90	130
MAR											
15...	0945	32	123	7.2	24.5	1.0	10.0	--	--	800	1800
APR											
03...	1115	14	127	7.3	26.0	1.0	8.2	1.8	150	68	240
MAY											
02...	1050	20	115	7.7	27.0	1.0	9.1	--	330	180	140
JUN											
08...	1110	128	88	6.8	26.0	20	8.1	2.8	30000	4000	5700
JUL											
09...	1030	75	103	7.4	27.0	--	8.7	--	--	760	180
AUG											
03...	1040	40	122	8.0	27.0	2.0	9.0	1.1	1600	810	120
31...	1135	712	--	--	25.0	--	--	--	--	--	--
SEP											
13...	1035	107	115	6.8	26.0	2.0	8.1	--	2100	230	760
OCT											
01...	1050	137	132	7.7	27.0	2.0	9.7	--	--	1200	350
NOV											
06...	1315	374	65	6.4	25.0	200	8.3	5.0	--	64000	44000
DEC											
11...	1110	100	100	7.8	24.0	--	8.6	--	--	4000	4000
JAN , 1980											
08...	1400	39	117	8.2	24.0	.40	8.8	--	--	370	160
FEB											
05...	1040	19	124	7.7	22.5	1.4	9.4	--	--	240	170
MAR											
12...	1115	19	272	8.0	26.0	.60	8.3	--	--	108	56
APR											
09...	1000	4.4	198	6.8	27.0	.20	8.8	--	--	50	180
MAY											
08...	0830	9.2	127	7.2	26.0	.30	7.6	--	--	38	960

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
03...	33	0	6.7	3.9	10	.8	1.1	43	0	35	1.4
NOV											
02...	29	0	6.1	3.3	10	.8	1.2	38	0	31	2.4
DEC											
01...	33	0	7.0	3.7	11	.8	1.2	43	0	35	.7
JAN , 1979											
09...	28	2	6.2	3.0	11	.9	1.2	32	0	26	8.1
FEB											
07...	39	0	9.2	4.0	13	.9	1.1	53	0	43	.8
MAR											
15...	32	0	6.9	3.6	10	.8	1.0	39	0	32	3.9
APR											
03...	36	0	7.8	4.0	11	.8	1.2	44	0	36	3.5
MAY											
02...	31	0	6.8	3.5	12	.9	1.2	41	0	34	1.3
JUN											
08...	23	0	4.8	2.6	8.6	.8	1.2	29	0	24	7.4
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
03...	32	0	6.9	3.5	10	.8	.8	44	0	36	.7
31...	--	--	--	--	--	--	--	--	--	--	--
SEP											
13...	29	0	6.3	3.1	10	.8	1.0	36	0	30	9.1
OCT											
01...	26	0	5.8	2.8	9.1	.8	1.0	34	0	28	1.1
NOV											
06...	15	0	3.0	1.8	6.6	.7	1.7	21	0	17	13
DEC											
11...	--	--	--	--	--	--	--	34	0	28	.9
JAN , 1980											
08...	33	0	7.2	3.7	12	.9	1.3	46	0	38	.5
FEB											
05...	59	21	9.4	8.6	56	3.2	2.8	46	0	38	1.5
MAR											
12...	34	0	7.1	3.9	12	.9	1.0	46	0	38	.7
APR											
09...	39	0	8.5	4.4	14	1.0	1.1	53	0	43	13
MAY											
08...	37	3	7.4	4.5	15	1.1	1.1	56	0	46	4.2

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

PHYTOPLANKTON ANALYSIS, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)
OCT , 1978											
03...	3.0	11	.1	24	82	81	6.7	.09	--	.030	--
NOV											
02...	6.0	31	.1	25	120	102	35.0	.28	--	<.010	--
DEC											
01...	2.6	11	.1	26	90	84	15.3	.15	--	.010	--
JAN , 1979											
09...	5.1	15	<.1	19	79	76	8.9	.20	--	.110	--
FEB											
07...	4.1	15	.1	23	95	96	3.4	.14	--	.010	--
MAR											
15...	3.7	12	.1	24	78	81	6.7	.16	--	.010	--
APR											
03...	3.3	13	.1	24	91	86	3.4	.22	--	<.010	--
MAY											
02...	3.2	12	.1	22	77	82	4.2	.05	--	.010	--
JUN											
08...	3.1	11	.1	19	76	65	26.3	.17	--	.020	--
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
03...	3.8	13	.1	24	89	84	9.6	.13	--	.010	--
31...	--	--	--	--	--	--	--	--	--	--	--
SEP											
13...	5.2	13	.1	26	78	84	22.5	.27	.28	<.010	--
OCT											
01...	2.8	11	.1	22	77	72	28.5	.10	--	.030	--
NOV											
06...	3.9	7.5	.1	13	64	49	64.6	--	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980											
08...	2.9	11	.1	25	83	87	8.7	.35	.25	.050	.050
FEB											
05...	9.5	54	.1	23	166	187	8.3	.14	.17	.000	.000
MAR											
12...	5.0	13	.1	25	93	91	4.9	.25	.24	.010	.010
APR											
09...	3.6	15	.2	28	105	102	1.3	.12	.12	--	--
MAY											
08...	4.0	14	.1	28	85	103	2.1	.27	.27	.000	.000

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)
OCT , 1978											
03...	.05	--	.08	.07	.17	.75	.020	.020	--	--	--
NOV											
02...	.24	--	.24	.13	.52	2.3	.030	.030	--	<1	--
DEC											
01...	.09	--	.10	.13	.25	1.1	.020	.020	1	1	<100
JAN , 1979											
09...	1.5	--	1.60	.95	1.8	8.0	.250	.020	--	--	--
FEB											
07...	.11	--	.12	.09	.26	1.2	.010	<.010	--	--	--
MAR											
15...	.08	--	.09	.02	.25	1.1	.010	.010	1	1	<100
APR											
03...	.09	--	.05	.01	.31	1.4	.010	<.010	--	--	--
MAY											
02...	.27	--	.28	.15	.33	1.5	.010	.010	--	1	<100
JUN											
08...	.38	--	.40	.18	.57	2.5	.040	.010	--	<1	--
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
03...	.09	--	.10	--	.23	1.0	.020	.010	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
SEP											
13...	.12	--	.12	.10	.39	1.7	.010	.010	1	<1	<100
OCT											
01...	.33	.12	.33	.29	.43	1.9	.010	.010	--	--	--
NOV											
06...	--	--	1.27	--	--	--	.220	.020	--	--	--
DEC											
11...	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980											
08...	.34	--	.39	--	.74	3.3	.020	.020	1	0	50
FEB											
05...	.21	--	.21	--	.35	1.6	.020	.010	--	--	--
MAR											
12...	.20	.20	.21	.21	.46	2.0	.020	.020	--	--	--
APR											
09...	--	--	.10	--	.22	.97	.010	.010	1	1	50
MAY											
08...	.22	.04	.22	.04	.49	2.2	.010	.010	--	--	--

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
OCT , 1978										
03...	--	--	--	--	--	--	--	--	--	--
NOV										
02...	<100	--	--	--	--	--	ND	--	2	--
DEC										
01...	<100	2	ND	<20	<2	4	ND	<2	ND	300
JAN , 1979										
09...	--	--	--	--	--	--	--	--	--	--
FEB										
07...	--	--	--	--	--	--	--	--	--	--
MAR										
15...	<100	ND	ND	<20	ND	<2	<2	3	2	240
APR										
03...	--	--	--	--	--	--	--	--	--	--
MAY										
02...	<100	--		--	<20	--	<2	--	3	--
JUN										
08...	30	--	--	--	--	--	<2	--	5	--
JUL										
09...	--	--	<2	--	--	--	--	--	--	--
AUG										
03...	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--
SEP										
13...	--	ND	ND	<20	<20	ND	--	3	<2	500
OCT										
01...	--	--	--	--	--	--	--	--	--	--
NOV										
06...	--	--	--	--	--	--	--	--	--	--
DEC										
11...	--	--	--	--	--	--	--	--	--	--
JAN , 1980										
08...	50	25	25	20	20	2	2	4	4	340
FEB										
05...	--	--	--	--	--	--	--	--	--	--
MAR										
12...	--	--	--	--	--	--	--	--	--	--
APR										
09...	50	0	0	30	20	0	0	4	4	270
MAY										
08...	--	--	--	--	--	--	--	--	--	--

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)
OCT , 1978										
03...	--	--	--	--	--	--	--	--	--	--
NOV										
02...	150	--	--	--	30	--	.5	--	--	--
DEC										
01...	130	7	ND	20	20	<.5	<.5	--	--	<1
JAN , 1979										
09...	--	--	--	--	--	--	--	--	--	--
FEB										
07...	--	--	--	--	--	--	--	--	--	--
MAR										
15...	110	5	5	40	<10	<.5	<.5	--	--	<1
APR										
03...	--	--	--	--	--	--	--	--	--	--
MAY										
02...	90	--		--	9	--	<.5	--	--	--
JUN										
08...	220	--	--	--	40	--	--	--	--	--
JUL										
09...	--	--	--	--	--	--	--	--	--	--
AUG										
03...	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--
SEP										
13...	80	2	ND	80	80	<.5	<.5	--	--	<1
OCT										
01...	--	--	--	--	--	--	--	--	--	--
NOV										
06...	--	--	--	--	--	--	--	--	--	--
DEC										
11...	--	--	--	--	--	--	--	--	--	--
JAN , 1980										
08...	140	3	2	30	20	.1	<.1	1	2	0
FEB										
05...	--	--	--	--	--	--	--	--	--	--
MAR										
12...	--	--	--	--	--	--	--	--	--	--
APR										
09...	90	1	1	30	20	.5	.5	2	2	0
MAY										
08...	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
03...	--	--	--	--	--	--	--	--	5	.41
NOV										
02...	<1	--	--	--	ND	--	2.3	--	13	3.8
DEC										
01...	<1	ND	ND	<20	ND	--	3.4	5.0	2	.34
JAN , 1979										
09...	--	--	--	--	--	20	--	3.7	327	37
FEB										
07...	--	--	--	--	--	1.8	--	--	6	.22
MAR										
15...	<1	ND	ND	<20	ND	--	4.3	--	1	.09
APR										
03...	--	--	--	--	--	--	4.4	.2	1	.04
MAY										
02...	<1	--	--	--	ND	6.2	2.4	--	1	.05
JUN										
08...	<1	--	ND	--	30	--	5.8	1.0	47	16
JUL										
09...	--	--	--	--	--	--	--	--	6	1.2
AUG										
03...	--	--	--	--	--	6.8	--	--	3	.32
31...	--	--	--	--	--	--	--	--	186	358
SEP										
13...	<1	ND	ND	<20	<20	--	4.0	--	3	.87
OCT										
01...	--	--	--	--	--	--	6.9	--	6	2.2
NOV										
06...	--	--	--	--	--	16	--	--	2160	2180
DEC										
11...	--	--	--	--	--	--	--	--	15	4.0
JAN , 1980										
08...	0	0	0	20	20	--	6.9	.3	4	.42
FEB										
05...	--	--	--	--	--	3.0	--	--	4	.21
MAR										
12...	--	0	--	--	--	1.4	--	--	9	.47
APR										
09...	0	0	0	10	6	--	2.5	--	2	.02
MAY										
08...	--	--	--	--	--	2.1	--	--	1	.02

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
JUN , 1980												
06...	0920	29	118	7.5	26.5	.60	8.6	--	124	230	31	0
JUL												
02...	1215	30	109	7.4	30.0	--	8.5	--	44	310	--	--
AUG												
07...	1000	15	117	8.0	28.0	1.4	8.4	--	162	108	34	0
SEP												
03...	1125	34	113	7.7	29.5	.30	8.3	870	470	138	28	0

ND Looked for but not detected.

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JUN , 1980												
06...	6.7	3.4	11	.9	.9	43	0	35	2.2	5.3	11	.1
JUL												
02...	--	--	--	--	--	37	0	30	2.4	--	--	--
AUG												
07...	7.3	3.8	11	.8	1.0	45	0	37	.7	2.6	11	.3
SEP												
03...	5.4	3.5	10	.8	1.1	36	0	29	1.1	3.9	11	.1

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
JUN , 1980												
06...	24	137	84	10.7	--	--	--	.06	--	.000	.000	.63
JUL												
02...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
07...	25	81	85	3.3	--	--	--	.12	.12	.010	.000	.08
SEP												
03...	26	76	80	7.0	0	.20	.000	.25	--	.000	.000	.16

DATE	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
JUN , 1980											
06...	.11	.63	.11	.69	3.1	.030	.010	0	.9	1	.08
JUL											
02...	--	--	--	--	--	--	--	--	--	128	10
AUG											
07...	.02	.09	.02	.21	.93	.010	.010	--	2.2	15	.61
SEP											
03...	.11	.16	.11	.41	1.8	.020	.010	0	4.3	4	.37

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

PHYTOPLANKTON ANALYSIS, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 3,78	DEC 1,78	JAN 9,79	FEB 7,79	APR 3,79
TIME	1210	1200	1235	1130	1115
TOTAL CELLS/ML	1100	1000	8600	600	71
DIVERSITY: DIVISION	0.2	0.9	1.2	0.4	1.0
.CLASS	0.2	0.9	1.2	0.4	1.0
..ORDER	0.2	0.9	1.8	1.3	1.3
...FAMILY	0.3	1.2	2.2	1.8	2.0
....GENUS	0.3	1.2	2.4	2.0	2.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	--	-
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	61	1	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	40#	57
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	120	1	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	250	3	25	4	5	7
....MELOSIRA	--	-	--	-	2500#	29	250#	42	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	220#	21	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	120	1	5	1	5	7
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	10	2	10	14
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	5	1	--	-
....SYNEDRA	--	-	--	-	250	3	220#	37	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	9	1	29	3	250	3	--	-	5	7
...NAVICULACEAE										
....NAVICULA	9	1	--	-	740	9	35	6	5	7
....PINNULARIA	--	-	72	7	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	9	1	--	-	490	6	--	-	--	-
...SURIRELLACEAE										
....SURIRELLA	9	1	--	-	--	-	5	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	120	1	40	7	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	1100#	97	720#	69	3700#	43	--	-	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	61	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

PHYTOPLANKTON ANALYSIS, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUN 8,79	JUL 9,79	AUG 3,79	SEP 13,79	OCT 1,79
TIME	1110	1030	1040	1035	1050
TOTAL CELLS/ML	2100	210	29	850	620
DIVERSITY: DIVISION	0.3	1.0	0.0	0.3	1.2
.CLASS	0.3	1.0	0.0	0.3	1.2
..ORDER	0.3	1.3	0.0	0.3	1.3
...FAMILY	2.4	2.2	1.0	0.3	2.2
....GENUS	2.4	2.5	1.0	0.3	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	--	-
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	20	1	--	-	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	43	7
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	56#	27	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	28	13	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	14	2
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	560#	27	42#	20	--	-	--	-	57	9
....COCCONEIS	--	-	28	13	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	160	8	--	-	--	-	--	-	29	5
...GOMPHONEMATACEAE										
....GOMPHONEMA	640#	31	28	13	--	-	--	-	270#	44
...NAVICULACEAE										
....NAVICULA	400#	19	28	13	14#	50	--	-	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	220	11	--	-	14#	50	28	3	43	7
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	80	4	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	140#	23
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	810#	95	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	14	2
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	14	2	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

PHYTOPLANKTON ANALYSIS, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NOV 6,79	DEC 11,79	JAN 8,80	FEB 5,80	APR 9,80
TIME	1315	1110	1400	1040	1000
TOTAL CELLS/ML	220	2100	340	240	170
DIVERSITY: DIVISION	0.4	1.4	1.1	1.4	0.0
.CLASS	0.4	0.0	1.1	1.4	0.0
..ORDER	0.4	0.0	1.3	1.4	0.0
...FAMILY	0.4	0.0	2.3	1.5	0.4
....GENUS	0.4	0.0	2.3	1.5	0.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	440#	21	--	-	--	-	--	-
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	14	7	40	2	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....GLOEOACTINIUM	--	-	27	1	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	14	4	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	57#	24	--	-
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	13	1	--	-	--	-	--	-
....MELOSIRA	--	-	400#	19	14	4	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	140#	83
....COCCONEIS	--	-	--	-	--	-	--	-	14	8
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	14	6	14	8
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	170	8	120#	36	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	81	4	14	4	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	430#	20	41	12	--	-	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	130	6	27	8	29	12	--	-
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	200#	93	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	120	6	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	140#	59	--	-
....SCHIZOTHRIX	--	-	250	12	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	110#	32	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50071000 RIO FAJARDO NEAR FAJARDO, PR--Continued

PHYTOPLANKTON ANALYSIS, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	MAY 8,80		JUN 6,80		JUL 2,80		AUG 7,80		SEP 3,80	
TIME	0830		0920		1215		1000		1125	
TOTAL CELLS/ML	110		980		620		390		1000	
DIVERSITY: DIVISION	1.0		1.4		0.6		0.8		0.1	
.CLASS	1.0		1.4		0.6		0.8		0.1	
..ORDER	1.0		1.7		0.7		0.8		0.1	
...FAMILY	1.4		2.4		1.1		1.0		0.5	
....GENUS	1.8		2.4		1.1		1.0		0.5	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	--	-
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	14	1	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	14	2	--	-	--	-
....SELENASTRUM	--	-	--	-	55	9	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	57#	50	--	-	--	-	--	-	--	-
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	96	10	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
....COSMARIUM	--	-	--	-	14	2	--	-	14	1
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	41	4	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	14	13	55	6	--	-	--	-	950#	93
....COCCONEIS	29#	25	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	14	1
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	190#	20	480#	78	86#	22	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	14	13	69	7	--	-	--	-	29	3
...NAVICULACEAE										
....NAVICULA	--	-	82	8	55	9	--	-	14	1
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	--	-	--	-	--	-
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	14	4	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	290#	74	--	-
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-
....LYNGBYA	--	-	430#	44	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50072500 RIO FAJARDO BELOW FAJARDO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°19'35", long 65°38'47", 1.2 mi (1.9 km) southwest of Playa de Fajardo, and 0.5 mi (0.8 km) east of Fajardo Plaza.

DRAINAGE AREA.--23.4 sq mi (60.6 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
03...	0930	40	182	7.1	29.0	--	7.6	--	6.1	2300000	590000	70000
DEC												
01...	0930	66	190	7.3	25.5	--	8.8	--	14	2800000	730000	90000
FEB , 1979												
07...	0920	15	198	7.4	25.0	--	7.7	--	19	2400000	1500000	280000
APR												
03...	0925	22	192	7.1	24.5	--	8.6	--	19	570000	300000	110000
JUN												
08...	0830	E160	93	6.8	25.0	--	7.9	--	2.2	2100000	200000	30000
AUG												
03...	0900	55	154	7.2	27.0	--	7.6	--	.6	37000	5100	1000
NOV												
06...	1640	137	116	7.3	26.5	160	7.6	16	1.7	--	16000	6000
JAN , 1980												
17...	1300	30	185	7.5	25.0	1.4	10.4	14	3.5	--	76000	2500
MAR												
19...	0845	21	178	7.3	25.5	7.5	7.7	4	--	--	12000	3800
MAY												
08...	1405	11	192	7.3	28.5	--	8.5	--	3.7	--	25000	1300
JUL												
03...	0835	37	145	6.5	28.5	1.4	7.7	7	1.0	--	20000	1400
SEP												
04...	0930	20	164	7.3	29.5	5.3	6.9	6	2.5	--	21000	1700

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
03...	44	0	10	4.5	13	.9	1.7	53	0	43	6.7
DEC											
01...	45	0	11	4.3	15	1.0	1.9	62	0	51	5.0
FEB , 1979											
07...	58	4	15	5.1	17	1.0	1.5	66	0	54	4.2
APR											
03...	50	4	12	4.8	15	.9	2.0	56	0	46	7.1
JUN											
08...	23	0	5.1	2.5	8.4	.8	1.2	30	0	25	7.6
AUG											
03...	42	0	9.9	4.2	12	.8	1.0	54	0	44	5.5
NOV											
06...	--	--	--	--	--	--	--	42	0	34	3.4
JAN , 1980											
17...	50	3	12	4.8	16	1.0	1.4	57	0	47	2.9
MAR											
19...	--	--	--	--	--	--	--	57	0	47	4.6
MAY											
08...	--	--	--	--	--	--	--	57	0	47	4.6
JUL											
03...	--	--	--	--	--	--	--	45	0	37	23
SEP											
04...	44	6	10	4.6	15	1.0	1.4	46	0	38	3.7

E Estimated.

50072500 RIO FAJARDO BELOW FAJARDO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
03...	4.8	19	.1	21	101	100	11.0	--	.10	.010	.11
DEC											
01...	4.5	19	.1	22	120	108	21.5	--	.13	.010	.14
FEB , 1979											
07...	5.0	27	.1	18	127	121	5.3	--	.03	<.010	.03
APR											
03...	5.3	26	.1	22	122	115	7.3	--	.19	.010	.20
JUN											
08...	3.6	11	.1	18	74	65	32.0	--	.10	.050	.15
AUG											
03...	4.9	17	.1	20	--	96	14.4	--	.02	.010	.03
NOV											
06...	--	--	--	--	--	--	--	252	.22	.010	.23
JAN , 1980											
17...	7.4	25	.1	17	--	112	9.1	12	.12	.000	.12
MAR											
19...	--	--	--	--	--	--	--	--	.16	.140	.30
MAY											
08...	--	--	--	--	--	--	--	--	.05	.010	.06
JUL											
03...	--	--	--	--	--	--	--	--	.02	.000	.02
SEP											
04...	5.3	22	.1	26	--	107	5.8	4	.11	.010	.12

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
03...	1.10	.10	1.20	1.3	5.8	.230	.180	--	--	--	--
DEC											
01...	1.00	.50	1.50	1.6	7.3	.330	.220	<1	--	ND	<20
FEB , 1979											
07...	.560	.44	1.00	1.0	4.6	.160	.110	--	--	--	--
APR											
03...	.690	.41	1.10	1.3	5.8	.240	.140	--	--	--	--
JUN											
08...	.080	.86	.94	1.1	4.8	.220	.060	--	--	ND	20
AUG											
03...	.050	.19	.24	.27	1.2	.040	<.010	<1	--	ND	<20
NOV											
06...	.030	.42	.45	.68	3.0	.040	--	--	--	--	--
JAN , 1980											
17...	.290	.12	.41	.53	2.3	.070	--	--	--	--	--
MAR											
19...	.050	.17	.22	.52	2.3	.070	--	1	<50	0	1
MAY											
08...	.180	.20	.38	.44	1.9	.090	--	--	--	--	--
JUL											
03...	.050	.20	.25	.27	1.2	.030	--	--	--	--	--
SEP											
04...	.180	.00	.18	.30	1.3	.040	--	1	<50	1	9

ND Looked for but not detected.

50072500 RIO FAJARDO BELOW FAJARDO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDIMENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
03...	--	--	--	--	--	--	--	--	6.3	12	1.3
DEC											
01...	4	770	NL	130	<.5	<1	ND	<20	6.9	47	8.4
FEB , 1979											
07...	--	--	--	140	--	--	--	--	5.7	39	1.6
APR											
03...	--	--	--	160	--	--	--	--	7.5	57	3.4
JUN											
08...	26	15000	8	320	<.5	<1	--	150	9.9	368	159
AUG											
03...	5	740	4	130	<.5	<1	ND	50	7.9	34	5.1
NOV											
06...	--	--	--	--	--	--	--	--	--	302	112
JAN , 1980											
17...	--	--	--	--	--	--	--	--	--	20	1.6
MAR											
19...	--	--	0	--	.2	0	0	--	--	42	2.4
MAY											
08...	--	--	--	--	--	--	--	--	--	46	1.4
JUL											
03...	--	--	--	--	--	--	--	--	--	12	1.2
SEP											
04...	--	--	11	--	.2	0	0	--	--	12	.65

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN							
08...	0830	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN						
08...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

50075000 RIO ICACOS NEAR NAGUABO, PR

LOCATION.--Lat 18°16'38", long 65°47'09", Hydrologic Unit 21010001, in Caribbean National Forest, off Highway 191, at El Yunque, 1.6 mi (2.6 km) upstream from confluence with Río Cubuy, 2.8 mi (4.5 km) north of Florida, and 5.3 mi (8.5 km) northwest of Naguabo Plaza.

DRAINAGE AREA.--1.26 sq mi (3.26 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1945 to March 1953 (operated by Puerto Rico Water Resources Authority), annual maximum, water years 1953-62, annual low-flow measurements 1962-66, October 1979 to current year.

GAGE.--Water-stage recorder and broad-crested weir. Altitude of gage is 2,020 ft (616 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--8 years (1946-52, 1980), 16.4 cu ft/s (0.464 cu m/s), 176.76 in/yr (4,490 mm/yr), 11,880 acre-ft/yr (14.6 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,460 cu ft/s (69.7 cu m/s) Oct. 25, 1947 and Oct. 25, 1953, gage height, 8.10 ft (2.469 m), from rating curve extended above 30 cu ft/s (0.850 cu m/s); minimum daily, 1.5 cu ft/s (0.042 cu m/s) Mar. 22, Apr. 10, 1946.

EXTREMES FOR WATER YEAR 1980.--Peak discharges above base of 650 cu ft/s (18.4 cu m/s) and maximum (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Nov. 9, 1979	1230	650	18.4	5.29	1.612
Apr. 10, 1980	1445	*752	21.3	5.59	1.704
Apr. 11, 1980	0345	656	18.6	5.31	1.618

Minimum discharge, 4.2 cu ft/s (0.119 cu m/s) April 1-8, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	12	11	7.5	5.2	5.1	4.2	7.0	6.0	5.5	6.6	5.6
2	9.0	7.6	12	7.4	5.2	4.8	4.2	6.5	5.5	7.0	6.4	5.7
3	20	9.4	18	7.4	11	4.9	4.2	6.5	5.5	6.0	6.4	6.1
4	15	15	11	7.3	5.7	8.2	4.2	6.5	5.5	6.0	11	42
5	18	27	11	9.4	9.8	73	4.2	6.0	5.5	15	6.6	29
6	8.0	14	10	7.7	49	9.5	4.2	6.0	5.5	12	6.4	7.7
7	30	23	9.8	7.4	9.4	6.3	4.2	6.0	5.5	9.4	10	6.3
8	20	12	10	13	6.2	6.3	4.2	6.0	5.5	14	23	6.2
9	15	89	26	10	58	5.9	37	6.0	20	8.1	14	7.5
10	13	24	13	14	25	5.5	64	6.0	10	8.4	28	50
11	13	12	16	7.6	8.2	5.6	114	6.0	12	7.1	8.2	9.7
12	40	9.2	24	25	6.6	7.8	23	12	17	6.2	6.7	11
13	20	13	14	9.7	6.2	5.7	22	30	11	10	14	8.2
14	25	8.2	10	7.6	10	11	6.9	19	8.0	24	12	11
15	30	7.6	19	6.9	6.8	5.6	6.1	10	13	8.0	11	6.3
16	10	7.5	10	6.8	5.9	6.1	8.0	100	10	24	6.6	6.0
17	10	61	11	6.3	5.6	16	6.6	14	9.0	25	6.2	5.9
18	9.0	27	9.1	6.1	5.6	7.9	12	9.0	8.5	19	13	5.8
19	8.0	24	8.8	6.0	5.6	8.9	6.0	8.0	8.5	8.8	7.7	17
20	7.5	65	58	6.0	5.4	7.3	6.0	7.2	10	22	6.0	12
21	7.0	18	10	6.0	5.2	5.3	6.0	9.4	7.0	10	5.8	7.0
22	8.4	23	9.1	5.8	5.2	5.0	5.5	6.7	6.5	8.9	5.9	8.4
23	24	30	43	7.4	20	4.8	9.0	6.3	6.0	8.4	7.8	10
24	9.9	29	31	13	9.8	4.9	6.5	6.2	6.0	9.3	5.9	11
25	8.2	110	12	15	5.9	4.7	20	9.6	6.0	7.2	5.6	17
26	11	34	9.4	6.2	7.1	4.5	13	7.0	6.0	16	5.8	8.9
27	9.3	15	8.7	6.1	5.6	4.5	8.0	10	5.5	12	5.4	12
28	7.8	46	8.4	5.6	5.4	4.6	8.0	80	5.5	12	5.8	12
29	7.4	13	8.2	5.6	5.2	4.5	9.5	20	5.5	7.1	53	6.9
30	7.2	14	7.9	5.3	---	4.5	8.0	7.0	6.5	6.7	7.7	6.2
31	30	---	8.1	5.2	---	4.5	---	6.0	---	6.4	6.1	---
TOTAL	460.7	799.5	467.5	260.3	319.8	263.2	438.7	445.9	242.0	349.5	324.6	358.4
MEAN	14.9	26.7	15.1	8.40	11.0	8.49	14.6	14.4	8.07	11.3	10.5	11.9
MAX	40	110	58	25	58	73	114	100	20	25	53	50
MIN	7.0	7.5	7.9	5.2	5.2	4.5	4.2	6.0	5.5	5.5	5.4	5.6
CFSM	11.8	21.2	12.0	6.67	8.73	6.74	11.6	11.4	6.41	8.97	8.33	9.44
IN.	13.59	23.59	13.79	7.68	9.43	7.76	12.94	13.15	7.14	10.31	9.58	10.57
AC-FT	914	1590	927	516	634	522	870	884	480	693	644	711

WTR YR 1980 TOTAL 4730.1 MEAN 12.9 MAX 114 MIN 4.2 CFSM 10.2 IN 139.54 AC-FT 9380

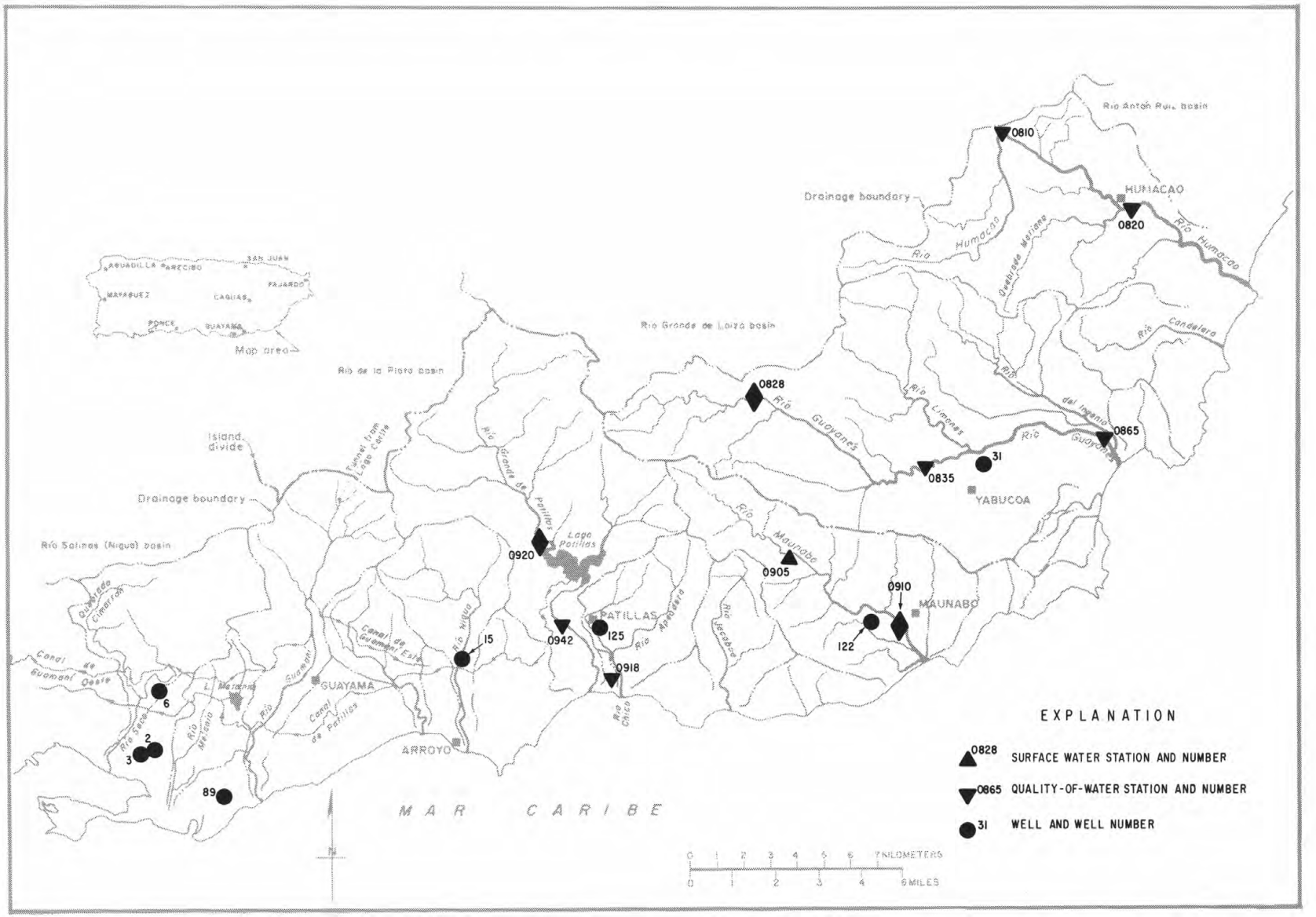

Figure 13.--Southeastern rivers basin--Río Humacao to Río Seco basins.

50081000 RIO HUMACAO AT LAS PIEDRAS, PR

LOCATION.--Lat 18°10'27", long 65°52'11", on left bank about 60 ft (18.3 m) off bridge on Highway 921 (km 1.1), 0.6 mi (1.0 km) southeast of junction with Highway 30, 0.8 mi (1.3 km) downstream from Quebrada Blanca and 0.8 mi (1.3 km) south of Las Piedras.

DRAINAGE AREA.--6.65 sq mi (17.22 sq km).

PERIOD OF RECORD.--Water years 1959-69, 1971 to September 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979.

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
OCT , 1978											
19...	1030	17	180	7.9	26.0	6.5	1.4	3500	570	750	46
NOV											
30...	1050	31	170	7.7	25.0	6.7	1.2	70000	8800	8700	38
FEB , 1979											
28...	1045	11	163	7.6	22.5	5.4	1.1	3100	940	1700	47
APR											
26...	1300	9.2	188	7.8	28.0	6.9	1.6	10000	2600	500	47
JUN											
28...	1420	113	82	6.8	25.0	7.4	1.6	70000	21000	42000	20
SEP											
10...	1245	88	110	7.2	26.0	6.2	1.4	29000	5400	6000	27

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)
OCT , 1978											
19...	0	12	4.0	10	1.0	1.9	68	0	56	1.4	6.6
NOV											
30...	0	10	3.2	9.5	1.1	1.8	56	0	46	1.8	5.9
FEB , 1979											
28...	0	12	4.2	11	1.1	1.2	69	0	57	2.8	6.2
APR											
26...	0	12	4.1	10	1.1	1.4	72	0	59	1.8	5.9
JUN											
28...	0	5.1	1.8	5.8	1.0	1.4	28	0	23	7.1	4.3
SEP											
10...	0	7.0	2.3	11	.9	1.5	40	0	33	4.0	6.1

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
19...	14	.1	39	129	127	5.9	.58	.010	.59	<.020
NOV										
30...	13	.1	36	133	113	11.1	.64	.010	.65	<.030
FEB , 1979										
28...	16	.1	40	130	131	3.8	.52	.010	.53	<.010
APR										
26...	14	.1	40	135	131	5.4	.29	<.010	.29	<.010
JUN										
28...	7.5	.1	19	66	63	20.1	.36	.010	.37	<.040
SEP										
10...	10	.1	27	--	65	20.2	.48	.020	.50	<.010

50081000 RIO HUMACAO AT LAS PIEDRAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
19...	.13	.15	.74	3.3	.050	.030	--	--	--	--
NOV										
30...	.31	.34	.99	4.4	.110	.050	1	ND	<20	4
FEB , 1979										
28...	.11	.11	.64	2.8	.030	.030	--	--	--	--
APR										
25...	.02	.02	.31	1.4	.050	.040	--	--	--	--
JUN										
26...	.92	.96	1.3	5.9	.090	.050	--	--	--	--
SEP										
10...	.01	.02	.52	2.3	.050	.020	1	ND	20	8

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
19...	--	--	--	--	--	--	--	--	23	1.0
NOV										
30...	4000	60	260	<.5	<1	ND	<20	2.2	285	24
FEB , 1979										
28...	--	--	50	--	--	--	--	1.6	14	.40
APR										
25...	--	--	90	--	--	--	--	2.4	43	1.1
JUN										
26...	--	--	--	--	--	--	--	10	732	223
SEP										
10...	4400	4	30	<.5	<1	ND	40	2.2	374	65

ND Looked for but not detected.

50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°08'49", long 65°49'37", at bridge on Highway 3, 300 ft (91 m) downstream from Quebrada Mariana, and 0.4 mi (0.6 km) south of Humacoa.

DRAINAGE AREA.--17.3 sq mi (44.8 sq km).

PERIOD OF RECORD.--Water years 1958-66, 1969 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
19...	0905	28	306	7.1	27.0	--	6.4	--	26	4600000	1500000	160000
NOV												
30...	0910	56	230	7.5	25.0	--	7.8	--	23	1700000	430000	150000
FEB , 1979												
28...	0915	22	262	7.0	23.0	--	6.6	--	7.4	1400000	240000	200000
APR												
20...	1025	15	313	7.0	27.5	--	7.2	--	17	1800000	1000000	70000
JUN												
28...	1240	524	98	6.9	25.0	--	8.2	--	3.0	270000	50000	90000
SEP												
10...	1030	198	147	7.5	26.0	--	8.2	--	2.4	600000	130000	46000
NOV												
26...	1300	136	--	6.9	25.0	200	7.3	16	3.6	--	40000	3700
JAN , 1980												
28...	1445	26	200	7.3	27.5	4.0	7.1	16	5.9	--	240000	17000
MAR												
18...	0905	17	300	7.4	25.0	.45	5.8	19	9.4	--	520000	150000
MAY												
28...	0900	E1500	88	6.7	23.0	250	8.1	77	3.0	--	150000	31000
JUL												
09...	0730	28	275	7.0	24.5	33	6.9	22	6.2	--	730000	130000
SEP												
12...	0830	16	343	7.2	26.0	7.2	4.6	38	13	--	1630000	260000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L (CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
19...	80	0	21	6.7	22	1.1	2.7	104	0	85	13
NOV											
30...	70	0	19	5.5	19	1.0	2.3	90	0	74	4.6
FEB , 1979											
28...	77	0	21	6.0	25	1.2	2.0	99	0	81	16
APR											
20...	81	0	22	6.4	27	1.3	2.6	110	0	90	18
JUN											
28...	26	0	6.6	2.2	5.2	.8	1.5	34	0	28	6.8
SEP											
10...	38	0	10	3.2	12	.8	1.7	61	0	50	3.1
NOV											
26...	--	--	--	--	--	--	--	50	0	41	10
JAN , 1980											
28...	84	0	17	5.2	24	1.3	2.1	87	0	71	7.0
MAR											
18...	--	--	--	--	--	--	--	100	0	82	6.4
MAY											
28...	22	0	7.7	2.0	6.8	.8	1.9	27	0	22	8.6
JUL											
09...	--	--	--	--	--	--	--	102	0	84	16
SEP											
12...	100	1	29	7.5	28	1.2	3.0	122	0	100	12

E Estimated.

50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
19...	12	28	.1	38	181	182	13.7	--	.74	.050	.79
NOV											
30...	8.6	21	.1	31	164	151	24.8	--	.65	.040	.69
FEB , 1979											
28...	11	30	.2	32	182	177	10.8	--	.68	.120	.80
APR											
20...	13	30	.3	37	200	193	8.3	--	.81	.100	.91
JUN											
28...	5.9	8.9	.1	17	74	68	105	--	.32	.040	.36
SEP											
10...	6.1	11	.1	25	--	99	52.9	--	.46	.020	.48
NOV											
26...	--	13	--	--	--	--	--	--	1.5	.020	1.5
JAN , 1980											
28...	9.4	23	.2	36	--	160	11.9	3	.68	.070	.75
MAR											
18...	--	--	--	--	--	--	--	--	.34	.010	.35
MAY											
28...	6.7	9.3	.1	12	--	61	247	804	.70	.030	.73
JUL											
09...	--	--	--	--	--	--	--	--	.56	.060	.62
SEP											
12...	13	37	.2	44	--	221	9.6	0	.57	.060	.63

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N03)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
19...	1.20	.90	2.10	2.9	13	.480	.250	--	--	--	--
NOV											
30...	.400	.55	.95	1.6	7.3	.280	.140	1	--	ND	<20
FEB , 1979											
28...	.380	.50	.88	1.7	7.4	.300	.170	--	--	--	--
APR											
20...	1.70	.60	2.30	3.2	14	.610	.520	--	--	--	--
JUN											
28...	.090	1.3	1.40	1.8	7.8	.120	.090	--	--	--	--
SEP											
10...	.100	.25	.35	.83	3.7	.140	.050	1	--	ND	<20
NOV											
26...	.140	1.6	1.70	3.2	14	.180	--	--	--	--	--
JAN , 1980											
28...	.300	.69	.99	1.7	7.7	.220	--	--	--	--	--
MAR											
18...	.030	.22	.25	.60	2.7	.170	--	1	100	1	10
MAY											
28...	.150	.85	1.00	1.7	7.7	.880	--	--	--	--	--
JUL											
09...	.710	.69	1.40	2.0	8.9	.360	--	--	--	--	--
SEP											
12...	3.60	.30	3.90	4.5	20	.820	--	1	100	0	11

ND Looked for but not detected.

50082000 RIO HUMACAO AT HIGHWAY 3 AT HUMACAO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
19...	--	--	--	--	--	--	--	--	--	21	1.6
NOV											
30...	30	21000	4.1	140	<.5	<1	ND	60	11	607	92
FEB , 1979											
28...	--	--	--	170	--	--	--	--	5.0	95	5.6
APR											
20...	--	--	--	210	--	--	--	--	7.4	42	1.7
JUN											
28...	--	--	--	--	--	--	--	--	14	669	547
SEP											
10...	21	11000	4	490	<.5	<1	ND	30	11	483	258
NOV											
26...	--	--	--	--	--	--	--	--	--	681	250
JAN , 1980											
28...	--	--	--	--	--	--	--	--	--	106	8.0
MAR											
18...	--	--	2	--	<.1	<	1	--	--	72	3.3
MAY											
28...	--	--	--	--	--	--	--	--	--	2090	--
JUL											
09...	--	--	--	--	--	--	--	--	--	102	7.7
SEP											
12...	--	--	0	--	.2	0	0	--	--	17	.73

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN							
28...	1240	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN						
28...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

50082800 RIO GUAYANES NEAR COLONIA LAURA, PR

LOCATION.--Lat 18°04'55", long 65°57'32", Hydrologic Unit 21010005, on left bank, 1,000 ft (305 m) south of Highway 182, 4.5 mi (7.2 km) west of Colonia Laura, and 5.8 mi (9.3 km) north-northwest of Yabucoa.

DRAINAGE AREA.--4.69 sq mi (12.15 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 920 ft (280 m), from topographic map. Previous to May 6, 1976, at site 400 ft (120 m) upstream at different datum.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--10 years (1970-79), 30.8 cu ft/s (0.872 cu m/s), 89.18 in/yr (2,265 mm/yr), 22,310 acre-ft/yr (27.5 cu hm/yr); median of yearly mean discharges 29 cu ft/s, (0.82 cu m/s), 21,000 acre-ft/yr (26 cu hm/yr).
--11 years (1970-80), 29.7 cu ft/s (0.841 cu m/s) 86.00 in/yr (2,184 mm/yr), 21,520 acre-ft/yr (26.5 cu hm/yr); median of yearly mean discharges 29 cu ft/s (0.82 cu m/s), 21,000 acre-ft/yr (26 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 6,960 cu ft/s (197 cu m/s) Oct. 23, 1974, gage height, 13.4 ft (4.08 m) datum then in use, from floodmarks, from rating curve extended above 40 cu ft/s (1.13 cu m/s) on basis of slope-area measurements of peak flow; minimum daily, 2.4 cu ft/s (0.068 cu m/s) June 9, 1974.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 1,800 cu ft/s (51.0 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 23, 1978	2000	3,290	93.2	13.80	4.206	Aug. 31, 1979	0545	*5,780	164	16.70	5.090
Oct. 26, 1978	0830	2,630	74.5	12.99	3.959	Sept. 4, 1979	1945	2,220	62.9	12.50	3.810
Oct. 31, 1978	1315	1,820	51.5	11.94	3.639	Sept. 22, 1979	0945	1,900	53.8	12.07	3.679
June 30, 1979	Unknown	5,000	142	Unknown		Sept. 29, 1979	1615	2,490	70.5	12.83	3.911
Aug. 30, 1979	1900	2,920	82.7	13.32	4.060	Sept. 9, 1980	1700	*1,320	37.4	11.14	3.395

Minimum discharges, 4.5 cu ft/s (0.127 cu m/s) May 4-5, 1979; 4.9 cu ft/s (0.139 cu m/s) May 11-12, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	70	25	15	9.6	7.7	5.7	5.6	40	300	30	72
2	15	71	25	13	9.3	7.2	5.5	5.3	80	130	25	62
3	14	39	20	12	9.3	7.0	5.6	5.3	140	90	25	49
4	14	37	20	12	9.3	6.7	5.4	4.9	35	70	20	518
5	17	37	20	11	9.2	6.5	5.3	4.6	46	200	20	558
6	15	32	28	22	9.3	6.5	5.3	7.6	38	140	25	94
7	14	31	81	14	9.2	6.3	5.3	5.2	26	100	18	73
8	13	29	22	13	9.1	6.2	5.3	20	22	70	16	69
9	17	35	18	13	9.0	6.1	5.6	36	76	55	15	99
10	53	58	17	12	9.0	6.1	6.4	106	48	45	15	79
11	52	27	16	12	8.9	6.9	6.5	93	82	40	16	67
12	32	27	15	12	8.7	8.1	6.0	62	50	35	17	44
13	23	24	15	11	10	6.8	8.2	25	30	30	15	44
14	31	46	15	19	9.0	6.6	6.9	16	25	30	61	38
15	17	27	14	12	10	6.5	5.5	92	35	30	26	36
16	40	22	14	12	10	6.2	5.3	15	20	30	21	33
17	17	22	14	11	9.1	6.1	5.2	11	25	35	20	32
18	15	95	15	11	8.7	8.1	5.2	10	20	340	20	28
19	15	33	14	11	8.7	6.5	5.1	45	15	60	19	30
20	38	25	17	15	8.7	6.0	5.7	40	15	32	31	32
21	16	34	15	11	10	6.0	5.4	35	15	34	22	29
22	16	30	13	13	9.6	6.0	5.6	25	10	29	20	246
23	551	30	13	11	9.3	6.0	5.9	25	10	33	30	45
24	261	25	15	11	9.1	6.0	4.9	20	10	25	60	31
25	188	25	23	10	8.4	6.5	14	15	40	22	90	53
26	670	25	14	10	9.3	6.1	12	20	200	21	50	59
27	297	25	13	10	8.5	5.8	7.0	25	250	20	25	29
28	75	20	13	9.8	7.8	5.7	6.1	40	300	20	20	25
29	45	20	24	9.8	---	6.6	5.8	250	500	19	20	229
30	75	20	14	9.8	---	7.2	5.7	100	700	18	830	36
31	202	---	13	9.8	---	6.2	---	65	---	39	923	---
TOTAL	2864	1041	595	378.2	256.1	202.2	187.4	1229.5	2903	2142	2545	2839
MEAN	92.4	34.7	19.2	12.2	9.15	6.52	6.25	39.7	96.8	69.1	82.1	94.6
MAX	670	95	81	22	10	8.1	14	250	700	340	923	558
MIN	13	20	13	9.8	7.8	5.7	4.9	4.6	10	18	15	25
CFSM	19.7	7.40	4.09	2.60	1.95	1.39	1.33	8.47	20.6	14.7	17.5	20.2
IN.	22.71	8.26	4.72	3.00	2.03	1.60	1.49	9.75	23.02	16.99	20.18	22.51
AC-FT	5680	2060	1180	750	508	401	372	2440	5760	4250	5050	5630

CAL YR 1978 TOTAL 11498.0 MEAN 31.5 MAX 670 MIN 8.5 CFSM 6.72 IN 91.18 AC-FT 22810
WTR YR 1979 TOTAL 17182.4 MEAN 47.1 MAX 923 MIN 4.6 CFSM 10.0 IN 136.25 AC-FT 34080

50082800 RIO GUAYANES NEAR COLONIA LAURA, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	18	30	13	9.6	8.1	5.7	9.0	11	13	8.3	8.4
2	44	18	35	13	9.4	7.7	5.5	8.5	9.4	12	8.2	7.6
3	52	19	65	13	12	7.8	5.4	7.5	8.7	11	8.3	9.8
4	108	18	40	13	11	11	5.4	7.0	8.0	15	9.8	16
5	49	17	35	17	9.8	15	5.5	6.5	7.7	25	10	19
6	35	18	30	15	10	10	5.3	6.0	7.4	60	9.4	10
7	63	18	30	13	10	9.0	5.5	6.0	7.4	15	10	8.5
8	46	20	30	18	9.6	8.8	5.5	5.5	8.3	10	30	7.8
9	96	101	45	15	10	8.8	5.5	5.1	21	10	12	75
10	56	27	35	14	11	8.1	9.1	5.1	12	14	72	15
11	44	21	30	13	10	7.8	16	5.0	34	16	13	10
12	34	19	30	23	9.9	11	12	7.4	17	10	10	11
13	30	17	25	38	9.4	8.1	13	11	13	9.6	9.2	10
14	42	17	21	18	9.3	8.0	7.1	247	11	16	19	9.1
15	40	16	40	13	9.0	8.2	6.9	24	19	14	10	8.3
16	27	16	21	12	9.0	7.3	8.2	16	12	12	9.0	8.1
17	28	18	19	11	8.7	7.9	6.4	13	20	52	8.3	7.8
18	26	16	18	11	9.5	7.4	13	11	11	46	9.4	7.9
19	23	16	18	11	9.4	7.6	8.2	9.3	10	21	11	11
20	24	16	19	11	8.7	7.2	6.2	8.7	11	16	12	30
21	23	15	16	10	8.8	6.6	6.8	7.8	9.5	12	12	11
22	23	15	26	10	8.1	6.4	8.9	31	8.9	14	11	9.0
23	30	30	19	12	12	6.4	15	14	8.4	11	10	8.9
24	24	76	17	23	10	6.5	12	9.4	8.2	10	12	21
25	22	35	16	12	9.0	6.4	6.4	8.7	10	9.5	13	12
26	83	160	16	11	8.9	6.1	6.2	16	12	8.9	17	14
27	23	80	15	11	8.3	6.1	6.0	60	11	10	8.3	10
28	24	50	14	10	8.2	6.1	6.0	194	10	12	7.6	9.1
29	22	40	14	10	8.0	6.0	6.0	20	9.5	9.6	15	9.4
30	20	35	14	9.8	---	5.8	5.5	14	11	8.8	9.3	9.5
31	19	---	14	9.4	---	5.7	---	11	---	8.6	11	---
TOTAL	1222	982	797	433.2	276.6	242.9	234.2	804.5	357.4	512.0	415.1	404.2
MEAN	39.4	32.7	25.7	14.0	9.54	7.84	7.81	26.0	11.9	16.5	13.4	13.5
MAX	108	160	65	38	12	15	16	247	34	60	72	75
MIN	19	15	14	9.4	8.0	5.7	5.3	5.0	7.4	8.6	7.6	7.6
CFSM	8.40	6.97	5.48	2.99	2.03	1.67	1.67	5.54	2.54	3.52	2.86	2.88
IN.	9.69	7.79	6.32	3.44	2.19	1.93	1.86	6.38	2.83	4.06	3.29	3.21
AC-FT	2420	1950	1580	859	549	482	465	1600	709	1020	823	802

CAL YR 1979 TOTAL 15683.4 MEAN 43.0 MAX 923 MIN 4.6 CFSM 9.17 IN 124.37 AC-FT 31110
WTR YR 1980 TOTAL 6681.1 MEAN 18.3 MAX 247 MIN 5.0 CFSM 3.90 IN 52.98 AC-FT 13250

50082800 RIO GUAYANES NEAR COLONIA LAURA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
18...	1135	15	162	7.5	26.0	6.6	.4	4100	2200	1100	44
DEC											
04...	1310	20	162	7.7	24.5	6.5	1.1	4000	3500	2000	42
FEB , 1979											
27...	1215	8.6	140	7.5	23.0	5.4	1.0	43000	17000	15000	44
APR											
24...	1200	5.3	143	7.7	24.0	5.6	1.3	4000	570	580	44
JUN											
07...	1220	26	131	7.4	26.0	6.4	1.2	4800	600	1700	37
AUG											
28...	1240	20	134	7.5	27.0	6.0	2.1	4800	810	570	39

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
18...	0	11	4.0	12	.8	1.3	67	0	55	3.4	2.4
DEC											
04...	0	11	3.8	12	.8	1.3	64	0	52	2.0	2.5
FEB , 1979											
27...	0	11	3.9	12	.8	1.0	66	0	54	3.3	2.4
APR											
24...	0	11	4.1	13	.8	1.1	66	0	54	2.1	2.4
JUN											
07...	0	9.1	3.4	11	.8	1.1	55	0	45	3.5	3.2
AUG											
28...	0	10	3.5	12	.8	1.0	60	0	49	3.0	3.5

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
18...	9.6	.1	35	107	109	4.4	.13	.010	.14	.020
DEC										
04...	9.7	.1	37	110	109	5.8	.21	.010	.22	.010
FEB , 1979										
27...	11	.1	36	119	110	2.8	.13	<.010	.13	<.010
APR										
24...	11	.1	36	114	111	1.6	.05	<.010	.05	.010
JUN										
07...	9.0	.1	32	98	96	6.9	.21	.010	.22	.010
AUG										
28...	9.4	.1	36	--	105	5.6	.20	<.010	.20	.020

50082800 RIO GUAYANES NEAR COLONIA LAURA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
18...	.17	.19	.33	1.5	.020	.010	--	--	--	--
DEC										
04...	.07	.08	.30	1.3	.030	.020	<1	2	<20	<2
FEB , 1979										
27...	.18	.18	.31	1.4	.020	.010	--	--	--	--
APR										
24...	.07	.08	.13	.58	.030	.010	--	--	--	--
JUN										
07...	.08	.09	.31	1.4	.020	<.010	--	--	20	3
AUG										
28...	.05	.07	.27	1.2	.020	<.010	1	2	20	5

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
18...	--	--	--	--	--	--	--	--	6	.25
DEC										
04...	1000	ND	60	<.5	<1	ND	<20	1.0	613	32
FEB , 1979										
27...	--	--	<10	--	--	--	--	2.9	0	.00
APR										
24...	--	--	60	--	--	--	--	1.9	4	.06
JUN										
07...	--	--	50	<.5	<1	--	30	8.5	16	1.1
AUG										
28...	810	9	50	<.5	<1	<2	<20	1.9	6	.32

ND Looked for but not detected.

50083500 RIO GUAYANES AT YABUCOA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'33", long 65°54'03", at bridge on Highway 182, 1.4 mi (2.2 km) west-northwest of Yabucoa.

DRAINAGE AREA.--17.2 sq mi (44.6 sq km).

PERIOD OF RECORD.--Water years 1958-1962, 1968-1970, 1980.

WATER QUALITY DATA, WATER YEARS OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
DEC , 1979												
04...	1135	107	135	6.8	24.5	--	6.0	--	1.5	4400	1800	--
JAN , 1980												
31...	1300	32	138	7.2	24.5	3.5	7.6	15	2.2	1300	120	44
MAR												
26...	1125	23	165	7.3	24.5	1.0	8.6	--	1.1	1100	310	--
MAY												
28...	1130	E800	55	6.2	23.5	200	7.8	49	1.7	27000	9900	11
JUL												
09...	1245	41	147	7.4	28.5	12	7.2	13	1.1	1200	460	--
SEP												
12...	1135	31	146	7.3	26.5	2.8	7.6	10	.8	2600	900	44

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
DEC , 1979												
04...	--	--	--	--	--	--	54	0	44	14	--	--
JAN , 1980												
31...	0	11	3.9	16	1.1	1.2	70	0	57	7.1	2.9	12
MAR												
26...	--	--	--	--	--	--	75	0	62	6.0	--	--
MAY												
28...	1	2.7	1.1	6.0	.8	1.3	12	0	10	12	4.3	7.2
JUL												
09...	--	--	--	--	--	--	64	0	52	10	--	--
SEP												
12...	0	11	4.1	14	.9	1.7	64	0	52	5.1	2.6	12

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
DEC , 1979												
04...	--	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980												
31...	.2	38	120	10.4	13	.23	.000	.23	.040	.17	.21	.44
MAR												
26...	--	--	--	--	--	.18	.000	.18	.030	.02	.05	.23
MAY												
28...	1.0	11	90	86.4	441	.41	.030	.44	.150	.85	1.00	1.4
JUL												
09...	--	--	--	--	--	.23	.010	.24	.000	.22	.22	.46
SEP												
12...	.1	40	117	5.9	25	.33	.010	.34	.030	.35	.38	.72

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1979												
04...	--	--	--	--	--	--	--	--	--	--	104	30
JAN , 1980												
31...	1.9	.060	--	--	--	--	--	--	--	--	22	1.9
MAR												
26...	1.0	.050	1	50	0	11	0	1.0	0	0	--	--
MAY												
28...	6.4	.280	--	--	--	--	--	--	--	--	E14	--
JUL												
09...	2.0	.010	--	--	--	--	--	--	--	--	28	3.1
SEP												
12...	3.2	.030	1	100	0	8	1	.2	0	0	36	3.0

E Estimated.

50086500 RIO GUAYANES ABOVE MOUTH AT PLAYA DE GUAYANES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'45", long 65°49'42", at old railroad crossing, 0.2 mi (0.3 km) from mouth, 0.4 mi (0.6 km) west of Playa de Guayanés, and 3.5 mi (5.6 km) northeast of Yabucoa Plaza.

DRAINAGE AREA.--34.0 sq mi (88.1 sq km).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
18...	1000	76	180	7.4	26.5	--	5.1	--	.5	7900	2500	2200
DEC												
04...	1045	96	195	7.5	25.0	--	5.3	--	.4	12000	2400	3500
FEB , 1979												
27...	1000	16	165	7.5	24.5	--	8.8	--	.7	25000	4500	400
APR												
24...	0855	E6.5	190	7.3	24.5	--	6.0	--	3.9	5200	2700	1200
JUN												
07...	0950	184	175	7.1	26.5	--	7.8	--	1.2	8000	3700	660
AUG												
28...	1000	113	179	7.2	26.5	--	7.9	--	2.1	30000	4800	2300
DEC												
04...	0930	215	144	6.5	23.5	40	7.2	0	1.2	--	4100	3900
JAN , 1980												
31...	1030	51	258	7.4	21.5	4.2	8.8	16	4.3	--	1400	130
MAR												
26...	0840	8.5	215	7.2	23.0	1.5	7.3	9	1.0	--	1000	140
MAY												
29...	0820	290	123	6.4	24.0	85	3.8	39	4.1	--	19000	8500
JUL												
09...	0955	65	175	7.3	26.5	14	7.8	14	1.0	--	1500	430
SEP												
11...	0900	51	186	7.3	25.5	3.1	7.0	8	.4	--	3500	1240

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
18...	48	0	12	4.3	15	.9	2.0	68	0	56	4.3
DEC											
04...	47	0	12	4.2	15	1.0	1.8	64	0	52	3.2
FEB , 1979											
27...	44	0	11	4.1	16	1.0	1.4	70	0	57	3.5
APR											
24...	53	0	13	5.0	16	1.1	1.8	80	0	66	6.4
JUN											
07...	47	0	12	4.1	15	1.0	1.8	64	0	52	8.1
AUG											
28...	51	0	13	4.4	17	1.0	1.7	71	0	58	7.2
DEC											
04...	--	--	--	--	--	--	--	41	0	34	21
JAN , 1980											
31...	52	0	13	4.7	15	1.1	1.7	67	0	55	4.3
MAR											
26...	--	--	--	--	--	--	--	96	0	79	9.7
MAY											
29...	30	2	7.4	2.7	13	1.0	3.8	34	0	28	22
JUL											
09...	--	--	--	--	--	--	--	70	0	57	5.6
SEP											
11...	56	0	14	5.2	15	1.1	3.3	76	0	62	6.1

E Estimated.

50086500 RIO GUAYANES ABOVE MOUTH AT PLAYA DE GUAYANES, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
18...	4.4	14	.1	35	120	120	24.6	--	.41	.010	.42
DEC											
04...	4.7	13	.1	36	124	118	32.1	--	.49	.010	.50
FEB , 1979											
27...	4.0	15	.1	36	128	122	5.4	--	.27	<.010	.27
APR											
24...	4.5	17	.1	37	140	136	2.5	--	.13	<.010	.13
JUN											
07...	7.9	16	.1	31	126	119	62.6	--	.45	.020	.47
AUG											
28...	7.4	14	.1	35	--	128	39.1	--	.42	.020	.44
DEC											
04...	--	--	--	--	--	--	--	--	.45	.010	.46
JAN , 1980											
31...	5.5	19	.2	38	--	134	18.6	32	.33	.020	.35
MAR											
26...	--	--	--	--	--	--	--	--	.08	.010	.09
MAY											
29...	11	11	.1	21	--	87	68.1	96	.34	.020	.36
JUL											
09...	--	--	--	--	--	--	--	--	.31	.010	.32
SEP											
11...	5.9	17	.2	37	--	139	19.1	12	.44	.010	.45

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
18...	.020	.19	.21	.63	2.8	.070	.040	--	--	--	--
DEC											
04...	.030	.20	.23	.73	3.2	.070	.040	<1	--	ND	<20
FEB , 1979											
27...	.010	.24	.25	.52	2.3	.040	.020	--	--	--	--
APR											
24...	.030	.21	.24	.37	1.6	.040	.020	--	--	--	--
JUN											
07...	.050	.42	.47	.94	4.2	.090	.020	--	--	ND	20
AUG											
28...	<.010	.32	.32	.76	3.4	.100	.030	1	--	<2	20
DEC											
04...	.020	.54	.56	1.0	4.5	.110	--	--	--	--	--
JAN , 1980											
31...	.040	.38	.42	.77	3.4	.070	--	--	--	--	--
MAR											
26...	.050	.16	.21	.30	1.3	.080	--	1	50	0	14
MAY											
29...	.060	.78	.84	1.2	5.3	.210	--	--	--	--	--
JUL											
09...	.010	.14	.15	.47	2.1	.080	--	--	--	--	--
SEP											
11...	.060	.20	.26	.71	3.1	.120	--	1	100	0	12

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
18...	--	--	--	--	--	--	--	--	--	34	7.0
DEC											
04...	3	2000	4	120	<.5	<1	ND	20	1.6	68	18
FEB , 1979											
27...	--	--	--	<10	--	--	--	--	3.0	12	.51
APR											
24...	--	--	--	20	--	--	--	--	3.8	32	.56
JUN											
07...	8	3000	16	180	<.5	<1	--	40	12	90	45
AUG											
28...	3	300	6	190	<.5	<1	<2	<20	3.2	86	26
DEC											
04...	--	--	--	--	--	--	--	--	--	136	79
JAN , 1980											
31...	--	--	--	--	--	--	--	--	--	52	7.2
MAR											
26...	--	--	1	--	1.2	0	0	--	--	44	1.0
MAY											
29...	--	--	--	--	--	--	--	--	--	130	102
JUL											
09...	--	--	--	--	--	--	--	--	--	54	9.5
SEP											
11...	--	--	0	--	.8	0	0	--	--	49	6.7

ND Looked for but not detected.

50090500 RIO MAUNABO AT LIZAS, PR

LOCATION.--Lat 18°01'38", long 65°56'24", Hydrologic Unit 21010005, on right bank, off Highway 759 at Lizas, about 1.0 mi (1.6 km) below Quebrada Coroco, and about 3.0 mi (4.8 km) northwest of Maunabo.

DRAINAGE AREA.--5.38 sq mi (13.93 sq km).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 230 ft (70.1 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--8 years (1972-79), 19.9 cu ft/s (0.564 cu m/s), 50.23 in/yr (1,276 mm/yr), 14,420 acre-ft/yr (17.8 cu hm/yr).
--9 years (1972-80), 19.4 cu ft/s (0.549 cu m/s), 48.97 in/yr (1,244 mm/yr), 14,060 acre-ft/yr (17.3 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,280 cu ft/s (178 cu m/s) Aug. 31, 1979, gage height, 14.57 ft (4.441 m), from rating curve extended above 50 cu ft/s (1.42 cu m/s) on basis of step-backwater analysis; minimum daily, 2.2 cu ft/s (0.062 cu m/s) Jul. 16, Aug. 7, 13, 1974.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 600 cu ft/s (17.0 cu m/s), revised, and maximum (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 23, 1978	1915	4,360	123	12.68	3.865
Oct. 26, 1978	0815	1,280	36.2	8.33	2.539
Oct. 31, 1978	1245	2,120	60.0	9.75	2.922
May 9, 1979	1100	635	18.0	6.82	2.079
June 27, 1979	0600	1,170	33.1	8.12	2.475
June 29, 1979	2100	2,880	81.6	10.88	3.316
June 30, 1979	2100	792	22.4	7.24	2.207
July 18, 1979	0900	929	26.3	7.58	2.310
Aug. 30, 1979	1800	2,640	74.8	10.54	3.213
Aug. 31, 1979	0400	*6,280	178	14.57	4.441
Sept. 4, 1979	1915	2,590	73.3	10.47	3.191
Sept. 22, 1979	0845	1,380	39.1	8.52	2.600
Sept. 29, 1979	1545	2,410	68.3	10.21	3.112
Oct. 4, 1979	1000	681	19.3	6.95	2.118
Nov. 25, 1979	1200	*1,160	32.9	8.08	2.463

Minimum discharges, 2.5 cu ft/s (0.071 cu m/s) Apr. 19, 1979; 2.4 cu ft/s (0.068 cu m/s) May 11, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	50	17	15	6.4	5.1	3.1	4.2	31	70	39	76
2	19	40	22	12	6.3	4.7	3.0	3.7	21	43	22	58
3	19	32	17	11	6.3	4.7	3.1	3.6	57	37	20	48
4	18	29	16	11	6.3	4.8	3.0	3.4	26	33	24	529
5	18	29	16	10	6.1	4.8	2.9	3.2	25	81	22	311
6	18	28	16	12	6.1	4.5	3.0	23	29	54	21	96
7	17	28	31	12	5.8	4.5	2.9	8.2	21	35	21	74
8	16	27	18	11	5.8	4.4	2.7	15	19	39	19	76
9	17	26	16	10	5.4	4.2	2.9	58	45	28	18	70
10	29	41	15	9.9	5.4	4.1	3.7	23	38	27	17	60
11	19	27	14	10	5.4	4.8	4.0	69	37	27	17	54
12	13	26	14	10	6.6	5.8	3.2	35	24	26	18	49
13	18	25	13	9.7	9.2	5.0	8.1	22	21	24	17	49
14	26	24	13	16	6.0	4.7	6.3	13	21	23	50	42
15	14	23	13	10	5.9	4.7	3.3	48	20	23	35	37
16	13	22	13	9.4	6.5	5.4	3.0	14	20	23	25	33
17	12	28	12	9.0	5.6	4.4	2.8	10	26	23	23	32
18	11	45	15	8.7	5.6	4.4	2.7	45	19	169	22	32
19	10	21	13	8.7	5.6	4.2	2.5	21	17	41	23	30
20	18	20	16	9.8	5.8	4.1	2.9	13	17	26	21	36
21	11	28	15	8.7	6.1	4.0	3.0	15	17	26	24	28
22	13	20	12	8.7	5.9	3.6	5.1	11	16	24	21	172
23	327	18	12	8.3	6.5	3.7	3.6	11	16	24	23	64
24	153	18	13	7.7	5.8	3.7	2.8	8.7	15	22	57	44
25	112	17	15	7.7	5.4	3.6	6.7	9.7	36	22	41	45
26	233	17	12	7.7	8.1	3.6	12	7.7	42	21	30	48
27	133	16	11	7.7	5.8	3.3	4.4	26	115	21	30	39
28	70	16	11	7.3	5.1	3.2	3.3	41	124	20	27	37
29	51	16	25	7.1	---	4.5	3.6	131	294	20	25	134
30	48	17	14	7.1	---	4.1	4.0	52	205	19	832	43
31	136	---	13	7.1	---	3.3	---	30	---	25	2480	---
TOTAL	1632	774	473	300.3	170.8	133.9	117.6	778.4	1414	1096	4064	2446
MEAN	52.6	25.8	15.3	9.69	6.10	4.32	3.92	25.1	47.1	35.4	131	81.5
MAX	327	50	31	16	9.2	5.8	12	131	294	169	2480	529
MIN	10	16	11	7.1	5.1	3.2	2.5	3.2	15	19	17	28
CFSM	9.78	4.80	2.84	1.80	1.13	.80	.73	4.67	8.76	6.58	24.3	15.1
IN.	11.28	5.35	3.27	2.08	1.18	.93	.81	5.38	9.78	7.58	28.10	16.91
AC-FT	3240	1540	938	596	339	266	233	1540	2800	2170	8060	4850

CAL YR 1978 TOTAL 7010.5 MEAN 19.2 MAX 327 MIN 4.8 CFSM 3.57 IN 48.47 AC-FT 13910
WTR YR 1979 TOTAL 13400.0 MEAN 36.7 MAX 2480 MIN 2.5 CFSM 6.82 IN 92.64 AC-FT 26580

50090500 RIO MAUNABO AT LIZAS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	24	28	12	7.2	6.3	4.2	4.8	9.8	11	7.1	5.5
2	54	20	24	11	7.5	5.9	4.1	4.7	7.9	9.7	7.1	5.4
3	45	29	43	11	9.0	5.9	4.0	4.5	6.9	10	7.1	5.5
4	91	20	28	10	9.4	5.9	4.0	4.5	6.6	13	7.5	5.2
5	55	20	33	11	8.5	11	4.0	4.4	6.1	25	8.1	6.7
6	56	20	27	11	8.7	7.2	4.0	4.2	5.6	37	6.9	11
7	70	21	26	10	8.3	6.3	4.1	4.2	7.4	21	6.4	5.4
8	64	32	24	13	7.9	6.5	4.0	4.2	7.1	17	19	5.4
9	78	85	54	10	8.1	6.5	4.0	4.1	21	13	8.7	11
10	60	29	30	12	8.7	5.1	4.2	3.9	35	9.6	14	12
11	55	21	26	9.2	8.1	6.1	20	3.8	44	15	9.4	9.0
12	45	18	27	25	7.9	11	23	5.4	19	9.0	7.5	11
13	43	17	24	18	7.7	6.3	24	5.2	14	7.7	6.8	9.4
14	56	16	21	12	7.9	5.9	6.3	80	11	9.2	6.7	8.1
15	62	16	34	9.9	7.2	5.4	5.4	26	13	13	8.7	6.9
16	41	16	22	9.0	7.5	5.8	7.7	11	12	8.3	6.7	6.1
17	35	15	19	8.7	7.5	7.7	5.9	8.9	31	14	6.2	6.4
18	31	16	17	8.3	7.5	5.6	9.2	8.2	14	21	5.8	6.4
19	29	15	18	7.9	8.5	5.8	6.5	8.2	11	22	5.9	8.4
20	28	14	19	7.9	7.5	5.1	6.7	8.0	11	13	5.8	15
21	27	14	18	7.7	7.1	5.0	5.6	8.2	10	11	5.6	7.2
22	25	14	23	6.9	6.9	5.0	5.1	35	8.7	10	5.5	6.1
23	27	18	17	7.5	6.9	5.0	5.9	20	7.9	8.9	5.4	5.6
24	26	36	15	16	7.2	5.0	7.1	14	7.7	8.4	6.8	14
25	23	125	14	9.9	6.7	5.0	21	10	8.3	8.0	7.3	9.2
26	55	78	14	8.3	6.7	4.8	10	24	8.7	7.7	8.6	6.4
27	28	38	13	7.7	6.7	5.0	6.5	31	8.5	8.5	6.1	5.9
28	25	41	12	7.5	6.7	4.8	5.6	74	7.7	8.7	5.4	11
29	23	28	12	7.2	6.5	4.8	5.4	21	7.5	7.9	8.6	8.2
30	22	25	12	7.2	---	4.7	5.3	14	9.8	7.3	6.3	6.3
31	22	---	12	7.1	---	4.4	---	10	---	7.4	5.7	---
TOTAL	1371	881	706	319.9	222.0	184.8	232.8	469.4	378.2	392.3	232.7	239.7
MEAN	44.2	29.4	22.8	10.3	7.66	5.96	7.76	15.1	12.6	12.7	7.51	7.99
MAX	91	125	54	25	9.4	11	24	80	44	37	19	15
MIN	22	14	12	6.9	6.5	4.4	4.0	3.8	5.6	7.3	5.4	5.2
CFSM	8.22	5.47	4.24	1.91	1.42	1.11	1.44	2.81	2.34	2.36	1.40	1.49
IN.	9.48	6.09	4.88	2.21	1.53	1.28	1.61	3.25	2.61	2.71	1.61	1.66
AC-FT	2720	1750	1400	635	440	367	462	931	750	778	462	475

CAL YR 1979 TOTAL 13479.0 MEAN 36.9 MAX 2480 MIN 2.5 CFSM 6.86 IN 93.18 AC-FT 26740
WTR YR 1980 TOTAL 5629.8 MEAN 15.4 MAX 125 MIN 3.8 CFSM 2.86 IN 38.92 AC-FT 11170

500910000 RIO MAUNABO AT MAUNABO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'24", long 65°54'19", at bridge on Highway 3, 0.4 mi (0.6 km) southwest of Maunabo, and 1.3 mi (2.1 km) upstream from mouth.

DRAINAGE AREA.--12.4 sq mi (32.1 sq km).

PERIOD OF RECORD.--Water years 1958-66, 1975 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
18...	1315	27	278	7.4	33.0	--	7.0	--	.4	3200	2200	2000
DEC												
05...	0950	36	227	7.5	25.5	--	8.0	--	1.6	38000	34000	2700
FEB , 1979												
27...	1400	12	288	7.5	32.0	--	7.6	--	1.4	20000	1600	250
APR												
24...	1355	8.0	234	7.2	30.0	--	7.7	--	1.0	4100	1200	1700
JUN												
28...	0940	940	76	6.6	24.0	--	8.6	--	2.7	220000	44000	56000
AUG												
28...	1430	39	202	7.4	32.0	--	6.8	--	2.6	31000	5200	2800
DEC												
04...	1400	52	196	7.3	27.0	100	7.7	13	.9	--	6600	1500
JAN , 1980												
31...	1500	52	228	7.5	29.5	15	7.1	32	2.8	--	7700	370
MAR												
26...	1430	11	272	7.4	32.5	1.2	7.2	15	.4	--	310	1000
MAY												
29...	1200	46	173	7.1	29.0	55	7.1	14	1.1	--	2700	500
JUL												
09...	1525	20	194	7.3	32.0	15	6.7	11	1.0	--	6500	350
SEP												
11...	1215	12	211	7.4	33.0	2.3	6.6	11	.8	--	4300	570

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
18...	73	0	18	6.8	19	1.0	1.4	97	0	80	6.2
DEC											
05...	72	0	17	7.2	19	1.0	1.4	93	0	76	4.7
FEB , 1979											
27...	78	0	19	7.5	21	1.0	1.2	102	0	84	5.2
APR											
24...	68	0	18	5.6	22	1.2	1.1	94	0	77	9.5
JUN											
28...	19	0	4.5	2.0	7.6	.8	.9	25	0	21	10
AUG											
28...	61	0	15	5.8	18	1.0	1.1	84	0	69	5.4
DEC											
04...	--	--	--	--	--	--	--	80	0	66	6.4
JAN , 1980											
31...	70	0	17	6.6	22	1.1	1.2	99	0	81	5.0
MAR											
26...	--	--	--	--	--	--	--	100	0	82	6.4
MAY											
29...	48	0	11	4.9	15	1.2	1.0	63	0	52	8.0
JUL											
09...	--	--	--	--	--	--	--	82	0	67	6.6
SEP											
11...	68	0	16	6.8	18	1.0	1.3	86	0	71	5.5

50091000 RIO MAUNABO AT MAUNABO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
18...	12	19	.1	36	164	160	12.0	--	.42	.010	.43
DEC											
05...	8.3	20	.1	38	153	157	15.0	--	.46	.010	.47
FEB , 1979											
27...	9.8	23	.1	37	175	169	5.8	--	.19	<.010	.19
APR											
24...	11	23	.1	35	164	162	3.5	--	.06	.030	.09
JUN											
28...	3.6	6.6	.1	16	63	54	160	--	.30	.020	.32
AUG											
28...	8.4	16	.1	37	--	143	14.9	--	.35	.010	.36
DEC											
04...	--	--	--	--	--	--	--	--	.48	.000	.48
JAN , 1980											
31...	9.0	18	.2	35	--	162	7.0	245	.21	.010	.22
MAR											
26...	--	--	--	--	--	--	--	--	.07	.000	.07
MAY											
29...	8.7	14	.1	31	--	121	15.1	4	.69	.010	.70
JUL											
09...	--	--	--	--	--	--	--	--	.16	.010	.17
SEP											
11...	7.1	17	.2	41	--	150	4.9	0	.25	.010	.26

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
18...	.020	.22	.24	.67	3.0	.110	.030	--	--	--	--
DEC											
05...	.220	.18	.40	.87	3.9	.100	.070	<1	--	ND	<20
FEB , 1979											
27...	<.010	.14	.14	.33	1.5	.070	.030	--	--	--	--
APR											
24...	.040	.89	.93	1.0	4.5	.830	.080	--	--	--	--
JUN											
28...	.060	2.0	2.10	2.4	11	.540	.070	--	--	--	--
AUG											
28...	<.010	.27	.27	.63	2.8	.120	.020	1	--	2	20
DEC											
04...	.000	.43	.43	.91	4.0	.170	--	--	--	--	--
JAN , 1980											
31...	.000	.40	.40	.62	2.7	.070	--	--	--	--	--
MAR											
26...	.030	.00	.03	.10	.40	.040	--	1	100	0	13
MAY											
29...	.030	.16	.19	.89	3.9	.100	--	--	--	--	--
JUL											
09...	.000	.20	.20	.37	1.6	.080	--	--	--	--	--
SEP											
11...	.030	.09	.12	.38	1.7	.040	--	1	100	0	12

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
16...	--	--	--	--	--	--	--	--	--	214	16
DEC											
05...	9	2200	3	80	<.5	<1	ND	20	--	53	5.2
FEB , 1979											
27...	--	--	--	<10	--	--	--	--	2.2	86	2.9
APR											
24...	--	--	--	5200	--	--	--	--	10	--	--
JUN											
28...	--	--	--	--	--	--	--	--	20	887	2250
AUG											
28...	33	8900	11	490	<.5	<1	<2	40	5.1	304	32
DEC											
04...	--	--	--	--	--	--	--	--	--	369	52
JAN , 1980											
31...	--	--	--	--	--	--	--	--	--	224	31
MAR											
26...	--	--	0	--	.6	0	0	--	--	22	.62
MAY											
29...	--	--	--	--	--	--	--	--	--	115	19
JUL											
09...	--	--	--	--	--	--	--	--	--	61	3.3
SEP											
11...	--	--	0	--	.8	0	0	--	--	51	1.7

ND Looked for but not detected.

50091800 RIO CHICO AT PROVIDENCIA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°59'16", long 66°00'18", at flat low bridge 200 ft (61 m) south of Highway 3, 0.5 mi (0.8 km) above mouth, and 1.5 mi (2.4 km) southeast of Patillas.

DRAINAGE AREA.--4.93 sq mi (12.77 sq km).

PERIOD OF RECORD.--December 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DEC , 1979										
04...	1540	13	309	7.7	27.0	2.0	6.1	16	6.2	530000
JAN , 1980										
15...	1430	2.9	400	7.6	27.0	1.5	5.2	27	10	110000
MAR										
11...	1200	.70	735	7.2	26.0	--	3.4	--	48	35000
MAY										
12...	1415	.48	712	7.2	30.5	21	1.5	200	124	1960000
JUL										
07...	1400	1.4	460	7.2	29.0	7.0	2.3	110	88	1890000
SEP										
02...	1340	.44	756	7.2	30.0	4.2	1.2	--	41	20000

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)
DEC , 1979										
04...	90000	--	--	--	--	--	--	--	137	0
JAN , 1980										
15...	95000	120	0	27	12	41	1.7	2.4	179	0
MAR										
11...	4000	--	--	--	--	--	--	--	240	0
MAY										
12...	530000	--	--	--	--	--	--	--	270	0
JUL										
07...	6000	--	--	--	--	--	--	--	194	0
SEP										
02...	23000	140	0	33	14	95	3.5	7.6	288	0

DATE	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)
DEC , 1979										
04...	110	4.4	--	--	--	--	--	--	--	.31
JAN , 1980										
15...	150	7.2	25	35	.2	31	262	2.1	26	.19
MAR										
11...	200	24	--	--	--	--	--	--	--	.09
MAY										
12...	220	27	18	59	.2	--	--	--	25	--
JUL										
07...	160	20	--	--	--	--	--	--	--	.00
SEP										
02...	236	29	66	64	.3	40	462	.55	9	.00

RIO CHICO BASIN

50091800 RIO CHICO AT PROVIDENCIA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)
DEC , 1979										
04...	.010	.32	1.10	.30	1.40	1.7	7.6	.410	--	--
JAN , 1980										
15...	.020	.21	4.20	1.0	5.20	5.4	24	.750	--	--
MAR										
11...	.040	.13	14.0	28	42.0	42	190	4.10	--	0
MAY										
12...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	.010	.01	7.40	3.6	11.0	11	49	3.20	--	--
SEP										
02...	.020	.02	15.0	14	29.0	29	130	.010	2	200

DATE	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
DEC , 1979									
04...	--	--	--	--	--	--	--	37	1.3
JAN , 1980									
15...	--	--	--	--	--	--	--	--	--
MAR									
11...	0	10	2	.3	0	1	13	11	.02
MAY									
12...	--	--	--	--	--	--	--	90	.12
JUL									
07...	--	--	--	--	--	--	--	88	.34
SEP									
02...	1	35	11	.4	0	2	--	32	.04

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR

LOCATION.--Lat 18°02'04", long 66°01'58", Hydrologic Unit 21010004, on left bank, at foot bridge, off Highway 184, 1.2 mi (1.9 km) upstream from Lago Patillas Dam and 2.2 mi (3.5 km) northwest of Patillas.

DRAINAGE.--18.3 sq mi (47.4 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1959 to October 1965 (annual low-flow and occasional measurements only), January 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 235 ft (71.6 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--13 years (1967-79), 62.2 cu ft/s (1.762 cu m/s), 46.16 in/yr (1,172 mm/yr), 45,060 acre-ft/yr (55.6 cu hm/yr); median of yearly mean discharges 62 cu ft/s (1.76 cu m/s), 44,900 acre-ft/yr (55 cu hm/yr).
--14 years (1967-80), 61.1 cu ft/s (1.730 cu m/s), 45.34 in/yr (1,152 mm/yr), 44,270 acre-ft/yr (54.6 cu hm/yr); median of yearly mean discharges 54 cu ft/s (1.53 cu m/s), 39,100 acre-ft/yr (48 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 cu ft/s (419 cu m/s) Sept. 16, 1975, gage height, 12.45 ft (3.795 m), from rating table extended above 250 cu ft/s (7.08 cu m/s) on basis of slope-area measurements of peak flow; minimum, 4.6 cu ft/s (0.130 cu m/s) May 13-16, 1968, gage height, 3.55 ft (1.082 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,500 cu ft/s (70.8 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 23, 1978	1930	6,080	172	11.18	3.408
Oct. 26, 1978	0815	4,780	135	10.34	3.152
May 29, 1979	0315	3,070	86.9	9.01	2.746
June 29, 1979	2200	4,830	137	10.37	3.161
June 30, 1979	1615	4,570	129	10.19	3.106
July 18, 1979	1015	2,970	84.1	8.92	2.719
Aug. 30, 1979	1830	6,790	192	11.60	3.536
Aug. 31, 1979	0445	*14,700	417	15.2	4.63
Sept. 4, 1979	1145	4,880	138	10.41	3.173
Sept. 29, 1979	1600	6,920	196	11.7	3.56
Oct. 4, 1979	1015	* 2,630	74.5	8.60	2.621

Minimum discharges, 6.2 cu ft/s (0.176 cu m/s) Apr. 4-5, 1979; 8.6 cu ft/s (0.244 cu m/s) Sept. 17, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	322	52	35	21	11	7.4	11	97	658	130	481
2	30	259	56	33	21	11	7.1	11	209	302	80	246
3	28	166	49	32	20	11	6.8	10	334	185	60	182
4	28	129	43	32	19	9.7	6.5	9.9	93	152	57	1430
5	27	110	42	31	20	9.4	6.6	9.4	66	430	54	1680
6	26	92	49	63	20	9.2	7.5	22	76	340	59	612
7	25	88	87	42	19	8.8	7.5	12	43	240	53	361
8	25	77	55	42	19	8.6	7.4	17	35	150	45	398
9	24	86	46	42	18	8.8	8.0	58	91	120	42	283
10	53	108	42	33	15	8.6	11	100	202	100	39	221
11	49	80	41	30	15	10	9.9	81	142	90	41	206
12	35	77	39	29	14	14	10	63	94	80	42	151
13	36	75	38	28	18	11	12	79	66	70	37	144
14	33	100	38	34	13	11	13	47	54	64	97	122
15	29	80	38	30	12	10	9.6	37	81	61	67	110
16	36	67	37	29	13	9.6	8.6	25	49	76	49	101
17	27	62	37	29	11	9.0	9.3	24	53	76	44	93
18	24	130	36	27	10	13	11	92	38	629	41	89
19	22	76	35	26	9.5	11	12	107	32	299	44	85
20	32	65	47	28	9.9	9.2	14	89	28	149	59	90
21	26	67	43	26	12	8.6	13	69	27	122	51	89
22	25	58	36	25	13	10	13	57	26	102	90	351
23	956	54	35	25	14	9.7	14	50	25	104	100	198
24	529	52	37	23	11	9.1	14	45	24	82	231	117
25	760	48	44	23	10	7.9	38	45	86	71	165	115
26	1530	47	39	24	14	7.4	44	48	414	63	93	96
27	997	45	35	23	13	7.1	19	76	544	58	66	80
28	450	45	33	22	11	7.1	15	93	632	55	45	72
29	235	47	39	22	---	8.5	13	432	1040	53	60	994
30	185	47	35	21	---	14	12	343	1310	49	2010	229
31	296	---	33	21	---	11	---	133	---	69	3120	---
TOTAL	6612	2759	1316	930	415.4	304.3	380.2	2295.3	6011	5099	7171	9426
MEAN	213	92.0	42.5	30.0	14.8	9.82	12.7	74.0	200	164	231	314
MAX	1530	322	87	63	21	14	44	432	1310	658	3120	1680
MIN	22	45	33	21	9.5	7.1	6.5	9.4	24	49	37	72
CFSM	11.6	5.03	2.32	1.64	.81	.54	.69	4.04	10.9	8.96	12.6	17.2
IN.	13.44	5.61	2.68	1.89	.84	.62	.77	4.67	12.22	10.36	14.58	19.16
AC-FT	13110	5470	2610	1840	824	604	754	4550	11920	10110	14220	18700

CAL YR 1978 TOTAL 25960.0 MEAN 71.1 MAX 1530 MIN 14 CFSM 3.89 IN 52.77 AC-FT 51490
WTR YR 1979 TOTAL 42719.2 MEAN 117 MAX 3120 MIN 6.5 CFSM 6.39 IN 86.83 AC-FT 84730

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	50	71	24	20	16	14	16	23	21	20	11
2	161	44	77	25	20	15	16	14	19	20	18	12
3	157	63	156	26	25	16	14	12	16	16	16	14
4	582	48	93	24	20	22	13	12	15	22	21	37
5	320	41	77	29	18	37	13	11	14	116	27	58
6	314	71	69	25	20	31	13	10	13	256	34	30
7	257	56	66	23	19	23	12	10	13	70	32	17
8	190	48	65	28	16	19	12	9.5	17	45	83	16
9	163	129	116	30	17	18	11	9.3	78	38	39	27
10	136	70	70	25	19	17	18	9.0	67	41	100	27
11	120	60	61	23	17	17	18	9.0	89	42	49	16
12	107	48	58	32	16	32	23	9.7	48	36	37	14
13	97	43	56	57	15	20	40	12	32	32	33	16
14	114	40	52	42	15	27	15	61	24	45	32	12
15	127	38	49	30	15	23	13	49	67	56	36	11
16	94	36	46	25	15	21	15	17	50	40	25	9.5
17	83	39	45	25	17	21	14	15	173	230	19	8.7
18	75	40	44	25	21	19	20	23	61	154	18	11
19	69	35	44	25	20	16	18	21	39	104	17	15
20	65	36	46	20	18	15	16	15	34	58	16	31
21	97	37	48	20	18	15	14	13	29	44	16	20
22	72	36	66	20	17	15	12	51	24	39	15	17
23	87	55	60	25	24	14	16	27	21	36	16	16
24	71	139	55	45	21	14	18	18	20	40	15	77
25	57	491	70	30	18	13	64	15	22	25	14	49
26	136	274	50	25	17	13	32	25	23	30	22	31
27	69	165	40	25	17	14	17	187	23	30	14	26
28	107	127	30	25	16	13	15	434	21	20	13	25
29	66	88	25	20	16	13	13	86	19	16	20	25
30	51	90	25	20	---	13	13	48	20	16	15	21
31	48	---	25	20	---	13	---	30	---	15	12	---
TOTAL	4274	2537	1855	838	527	575	542	1278.5	1114	1753	844	700.2
MEAN	138	84.6	59.8	27.0	18.2	18.5	18.1	41.2	37.1	56.5	27.2	23.3
MAX	582	491	156	57	25	37	64	434	173	256	100	77
MIN	48	35	25	20	15	13	11	9.0	13	15	12	8.7
CFSM	7.54	4.62	3.27	1.48	1.00	1.01	.99	2.25	2.03	3.09	1.49	1.27
IN.	8.69	5.16	3.77	1.70	1.07	1.17	1.10	2.60	2.26	3.56	1.72	1.42
AC-FT	8480	5030	3680	1660	1050	1140	1080	2540	2210	3480	1670	1390

CAL YR 1979 TOTAL 40698.2 MEAN 112 MAX 3120 MIN 6.5 CFSM 6.12 IN 82.73 AC-FT 80720
WTR YR 1980 TOTAL 16837.7 MEAN 46.0 MAX 582 MIN 8.7 CFSM 2.51 IN 34.23 AC-FT 33400

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978											
04...	0945	30	173	7.6	26.0	1.0	8.3	.5	4000	1400	670
NOV											
06...	1215	93	164	7.7	26.5	3.0	7.9	--	--	1500	2000
DEC											
05...	1300	42	170	8.6	27.0	2.0	8.2	2.3	21000	2200	2100
JAN , 1979											
10...	0925	33	142	7.5	21.0	1.0	9.7	--	--	290	2000
FEB											
09...	0930	18	158	7.5	22.5	1.0	9.0	2.1	11000	460	1300
MAR											
13...	1015	11	167	7.6	25.0	1.0	8.9	--	--	320	430
APR											
09...	1040	8.4	186	7.7	25.5	1.0	8.6	.8	580	320	760
MAY											
04...	1035	11	181	7.7	27.0	1.0	8.6	--	31000	21000	1800
JUN											
12...	1140	92	135	7.5	26.0	3.0	8.6	--	4300	2500	1500
JUL											
13...	0945	70	153	7.9	24.0	1.0	8.2	--	--	1300	1100
AUG											
06...	1110	51	154	7.3	27.0	1.0	7.5	.7	2300	700	380
SEP											
14...	1100	120	148	7.6	26.0	1.0	8.8	--	16000	2900	740
OCT											
02...	1135	340	155	7.2	26.0	20	8.4	--	--	5700	1900
NOV											
08...	1440	46	103	7.7	28.0	150	7.8	1.5	--	2200	410
DEC											
12...	1055	56	147	7.9	23.5	1.0	8.5	--	--	6600	1600
JAN , 1980											
15...	1145	29	147	7.4	22.5	.10	8.5	.8	--	640	60
FEB											
05...	1415	18	118	8.0	26.0	.50	8.2	--	--	180	600
MAR											
11...	0900	17	215	7.9	23.0	.40	5.6	--	--	480	300
APR											
09...	1530	10	192	8.9	25.0	.18	7.9	--	--	210	350
MAY											
05...	1615	11	137	8.4	25.5	--	7.7	--	--	450	320
JUN											
02...	1600	18	162	7.9	31.0	2.0	7.2	--	--	2100	70
JUL , 1980											
02...	1430	18	166	7.5	29.0	.50	7.7			510	214
AUG											
05...	1400	22	152	8.6	27.5	3.3	7.9			1000	160
SEP											
03...	1045	15	161	8.0	27.0	.30	7.9			1000	2700
30...	1245	154	154	8.4	28.0	.50	7.8			900	110

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
OCT , 1978											
04...	51	0	11	5.7	13	.8	.6	65	0	53	2.6
NOV											
06...	42	0	9.4	4.5	13	.9	.5	52	0	43	1.7
DEC											
05...	46	0	10	5.0	13	.8	.6	55	6	55	.3
JAN , 1979											
10...	49	0	11	5.3	14	.9	.5	60	0	49	3.0
FEB											
09...	56	0	13	5.7	15	.9	.5	70	0	57	3.5
MAR											
13...	56	0	13	5.6	14	.8	.5	70	0	57	2.8
APR											
09...	57	0	13	5.9	16	.9	.5	74	0	61	2.4
MAY											
04...	53	0	12	5.7	16	1.0	.5	72	0	59	2.3
JUN											
12...	39	1	9.0	3.9	11	.8	.5	46	0	38	2.3
JUL											
13...	44	0	10	4.6	14	.9	.4	56	0	46	1.1
AUG											
06...	--	--	--	--	--	--	--	60	0	49	4.8
SEP											
14...	42	0	9.6	4.4	12	.8	.5	51	0	42	2.1
OCT											
02...	36	1	8.1	3.8	11	.8	.5	43	0	35	4.3
NOV											
08...	67	6	17	6.0	7.1	.4	1.9	74	0	61	2.4
DEC											
12...	40	0	9.2	4.1	12	.8	.4	57	0	47	1.1
JAN , 1980											
15...	47	0	11	4.7	13	.8	.6	60	0	49	3.8
FEB											
05...	48	0	11	5.0	15	.9	.4	71	0	58	1.1
MAR											
11...	52	0	12	5.3	17	1.0	1.2	84	0	69	1.7
APR											
09...	53	0	12	5.6	17	1.0	.5	80	4	72	.2
MAY											
05...	--	--	--	--	--	--	--	69	0	57	.4
JUN											
02...	43	0	9.5	4.6	15	1.0	2.5	60	0	49	1.2
JUL ,											
02...	46	1	11	4.9	13	.8	.7	65	0	53	2.9
AUG											
05...	62	8	13	7.2	28	1.5	1.4	46	12	57	.3
SEP											
03...	53	3	12	5.5	14	.8	.6	41	0	50	.7
30...	57	8	13	5.9	14	.8	.5	52	4	49	.4

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)
OCT , 1978											
04...	11	10	.1	26	111	109	8.9	.22	--	.030	--
NOV											
06...	9.0	13	.1	27	112	103	28.1	.33	--	<.010	--
DEC											
05...	9.4	12	.1	23	101	106	11.5	.12	--	.090	--
JAN , 1979											
10...	9.1	12	<.1	23	104	104	9.2	.21	--	.010	--
FEB											
09...	12	12	.1	25	124	118	6.0	.13	--	.010	--
MAR											
13...	12	12	.1	25	114	117	3.5	.10	--	.030	--
APR											
09...	12	10	.1	25	--	119	--	.06	--	.010	--
MAY											
04...	12	13	.1	24	118	120	3.4	.07	--	<.010	--
JUN											
12...	8.6	12	.1	21	93	89	23.1	.48	--	.010	--
JUL											
13...	9.2	12	.1	27	101	105	19.1	.14	--	.040	--
AUG											
06...	10	12	.1	--	108	52	14.9	.18	--	<.010	--
SEP											
14...	8.9	13	.1	28	98	101	31.8	.26	.27	<.010	--
OCT											
02...	7.2	11	.1	24	99	89	90.9	.40		.000	--
NOV											
06...	8.0	4.7	.1	24	115	111	14.3	1.3	1.3	.030	.010
DEC											
12...	8.1	10	.0	23	109	96	16.3	.22	.18	.000	.000
JAN , 1980											
15...	10	11	.1	24	97	105	7.6	.23	.25	.000	.010
FEB											
05...	11	12	.1	25	114	115	5.4	.12	.13	.000	.010
MAR											
11...	12	12	.1	24	120	126	5.6	.16	.18	.050	.080
APR											
09...	13	12	.1	24	118	128	3.3	.00	--	.050	.050
MAY											
05...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	11	17	.1	22	127	115	6.0	1.1	.94	.040	.020
JUL											
02...	10	11	.1	21	102	100	5.0	.06	.08	.000	.000
AUG											
05...	9.5	15	.0	22	111	129	6.6	.02	.03	.020	.000
SEP											
03...	9.1	11	.1	20	101	102	4.1	.03	.02	--	--
30...	11	10	.1	26	106	111	5.7	.08	--	.000	.000

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN DIS-SOLVED (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)
OCT , 1978											
04...	.06	--	.05	.09	.31	--	1.4	.020	.020	--	--
NOV											
06...	.10	--	.10	<.10	.43	--	1.9	.010	.010	--	--
DEC											
05...	.03	--	.12	.10	.24	--	1.1	.020	.010	--	<1
JAN , 1979											
10...	.12	--	.13	.08	.34	--	1.5	.010	.010	--	--
FEB											
09...	.15	--	.16	.07	.29	--	1.3	.010	.010	--	--
MAR											
13...	.03	--	.06	.04	.16	--	.71	.020	.020	.010	1
APR											
09...	.76	--	.77	.15	.83	--	3.7	.010	.010	--	--
MAY											
04...	.04	--	.04	<.10	.11	--	.49	.030	.020	--	--
JUN											
12...	.08	--	.09	--	.57	--	2.5	.020	.020	--	--
JUL											
13...	.01	--	.05	.05	.19	--	.84	.010	.010	--	<1
AUG											
06...	.15	--	.15	.09	.33	--	1.5	.020	.010	--	--
SEP											
14...	.15	--	.15	.06	.41	--	1.8	.020	.010	--	1
OCT											
02...	.21	--	.21	.04	.61	.45	2.7	.030	.020	--	--
NOV											
08...	.50	.20	.53	.21	1.8	1.5	8.1	.170	.020	--	--
DEC											
12...	.16	.05	.16	.05	.38	.23	1.7	.020	.010	--	0
JAN , 1980											
15...	.75	.17	.75	.18	.98	.43	4.3	.020	.020	--	1
FEB											
05...	.17	.12	.17	.13	.29	.26	1.3	.020	.020	--	--
MAR											
11...	.36	.33	.41	.41	.57	.59	2.5	.030	.020	--	--
APR											
09...	.18	.06	.23	.11	.23	.18	1.0	.020	.000	--	2
MAY											
05...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	.47	.28	.51	.30	1.6	1.2	7.1	.040	.030	--	--
JUL , 19											
02...	.14	.14	.14	.14	.20	.25	.89	.090	.080		1
AUG											
05...	.00	.00	.00	.00	.02	.08	.09	.040	.050		--
SEP											
03...	--	--	--	--	--	--	--	.010	.010		--
30...	.19	.18	.19	.18	.27	.29	1.2	.020	.010		0

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)
OCT , 1978											
04...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	<1	--	<100	--	--	--	--	--	<2	--	<2
DEC											
05...	<1	<100	<100	ND	ND	<20	<2	3	ND	2	ND
JAN , 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
FEB											
09...	--	--	--	--	--	--	--	--	--	--	--
MAR											
13...	1	<100	<100	1	<2	<20	ND	<2	<2	6	2
APR											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
04...	<1	--	<100	--		--	<20	--	3	--	2
JUN											
12...	--	--	--	--	--	--	--	--	--	--	--
JUL											
13...	<1	<100	20	3	3	30	<20	ND	ND	<2	ND
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
SEP											
14...	<1	<100	--	ND	--	20	<20	ND	--	2	ND
OCT											
02...	--	--	--	--	--	--	--	--	--	--	--
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
DEC											
12...	0	0	0	1	1	20	10	0	0	2	2
JAN , 1980											
15...	0	100	30	4	4	20	20	0	0	5	3
FEB											
05...	--	--	--	--	--	--	--	--	--	--	--
MAR											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
09...	1	<50	20	0	0	20	10	0	0	4	4
MAY											
05...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
JUL											
02...	1	<50	20	0	0	20	<10	0	0	2	2
AUG											
05...	--	--	--	--	--	--	--	--	--	--	--
SEP											
03...	--	--	--	--	--	--	--	--	--	--	--
30...	0	100	100	1	1	20	<10	0	0	3	3

ND Looked for but not detected.

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)
OCT , 1978											
04...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	--	120	--	--	--	20	--	<.5	--	--	--
DEC											
05...	160	30	ND	--	<10	--	<.5	<.5	--	--	<1
JAN , 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
FEB											
09...	--	--	--	--	--	--	--	--	--	--	--
MAR											
13...	90	20	4	ND	<10	6	<.5	<.5	--	--	<1
APR											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
04...	--	20	--		--	7	--	<.5	--	--	--
JUN											
12...	--	--	--	--	--	--	--	--	--	--	--
JUL											
13...	100	30	2	2	20	8	<.5	<.5	--	--	<1
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
SEP											
14...	270	50	2	ND	20	20	<.5	<.5	--	--	<1
OCT											
02...	--	--	--	--	--	--	--	--	--	--	--
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
DEC											
12...	240	30	0	0	10	8	.1	.1	2	0	0
JAN , 1980											
15...	150	40	2	1	10	4	.3	.2	3	0	0
FEB											
05...	--	--	--	--	--	--	--	--	--	--	--
MAR											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
09...	280	20	2	2	10	5	.1	.1	2	--	0
MAY											
05...	--	--	--	--	--	--	--	--	--	--	--
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
JUL											
02...	120	30	1	0	20	5	.2	.1	0	0	0
AUG											
05...	--	--	--	--	--	--	--	--	--	--	--
SEP											
03...	--	--	--	--	--	--	--	--	--	--	--
30...	200	20	5	1	10	0	.2	.2	5	2	0

ND Looked for but not detected.

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
04...	--	--	--	--	--	2.2	--	--	1	.08
NOV										
06...	<1	--	--	--	<20	--	2.6	--	2	.50
DEC										
05...	<1	ND	ND	<20	ND	--	6.9	--	1	.11
JAN , 1979										
10...	--	--	--	--	--	3.3	--	.3	0	.00
FEB										
09...	--	--	--	--	--	3.9	--	--	1	.05
MAR										
13...	<1	ND	ND	20	<20	--	3.2	--	1	.03
APR										
09...	--	--	--	--	--	1.7	--	--	2	.05
MAY										
04...	<1	--	--	--	ND	--	5.4	--	2	.06
JUN										
12...	--	--	--	--	--	1.5	--	--	11	2.7
JUL										
13...	<1	ND	ND	20	20	1.9	--	--	2	.38
AUG										
06...	--	--	--	--	--	4.3	--	--	1	.14
SEP										
14...	<1	ND	ND	40	20	--	4.7	--	5	1.6
OCT										
02...	--	--	--	--	--	--	1.9	--	23	21
NOV										
08...	--	--	--	--	--	7.9	--	--	2	.25
DEC										
12...	0	0	0	10	9	3.0	--	--	2	.30
JAN , 1980										
15...	0	0	0	30	30	--	3.1	--	1	.08
FEB										
05...	--	--	--	--	--	2.0	--	--	0	.00
MAR										
11...	--	2	--	--	--	3.4	--	--	0	.00
APR										
09...	0	0	0	10	10	--	2.0	.1	0	.00
MAY										
05...	--	--	--	--	--	--	--	--	1	.03
JUN										
02...	--	24	--	--	--	.0	--	--	3	.15
JUL										
02...	0	2	0	10	2	--	3.5		1	.05
AUG										
05...	--	--	--	--	--	.8	--		8	.48
SEP										
03...	--	0	--	--	--	--	--		1	.04
30...	0	0	0	20	20	--	2.5		3	1.2

ND Looked for but not detected.

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PESTICIDE ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL (UG/L)
DEC 05...	1300	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	0930	ND	--	ND	--	ND	--	ND	--	ND
JUN 12...	1140	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 06...	1110	ND	--	ND	--	ND	--	ND	--	ND
DEC 12...	1055	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 05...	1445	ND	--	ND	--	ND	--	ND	--	ND

DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOTTOM MATERIAL (UG/KG)
DEC 05...	--	ND	--	ND	ND	--	ND	--	ND	--
FEB 09...	--	ND	--	ND	ND	--	ND	--	ND	--
JUN 12...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 06...	--	ND	--	ND	ND	--	ND	--	ND	--
DEC 12...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 05...	--	ND	--	ND	ND	--	ND	--	ND	--

DATE	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	MALATHION, TOTAL (UG/L)	MALATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	METHOXYCHLOR, TOTAL (UG/L)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARATHION, TOTAL (UG/L)
DEC 05...	--	ND	--	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	--	ND	--	ND	--	ND
JUN 12...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 06...	--	ND	--	--	ND	--	ND	--	ND
DEC 12...	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 05...	--	ND	--	--	ND	--	ND	--	ND

DATE	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRITHION, TOTAL (UG/L)	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG)	PARATHION, TOTAL (UG/L)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL (UG/L)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC 05...	--	ND	--	ND	--	ND	--	ND	--			
FEB 09...	--	ND	--	ND	--	ND	--	ND	--			
JUN 12...	ND	ND	ND	ND	ND	ND	ND	ND	ND			
AUG 06...	--	ND	--	ND	--	ND	--	ND	--			
DEC 12...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 05...	--	ND	--	ND	--	ND	--	ND	--	--	--	--

ND Looked for but not detected.

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 4,78		NOV 6,78		JAN 10,79		FEB 9,79		JUN 12,79		JUL 13,79	
TIME	0945		1215		0925		0930		1140		0945	
TOTAL CELLS/ML	21		100		280		110		39		3700	
DIVERSITY: DIVISION	0.9		1.0		1.2		1.5		1.6		1.2	
.CLASS	0.9		1.0		1.2		1.5		1.6		1.2	
..ORDER	0.9		1.0		1.3		1.8		1.6		1.2	
...FAMILY	0.9		1.4		2.7		2.3		1.6		1.2	
....GENUS	0.9		1.4		2.7		2.3		1.6		1.2	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	--	-	--	-
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	31	11	--	-	13#	33	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	7#	33	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	45#	41	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	8	3	5	5	--	-	200	5
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	43#	43	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	38	14	10	9	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	8	3	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	31	11	5	5	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....NAVICULA	14#	67	43#	43	85#	31	10	9	13#	33	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	14	14	23	8	5	5	--	-	2300#	62
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	54#	19	30#	27	--	-	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	1200#	33
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	--	-	--	-	--	-	--	-	13#	33	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	AUG 6,79	SEP 14,79	OCT 2,79	NOV 8,79	DEC 12,79
TIME	1110	1100	1135	1440	1055
TOTAL CELLS/ML	260	520	57	0	850
DIVERSITY: DIVISION	1.0	0.8	0.8	0.0	0.8
.CLASS	1.0	0.8	0.8	0.0	0.0
..ORDER	1.1	0.8	0.8	0.0	0.0
...FAMILY	1.1	1.5	1.5	0.0	0.0
....GENUS	1.1	1.5	1.5	0.0	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	630#	74
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	14#	25	--	-	16	2
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	14	5	--	-	--	-	--	-	8	1
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	14	5	--	-	--	-	--	-	91	11
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	14#	25	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	16	2
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	8	1
...NAVICULACEAE										
....NAVICULA	--	-	130#	25	29#	50	--	-	66	8
...NITZSCHIACEAE										
....NITZSCHIA	--	-	270#	53	--	-	--	-	16	2
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	210#	79	--	-	--	-	--	-	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	110#	22	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	28	11	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1980

DATE	JAN 15,80		FEB 5,80		MAR 11,80		APR 9,80		MAY 5,80	
TIME	1145		1415		0900		1530		1615	
TOTAL CELLS/ML	69		14		85		1100		170	
DIVERSITY: DIVISION	0.0		0.0		1.2		1.4		0.7	
.CLASS	0.0		0.0		1.2		1.4		0.7	
..ORDER	0.7		0.0		1.3		1.5		0.7	
...FAMILY	1.4		0.0		1.4		1.9		0.8	
....GENUS	1.4		0.0		1.4		1.9		0.8	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	--	-
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	14	1	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	14	1	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	60#	71	370#	35	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	14	1	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	14#	20	--	-	5	6	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	5	6	--	-	--	-
....COCCONEIS	41#	60	--	-	--	-	41	4	14	8
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	14	1	--	-
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	14	1	14	8
...NAVICULACEAE										
....NAVICULA	14#	20	14#	100	--	-	14	1	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	5	6	55	5	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	10	12	--	-	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	520#	49	140#	83
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50092000 RIO GRANDE DE PATILLAS NEAR PATILLAS, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUN 2,80	JUL 2,80	AUG 5,80	SEP 3,80	SEP 30,80
TIME	1600	1430	1400	1045	1245
TOTAL CELLS/ML	27	330	41	72	96
DIVERSITY: DIVISION	0.0	1.4	0.0	0.0	0.6
.CLASS	0.0	1.4	0.0	0.0	0.6
..ORDER	0.0	2.1	0.0	0.0	0.6
...FAMILY	0.0	2.3	1.6	1.4	1.1
....GENUS	0.0	2.6	1.6	1.9	1.1

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)	--	-	--	-	--	-	--	-	--	-
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	69#	21	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	14	14
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	14	4	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	14#	33	14#	20	--	-
....COCCONEIS	--	-	27	8	--	-	29#	40	69#	71
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	14#	20	--	-
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	14#	33	14#	20	--	-
...NAVICULACEAE										
....NAVICULA	27#	100	--	-	14#	33	--	-	14	14
...NITZSCHIACEAE										
....NITZSCHIA	--	-	27	8	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROCOCCACEAE										
....ANACYSTIS	--	-	41	13	--	-	--	-	--	-
....COCCOCHLORIS	--	-	82#	25	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	69#	21	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50094200 RIO GRANDE DE PATILLAS AT PATILLAS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'15", long 66°01'27", at bridge on Highway 3, 0.7 mi (1.1 km) west of Patillas, and 1.9 mi (3.1 km) upstream from mouth.

DRAINAGE AREA.--27.9 sq mi (72.3 sq km).

PERIOD OF RECORD.--Water years 1960-64, 1974 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
04...	1145	9.7	278	8.0	31.0	9.0	.5	1000	70	120	79
DEC											
05...	1140	73	162	7.7	25.0	7.7	2.3	500	160	320	46
FEB , 1979											
09...	1310	1.2	400	8.2	25.0	11.4	2.4	6800	34	40	120
APR											
09...	1250	E.75	369	8.2	30.0	12.5	.9	7100	20	210	120
JUN											
12...	1430	E7.5	236	7.6	31.0	8.2	--	2100	820	1500	71
AUG											
06...	1310	47	141	8.3	30.0	8.8	1.0	250	110	140	40

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
04...	0	18	8.3	21	1.0	.7	98	0	80	1.6	17
DEC											
05...	0	10	5.0	12	.8	.9	58	0	48	1.9	8.5
FEB , 1979											
09...	5	30	12	31	1.2	.7	140	0	115	1.4	34
APR											
09...	5	28	12	33	1.3	.6	140	0	115	1.4	34
JUN											
12...	0	17	6.9	19	1.0	.7	90	0	74	3.6	17
AUG											
06...	0	9.4	3.9	13	.9	.5	52	0	43	.4	9.6

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
04...	16	.1	24	150	153	5.9	.40	<.010	.40	.030
DEC										
05...	12	.1	23	99	101	19.5	.42	.010	.43	.100
FEB , 1979										
09...	25	.2	25	239	227	.77	1.1	.010	1.1	.020
APR										
09...	23	.1	25	233	225	.47	.62	.010	.63	.010
JUN										
12...	17	.1	21	146	143	5.0	1.1	.020	1.1	.040
AUG										
06...	11	.1	22	--	95	12.0	.34	.010	.35	<.010

E Estimated.

50094200 RIO GRANDE DE PATILLAS AT PATILLAS, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
04...	.28	.31	.71	3.1	.010	--	--	--	--	--
DEC										
05...	.19	.29	.72	3.2	.010	--	<1	ND	<20	3
FEB , 1979										
09...	.19	.21	1.3	5.8	.010	.010	--	--	--	--
APR										
09...	.18	.19	.82	3.6	.010	.010	--	--	--	--
JUN										
12...	.19	.23	1.3	5.9	.080	<.010	--	--	--	--
AUG										
06...	.24	.24	.59	2.6	.020	<.010	<1	ND	20	4

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
04...	--	--	--	--	--	--	--	--	2	.05
DEC										
05...	250	3	30	<.5	<1	ND	30	--	3	.59
FEB , 1979										
09...	--	--	20	--	--	--	--	1.2	--	--
APR										
09...	--	--	20	--	--	--	--	1.2	13	.03
JUN										
12...	--	--	--	--	--	--	--	3.8	13	.26
AUG										
06...	220	3	20	<.5	<1	ND	20	3.7	6	.76

ND Looked for but not detected.

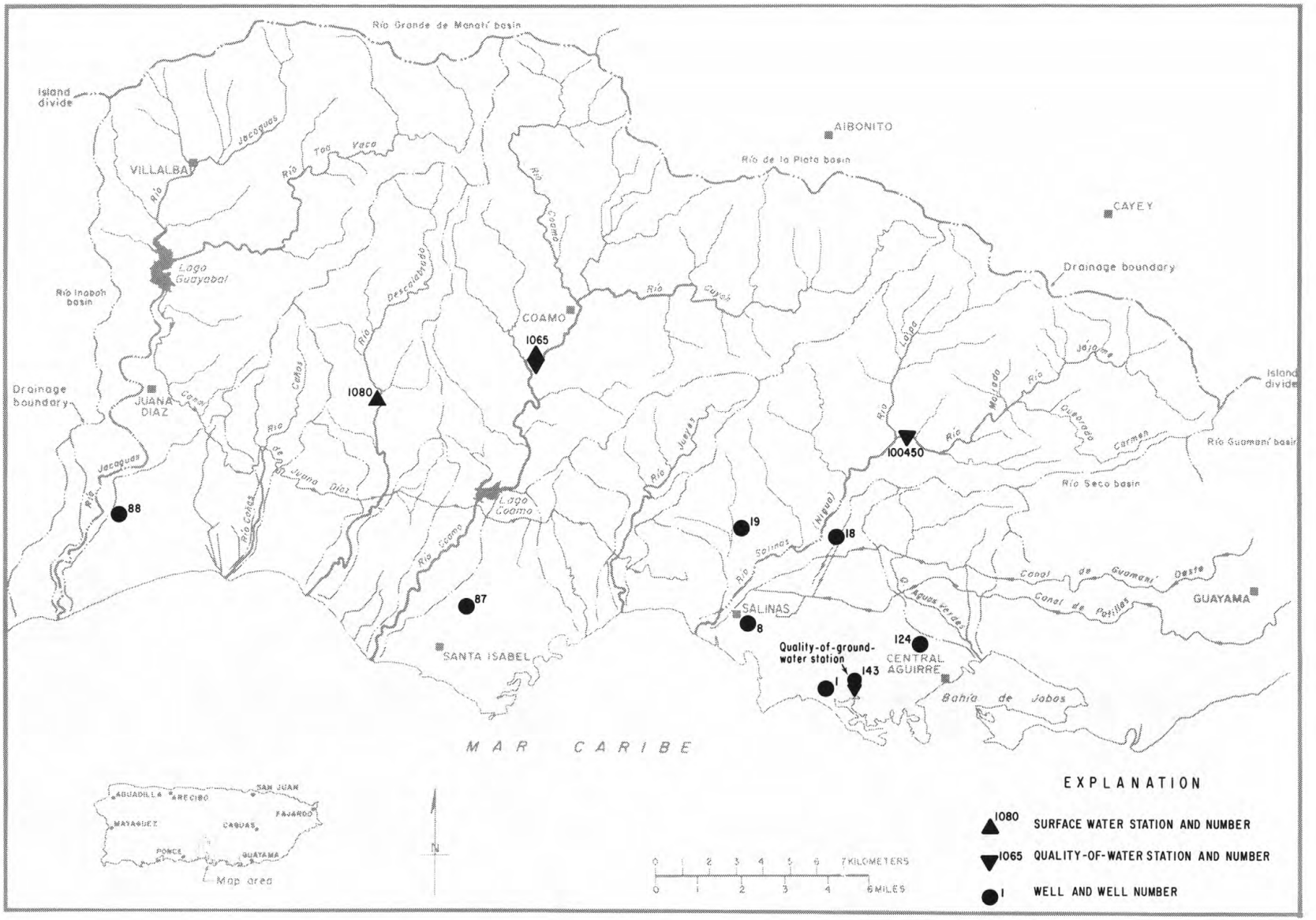

Figure 14.--South coast rivers basin--Río Salinas to Río Jacaguas basins.

50100450 RIO MAJADA AT LA PLENA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°02'41", long 66°12'27", on right bank, upstream side of concrete-dip section on Highway 712, and about 0.3 mi (0.5 km) southwest of La Plena.

DRAINAGE AREA.--16.7 sq mi (43.3 sq km).

PERIOD OF RECORD.--Water years 1973 to April 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT , 1978									
13...	1445	2.5	590	8.2	25.5	8.5	--	--	--
NOV									
22...	1200	14	700	8.3	25.0	9.6	250	--	57
DEC									
13...	1030	7.1	665	8.3	22.0	10.4	280	--	64
JAN , 1979									
16...	1550	4.7	690	8.5	25.0	8.2	250	--	57
FEB									
23...	1030	1.8	610	8.1	23.0	9.6	260	--	63
MAR									
02...	1110	1.2	650	8.2	22.5	11.0	260	--	62
APR									
24...	0945	1.1	693	8.4	25.0	9.6	260	65	61

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978									
13...	--	28	--	1.6	150	80	29	.2	26
NOV									
22...	27	38	1.0	1.6	--	--	--	--	--
DEC									
13...	28	39	1.0	1.5	--	54	48	.2	27
JAN , 1979									
16...	26	37	1.0	1.4	--	55	46	.2	26
FEB									
23...	25	40	1.1	1.3	--	82	46	--	25
MAR									
02...	26	43	1.2	1.4	--	90	45	--	26
APR									
24...	25	39	1.1	2.0	190	100	44	--	--

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
OCT , 1978									
13...	345	2.7	--	--	--	--	--	--	--
NOV									
22...	--	--	--	--	--	--	--	--	--
DEC									
13...	--	--	ND	<20	7	50	ND	<10	<20
JAN , 1979									
16...	--	--	--	--	--	--	--	--	--
FEB									
23...	412	--	--	--	--	--	--	--	--
MAR									
02...	424	1.4	--	--	--	--	--	--	--
APR									
24...	432	1.3	--	--	--	--	--	--	--

ND Looked for but not detected.

50104500 RIO COAMO AT COAMO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°05'20", long 66°21'32", at crossing at dirt road and river, .36 mi (.6 km) north of Coamo plaza, .24 mi (.40 km) north of intersection of 155 and Dr. Veve (norte).

DRAINAGE AREA.--12.4 sq mi (32.1 sq km).

PERIOD OF RECORD.--Water year 1978 to April 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT , 1978										
13...	1055	6.7	385	8.0	25.0	8.1	--	--	--	--
NOV										
20...	1250	7.6	545	8.3	29.0	8.2	220	--	59	18
DEC										
14...	1040	5.0	495	8.0	25.0	8.2	190	--	52	15
JAN , 1979										
18...	1435	2.4	460	8.9	26.5	10.4	180	--	46	17
FEB										
21...	1320	1.7	490	8.2	29.5	9.2	180	--	48	15
MAR										
26...	1105	1.3	470	8.1	28.0	8.2	180	4	49	15
APR										
19...	1215	.70	467	8.4	27.0	8.6	170	0	46	14

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT , 1978									
13...	21	--	2.3	140	15	18	.2	31	234
NOV									
20...	24	.7	2.1	--	--	--	--	--	--
DEC									
14...	24	.8	2.1	--	27	25	.2	23	--
JAN , 1979									
18...	26	.8	1.9	--	18	23	.1	19	--
FEB									
21...	27	.9	1.7	--	20	25	--	31	285
MAR									
26...	26	.8	1.6	180	21	23	--	32	284
APR									
19...	26	.9	1.9	190	21	23	--	--	273

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
OCT , 1978									
13...	--	4.2	--	--	--	--	--	--	--
NOV									
20...	--	--	--	--	--	--	--	--	--
DEC									
14...	--	--	ND	130	480	150000	ND	4600	300
JAN , 1979									
18...	--	--	--	--	--	--	--	--	--
FEB									
21...	--	1.3	--	--	--	--	--	--	--
MAR									
26...	276	--	--	--	--	--	--	--	--
APR									
19...	--	.52	--	--	--	--	--	--	--

ND Looked for but not detected.

50106500 RIO COAMO NEAR COAMO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'52", long 66°22'10", on Highway 153 bridge, 0.4 mi (1.0 km) above Río de la Mina, and 1.75 mi (4.53 km) south of Coamo plaza.

DRAINAGE AREA.--46.0 sq mi (119.1 sq km).

PERIOD OF RECORD.--December 1978 to September 1980.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC , 1978											
14...	0930	--	690	7.8	22.0	--	8.6	--	--	--	--
NOV , 1979											
14...	0930	38	627	7.9	24.0	1.0	8.6	10	1.6	42000	900
JAN , 1980											
23...	1515	12	618	7.8	27.5	.50	7.3	24	23	48000	12000
MAR											
07...	0730	9.8	710	7.7	21.0	5.5	5.6	68	.9	24000	2900
MAY											
13...	1015	13	515	8.1	27.5	--	9.3	18	--	18000	2800
JUL											
08...	1000	9.0	560	7.5	27.5	--	7.3	--	1.7	1600	260
SEP											
03...	1515	6.1	663	7.6	33.0	.60	6.7	--	3.2	<10	980

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L (ACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
DEC , 1978											
14...	320	--	85	26	36	.9	3.8	--	--	--	--
NOV , 1979											
14...	--	--	--	--	--	--	--	273	0	220	5.5
JAN , 1980											
23...	250	17	64	21	41	1.1	2.7	280	0	230	7.1
MAR											
07...	--	--	--	--	--	--	--	350	0	290	11
MAY											
13...	190	0	48	16	37	1.2	2.7	240	0	200	3.1
JUL											
08...	--	--	--	--	--	--	--	218	0	179	11
SEP											
03...	250	27	66	20	35	1.1	4.2	268	0	220	11

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
DEC , 1978											
14...	37	50	.4	31	--	--	--	--	--	--	--
NOV , 1979											
14...	--	--	--	--	--	--	4	2.9	.140	3.0	.520
JAN , 1980											
23...	36	47	.3	29	379	12.3	5	2.5	.440	2.9	.660
MAR											
07...	--	--	--	--	--	--	--	.00	.010	.01	9.50
MAY											
13...	23	34	.2	29	308	11.1	--	1.8	.280	2.1	.410
JUL											
08...	--	--	--	--	--	--	--	--	--	--	--
SEP											
03...	31	44	.3	37	374	6.2	2	2.0	.320	2.3	.980

50106500 RIO COAMO NEAR COAMO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
DEC , 1978										
14...	--	--	--	--	--	--	--	ND	20	2
NOV , 1979										
14...	.58	1.10	4.1	18	.380	--	--	--	--	--
JAN , 1980										
23...	1.1	1.80	4.7	21	.710	--	--	--	--	--
MAR										
07...	21	30.0	30	130	2.30	1	100	0	12	--
MAY										
13...	.69	1.10	3.2	14	.880	--	--	--	--	--
JUL										
08...	--	--	--	--	--	--	--	--	--	--
SEP										
03...	1.1	2.10	4.4	19	.050	1	100	1	10	--

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1978										
14...	130	ND	50	--	--	--	<20	--	--	--
NOV , 1979										
14...	--	--	--	--	--	--	--	--	6	.62
JAN , 1980										
23...	--	--	--	--	--	--	--	--	4	.13
MAR										
07...	--	3	--	.4	1	2	--	19	1	.03
MAY										
13...	--	--	--	--	--	--	--	--	5	.18
JUL										
08...	--	--	--	--	--	--	--	--	9	.22
SEP										
03...	--	9	--	.2	0	0	--	--	6	.10

ND Looked for but not detected.

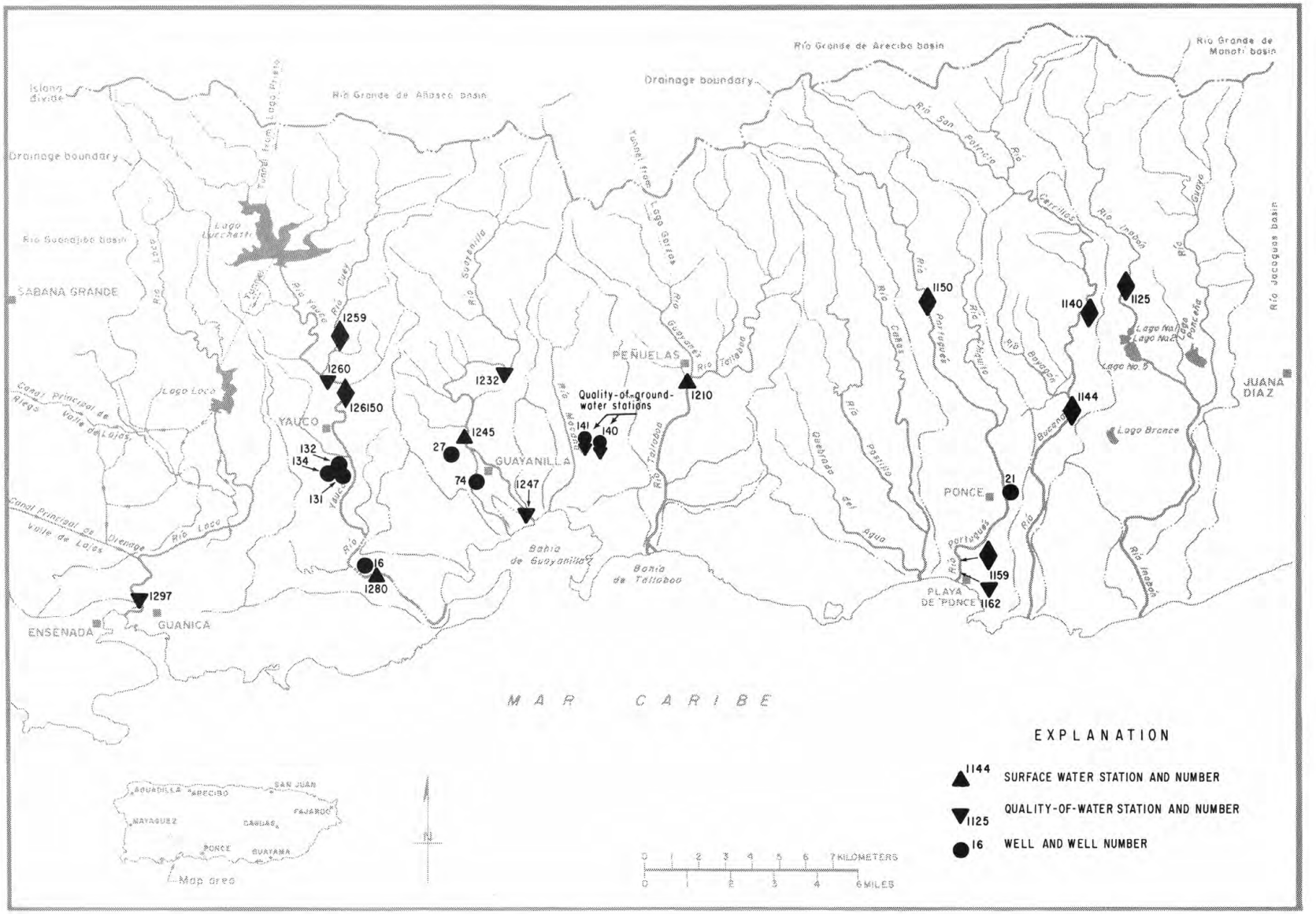

Figure 15.--South coast rivers basin--Río Inabón to Río Loco basins.

50112500 RIO INABON AT REAL ABAJO, PR

LOCATION.--Lat 18°05'10", long 66°33'46", Hydrologic Unit 21010004, at bridge on private road, off Highway 511 at Hacienda La Concordia, 0.4 mi (0.6 km) upstream from diversion canal, 0.5 mi (0.8 km) north of Real Abajo, and 6.1 mi (9.8 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--9.70 sq mi (25.12 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1962-63 (annual low-flow measurements only), February to June 1964 (monthly measurements only), July 1964 to July 1970, April 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 410 ft (125 m), from topographic map. Prior to April 1971 nonrecording gage and crest-stage gage at different datum.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--13 years (1965-69, 1972-79), 19.1 cu ft/s (0.541 cu m/s), 26.74 in/yr (679 mm/yr), 13,840 acre-ft/yr (17.1 cu hm/yr); median of yearly mean discharges, 19 cu ft/s (0.54 cu m/s), 13,800 acre-ft/yr (17 cu hm/yr).
--14 years (1965-69, 1972-80) 19.2 cu ft/s (0.544 cu m/s), 26.88 in/yr (683 mm/yr), 13,910 acre-ft/yr (17.2 cu hm/yr); median of yearly mean discharges 20 cu ft/s (0.57 cu m/s), 14,500 acre-ft/yr (18 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 cu ft/s (198 cu m/s) Sept. 16, 1975, gage height, 18.6 ft (5.669 m) from flood-mark, from rating curve extended above 30 cu ft/s (0.850 cu m/s) on basis of contracted opening and flow-over-road measurements of peak flow; minimum daily, 0.80 cu ft/s (0.023 cu m/s) July 23, 1977.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 500 cu ft/s (14.2 cu m/s), revised, and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 8, 1978	1615	554	15.7	7.04	2.146
Oct. 26, 1978	1445	654	18.5	7.92	2.414
May 15, 1979	1615	507	14.4	6.66	2.030
Aug. 15, 1979	1800	519	14.7	6.75	2.057
Aug. 31, 1979	0730	*895	25.3	9.96	3.036
May 29, 1980	1615	808	22.9	9.24	2.816
Sept. 4, 1980	0700	*881	24.9	9.84	2.999
Sept. 11, 1980	1530	564	16.0	7.13	2.173
Sept. 27, 1980	1630	596	16.9	7.41	2.258

Minimum daily discharges, 1.6 cu ft/s (0.045 cu m/s) May 12, 1979; 2.5 cu ft/s (0.071 cu m/s) Mar. 31 to Apr 6, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	69	11	9.0	9.2	4.5	3.2	3.1	39	9.7	19	168
2	18	80	11	8.2	7.1	4.1	3.1	3.0	21	6.8	19	112
3	15	66	10	6.8	4.1	3.9	2.8	2.8	22	6.3	19	66
4	24	51	9.9	6.6	3.8	4.7	2.6	2.7	21	5.6	20	107
5	34	40	9.9	6.0	3.4	5.6	2.5	2.8	16	5.8	18	161
6	24	35	9.8	11	3.7	4.5	2.4	2.3	15	10	16	124
7	18	31	9.1	9.4	4.1	3.9	2.6	2.1	13	9.5	14	91
8	87	28	8.9	6.8	4.6	3.9	3.2	2.0	10	8.3	12	118
9	70	25	8.9	6.2	4.5	3.8	3.4	3.1	32	9.0	12	138
10	50	24	8.9	5.8	4.8	3.8	3.2	5.5	48	9.0	12	113
11	29	22	8.9	6.4	8.3	3.6	3.2	2.1	109	8.0	12	79
12	25	21	8.9	6.4	9.5	4.1	2.9	1.6	56	8.0	11	59
13	25	20	10	6.1	5.8	4.1	3.0	2.6	31	80	9.4	45
14	22	19	10	6.6	5.3	4.1	3.2	9.6	24	30	11	37
15	20	37	9.5	6.7	6.3	4.1	2.8	43	18	20	52	36
16	48	22	11	6.5	6.0	5.1	2.6	18	15	12	20	31
17	39	18	22	5.6	5.4	3.8	2.5	13	12	30	13	69
18	27	19	41	5.3	7.0	3.9	2.4	19	11	300	23	87
19	29	18	19	5.7	5.0	3.9	2.5	19	10	150	33	42
20	29	19	18	10	4.6	3.9	2.6	43	7.6	80	81	32
21	23	17	16	6.8	5.9	3.4	2.6	29	7.0	40	64	32
22	18	15	12	9.8	5.8	3.4	3.2	15	6.5	30	52	33
23	83	18	14	13	5.1	3.4	4.1	15	6.1	18	50	37
24	79	17	14	10	4.7	3.2	2.8	14	5.8	16	59	37
25	92	14	13	10	4.7	2.9	2.0	15	5.5	15	37	37
26	264	13	11	11	4.7	2.8	2.0	12	5.4	18	28	37
27	175	12	10	12	4.9	7.1	2.0	9.5	5.2	15	24	37
28	145	11	10	12	4.7	4.9	2.1	8.1	5.7	13	22	38
29	98	11	10	13	---	6.6	2.7	13	22	17	30	53
30	89	12	9.9	12	---	7.4	3.1	12	12	18	121	71
31	79	---	9.1	12	---	4.1	---	11	---	17	516	---
TOTAL	1793	804	384.7	262.7	153.0	132.5	83.3	353.9	611.8	1015.0	1429.4	2127
MEAN	57.8	26.8	12.4	8.47	5.46	4.27	2.78	11.4	20.4	32.7	46.1	70.9
MAX	264	80	41	13	9.5	7.4	4.1	43	109	300	516	168
MIN	15	11	8.9	5.3	3.4	2.8	2.0	1.6	5.2	5.6	9.4	31
CFSM	5.96	2.76	1.28	.87	.56	.44	.29	1.18	2.10	3.37	4.75	7.31
IN.	6.88	3.08	1.48	1.01	.59	.51	.32	1.36	2.35	3.89	5.48	8.16
AC-FT	3560	1590	763	521	303	263	165	702	1210	2010	2840	4220

CAL YR 1978 TOTAL 6914.2 MEAN 18.9 MAX 264 MIN 1.8 CFSM 1.95 IN 26.51 AC-FT 13710
WTR YR 1979 TOTAL 9150.3 MEAN 25.1 MAX 516 MIN 1.6 CFSM 2.59 IN 35.09 AC-FT 18150

50112500 RIO INABON AT REAL ABAJO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	37	16	6.9	4.2	3.3	2.5	52	27	6.0	9.1	28
2	55	29	16	6.6	4.1	3.4	2.5	18	16	6.0	6.8	55
3	41	27	17	6.5	4.3	3.5	2.5	10	12	6.0	5.4	51
4	50	53	19	6.5	5.6	3.5	2.5	8.0	20	7.0	5.4	86
5	54	50	17	6.4	7.8	8.7	2.5	7.0	17	6.0	5.8	83
6	42	55	15	9.9	7.8	10	2.5	7.0	19	6.0	5.7	51
7	76	73	14	8.9	5.9	5.2	35	6.5	15	20	5.6	40
8	78	62	14	6.3	4.5	4.3	25	6.0	16	15	5.5	40
9	60	45	13	6.3	4.1	4.0	22	6.0	16	10	5.7	28
10	48	35	12	6.3	4.3	3.8	19	6.0	13	8.0	6.2	30
11	49	28	12	6.1	4.6	3.7	19	5.5	14	7.6	5.8	62
12	42	24	12	6.5	4.7	3.8	50	5.5	15	7.2	5.3	54
13	46	30	11	7.2	4.1	3.7	22	5.5	21	9.3	5.9	38
14	51	25	11	7.1	3.9	3.6	12	5.5	15	11	8.2	37
15	49	21	11	6.2	3.7	3.8	11	5.0	13	13	8.7	30
16	37	21	11	6.0	3.8	3.6	9.9	5.0	12	39	6.5	25
17	31	43	11	5.8	3.8	3.6	11	5.0	9.8	31	5.8	45
18	28	65	10	5.6	4.3	3.5	9.2	10	10	29	6.7	43
19	28	46	10	5.4	4.7	3.4	8.6	21	11	31	50	29
20	28	33	11	5.6	4.1	3.3	8.3	19	11	20	40	29
21	49	34	11	5.6	4.0	3.2	8.3	26	10	87	25	68
22	47	26	9.2	5.5	3.8	2.7	8.1	24	10	47	22	85
23	34	25	8.7	5.4	4.0	2.8	8.0	45	12	18	19	93
24	29	47	8.7	6.1	6.6	3.0	8.2	40	20	12	18	69
25	25	28	13	5.7	3.7	2.9	51	24	12	11	18	58
26	23	25	8.2	5.5	3.6	2.9	22	18	9.6	9.4	15	51
27	24	23	7.8	5.2	3.5	3.2	18	88	8.9	8.7	14	74
28	36	20	7.6	4.8	3.4	3.0	20	126	8.5	8.6	51	69
29	37	18	7.2	4.5	3.3	3.0	10	204	8.0	8.9	52	73
30	26	17	7.1	4.3	---	3.0	14	128	8.0	8.1	35	76
31	25	---	7.0	4.3	---	2.5	---	51	---	8.5	38	---
TOTAL	1302	1065	358.5	189.0	130.2	117.9	444.6	987.5	409.8	515.3	511.1	1600
MEAN	42.0	35.5	11.6	6.10	4.49	3.80	14.8	31.9	13.7	16.6	16.5	53.3
MAX	78	73	19	9.9	7.8	10	51	204	27	87	52	93
MIN	23	17	7.0	4.3	3.3	2.5	2.5	5.0	8.0	6.0	5.3	25
CFSM	4.33	3.66	1.20	.63	.46	.39	1.53	3.29	1.41	1.71	1.70	5.50
IN.	4.99	4.08	1.37	.72	.50	.45	1.70	3.79	1.57	1.98	1.96	6.14
AC-FT	2580	2110	711	375	258	234	882	1960	813	1020	1010	3170

CAL YR 1979 TOTAL 8894.1 MEAN 24.4 MAX 516 MIN 1.6 CFSM 2.52 IN 34.11 AC-FT 17640
WTR YR 1980 TOTAL 7630.9 MEAN 20.8 MAX 204 MIN 2.5 CFSM 2.14 IN 29.26 AC-FT 15140

50112500 RIO INABON AT REAL ABAJO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-73, 1974 to July 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1978										
07...	0945	9.0	305	8.2	23.0	5.3	140	--	44	8.0
JUL , 1979										
23...	1315	25	250	8.4	28.0	8.2	110		34	5.3

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	ARSENIC TOTAL (UG/L AS AS)
DEC , 1978										
07...	10	.4	1.0	10	8.1	.1	19	--	--	--
JUL , 1979										
23...	8.5	.4	1.1	--	--	--	20	69	4.7	1

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
DEC , 1978									
07...	ND	<20	ND	30	ND	<10	--	--	20
JUL , 1979									
23...	5	<20	3	90	2	<10	<.5	<1	<20

500114000 RIO CERRILLOS NEAR PONCE, PR

LOCATION.--Lat 18°04'15", long 66°34'51", Hydrologic Unit 21010004, on right bank off Highway 139, 2.3 mi (3.7 km) upstream from Quebrada Ausubo and 4.6 mi (7.4 km) northeast of Plaza Degetau in Ponce.

DRAINAGE AREA.--17.8 sq mi (46.1 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to April 1964 (monthly measurements only), May 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 253.10 ft (77.145 m) above mean sea level, datum of 1929. Prior to Mar 22, 1977, at site 0.15 mi (0.24 km) upstream and datum 9.90 ft (3.018 m) higher.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--15 years (1965-79), 36.2 cu ft/s (1.025 cu m/s), 27.62 in/yr (702 mm/yr), 26,230 acre-ft/yr (32.3 cu hm/yr); median of yearly mean discharges, 33 cu ft/s (0.93 cu m/s), 23,900 acre-ft/yr (29 cu hm/yr).
--16 years (1965-80), 35.9 cu ft/s (1.017 cu m/s), 27.39 in/yr (696 mm/yr), 26,010 acre-ft/yr (32.1 cu hm/yr); median of yearly mean discharges, 33 cu ft/s (0.93 cu m/s), 23,900 acre-ft/yr (29 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 cu ft/s (634 cu m/s) Sept. 16, 1975, gage height, 11.2 ft (3.41 m), from flood-marks, from rating curve extended above 150 cu ft/s (4.25 cu m/s) on basis of slope-area measurement of peak flow; minimum, 2.2 cu ft/s (0.062 cu m/s) May 28, 1967.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 1,200 cu ft/s (34.0 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 9, 1978	1445	1,420	40.2	8.33	2.539	July 13, 1979	1715	2,400	68.0	9.84	2.999
Oct. 26, 1978	0800	1,670	47.3	8.79	2.679	Aug. 31, 1979	1900	*3,580	101	11.19	3.411
May 16, 1979	1845	1,530	43.3	8.53	2.600	May 27, 1980	1900	*1,420	40.2	8.31	2.533

Minimum daily discharges, 4.0 cu ft/s (0.113 cu m/s) May 5-6, 1979; 4.8 cu ft/s (0136 cu m/s) Apr. 5-6, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	122	20	13	9.0	8.2	7.0	4.8	65	51	48	182
2	30	178	20	12	9.0	8.2	6.2	4.7	39	34	52	166
3	35	131	20	12	9.0	8.0	5.5	4.3	42	29	32	131
4	36	94	19	12	9.0	10	5.2	4.3	43	22	27	110
5	51	77	18	28	9.0	12	5.3	4.0	29	21	24	109
6	35	66	18	21	8.5	8.3	5.3	4.0	28	23	26	175
7	26	61	17	16	8.5	7.0	5.1	4.3	23	22	26	160
8	95	54	17	15	8.5	6.4	4.8	4.3	16	19	23	195
9	217	45	16	14	8.5	6.1	5.5	7.7	50	17	21	211
10	81	41	15	13	8.5	5.9	5.2	32	148	16	21	194
11	39	41	15	15	8.5	5.9	4.6	14	371	15	20	155
12	28	43	14	14	10	5.9	4.3	7.0	178	15	20	133
13	25	39	15	13	8.5	5.9	4.3	11	91	221	18	122
14	22	38	16	12	8.2	5.9	4.3	159	60	123	21	107
15	19	106	16	12	16	5.9	4.2	150	47	59	53	98
16	79	53	16	12	11	8.1	4.0	202	38	45	37	94
17	42	36	34	12	8.8	6.4	4.0	85	33	53	24	120
18	24	29	21	12	9.3	11	4.0	53	33	400	54	92
19	20	29	21	13	9.0	7.8	4.3	60	27	200	85	80
20	19	89	21	30	13	7.3	4.3	109	25	100	121	73
21	17	53	16	14	17	6.7	4.3	94	22	80	78	69
22	14	35	16	13	9.7	5.9	4.9	50	20	60	87	73
23	253	31	16	14	9.1	5.9	7.0	40	18	50	68	69
24	155	30	16	13	8.0	5.9	6.2	27	17	45	76	73
25	211	28	15	12	7.0	5.9	5.0	22	18	43	39	86
26	756	24	14	12	7.0	5.9	4.8	19	19	44	25	75
27	408	19	14	11	7.8	20	4.6	16	16	40	19	64
28	313	19	14	10	8.1	14	4.3	16	18	38	16	61
29	157	18	14	10	---	23	4.6	29	76	34	31	100
30	178	20	13	9.5	---	17	4.8	26	62	31	39	105
31	148	---	13	9.0	---	9.2	---	23	---	31	586	---
TOTAL	3562	1649	530	428.5	263.5	269.6	147.9	1286.4	1672	1981	1817	3482
MEAN	115	55.0	17.1	13.8	9.41	8.70	4.93	41.5	55.7	63.9	58.6	116
MAX	756	178	34	30	17	23	7.0	202	371	400	586	211
MIN	14	18	13	9.0	7.0	5.9	4.0	4.0	16	15	16	61
CFSM	6.46	3.09	.96	.78	.53	.49	.28	2.33	3.13	3.59	3.29	6.52
IN.	7.44	3.45	1.11	.90	.55	.56	.31	2.69	3.49	4.14	3.80	7.28
AC-FT	7070	3270	1050	850	523	535	293	2550	3320	3930	3600	6910

CAL YR 1978 TOTAL 11205.9 MEAN 30.7 MAX 756 MIN 7.0 CFSM 1.73 IN 23.42 AC-FT 22230
WTR YR 1979 TOTAL 17088.9 MEAN 46.8 MAX 756 MIN 4.0 CFSM 2.63 IN 35.71 AC-FT 33900

500114000 RIO CERRILLOS NEAR PONCE, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	48	28	17	10	7.6	5.3	76	60	16	21	45
2	91	38	28	17	9.6	7.6	5.3	36	46	14	13	40
3	80	32	28	22	9.9	8.2	5.3	22	37	13	12	40
4	96	60	41	20	14	9.4	5.1	17	33	14	13	58
5	101	69	35	17	30	22	4.8	15	29	12	14	68
6	74	78	28	26	24	27	4.8	13	26	15	12	43
7	90	72	27	29	16	16	19	12	24	14	12	45
8	115	75	25	19	13	12	20	10	26	19	12	61
9	81	64	25	18	12	9.5	15	9.5	24	17	12	45
10	67	50	23	18	11	8.2	14	8.9	23	13	14	55
11	65	42	23	18	11	8.2	34	8.7	34	9.1	14	71
12	71	38	22	17	11	8.0	89	9.5	27	8.1	11	55
13	62	52	21	17	11	7.6	35	13	24	8.2	9.4	49
14	67	45	21	18	11	7.6	14	10	19	9.1	15	73
15	64	36	20	17	10	7.6	9.8	13	17	12	15	61
16	52	32	21	16	9.6	7.6	12	11	16	27	9.9	40
17	48	52	21	15	9.6	8.2	15	18	15	12	20	89
18	45	72	21	15	9.6	7.9	9.3	35	14	21	30	68
19	42	63	21	15	10	7.6	8.6	65	17	37	72	37
20	42	68	20	15	10	7.1	7.6	53	15	18	28	39
21	60	63	21	15	10	6.2	7.6	63	15	89	14	141
22	59	47	19	15	9.6	5.9	7.1	54	12	60	11	158
23	47	50	18	15	10	5.9	5.7	67	8.2	21	9.7	136
24	44	80	18	16	17	5.9	6.2	51	15	12	8.3	114
25	39	51	27	16	11	5.9	39	40	13	7.4	7.7	115
26	37	43	20	16	9.5	5.9	43	28	11	7.1	8.3	127
27	36	37	19	16	8.9	6.4	27	199	8.6	5.8	7.9	155
28	52	33	18	16	8.6	6.4	35	224	8.3	6.8	36	162
29	57	30	17	13	7.9	6.2	16	197	16	8.3	48	144
30	38	29	17	11	---	5.7	16	152	21	5.8	33	169
31	34	---	17	11	---	5.3	---	88	---	5.2	75	---
TOTAL	1945	1549	710	526	344.8	270.6	535.5	1618.6	654.1	536.9	618.2	2503
MEAN	62.7	51.6	22.9	17.0	11.9	8.73	17.9	52.2	21.8	17.3	19.9	83.4
MAX	115	80	41	29	30	27	89	224	60	89	75	169
MIN	34	29	17	11	7.9	5.3	4.8	8.7	8.2	5.2	7.7	37
CFSM	3.52	2.90	1.29	.96	.67	.49	1.01	2.93	1.23	.97	1.12	4.69
IN.	4.06	3.24	1.48	1.10	.72	.57	1.12	3.38	1.37	1.12	1.29	5.23
AC-FT	3860	3070	1410	1040	684	537	1060	3210	1300	1060	1230	4960

CAL YR 1979 TOTAL 15551.9 MEAN 42.6 MAX 586 MIN 4.0 CFSM 2.39 IN 32.50 AC-FT 30850
WTR YR 1980 TOTAL 11811.7 MEAN 32.3 MAX 224 MIN 4.8 CFSM 1.82 IN 24.68 AC-FT 23430

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978												
05...	1050	25	295	8.0	25.5	5.0	6.4	.2	8600	2200	3200	110
NOV												
06...	1145	52	308	8.1	26.5	200	7.9	4.6	25000	4500	20000	140
DEC												
06...	1115	18	318	8.3	25.5	1.0	9.7	.6	17000	700	600	140
JAN , 1979												
10...	1335	13	298	8.4	26.0	1.0	8.9	--	--	110	140	150
30...	1600	9.9	317	8.1	25.5	25	8.2	.8	17000	6800	5000	150
MAR												
07...	1330	6.2	302	8.3	29.0	1.0	8.8	--	--	210	180	136
APR												
05...	1520	5.5	290	8.2	28.5	9.0	7.8	2.2	1000	440	530	120
MAY												
02...	1500	4.6	291	8.3	34.0	3.0	9.0	--	8000	70	130	120
JUN												
13...	1245	89	238	8.1	28.0	15	7.2	.3	11800	200	620	--
JUL												
11...	1230	15	254	8.5	30.0	1.0	8.5	1.4	--	900	160	110
AUG												
09...	1440	20	246	8.4	30.0	3.0	8.5	1.6	5000	600	50	110
28...	1030	5.5	232	7.7	28.0	--	8.2	--	--	--	--	--
SEP												
12...	1000	136	270	6.9	24.5	5.0	8.4	--	1300	390	470	140
OCT												
02...	1000	71	194	8.3	23.5	6.0	8.4	--	--	370	2100	100
NOV												
08...	0845	56	233	8.1	22.0	20	8.3	2.2	--	4000	3700	100
DEC												
13...	1000	21	275	8.5	22.0	.00	8.7	1.1	1400	590	110	140
JAN , 1980												
08...	1530	16	284	8.3	25.0	1.1	8.3	--	13000	1070	340	--
FEB												
04...	1445	15	250	8.4	29.5	1.5	8.5	3.4	12000	130	--	120
MAR												
12...	0900	8.0	326	7.9	22.0	.25	8.4	--	2700	580	--	130
APR												
01...	0930	5.4	313	8.1	22.0	.10	8.9	--	--	120	--	140
MAY												
06...	1130	12	261	8.3	28.0	--	8.1	--	940	540	4	--
JUN												
04...	0945	35	263	8.0	24.0	.50	8.4	--	1000	400	--	110
JUL , 1980												
03...	1030	13	287	7.2	25.5	.85	8.8		--	320	--	120
AUG												
06...	1230	12	246	8.4	25.0	.45	7.8		300	100	50	130
SEP												
04...	0845	26	161	8.0	23.5	.30	8.3		1500	1280	1400	110

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT , 1978												
05...	10	33	6.4	7.8	.3	1.1	120	0	98	1.9	14	5.9
NOV												
08...	0	42	7.5	11	.4	1.3	170	0	139	2.2	15	8.7
DEC												
06...	3	44	8.3	11	.4	1.2	167	0	137	1.3	18	8.4
JAN , 1979												
10...	22	45	8.1	11	.4	1.0	152	2	128	1.0	17	8.9
30...	15	45	8.0	12	.4	1.2	--	--	130	--	18	8.6
MAR												
07...	6	39	7.1	12	.5	1.0	160	0	130	1.3	20	9.5
APR												
05...	0	37	6.8	12	.5	1.1	150	0	123	1.5	18	8.9
MAY												
02...	0	37	6.8	14	.6	1.1	210	0	172	1.7	19	8.7
JUN												
13...	--	--	--	--	--	--	120	0	98	1.5	14	7.5
JUL												
11...	6	35	6.6	12	.5	.8	116	8	108	.7	16	7.4
AUG												
09...	3	34	6.2	11	.5	1.1	127	2	107	.8	17	7.7
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
12...	10	45	6.9	11	.4	1.0	160	0	131	32	14	11
OCT												
02...	34	31	5.8	13	.6	1.2	80	0	66	.6	12	6.7
NOV												
08...	5	32	5.7	9.4	.4	1.1	120	0	98	1.5	11	6.0
DEC												
13...	10	43	7.4	12	.4	.9	140	8	128	.8	18	8.5
JAN , 1980												
08...	--	--	--	--	--	1.1	--	0	120	--	18	8.4
FEB												
04...	0	38	6.9	12	.5	1.0	135	7	120	1.0	20	8.9
MAR												
12...	0	41	7.4	13	.5	1.2	170	0	140	3.4	16	9.1
APR												
01...	0	42	7.5	14	.5	1.0	170	0	139	2.2	16	9.2
MAY												
06...	--	--	--	--	--	--	131	0	110	1.1	--	--
JUN												
04...	23	33	6.0	9.7	.4	1.5	106	0	87	1.7	16	7.6
JUL												
03...	7	37	6.5	10	.4	1.1	138	0	113	1.4	17	7.9
AUG												
06...	17	39	6.9	10	.4	1.5	134	2	113	.9	15	8.1
SEP												
04...	17	35	6.3	9.1	.4	1.2	105	8	96	1.9	14	6.3

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978												
05...	.1	20	149	147	10.1	--	--	--	--	.58	--	.030
NOV												
06...	.1	24	200	198	28.1	--	572	--	--	.96	--	.130
DEC												
06...	.1	22	197	195	9.6	--	--	--	--	.71	--	.080
JAN , 1979												
10...	.1	20	189	186	6.5	--	--	--	--	.44	--	.010
30...	.1	22	195	193	5.2	--	--	--	--	.48	--	.010
MAR												
07...	.1	20	177	158	3.0	--	0	--	--	.11	--	.050
APR												
05...	.1	20	189	178	2.8	--	--	--	--	.08	--	.020
MAY												
02...	.1	22	180	213	2.2	36	--	.02	<.010	.02	--	<.010
JUN												
13...	.1	--	161	--	38.7	--	44	--	--	1.1	--	<.010
JUL												
11...	.1	20	163	163	6.7	--	0	--	--	.05	--	<.010
AUG												
09...	.1	21	162	163	8.5	--	--	--	--	.07	--	<.010
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
12...	.1	25	201	193	73.8	--	8	--	--	1.0	--	.020
OCT												
02...	.1	22	149	137	28.6	--	6	--	--	1.2	1.2	.340
NOV												
06...	.1	22	152	150	23.0	--	--	--	--	.84	--	.000
DEC												
13...	.1	22	--	189	10.7	34	--	.53	.000	.53	--	.010
JAN , 1980												
08...	.1	--	187	102	8.2	7	--	--	--	.47	.42	.000
FEB												
04...	.1	23	182	185	7.2	--	--	.26	.010	.27	.27	.040
MAR												
12...	.1	20	192	193	4.2	--	--	--	--	.25	.24	.010
APR												
01...	.1	21	199	111	2.9	--	3	.06	.000	.06	.06	.010
MAY												
06...	--	--	--	--	--	--	2	--	--	--	--	--
JUN												
04...	.1	21	165	151	15.6	--	--	--	--	.81	.81	.000
JUL												
03...	.1	20	165	168	5.8	6	--	--	.17	.17		.010
AUG												
06...	.0	23	173	172	5.8	--	--	--	.04	.04		.030
SEP												
04...	.1	23	148	153	10.4	--	.01	.000	.01	.01		.000

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN DIS-SOLVED (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978											
05...	--	.10	--	.13	.13	.71	--	3.1	.040	.040	--
NOV											
08...	--	1.6	--	1.70	--	2.7	--	12	.050	.030	--
DEC											
06...	--	.00	--	.07	.08	.78	--	3.5	.030	.030	--
JAN , 1979											
10...	--	.00	--	.01	<.10	.45	--	2.0	.030	.030	--
30...	--	.10	--	.11	<.10	.59	--	2.6	.070	.040	--
MAR											
07...	--	.33	--	.38	.12	.49	--	2.2	.020	.020	--
APR											
05...	--	.25	--	.27	.16	.35	--	1.6	.040	.020	--
MAY											
02...	--	.17	--	.17	.03	.19	--	.84	.030	.030	.010
JUN											
13...	--	--	--	--	1.1	--	--	--	.060	.030	--
JUL											
11...	--	.10	--	.10	.10	.15	--	.66	.020	.010	--
AUG											
09...	--	.33	--	.33	.33	.40	--	1.8	.020	.020	--
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
12...	--	.11	--	.13	<.10	1.1	1.1	5.0	.040	.030	--
OCT											
02...	--	.00	--	.34	.34	1.5	--	6.8	.040	.030	--
NOV											
06...	.000	.36	.16	.36	.16	1.2	1.0	5.3	.030	.020	--
DEC											
13...	--	.21	--	.22	--	.75	--	3.3	.020	--	--
JAN , 1980											
08...	.000	.24	.23	.24	.23	.71	.65	3.1	.060	.060	--
FEB											
04...	.040	.16	.16	.20	.20	.47	.66	2.1	.040	.040	--
MAR											
12...	.010	.22	.13	.23	.14	.48	.38	2.1	.020	.020	--
APR											
01...	.010	.12	--	.13	--	.19	.32	.84	.020	.020	--
MAY											
06...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	.000	.52	.11	.52	.11	1.3	.94	5.9	.070	.050	--
JUL											
03...	.010	.06	.06	.07	.07	.24	.27	1.1	.060	.020	
AUG											
06...	.000	.16	.16	.19	.16	.23	.20	1.0	.050	.030	
SEP											
04...	.000	.18	.07	.18	.07	.19	.08	.84	.000	.000	

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978											
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	--	1	300	<100	--	--	40	--	16	<2	81
DEC											
06...	<1	<1	<100	<100	ND	ND	<20	<2	2	2	<2
JAN , 1979											
10...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	1	1	200	200	9	7	<20	ND	ND	ND	4
APR											
05...	--	--	--	--	--	--	--	--	--	--	--
MAY											
02...	--	1	--	<100	--		--	<20	--	3	--
JUN											
13...	--	--	--	--	--	--	--	--	--	--	--
JUL											
11...	<1	<1	40	--	<2	--	20	<20	ND	ND	3
AUG											
09...	1	1	<100	--	ND	ND	<20	<20	<2	ND	5
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
12...	<1	<1	200	30	ND	ND	20	20	ND	ND	4
OCT											
02...	--	--	--	--	--	--	--	--	--	--	--
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
DEC											
13...	0	0	30	30	4	4	20	10	2	0	2
JAN , 1980											
08...	--	--	--	--	--	--	--	--	--	--	--
FEB											
04...	--	--	--	--	--	--	--	--	--	--	--
MAR											
12...	--	--	--	--	--	--	--	--	--	--	--
APR											
01...	--	2	--	40	--	2	--	<10	--	0	--
MAY											
06...	--	--	--	--	--	--	--	--	--	--	--
JUN											
04...	--	--	--	--	--	--	--	--	--	--	--
JUL											
03...	0	0	50	50	0	0	20	<10	0	0	3
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
SEP											
04...	--	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)
OCT , 1978											
05...	--	--	--	--	--	--	--	--	--	--	--
NOV											
08...	<2	60000	<10	--	--	1600	30	--	<.5	--	--
DEC											
06...	ND	60	<10	6	6	<10	<10	<.5	<.5	--	--
JAN , 1979											
10...	--	300	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
MAR											
07...	3	320	<10	160	46	20	6	<.5	<.5	--	--
APR											
05...	--	--	--	--	--	--	--	--	--	--	--
MAY											
02...	2	--	<10	--		--	5	--	<.5	--	--
JUN											
13...	--	--	--	--	--	--	--	--	--	--	--
JUL											
11...	<2	90	<10	<2	<2	<10	4	<.5	<.5	--	--
AUG											
09...	3	230	<10	ND	ND	<10	4	<.5	<.5	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
12...	--	870	<10	ND	ND	30	<10	<.5	<.5	--	--
OCT											
02...	--	820	--	--	--	--	--	--	--	--	--
NOV											
06...	--	--	--	--	--	--	--	--	--	--	--
DEC											
13...	2	60	10	10	10	3	3	<.1	<.1	2	1
JAN , 1980											
08...	3	170	--	--	25	--	--	--	--	--	5
FEB											
04...	--	--	--	--	--	--	--	--	--	--	--
MAR											
12...	--	--	--	--	--	--	--	--	--	--	--
APR											
01...	2	170	0	--	1	--	6	--	.3	--	0
MAY											
06...	--	200	--	--	--	--	--	--	--	--	--
JUN											
04...	--	150	--	--	--	--	--	--	--	--	--
JUL											
03...	3	120	10	2	0	<50	2	.1	.1	0	0
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
SEP											
04...	--	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978											
05...	--	--	--	--	--	--	1.6	--	--	6	.40
NOV											
08...	<1	<1	--	--	240	<20	--	5.2	--	1540	216
DEC											
06...	1	1	ND	ND	20	<20	--	8.6	--	0	.00
JAN , 1979											
10...	--	--	--	--	--	--	1.9	--	.2	2	.07
30...	--	--	--	--	--	--	--	--	--	82	2.2
MAR											
07...	<1	<1	ND	ND	<20	ND	2.0	2.0	--	5	.08
APR											
05...	--	--	--	--	--	--	--	6.9	--	7	.10
MAY											
02...	--	<1	--	--	--	ND	4.3	--	--	7	.09
JUN											
13...	--	--	--	--	--	--	1.6	--	--	54	13
JUL											
11...	<1	<1	ND	ND	50	20	3.5	2.3	.5	13	.53
AUG											
09...	<1	<1	ND	ND	20	9	--	3.1	--	13	.68
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
12...	<1	<1	ND	ND	20	--	2.1	--	--	20	7.3
OCT											
02...	--	--	--	--	--	--	--	--	--	19	3.6
NOV											
06...	--	--	--	--	--	--	2.1	--	--	40	6.0
DEC											
13...	0	0	0	0	120	80	4.1	1.5	--	1	.06
JAN , 1980											
08...	--	--	--	0	--	--	--	5.5	--	5	.22
FEB											
04...	--	--	--	--	--	--	--	--	--	7	.28
MAR											
12...	--	--	1	--	--	--	3.0	--	--	3	.07
APR											
01...	--	0	--	--	--	9	3.0	--	--	1	.01
MAY											
06...	--	--	--	--	--	--	--	--	--	2	.07
JUN											
04...	--	--	4	--	--	--	1.7	--	--	5	.47
JUL											
03...	0	0	0	0	5	5	4.4	4.4		6	.20
AUG											
06...	--	--	--	--	--	--	3.4	--		1	.03
SEP											
04...	--	--	0	--	--	--	1.5	--		14	.98

ND Looked for but not detected.

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)
APR 05...	1520	.00	.00	.0	.00	.00	.00	.00	.00	.00

DATE	ETHION, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)
APR 05...	.00	.00	.00	.00	.00	.00	.00	0	.00

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO AUGUST 1980

DATE	OCT 5,78	DEC 6,78	JAN 10,79	MAR 7,79	MAY 2,79
TIME	1050	1115	1335	1330	1500
TOTAL COUNT	115	74	138	34	121
DIVERSITY: PHYLUM	0.6	0.0	0.1	0.0	0.0
.CLASS	0.6	0.0	0.1	0.0	0.0
..ORDER	0.8	0.5	0.8	0.5	1.2
...FAMILY	0.8	1.4	1.6	1.2	1.7
....GENUS	0.9	2.5	2.3	1.2	2.2
....GENUS-INSECTA	2.3	2.5	2.2	1.2	2.2
ORGANISM	COUNT	COUNT	COUNT	COUNT	COUNT
ANNELIDA					
.OLIGOCHAETA					
..PLESIOPORA					
...NAIDIDAE					
....UNKNOWN GENUS	--	--	--	--	--
..UNKNOWN ORDER					
...UNKNOWN FAMILY					
....UNKNOWN GENUS	--	--	--	--	--

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO AUGUST 1980

DATE TIME	OCT 5,78 1050	DEC 6,78 1115	JAN 10,79 1335	MAR 7,79 1330	MAY 2,79 1500
ORGANISM	COUNT	COUNT	COUNT	COUNT	COUNT
ARTHROPODA (ARTHROPODS)					
.CRUSTACEA					
..DECAPODA					
...PALAEMONIDAE					
....MACROBRACHIUM	--	--	--	--	--
.INSECTA					
..COLEOPTERA					
...DRYOPIDAE					
....UNKNOWN GENUS	--	--	1	--	--
...ELMIDAE					
....OPTIOSERVUS	--	--	--	--	--
....STENELMIS	--	--	--	--	--
..DIPTERA					
...CERATOPOGONIDAE=HELEIDAE					
....UNKNOWN GENUS	--	20	77	23	22
...CHIRONOMIDAE					
....ABLABESMYIA	--	--	--	--	8
....CHIRONOMUS	--	--	--	--	--
....CONCHAPELOPIA	2	--	1	--	--
....CONCHAPELOPIA,ARCTO,RHEO	--	--	--	--	--
....CORYNONEURA	--	--	1	--	--
....CRICOTOPUS	--	--	--	--	--
....CRYPTOCHIRONOMUS	1	--	9	--	--
....LABRUNDINIA	1	--	1	--	--
....NANOCLADIUS	--	--	--	--	--
....ORTHOCLADIUS	--	--	--	--	--
....PARACLADOPELMA	--	--	--	--	--
....PARATENDIPES	1	--	--	--	--
....PENTANEURA	--	5	5	--	--
....POLYPEDILUM	1	21	11	7	31
....PROCLADIUS	--	--	--	--	--
....PSECTROCLADIUS	1	8	6	--	--
....PSECTROTANYPUS	--	--	--	--	--
....RHEOCRICOTOPUS	--	11	2	--	--
....TANYTARSUS	--	--	--	--	1
....THIENEMANNIELLA	--	--	--	--	--
....ZAVRELIMYIA	1	--	1	--	6
...SIMULIIDAE					
....SIMULIUM	--	--	1	--	--
...TIPULIDAE					
....UNKNOWN GENUS	--	--	--	--	--
..EPHEMEROPTERA					
...BAETIDAE					
....BAETIS	--	--	--	--	--
...CAENIDAE					
....CAENIS	9	6	19	4	47
...HEPTAGENIIDAE					
....STENACRON	--	--	--	--	--
...LEPTOPHLEBIIDAE					
....HERMANELLOPSIS	--	--	--	--	--
....LEPTOPHLEBIA	--	3	--	--	--
....PARALEPTOPHLEBIA	--	--	--	--	--
...SIPHLONURIDAE					
....ISONYCHIA	--	--	--	--	--
..HEMIPTERA					
...					
....UNKN.GENUS	--	--	1	--	--
...NAUCORIDAE					
....UNKN.GENUS	--	--	--	--	6
...VELIIDAE					
....MICROVELIA	--	--	--	--	--
..ODONATA					
...LIBELLULIDAE					
....MACROTHEMIS	--	--	--	--	--
....UNKN.GENUS	--	--	--	--	--
..TRICHOPTERA					
...GLOSSOSOMATIDAE					
....GLOSSOSOMA	--	--	--	--	--
...HYDROPTILIDAE					
....HYDROPTILA	--	--	--	--	--
...PHILOPOTAMIDAE					
....CHIMARRA	--	--	--	--	--
...POLYCENTROPODIDAE					
....POLYCENTROPUS	--	--	--	--	--
CNIDARIA (CNIDARIANS)					
.HYDROZOA					
..HYDROIDA					
...HYDRIDAE					
....HYDRA	--	--	--	--	--
MOLLUSCA (MOLLUSCS)					
.GASTROPODA					
..BASOMMATOPHORA					
...ANCYLIDAE					
....FERRISSIA	98	--	--	--	--
..UNKNOWN ORDER					
...UNKNOWN FAMILY					
....UNKNOWN GENUS	--	--	2	--	--

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO AUGUST 1980

DATE	JUL 11,79	AUG 28,79	SEP 12,79	JAN 8,80	FEB 4,80
TIME	1230	1030	1000	1530	1700
TOTAL COUNT	40	4	0	17	81
DIVERSITY: PHYLUM	0.0	0.0	0.0	0.0	0.3
.CLASS	0.0	0.0	0.0	0.0	0.3
..ORDER	0.5	0.8	0.0	1.1	1.4
...FAMILY	0.5	0.8	0.0	2.3	1.8
....GENUS	2.0	0.8	0.0	2.5	3.3
....GENUS-INSECTA	2.0	0.8	0.0	2.5	3.1
ORGANISM	COUNT	COUNT	COUNT	COUNT	COUNT
ANNELIDA					
.OLIGOCHAETA					
..PLESIOPORA					
...NAIDIDAE					
....UNKNOWN GENUS	--	--	--	--	1
..UNKNOWN ORDER					
...UNKNOWN FAMILY					
....UNKNOWN GENUS	--	--	--	--	--
ARTHROPODA (ARTHROPODS)					
.CRUSTACEA					
..DECAPODA					
...PALAEMONIDAE					
....MACROBRACHIUM	--	--	--	--	--
.INSECTA					
..COLEOPTERA					
...DRYOPIDAE					
....UNKNOWN GENUS	--	--	--	--	--
...ELMIDAE					
....OPTIOSERVUS	--	--	--	--	--
....STENELMIS	--	--	--	2	--
..DIPTERA					
...CERATOPOGONIDAE=HELEIDAE					
....UNKNOWN GENUS	--	--	--	3	3
...CHIRONOMIDAE					
....ABLABESMYIA	--	--	--	--	--
....CHIRONOMUS	1	--	--	--	--
....CONCHAPELOPIA	--	--	--	--	--
....CONCHAPELOPIA,ARCTO,RHEO	--	--	--	--	--
....CORYNONEURA	--	--	--	--	1
....CRICOTOPUS	--	--	--	--	3
....CRYPTOCHIRONOMUS	--	--	--	--	--
....LABRUNDINIA	3	--	--	--	4
....NANOCLADIUS	--	--	--	--	6
....ORTHOCLADIUS	--	--	--	--	--
....PARACLADOPELMA	--	--	--	--	--
....PARATENDIPES	--	--	--	--	--
....PENTANEURA	--	--	--	--	--
....POLYPEDILUM	17	--	--	3	6
....PROCLADIUS	1	--	--	--	--
....PSECTROCLADIUS	13	--	--	--	--
....PSECTROTANYPUS	--	--	--	--	--
....RHEOCRICOTOPUS	--	--	--	--	7
....TANYTARSUS	--	--	--	--	--
....THIENEMANNIELLA	--	--	--	1	24
....ZAVRELIMYIA	--	--	--	--	--
...SIMULIIDAE					
....SIMULIUM	--	--	--	6	--
...TIPULIDAE					
....UNKNOWN GENUS	--	--	--	--	--
..EPHEMEROPTERA					
...BAETIDAE					
....BAETIS	--	--	--	--	16
...CAENIDAE					
....CAENIS	5	--	--	--	2
...HEPTAGENIIDAE					
....STENACRON	--	--	--	--	--
...LEPTOPHLEBIIDAE					
....HERMANELLOPSIS	--	--	--	--	--
....LEPTOPHLEBIA	--	--	--	--	--
....PARALEPTOPHLEBIA	--	1	--	--	1
...SIPHLONURIDAE					
....ISONYCHIA	--	--	--	--	--
..HEMIPTERA					
...					
....UNKN.GENUS	--	--	--	--	--
...NAUCORIDAE					
....UNKN.GENUS	--	--	--	--	--
...VELIIDAE					
....MICROVELIA	--	--	--	--	2
..ODONATA					
...LIBELLULIDAE					
....MACROTHEMIS	--	--	--	1	--
....UNKN.GENUS	--	--	--	--	--
..TRICHOPTERA					
...GLOSSOSOMATIDAE					
....GLOSSOSOMA	--	--	--	1	--
...HYDROPTILICAE					
....HYDROPTILA	--	--	--	--	2
...PHILOPOTAMIDAE					
....CHIMARRA	--	3	--	--	--
...POLYCENTROPODIDAE					
....POLYCENTROPUS	--	--	--	--	1
CNIDARIA (CNIDARIANS)					
.HYDROZOA					
..HYDROIDA					
...HYDRIDAE					
....HYDRA	--	--	--	--	2
MOLLUSCA (MOLLUSCS)					
.GASTROPODA					
..BASOMMATOPHORA					
...ANCYLIDAE					
....FERRISSIA	--	--	--	--	--
..UNKNOWN ORDER					
...UNKNOWN FAMILY					
....UNKNOWN GENUS	--	--	--	--	--

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO AUGUST 1980

DATE TIME	MAR 12,80 0900	APR 1,80 0930	MAY 6,80 1130	AUG 6,80 1300
TOTAL COUNT	56	146	100	6
DIVERSITY: PHYLUM	0.0	0.0	0.1	0.0
.CLASS	0.1	0.1	0.1	0.0
..ORDER	0.4	0.4	1.2	1.8
...FAMILY	1.2	0.4	1.6	2.3
....GENUS	2.4	2.1	2.3	2.3
....GENUS-INSECTA	2.4	2.0	2.2	2.3
ORGANISM	COUNT	COUNT	COUNT	COUNT
ANNELIDA				
.OLIGOCHAETA				
..PLESIOPORA				
...NAIDIDAE				
....UNKNOWN GENUS	--	--	--	--
..UNKNOWN ORDER				
...UNKNOWN FAMILY				
....UNKNOWN GENUS	--	--	1	--
ARTHROPODA (ARTHROPODS)				
.CRUSTACEA				
..DECAPODA				
...PALAEMONIDAE				
....MACROBRACHIUM	1	2	--	--
.INSECTA				
..COLEOPTERA				
...DRYOPIDAE				
....UNKNOWN GENUS	--	--	--	--
...ELMIDAE				
....OPTIOSERVUS	--	--	--	1
....STENELMIS	--	--	--	--
..DIPTERA				
...CERATOPOGONIDAE=HELEIDAE				
....UNKNOWN GENUS	8	--	--	--
...CHIRONOMIDAE				
....ABLABESMYIA	--	4	2	--
....CHIRONOMUS	--	--	1	--
....CONCHAPELOPIA	--	--	--	1
....CONCHAPELOPIA,ARCTO,RHEO	1	--	--	--
....CORYNONEURA	--	--	--	--
....CRICOTOPUS	--	--	--	--
....CRYPTOCHIRONOMUS	--	2	--	--
....LABRUNDINIA	--	1	1	--
....NANOCLADIUS	--	--	--	--
....ORTHOCLADIUS	18	4	--	--
....PARACLADOPELMA	--	4	--	--
....PARATENDIPES	--	--	--	--
....PENTANEURA	--	--	--	--
....POLYPEDILUM	2	45	35	--
....PROCLADIUS	--	--	--	--
....PSECTROCLADIUS	3	--	--	--
....PSECTROTANYPUS	--	2	--	--
....RHEOCRICOTOPUS	--	2	--	--
....TANYTARSUS	19	73	15	--
....THIENEMANNIELLA	--	--	--	--
....ZAVRELIMYIA	--	--	--	--
...SIMULIIDAE				
....SIMULIUM	--	--	--	--
...TIPULIDAE				
....UNKNOWN GENUS	1	--	--	--
..EPHEMEROPTERA				
...BAETIDAE				
....BAETIS	2	2	34	--
...CAENIDAE				
....CAENIS	1	5	4	--
...HEPTAGENIIDAE				
....STENACRON	--	--	--	2
...LEPTOPHLEBIIDAE				
....HERMANELLOPSIS	--	--	5	--
....LEPTOPHLEBIA	--	--	--	--
....PARALEPTOPHLEBIA	--	--	--	--
...SIPHLONURIDAE				
....ISONYCHIA	--	--	--	1
..HEMIPTERA				
...				
....UNKN.GENUS	--	--	--	--
...NAUCORIDAE				
....UNKN.GENUS	--	--	--	--
...VELIIDAE				
....MICROVELIA	--	--	--	--
..ODONATA				
...LIBELLULIDAE				
....MACROTHEMIS	--	--	--	--
....UNKN.GENUS	--	--	2	--
..TRICHOPTERA				
...GLOSSOSOMATIDAE				
....GLOSSOSOMA	--	--	--	--
...HYDROPTILIDAE				
....HYDROPTILA	--	--	--	--
...PHILOPOTAMIDAE				
....CHIMARRA	--	--	--	1
...POLYCENTROPODIDAE				
....POLYCENTROPUS	--	--	--	--
CNIDARIA (CNIDARIANS)				
.HYDROZOA				
..HYDROIDA				
...HYDRIDAE				
....HYDRA	--	--	--	--
MOLLUSCA (MOLLUSCS)				
.GASTROPODA				
..BASOMMATOPHORA				
...ANCYLIDAE				
....FERRISSIA	--	--	--	--
..UNKNOWN ORDER				
...UNKNOWN FAMILY				
....UNKNOWN GENUS	--		--	--

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS 1978 TO SEPTEMBER 1980

DATE	OCT 5,78	NOV 8,78	JAN 10,79	JAN 30,79	APR 5,79	JUN 13,79
TIME	1050	1145	1335	1600	1520	1245
TOTAL CELLS/ML	43	28	50	48	120	51
DIVERSITY: DIVISION	0.0	0.0	0.0	0.5	0.0	0.0
.CLASS	0.0	0.0	0.0	0.5	0.0	0.0
..ORDER	1.0	0.0	0.0	0.5	1.0	0.0
...FAMILY	1.5	0.0	1.2	0.6	1.8	0.0
....GENUS	1.9	0.0	1.6	0.6	2.2	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	7#	17	--	-	--	-	--	-	43#	38	--	-
....MELOSIRA	14#	33	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	7#	17	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	10#	20	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	14	13	--	-
...NAVICULACEAE												
....GYROSIGMA	--	-	--	-	5	10	--	-	--	-	--	-
....NAVICULA	14#	33	28#	100	30#	60	3	6	29#	25	51#	100
....PINNULARIA	--	-	--	-	--	-	--	-	14	13	--	-
...NITZSCHIACEAE												
....DENTICULA	--	-	--	-	--	-	--	-	14	13	--	-
....NITZSCHIA	--	-	--	-	5	10	3	6	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	43#	89	--	-	--	-
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....CALOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS 1978 TO SEPTEMBER 1980

DATE	JUL 11,79		AUG 9,79		SEP 12,79		OCT 2,79		NOV 8,79	
TIME	1230		1440		1000		1000		0845	
TOTAL CELLS/ML	2000		1400		14		72		14	
DIVERSITY: DIVISION	0.6		1.2		0.0		0.7		0.0	
.CLASS	0.6		1.2		0.0		0.7		0.0	
..ORDER	1.5		1.6		0.0		0.7		0.0	
...FAMILY	2.0		1.8		0.0		1.9		0.0	
....GENUS	2.0		1.8		0.0		1.9		0.0	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	13	1	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	91	5	26	2	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	940#	48	220#	16	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	14#	20	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	36	2	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	36	2	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	510#	26	77	6	--	-	29#	40	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....DENTICULA	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	240	12	280#	20	--	-	14#	20	14#	100
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	13	1	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	110	6	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	770#	55	--	-	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	14#	100	--	-	--	-
...RIVULARIACEAE										
....CALOTHRIX	--	-	--	-	--	-	--	-	--	-
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	14#	20	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS 1978 TO SEPTEMBER 1980

DATE	DEC 13,79		JAN 8,80		FEB 4,80		MAR 12,80		APR 1,80	
TIME	1000		1530		1445		0900		0930	
TOTAL CELLS/ML	240		57		500		440		560	
DIVERSITY: DIVISION	0.0		1.0		1.4		1.3		0.9	
.CLASS	0.0		1.0		1.4		1.3		0.9	
..ORDER	0.9		1.0		1.6		1.8		1.0	
...FAMILY	2.3		1.5		2.0		2.5		2.5	
....GENUS	2.4		1.5		2.0		2.7		2.5	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	14	2
....DICTYOSPHAERIUM	--	-	--	-	--	-	14	3	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	57	11	29	6	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	41	7
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	86#	35	--	-	29	6	72#	16	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	14	3	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	14	6	--	-	--	-	14	3	--	-
....COCCONEIS	14	6	--	-	--	-	57	13	210#	37
...CYMBELLACEAE										
....CYMBELLA	14	6	--	-	--	-	14	3	27	5
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	71#	29	14#	25	--	-	--	-	27	5
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	29	12	--	-	110#	23	29	6	41	7
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....DENTICULA	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	14	6	14#	25	86#	17	29	6	150#	27
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	29#	50	--	-	--	-	55	10
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	220#	43	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	170#	39	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....CALOTHRIX	--	-	--	-	--	-	--	-	--	-
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50114000 RIO CERRILLOS NEAR PONCE, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS 1978 TO SEPTEMBER 1980

DATE	MAY 6,80		JUN 4,80		JUL 3,80		AUG 6,80		SEP 4,80	
TIME	1130		0945		1030		1230		0845	
TOTAL CELLS/ML	160		110		1600		300		41	
DIVERSITY: DIVISION	0.0		0.0		0.3		1.0		0.0	
.CLASS	0.0		0.0		0.3		1.0		0.0	
..ORDER	0.0		0.0		0.4		1.0		0.0	
...FAMILY	0.9		0.0		1.4		2.0		0.0	
....GENUS	0.9		0.0		1.6		2.0		0.0	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	14	1	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	100#	64	--	-	--	-	14	5	--	-
....COCCONEIS	--	-	--	-	14	1	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	14	1	28	9	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	110#	100	41	3	55#	18	--	-
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....DENTICULA	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	58#	36	--	-	14	1	69#	23	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	14	1	--	-	41#	100
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	140#	45	--	-
....OSCILLATORIA	--	-	--	-	950#	58	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....CALOTHRIX	--	-	--	-	480#	30	--	-	--	-
....RAPHIDIOPSIS	--	-	--	-	82	5	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50115000 RIO PORTUGUES NEAR PONCE, PR

LOCATION.--Lat 18°04'45", long 66°38'01" (revised), Hydrologic Unit 21010004, on right bank at bridge on Highway 503, 0.2 mi (0.3 km) upstream from small unnamed tributary, 4.4 mi (7.1 km) upstream from Río Chiquito, and 4.7 mi (7.6 km) north of Plaza Degetau in Ponce.

DRAINAGE AREA.--8.82 sq mi (22.84 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to June 1964 (monthly measurements only), July 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 470 ft (143 m), from topographic map. Prior to Dec. 4, 1964, non-recording gage at same site and datum.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--15 years (1965-79), 17.6 cu ft/s (0.498 cu m/s), 27.10 in/yr (688 mm/yr), 12,750 acre-ft/yr (15.7 cu hm/yr); median of yearly mean discharges 15 cu ft/s (0.42 cu m/s), 10,900 acre-ft/yr (13 cu hm/yr).
--16 years (1965-80), 17.6 cu ft/s (0.498 cu m/s), 27.10 in/yr (688 mm/yr), 12,750 acre-ft/yr (15.7 cu hm/yr); median of yearly mean discharges 15 cu ft/s (0.42 cu m/s), 10,900 acre-ft/yr (13 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 cu ft/s (371 cu m/s) Sept. 16, 1975, gage height, 10.1 ft (3.08 m), from flood-marks, from rating curve extended above 150 cu ft/s (4.25 cu m/s) on basis of slope-area measurement of peak flow; minimum, 1.0 cu ft/s (0.028 cu m/s) May 29, 1973.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 800 cu ft/s (22.7 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 26, 1978	0715	1,700	48.1	7.58	2.310
Oct. 26, 1978	1600	1,020	28.9	6.11	1.862
Nov. 20, 1978	1515	920	26.0	5.88	1.792
May 14, 1979	1615	1,320	37.4	6.80	2.073
May 16, 1979	1800	2,600	73.6	9.17	2.795
June 10, 1979	2230	2,070	58.6	8.26	2.518
July 18, 1979	1615	1,970	55.8	8.08	2.463
Aug. 31, 1979	0730	*3,010	85.2	9.81	2.990
May 27, 1980	1815	1,600	45.3	7.38	2.249
May 29, 1980	1515	1,780	50.4	7.72	2.353
July 21, 1980	1630	1,320	37.4	6.81	2.076

Minimum discharges, 2.0 cu ft/s (0.031 cu m/s) May 6-10, 1979; 2.2 cu ft/s (0.062 cu m/s) Apr. 22-25, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	68	13	6.7	3.9	3.1	5.8	2.4	37	23	46	227
2	11	90	12	6.6	3.9	3.1	5.0	2.4	14	12	35	90
3	42	66	11	6.7	3.9	3.1	4.4	2.2	23	9.1	19	68
4	34	48	11	6.7	3.9	3.9	3.8	2.2	19	8.8	17	139
5	22	36	11	6.7	4.2	4.8	3.3	2.2	8.4	10	15	324
6	16	31	11	13	4.3	3.6	3.3	2.1	5.4	9.2	19	174
7	10	27	11	11	4.2	3.6	3.2	2.2	3.9	7.6	17	112
8	41	25	11	8.0	4.2	3.6	3.3	2.2	3.2	6.3	15	257
9	135	22	11	7.5	4.2	3.6	3.3	2.2	13	6.8	9.5	197
10	62	21	11	7.0	4.2	3.6	3.3	27	181	6.4	9.6	104
11	29	20	11	8.6	4.2	3.5	3.3	6.6	604	9.9	9.6	68
12	19	28	10	7.8	4.7	3.8	3.4	2.8	173	9.5	9.3	56
13	15	21	9.9	6.7	4.0	3.6	3.2	5.0	84	75	10	47
14	14	43	9.5	6.6	7.0	3.1	3.9	104	42	37	13	37
15	12	178	11	6.3	14	3.1	3.5	39	25	24	15	32
16	35	65	11	6.3	6.1	3.1	3.1	223	20	15	13	27
17	21	33	12	5.6	4.5	4.3	4.1	65	18	30	12	24
18	13	26	13	5.3	4.6	5.7	3.7	26	15	626	64	21
19	11	21	13	8.6	5.2	3.9	4.9	30	13	332	74	17
20	11	122	12	12	12	3.8	6.8	86	11	96	101	15
21	10	59	12	5.9	9.7	3.6	4.5	56	11	60	70	13
22	16	33	9.1	6.7	4.7	3.7	3.8	17	11	46	101	14
23	288	28	8.5	6.7	4.5	3.9	3.6	10	8.1	37	135	12
24	108	24	7.9	5.1	4.2	3.9	3.6	4.8	8.7	31	150	13
25	172	20	7.5	4.5	4.2	3.9	3.3	3.6	12	28	110	17
26	648	18	7.6	4.5	4.2	19	3.3	2.7	8.7	25	86	11
27	336	16	7.5	4.5	4.2	45	4.1	11	6.0	23	72	11
28	203	15	7.8	4.5	3.9	18	3.9	5.0	7.3	21	62	9.1
29	79	14	8.0	4.2	---	31	3.9	10	31	19	70	147
30	133	14	7.6	4.2	---	14	2.6	14	33	10	222	67
31	94	---	6.7	4.0	---	7.3	---	10	---	18	1110	---
TOTAL	2656	1232	315.6	208.5	146.8	227.2	115.2	778.6	1449.7	1680.6	2711.0	2350.1
MEAN	85.7	41.1	10.2	6.73	5.24	7.33	3.84	25.1	48.3	54.2	87.5	78.3
MAX	648	178	13	13	14	45	6.8	223	604	626	1110	324
MIN	10	14	6.7	4.0	3.9	3.1	2.6	2.1	3.2	6.3	9.3	9.1
CFSM	9.72	4.66	1.16	.76	.59	.83	.44	2.85	5.48	6.15	9.92	8.88
IN	11.20	5.20	1.33	.88	.62	.96	.49	3.28	6.11	7.09	11.43	9.91
AC-FT	5270	2440	626	414	291	451	228	1540	2880	3330	5380	4660

CAL YR 1978 TOTAL 7181.1 MEAN 19.7 MAX 648 MIN 3.3 CFSM 2.23 IN 30.28 AC-FT 14240
WTR YR 1979 TOTAL 13871.3 MEAN 38.0 MAX 1110 MIN 2.1 CFSM 4.31 IN 58.50 AC-FT 27510

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	27	14	7.1	4.5	4.6	3.8	40	31	5.5	8.0	18
2	43	20	13	7.1	4.5	4.2	3.9	18	21	5.9	7.1	16
3	39	15	14	8.5	4.9	3.9	3.9	9.2	19	6.2	7.6	13
4	45	26	25	8.0	7.2	5.0	3.9	6.7	17	9.0	7.6	9.8
5	53	33	20	8.1	13	7.5	3.6	5.9	16	6.3	7.1	14
6	38	71	15	16	8.8	12	3.6	5.2	14	6.0	7.1	13
7	84	43	13	16	7.8	9.3	4.5	3.9	12	20	6.7	9.9
8	50	37	12	8.2	6.4	5.3	6.1	4.1	12	15	7.1	15
9	47	29	12	7.7	5.5	4.4	6.0	4.2	12	10	6.7	8.0
10	36	22	10	8.0	5.5	4.1	8.9	4.1	11	9.0	6.7	19
11	30	19	11	7.7	5.5	3.8	7.0	4.0	34	8.0	6.6	18
12	28	16	10	7.5	5.4	3.6	62	4.1	20	15	6.1	23
13	24	40	10	6.7	5.2	3.5	16	4.0	17	10	5.5	35
14	22	21	9.5	6.7	5.2	3.3	7.3	4.5	12	9.0	6.2	62
15	22	16	9.0	6.6	4.8	2.8	5.0	6.0	9.5	8.0	6.3	41
16	21	14	9.0	6.2	4.8	2.8	4.3	6.0	9.0	50	5.4	23
17	18	46	9.5	6.0	4.8	2.8	3.9	11	8.5	30	5.1	29
18	18	47	9.5	6.2	4.8	2.8	3.2	13	8.0	40	4.9	22
19	20	33	9.0	5.8	4.8	3.0	3.0	95	7.1	68	5.7	18
20	19	27	9.5	5.2	4.8	3.1	2.8	42	7.1	22	5.2	25
21	56	26	8.5	5.5	4.8	3.0	2.8	17	7.1	143	4.7	105
22	28	19	7.1	5.4	4.8	2.6	2.5	16	6.3	54	4.8	58
23	18	26	6.7	5.5	5.4	2.6	2.2	15	6.7	19	4.4	33
24	17	47	7.1	5.7	7.8	2.6	2.4	57	5.9	14	4.2	98
25	15	27	10	6.0	5.5	2.8	32	39	10	10	4.8	86
26	15	21	8.0	5.4	5.2	3.2	23	23	8.5	10	4.8	54
27	13	19	8.0	4.8	5.2	5.3	9.4	235	6.3	9.0	4.1	98
28	32	16	8.0	4.8	5.1	4.6	7.0	244	5.9	8.5	52	72
29	23	15	8.0	4.7	4.8	3.8	5.7	322	6.7	8.0	13	49
30	16	14	7.6	4.5	---	3.6	16	141	7.1	7.6	6.7	72
31	16	---	7.6	4.5	---	3.5	---	53	---	8.0	27	---
TOTAL	940	832	330.6	216.1	166.8	129.4	265.7	1452.9	367.7	644.0	259.2	1156.7
MEAN	30.3	27.7	10.7	6.97	5.75	4.17	8.86	46.9	12.3	20.8	8.36	38.6
MAX	84	71	25	16	13	12	62	322	34	143	52	105
MIN	13	14	6.7	4.5	4.5	2.6	2.2	3.9	5.9	5.5	4.1	8.0
CFSM	3.44	3.14	1.21	.79	.65	.47	1.01	5.32	1.40	2.36	.95	4.38
IN.	3.96	3.51	1.39	.91	.70	.55	1.12	6.13	1.55	2.72	1.09	4.88
AC-FT	1860	1650	656	429	331	257	527	2880	729	1280	514	2290

CAL YR 1979 TOTAL 11770.3 MEAN 32.2 MAX 1110 MIN 2.1 CFSM 3.65 IN 49.64 AC-FT 23350
WTR YR 1980 TOTAL 6761.1 MEAN 18.5 MAX 322 MIN 2.2 CFSM 2.10 IN 28.51 AC-FT 13410

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: January 1968 to December 1969, September 1973 to current year.

EXTREMES FOR PERIOD OF DAILY RECORDS.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 22,900 mg/L August 31, 1979; minimum daily mean, 0.0 mg/L several days during many years.
SEDIMENT LOADS: Maximum daily, 95,900 tons (87,000 tonnes) August 31, 1979; minimum daily mean, 0.0 ton (0.0 tonne) several days during many years.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 22,900 mg/L August 31, 1979 and 4,490 mg/L May 27, 1980; minimum daily mean, 0.0 mg/L several days during both years.
SEDIMENT LOADS: Maximum daily, 95,900 tons (87,000 tonnes) August 31, 1979 and 10,500 tons (9,500 tonnes) May 27, 1980, minimum daily, 0.0 ton (0.0 tonnes) several days during both years

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
05...	0710	15	251	8.1	23.0	--	9.2	--	.2	14000	2500	3100
NOV												
08...	0730	26	318	8.1	22.0	--	8.6	--	2.2	--	1000	2900
DEC												
06...	0730	11	338	8.2	22.0	--	8.7	--	.8	46000	440	2000
JAN , 1979												
11...	0700	8.0	328	8.0	20.5	--	9.0	--	--	--	490	2600
FEB												
01...	1200	4.3	322	8.5	23.5	--	7.1	--	1.1	4200	700	540
MAR												
08...	1500	3.5	312	8.2	25.0	--	8.4	--	--	--	250	150
APR												
04...	1630	3.2	299	8.2	26.5	--	8.0	--	2.8	1900	530	690
MAY												
03...	1500	2.3	282	8.2	27.0	--	8.4	--	--	1000	240	--
JUN												
14...	1015	38	248	8.0	24.5	--	8.4	--	.1	1600	40	840
JUL												
11...	1045	11	285	7.6	26.0	--	8.2	--	--	--	--	--
AUG												
09...	1730	11	295	8.2	28.0	--	7.8	--	1.8	1600	340	250
28...	1630	54	289	7.1	28.4	--	7.4	--	--	--	--	--
SEP												
05...	1830	366	--	--	22.0	--	--	--	--	--	--	--
11...	1700	64	296	8.0	26.0	--	8.0	--	--	--	--	--
OCT												
03...	1150	30	276	8.0	24.8	--	8.4	--	--	--	--	--
NOV												
07...	1530	30	228	7.6	24.0	8.0	8.7	6	2.2	--	1500	3000
DEC												
12...	1600	11	317	8.2	25.0	--	7.5	--	--	--	220	210
JAN , 1980												
09...	1600	7.5	318	8.1	24.5	--	8.5	--	--	43000	390	530
MAR												
11...	1700	3.8	300	8.1	25.5	--	8.0	--	2.1	5000	60	--
APR												
09...	0700	4.5	289	7.8	21.5	--	8.3	--	--	800	210	--
MAY												
08...	1715	3.9	302	8.2	30.0	--	8.2	--	6.2	--	280	230
JUN												
04...	1415	15	273	8.0	26.3	--	9.4	--	--	4000	2000	--
JUL , 1980												
03...	1600	6.6	288	8.1	25.5	.40	8.0	12	1.3	500	440	--
AUG												
07...	1530	6.6	262	8.3	26.5	--	8.4	--	--	6000	330	70
SEP												
04...	1515	8.5	215	8.0	27.0	.80	8.4	7	--	2200	710	600

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)
OCT , 1978												
05...	120	1	35	6.8	7.9	.3	1.4	140	0	115	1.8	7.2
NOV												
08...	--	--	--	--	--	--	--	176	0	144	2.2	--
DEC												
06...	160	2	48	8.9	11	.4	1.4	152	0	157	1.9	8.2
JAN , 1979												
11...	--	--	--	--	--	--	--	186	0	153	3.0	5.9
FEB												
01...	150	0	47	8.1	11	.4	1.3	180	4	154	1.0	7.9
MAR												
08...	--	--	--	--	--	--	--	177	0	150	1.8	--
APR												
04...	120	0	36	6.6	9.4	.4	1.4	260	0	213	2.6	7.5
MAY												
03...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
14...	110	0	35	6.0	8.7	.4	1.2	160	0	131	2.6	7.2
JUL												
11...	--	--	--	--	--	--	--	170	0	139	4.3	--
AUG												
09...	120	0	39	6.6	10	.4	1.3	160	0	131	1.6	8.8
28...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
05...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--
OCT												
03...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
07...	0	0	--	--	--	--	--	130	0	110	5.2	--
DEC												
12...	--	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980												
09...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
11...	--	--	--	--	--	--	--	180	0	150	2.3	--
APR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
08...	--	--	--	--	--	--	--	160	0	130	1.6	--
JUN												
04...	--	--	--	--	--	--	--	--	0	0	--	--
JUL												
03...	--	--	--	--	--	--	--	150	0	120	1.9	--
AUG												
07...	--	--	--	--	--	--	--	--	0	--	--	--
SEP												
04...	--	--	--	--	--	--	--	140	0	115	2.2	--

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
05...	7.1	.1	19	--	154	6.2	--	--	1.3	<.010	1.3
NOV											
08...	10	--	22	--	--	--	--	4	1.4	<.010	1.4
DEC											
06...	10	.1	21	204	203	6.1	--	--	1.2	<.010	1.2
JAN , 1979											
11...	11	.1	21	--	--	--	--	--	--	--	--
FEB											
01...	10	.1	21	200	199	2.3	--	--	.76	<.010	.76
MAR											
08...	10	--	18	--	--	--	--	0	.39	<.010	.39
APR											
04...	9.9	.1	18	186	217	1.6	--	--	.79	.010	.80
MAY											
03...	9.5	--	22	--	--	--	38	--	.28	<.010	.28
JUN											
14...	7.9	.1	21	--	166	16.9	--	14	1.5	<.010	1.5
JUL											
11...	--	--	21	--	--	--	--	7	.64	<.010	.64
AUG											
09...	9.0	.1	22	--	176	5.4	--	--	.65	<.010	.65
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	13	1.4	.010	1.4
OCT											
03...	--	--	22	--	--	--	--	7	1.2	.000	1.2
NOV											
07...	--	--	--	--	--	--	21	15	1.4	.000	1.4
DEC											
12...	--	--	24	--	--	--	26	--	.99	.000	.99
JAN , 1980											
09...	--	--	23	--	--	--	36	--	.85	.080	.93
MAR											
11...	--	--	--	--	--	--	--	--	.62	.010	.63
APR											
09...	10	--	23	--	--	--	--	3	.91	.020	.93
MAY											
08...	--	--	--	--	--	--	--	--	.54	.000	.54
JUN											
04...	--	--	21	--	--	--	--	--	1.3	.000	1.3
JUL											
03...	--	--	21	--	--	--	--	6	--	--	.10
AUG											
07...	--	--	22	--	--	--	--	3	.42	.000	.42
SEP											
04...	--	--	--	--	--	--	0	--	.67	.000	.67

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N(3))	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
05...	.030	.06	.09	1.4	6.2	.030	--	--	--	--	--
NOV											
08...	<.010	.03	.03	1.4	6.3	.030	.030	--	--	--	--
DEC											
06...	.040	.23	.27	1.5	6.5	.030	--	<1	--	ND	<20
JAN , 1979											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
01...	.010	.23	.24	1.0	4.4	.060	.050	--	--	--	--
MAR											
08...	.060	.40	.46	.85	3.8	.030	.020	--	--	--	--
APR											
04...	.070	.17	.24	1.0	4.6	.030	.020	--	--	--	--
MAY											
03...	<.010	.15	.15	.43	1.9	.040	.020	--	--	--	--
JUN											
14...	.010	.18	.19	1.7	7.5	.040	.020	--	--	--	--
JUL											
11...	<.010	.15	.15	.79	3.5	.040	.030	--	--	--	--
AUG											
09...	<.010	.00	<.10	.65	2.9	.030	.010	<1	--	ND	<20
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
05...	--	--	--	--	--	--	--	--	--	--	--
11...	.070	.06	.13	1.5	6.8	.030	--	--	--	--	--
OCT											
03...	.020	.13	.15	1.4	6.0	.040	.040	--	--	--	--
NOV											
07...	.010	.21	.22	1.6	7.2	.030	--	--	--	--	--
DEC											
12...	.020	.01	.03	1.0	4.5	.030	--	--	--	--	--
JAN , 1980											
09...	.010	.48	.49	1.4	6.3	.040	--	--	--	--	--
MAR											
11...	.020	.11	.13	.76	3.4	.030	--	--	50	0	10
APR											
09...	.010	.36	.37	1.3	5.8	.210	--	--	--	--	--
MAY											
08...	.010	.57	.58	1.1	5.0	.030	--	--	--	--	--
JUN											
04...	.010	.78	.79	2.1	9.3	.040	--	--	--	--	--
JUL											
03...	--	--	--	--	--		.070	--	--	--	--
AUG											
07...	.020	.18	.20	.62	2.7		.030	--	--	--	--
SEP											
04...	.040	.05	.09	.76	3.4		1.00	0	100	0	10

ND Looked for but not detected.

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
05...	--	--	--	--	--	--	--	--	--	10	.40
NOV											
08...	--	200	--	--	--	--	--	--	--	31	2.2
DEC											
06...	<2	20	2	<10	<.5	<1	ND	<20	--	0	.00
JAN , 1979											
11...	--	170	--	--	--	--	--	--	--	0	.00
FEB											
01...	--	--	--	<10	--	--	--	--	3.2	0	.00
MAR											
08...	--	150	--	--	--	--	--	--	9.4	0	.00
APR											
04...	--	--	--	<10	--	--	--	--	7.2	10	.09
MAY											
03...	--	170	--	--	--	--	--	--	14	--	--
JUN											
14...	--	430	--	--	--	--	--	--	--	15	1.5
JUL											
11...	--	110	--	--	--	--	--	--	3.3	--	--
AUG											
09...	3	180	ND	<10	<.5	<1	ND	40	5.2	7	.22
28...	--	--	--	--	--	--	--	--	--	--	--
SEP											
05...	--	--	--	--	--	--	--	--	--	286	283
11...	--	620	--	--	--	--	--	--	--	16	2.8
OCT											
03...	--	610	--	--	--	--	--	--	.9	--	--
NOV											
07...	--	270	--	--	--	--	--	--	--	14	1.1
DEC											
12...	--	140	--	--	--	--	--	--	4.4	--	--
JAN , 1980											
09...	--	190	--	--	--	--	--	--	--	7	.14
MAR											
11...	--	--	2	--	.1	0	0	--	--	3	.03
APR											
09...	--	850	--	--	--	--	--	--	--	3	.04
MAY											
08...	--	--	--	--	--	--	--	--	--	2	.02
JUN											
04...	--	150	--	--	--	--	--	--	2.9	--	--
JUL											
03...		190	--		--	--	--		4.5	1	.02
AUG											
07...		150	--		--	--	--		.0	2	.04
SEP											
04...		--	5		.2	0	0		--	9	.21

ND Looked for but not detected.

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO SEPTEMBER 1980

DATE TIME	OCT 5,78 0710	NOV 8,78 0730	DEC 6,78 0730	JAN 11,79 0700	MAR 8,79 1500	MAY 3,79 1500
TOTAL COUNT	16	0	73	342	26	28
DIVERSITY: PHYLUM	0.0	0.0	0.0	0.0	0.0	0.0
.CLASS	0.0	0.0	0.0	0.0	0.0	0.0
..ORDER	0.5	0.0	0.0	0.1	0.5	1.0
...FAMILY	1.2	0.0	1.0	1.0	1.2	1.0
....GENUS	2.8	0.0	1.8	2.6	1.5	2.4
....GENUS-INSECTA	2.8	0.0	1.8	2.6	1.5	2.4
ORGANISM	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
ANNELIDA						
.OLIGOCHAETA						
..PLESIOPORA						
...NAIDIDAE						
....UNKNOWN GENUS	--	--	--	--	--	--
..UNKNOWN ORDER						
...UNKNOWN FAMILY						
....UNKNOWN GENUS	--	--	--	--	--	--
ARTHROPODA (ARTHROPODS)						
.CRUSTACEA						
..DECAPODA						
...ASTACIDAE						
....UNKNOWN GENUS	--	--	--	--	--	--
...PALAEMONIDAE						
....MACROBRACHIUM	--	--	--	--	--	--
.INSECTA						
..COLEOPTERA						
...ELMIDAE						
....PHANOCERUS	--	--	--	--	--	--
..DIPTERA						
...CERATOPOGONIDAE=HELEIDAE						
....UNKNOWN GENUS	3	--	44	112	17	--
...CHIRONOMIDAE						
....ABLABESMYIA	--	--	--	--	--	--
....BRILLIA	--	--	--	3	--	1
....CHIRONOMUS	--	--	--	--	--	--
....CONCHAPELOPIA	--	--	--	21	--	--
....CONCHAPELOPIA,ARCTO,RHEO	--	--	--	--	--	--
....CORYNONEURA	--	--	4	23	--	--
....CRICOTOPUS	--	--	--	--	--	--
....CRYPTOCHIRONOMUS	4	--	--	--	--	--
....EUKIEFFERIELLA	1	--	--	--	--	--
....LABRUNDINIA	--	--	--	--	--	1
....LARSIA	--	--	4	--	--	--
....NANOCLADIUS	--	--	--	--	--	--
....NILOTANYPUS	--	--	--	--	--	--
....ORTHOCLADIUS	--	--	--	--	--	--
....PARATENDIPES	--	--	3	1	--	--
....PENTANEURA	--	--	--	14	--	--
....POLYPEDILUM	3	--	13	34	4	2
....PSECTROCLADIUS	1	--	--	--	1	2
....PSECTROTANYPUS	--	--	--	91	--	--
....RHEOCRICOTOPUS	--	--	5	37	--	5
....RHEOTANYTARSUS	--	--	--	--	1	3
....SMITTIA	--	--	--	--	--	1
....STENOCHIRONOMUS	1	--	--	--	--	--
....TANYTARSUS	--	--	--	--	--	--
....UNKNOWN GENUS	--	--	--	--	--	--
....ZAVRELIMYIA	1	--	--	--	--	--
..EPHEMEROPTERA						
...BAETIDAE						
....BAETIS	--	--	--	--	--	--
...CAENIDAE						
....CAENIS	2	--	--	2	3	13
...HEPTAGENIIDAE						
....STENONEMA	--	--	--	--	--	--
...LEPTOPHLEBIIDAE						
....HAGENULOPSIS	--	--	--	--	--	--
....HERMANELLOPSIS	--	--	--	--	--	--
....LEPTOPHLEBIA	--	--	--	4	--	--
....PARALEPTOPHLEBIA	--	--	--	--	--	--
....UNKNOWN GENUS	--	--	--	--	--	--
..ODONATA						
...COENAGRIONIDAE						
....ENALLAGMA	--	--	--	--	--	--
....UNKNOWN GENUS	--	--	--	--	--	--
...CORDULIIDAE						
....UNKN.GENUS	--	--	--	--	--	--
..TRICHOPTERA						
...POLYCENTROPODIDAE						
....POLYCENTROPUS	--	--	--	--	--	--
MOLLUSCA (MOLLUSCS)						
.GASTROPODA						
..BASOMMATOPHORA						
...ANCYLIDAE						
....HEBETANCYLUS	--	--	--	--	--	--
....LAEVAPEX	--	--	--	--	--	--
..MESOGASTROPODA						
...THIARIDAE						
....MELANOIDES	--	--	--	--	--	

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUL 11,79	AUG 9,79	AUG 28,79	SEP 11,79	NOV 7,79	JAN 16,80
TIME	1045	1730	1630	1700	1530	0900
TOTAL COUNT	384	158	6	9	52	300
DIVERSITY: PHYLUM	0.0	0.1	0.0	0.0	0.4	0.0
.CLASS	0.1	0.1	0.0	0.0	0.4	0.0
..ORDER	0.9	1.0	1.0	0.9	1.0	0.7
...FAMILY	1.6	1.9	1.0	1.5	1.6	1.0
....GENUS	3.0	3.0	1.8	1.9	3.0	1.7
....GENUS-INSECTA	3.0	2.9	1.8	1.9	2.7	1.7
ORGANISM	COUNT	COUNT	COUNT	COUNT	COUNT	COUNT
ANNELIDA						
.OLIGOCHAETA						
..PLESIOPORA						
...NAIDIDAE						
....UNKNOWN GENUS	1	2	--	--	2	--
..UNKNOWN ORDER						
...UNKNOWN FAMILY						
....UNKNOWN GENUS	--	--	--	--	2	--
ARTHROPODA (ARTHROPODS)						
.CRUSTACEA						
..DECAPODA						
...ASTACIDAE						
....UNKNOWN GENUS	--	--	--	--	--	--
...PALAEMONIDAE						
....MACROBRACHIUM	1	--	--	--	--	--
.INSECTA						
..COLEOPTERA						
...ELMIDAE						
....PHANOCERUS	--	1	--	--	--	--
..DIPTERA						
...CERATOPOGONIDAE=HELEIDAE						
....UNKNOWN GENUS	61	25	--	2	5	--
...CHIRONOMIDAE						
....ABLABESMYIA	--	--	--	--	--	10
....BRILLIA	--	--	--	--	--	--
....CHIRONOMUS	--	--	--	1	--	--
....CONCHAPELOPIA	--	--	1	--	--	--
....CONCHAPELOPIA+ARCTO+RHEO	2	6	--	--	1	2
....CORYNONEURA	2	1	1	--	--	--
....CRICOTOPUS	8	4	1	--	--	--
....CRYPTOCHIRONOMUS	2	5	--	--	8	--
....EUKIEFFERIELLA	--	--	--	--	--	--
....LABRUNDINIA	--	--	--	--	1	14
....LARSIA	11	7	--	--	--	--
....NANOCLADIUS	--	--	--	--	--	3
....NILOTANYPUS	25	8	--	--	--	--
....ORTHOCLADIUS	--	--	--	--	6	--
....PARATENDIPES	--	--	--	--	--	--
....PENTANEURA	--	--	--	--	--	--
....POLYPEDILUM	92	63	--	3	19	212
....PSECTROCLADIUS	13	--	--	--	--	--
....PSECTROTANYPUS	--	--	--	--	--	--
....RHEOCRICOTOPUS	80	1	--	--	--	--
....RHEOTANYTARSUS	--	--	--	--	2	--
....SMITTIA	--	--	--	--	--	--
....STENOCHIRONOMUS	--	--	--	--	--	--
....TANYTARSUS	3	--	--	--	--	--
....UNKNOWN GENUS	--	--	--	--	--	4
....ZAVRELIMYIA	--	--	--	--	--	--
..EPHEMEROPTERA						
...BAETIDAE						
....BAETIS	61	12	3	3	3	19
...CAENIDAE						
....CAENIS	14	14	--	--	1	11
...HEPTAGENIIDAE						
....STENONEMA	--	--	--	--	--	--
...LEPTOPHLEBIIDAE						
....HAGENULOPSIS	--	--	--	--	--	--
....HERMANELLOPSIS	--	--	--	--	--	22
....LEPTOPHLEBIA	--	--	--	--	--	--
....PARALEPTOPHLEBIA	--	2	--	--	--	--
....UNKNOWN GENUS	3	3	--	--	1	--
..ODONATA						
...COENAGRIONIDAE						
....ENALLAGMA	--	--	--	--	--	3
....UNKNOWN GENUS	--	--	--	--	--	--
...CORDULIIDAE						
....UNKN.GENUS	5	4	--	--	--	--
..TRICHOPTERA						
...POLYCENTROPODIDAE						
....PCLYCENTROPUS	--	--	--	--	1	--
MOLLUSCA (MOLLUSCS)						
.GASTROPODA						
..BASOMMATOPHORA						
...ANCYLIDAE						
....HEBETANCYLUS	--	--	--	--	--	--
....LAEVAPEX	--	--	--	--	--	--
..MESOGASTROPODA						
...THIARIDAE						
....MELANOIDES	--	--	--	--	--	--

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

BENTHIC INVERTEBRATE ANALYSES, OCTOBER 1978 TO SEPTEMBER 1980

DATE TIME	MAR 11,80 1700	APR 9,80 0700	MAY 8,80 1715	AUG 7,80 1530	SEP 4,80 1515
TOTAL COUNT	76	160	34	196	42
DIVERSITY: PHYLUM	0.0	0.1	0.5	0.0	0.2
.CLASS	0.0	0.1	0.5	0.0	0.2
..ORDER	1.1	0.4	0.8	0.9	1.1
...FAMILY	1.6	0.4	0.8	1.0	1.1
....GENUS	2.4	1.7	1.5	1.5	2.1
....GENUS-INSECTA	2.4	1.6	1.0	1.5	2.0
ORGANISM	COUNT	COUNT	COUNT	COUNT	COUNT
ANNELIDA					
.OLIGOCHAETA					
..PLESIOPORA					
...NAIDIDAE					
....UNKNOWN GENUS	--	--	--	--	--
..UNKNOWN ORDER					
...UNKNOWN FAMILY					
....UNKNOWN GENUS	--	--	--	--	--
ARTHROPODA (ARTHROPODS)					
.CRUSTACEA					
..DECAPODA					
...ASTACIDAE					
....UNKNOWN GENUS	--	--	--	1	--
...PALAEMONIDAE					
....MACROBRACHIUM	--	--	--	--	--
.INSECTA					
..COLEOPTERA					
...ELMIDAE					
....PHANOCERUS	--	--	--	--	--
..DIPTERA					
...CERATOPOGONIDAE=HELEIDAE					
....UNKNOWN GENUS	--	1	--	--	--
...CHIRONOMIDAE					
....ABLABESMYIA	9	2	--	7	13
....BRILLIA	--	--	--	--	--
....CHIRONOMUS	--	--	--	--	--
....CONCHAPELOPIA	--	--	--	--	1
....CONCHAPELOPIA,ARCTO,RHEO	--	--	--	--	--
....CORYNONEURA	--	--	--	--	--
....CRICOTOPUS	--	--	--	3	--
....CRYPTOCHIRONOMUS	--	2	--	--	1
....EUKIEFFERIELLA	--	--	--	--	--
....LABRUNDINIA	2	--	--	--	--
....LARSIA	--	--	--	--	--
....NANOCLADIUS	--	--	--	--	--
....NILOTANYPUS	--	--	--	10	--
....ORTHOCLADIUS	--	--	--	--	--
....PARATENDIPES	--	--	--	--	1
....PENTANEURA	--	--	--	--	--
....POLYPEDILUM	27	94	22	27	11
....PSECTROCLADIUS	--	--	--	--	--
....PSECTROTANYPUS	--	7	--	--	--
....RHEOCRICOTOPUS	1	--	--	3	--
....RHEOTANYTARSUS	--	--	--	--	--
....SMITTIA	--	--	--	--	--
....STENOCHIRONOMUS	--	--	--	--	--
....TANYTARSUS	2	45	7	--	--
....UNKNOWN GENUS	--	--	--	--	--
....ZAVRELIMYIA	--	--	--	--	--
..EPHEMEROPTERA					
...BAETIDAE					
....BAETIS	6	--	1	140	--
...CAENIDAE					
....CAENIS	5	5	--	--	--
...HEPTAGENIIDAE					
....STENONEMA	--	--	--	5	14
...LEPTOPHLEBIIDAE					
....HAGENULOPSIS	--	2	--	--	--
....HERMANELLOPSIS	23	--	--	--	--
....LEPTOPHLEBIA	--	--	--	--	--
....PARALEPTOPHLEBIA	--	--	--	--	--
....UNKNOWN GENUS	--	--	--	--	--
..ODONATA					
...COENAGRIONIDAE					
....ENALLAGMA	--	--	--	--	--
....UNKNOWN GENUS	1	--	--	--	--
...CORDULIIDAE					
....UNKN.GENUS	--	--	--	--	--
..TRICHOPTERA					
...POLYCENTROPODIDAE					
....POLYCENTROPUS	--	--	--	--	--
MOLLUSCA (MOLLUSCS)					
.GASTROPODA					
..BASOMMATOPHORA					
...ANCYLIDAE					
....HEBETANCYLUS	--	--	2	--	--
....LAEVAPEX	--	2	--	--	--
..MESOGASTROPODA					
...THIARIDAE					
....MELANOIDES	--	--	2	--	1

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	16	49	2.1	68	6	1.1	13	2	.07
2	11	51	1.5	90	244	157	12	2	.06
3	42	248	132	66	2	.36	11	1	.03
4	34	48	7.4	48	8	1.0	11	9	.27
5	22	23	1.4	36	8	.78	11	0	.00
6	16	27	1.2	31	8	.67	11	0	.00
7	10	18	.49	27	7	.51	11	0	.00
8	41	302	101	25	2	.14	11	6	.18
9	135	1270	1240	22	4	.24	11	2	.06
10	62	77	18	21	7	.40	11	3	.09
11	29	25	2.0	20	6	.32	11	5	.15
12	19	26	1.3	28	0	.00	10	9	.24
13	15	25	1.0	21	7	.40	9.9	11	.29
14	14	35	1.3	43	361	123	9.5	12	.31
15	12	21	.68	178	2230	5000	11	3	.09
16	35	196	66	65	64	41	11	17	.50
17	21	34	1.9	33	14	1.2	12	1	.03
18	13	28	.98	26	14	.98	13	17	.60
19	11	24	.71	21	14	.79	13	4	.14
20	11	27	.80	122	1920	2240	12	11	.40
21	10	14	.38	59	115	25	12	13	.42
22	16	28	1.6	33	10	.89	9.1	9	.22
23	288	3170	3910	28	5	.38	8.5	16	.37
24	108	370	238	24	5	.32	7.9	0	.00
25	172	1260	877	20	5	.27	7.5	28	.57
26	648	13700	33900	18	4	.19	7.6	16	.33
27	336	5510	3540	16	3	.13	7.5	9	.18
28	203	7880	5070	15	2	.08	7.8	26	.55
29	79	6350	1350	14	2	.08	8.0	0	.00
30	133	4980	3200	14	2	.08	7.6	8	.16
31	94	94	60	---	---	---	6.7	11	.20
TOTAL	2656	---	53728.74	1232	---	7597.31	315.6	---	6.51

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	6.7	7	.13	3.9	1	.01	3.1	0	.00
2	6.6	11	.20	3.9	2	.02	3.1	3	.03
3	6.7	10	.18	3.9	21	.22	3.1	1	.00
4	6.7	0	.00	3.9	0	.00	3.9	3	.03
5	6.7	4	.07	4.2	2	.02	4.8	0	.00
6	13	33	1.2	4.3	11	.13	3.6	14	.14
7	11	31	.92	4.2	3	.03	3.6	27	.26
8	8.0	3	.06	4.2	12	.14	3.6	4	.04
9	7.5	3	.06	4.2	2	.02	3.6	17	.17
10	7.0	2	.04	4.2	0	.00	3.6	29	.28
11	8.6	8	.19	4.2	4	.05	3.5	10	.09
12	7.8	6	.13	4.7	5	.06	3.8	6	.06
13	6.7	1	.02	4.0	1	.01	3.6	5	.05
14	6.6	0	.00	7.0	15	1.8	3.1	10	.08
15	6.3	2	.03	14	18	1.9	3.1	4	.03
16	6.3	2	.03	6.1	11	.18	3.1	11	.09
17	5.6	2	.03	4.5	17	.21	4.3	12	.14
18	5.3	7	.10	4.6	1	.01	5.7	6	.09
19	8.6	21	1.9	5.2	0	.00	3.9	6	.06
20	12	78	5.1	12	19	2.6	3.8	7	.07
21	5.9	2	.03	9.7	18	.96	3.6	6	.06
22	6.7	8	.14	4.7	1	.01	3.7	5	.05
23	6.7	6	.11	4.5	0	.00	3.9	2	.02
24	5.1	0	.00	4.2	1	.01	3.9	4	.04
25	4.5	4	.05	4.2	2	.02	3.9	4	.04
26	4.5	4	.05	4.2	0	.00	19	1750	38
27	4.5	1	.01	4.2	5	.06	45	4200	91
28	4.5	4	.05	3.9	0	.00	18	789	17
29	4.2	3	.03	---	---	---	31	205	4.4
30	4.2	4	.05	---	---	---	14	35	1.3
31	4.0	0	.00	---	---	---	7.3	15	.30
TOTAL	208.5	---	10.91	146.8	---	8.47	227.2	---	153.92

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	5.8	17	.27	2.4	0	.00	37	205	17
2	5.0	16	.22	2.4	0	.00	14	130	4.9
3	4.4	21	.25	2.2	0	.00	23	211	8.0
4	3.8	16	.16	2.2	2	.01	19	30	1.5
5	3.3	13	.12	2.2	14	.08	8.4	29	.66
6	3.3	5	.04	2.1	9	.05	5.4	15	.22
7	3.2	6	.05	2.2	8	.05	3.9	6	.06
8	3.3	6	.05	2.2	0	.00	3.2	6	.05
9	3.3	15	.13	2.2	7	.02	13	41	.58
10	3.3	8	.07	27	290	65	181	2980	5030
11	3.3	22	.20	6.6	43	1.6	604	2220	5190
12	3.4	3	.03	2.8	24	.18	173	127	65
13	3.2	1	.00	5.0	28	.38	84	35	7.9
14	3.9	3	.03	104	6100	6390	42	6	.68
15	3.5	1	.00	39	579	93	25	6	.41
16	3.1	10	.08	223	4220	12600	20	9	.49
17	4.1	0	.00	65	105	33	18	7	.34
18	3.7	1	.00	26	47	6.1	15	7	.28
19	4.9	0	.00	30	35	2.8	13	3	.11
20	6.8	2	.04	86	181	55	11	4	.12
21	4.5	4	.05	56	39	7.6	11	3	.09
22	3.8	0	.00	17	24	1.1	11	1	.03
23	3.6	0	.00	10	13	.35	8.1	8	.17
24	3.6	4	.04	4.8	6	.08	8.7	6	.14
25	3.3	3	.03	3.6	8	.08	12	8	.26
26	3.3	2	.02	2.7	9	.07	8.7	4	.09
27	4.1	0	.00	11	98	7.9	6.0	2	.03
28	3.9	0	.00	5.0	15	.20	7.3	6	.12
29	3.9	0	.00	10	77	6.2	31	71	16
30	2.6	0	.00	14	70	5.7	33	201	46
31	---	---	---	10	13	.35	---	---	---
TOTAL	115.2	---	1.88	778.6	---	19276.90	1449.7	---	10391.23

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	23	170	11	46	106	24	227	1670	1360
2	12	26	.84	35	26	1.6	90	79	24
3	9.1	23	.57	19	2	.1	68	35	13
4	8.8	3	.07	17	19	.9	139	813	879
5	10	4	.11	15	6	.2	324	1130	1140
6	9.2	3	.07	19	5	.3	174	294	149
7	7.6	4	.08	17	12	.6	112	266	80
8	6.3	5	.09	15	3	.1	257	2650	3400
9	6.8	4	.07	9.5	3	.1	197	1390	1100
10	6.4	8	.14	9.6	2	.1	104	62	21
11	9.9	5	.13	9.6	3	.1	68	10	1.8
12	9.5	11	.28	9.3	6	.2	56	13	2.0
13	75	1240	832	10	2	.1	47	7	.89
14	37	690	82	13	1	.0	37	14	1.4
15	24	81	5.0	15	2	.1	32	6	.52
16	15	22	.89	13	4	.1	27	14	1.0
17	30	300	107	12	5	.2	24	4	.26
18	626	5720	18800	64	601	317	21	10	.57
19	332	647	1780	74	758	215	17	12	.55
20	96	10	2.6	101	648	362	15	6	.24
21	60	8	1.3	70	319	85	13	6	.21
22	46	10	1.2	101	571	339	14	5	.19
23	37	19	1.9	135	498	569	12	7	.23
24	31	5	.42	150	94	48	13	13	.46
25	28	4	.30	110	10	3.0	17	35	1.2
26	25	2	.14	86	8	1.9	11	19	.56
27	23	2	.12	72	9	1.7	11	5	.15
28	21	8	.45	62	1	.2	9.1	19	.47
29	19	5	.26	70	97	3.1	147	2100	2020
30	19	8	.41	222	1900	4790	67	116	31
31	18	3	.15	1110	22900	95900	---	---	---
TOTAL	1680.6	---	21629.59	2711.0	---	102663.7	2350.1	---	10229.70
YEAR	13871.3		225698.86						

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	34	11	1.0	27	125	26	14	23	.93
2	43	264	63	20	32	1.7	13	15	.65
3	39	97	20	15	45	1.8	14	23	1.1
4	45	147	33	26	94	25	25	103	32
5	53	99	18	33	128	26	20	87	9.3
6	38	17	1.7	71	1220	858	15	16	.69
7	84	1960	1370	43	875	140	13	19	.77
8	50	207	37	37	1350	149	12	16	.65
9	47	186	46	29	45	3.5	12	14	.57
10	36	60	5.8	22	11	.65	10	6	.23
11	30	5	.38	19	13	.67	11	13	.49
12	28	5	.38	16	14	.64	10	4	.15
13	24	4	.26	40	474	220	10	3	.08
14	22	14	.83	21	77	5.9	9.5	2	.06
15	22	5	.30	16	11	.50	9.0	2	.06
16	21	9	.46	14	18	.78	9.0	3	.10
17	18	4	.19	46	447	236	9.5	2	.06
18	18	7	.34	47	371	85	9.5	5	.15
19	20	26	2.1	33	316	38	9.0	5	.12
20	19	13	.67	27	238	22	9.5	5	.15
21	56	575	440	26	20	1.4	8.5	3	.08
22	28	66	7.6	19	7	.40	7.1	3	.07
23	18	5	.24	26	96	18	6.7	1	.02
24	17	10	.46	47	216	42	7.1	6	.14
25	15	8	.32	27	7	.57	10	23	.81
26	15	4	.16	21	15	.97	8.0	2	.05
27	13	10	.35	19	21	1.2	8.0	7	.17
28	32	151	73	16	18	.92	8.0	5	.12
29	23	59	5.4	15	15	.69	8.0	6	.14
30	16	8	.35	14	16	.73	7.6	2	.05
31	16	3	.14	---	---	---	7.6	4	.09
TOTAL	940	---	2129.43	832	---	1908.02	330.6	---	50.05

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	7.1	5	.11	4.5	7	.09	4.6	3	.04
2	7.1	9	.19	4.5	11	.13	4.2	3	.03
3	8.5	6	.14	4.9	13	.17	3.9	3	.03
4	8.0	3	.07	7.2	34	1.3	5.0	5	.07
5	8.1	4	.09	13	192	8.6	7.5	26	1.4
6	16	37	3.4	8.8	15	.36	12	25	1.3
7	16	33	2.7	7.8	13	.27	9.3	18	.45
8	8.2	0	.00	6.4	15	.26	5.3	16	.23
9	7.7	8	.17	5.5	19	.28	4.4	5	.06
10	8.0	3	.06	5.5	4	.06	4.1	5	.06
11	7.7	4	.08	5.5	11	.16	3.8	2	.02
12	7.5	8	.16	5.4	25	.36	3.6	2	.02
13	6.7	2	.04	5.2	6	.08	3.5	1	.00
14	6.7	3	.05	5.2	13	.18	3.3	2	.02
15	6.6	3	.05	4.8	8	.10	2.8	2	.02
16	6.2	3	.05	4.8	9	.12	2.8	1	.00
17	6.0	5	.08	4.8	13	.17	2.8	4	.03
18	6.2	1	.02	4.8	2	.03	2.8	3	.02
19	5.8	3	.05	4.8	3	.04	3.0	2	.02
20	5.2	4	.06	4.8	3	.04	3.1	3	.03
21	5.5	3	.04	4.8	4	.05	3.0	2	.02
22	5.4	4	.06	4.8	4	.05	2.6	4	.03
23	5.5	3	.04	5.4	2	.03	2.6	4	.03
24	5.7	2	.03	7.8	2	.04	2.6	3	.02
25	6.0	2	.03	5.5	8	.12	2.8	4	03
26	5.4	3	.04	5.2	6	.08	3.2	3	.03
27	4.8	6	.08	5.2	5	.07	5.3	3	.04
28	4.8	3	.04	5.1	5	.07	4.6	9	.11
29	4.7	7	.09	4.8	4	.05	3.8	10	.10
30	4.5	2	.02	---	---	---	3.6	15	.15
31	4.5	6	.07	---	---	---	3.5	12	.11
TOTAL	216.1	---	8.11	166.8	---	13.36	129.4	---	4.52

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	3.8	25	.26	40	397	52	31	21	1.8
2	3.9	25	.26	18	86	5.1	21	1	.06
3	3.9	15	.16	9.2	20	.50	19	0	.00
4	3.9	25	.26	6.7	16	.29	17	2	.09
5	3.6	0	.00	5.9	15	.24	16	0	.00
6	3.6	20	.19	5.2	10	.14	14	0	.00
7	4.5	18	.22	3.9	3	.03	12	0	.00
8	6.1	70	1.2	4.1	9	.09	12	0	.00
9	6.0	75	2.4	4.2	16	.18	12	1	.03
10	8.9	120	4.3	4.1	4	.04	11	0	.00
11	7.0	86	2.8	4.0	1	.01	34	957	305
12	62	499	217	4.1	11	.12	20	203	17
13	16	73	3.9	4.0	4	.04	17	17	.73
14	7.3	59	1.2	4.5	6	.07	12	1	.03
15	5.0	9	.12	6.0	2	.03	9.5	2	.04
16	4.3	6	.07	6.0	3	.05	9.0	1	.02
17	3.9	2	.02	11	64	3.0	8.5	2	.03
18	3.2	1	.00	13	150	6.2	8.0	0	.00
19	3.0	1	.00	95	2370	1750	7.1	0	.00
20	2.8	1	.00	42	913	171	7.1	1	.01
21	2.8	1	.00	17	28	.26	7.1	0	.00
22	2.5	0	.00	16	10	.08	6.3	13	.15
23	2.2	0	.00	15	12	.08	6.7	16	.18
24	2.4	1	.00	57	664	253	5.9	13	.13
25	32	346	185	39	132	21	10	20	1.2
26	23	208	13	23	19	.29	8.5	28	.39
27	9.4	54	1.4	235	4490	10500	6.3	16	.15
28	7.0	25	.47	244	1900	1690	5.9	13	.11
29	5.7	13	.20	322	2350	5410	6.7	21	.21
30	16	117	9.1	141	199	131	7.1	25	.27
31	---	---	---	53	17	2.4	---	---	---
TOTAL	265.7	---	443.53	1452.9	---	19997.24	367.7	---	327.63

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	5.5	18	.13	8.0	21	.45	18	95	6.9
2	5.9	18	.13	7.1	13	.24	16	60	6.0
3	6.2	2	.01	7.6	18	.36	13	16	.69
4	9.0	20	.86	7.6	18	.36	9.8	40	1.3
5	6.3	1	.02	7.1	16	.31	14	49	2.4
6	6.0	1	.02	7.1	16	.31	13	20	.70
7	20	3	.27	6.7	13	.25	9.9	11	.29
8	15	2	.12	7.1	16	.31	15	20	.59
9	10	1	.04	6.7	16	.29	8.0	13	.26
10	9.0	2	.08	6.7	16	.29	19	40	4.7
11	8.0	3	.10	6.6	1	.02	18	7	.32
12	15	2	.06	6.1	1	.02	23	44	7.6
13	10	1	.04	5.5	0	.00	35	190	66
14	9.0	5	.19	6.2	0	.00	62	313	115
15	8.0	1	.04	6.3	1	.02	41	54	6.0
16	50	2200	802	5.4	1	.01	23	4	.25
17	30	1550	990	5.1	0	.00	29	158	38
18	40	1400	767	4.9	0	.00	22	57	4.0
19	68	1580	1280	5.7	0	.00	18	4	.19
20	22	139	12	5.2	0	.00	25	1300	223
21	143	2500	4420	4.7	0	.00	105	2130	2130
22	54	459	137	4.8	2	.03	58	195	45
23	19	66	3.0	4.4	0	.00	33	6	.53
24	14	47	1.5	4.2	0	.00	98	1020	826
25	10	28	.70	4.8	1	.01	86	550	230
26	10	28	.70	4.8	5	.06	54	7	1.0
27	9.0	23	52	4.1	11	.12	98	385	312
28	8.5	21	.45	52	1270	859	72	52	13
29	8.0	18	.36	13	133	8.2	49	6	.79
30	7.6	18	.36	6.7	9	.16	72	463	242
31	8.0	21	.45	27	588	200	---	---	---
TOTAL	644.0	---	8418.15	259.2	---	1070.82	1156.7	---	4284.51
YEAR	6761.1		38655.37						

50115000 RIO PORTUGUES NEAR PONCE, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
NOV , 1978											
15...	1430	11	18	26	36	48	72	85	95	98	100
15...	1500	8	12	17	24	31	59	76	92	98	99
15...	1530	17	26	35	46	62	79	86	96	99	100
20...	1500	16	24	33	45	59	83	92	96	98	99
20...	1530	37	49	65	81	88	92	95	98	99	100
20...	1600	14	22	31	46	62	78	89	96	99	100
MAR , 1979											
27...	1900	37	54	69	82	95	99	99	100	100	100
MAY											
14...	1600	13	20	30	33	38	74	86	96	99	100
16...	1645	3	6	9	16	24	38	56	81	96	99
16...	1715	27	36	48	62	75	87	93	97	99	100
16...	1745	18	24	34	45	58	73	85	95	99	100
16...	1830	16	23	29	37	44	69	82	94	98	99
16...	1910	0	15	20	28	37	81	89	96	98	99
16...	2120	13	19	30	41	57	75	86	95	99	99
JUL											
18...	1500	12	20	27	37	51	67	80	90	97	99
18...	1730	14	22	30	40	50	69	80	89	95	98
SEP											
08...	1100	19	27	35	49	65	86	94	97	99	100
08...	1300	20	27	39	51	68	83	93	97	99	99
OCT											
07...	1630	13	20	29	42	57	83	94	97	99	100
07...	1700	15	22	32	45	58	84	95	98	99	100
MAY , 1980											
19...	1720	0	15	20	28	35	80	91	96	98	100
19...	1745	12	20	27	38	53	84	92	98	99	99
19...	1800	8	14	20	29	39	80	86	94	97	98
19...	1900	18	29	34	44	51	87	94	98	100	100
27...	1745	15	21	27	35	41	79	88	96	99	100
27...	1810	14	21	27	34	41	77	87	95	98	100
27...	1830	12	17	23	29	37	64	85	94	98	100
27...	1900	11	16	19	29	35	72	87	95	98	100
29...	1530	12	19	30	34	43	70	79	91	97	99
29...	1600	8	12	16	23	32	54	68	88	96	98
29...	1630	11	16	23	31	40	64	75	89	97	99
29...	1700	14	21	28	39	52	73	83	94	98	100
JUN											
11...	1700	39	54	66	80	93	99	100	100	100	100
11...	1800	42	56	69	83	97	99	100	100	100	100
JUL											
17...	1700	28	42	58	72	87	99	100	100	100	100
18...	1700	24	42	56	71	81	99	100	100	100	100
18...	1730	14	22	30	40	50	68	80	89	95	98
19...	1700	26	40	55	67	80	98	99	100	100	100
21...	1700	27	40	55	69	79	99	100	100	100	100
AUG											
28...	1600	0	15	22	32	47	84	88	95	98	100
28...	1630	16	23	30	43	57	90	96	98	99	100
28...	1700	12	18	25	37	50	85	91	97	99	100
28...	1745	8	13	19	29	39	71	86	95	99	100
SEP											
19...	1645	8	15	22	34	47	87	96	99	100	100
19...	1700	11	19	28	41	54	95	98	99	100	100
20...	1700	10	16	24	35	44	88	95	98	99	99
21...	1600	7	11	18	28	41	87	96	99	99	100
21...	1645	6	12	19	31	42	77	96	99	99	100
21...	1715	5	11	17	29	41	85	95	99	99	99

50116200 RIO PORTUGUES AT PONCE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'20", long 66°36'28", 1,300 ft (400 m) south of Las Americas Avenue Bridge, 1.2 mi (1.9 km) south of CSG 50115900, 0.8 mi (1.3 km) west of Highways 1 and 2 junction, and 0.7 mi (1.1 km) southeast of Ponce.

DRAINAGE AREA.--18.9 sq mi (49.0 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
08...	0645	36	358	7.8	22.0	20	6.6	7	2.6	21000	E6C0	--
JAN , 1980												
10...	1130	8.6	572	7.6	26.5	.5C	6.2	10	.8	6000	11C0	210
MAR												
13...	0915	2.3	544	7.6	25.5	--	6.8	--	2.4	1300	28C	--
MAY												
20...	1600	26	288	7.7	30.0	--	6.8	21	3.5	35000	35C0	110
JUL												
16...	1330	6.8	413	7.8	32.0	5.5	8.4	34	3.5	46000	13C0	--
SEP												
09...	1030	7.4	446	8.8	28.0	.2C	6.C	9	3.6	7800	1CC0	170

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
08...	--	--	--	--	--	--	167	0	140	4.2	--	--
JAN , 1980												
10...	--	60	14	43	1.3	2.3	--	--	--	--	4E	37
MAR												
13...	--	--	--	--	--	--	228	0	190	9.2	--	--
MAY												
20...	8	31	7.1	18	.8	1.6	120	0	98	3.8	15	14
JUL												
16...	--	--	--	--	--	--	192	0	160	4.9	--	--
SEP												
09...	30	47	12	25	.8	2.1	149	9	137	.4	31	24

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
08...	--	--	--	--	23	1.6	.010	1.6	.020	.28	.30	1.9
JAN , 1980												
10...	.2	23	--	--	20	.44	.190	.63	.010	.46	.47	1.1
MAR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
20...	.1	18	164	11.5	--	--	--	--	--	--	--	--
JUL												
16...	--	--	--	--	--	.26	.C3C	.29	.060	.41	.47	.76
SEP												
09...	.2	21	245	4.9	--	.24	.020	.26	.050	.27	.32	.58

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
08...	8.4	.05C	--	--	--	--	--	--	--	--	4C	3.9
JAN , 1980												
10...	4.9	.120	--	--	--	--	--	--	--	--	17	.39
MAR												
13...	--	--	--	100	0	20	1	.1	0	0	1	.01
MAY												
20...	--	--	--	--	--	--	--	--	--	--	108	7.6
JUL												
16...	3.4	.140	--	--	--	--	--	--	--	--	78	1.4
SEP												
09...	2.6	.060	1	<5C	1	1C	17	<.1	0	0	12	.24

50116500 RIO PORTUGUES AT HIGHWAY 2 BYPASS AT PONCE, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°59'52", long 66°36'52", on pier at bridge on Highway 2 bypass, 1.1 mi (1.8 km) south of Degetau Plaza, and 2.0 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--20.5 sq mi (53.1 sq km).

PERIOD OF RECORD.--Water years 1964-66, 1975 to June 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
05...	1355	E2.0	1500	7.6	35.0	.0	121	9000000	2600000	200000	300
DEC											
07...	0710	1.0	2200	7.5	26.0	4.8	7.5	16000	8000	2300	640
FEB , 1979											
02...	1000	3.0	530	7.8	24.5	7.1	1.2	46000	11000	700	180
APR											
05...	0800	1.6	624	7.2	23.0	9.5	12	18000	3100	5900	170
JUN											
15...	1615	26	353	7.8	29.0	7.7	.0	370000	49000	26000	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
05...	0	95	16	140	3.5	26	374	0	307	15	87
DEC											
07...	380	210	28	250	4.3	2.8	314	0	258	16	91
FEB , 1979											
02...	33	51	13	45	1.5	2.4	180	0	148	4.6	61
APR											
05...	0	49	12	51	1.7	2.7	210	0	172	21	61
JUN											
15...	--	--	--	--	--	--	131	0	107	--	--

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
05...	170	.2	--	--	--	--	.40	1.90	2.3	1.90
DEC										
07...	600	.1	30	1320	1370	3.6	4.1	.070	4.2	.150
FEB , 1979										
02...	44	.1	20	333	325	2.7	.76	.080	.84	.160
APR										
05...	45	.1	23	364	347	1.6	.91	.090	1.0	.090
JUN										
15...	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
05...	7.4	9.30	12	51	2.90	1.70	--	--	--	--
DEC										
07...	.28	.43	4.6	21	.250	.170	<1	ND	<20	4
FEB , 1979										
02...	.59	.75	1.6	7.0	.300	.270	--	--	--	--
APR										
05...	.42	.51	1.5	6.7	.340	.280	--	--	--	--
JUN										
15...	--	--	--	--	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
05...	--	--	--	--	--	--	--	--	0	.00
DEC										
07...	90	3	20	<.5	2	ND	70	--	0	.00
FEB , 1979										
02...	--	--	70	--	--	--	--	4.3	6	.05
APR										
05...	--	--	80	--	--	--	--	7.8	1	.00
JUN										
15...	--	--	--	--	--	--	--	--	119	6.5

E Estimated.

ND Looked for but not detected.

50123200 RIO GUAYANILLA AT BARRIO MACANA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°03'24", long 66°47'03", at bridge on km 0.7 on Highway 378, at Barrio Macaná, 0.4 mi (0.6 km) northwest of junction of Highways 132 and 378, and 2.5 mi (4.0 km) north of Guayanilla Plaza.

DRAINAGE AREA.--14.1 sq mi (36.5 sq km).

PERIOD OF RECORD.--Water years 1958-62, 1974 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
06...	0925	14	373	7.9	25.0	9.4	1.0	22000	1900	2400	180
DEC											
07...	1020	13	406	8.6	25.5	9.1	1.8	2300	660	530	210
FEB , 1979											
15...	0920	8.4	382	7.7	23.0	10.0	1.4	42000	5000	9000	180
APR											
19...	0910	2.2	404	7.9	26.0	10.6	1.3	68000	6000	260	190
JUN											
27...	0935	18	398	8.1	25.5	8.8	1.4	2900	350	390	190
AUG											
17...	0915	14	392	8.0	26.0	8.1	.2	50000	2600	1900	180

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
06...	37	49	14	10	.3	1.3	174	0	143	3.5	40
DEC											
07...	32	55	18	13	.4	1.4	196	11	179	.9	40
FEB , 1979											
15...	39	47	14	12	.4	1.6	166	0	136	5.3	38
APR											
19...	24	49	16	13	.4	1.1	200	0	164	4.0	41
JUN											
27...	31	50	15	13	.4	1.3	190	0	156	2.4	39
AUG											
17...	27	50	14	12	.4	1.1	190	0	156	3.0	39

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
06...	12	.1	18	233	230	8.8	.78	.010	.79	.040
DEC										
07...	14	.1	19	271	268	9.5	.67	.010	.68	.040
FEB , 1979										
15...	13	.1	16	242	224	5.5	.77	.010	.78	.010
APR										
19...	12	.1	14	246	245	1.5	.04	<.010	.04	.080
JUN										
27...	14	.1	18	260	244	12.6	.44	.010	.45	.010
AUG										
17...	13	.1	18	--	236	9.1	.62	.010	.63	.010

50123200 RIO GUAYANILLA AT BARRIO MACANA, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
06...	.19	.18	.97	4.3	.050	.050	--	--	--	--
DEC										
07...	.24	.28	.96	4.3	.040	.040	1	ND	<20	3
FEB , 1979										
15...	.69	.65	1.4	6.3	.100	.030	--	--	--	--
APR										
19...	.02	.10	.14	.62	.040	.040	--	--	--	--
JUN										
27...	.04	.05	.50	2.2	.040	.020	--	--	--	--
AUG										
17...	.23	.24	.87	3.9	.100	.030	2	<2	20	<20

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
06...	--	--	--	--	--	--	--	--	2	.08
DEC										
07...	160	3	20	<.5	<1	ND	<20	--	1	.04
FEB , 1979										
15...	--	--	160	--	--	--	--	3.4	100	2.3
APR										
19...	--	--	<10	--	--	--	--	5.9	7	.04
JUN										
27...	--	--	--	--	--	--	--	3.6	23	1.1
AUG										
17...	3400	4	130	<.5	<1	ND	60	5.8	118	4.5

ND Looked for but not detected.

50124700 RIO GUAYANILLA AT CENTRAL RUFINA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°00'40", long 66°46'49", at railroad bridge, 0.7 mi (1.1 km) from mouth, 0.9 mi (1.4 km) east of Central Rufina and and 0.9 mi (1.4 km) southeast of Guayanilla.

DRAINAGE AREA.--22.8 sq mi (59.1 sq km).

PERIOD OF RECORD.--Water years 1960-65, 1974 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
06...	0750	13	478	7.3	25.0	--	8.3	--	33	2000000	260000	53000
DEC												
07...	0840	1.5	1100	7.5	26.0	--	1.2	--	36	8900000	1800000	230000
FEB , 1979												
15...	0730	13	372	6.9	23.5	--	8.3	--	23	650000	150000	70000
APR												
19...	0730	1.5	735	7.3	26.0	--	2.6	--	44	1500000	600000	63000
JUN												
27...	0745	8.1	594	7.8	25.5	--	8.1	--	2.0	850000	68000	23000
AUG												
17...	0730	7.1	683	7.6	25.5	--	6.5	--	9.0	1200000	50000	13000
OCT												
10...	1520	25	662	7.8	27.0	--	7.6	11	6.0	--	210000	17000
NOV												
15...	0700	16	508	8.1	24.0	4.0	7.8	23	2.1	--	41000	2700
JAN , 1980												
22...	0735	2.2	718	7.6	23.0	.40	3.2	46	9.6	--	200000	21000
MAR												
07...	1430	2.0	1370	7.5	32.0	.40	2.6	11	--	--	15000000	220000
MAY												
16...	1600	.79	1230	7.7	33.0	--	2.2	--	40	--	10000000	120000
JUL												
17...	0900	1.3	1020	7.4	28.0	6.0	5.0	67	19	--	1700	100
SEP												
10...	1530	.81	1280	7.9	33.5	7.9	1.3	82	34	--	13000000	240000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
06...	210	58	55	17	22	.7	2.2	182	0	149	15
DEC											
07...	320	0	87	26	75	1.8	6.0	416	0	341	21
FEB , 1979											
15...	160	56	42	14	17	.6	2.7	130	0	107	26
APR											
19...	250	14	60	25	87	2.4	5.8	291	0	239	23
JUN											
27...	250	49	62	22	26	.7	2.0	240	0	197	6.1
AUG											
17...	250	44	65	21	40	1.1	2.5	250	0	205	10
OCT											
10...	--	--	--	--	--	--	--	233	0	190	5.9
NOV											
15...	--	--	--	--	--	--	--	215	0	180	2.7
JAN , 1980											
22...	320	44	88	25	74	1.8	3.0	340	0	280	14
MAR											
07...	--	--	--	--	--	--	--	441	0	362	--
MAY											
16...	390	13	110	28	100	2.2	9.6	460	0	380	15
JUL											
17...	--	--	--	--	--	--	--	400	0	330	25
SEP											
10...	350	0	94	27	70	1.6	10	438	0	359	8.8

50124700 RIO GUAYANILLA AT CENTRAL RUFINA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
06...	51	36	.4	19	295	292	10.0	--	.88	.010	.89
DEC											
07...	93	67	.1	25	553	564	2.2	--	.03	.050	.08
FEB , 1979											
15...	42	19	.1	14	239	215	8.4	--	.62	.020	.64
APR											
19...	89	56	.1	21	448	487	2.3	--	.10	.080	.18
JUN											
27...	54	39	.1	19	372	342	8.1	--	.80	.030	.83
AUG											
17...	61	52	.1	6.1	--	371	7.1	--	1.0	.060	1.1
OCT											
10...	--	--	--	--	--	--	--	--	1.9	.050	1.9
NOV											
15...	--	--	--	--	--	--	--	21	1.1	.030	1.1
JAN , 1980											
22...	100	71	.1	23	--	552	3.0	12	1.2	.230	1.4
MAR											
07...	--	--	--	--	--	--	--	--	3.0	.210	3.2
MAY											
16...	140	100	.1	26	--	740	1.6	--	--	--	--
JUL											
17...	--	--	--	--	--	--	--	--	.50	.260	.76
SEP											
10...	120	83	.2	30	--	650	1.4	--	.00	.020	.02

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
06...	1.30	.60	1.90	2.8	12	.530	.430	--	--	--	--
DEC											
07...	14.0	2.0	16.0	16	71	3.90	3.90	2	--	ND	<20
FEB , 1979											
15...	1.00	1.5	2.50	3.1	14	.500	.270	--	--	--	--
APR											
19...	6.40	8.6	15.0	15	67	2.00	1.70	--	--	--	--
JUN											
27...	.670	.27	.94	1.8	7.8	.210	.160	--	--	--	--
AUG											
17...	1.80	1.1	2.90	4.0	18	.720	.580	1	--	4	20
OCT											
10...	.400	.40	.80	2.7	12	.180	.130	--	--	--	--
NOV											
15...	.570	.21	.78	1.9	8.3	.190	--	--	--	--	--
JAN , 1980											
22...	.440	4.8	5.20	6.6	29	1.20	--	--	--	--	--
MAR											
07...	.200	.64	.84	4.0	18	.350	--	1	<50	0	8
MAY											
16...	--	--	--	--	--	--	--	--	--	--	--
JUL											
17...	14.0	10	24.0	25	110	3.50	--	--	--	--	--
SEP											
10...	22.0	27	49.0	49	217	4.80	--	3	100	0	10

ND Looked for but not detected.

50124700 RIO GUAYANILLA AT CENTRAL RUFINA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
06...	--	--	--	--	--	--	--	--	--	16	.54
DEC											
07...	5	210	2	320	<.5	1	ND	<20	--	4	.02
FEB , 1979											
15...	--	--	--	320	--	--	--	--	7.1	202	7.1
APR											
19...	--	--	--	110	--	--	--	--	10	7	.04
JUN											
27...	--	--	--	--	--	--	--	--	4.0	12	.26
AUG											
17...	8	1100	2	80	<.5	<1	ND	20	5.2	107	2.0
OCT											
10...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	23	.99
JAN , 1980											
22...	--	--	--	--	--	--	--	--	--	6	.04
MAR											
07...	--	--	1	--	.4	0	0	--	2.3	12	.07
MAY											
16...	--	--	--	--	--	--	--	--	--	24	.05
JUL											
17...	--	--	--	--	--	--	--	--	--	13	.05
SEP											
10...	--	--	2	--	.1	1	0	--	--	25	.05

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
DEC							
07...	0840	0	.2	0	.0	.3	.5
JUN							
27...	0745	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
DEC						
07...	.0	.0	.0	.0	.0	0
JUN						
27...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

50125900 RIO DUEY ABOVE DIVERSION NEAR YAUCO, PR

LOCATION.--Lat 18°04'11", long 66°50'47", Hydrologic Unit 21010004, on right bank at diversion valve house, 0.2 mi (0.3 km) northeast of Highway 372 and junction with local road, 0.4 mi (0.6 km) southeast of Escuela Caimito, 1.8 mi (2.9 km) above confluence with Río Yauco, and 2.2 mi (3.5 km) north of Yauco Plaza.

DRAINAGE AREA.--8.93 sq mi (23.13 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to September 1980 (discontinued).

GAGE.--Water-stage recorder and concrete diversion dam. Altitude of gage is 328 ft (100 m), from topographic map.

REMARKS.--Records poor. An undetermined amount of water is diverted from gage pool.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,780 cu ft/s (164 cu m/s) June 11, 1979, gage height, 12.76 ft (3.889 m), from rating curve extended above 100 cu ft/s (2.83 cu m/s) on basis of slope-area measurement of peak flow; minimum daily, 0.94 cu ft/s (0.027 cu m/s) Jan. 10, 1977.

EXTREMES FOR CURRENT PERIOD.--Water year 1979: Maximum discharge 5,780 cu ft/s (164 cu m/s) June 11, gage height 12.76 ft (3.889 m); minimum daily 2.0 cu ft/s (0.057 cu m/s) many days.

Water year 1980: Maximum discharge, 2160 cu ft/s (61.2 cu m/s) May 27, gage height 8.78 ft (2.676 m); minimum daily, 2.0 cu ft/s (0.057 cu m/s) May 12-15, July 23-24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	19	7.1	4.8	4.0	3.0	4.5	2.0	6.0	9.0	13	250
2	9.0	16	6.9	4.6	4.5	3.0	4.0	2.0	5.7	7.8	12	150
3	20	13	6.8	4.2	3.8	3.0	4.0	2.0	7.5	7.9	9.2	110
4	8.0	11	6.6	4.4	3.4	3.0	3.5	2.0	6.2	7.5	14	95
5	6.5	10	6.4	4.2	3.4	3.0	3.5	2.0	5.3	8.6	10	80
6	5.5	9.5	6.2	5.2	4.5	3.0	3.0	2.0	5.0	7.8	11	70
7	5.0	8.7	6.3	5.2	3.5	3.0	3.0	2.0	4.7	7.4	9.3	58
8	15	8.1	6.0	4.7	3.5	3.0	3.0	2.0	4.8	7.2	7.4	106
9	11	10	5.9	4.2	5.0	3.0	3.0	2.0	14	6.7	7.0	59
10	10	29	5.8	3.9	5.0	5.0	3.0	5.0	367	6.3	11	34
11	8.3	11	5.6	4.2	3.5	4.5	2.5	10	1320	5.9	11	29
12	6.4	9.9	5.3	3.5	3.5	3.5	2.5	9.0	317	6.3	7.3	25
13	5.9	9.1	5.3	3.6	4.0	3.5	2.5	7.1	47	13	7.3	22
14	5.6	39	5.3	3.5	5.5	3.5	2.5	197	30	11	12	20
15	4.5	36	5.2	3.5	5.5	3.0	2.5	110	24	8.3	9.1	19
16	8.1	19	7.1	3.5	3.2	3.0	2.5	70	20	6.6	9.3	17
17	8.4	12	22	3.6	3.7	3.0	2.5	27	18	13	7.1	16
18	22	10	16	3.5	3.4	3.5	2.5	27	16	474	24	15
19	19	8.9	9.8	3.4	3.4	4.9	2.0	48	15	156	36	14
20	10	136	7.2	3.8	5.7	3.2	2.0	95	13	39	140	13
21	7.2	39	7.2	3.5	4.6	3.0	2.0	46	12	24	62	13
22	50	18	5.9	3.5	4.1	3.0	2.0	38	11	18	47	13
23	8.0	14	5.7	3.5	3.3	3.0	2.0	18	11	15	94	12
24	8.0	13	5.4	3.0	3.0	3.0	2.0	11	15	13	70	12
25	160	11	5.2	3.0	3.0	3.0	2.0	8.9	13	12	35	11
26	222	10	5.1	3.0	3.0	3.0	2.0	7.6	9.3	12	20	11
27	194	9.5	4.9	3.0	3.0	19	2.0	7.1	8.0	11	16	12
28	132	8.4	4.8	3.0	3.0	7.7	2.0	7.0	8.3	11	14	11
29	39	7.5	5.0	3.5	---	8.4	2.0	9.7	11	10	13	44
30	32	7.3	4.9	3.5	---	5.9	2.0	8.0	12	9.4	99	22
31	26	---	4.9	3.5	---	5.0	---	6.3	---	9.5	1120	---
TOTAL	1073.4	562.9	211.8	117.5	109.0	131.6	78.5	790.7	2356.8	954.2	1957.0	1363
MEAN	34.6	18.8	6.83	3.79	3.89	4.25	2.62	25.5	78.6	30.8	63.1	45.4
MAX	222	136	22	5.2	5.7	19	4.5	197	1320	474	1120	250
MIN	4.5	7.3	4.8	3.0	3.0	3.0	2.0	2.0	4.7	5.9	7.0	11
CFSM	3.88	2.11	.77	.42	.44	.48	.29	2.86	8.80	3.45	7.07	5.08
IN.	4.47	2.34	.88	.49	.45	.55	.33	3.29	9.82	3.97	8.15	5.68
AC-FT	2130	1120	420	233	216	261	156	1570	4670	1890	3880	2700

CAL YR 1978 TOTAL 3083.9 MEAN 8.45 MAX 222 MIN 2.0 CFSM .95 IN 12.85 AC-FT 6120
WTR YR 1979 TOTAL 9706.4 MEAN 26.6 MAX 1320 MIN 2.0 CFSM 2.98 IN 40.43 AC-FT 19250

50125900 RIO DUEY ABOVE DIVERSION NEAR YAUCO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	15	10	5.0	4.0	3.0	2.5	4.0	14	7.5	3.0	15
2	14	19	9.7	5.0	4.0	3.0	2.5	4.0	11	8.0	3.0	51
3	13	42	9.1	5.0	4.0	3.0	2.5	3.5	9.2	10	3.0	13
4	12	79	9.8	5.0	8.1	3.0	2.5	3.5	8.1	9.6	3.0	21
5	12	77	9.7	5.0	9.9	3.0	2.5	3.0	7.8	9.6	3.0	14
6	11	66	8.7	5.0	5.4	4.7	2.5	3.0	7.1	10	3.0	6.1
7	11	40	7.9	5.0	4.2	5.4	2.5	3.0	6.6	11	3.0	4.2
8	11	27	7.6	5.0	4.0	4.0	3.0	4.0	6.4	8.8	3.0	3.5
9	11	18	7.6	5.0	3.5	3.5	34	2.5	6.5	4.0	3.0	3.7
10	10	14	7.2	5.0	3.4	4.0	12	2.5	6.4	4.0	3.0	3.9
11	10	12	7.1	4.5	3.5	3.5	22	2.5	6.2	4.0	3.0	4.0
12	9.7	11	7.1	4.5	2.8	3.5	81	2.0	7.5	4.0	3.0	10
13	9.6	10	7.0	4.5	3.0	3.5	20	2.0	6.3	4.0	100	25
14	9.1	9.5	6.8	4.5	4.0	3.0	9.6	2.0	5.4	4.0	50	10
15	9.0	9.1	6.5	4.5	5.0	3.0	5.8	2.0	4.8	4.0	20	4.9
16	84	9.4	6.5	4.5	4.0	3.0	5.7	5.0	4.7	5.4	10	3.2
17	7.9	35	6.8	4.5	3.5	3.0	4.8	3.5	4.4	4.5	8.0	5.1
18	7.6	45	6.6	4.5	3.5	3.0	4.5	2.5	3.9	2.7	7.1	9.4
19	14	35	6.6	4.5	3.0	3.0	4.5	5.7	3.5	5.9	5.6	4.8
20	15	24	7.2	4.5	3.0	3.0	4.0	4.0	3.2	4.9	5.4	4.1
21	23	22	6.7	4.5	3.0	3.0	4.0	3.5	3.0	2.8	5.0	3.4
22	14	16	6.5	4.5	3.0	3.0	4.0	3.0	3.0	2.3	5.0	3.0
23	10	21	6.3	4.0	6.0	3.0	4.0	2.5	3.0	2.0	4.5	3.0
24	9.1	24	6.1	4.0	4.5	2.5	4.0	69	3.0	2.0	4.5	20
25	8.6	17	7.6	4.0	4.0	2.5	300	26	10	5.0	4.5	53
26	8.6	16	6.0	4.0	3.5	2.5	21	11	7.4	4.5	50	33
27	8.2	14	6.0	4.0	3.0	2.5	9.7	200	3.9	4.0	20	108
28	12	12	6.0	4.0	3.0	2.5	6.7	165	3.5	3.5	10	41
29	11	11	5.5	4.0	3.0	2.5	5.1	53	15	3.5	7.0	55
30	8.1	10	5.5	4.0	---	2.5	4.5	41	10	3.5	6.0	27
31	8.2	---	5.5	4.0	---	2.5	---	20	---	3.5	5.0	---
TOTAL	415.7	760.0	223.2	140.0	118.8	97.1	591.4	658.2	194.8	162.5	363.6	562.3
MEAN	13.4	25.3	7.20	4.52	4.10	3.13	19.7	21.2	6.49	5.24	11.7	18.7
MAX	84	79	10	5.0	9.9	5.4	300	200	15	11	100	108
MIN	7.6	9.1	5.5	4.0	2.8	2.5	2.5	2.0	3.0	2.0	3.0	3.0
CFSM	1.50	2.83	.81	.51	.46	.35	2.21	2.37	.73	.59	1.31	2.09
IN.	1.73	3.17	.93	.58	.49	.40	2.46	2.74	.81	.68	1.51	2.34
AC-FT	825	1510	443	278	236	193	1170	1310	386	322	721	1120

CAL YR 1979 TOTAL 9257.2 MEAN 25.4 MAX 1320 MIN 2.0 CFSM 2.84 IN 38.56 AC-FT 18360
WTR YR 1980 TOTAL 4287.6 MEAN 11.7 MAX 300 MIN 2.0 CFSM 1.31 IN 17.86 AC-FT 8500

50125900 RIO DUEY ABOVE DIVERSION NEAR YAUCO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to October 1979 (discontinued).

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
OCT , 1978											
06...	1035	5.7	300	8.4	23.5	8.8	--	--	--	--	9.4
NOV											
15...	1235	10	420	8.3	25.0	9.8	190	--	50	17	22
DEC											
06...	1125	6.6	405	8.4	23.0	9.2	190	--	50	16	13
JAN , 1979											
12...	1135	3.9	355	8.7	21.5	9.5	170	--	44	15	12
FEB											
15...	1150	4.8	300	8.2	23.0	9.3	140	--	38	12	11
MAR											
27...	1125	4.9	386	8.1	25.0	8.6	110	18	29	9.9	9.4
APR											
18...	1305	2.3	298	8.2	27.5	9.6	130	0	34	12	12
MAY											
16...	1205	17	230	8.8	26.0	8.4	93	--	23	8.7	8.6
JUN											
12...	1635	89	270	7.8	25.0	8.3	100	--	27	9.0	9.3
JUL											
19...	1500	97	202	8.0	25.0	9.1	90	--	22	8.4	7.9
AUG											
15...	1235	8.2	305	8.5	28.0	8.1	140	--	37	12	11
SEP											
20...	0930	11	--	8.4	26.0	9.4	180	--	46	15	14
OCT											
16...	1420	8.2	344	8.7	27.0	9.3	160	--	41	14	12

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)
OCT , 1978										
06...	--	1.5	120	15	10	.1	25	191	--	2.9
NOV										
15...	.7	1.9	--	25	16	.1	25	--	--	--
DEC										
06...	.4	1.5	--	21	16	.1	27	--	--	--
JAN , 1979										
12...	.4	1.3	--	14	14	.1	26	--	--	--
FEB										
15...	.4	1.4	--	12	13	--	25	207	--	2.6
MAR										
27...	.4	1.8	95	15	12	--	22	170	156	--
APR										
18...	.5	1.5	140	11	12	--	--	181	--	1.1
MAY										
16...	.4	1.9	--	20	12	.1	20	--	94	--
JUN										
12...	.4	1.7	--	22	13	.1	23	188	--	--
JUL										
19...	.4	1.4	--	17	11	.1	27	146	95	38.2
AUG										
15...	.4	1.4	--	13	13	.1	21	--	109	2.4
SEP										
20...	.5	1.2	--	18	21	.2	25	--	140	4.1
OCT										
16...	.4	1.2	--	18	16	.2	28	223	130	4.9

50125900 RIO DUEY ABOVE DIVERSION NEAR YAUCO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
OCT , 1978											
06...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
DEC											
06...	--	ND	<20	2	60	2	<10	--	--	--	30
JAN , 1979											
12...	--	--	--	--	--	--	--	--	--	--	--
FEB											
15...	--	--	--	--	--	--	--	--	--	--	--
MAR											
27...	--	--	--	--	--	--	--	--	--	--	--
APR											
18...	--	--	--	--	--	--	--	--	--	--	--
MAY											
16...	--	--	--	--	--	--	--	--	--	--	--
JUN											
12...	--	--	--	--	--	--	--	--	--	--	--
JUL											
19...	<1	ND	20	5	2400	2	20	<.5	<1	ND	30
AUG											
15...	<1	--	--	--	--	--	--	<.5	<1	--	--
SEP											
20...	--	--	--	--	--	--	--	--	--	--	--
OCT											
16...	--	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR

LOCATION.--Lat 18°02'58", long 66°50'30", Hydrologic Unit 21010004, on right bank off Highway 127, about 300 ft (91 m) upstream from diversion Monserrate, 0.1 mi (0.2 km) downstream from Quebrada de las Quebradas, 0.9 mi (1.4 km) downstream from Río Duey, and 1.0 mi (1.6 km) northeast of Yauco Plaza.

DRAINAGE AREA.--27.2 sq mi (70.4 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 115 ft (35 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 cu ft/s (297 cu m/s) Aug. 31, 1979, gage height, 9.83 ft (2.996 m) from floodmark, from rating curve extended above 300 cu ft/s (8.50 cu m/s) on basis of step-backwater analysis; minimum daily discharge, 0.2 cu ft/s (0.006 cu m/s) June 30, 1978.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 1,000 cu ft/s (28.3 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 27, 1978	2130	3,930	111	6.82	2.079
Nov. 10, 1978	1430	1,090	30.9	4.23	1.289
Nov. 20, 1978	1500	1,140	32.3	4.31	1.314
June 10, 1979	1800	3,710	105	6.68	2.036
June 11, 1979	1600	6,900	195	Unknown	
July 19, 1979	Unknown	3,400	96	Unknown	
Aug. 20, 1979	1500	1,020	28.9	4.13	1.259
Aug. 31, 1979	1000	*10,500	297	9.83	2.996
Nov. 4, 1979	1400	1,320	37.4	4.54	1.384
May 28, 1980	Unknown	* 2,000	57	Unknown	

Minimum daily discharges, 4.3 cu ft/s (0.122 cu m/s) Oct. 15, 1978; 1.7 cu ft/s (0.048 cu m/s) May 22, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	40	20	17	12	9.1	6.7	8.2	9.3	29	25	521
2	6.5	46	19	17	12	9.3	6.4	8.3	8.9	25	24	116
3	7.9	32	19	17	11	8.6	6.4	8.4	9.7	25	15	109
4	7.9	29	19	17	11	8.5	6.7	8.1	10	25	25	107
5	12	26	18	17	11	8.0	7.0	7.6	8.6	25	20	379
6	7.6	26	17	17	11	8.5	7.0	7.6	8.2	25	18	327
7	5.4	26	17	18	10	8.0	7.1	8.5	7.9	25	19	282
8	55	25	22	17	9.8	8.2	7.4	9.8	7.9	20	17	323
9	36	47	23	15	9.8	8.2	8.8	9.3	12	20	16	293
10	16	126	20	13	9.8	8.2	8.6	9.2	510	20	16	235
11	11	35	20	12	11	8.2	7.7	10	1120	20	21	186
12	8.0	29	19	12	9.1	8.6	7.3	7.7	319	20	16	105
13	8.0	27	18	12	8.9	7.9	7.0	12	99	20	16	190
14	7.2	84	18	13	9.8	7.6	7.0	153	60	20	18	84
15	4.3	92	18	12	12	7.7	7.0	103	58	20	19	67
16	8.6	39	18	12	8.9	7.9	7.0	123	60	15	20	60
17	11	29	37	13	12	8.0	6.9	40	58	15	16	54
18	11	25	32	12	9.2	7.5	7.3	38	54	15	35	50
19	25	23	27	12	8.0	7.7	7.3	71	48	1000	53	44
20	15	168	22	13	9.0	8.4	7.5	72	43	63	152	43
21	11	65	20	13	9.5	7.3	7.3	60	40	38	100	42
22	62	38	18	13	9.2	7.0	7.6	46	39	30	87	42
23	134	32	17	14	9.7	7.0	7.9	20	39	26	112	40
24	127	29	17	13	9.2	6.7	7.6	13	37	23	126	38
25	228	28	17	13	9.1	6.4	7.3	12	37	20	75	37
26	333	26	17	13	9.1	8.4	7.3	11	32	18	57	36
27	325	25	16	13	8.6	21	7.3	10	30	17	51	36
28	269	21	16	13	9.0	14	7.0	9.7	29	16	50	36
29	84	22	16	13	---	9.7	7.0	12	29	15	49	75
30	58	22	16	13	---	9.0	7.0	11	29	14	110	46
31	49	---	17	13	---	7.3	---	9.7	---	14	2690	---
TOTAL	1950.7	1282	610	432	278.7	267.9	217.4	929.1	2852.5	1678	4068	4003
MEAN	62.9	42.7	19.7	13.9	9.95	8.64	7.25	30.0	95.1	54.1	131	133
MAX	333	168	37	18	12	21	8.8	153	1120	1000	2690	521
MIN	4.3	21	16	12	8.0	6.4	6.4	7.6	7.9	14	15	36
CFSM	2.31	1.57	.72	.51	.37	.32	.27	1.10	3.50	1.99	4.82	4.89
IN.	2.67	1.75	.83	.59	.38	.37	.30	1.27	3.90	2.29	5.56	5.47
AC-FT	3870	2540	1210	857	553	531	431	1840	5660	3330	8070	7940

CAL YR 1978 TOTAL 5586.50 MEAN 15.3 MAX 333 MIN .20 CFSM .56 IN 7.64 AC-FT 11080
WTR YR 1979 TOTAL 18569.30 MEAN 50.9 MAX 2690 MIN 4.3 CFSM 1.87 IN 25.40 AC-FT 36830

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	23	19	12	11	8.9	4.0	3.0	20	5.7	3.1	2.5
2	34	24	19	12	11	8.9	4.0	3.0	15	4.8	3.1	50
3	35	44	18	12	10	8.6	4.0	3.1	10	3.9	3.1	30
4	33	118	18	12	11	8.7	4.0	3.1	9.0	3.6	3.1	45
5	32	89	18	12	17	8.9	4.0	3.1	8.0	4.5	3.3	10
6	31	97	17	18	12	8.9	4.2	3.0	7.0	4.1	2.6	4.0
7	30	60	16	16	11	11	4.3	2.8	6.0	4.0	2.8	3.0
8	32	44	16	12	11	8.3	12	2.6	5.5	3.8	30	2.0
9	31	36	16	12	11	5.7	19	2.6	5.0	3.8	3.0	8.0
10	30	32	15	12	10	5.1	8.7	2.5	5.0	5.5	2.7	5.0
11	30	28	15	12	9.7	5.1	16	2.5	4.9	4.1	2.7	4.0
12	30	26	14	12	9.7	5.1	71	2.1	5.4	3.6	2.5	3.0
13	31	25	14	12	9.7	5.1	13	2.1	5.4	3.5	5.0	2.5
14	29	25	14	11	9.7	4.9	5.9	2.3	5.2	3.5	10	4.0
15	26	23	14	11	9.7	4.9	4.4	2.7	5.2	3.5	2.5	7.0
16	23	23	14	11	9.3	4.9	3.9	2.3	4.6	3.6	3.0	4.0
17	20	40	14	11	9.3	5.3	4.1	2.1	4.6	4.7	20	3.0
18	20	59	14	11	9.3	5.7	3.4	2.6	4.5	3.7	5.0	10
19	28	49	16	11	9.3	6.1	3.1	5.0	4.4	4.4	4.0	4.5
20	33	42	14	11	8.9	5.5	2.8	2.2	4.2	5.5	3.5	3.0
21	34	34	13	11	8.9	5.1	2.8	2.0	4.2	4.0	3.0	2.5
22	27	26	13	11	8.9	4.7	2.8	1.7	4.2	3.5	3.0	2.0
23	19	22	13	11	8.9	4.5	2.8	2.8	4.1	3.3	3.0	2.0
24	18	21	13	11	9.1	4.5	2.6	15	3.9	3.2	2.5	2.0
25	18	19	14	11	9.3	4.2	12	50	5.0	3.1	2.5	4.5
26	17	19	13	11	9.3	4.0	12	10	6.6	3.1	2.5	20
27	16	19	14	11	9.3	4.2	5.3	3.5	4.5	3.3	2.5	100
28	18	18	13	11	8.9	4.2	5.6	1200	4.0	3.1	5.0	60
29	21	18	13	11	8.9	4.2	3.8	500	4.0	3.2	2.5	80
30	17	18	13	11	---	4.2	3.0	150	6.1	3.1	2.5	40
31	15	---	12	11	---	4.2	---	60	---	3.1	2.5	---
TOTAL	813	1121	459	364	291.1	183.6	248.5	2049.7	185.5	119.8	146.5	517.5
MEAN	26.2	37.4	14.8	11.7	10.0	5.92	8.28	66.1	6.18	3.86	4.73	17.3
MAX	35	118	19	18	17	11	71	1200	20	5.7	30	100
MIN	15	18	12	11	8.9	4.0	2.6	1.7	3.9	3.1	2.5	2.0
CFSM	.96	1.38	.54	.43	.37	.22	.30	2.43	.23	.14	.17	.64
IN.	1.11	1.53	.63	.50	.40	.25	.34	2.80	.25	.16	.20	.71
AC-FT	1610	2220	910	722	577	364	493	4070	368	238	291	1030

CAL YR 1979 TOTAL 17119.6 MEAN 46.9 MAX 2690 MIN 6.4 CFSM 1.72 IN 23.41 AC-FT 33960
WTR YR 1980 TOTAL 6499.2 MEAN 17.8 MAX 1200 MIN 1.7 CFSM .65 IN 8.89 AC-FT 12890

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to October 1979 (discontinued).

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
OCT , 1978											
06...	0825	8.4	355	8.5	24.5	9.0	--	--	--	12	--
NOV											
15...	0950	33	455	8.1	24.0	8.8	210	57	16	15	.5
DEC											
06...	0915	17	465	8.0	23.0	9.0	200	54	15	16	.5
JAN , 1979											
12...	0925	12	380	8.2	22.5	8.5	200	54	15	16	.5
FEB											
15...	0915	12	345	7.7	23.5	8.8	160	44	12	15	.5
MAR											
14...	1355	7.6	330	8.6	25.0	12.2	140	38	11	14	.5
APR											
18...	1120	7.8	366	8.0	26.0	9.0	150	41	11	14	.5
MAY											
16...	0915	1.3	265	8.6	24.0	8.0	110	28	9.0	9.7	.4
JUN											
14...	1320	59	485	8.0	31.0	7.8	220	60	16	16	.5
JUL											
19...	1725	196	253	8.3	26.5	8.2	110	29	8.2	8.7	.4
AUG											
17...	1230	16	--	8.0	31.0	8.8	190	54	14	16	.5
SEP											
20...	1230	12	437	8.2	30.0	9.0	200	56	15	19	.6
OCT											
16...	1140	24	405	7.9	27.0	8.1	190	52	14	16	.5

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	ARSENIC TOTAL (UG/L AS AS)
OCT , 1978										
06...	1.6	140	15	11	.1	22	211	--	4.8	--
NOV										
15...	2.1	--	30	19	.1	23	--	--	--	--
DEC										
06...	1.7	--	25	18	.1	22	--	--	--	--
JAN , 1979										
12...	1.5	--	19	16	.1	18	--	--	--	--
FEB										
15...	1.7	--	18	17	--	20	219	--	7.1	--
MAR										
14...	1.4	--	15	14	--	19	201	--	4.1	--
APR										
18...	1.6	150	16	13	--	--	205	--	4.3	--
MAY										
16...	2.2	--	20	12	.1	19	--	100	--	--
JUN										
14...	2.3	--	35	22	.1	24	323	--	--	--
JUL										
19...	1.7	--	15	10	.1	20	162	93	85.7	1
AUG										
17...	1.5	--	21	21	.2	22	--	150	6.5	<1
SEP										
20...	1.5	--	26	24	.2	23	--	165	5.4	--
OCT										
16...	1.4	--	29	20	.2	24	262	157	17.0	--

50126150 RIO YAUCO ABOVE DIVERSION MONSERRATE NEAR YAUCO, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
OCT , 1978										
06...	--	--	--	--	--	--	--	--	--	--
NOV										
15...	--	--	--	--	--	--	--	--	--	--
DEC										
06...	ND	<20	<2	170	<2	40	--	--	--	ND
JAN , 1979										
12...	--	--	--	--	--	--	--	--	--	--
FEB										
15...	--	--	--	--	--	--	--	--	--	--
MAR										
14...	--	--	--	--	--	--	--	--	--	--
APR										
18...	--	--	--	--	--	--	--	--	--	--
MAY										
16...	--	--	--	--	--	--	--	--	--	--
JUN										
14...	--	--	--	--	--	--	--	--	--	--
JUL										
19...	ND	20	11	5300	4	150	<.5	<1	ND	20
AUG										
17...	--	--	--	--	--	--	<.5	<1	--	--
SEP										
20...	--	--	--	--	--	--	--	--	--	--
OCT										
16...	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50128000 RIO YAUCO NEAR YAUCO, PR

LOCATION.--Lat 17°59'19", long 66°49'55", Hydrologic Unit 21010004, on right bank at downstream side of bridge on Highway 335, 0.8 mi (1.3 km) northwest of central San Francisco and 3.4 mi (5.5 km) southeast of junction of Highways 335 and 2, at Yauco.

DRAINAGE AREA.--45.5 sq mi (117.8 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 (discharge measurements only), May 1961 to December 1964, November 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 19.14 ft (5.834 m) above mean sea level, datum of 1929.

REMARKS.--Records poor. Natural flow of stream is affected by transbasin diversions, storage reservoirs, power development, diversions for irrigation and municipal use, and return flow from irrigated areas.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,680 cu ft/s (161 cu m/s) Aug. 31, 1979, gage height, 15.76 ft (4.804 m) from rating curve extended above 2,000 cu ft/s (56.6 cu m/s); no flow many days each year.

EXTREMES FOR CURRENT PERIOD.--Water year 1979: Maximum discharge, 5,680 cu ft/s (161 cu m/s) Aug. 31, 1979, gage height, 15.76 ft (4.804 m) from rating curve extended above 2,000 cu ft/s (56.6 cu m/s); no flow many days each year.

EXTREMES FOR CURRENT PERIOD.--Water year 1979: Maximum discharge, 5,680 cu ft/s (161 cu m/s) Aug. 31, gage height, 15.76 ft (4.804 m) no flow many days.

Water year 1980: Maximum discharge 2,010 cu ft/s (56. 9 cu m/s) May 28, gage height, 11.96 ft (3.645 m); no flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	45	9.7	2.2	.99	.80	.00	.00	9.7	14	13	1680
2	.00	49	9.2	2.7	1.1	.83	.00	.00	9.4	13	23	234
3	.00	40	9.5	2.1	.99	.69	.02	.00	9.6	14	12	170
4	.00	40	11	1.7	.60	.40	.17	.00	11	15	12	143
5	.00	35	8.2	2.1	1.1	.58	.15	.00	9.5	12	16	510
6	.00	30	8.2	2.1	1.2	.77	.14	.00	8.2	13	12	321
7	.00	25	7.8	1.6	1.1	.70	.00	.00	7.0	11	12	320
8	.00	25	7.0	1.3	.86	.64	.00	.01	6.5	9.3	11	372
9	.00	51	6.3	1.2	.68	.63	.00	.01	8.8	11	11	313
10	.00	57	5.6	1.2	.73	.59	.04	.00	366	10	11	203
11	.00	56	6.6	1.7	.74	.28	.00	.00	1800	9.0	13	164
12	.00	30	5.8	1.9	.82	.45	.00	.00	500	8.0	11	137
13	.00	25	5.5	1.4	.91	.48	.00	.00	135	7.9	11	151
14	.00	80	5.1	.73	1.0	.40	.00	135	79	12	10	81
15	.00	80	4.6	.78	1.0	.49	.00	121	55	8.5	10	49
16	.00	36	3.7	1.1	1.0	.67	.00	154	44	7.6	10	39
17	.00	22	4.5	1.1	1.0	.21	.00	128	35	7.1	9.8	35
18	.00	19	6.0	1.1	1.2	.00	.00	45	31	483	11	32
19	.00	15	5.0	.98	1.4	.27	.00	73	26	1390	19	30
20	.00	122	4.9	.97	1.4	.49	.00	249	21	94	115	27
21	.00	62	4.6	.52	1.4	.45	.00	101	20	48	48	26
22	.00	21	4.0	.60	1.3	.21	.00	47	18	33	43	24
23	.00	16	3.9	.95	1.0	.19	.00	32	17	25	45	23
24	.00	17	3.5	1.3	.84	.23	.00	14	16	21	99	22
25	273	15	3.5	1.2	.65	.21	.00	12	21	19	28	21
26	85	12	3.6	1.1	.82	.20	.00	11	18	17	18	20
27	162	12	3.4	.88	.98	1.1	.00	9.7	17	16	15	18
28	533	12	3.0	.59	.84	9.8	.00	9.1	15	15	13	18
29	80	13	2.8	.94	---	.87	.00	9.4	14	14	14	56
30	50	9.8	2.6	1.1	---	.49	.00	10	16	14	19	34
31	47	---	2.1	1.1	---	.02	---	9.6	---	13	2630	---
TOTAL	1230.00	1071.8	171.2	40.24	27.65	23.14	.52	1169.82	3343.7	2384.4	3324.8	5273
MEAN	39.7	35.7	5.52	1.30	.99	.75	.017	37.7	111	76.9	107	176
MAX	533	122	11	2.7	1.4	9.8	.17	249	1800	1390	2630	1680
MIN	.00	9.8	2.1	.52	.60	.00	.00	.00	6.5	7.1	9.8	18
CFSM	.87	.79	.12	.03	.02	.02	.000	.83	2.44	1.69	2.35	3.87
IN.	1.01	.88	.14	.03	.02	.02	.00	.96	2.73	1.95	2.72	4.31
AC-FT	2440	2130	340	80	55	46	1.0	2320	6630	4730	6590	10460

CAL YR 1978	TOTAL	2477.27	MEAN	6.79	MAX	533	MIN	.00	CFSM	.15	IN 2.03	AC-FT 4910
WTR YR 1979	TOTAL	18060.27	MEAN	49.5	MAX	2630	MIN	.00	CFSM	1.09	IN 14.77	AC-FT 35820

50128000 RIO YAUCO NEAR YAUCO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	15	10	1.5	2.0	.47	.00	.36	7.2	.57	.00	.00
2	18	19	9.2	1.1	2.0	.65	.02	.48	4.7	56	.00	44
3	16	31	8.2	.77	1.8	.76	.00	.56	3.8	.53	.00	17
4	16	132	7.2	.67	2.3	1.0	.00	.67	3.1	.49	.00	.02
5	15	86	6.9	.62	8.7	2.9	.02	.69	2.7	.41	.00	1.9
6	14	87	6.1	2.0	3.7	2.6	.49	.75	2.3	.35	.00	.11
7	13	55	5.2	9.9	3.3	1.4	.00	.59	2.1	.38	.00	.00
8	13	37	4.5	4.0	2.8	3.5	.00	.40	1.9	.34	.00	.00
9	11	26	4.1	3.2	2.3	1.2	12	.20	1.7	.13	9.8	.00
10	11	22	3.8	2.6	2.0	.91	3.9	.00	1.5	.05	.00	.00
11	10	20	3.5	2.3	1.8	.63	10	.00	1.4	.14	.00	.00
12	9.7	19	3.2	2.3	1.8	.54	153	.00	1.4	.14	.00	.00
13	9.3	17	2.7	2.5	2.0	.41	7.8	.00	1.2	.13	.00	.00
14	8.8	15	2.4	2.4	2.1	.23	1.6	.00	1.0	.12	.00	.00
15	8.2	12	2.3	2.3	2.1	.14	1.0	.00	1.0	.09	.00	.00
16	20	13	2.1	2.5	1.9	.33	.78	.00	1.0	.02	.00	.00
17	22	20	2.0	2.5	1.7	.59	.59	.00	.89	.00	.00	.00
18	23	44	1.7	2.3	1.6	.32	.59	.00	.78	.02	.00	.00
19	23	40	2.2	2.2	1.6	.17	.47	.00	.83	.06	.00	.00
20	31	67	4.5	2.1	1.3	.00	.45	.06	.70	.07	.00	.00
21	46	37	4.4	2.1	1.1	.00	.44	.01	.63	.01	.00	.00
22	36	21	3.8	2.1	.91	.00	.44	.00	.61	.00	.00	.00
23	18	25	3.6	2.0	.83	.00	.42	.00	.72	.00	.00	.00
24	14	40	2.8	1.9	1.2	.28	.52	13	.71	.00	.00	.00
25	13	24	2.7	1.8	1.3	.00	1.9	40	.63	.00	.00	.00
26	13	19	1.9	1.8	.93	.00	5.6	.43	.56	.00	.00	56
27	13	18	1.6	2.1	.65	.00	.75	275	.60	.00	.00	156
28	13	16	1.4	2.0	.55	.00	.52	1400	.55	.00	.00	109
29	17	13	1.7	2.1	.40	.00	.42	167	.52	.00	.00	118
30	13	11	1.8	1.9	---	.00	.30	43	.58	.00	.00	55
31	13	---	1.6	2.0	---	.00	---	16	---	.00	.00	---
TOTAL	522.0	1001	119.1	71.56	56.67	19.03	204.02	1959.20	47.31	4.61	9.80	557.03
MEAN	16.8	33.4	3.84	2.31	1.95	.61	6.80	63.2	1.58	.15	.32	18.6
MAX	46	132	10	9.9	8.7	3.5	153	1400	7.2	.57	9.8	156
MIN	8.2	11	1.4	.62	.40	.00	.00	.00	.52	.00	.00	.00
CFSM	.37	.73	.08	.05	.04	.01	.15	1.39	.04	.003	.007	.41
IN.	.43	.82	.10	.06	.05	.02	.17	1.60	.04	.00	.01	.46
AC-FT	1040	1990	236	142	112	38	405	3890	94	9.1	19	1100

CAL YR 1979	TOTAL	17229.37	MEAN 47.2	MAX 2630	MIN .00	CFSM 1.04	IN 14.09	AC-FT 34170				
WTR YR 1980	TOTAL	4571.33	MEAN 12.5	MAX 1400	MIN .00	CFSM .28	IN 3.74	AC-FT 9070				

50128000 RIO YAUCO NEAR YAUCO, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1978 to October 1979 (discontinued).

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV , 1978											
14...	1415	18	650	8.1	27.0	8.2	280	72	24	26	.7
DEC											
04...	1425	12	600	8.0	25.0	3.0	240	63	21	25	.7
JUN , 1979											
11...	1500	1870	--	--	22.5	--	--	--	--	--	--
AUG											
17...	0940	7.4	675	7.4	29.0	6.5	260	69	21	32	.9
SEP											
20...	1245	14	644	7.8	25.0	8.5	280	74	22	30	.8
OCT											
16...	0850	24	675	7.7	25.0	4.1	270	72	21	33	.9

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
NOV , 1978										
14...	2.9	43	35	.2	24	--	--	--	--	--
DEC										
04...	2.9	37	32	.2	22	--	--	--	--	ND
JUN , 1979										
11...	--	--	--	--	--	--	--	--	--	--
AUG										
17...	3.3	34	39	.2	23	--	222	4.4	1	--
SEP										
20...	2.5	39	42	.2	22	--	232	8.8	--	--
OCT										
16...	2.6	46	45	.2	23	412	243	26.7	--	--

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1978										
14...	--	--	--	--	--	--	--	--	--	--
DEC										
04...	<20	4	680	3	50	--	--	<20	--	--
JUN , 1979										
11...	--	--	--	--	--	--	--	--	952	4E10
AUG										
17...	--	--	--	--	--	<.5	<1	--	--	--
SEP										
20...	--	--	--	--	--	--	--	--	--	--
OCT										
16...	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

RIO LOCO BASIN

50129700 RIO LOCO AT GUANICA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 17°58'33", long 66°54'52", 0.6 mi (1.0 km) northwest of Guánica and 1.2 mi (1.9 km) northeast of Ensenada.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
06...	1100	5.0	10300	7.5	30.5	--	3.8	--	1.8	400	140	250
DEC												
07...	1145	.00	8000	8.1	28.0	--	7.1	--	1.6	30000	660	870
FEB , 1979												
15...	1100	.00	11200	7.9	28.0	--	6.2	--	1.9	3000	540	230
APR												
18...	1430	2.0	27600	7.6	31.0	--	5.9	--	2.3	>100000	>10000	>10000
JUN												
26...	1520	163	1380	8.1	30.0	--	6.5	--	1.8	10000	6100	3800
AUG												
17...	1110	E12	3050	7.6	29.5	--	4.7	--	.5	15000	1500	1500
NOV												
15...	0950	296	348	7.9	25.0	20	8.8	9	1.5	--	5000	4400
JAN , 1980												
16...	0900	--	15100	7.8	26.5	.60	3.5	380	--	--	--	--
22...	1155	E.50	14400	7.8	25.5	.50	5.8	400	3.6	--	370	120
MAR												
13...	1230	E70	17000	8.2	27.5	--	9.4	--	3.8	--	1240	100
MAY												
16...	1200	E10	14000	8.1	28.5	--	4.6	--	1.7	--	330	100
JUL												
15...	1145	E20	22500	8.0	30.0	.40	4.8	320	2.5	--	360	1
SEP												
16...	1300	E2.0	15500	8.4	32.0	2.0	5.1	78	2.1	--	150	90

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L (ACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
06...	1700	1400	140	320	3100	33	100	275	0	226	14
DEC											
07...	940	680	78	180	1200	17	45	318	0	261	4.0
FEB , 1979											
15...	1200	1000	100	240	2100	28	82	292	0	239	5.9
APR											
18...	3500	3300	240	710	6500	48	250	293	0	240	12
JUN											
26...	360	27	55	55	170	3.9	6.0	410	0	336	5.2
AUG											
17...	510	230	67	82	450	8.7	17	340	0	279	14
NOV											
15...	--	--	--	--	--	--	--	166	0	140	3.3
JAN , 1980											
16...	--	--	--	--	--	--	--	360	0	295	9.1
22...	2000	1700	160	380	3100	30	13	376	0	310	9.5
MAR											
13...	--	--	--	--	--	--	--	377	0	310	3.8
MAY											
16...	--	--	--	--	--	--	--	380	0	312	4.8
JUL											
15...	--	--	--	--	--	--	--	462	0	380	7.4
SEP											
16...	1500	1200	98	300	2700	31	92	338	0	277	2.2

E Estimated.

50129700 RIO LOCO AT GUANICA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
06...	700	4500	.2	19	8520	9010	115	--	.12	.020	.14
DEC											
07...	340	2200	.3	23	4240	4220	.00	--	.66	.020	.68
FEB , 1979											
15...	530	3400	.4	18	7000	6610	.00	--	.55	.020	.57
APR											
18...	1500	10000	.6	14	20200	19400	110	--	.02	.010	.03
JUN											
26...	76	220	.2	35	--	821	361	--	1.6	.020	1.6
AUG											
17...	160	790	.3	29	--	1760	57.0	--	1.3	.050	1.3
NOV											
15...	--	--	--	--	--	--	--	35	1.0	.000	1.0
JAN , 1980											
16...	--	4600	--	--	--	--	--	41	.49	.010	.50
22...	680	5100	.5	27	--	9650	13.0	77	.98	.020	1.0
MAR											
13...	--	--	--	--	--	--	--	--	--	--	--
MAY											
16...	--	--	--	--	--	--	--	--	--	--	--
JUL											
15...	--	6300	--	--	--	--	--	--	.52	.020	.54
SEP											
16...	570	4300	.0	24	--	8250	44.6	12	.44	.020	.46

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N03)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
06...	.230	.44	.67	.81	3.6	.180	.160	--	--	--	--
DEC											
07...	.080	.38	.46	1.1	5.0	.100	.080	1	--	ND	<20
FEB , 1979											
15...	.110	.89	1.00	1.6	7.0	.110	.100	--	--	--	--
APR											
18...	.130	.31	.44	.47	2.1	.090	.070	--	--	--	--
JUN											
26...	.030	.48	.51	2.1	9.3	.190	.140	--	--	--	--
AUG											
17...	.100	.69	.79	2.1	9.3	.180	.140	1	--	2	30
NOV											
15...	.030	.11	.14	1.1	5.0	.060	--	--	--	--	--
JAN , 1980											
16...	.130	.39	.52	1.0	4.5	.240	--	--	--	--	--
22...	.180	.37	.55	1.6	6.9	.130	--	--	--	--	--
MAR											
13...	--	--	--	--	--	--	--	--	100	0	20
MAY											
16...	--	--	--	--	--	--	--	--	--	--	--
JUL											
15...	.520	.11	.63	1.2	5.2	.170	--	--	--	--	--
SEP											
16...	.010	.48	.49	.95	4.2	.200	--	2	100	1	8

ND Looked for but not detected.

50129700 RIO LOCO AT GUANICA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
06...	--	--	--	--	--	--	--	--	--	8	.11
DEC											
07...	2	620	2	130	<.5	<1	ND	<20	--	7	.00
FEB , 1979											
15...	--	--	--	120	--	--	--	--	5.7	13	.00
APR											
18...	--	--	--	20	--	--	--	--	8.0	9	.05
JUN											
26...	--	--	--	--	--	--	--	--	--	30	13
AUG											
17...	7	880	3	110	<.5	<1	ND	70	6.9	28	.91
NOV											
15...	--	--	--	--	--	--	--	--	--	35	28
JAN , 1980											
16...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	11	--
MAR											
13...	--	--	2	--	.3	0	0	--	--	6	--
MAY											
16...	--	--	--	--	--	--	--	--	--	50	--
JUL											
15...	--	--	--	--	--	--	--	--	--	13	--
SEP											
16...	--	--	12	--	.2	0	3	--	--	10	.05

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN							
26...	1520	2	.0	13	2.0	1.6	3.6

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
JUN						
26...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

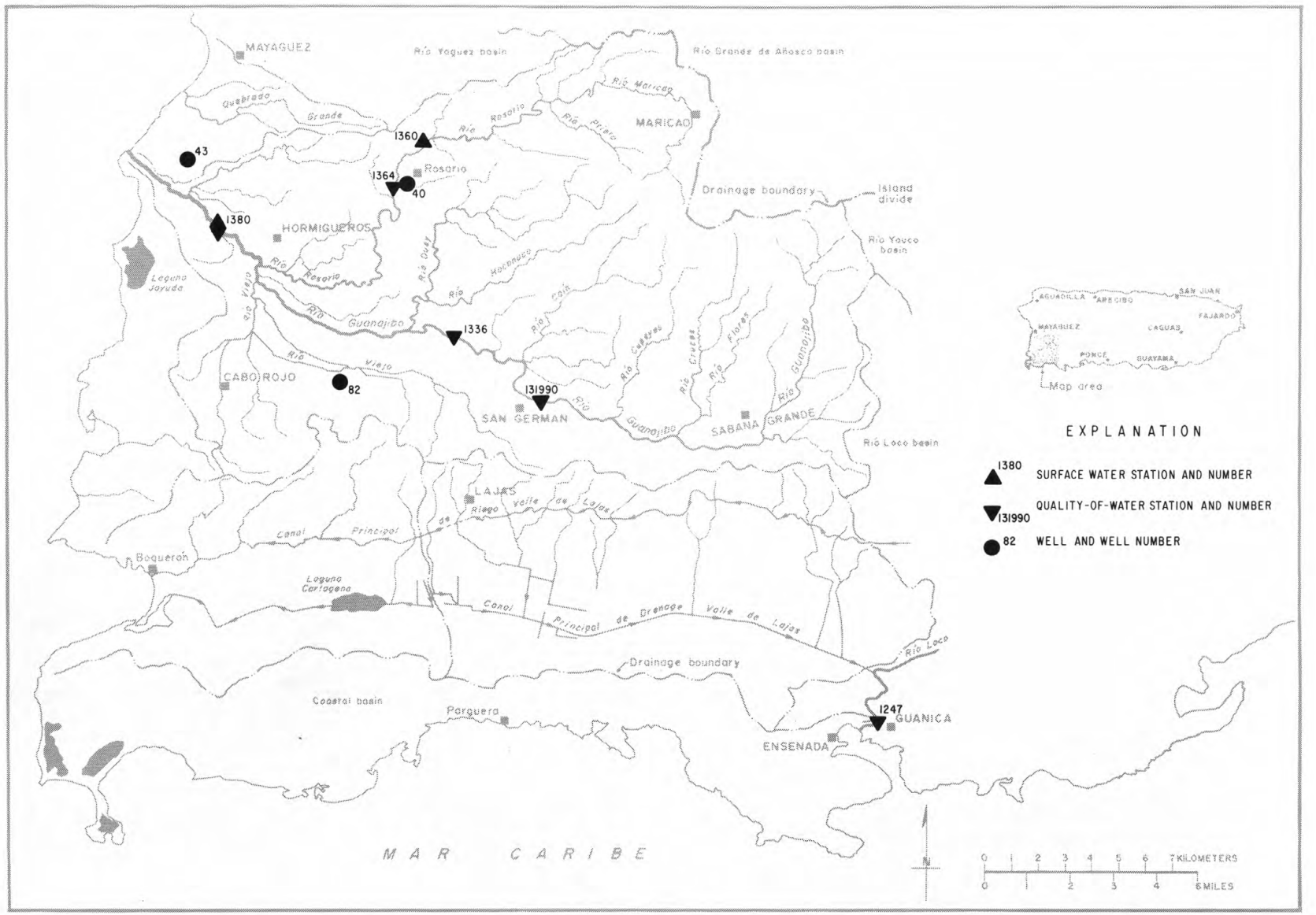

Figure 16.--Río Guanajibo basin.

50131990 RIO GUANAJIBO AT HIGHWAY 119 AT SAN GERMAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°05'06", long 67°02'02", at bridge on Highway 119 at San Germán, 0.6 mi (1.0 km) northeast of San Germán Plaza.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1975 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
06...	1200	13	482	8.0	31.0	11.6	2.0	260000	58000	5500	220
DEC											
07...	1320	36	560	8.4	28.5	8.6	1.8	28000	600	900	280
FEB , 1979											
14...	1230	6.5	570	8.2	27.0	11.4	.7	300	140	80	280
APR											
18...	1235	4.3	564	8.3	29.5	12.3	1.6	700	66	290	280
JUN											
26...	1245	24	534	8.5	30.5	11.2	1.2	390	170	38	260
AUG											
16...	1415	42	496	7.9	33.0	8.0	.7	3100	2600	270	230

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
06...	21	18	42	17	.5	1.1	240	0	197	3.8	23
DEC											
07...	40	26	53	16	.4	1.5	292	2	243	1.9	28
FEB , 1979											
14...	21	26	51	16	.4	1.0	310	0	254	3.1	28
APR											
18...	15	24	53	19	.5	1.0	321	0	263	2.6	28
JUN											
26...	8	25	47	15	.4	1.1	290	6	248	1.5	27
AUG											
16...	15	22	42	13	.4	1.1	260	0	213	5.2	23

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
06...	33	.1	37	278	290	9.4	.36	.020	.38	.180
DEC										
07...	23	.1	35	316	329	30.9	.97	.030	1.0	.090
FEB , 1979										
14...	24	.1	34	326	333	5.7	.22	.010	.23	.020
APR										
18...	25	.1	35	327	343	3.8	.04	.010	.05	.020
JUN										
26...	19	.1	34	309	317	20.2	.18	.010	.19	.020
AUG										
16...	16	.1	34	--	279	31.9	.33	.020	.35	.060

50131990 RIO GUANAJIBO AT HIGHWAY 119 AT SAN GERMAN, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
OCT , 1978										
06...	.37	.55	.93	4.1	.170	.150	--	--	--	--
DEC										
07...	.35	.44	1.4	6.4	.140	.130	1	ND	<20	2
FEB , 1979										
14...	.05	.07	.30	1.3	.070	.050	--	--	--	--
APR										
18...	.12	.14	.19	.84	.040	.030	--	--	--	--
JUN										
26...	.15	.17	.36	1.6	.100	.070	--	--	--	--
AUG										
16...	.35	.41	.76	3.4	.170	.120	1	ND	30	5

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
06...	--	--	--	--	--	--	--	--	4	.13
DEC										
07...	200	4	20	<.5	<1	ND	<20	--	7	.68
FEB , 1979										
14...	--	--	20	--	--	--	--	1.8	1	.02
APR										
18...	--	--	<10	--	--	--	--	8.2	24	.28
JUN										
26...	--	--	--	--	--	--	--	4.3	11	.72
AUG										
16...	910	3	60	<.5	<1	ND	20	12	23	2.6

ND Looked for but not detected.

50133600 RIO GUANAJIBO NEAR SAN GERMAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°07'18", long 67°03'56", at bridge on Highway 347, 2.2 mi (3.5 km) northwest of San Germán.

DRAINAGE AREA.--45.5 sq mi (117.8 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
15...	1120	92	488	7.8	26.0	8.0	6.6	12	1.9	46000	500	--
JAN , 1980												
24...	1105	14	589	7.8	26.0	2.2	6.8	27	3.2	61000	4400	290
MAR												
21...	1000	9.5	616	7.6	20.0	1.0	7.0	10	4.7	4400	570	--
MAY												
16...	0730	14	659	7.7	23.0	--	4.8	--	7.7	33000	1500	270
JUL												
10...	1530	17	534	7.7	30.0	.35	7.4	14	6.0	3900	500	--
SEP												
17...	1645	20	578	8.0	30.5	.50	6.5	31	2.3	12000	600	210

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
15...	--	--	--	--	--	--	278	0	230	7.1	--	--
JAN , 1980												
24...	17	32	50	24	.6	1.8	328	0	270	8.3	30	29
MAR												
21...	--	--	--	--	--	--	320	0	262	--	--	--
MAY												
16...	16	29	48	33	.9	2.9	310	0	250	9.9	38	38
JUL												
10...	--	--	--	--	--	--	311	0	260	9.9	--	--
SEP												
17...	0	24	37	24	.7	2.2	264	0	217	4.2	30	26

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
15...	--	--	--	--	10	.48	.050	.53	.470	.24	.71	1.2
JAN , 1980												
24...	.4	35	364	13.8	10	.13	.090	.22	1.20	1.9	3.10	3.3
MAR												
21...	--	--	--	--	--	.14	.120	.26	1.40	.60	2.00	2.3
MAY												
16...	.5	35	377	14.3	--	--	--	--	--	--	--	--
JUL												
10...	--	--	--	--	--	.73	.370	1.1	.000	.51	.51	1.6
SEP												
17...	.0	16	289	15.6	1	.57	.140	.71	.010	.36	.37	1.1

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
15...	5.5	.220	--	--	--	--	--	--	--	--	12	1.4
JAN , 1980												
24...	15	.330	--	--	--	--	--	--	--	--	542	20
MAR												
21...	10	1.10	1	100	0	0	0	.2	0	0	9	.23
MAY												
16...	--	--	--	--	--	--	--	--	--	--	77	2.9
JUL												
10...	7.1	.290	--	--	--	--	--	--	--	--	6	.28
SEP												
17...	4.8	.920	1	100	0	14	5	.2	0	0	18	.97

50136000 RIO ROSARIO AT ROSARIO, PR

LOCATION.--Lat 18°10'22", long 67°04'31", Hydrologic Unit 21010003, on left bank above low dam, 0.2 mi (0.3 km) below Quebrada Figueroa, 0.7 mi (1.1 km) northeast of Rosario, and 1.6 mi (8.6 km) below Quebrada Palma.

DRAINAGE AREA.--16.4 sq mi (42.5 sq km), revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1960 to June 1966 (gage-height records only) in files of Puerto Rico Water Resources Authority. June 1975 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 230 ft (70 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--5 years (1976-80), 43.7 cu ft/s (1.238 cu m/s), 36.19 in/yr (919 mm/yr), 31,660 acre-ft/yr (39.0 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,800 cu ft/s (957 cu m/s) Sept. 16, 1975, gage height, 19.6 ft (5.97 m), from flood-marks, from rating curve extended above 60 cu ft/s (1.70 cu m/s) on basis of slope-area measurement of peak flow; minimum daily discharge, 2.4 cu ft/s (0.068 cu m/s) June 18, 21, 1977.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 1,500 cu ft/s (42.5 cu m/s), revised and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 9, 1978	1515	2,800	79.3	7.07	2.155
June 11, 1979	1615	2,190	62.0	6.44	1.963
June 25, 1979	1530	2,260	64.0	6.52	1.987
July 17, 1979	1645	5,440	154	9.15	2.789
Aug. 20, 1979	1500	5,960	169	9.54	2.908
Aug. 31, 1979	Unknown	*8,890	252	11.45	3.490
Dec. 3, 1979	1745	*6,240	177	9.74	2.969
Apr. 10, 1980	1800	1,680	47.6	5.82	1.774
May 27, 1980	1530	3,890	110	8.00	2.438
Aug. 1, 1980	1245	4,200	119	8.24	2.512
Aug. 16, 1980	1715	1,530	43.3	5.62	1.713
Sept. 20, 1980	1515	1,650	46.7	5.78	1.762
Sept. 21, 1980	1515	1,530	43.3	5.62	1.713

Minimum discharges, 5.8 cu ft/s (0.164 cu m/s) Mar. 25, 1979; 7.0 cu ft/s (0.198 cu m/s) Apr. 23, 24, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	80	23	14	11	8.4	9.3	15	37	34	38	500
2	54	65	22	14	11	8.3	8.5	11	53	34	34	250
3	54	55	21	13	11	8.8	7.9	16	40	34	68	220
4	67	50	22	13	10	8.0	7.7	15	32	33	45	173
5	62	45	21	14	10	7.8	7.3	32	28	33	33	207
6	47	40	20	16	10	7.6	7.2	101	26	33	48	178
7	39	40	19	16	9.9	7.3	7.2	53	24	33	38	118
8	46	38	18	14	9.8	7.4	7.0	23	23	32	31	101
9	385	37	17	14	9.5	7.4	6.9	39	29	32	28	90
10	132	37	18	13	12	7.1	7.2	74	113	32	26	80
11	68	37	17	14	14	7.1	7.4	42	571	32	39	73
12	68	34	17	13	14	6.9	7.9	61	211	32	30	67
13	94	35	17	13	11	7.0	17	65	213	33	40	127
14	66	31	16	13	10	7.0	32	155	202	32	45	91
15	61	32	16	12	10	7.0	19	80	97	31	35	76
16	137	31	21	12	10	6.6	10	176	73	52	30	89
17	108	29	22	12	14	7.2	8.9	92	61	151	167	84
18	61	28	24	12	23	8.5	8.4	137	53	228	113	79
19	52	27	18	12	11	6.8	8.5	83	48	224	44	68
20	47	180	17	12	12	6.6	34	245	43	74	400	76
21	45	63	18	12	11	7.4	56	116	40	58	150	61
22	55	36	18	11	10	6.5	21	67	37	50	200	54
23	56	31	19	12	9.6	6.2	13	48	35	45	300	52
24	60	28	16	12	9.2	6.4	11	37	110	40	200	135
25	61	26	15	11	8.9	6.0	9.3	32	202	35	150	68
26	99	25	15	11	8.7	70	8.6	49	65	34	120	53
27	118	24	15	11	8.8	38	10	94	41	32	100	49
28	137	23	15	11	8.5	19	19	135	36	30	200	45
29	70	23	15	11	---	24	15	161	36	29	130	130
30	600	23	15	11	---	20	15	68	35	35	120	83
31	100	---	15	11	---	11	---	47	---	30	1500	---
TOTAL	3115	1253	562	390	307.9	363.3	407.2	2369	2614	1637	4502	3477
MEAN	100	41.8	18.1	12.6	11.0	11.7	13.6	76.4	87.1	52.8	145	116
MAX	600	180	24	16	23	70	56	245	571	228	1500	500
MIN	39	23	15	11	8.5	6.0	6.9	11	23	29	26	45
CFSM	6.10	2.55	1.10	.77	.67	.71	.83	4.66	5.31	3.22	8.84	7.07
IN	7.07	2.84	1.27	.88	.70	.82	.92	5.37	5.93	3.71	10.21	7.89
AC-FT	6180	2490	1110	774	611	721	808	4700	5180	3250	8930	6900

CAL YR 1978 TOTAL 12148.1 MEAN 33.3 MAX 600 MIN 8.8 CFSM 2.03 IN 27.55 AC-FT 24100
WTR YR 1979 TOTAL 20997.4 MEAN 57.5 MAX 1500 MIN 6.0 CFSM 3.51 IN 47.63 AC-FT 41650

50136000 RIO ROSARIO AT ROSARIO, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	31	35	25	16	12	12	10	70	35	289	60
2	52	30	35	21	16	12	12	10	55	37	89	152
3	47	30	530	21	15	12	12	10	45	70	75	126
4	45	29	155	30	16	12	12	10	40	77	70	121
5	50	29	88	21	20	24	15	10	36	46	65	86
6	70	40	80	21	22	26	11	10	34	36	60	77
7	60	100	70	21	19	58	16	14	45	89	60	76
8	100	40	60	20	16	75	25	30	51	60	58	108
9	80	35	55	20	16	51	101	16	42	100	56	63
10	65	30	50	19	15	26	239	15	37	107	56	62
11	54	28	47	19	15	20	63	14	37	79	55	68
12	50	27	45	18	15	17	83	14	32	62	55	59
13	82	26	43	19	14	16	54	15	100	64	55	112
14	64	25	39	19	14	16	51	15	81	61	55	159
15	51	25	37	18	14	15	20	16	52	55	94	96
16	47	25	36	17	14	15	12	79	45	65	207	72
17	43	200	36	18	13	15	11	92	42	58	132	66
18	41	100	35	18	13	17	10	107	41	54	74	55
19	39	80	33	17	13	20	10	158	39	134	66	65
20	53	120	36	18	13	16	10	74	37	108	56	192
21	45	77	32	17	13	14	10	42	37	68	49	283
22	39	59	32	17	13	14	10	32	37	58	46	146
23	36	65	32	19	14	14	9.8	47	37	53	46	176
24	35	64	34	18	17	14	9.8	246	71	51	47	154
25	65	55	31	19	13	14	40	104	46	50	148	130
26	52	47	27	19	13	14	15	55	37	49	85	100
27	38	44	27	18	13	13	12	658	35	49	60	350
28	40	41	25	17	12	13	11	378	35	49	67	500
29	36	38	25	13	12	13	10	227	37	49	68	300
30	34	36	22	16	---	12	10	127	37	49	60	200
31	32	---	22	16	---	12	---	100	---	100	61	---
TOTAL	1604	1576	1854	589	429	622	916.6	2735	1370	2022	2464	4214
MEAN	51.7	52.5	59.8	19.0	14.8	20.1	30.6	88.2	45.7	65.2	79.5	140
MAX	100	200	530	30	22	75	239	658	100	134	289	500
MIN	32	25	22	13	12	12	9.8	10	32	35	46	55
CFSM	3.15	3.20	3.65	1.16	.90	1.23	1.87	5.38	2.79	3.98	4.85	8.54
IN.	3.64	3.57	4.21	1.34	.97	1.41	2.08	6.20	3.11	4.59	5.59	9.56
AC-FT	3180	3130	3680	1170	851	1230	1820	5420	2720	4010	4890	8360

CAL YR 1979 TOTAL 21101.4 MEAN 57.8 MAX 1500 MIN 6.0 CFSM 3.52 IN 47.86 AC-FT 41850
WTR YR 1980 TOTAL 20395.6 MEAN 55.7 MAX 658 MIN 9.8 CFSM 3.40 IN 46.26 AC-FT 40450

50136400 RIO ROSARIO NEAR HORMIGUEROS, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°09'36", long 67°05'08", at bridge on Highway 348, 0.5 mi (0.8 km) southwest of Rosario.

DRAINAGE AREA.--18.3 sq mi (47.4 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
15...	1350	34	225	8.5	26.5	2.0	9.0	4	1.4	2700	530	--
JAN , 1980												
23...	1045	19	281	8.3	23.0	1.0	9.1	12	1.0	70	60	120
MAR												
14...	1000	14	267	8.7	26.5	--	7.8	--	1.8	190	140	--
MAY												
09...	1130	15	306	8.5	28.0	--	9.0	--	5.4	156	108	--
JUL												
10...	1030	82	191	7.6	26.0	7.8	7.3	18	1.2	3900	1200	--
SEP												
17...	1100	51	235	8.8	29.0	.30	7.8	--	.4	370	200	100

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
15...	--	--	--	--	--	--	124	6	110	.7	--	--
JAN , 1980												
23...	0	25	15	9.5	.4	1.1	154	0	130	1.2	5.5	8.4
MAR												
14...	--	--	--	--	--	--	143	8	131	.5	--	--
MAY												
09...	--	--	--	--	--	--	132	10	130	.8	--	--
JUL												
10...	--	--	--	--	--	--	112	0	92	4.5	--	--
SEP												
17...	0	20	13	8.8	.4	1.5	94	20	110	.3	5.3	7.1

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
15...	--	--	--	--	13	.79	.000	.79	.010	.15	.16	.95
JAN , 1980												
23...	.1	28	169	8.7	27	.58	.010	.59	.020	.75	.77	1.4
MAR												
14...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
09...	--	--	--	--	--	.26	.000	.26	.000	.33	.33	.59
JUL												
10...	--	--	--	--	--	.70	.010	.71	.010	.99	1.00	1.7
SEP												
17...	.0	20	142	19.6	0	.83	.000	.83	.000	.22	.22	1.1

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
15...	4.2	.040	--	--	--	--	--	--	--	--	4	.37
JAN , 1980												
23...	6.0	.040	--	--	--	--	--	--	--	--	0	.00
MAR												
14...	--	--	--	0	0	20	1	.1	0	2	2	.08
MAY												
09...	2.6	.020	--	--	--	--	--	--	--	--	1	.04
JUL												
10...	7.6	.020	--	--	--	--	--	--	--	--	63	14
SEP												
17...	4.6	.050	1	100	0	9	3	.2	0	0	7	.97

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR

LOCATION.--Lat 18°09'29", long 67°08'46", Hydrologic Unit 21010003, at bridge on Highway 114 (formerly Highway 2), 1.2 mi (1.9 km) west of Hormigueros, and 1.7 mi (2.7 km) downstream from Río Rosario.

DRAINAGE AREA.--120 sq mi (311 sq km).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Annual low-flow measurements 1959, monthly measurements April 1959 to November 1967, January 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.36 ft (2.243 m) above mean sea level.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--6 years (1974-79), 245 cu ft/s (6.938 cu m/s), 27.73 in/yr (704 mm/yr), 177,500 acre-ft/yr (219 cu hm/yr).
--7 years (1974-80), 237 cu ft/s (6.712 cu m/s), 26.82 in/yr (681 mm/yr), 171,700 acre-ft/yr (212 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 128,000 cu ft/s (3,625 cu m/s) Sept. 16, 1975, gage height, 28.50 ft (8.687 m) from rating curve extended above 100 cu ft/s (2.83 cu m/s) on the basis of contracted-opening measurement of peak flow; minimum, 4.6 cu ft/s (0.130 cu m/s) June 22, 1977, gage height, 5.36 ft (1.633 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 2,000 cu ft/s (56.6 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 10, 1978	0115	3,490	98.8	11.85	3.612
Oct. 27, 1978	0245	5,360	152	12.99	3.959
Oct. 28, 1978	1115	7,460	211	13.98	4.261
Oct. 31, 1978	0645	7,900	224	14.16	4.316
June 12, 1979	0245	13,100	371	15.92	4.852
Aug. 17, 1979	2145	2,120	60.0	10.70	3.261
Aug. 18, 1979	2345	2,230	63.2	10.82	3.298
Aug. 20, 1979	2315	4,670	132	12.63	3.850
Aug. 24, 1979	1800	2,400	68.0	11.00	3.353
Sept. 1, 1979	0600	*53,000	1,500	22.5	6.86
May 27, 1980	2345	*15,000	425	16.46	5.017
May 29, 1980	2130	2,980	84.4	11.49	3.502
Sept. 24, 1980	2400	2,100	59.5	10.68	3.255
Sept. 28, 1980	0115	7,470	212	14.00	4.267
Sept. 29, 1980	0245	3,420	96.8	11.82	3.603
Sept. 30, 1980	2145	2,720	77.0	11.28	3.438

Minimum discharges, 11 cu ft/s (0.312 cu m/s) Apr. 20, 1979; 14 cu ft/s Apr. 7, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	291	800	120	59	31	23	28	32	96	116	117	26400
2	345	400	120	56	30	23	24	21	81	106	156	2000
3	253	300	120	54	31	25	23	17	106	102	170	1100
4	433	280	120	51	29	24	21	23	89	98	352	950
5	284	250	110	50	27	21	20	22	72	97	245	1300
6	191	240	110	50	27	20	19	61	64	103	158	950
7	179	230	110	53	26	20	18	142	58	93	153	800
8	161	215	110	51	27	20	17	43	54	92	121	600
9	720	221	103	50	25	20	16	35	66	88	107	500
10	1390	300	96	45	31	19	16	65	314	85	203	450
11	209	200	93	44	36	19	17	69	1800	84	310	400
12	236	300	90	44	34	18	17	197	7500	82	175	400
13	283	200	85	45	28	18	16	263	1000	198	125	700
14	262	190	83	43	26	19	28	96	780	271	188	1300
15	221	190	81	41	26	17	40	234	394	224	195	700
16	340	180	78	41	25	17	20	343	315	175	164	950
17	688	180	163	43	26	20	15	601	257	271	670	1400
18	264	170	155	40	38	26	14	411	213	720	1000	800
19	231	170	118	39	52	20	13	479	177	500	1100	700
20	226	160	107	47	36	19	16	914	153	939	1300	600
21	220	160	93	39	40	15	55	813	137	462	1700	700
22	196	150	84	36	31	15	92	379	124	350	420	500
23	294	150	83	38	28	15	65	283	115	285	510	400
24	664	140	75	37	27	15	29	215	150	230	860	800
25	1260	140	70	34	26	15	23	184	247	185	750	550
26	1850	140	68	34	25	200	20	156	221	158	670	400
27	4400	130	65	32	24	130	17	187	148	143	422	350
28	5800	130	62	32	23	90	26	181	131	125	421	350
29	3000	130	61	33	---	63	27	282	125	113	440	500
30	2000	120	60	32	---	58	27	151	124	118	398	800
31	6000	---	61	32	---	37	---	113	---	123	9400	---
TOTAL	32891	6566	2954	1325	835	1061	779	7012	15111	6736	23000	48350
MEAN	1061	219	95.3	42.7	29.8	34.2	26.0	226	504	217	742	1612
MAX	6000	800	163	59	52	200	92	914	7500	939	9400	26400
MIN	161	120	60	32	23	15	13	17	54	82	107	350
CFSM	8.84	1.83	.79	.36	.25	.29	.22	1.88	4.20	1.81	6.18	13.4
IN.	10.20	2.04	.92	.41	.26	.33	.24	2.17	4.68	2.09	7.13	14.99
AC-FT	65240	13020	5860	2630	1660	2100	1550	13910	29970	13360	45620	95900

CAL YR 1978	TOTAL	66017	MEAN 181	MAX 6000	MIN 14	CFSM 1.51	IN 20.47	AC-FT	130900	
WTR YR 1979	TOTAL	146620	MEAN 402	MAX 26400	MIN 13	CFSM 3.35	IN 45.45	AC-FT	290800	

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	400	120	80	48	37	32	19	70	288	124	236	55
2	300	110	80	47	39	32	17	60	236	119	221	116
3	200	100	140	47	39	32	17	50	201	171	137	157
4	180	100	230	53	37	32	18	40	182	148	110	238
5	170	90	350	46	44	33	17	40	170	127	100	177
6	300	110	180	45	40	40	16	30	163	120	90	108
7	200	140	140	68	40	36	73	30	165	150	80	86
8	250	200	120	49	37	100	128	30	167	154	80	95
9	400	280	110	46	35	114	210	30	161	225	70	102
10	600	170	109	45	37	44	530	28	158	217	70	67
11	350	130	125	45	35	34	538	28	159	141	65	68
12	300	110	197	45	34	32	655	100	159	134	121	66
13	250	100	181	45	35	31	488	71	167	128	325	93
14	220	100	117	44	35	30	337	68	195	127	255	173
15	200	100	98	44	35	30	217	68	151	124	175	247
16	180	100	91	43	35	28	162	90	143	121	234	123
17	170	100	85	43	35	28	127	210	138	114	254	89
18	150	350	80	43	34	28	104	283	133	111	193	101
19	140	250	79	43	34	27	89	319	132	209	187	97
20	140	180	76	43	34	26	76	179	131	233	185	263
21	200	150	70	42	35	26	66	113	129	134	107	468
22	180	140	64	42	34	25	64	111	126	125	54	326
23	160	130	64	41	34	24	63	236	126	119	46	438
24	140	120	63	40	35	24	66	600	128	113	39	631
25	130	120	61	40	34	24	102	406	131	107	108	737
26	120	110	54	41	34	22	175	162	121	100	128	397
27	120	100	56	39	34	22	168	4030	118	100	56	1660
28	120	100	54	39	33	23	138	8980	114	95	78	3580
29	160	90	52	40	32	23	90	1920	180	90	106	2070
30	140	90	49	39	---	22	80	942	162	90	62	1630
31	130	---	49	39	---	19	---	377	---	90	49	---
TOTAL	6700	4090	3304	1374	1036	1043	4850	19701	4734	4160	4021	14458
MEAN	216	136	107	44.3	35.7	33.6	162	636	158	134	130	482
MAX	600	350	350	68	44	114	655	8980	288	233	325	3580
MIN	120	90	49	39	32	19	16	28	114	90	39	55
CFSM	1.80	1.13	.89	.37	.30	.28	1.35	5.30	1.32	1.12	1.08	4.02
IN.	2.08	1.27	1.02	.43	.32	.32	1.50	6.11	1.47	1.29	1.25	4.48
AC-FT	13290	8110	6550	2730	2050	2070	9620	39080	9390	8250	7980	28680

CAL YR 1979 TOTAL 118303 MEAN 324 MAX 26400 MIN 13 CFSM 2.70 IN 36.67 AC-FT 234700
WTR YR 1980 TOTAL 69471 MEAN 190 MAX 8980 MIN 16 CFSM 1.58 IN 21.54 AC-FT 137800

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
13...	1200	254	350	7.2	26.0	--	6.6	--	1.0	340000	66000	15000
DEC												
08...	0815	111	455	7.6	24.0	--	7.4	--	1.2	70000	13000	5600
FEB , 1979												
14...	0940	26	505	7.4	24.5	--	6.8	--	2.2	140000	19000	1500
APR												
18...	1030	14	536	7.5	28.0	--	6.6	--	4.2	540000	76000	16000
JUN												
26...	1045	204	314	7.4	26.0	--	9.5	--	1.2	79000	4300	5300
AUG												
16...	1215	161	424	7.4	27.0	--	6.2	--	1.6	80000	32000	4000
NOV												
16...	0740	105	414	8.0	24.5	15	7.2	20	2.3	--	14000	2200
JAN , 1980												
23...	1315	43	455	8.0	25.0	3.0	7.8	11	3.1	--	3100	430
MAR												
14...	1500	30	519	7.7	26.0	--	6.6	--	3.9	--	23000	800
MAY												
09...	1500	30	468	8.3	30.0	--	7.5	--	6.9	--	3500	300
JUL												
10...	1315	188	293	7.4	24.5	--	6.6	--	1.9	--	25000	9500
SEP												
17...	1330	89	338	8.5	28.0	.50	6.8	16	1.4	--	31000	4000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CL2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978												
13...	160	17	24	25	9.8	.3	2.5	178	0	146	18	20
DEC												
08...	240	28	34	38	16	.4	2.2	260	0	213	10	24
FEB , 1979												
14...	220	8	34	33	21	.6	2.4	260	0	213	17	25
APR												
18...	220	3	33	34	23	.7	3.0	267	0	219	14	24
JUN												
26...	140	6	22	20	11	.4	1.7	160	0	131	10	14
AUG												
16...	190	10	30	28	16	.5	2.0	220	0	180	14	20
NOV												
16...	--	--	--	--	--	--	--	224	0	180	3.6	--
JAN , 1980												
23...	220	8	33	33	19	.6	1.6	256	0	210	4.1	20
MAR												
14...	--	--	--	--	--	--	--	255	0	210	8.1	--
MAY												
09...	--	--	--	--	--	--	--	245	0	200	2.0	--
JUL												
10...	--	--	--	--	--	--	--	164	0	134	10	--
SEP												
17...	140	0	23	21	12	.4	1.7	137	23	151	.9	14

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978											
13...	12	.1	26	214	207	147	--	.51	.030	.54	.150
DEC											
08...	18	.2	28	281	289	84.2	--	.85	.070	.92	.150
FEB , 1979											
14...	29	.1	30	319	303	22.2	--	.88	.120	1.0	.390
APR											
18...	28	.2	33	310	310	12.1	--	.27	.080	.35	2.00
JUN											
26...	11	.1	26	192	185	106	--	.78	.040	.82	.090
AUG											
16...	17	.2	27	--	249	108	--	.56	.050	.61	.180
NOV											
16...	--	--	--	--	--	--	31	.76	.090	.85	.130
JAN , 1980											
23...	21	.2	31	--	285	33.1	9	.99	.110	1.1	.280
MAR											
14...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	.42	.040	.46	.180
JUL											
10...	--	--	--	--	--	--	--	--	--	--	--
SEP											
17...	11	.0	31	--	204	49.2	27	.72	.010	.73	.130

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT , 1978										
13...	.61	.76	1.3	5.8	.280	.190	--	--	--	--
DEC										
08...	.46	.61	1.5	6.8	.180	.150	1	--	ND	<20
FEB , 1979										
14...	.48	.87	1.9	8.3	.470	.470	--	--	--	--
APR										
18...	.30	2.30	2.7	12	1.20	.990	--	--	--	--
JUN										
26...	.49	.58	1.4	6.2	.220	.100	--	--	--	--
AUG										
16...	.74	.92	1.5	6.8	.340	.210	1	--	ND	30
NOV										
16...	.39	.52	1.4	6.1	.160	--	--	--	--	--
JAN , 1980										
23...	.72	1.00	2.1	9.3	.370	--	--	--	--	--
MAR										
14...	--	--	--	--	--	--	--	0	0	40
MAY										
09...	.57	.75	1.2	5.4	.480	--	--	--	--	--
JUL										
10...	--	--	--	--	--	--	--	--	--	--
SEP										
17...	.22	.35	1.1	4.8	.310	--	1	100	0	17

ND Looked for but not detected.

50138000 RIO GUANAJIBO NEAR HORMIGUEROS, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
13...	--	--	--	--	--	--	--	--	--	129	88
DEC											
08...	2	770	4	100	<.5	<1	ND	<20	--	11	3.3
FEB , 1979											
14...	--	--	--	190	--	--	--	--	5.0	79	5.5
APR											
18...	--	--	--	30	--	--	--	--	5.8	66	2.6
JUN											
26...	--	--	--	--	--	--	--	--	6.5	191	105
AUG											
16...	9	2200	6	190	<.5	<1	ND	70	10	137	60
NOV											
16...	--	--	--	--	--	--	--	--	--	75	21
JAN , 1980											
23...	--	--	--	--	--	--	--	--	--	98	11
MAR											
14...	--	--	2	--	.1	0	0	--	--	73	5.9
MAY											
09...	--	--	--	--	--	--	--	--	--	23	1.9
JUL											
10...	--	--	--	--	--	--	--	--	--	204	104
SEP											
17...	--	--	4	--	.1	6	0	--	--	56	14

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
DEC							
08...	0815	0	.0	0	3.8	1.2	.0
JUN							
26...	1045	0	.0	0	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
DEC						
08...	.0	.0	.0	.0	.0	0
JUN						
26...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

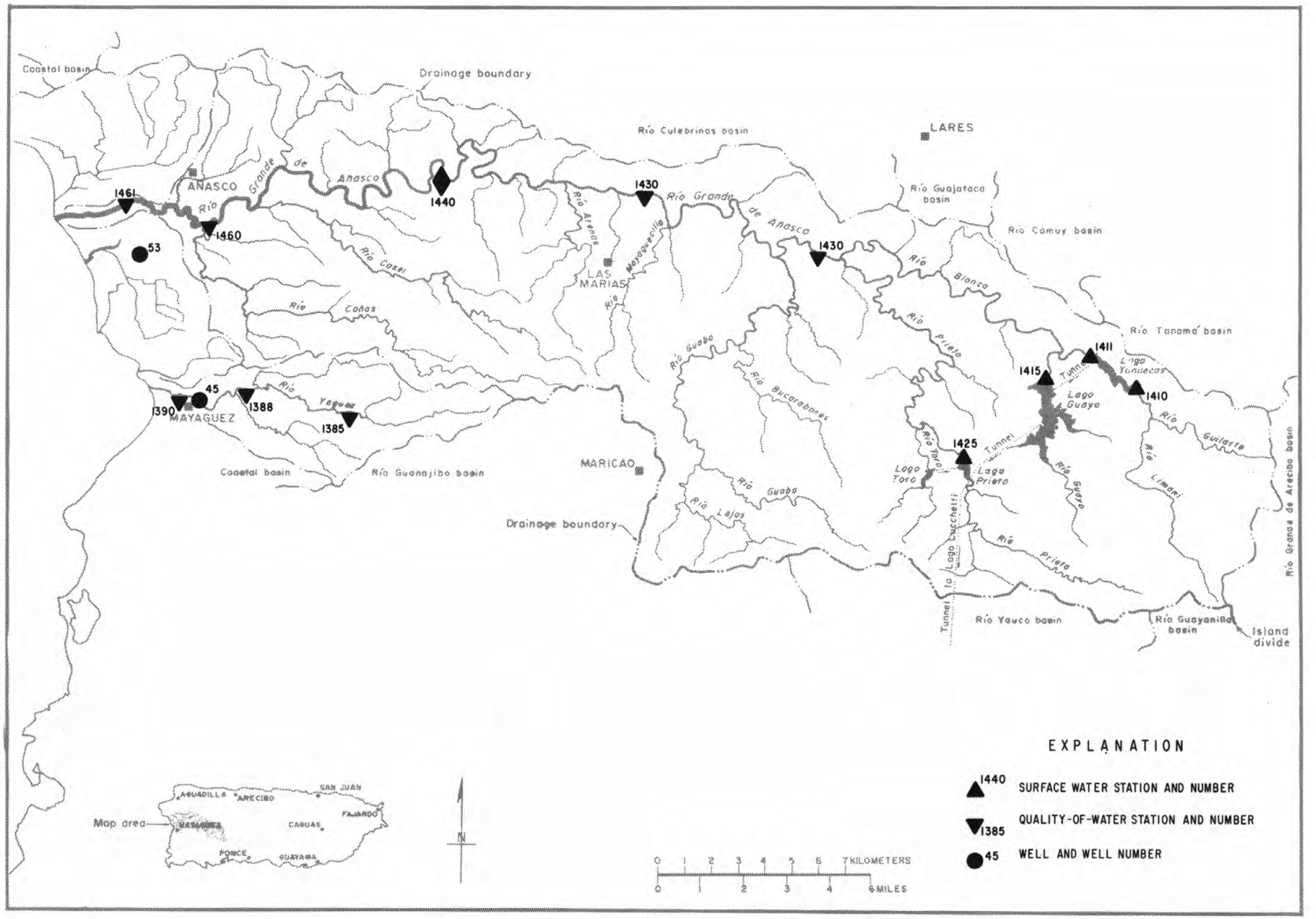

Figure 17.--Río Yagüez and Río Grande de Añasco basins.

RIO YAGUEZ BASIN

50138500 RIO YAGUEZ AT PRESADA DE MAYAGUEZ, PR

LOCATION.--Lat 18°12'02", long 67°04'43", 0.7 mi (1.1 km) northeast of Highway 105, and 2.5 mi (4.0 km) north of Rosario.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--Water years 1975 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
13...	0745	11	290	7.5	23.0	8.7	1.2	170000	25000	18000	99
DEC											
08...	1325	1.5	290	8.3	25.0	9.4	1.7	3200	640	1200	130
FEB , 1979											
13...	1310	.40	263	8.0	24.0	10.2	1.2	1100	310	610	130
APR											
18...	0745	E.20	288	7.3	25.0	7.7	2.5	5300	1200	6300	120
JUN											
22...	0850	6.7	275	8.0	24.0	8.4	.0	7000	1500	1200	120
AUG											
16...	0815	4.4	265	7.7	23.0	8.3	.2	16000	2900	4800	120

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
13...	2	26	8.3	8.5	.4	2.1	118	0	97	6.0	6.9
DEC											
08...	0	34	10	11	.4	1.8	161	0	132	1.3	6.7
FEB , 1979											
13...	0	34	10	9.9	.4	1.5	160	0	131	2.6	6.6
APR											
18...	0	32	8.7	15	.6	2.0	148	0	121	12	14
JUN											
22...	0	33	9.9	11	.4	1.5	160	0	131	2.6	5.4
AUG											
16...	0	32	9.0	9.3	.4	1.5	150	0	123	4.8	6.8

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
13...	6.8	.1	27	160	144	4.9	1.1	.020	1.1	<.010
DEC										
08...	7.7	.1	34	188	185	.76	.77	.010	.78	.050
FEB , 1979										
13...	8.2	.1	34	186	183	.20	.48	.010	.49	.020
APR										
18...	8.8	.1	28	193	182	.10	.19	.010	.20	.020
JUN										
22...	7.2	.1	33	186	180	3.4	.65	.010	.66	.010
AUG										
16...	7.1	.1	31	--	171	2.0	.78	<.010	.78	.010

E Estimated.

50138500 RIO YAGUEZ AT PRESADA DE MAYAGUEZ, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
OCT , 1978										
13...	.18	.18	1.3	5.7	.050	.030	--	--	--	--
DEC										
08...	.16	.21	.99	4.4	.050	.050	<1	ND	<20	<2
FEB , 1979										
13...	.00	.02	.49	2.2	.040	.030	--	--	--	--
APR										
18...	.22	.24	.44	1.9	.060	.030	--	--	--	--
JUN										
22...	.08	.09	.75	3.3	.040	.020	--	--	--	--
AUG										
16...	.25	.26	1.0	4.6	.060	.050	1	<2	20	4

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
13...	--	--	--	--	--	--	--	--	3	.09
DEC										
08...	500	2	30	<.5	<1	ND	<20	--	8	.03
FEB , 1979										
13...	--	--	30	--	--	--	--	6.1	2	.00
APR										
18...	--	--	<10	--	--	--	--	5.1	56	.03
JUN										
22...	--	--	--	--	--	--	--	1.9	12	.22
AUG										
16...	1300	3	70	<.5	<1	ND	<20	2.1	66	.79

ND Looked for but not detected.

50138800 RIO YAGUEZ NEAR MAYAGUEZ, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°12'31", long 67°07'07", at steel-cross bridge on unnumbered paved road about 800 ft (244 m) south of Highway 106, 1.8 mi (2.9 km) west of Highways 106 and 352 junction, and 1.4 mi (2.3 km) east-northeast from Mayaguez.

DRAINAGE AREA.--6.67 sq mi (17.28 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
16...	1000	29	198	7.6	23.0	--	8.4	--	--	18000	10000	--
JAN , 1980												
24...	0835	4.3	286	7.9	21.0	1.5	8.6	9	1.2	590	550	130
MAR												
21...	0840	2.4	292	7.8	21.0	.20	8.7	3	2.9	2900	650	--
MAY												
02...	0920	2.6	284	8.1	26.0	1.5	8.8	58	2.4	3400	780	--
JUL												
16...	1635	11	270	8.1	27.5	23	8.0	15	1.9	38000	1800	--
SEP												
11...	0940	17	245	7.9	26.0	1.6	6.6	7	2.5	1700	1200	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
16...	--	--	--	--	--	--	98	0	80	3.9	--	--
JAN , 1980												
24...	0	36	10	13	.5	1.5	171	0	140	3.4	6.4	9.5
MAR												
21...	--	--	--	--	--	--	170	0	140	4.3	--	--
MAY												
02...	--	--	--	--	--	--	160	0	130	2.0	--	--
JUL												
16...	--	--	--	--	--	--	146	0	120	1.9	--	--
SEP												
11...	--	--	--	--	--	--	142	0	116	2.9	--	--

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN , 1980												
24...	.1	31	192	2.2	4	.52	.010	.53	.020	.61	.63	1.2
MAR												
21...	--	--	--	--	--	.51	.020	.53	.160	.13	.29	.82
MAY												
02...	--	--	--	--	2	.52	.010	.53	.000	.26	.26	.79
JUL												
16...	--	--	--	--	--	.71	.000	.71	.010	.11	.12	.83
SEP												
11...	--	--	--	--	0	.85	.010	.86	.080	.27	.35	1.2

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
16...	--	--	--	--	--	--	--	--	--	--	50	3.3
JAN , 1980												
24...	5.1	.050	--	--	--	--	--	--	--	--	0	.00
MAR												
21...	3.6	.050	1	100	1	0	0	.1	0	0	1	.01
MAY												
02...	3.5	.030	--	--	--	--	--	--	--	--	1	.01
JUL												
16...	3.7	.090	--	--	--	--	--	--	--	--	11	2.1
SEP												
11...	5.4	.070	1	100	0	8	0	<.1	0	0	5	.23

50139500 RIO YAGUEZ NEAR MOUTH AT MAYAGUEZ, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°12'35", long 67°09'07", at bridge on Highway 102, 1,100 ft (335 m) upstream from mouth.

DRAINAGE AREA.--13.2 mi (34.2 sq km).

PERIOD OF RECORD.--Water years 1974 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
13...	1000	25	2270	7.5	26.0	7.2	16	680000	480000	210000	330
DEC											
08...	1115	13	790	8.7	24.0	6.3	25	570000	190000	17000	200
FEB , 1979											
14...	0800	5.0	720	7.2	23.0	2.7	19	16000000	220000	39000	220
APR											
18...	0900	E2.0	845	7.0	27.0	.7	3900	1900000	260000	300000	200
JUN											
22...	1100	15	382	7.7	25.5	3.8	52	560000	260000	26000	150
AUG											
16...	1015	13	388	7.2	27.0	3.9	13	800000	510000	49000	140

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
13...	210	38	58	340	6.1	15	156	0	128	7.9	99
DEC											
08...	18	32	28	90	2.8	5.1	200	8	177	.7	26
FEB , 1979											
14...	48	42	28	82	2.4	5.1	210	0	172	21	23
APR											
18...	23	35	27	82	2.5	5.6	214	0	176	34	24
JUN											
22...	0	29	19	25	.9	2.9	190	0	156	6.1	9.6
AUG											
16...	0	28	17	22	.8	2.8	170	0	139	17	14

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
13...	600	.1	24	1320	1250	E9.1	.80	.020	.82	.410
DEC										
08...	130	.1	26	427	444	15.4	.69	.070	.76	.930
FEB , 1979										
14...	150	.2	25	477	459	6.4	.18	.030	.21	.580
APR										
18...	150	.3	27	488	456	2.6	.09	.010	.10	.130
JUN										
22...	23	.1	28	237	230	9.6	.03	<.010	.03	.060
AUG										
16...	28	.1	26	--	222	7.9	.53	.050	.58	<.010

E Estimated.

50139500 RIO YAGUEZ NEAR MOUTH AT MAYAGUEZ, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
OCT , 1978										
13...	.55	.96	1.8	7.9	.200	.100	--	--	--	--
DEC										
08...	10	11.0	12	52	.280	.210	1	ND	30	9
FEB , 1979										
14...	1.0	1.60	1.8	8.0	.200	.150	--	--	--	--
APR										
18...	.84	.97	1.1	4.7	.320	.210	--	--	--	--
JUN										
22...	1.7	1.80	1.8	8.1	.210	.010	--	--	--	--
AUG										
16...	.88	.88	1.5	6.5	.150	.020	1	<2	20	6

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
13...	--	--	--	--	--	--	--	--	212	14
DEC										
08...	7800	11	210	<.5	<1	ND	30	--	174	6.3
FEB , 1979										
14...	--	--	350	--	--	--	--	7.3	85	1.1
APR										
18...	--	--	20	--	--	--	--	16	78	.42
JUN										
22...	--	--	--	--	--	--	--	23	18	.73
AUG										
16...	1400	5	180	<.5	<1	ND	60	14	72	2.6

E Estimated.

50143000 RIO GRANDE DE AÑASCO NEAR LARES, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°15'26", long 66°55'00", at bridge on Highway 124, 0.7 mi (1.1 km) downstream from confluence of Río Blanco and Río Prieto, and 3.7 mi (6.0 km) southwest of Lares.

DRAINAGE AREA.--26.3 sq mi (68.1 sq km) this does not include 36.2 sq mi (93.8 sq km) which contributes only during high floods, and 3.5 sq mi (9.1 sq km) which contributes only part of its storm runoff.

PERIOD OF RECORD.--Water years 1959-68, 1970 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
11...	1310	75	286	7.9	27.5	--	8.2	--	1.2	4000	200	1600
DEC												
13...	1425	25	275	8.3	24.5	--	9.2	--	.4	430	48	230
FEB , 1979												
01...	1250	15	304	8.2	24.5	--	10.0	--	.6	2500	33	68
APR												
05...	0740	14	297	7.4	22.0	--	9.0	--	.5	1900	106	220
JUN												
14...	1400	286	202	7.7	27.0	--	7.8	--	.5	8000	1400	780
AUG												
08...	0730	31	307	7.9	24.5	--	7.8	--	1.0	2100	150	260
NOV												
30...	0850	44	284	8.1	20.5	1.0	9.9	22	1.3	--	170	2400
JAN , 1980												
16...	1225	21	302	8.0	23.0	1.6	8.5	8	1.0	--	18	26
MAR												
19...	1445	15	284	8.5	30.0	--	10.4	13	1.7	--	14	48
MAY												
08...	1030	13	292	8.4	30.0	2.2	9.6	11	2.4	--	24	22
JUL												
14...	1320	22	276	7.5	30.5	2.5	9.0	4	4.0	--	34	28
SEP												
04...	1100	54	244	7.9	28.0	13	8.6	13	2.1	--	5000	10000

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
11...	110	8	31	9.1	11	.4	1.6	130	0	107	2.6
DEC											
13...	140	7	36	11	12	.5	1.4	156	0	128	1.3
FEB , 1979											
01...	140	6	37	11	14	.5	1.4	160	0	131	1.6
APR											
05...	140	--	37	11	12	.5	1.6	--	--	--	--
JUN											
14...	78	7	21	6.2	9.1	.4	1.6	86	0	71	2.7
AUG											
08...	130	0	36	9.8	12	.5	1.5	160	0	131	3.2
NOV											
30...	--	--	--	--	--	--	--	149	0	120	1.9
JAN , 1980											
16...	130	--	37	9.9	16	.6	1.4	156	0	130	2.5
MAR											
19...	--	--	--	--	--	--	--	134	6	120	--
MAY											
08...	--	--	--	--	--	--	--	140	2	120	.9
JUL											
14...	--	--	--	--	--	--	--	124	2	110	6.5
SEP											
04...	100	11	29	7.8	10	.4	2.4	108	0	89	2.2

RIO GRANDE DE AÑASCO BASIN

50143000 RIO GRANDE DE AÑASCO NEAR LARES, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
11...	19	7.6	.1	32	174	176	35.2	--	1.3	.010	1.3
DEC											
13...	21	10	.1	34	209	203	14.0	--	.82	<.010	.82
FEB , 1979											
01...	24	11	.1	30	202	207	8.1	--	.47	<.010	.47
APR											
05...	24	10	.1	29	200	--	7.8	--	.46	.010	.47
JUN											
14...	12	7.5	.1	26	235	126	181	--	1.5	.020	1.5
AUG											
08...	21	11	.1	30	--	200	16.6	--	.60	.010	.61
NOV											
30...	--	--	--	--	--	--	--	--	1.2	.050	1.2
JAN , 1980											
16...	24	10	.1	30	--	205	11.6	10	.68	.000	.68
MAR											
19...	--	--	--	--	--	--	--	--	.15	.100	.25
MAY											
08...	--	--	--	--	--	--	--	0	.27	.010	.28
JUL											
14...	--	--	--	--	--	--	--	--	.56	.010	.57
SEP											
04...	20	7.9	.1	29	--	159	23.2	106	1.3	.020	1.3

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)(3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
11...	<.010	.04	.04	1.3	5.9	.040	.030	--	--	--	--
DEC											
13...	.020	.02	.04	.86	3.8	.040	.030	<1	--	<2	<20
FEB , 1979											
01...	.010	.16	.17	.64	2.8	.030	.020	--	--	--	--
APR											
05...	.010	.02	.03	.50	2.2	.020	.020	--	--	--	--
JUN											
14...	.040	.25	.29	1.8	7.9	.070	.030	--	--	--	--
AUG											
08...	.010	.09	.10	.71	3.1	.030	.010	<1	--	<2	<20
NOV											
30...	.030	.12	.15	1.4	6.0	.030	--	--	--	--	--
JAN , 1980											
16...	.000	.20	.20	.88	3.9	.030	--	--	--	--	--
MAR											
19...	.000	.16	.16	.41	1.8	.030	--	0	<50	0	3
MAY											
08...	.020	.60	.62	.90	4.0	.030	--	--	--	--	--
JUL											
14...	.010	.15	.16	.73	3.2	.030	--	--	--	--	--
SEP											
04...	.050	.10	.15	1.5	6.4	.170	--	1	100	0	8

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
11...	--	--	--	--	--	--	--	--	--	5	1.0
DEC											
13...	ND	130	8	40	<.5	<1	ND	ND	--	0	.00
FEB , 1979											
01...	--	--	--	40	--	--	--	--	3.7	10	.40
APR											
05...	--	--	--	40	--	--	--	--	2.4	6	.23
JUN											
14...	--	--	--	--	--	--	--	--	7.1	476	368
AUG											
08...	4	150	7	30	<.5	<1	ND	<20	5.2	6	.50
NOV											
30...	--	--	--	--	--	--	--	--	--	5	.59
JAN , 1980											
16...	--	--	--	--	--	--	--	--	--	1	.06
MAR											
19...	--	--	1	--	.1	0	0	--	--	3	.12
MAY											
08...	--	--	--	--	--	--	--	--	--	1	.04
JUL											
14...	--	--	--	--	--	--	--	--	--	5	.30
SEP											
04...	--	--	9	--	.9	0	0	--	--	152	22

ND Looked for but not detected.

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR

LOCATION.--Lat 18°17'05", long 67°03'05", Hydrologic Unit 21010003, on left bank, 200 ft (61 m) downstream from bridge on Highway 108, 0.4 mi (0.6 km) downstream from Quebrada La Zumbadora, 4.4 mi (7.1 km) northwest of Las Marías, 5.4 mi (8.7 km) southwest of San Sebastián.

DRAINAGE AREA.--94.3 sq mi (244.2 sq km), does not include 36.2 sq mi (93.8 sq km) which contributes only during high floods, and 3.5 sq mi (9.1 sq km) which contributes only part of its storm runoff.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1960 (discharge measurement only), March 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 103.72 ft (31.614 m) above mean sea level (Puerto Rico Department of Public Works bench mark). Previous to Oct. 30, 1975, a site 600 ft (180 m) upstream at same datum.

REMARKS.--Records fair. Transbasin diversion (except during floods) to Río Yauco basin for hydroelectric power and irrigation above Lago Guayo, Yahuecas, and Prieto, combined usable storage 17,300 acre-ft (21.3 cu hm). Limited storm runoff is contributed to basin by 3.5 sq mi (9.1 sq km) above Río Toro Diversion dam.

AVERAGE DISCHARGES.--16 years (1964-79), 301 cu ft/s (8.524 cu m/s), 43.35 in/yr (1,101 mm/yr), 218,100 acre-ft/yr (269 cu hm/yr); median of yearly mean discharges 294 cu ft/s (8.33 cu m/s), 213,000 acre-ft/yr (263 cu hm/yr).
--17 years (1964-80), 305 cu ft/s (8.638 cu m/s), 43.92 in/yr (1,116 mm/yr), 221,000 acre-ft/yr (271 cu hm/yr); median of yearly mean discharges 302 cu ft/s (8.55 cu m/s), 219,000 acre-ft/yr (270 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 140,000 cu ft/s (3,965 cu m/s) Sept. 16, 1975, gage height, 33.9 ft (10.33 m), from rating curve extended above 4,000 cu ft/s (113 cu m/s) on basis of slope-area measurement; minimum, 31 cu ft/s (0.878 cu m/s) Apr. 19-20, 1965, gage height, 0.88 ft (0.268 m).

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 6,000 cu ft/s (170 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
Oct. 30, 1978	2100	7,400	210	8.04	2.451
June 11, 1979	2100	14,700	416	11.24	3.426
July 19, 1979	0400	10,300	292	9.47	2.886
Aug. 31, 1979	1230	*38,700	1096	18.10	5.517
Sept. 14, 1979	1845	6,280	178	7.42	2.262
Oct. 8, 1979	1645	6,040	171	7.28	2.219
Oct. 9, 1979	1645	7,530	213	8.11	2.472
Dec. 3, 1979	2030	6,850	194	7.74	2.359
Apr. 25, 1980	2000	6,490	184	7.54	2.298
May 19, 1980	2000	7,800	221	8.25	2.515
May 27, 1980	1830	*28,600	810	15.60	4.755
Sept. 27, 1980	1730	23,100	654	14.06	4.286

Minimum discharges, 50 cu ft/s (1.416 cu m/s) Apr. 13, 1979; 61 cu ft/s (1.728 cu m/s) Apr. 1-5, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	787	700	150	116	79	67	74	233	263	270	290	4360
2	1240	458	144	114	80	68	67	105	476	233	270	1940
3	930	346	142	113	82	66	61	102	559	236	250	1060
4	1590	305	139	112	80	65	58	167	267	252	230	1010
5	985	282	136	115	79	66	56	125	219	236	203	1170
6	627	267	133	125	77	63	55	425	607	229	229	1470
7	459	255	130	154	77	61	54	421	316	339	194	807
8	600	245	129	127	75	62	52	192	219	232	200	618
9	1320	235	125	122	73	61	52	298	206	206	167	535
10	622	228	123	119	72	60	52	409	347	198	163	461
11	427	222	124	119	93	62	52	270	7800	317	173	416
12	367	217	120	122	110	64	52	655	3560	209	187	400
13	387	211	116	116	88	72	50	697	1510	319	160	776
14	420	207	117	113	77	74	53	1010	1310	301	179	1390
15	334	246	117	110	77	74	101	1710	702	254	287	711
16	423	259	126	108	83	64	60	1940	861	215	442	979
17	443	217	155	113	244	61	55	923	773	600	702	1390
18	599	198	296	109	465	62	52	665	441	2000	843	786
19	407	189	140	104	180	65	63	702	351	4770	1060	648
20	323	293	127	105	127	62	91	949	307	1630	1390	760
21	296	281	128	104	95	62	160	745	278	1160	870	611
22	278	198	127	100	85	65	120	453	259	998	485	442
23	302	184	161	98	78	61	90	617	246	895	638	432
24	402	179	128	96	75	62	83	359	277	692	1100	905
25	414	172	120	94	71	62	66	1030	545	580	1080	619
26	1010	164	120	91	72	61	75	720	530	640	665	395
27	1140	168	117	90	72	281	68	404	323	700	483	379
28	1970	159	117	90	69	198	283	986	265	540	340	406
29	1490	153	116	86	---	286	158	1060	301	430	314	776
30	2300	150	116	84	---	191	264	472	328	370	415	833
31	1490	---	116	80	---	99	---	325	---	320	15000	---
TOTAL	24382	7388	4155	3349	2935	2727	2577	19169	24446	20371	29009	27485
MEAN	787	246	134	108	105	88.0	85.9	618	815	657	936	916
MAX	2300	700	296	154	465	286	283	1940	7800	4770	15000	4360
MIN	278	150	116	80	69	60	50	102	206	198	160	379
CFSM	8.35	2.61	1.42	1.15	1.11	.93	.91	6.55	8.64	6.97	9.93	9.71
IN.	9.62	2.91	1.64	1.32	1.16	1.08	1.02	7.56	9.64	8.04	11.44	10.84
AC-FT	48360	14650	8240	6640	5820	5410	5110	38020	48490	40410	57540	54520

CAL YR 1978 TOTAL 106126 MEAN 291 MAX 2300 MIN 63 CFSM 3.09 IN 41.86 AC-FT 210500
WTR YR 1979 TOTAL 167993 MEAN 460 MAX 15000 MIN 50 CFSM 4.88 IN 66.27 AC-FT 333200

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	768	326	228	163	96	63	64	129	453	220	532	240
2	492	308	227	160	94	67	62	115	377	202	250	740
3	410	290	903	156	93	65	61	105	444	222	162	779
4	377	249	984	158	98	71	61	99	327	212	153	1070
5	789	301	495	152	171	111	65	92	293	208	152	840
6	511	517	344	147	145	235	65	84	270	187	126	329
7	679	769	301	152	130	212	64	80	268	475	121	525
8	1220	869	283	144	95	393	142	80	287	467	118	870
9	2110	491	270	136	90	150	456	109	232	436	232	365
10	983	326	432	138	96	99	726	82	437	365	278	503
11	604	287	312	136	90	80	541	74	496	239	152	767
12	700	265	262	132	89	73	464	108	409	205	154	443
13	509	252	239	131	83	67	433	190	312	185	213	861
14	634	250	232	126	81	65	268	122	294	184	166	844
15	497	285	226	125	78	62	198	101	223	276	141	598
16	420	243	217	119	75	69	154	555	205	300	677	425
17	390	917	213	114	75	75	127	723	251	240	408	341
18	402	625	213	111	74	72	105	680	425	179	320	368
19	365	519	211	110	72	77	94	1610	232	182	474	266
20	603	332	239	110	72	70	88	897	202	233	286	274
21	514	331	206	111	73	67	84	368	674	326	179	938
22	418	290	197	109	72	65	80	275	254	181	154	741
23	320	320	196	108	70	63	82	870	283	158	177	1030
24	314	421	226	105	87	65	99	1540	274	152	560	1400
25	347	306	232	103	77	65	1120	974	404	144	490	1520
26	382	279	190	143	71	64	795	409	241	135	240	796
27	299	260	182	108	70	64	570	6910	206	133	412	4970
28	439	249	180	102	67	132	372	4810	195	131	416	1850
29	348	243	176	100	64	83	194	1610	186	131	655	1950
30	292	236	174	98	---	69	160	937	278	129	343	1510
31	274	---	168	96	---	64	---	590	---	121	306	---
TOTAL	17410	11356	8958	3903	2548	2977	7794	25328	9432	6958	9047	28153
MEAN	562	379	289	126	87.9	96.0	260	817	314	224	292	938
MAX	2110	917	984	163	171	393	1120	6910	674	475	677	4970
MIN	274	236	168	96	64	62	61	74	186	121	118	240
CFSM	5.96	4.02	3.07	1.34	.93	1.02	2.76	8.66	3.33	2.38	3.10	9.95
IN.	6.87	4.48	3.53	1.54	1.01	1.17	3.07	9.99	3.72	2.74	3.57	11.11
AC-FT	34530	22520	17770	7740	5050	5900	15460	50240	18710	13800	17940	55840

CAL YR 1979 TOTAL 169792 MEAN 465 MAX 15000 MIN 50 CFSM 4.93 IN 66.98 AC-FT 336800
WTR YR 1980 TOTAL 133864 MEAN 366 MAX 6910 MIN 61 CFSM 3.88 IN 52.81 AC-FT 265500

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978											
12...	0720	360	232	7.4	24.0	5.0	8.4	1.5	6000	600	2100
NOV											
07...	1215	257	240	8.1	25.5	5.0	7.9	--	--	580	480
DEC											
14...	0715	116	191	7.6	22.0	2.0	9.2	1.5	1200	110	350
JAN , 1979											
11...	1210	118	240	8.0	24.0	1.0	10.6	--	--	100	30
FEB											
02...	1015	80	224	7.6	24.5	1.0	9.3	.5	1700	56	390
MAR											
09...	1100	60	235	7.8	24.0	1.0	9.9	--	--	54	130
APR											
06...	0720	56	256	7.6	23.0	6.0	10.0	--	520	132	120
MAY											
08...	1130	152	232	7.7	24.5	20	8.4	--	5100	2600	810
JUN											
15...	0715	568	202	7.8	24.5	50	8.6	1.0	11000	2200	1900
JUL											
10...	1010	190	237	7.7	27.0	4.0	8.9	--	--	390	140
AUG											
09...	0700	167	240	7.8	26.0	6.0	7.6	.5	2700	530	610
SEP											
19...	0650	519	200	7.2	23.0	50	8.8	--	60000	2100	5900
OCT											
11...	1030	E510	221	7.2	24.0	15	8.9	--	--	6000	9000
NOV											
09...	1050	429	167	7.6	23.5	1.0	8.4	2.2	--	12000	10000
DEC											
13...	1140	250	229	8.1	23.0	4.0	9.0	--	--	560	330
JAN , 1980											
16...	0820	125	229	8.0	21.0	.50	8.6	--	--	240	100
FEB											
06...	1210	155	231	8.0	22.0	1.5	9.3	--	--	770	500
MAR											
19...	1045	78	232	8.1	25.0	5.0	9.5	--	--	200	80
APR											
02...	1445	61	220	8.9	30.0	.80	10.2	--	--	22	13
MAY											
08...	1535	79	224	8.4	32.0	--	9.2	--	--	28	30
29...	1240	1050	190	7.6	25.0	60	8.3	--	--	3000	3200
JUL , 1980											
09...	1225	286	177	7.8	27.0	--	8.4	--	--	15000	13000
AUG											
05...	1440	153	213	8.2	27.5	19	9.0	--	--	1800	190
SEP											
05...	1205	E600	159	7.2	26.0	4.7	8.6	--	--	16000	33000

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
OCT , 1978											
12...	98	4	25	8.7	8.9	.4	1.7	115	0	94	7.3
NOV											
07...	110	3	28	9.7	9.2	.4	1.6	124	0	102	1.6
DEC											
14...	110	1	26	9.9	9.6	.4	1.4	128	0	105	5.1
JAN , 1979											
11...	110	2	29	10	10	.4	1.2	132	0	108	2.1
FEB											
02...	98	0	25	9.6	10	.4	1.3	126	0	100	5.1
MAR											
09...	100	0	26	9.6	9.9	.4	1.1	134	0	110	3.4
APR											
06...	110	3	28	10	11	.5	1.4	131	0	107	5.3
MAY											
08...	96	3	23	7.9	8.7	.4	2.1	106	0	87	3.4
JUN											
15...	--	--	--	--	--	--	1.5	100	0	82	2.5
JUL											
10...	99	0	25	8.8	9.0	.4	1.3	124	0	102	4.0
AUG											
09...	100	0	26	8.8	10	.4	1.4	130	0	107	3.3
SEP											
19...	83	3	21	7.4	8.1	.4	1.5	98	0	80	9.9
OCT											
11...	86	0	22	7.6	9.7	.5	1.6	100	7	94	12
NOV											
09...	48	3	11	5.1	15	.9	.7	56	0	46	2.3
DEC											
13...	100	0	26	9.3	11	.5	1.4	123	0	100	1.6
JAN , 1980											
16...	110	0	27	9.5	10	.4	1.4	136	0	110	2.2
FEB											
06...	100	2	25	9.2	13	.6	1.5	120	0	98	1.9
MAR											
19...	--	--	--	--	--	--	--	130	0	107	1.7
APR											
02...	98	6	24	9.3	11	.5	1.4	110	1	92	.2
MAY											
06...	--	--	--	--	--	--	--	124	2	105	--
29...	71	3	17	6.9	10	.5	1.6	84	0	69	3.5
JUL											
09...	--	--	--	--	--	--	--	90	0	74	2.3
AUG											
05...	97	3	25	8.4	9.1	.4	1.6	111	0	94	1.2
SEP											
05...	--	--	--	--	--	--	--	77	0	56	6.9

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)
OCT , 1978											
12...	10	5.9	.1	31	148	148	144	1.1	--	<.010	--
NOV											
07...	8.6	6.7	.1	31	161	154	112	1.0	--	<.010	--
DEC											
14...	9.7	6.8	.1	29	156	156	48.9	.66	--	.010	--
JAN , 1979											
11...	8.9	7.4	.1	25	155	157	49.4	.94	--	.010	--
FEB											
02...	10	7.2	.1	27	153	152	32.8	.28	--	.010	--
MAR											
09...	13	7.4	.1	27	159	160	25.8	.16	--	.020	--
APR											
06...	12	7.7	<.1	28	161	161	24.3	.31	--	.010	--
MAY											
08...	14	7.0	.1	25	144	140	59.1	1.4	--	.050	--
JUN											
15...	9.7	5.9	.1	--	229	--	351	1.2	--	.010	--
JUL											
10...	9.4	6.8	.1	28	130	150	66.7	.42	--	.010	--
AUG											
09...	11	6.6	.1	30	150	158	67.6	.57	--	.010	--
SEP											
19...	6.0	5.8	.1	28	131	132	184	1.1	--	.010	--
OCT											
11...	8.5	6.0	.1	30	143	148	197	1.2	1.3	.000	.000
NOV											
09...	10	11	.1	26	109	108	126	.27	.30	.000	--
DEC											
13...	10	6.7	.1	30	157	159	106	.82	.77	.010	.010
JAN , 1980											
16...	11	6.9	.1	29	170	164	57.4	.61	.55	.000	.000
FEB											
06...	11	8.6	.1	27	151	157	63.2	.54	.53	.010	.010
MAR											
19...	11	6.9	.1	30	172	--	--	.28	.31	.040	.010
APR											
02...	9.9	7.4	.1	29	157	148	25.9	.10	.10	.000	.000
MAY											
08...	--	--	--	--	--	--	--	--	--	--	--
29...	9.4	9.5	.1	24	143	124	405	1.5	.63	.070	--
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
AUG											
05...	8.0	6.7	.0	32	146	151	60.3	.84	.84	.030	.030
SEP											
05...	--	--	--	--	--	--	--	1.4	1.4	.060	.000

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN DIS-SOLVED (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)
OCT , 1978											
12...	.14	--	.14	--	1.2	--	5.5	.040	.030	--	--
NOV											
07...	.04	--	.04	.04	1.0	--	4.6	.040	.040	--	<1
DEC											
14...	.03	--	.04	.04	.70	--	3.1	.040	.030	1	1
JAN , 1979											
11...	.00	--	.01	.01	.94	--	4.2	.030	.020	--	--
FEB											
02...	.22	--	.23	.19	.51	--	2.3	.030	.030	--	--
MAR											
09...	.26	--	.30	.30	.46	--	2.0	.020	.020	1	1
APR											
06...	.21	--	.22	.12	.53	--	2.3	.020	.020	--	--
MAY											
08...	.54	--	.59	.42	2.0	--	8.8	.080	.040	--	--
JUN											
15...	.18	--	.19	.14	1.4	--	6.2	.070	.020	--	--
JUL											
10...	.32	--	.33	.33	.75	--	3.3	.020	.010	<1	<1
AUG											
09...	.11	--	.12	.01	.69	--	3.1	.030	.020	--	--
SEP											
19...	.57	--	.58	.42	1.7	--	7.4	.050	.030	1	<1
OCT											
11...	.22	.18	.22	.18	1.4	1.5	6.3	.050	.030	--	--
NOV											
09...	.29	--	.29	.20	.56	.50	2.5	.630	.000	--	--
DEC											
13...	--	--	.10	.10	.92	--	4.1	.040	.020	0	0
JAN , 1980											
16...	.48	.48	.48	.48	1.1	1.1	4.8	.040	.040	1	0
FEB											
06...	.16	.08	.17	.09	.71	.62	3.1	.040	.030	--	--
MAR											
19...	.15	.11	.15	.12	.47	.43	2.1	.030	.030	--	--
APR											
02...	.18	.14	.18	.14	.28	.25	1.2	.030	.020	1	1
MAY											
08...	--	--	--	--	--	--	--	--	--	--	--
29...	.28	--	.35	.27	1.9	.90	8.2	.090	.030	--	--
JUL											
09...	--	--	--	--	--	--	--	--	--		
AUG											
05...	.49	.50		.53	1.4	1.4	4.0	.060	.040		
SEP											
05...	.15	.16	.21	.16	1.6	1.6	7.1	.140	.030		

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
OCT , 1978											
12...	--	--	--	--	--	--	--	--	--	--	--
NOV											
07...	--	<100	--	<2	--	--	--	<2	--	<2	--
DEC											
14...	<100	<100	2	--	<20	ND	ND	ND	ND	ND	230
JAN , 1979											
11...	--	--	--	--	--	--	--	--	--	--	--
FEB											
02...	--	--	--	--	--	--	--	--	--	--	--
MAR											
09...	200	200	ND	--	<20	ND	<2	<2	2	--	270
APR											
06...	--	--	--	--	--	--	--	--	--	--	--
MAY											
08...	--	--	--	--	--	--	--	--	--	--	--
JUN											
15...	--	--	--	--	--	--	--	--	--	<2	--
JUL											
10...	<100	<100	<20	ND	20	<20	<2	ND	4	2	510
AUG											
09...	--	--	--	--	--	--	--	--	--	--	--
SEP											
19...	<100	1	ND	<2	<20	<20	3	<2	<20	ND	4900
OCT											
11...	--	--	--	--	--	--	--	--	--	--	--
NOV											
09...	--	--	--	--	--	--	--	--	--	--	--
DEC											
13...	50	50	1	1	20	10	3	0	3	3	360
JAN , 1980											
16...	50	50	5	5	10	<10	3	3	2	2	220
FEB											
06...	--	--	--	--	--	--	--	--	--	--	--
MAR											
19...	--	--	--	--	--	--	--	--	--	--	--
APR											
02...	50	40	0	0	20	10	0	0	2	2	230
MAY											
08...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)
OCT , 1978										
12...	--	--	--	--	--	--	--	--	--	--
NOV										
07...	<10	--	10	--	30	--	<.5	--	--	--
DEC										
14...	50		--	50	30	<.5	<.5	--	--	<1
JAN , 1979										
11...	--	--	--	--	--	--	--	--	--	--
FEB										
02...	--	--	--	--	--	--	--	--	--	--
MAR										
09...	30	2	--	30	30	<.5	<.5	--	--	<1
APR										
06...	--	--	--	--	--	--	--	--	--	--
MAY										
08...	--	--	--	--	--	--	--	--	--	--
JUN										
15...	--	--	9	--	--	--	--	--	--	--
JUL										
10...	<10	2	2	60	30	<.5	<.5	--	--	<1
AUG										
09...	--	--	--	--	--	--	--	--	--	--
SEP										
19...	<10	3	3	130	2	<.5	<.5	--	--	<1
OCT										
11...	--	--	--	--	--	--	--	--	--	--
NOV										
09...	--	--	--	--	--	--	--	--	--	--
DEC										
13...	20	3	3	30	20	.1	.1	2	2	0
JAN , 1980										
16...	10	1	0	50	30	.2	.2	0	0	0
FEB										
06...	--	--	--	--	--	--	--	--	--	--
MAR										
19...	--	--	--	--	--	--	--	--	--	--
APR										
02...	20	4	0	30	20	.1	.1	2	0	0
MAY										
08...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--

ND Looked for but not detected.

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978										
12...	--	--	--	--	--	3.2	--	--	17	17
NOV										
07...	<1	--	--	--	<20	--	3.8	--	7	4.9
DEC										
14...	<1	ND	ND	ND	ND	--	3.2	--	6	1.9
JAN , 1979										
11...	--	--	--	--	--	1.8	--	.2	4	1.3
FEB										
02...	--	--	--	--	--	--	--	--	3	.64
MAR										
09...	<1	ND	ND	<20	<20	--	3.2	--	3	.49
APR										
06...	--	--	--	--	--	--	4.4	.2	23	3.5
MAY										
08...	--	--	--	--	--	--	--	--	89	37
JUN										
15...	<1	--	ND	--	--	3.0	--	1.0	156	239
JUL										
10...	<1	ND	ND	55	5	6.1	1.6	--	19	5.7
AUG										
09...	--	--	--	--	--	2.8	--	--	14	6.3
SEP										
19...	<1	ND	ND	220	ND	--	2.8	--	126	177
OCT										
11...	--	--	--	--	--	--	--	--	51	70
NOV										
09...	--	--	--	--	--	3.3	--	--	384	445
DEC										
13...	0	0	0	10	10	1.6	--	--	11	7.4
JAN , 1980										
16...	0	0	0	20	20	--	4.6	1.0	4	1.3
FEB										
06...	--	--	--	--	--	3.4	--	--	16	6.7
MAR										
19...	--	--	--	--	--	.6	--	--	14	2.9
APR										
02...	0	0	0	10	2	--	3.3	.4	3	.50
MAY										
08...	--	--	--	--	--	--	--	--	8	1.7
29...	--	0	--	--	--	2.5	--	--	709	2010
JUL										
09...		--				--			298	230
AUG										
05...		--				1.9			74	31
SEP										
05...		0				11			606	--

ND Looked for but not detected.

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL (UG/L)
DEC										
14...	0715	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
09...	1100	ND	--	ND	--	ND	--	ND	--	ND
12...	1100	ND	--	ND	--	ND	--	ND	--	ND
APR										
06...	0720	.00	--	.00	--	.0	--	.00	--	.00
JUN										
15...	0715	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
09...	0700	ND	--	ND	--	ND	--	ND	--	ND

DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOTTOM MATERIAL (UG/KG)
DEC										
14...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
09...	--	ND	--	ND	ND	--	ND	--	ND	--
12...	--	ND	--	ND	ND	--	ND	--	ND	--
APR										
06...	--	.00	--	.00	.32	--	.00	--	.00	--
JUN										
15...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
09...	--	ND	--	ND	ND	--	ND	--	ND	--

DATE	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	MALATHION, TOTAL (UG/L)	MALATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	METHOXYCHLOR, TOTAL (UG/L)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARATHION, TOTAL (UG/L)
DEC									
14...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR									
09...	--	ND	--	--	ND	--	ND	--	ND
12...	--	ND	--	--	ND	--	ND	--	ND
APR									
06...	--	.00	--	--	.00	--	.00	--	.00
JUN									
15...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG									
09...	--	ND	--	--	ND	--	ND	--	ND

DATE	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRITHION, TOTAL (UG/L)	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG)	PARATHION, TOTAL (UG/L)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL (UG/L)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG)
DEC									
14...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR									
09...	--	ND	--	ND	--	ND	--	ND	--
12...	--	ND	--	ND	--	ND	--	ND	--
APR									
06...	--	.00	--	.00	--	0	--	.00	--
JUN									
15...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG									
09...	--	ND	--	ND	--	ND	--	ND	--

ND Looked for but not detected.

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	OCT 12,78	NOV 7,78	JAN 11,79	FEB 2,79	APR 6,79	MAY 8,79
TIME	0720	1215	1210	1015	0720	1130
TOTAL CELLS/ML	460	1100	230	27	29	42
DIVERSITY: DIVISION	0.8	0.2	0.7	0.7	0.0	0.9
.CLASS	0.8	0.2	0.7	0.7	0.0	0.9
..ORDER	0.8	0.2	0.7	0.7	0.0	0.9
...FAMILY	0.8	0.2	1.4	0.7	0.0	1.6
....GENUS	0.8	0.2	1.4	0.7	0.0	1.6

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	38	8	--	-	--	-	--	-	--	-	14#	33
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
..TETRASPORALES												
...COCCOMYXACEAE												
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	--	-	45#	20	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	14	1	140#	60	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	29#	100	--	-
...NAVICULACEAE												
....NAVICULA	38	8	--	-	45#	20	5#	20	--	-	14#	33
...NITZSCHIACEAE												
....DENTICULA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	--	-	14	1	--	-	--	-	--	-	14#	33
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	380#	83	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	1100#	98	--	-	22#	80	--	-	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	JUN 15,79	JUL 10,79	AUG 9,79	SEP 19,79	OCT 11,79	NOV 9,79
TIME	0715	1010	0700	0650	1030	1050
TOTAL CELLS/ML	13	270	52	82	15	0
DIVERSITY: DIVISION	0.0	0.7	0.8	0.9	0.9	0.0
.CLASS	0.0	0.7	0.8	0.9	0.9	0.0
..ORDER	0.0	0.7	0.8	0.9	0.9	0.0
...FAMILY	0.0	2.3	1.5	0.9	1.6	0.0
....GENUS	0.0	2.3	1.5	0.9	1.6	0.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	5#	33	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
..TETRASPORALES												
...COCCOMYXACEAE												
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	13#	100	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	55#	67	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	14	5	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	14	5	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	72#	26	13#	25	--	-	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	29	11	--	-	--	-	5#	33	--	-
...NITZSCHIACEAE												
....DENTICULA	--	-	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	--	-	86#	32	26#	50	--	-	5#	33	--	-
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	13#	25	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	57#	21	--	-	27#	33	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	DEC 13,79	JAN 16,80	FEB 6,80	MAR 19,80	APR 2,80
TIME	1140	0820	1210	1045	1445
TOTAL CELLS/ML	100	290	350	2700	510
DIVERSITY: DIVISION	0.0	0.3	1.4	0.3	0.5
.CLASS	0.0	0.3	1.4	0.3	0.5
..ORDER	0.0	0.7	1.7	0.3	0.6
...FAMILY	1.4	2.5	2.6	0.3	0.7
....GENUS	1.4	2.5	2.6	0.3	1.5

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	10	3	14	1	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	14	5	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	5	1	--	-	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	10	3	41	2	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	27	10	15	4	--	-	14	3
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	120#	43	110#	32	--	-	14	3
...CYMBELLACEAE										
....CYMBELLA	--	-	14	5	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	10	3	--	-	14	3
...GOMPHONEMATACEAE										
....GOMPHONEMA	43#	43	55#	19	5	1	--	-	14	3
...NAVICULACEAE										
....NAVICULA	43#	43	27	10	35	10	14	1	--	-
...NITZSCHIACEAE										
....DENTICULA	--	-	--	-	--	-	--	-	--	-
....NITZSCHIA	14	14	14	5	15	4	14	1	--	-
...SURIRELLACEAE										
....SURIRELLA	--	-	14	5	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	140#	27
....OSCILLATORIA	--	-	--	-	--	-	2600#	96	320#	62
....SCHIZOTHRIX	--	-	--	-	120#	35	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	5	1	14	1	--	-
....TRACHELOMONAS	--	-	--	-	5	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50144000 RIO GRANDE DE AÑASCO NEAR SAN SEBASTIAN, PR--Continued

PHYTOPLANKTON ANALYSES, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	MAY 8,80	MAY 29,80	JUL 9,80	AUG 5,80	SEP 5,80
TIME	1535	1240	1225	1440	1205
TOTAL CELLS/ML	86	510	960	240	110
DIVERSITY: DIVISION	1.0	0.8	1.0	0.5	0.5
.CLASS	1.0	0.8	1.0	0.5	0.5
..ORDER	1.5	1.0	1.6	0.5	1.4
...FAMILY	1.5	1.7	1.8	0.5	1.8
....GENUS	1.5	1.8	1.8	0.5	1.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	14	3	--	-	--	-	14	13
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	410#	43	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	43#	50	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	14	3	270#	29	--	-	43#	38
....MELOSIRA	29#	33	14	3	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	14	3	140	14	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	29	12	--	-
...NAVICULACEAE										
....NAVICULA	--	-	14	3	140	14	--	-	43#	38
...NITZSCHIACEAE										
....DENTICULA	--	-	14	3	--	-	--	-	--	-
....NITZSCHIA	14#	17	14	3	--	-	--	-	14	13
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	330#	65	--	-	220#	88	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	82#	16	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50146000 RIO GRANDE DE AÑASCO NEAR AÑASCO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°16'00", long 67°08'05", at bridge on Highway 430, 0.2 mi (0.3 km) south of Highway 430, 0.2 mi (0.3 km) south of Highway 109 at a El Espino and 1.4 mi (2.3 km) east-southeast from Añasco.

DRAINAGE AREA.--139 sq mi (360 sq km) this does not include 39.7 sq mi (102.8 sq km), flow is diverted to south coast.

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
16...	1235	E490	225	7.7	26.0	15	5.0	8	1.3	290	220	--
JAN , 1980												
17...	0850	160	27	7.6	21.0	4.5	8.2	66	4.2	170	400	100
MAR												
27...	0845	83	24	8.1	27.0	.25	7.6	2	--	70	140	--
MAY												
09...	0855	173	235	7.8	28.0	150	7.0	12	--	1300	2800	--
JUL												
17...	0825	E275	155	7.4	25.0	--	8.4	--	2.0	28000	32000	--
SEP												
11...	1225	E650	157	7.4	27.0	5.4	8.0	6	2.8	15000	5000	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
16...	--	--	--	--	--	--	118	0	97	3.8	--	--
JAN , 1980												
17...	0	26	9.2	9.7	.4	1.4	133	0	110	5.3	5.8	7.4
MAR												
27...	--	--	--	--	--	--	130	0	110	1.7	--	--
MAY												
09...	--	--	--	--	--	--	130	0	110	3.3	--	--
JUL												
17...	--	--	--	--	--	--	76	0	62	4.8	--	--
SEP												
11...	--	--	--	--	--	--	80	0	66	5.1	--	--

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
16...	--	--	--	--	32	.79	.010	.80	.010	.22	.23	1.0
JAN , 1980												
17...	.1	27	156	67.4	163	.54	.010	.55	.100	.39	.49	1.0
MAR												
27...	--	--	--	--	--	.05	.000	.05	.030	.08	.11	.16
MAY												
09...	--	--	--	--	435	.08	.010	.09	.030	.64	.67	.76
JUL												
17...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
11...	--	--	--	--	330	.86	.030	.89	.060	.09	.15	1.0

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
16...	4.6	.050	--	--	--	--	--	--	--	--	52	--
JAN , 1980												
17...	4.6	.040	--	--	--	--	--	--	--	--	177	76
MAR												
27...	.71	.040	1	50	0	4	0	<.1	0	0	42	9.4
MAY												
09...	3.4	.060	--	--	--	--	--	--	--	--	514	240
JUL												
17...	--	--	--	--	--	--	--	--	--	--	536	--
SEP												
11...	4.6	.020	1	100	1	26	5	<.1	0	0	433	760

E Estimated.

50146100 RIO GRANDE DE AÑASCO NEAR AÑASCO, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°16'29", long 67°09'43", on Highway 2 bridge at Central Igualdad, and 1.5 mi (2.4 km) southwest of Añasco Plaza.

DRAINAGE AREA.--141 sq mi (365 sq km) this does not include 39.7 sq mi (102.8 sq km), flow mostly is diverted to the south coast.

PERIOD OF RECORD.--Water years 1958-60, 1974 to August 1979 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
12...	1140	499	242	7.3	26.0	7.3	2.0	46000	13000	2500	97
DEC											
14...	1130	143	250	7.7	23.5	8.2	1.8	1300	230	190	110
FEB , 1979											
13...	1150	104	242	7.3	25.0	7.6	1.7	60000	4000	400	100
APR											
06...	1100	74	292	7.3	26.0	6.8	1.4	90000	19000	800	110
JUN											
15...	1140	E710	214	7.4	26.0	7.0	1.0	21000	1500	1800	85
AUG											
09...	1200	181	255	7.6	27.5	6.5	3.8	2600	600	360	100

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
12...	1	24	8.9	9.2	.4	1.9	117	0	96	9.4	9.0
DEC											
14...	1	26	10	12	.5	1.6	133	0	109	4.2	9.4
FEB , 1979											
13...	0	25	10	12	.5	1.5	130	0	107	10	11
APR											
06...	0	27	11	15	.6	1.8	140	0	115	11	12
JUN											
15...	3	21	8.0	7.8	.4	1.7	100	0	82	6.4	9.4
AUG											
09...	0	26	9.0	9.7	.4	1.7	130	0	107	5.2	10

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
12...	7.3	.1	30	148	148	199	.90	.020	.92	.030
DEC										
14...	12	.1	29	169	166	65.3	.58	.010	.59	.080
FEB , 1979										
13...	13	.1	26	165	163	46.3	.35	.010	.36	.060
APR										
06...	15	.1	28	183	179	36.3	.87	.030	.90	.220
JUN										
15...	6.8	.1	25	233	129	447	1.1	.020	1.1	.040
AUG										
09...	9.8	.1	29	--	159	77.7	.52	.010	.53	.220

E Estimated.

50146100 RIO GRANDE DE AÑASCO NEAR AÑASCO, PR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
OCT , 1978										
12...	.19	.22	1.1	5.0	.080	.030	--	--	--	--
DEC										
14...	.17	.25	.84	3.7	.080	.050	1	<2	<20	2
FEB , 1979										
13...	.09	.15	.51	2.3	.060	.040	--	--	--	--
APR										
06...	.10	.32	1.2	5.4	.140	.120	--	--	--	--
JUN										
15...	.46	.50	1.6	7.1	.090	.030	--	--	--	--
AUG										
09...	.32	.54	1.1	4.7	.060	.010	1	ND	<20	5

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
12...	--	--	--	--	--	--	--	--	77	104
DEC										
14...	530	5	90	<.5	<1	ND	30	--	6	2.3
FEB , 1979										
13...	--	--	110	--	--	--	--	5.6	50	14
APR										
06...	--	--	140	--	--	--	--	3.8	49	5.7
JUN										
15...	--	--	--	--	--	--	--	9.7	272	521
AUG										
09...	840	4	120	<.5	<1	ND	20	2.8	50	24

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)
DEC							
14...	1130	0	.0	0	.0	.0	.0
JUN							
15...	1140	18	.0	45	2.0	4.3	.1

DATE	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)
DEC						
14...	.0	.0	.0	.0	.0	0
JUN						
15...	.7	.0	.0	.0	18	0

ND Looked for but not detected.

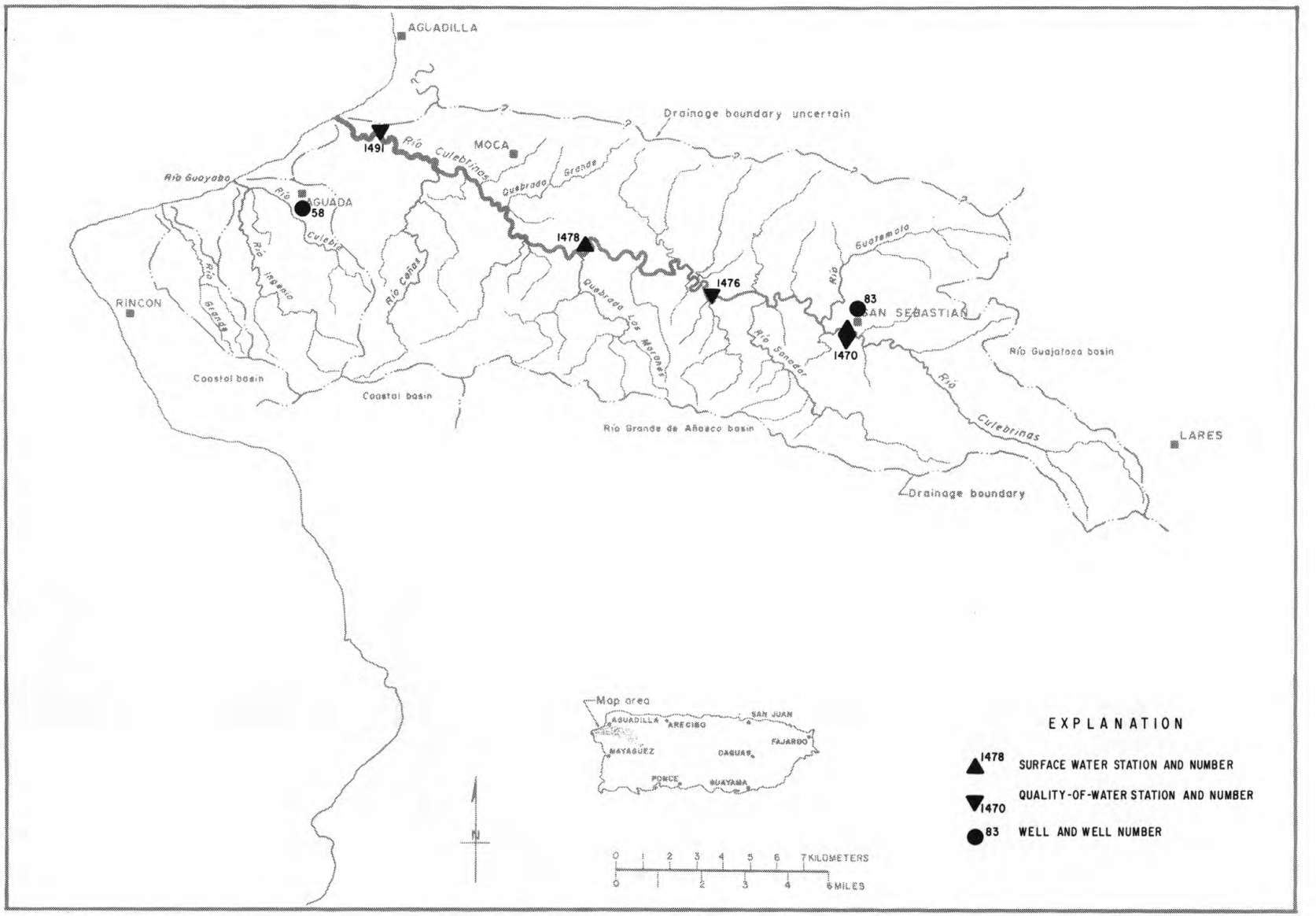

Figure 18.--Río Culebrinas basin.

50147000 RIO CULEBRINAS AT SAN SEBASTIAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'08", long 66°59'46", at bridge on Highway 109, 0.4 mi (0.6 km) southwest of San Sebastián, and 0.9 mi (1.4 km).

DRAINAGE AREA.--16.6 sq mi (43.0 sq km).

PERIOD OF RECORD.--Water years 1960-71, 1973 to January 1980 (discontinued).

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978											
12...	1510	61	300	7.8	28.0	8.0	2.6	310000	81000	32000	120
DEC											
15...	0645	14	227	7.5	21.0	8.0	2.8	43000	8100	3300	99
FEB , 1979											
13...	0715	9.4	220	7.2	22.0	6.7	7.9	100000	4700	6300	98
APR											
17...	1430	3.3	375	7.4	28.5	3.8	30	5600000	2400000	360000	120
JUN											
22...	0700	57	314	7.7	24.0	8.3	.3	28000	7600	6000	140
AUG											
15...	1515	18	266	8.1	27.0	7.9	2.0	90000	31000	3600	110
JAN , 1980											
16...	1450	12	--	--	23.5	--	--	--	--	--	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACL3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978											
12...	6	39	6.0	11	.4	2.2	142	0	116	3.6	13
DEC											
15...	0	30	5.9	12	.5	2.0	128	0	105	6.5	5.4
FEB , 1979											
13...	0	30	5.6	12	.5	2.3	120	0	98	12	6.9
APR											
17...	0	37	6.7	25	1.0	4.7	183	0	150	12	10
JUN											
22...	6	45	6.1	12	.4	1.7	160	0	131	5.1	15
AUG											
15...	0	33	5.6	12	.5	2.0	130	0	107	1.7	14
JAN , 1980											
16...	--	--	--	--	--	--	--	--	--	--	--

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1978										
12...	9.3	.1	35	189	186	31.1	1.4	.010	1.4	.120
DEC										
15...	9.7	.1	44	180	172	6.8	1.2	.020	1.2	.060
FEB , 1979										
13...	11	.2	37	177	164	4.5	.90	.060	.96	.120
APR										
17...	21	.3	37	235	232	2.1	.00	.030	.03	4.30
JUN										
22...	10	.1	31	213	200	32.8	1.1	.010	1.1	.030
AUG										
15...	10	.1	32	--	173	8.6	.97	.030	1.0	.130
JAN , 1980										
16...	--	--	--	--	--	--	--	--	--	--

50147000 RIO CULEBRINAS AT SAN SEBASTIAN, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
OCT , 1978										
12...	.28	.40	1.8	8.0	.120	.090	--	--	--	--
DEC										
15...	.08	.14	1.3	5.9	.090	.080	2	ND	<20	ND
FEB , 1979										
13...	.39	.51	1.5	6.5	.190	.140	--	--	--	--
APR										
17...	3.5	7.80	.03	35	1.60	1.30	--	--	--	--
JUN										
22...	.25	.28	1.4	6.1	.050	--	--	--	--	--
AUG										
15...	.17	.30	1.3	5.8	.100	.050	2	ND	20	4
JAN , 1980										
16...	--	--	--	--	--	--	--	--	--	--

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978										
12...	--	--	--	--	--	--	--	--	6	.99
DEC										
15...	170	4	30	<.5	<1	ND	20	--	0	.00
FEB , 1979										
13...	--	--	110	--	--	--	--	8.0	52	1.3
APR										
17...	--	--	30	--	--	--	--	20	49	.43
JUN										
22...	--	--	--	--	--	--	--	4.6	24	3.7
AUG										
15...	480	<2	60	<.5	<1	ND	<20	5.2	14	.70
JAN , 1980										
16...	--	--	--	--	--	--	--	--	3	.10

ND Looked for but not detected.

50147600 RIO CULEBRINAS NEAR SAN SEBASTIAN, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°20'51", long 67°02'40", at bridge on Highway 423, 1.3 mi (2.1 km) south of Quebrada El Salto Bridge on Highway 111, and 2.1 mi (3.4 km) west of Central La Plata.

DRAINAGE AREA.--58.2 sq mi (150.7 sq km).

PERIOD OF RECORD.--November 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1979												
29...	0730	106	268	7.9	21.0	2.0	8.3	50	1.6	9000	2500	--
JAN , 1980												
29...	1035	28	230	7.6	23.0	3.5	7.6	9	5.3	3800000	<10	94
MAR												
20...	0955	19	318	7.6	24.0	.20	7.2	13	3.8	1700	250	--
MAY												
01...	1030	58	319	7.9	26.0	8.9	6.6	8	3.2	>10000	>10000	--
JUL												
18...	1255	60	279	7.9	27.5	18	8.5	12	2.2	5800	1500	--
SEP												
17...	1100	117	268	8.0	26.5	1.6	8.2	26	2.1	4100	550	110

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1979												
29...	--	--	--	--	--	--	144	0	120	2.9	--	--
JAN , 1980												
29...	0	30	4.7	15	.7	2.1	130	0	110	5.2	7.4	11
MAR												
20...	--	--	--	--	--	--	160	0	130	6.4	--	--
MAY												
01...	--	--	--	--	--	--	170	0	140	3.4	--	--
JUL												
18...	--	--	--	--	--	--	136	0	110	2.7	--	--
SEP												
17...	750	38	4.6	9.9	.4	2.0	143	0	117	2.3	10	9.1

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
NOV , 1979												
29...	--	--	--	--	--	1.6	.050	1.6	.020	.22	.24	1.8
JAN , 1980												
29...	.1	36	170	12.9	5	.37	.020	.39	.070	.59	.66	1.1
MAR												
20...	--	--	--	--	--	.47	.040	.51	.230	.54	.77	1.3
MAY												
01...	--	--	--	--	12	.37	.010	.38	.110	.26	.37	.75
JUL												
18...	--	--	--	--	--	1.1	.030	1.1	.070	.17	.24	1.3
SEP												
17...	.0	32	478	151	3	1.2	.030	1.2	.020	.22	.24	1.4

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1979												
29...	8.1	.080	--	--	--	--	--	--	--	--	84	24
JAN , 1980												
29...	4.6	.080	--	--	--	--	--	--	--	--	8	.60
MAR												
20...	5.7	.400	2	<50	1	5	0	.1	0	0	8	.40
MAY												
01...	3.3	.070	--	--	--	--	--	--	--	--	25	3.9
JUL												
18...	5.9	.070	--	--	--	--	--	--	--	--	53	8.6
SEP												
17...	6.4	.040	1	100	0	1	1	.1	0	0	41	13

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR

LOCATION.--Lat 18°21'42", long 67°05'33", Hydrologic Unit 21010003, on right bank, at bridge on Highway 404, 0.3 mi (0.5 km) downstream from Quebrada Yagruma, and 2.8 mi (4.5 km) southeast of Moca.

DRAINAGE AREA.--71.2 sq mi (184.4 sq km).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 45 ft (13.7 m), from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGES.--12 years (1968-79), 289 cu ft/s (8.184 cu m/s), 55.12 in/yr (1,400 mm/yr), 209,400 acre-ft/yr (258 cu hm/yr); median of yearly mean discharges, 282 cu ft/s (7.99 cu m/s), 204,000 acre-ft/yr (252 cu hm/yr).
--13 years (1968-80), 295 cu ft/s (8.354 cu m/s), 56.27 in/yr (1,429 mm/yr), 213,700 acre-ft/yr (263 cu hm/yr); median of yearly mean discharges, 285 cu ft/s (8.071 cu m/s), 206,000 acre-ft/yr (254 cu hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,000 cu ft/s (1,954 cu m/s) Sept. 16, 1975, gage height, 36.6 ft (11.16 m) from slope-area measurement, but may have been exceeded by flood of Oct. 23, 1974, from rating curve extended above 2,600 cu ft/s (73.6 cu m/s) on basis of slope-area and contracted-opening measurements of peak flow; minimum, 16 cu ft/s (0.453 cu m/s) Apr. 17-19, 1979.

EXTREMES FOR WATER YEARS 1979-80.--Peak discharges above base of 11,300 cu ft/s (320 cu m/s) and maximums (*):

Date	Time	Discharge (cu ft/s)	Discharge (cu m/s)	Gage height (ft)	Gage height (m)
June 15, 1979	1815	12,900	365	23.21	7.074
Aug. 17, 1979	2030	*15,100	428	24.13	7.355
Aug. 20, 1979	1830	12,900	365	23.19	7.068
Oct. 7, 1979	1900	13,400	379	23.42	7.138
Oct. 9, 1979	1800	12,000	340	22.76	6.937
May 19, 1980	2230	24,300	688	27.34	8.333
May 23, 1980	1715	17,600	498	25.11	7.654
May 27, 1980	1915	*31,400	889	29.31	8.934
May 29, 1980	2045	11,700	331	22.65	6.904
June 12, 1980	2000	12,200	346	22.88	6.974
Sept. 30, 1980	2145	14,100	399	23.72	7.230

Minimum discharges, 16 cu ft/s (0.453 cu m/s) Apr. 17-19, 1979; 28 cu ft/s (0.793 cu m/s) Apr. 3-5, 1980.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	170	81	58	39	31	26	109	610	290	300	1490
2	608	156	79	56	38	30	22	68	360	230	275	1880
3	671	158	78	55	40	29	23	169	920	230	145	753
4	1690	131	76	55	37	28	23	307	350	250	128	541
5	2090	127	75	55	36	28	23	106	280	235	681	823
6	1840	123	74	62	36	28	23	64	250	230	508	668
7	598	122	73	76	36	27	22	58	630	355	193	472
8	457	116	72	64	35	26	21	55	410	230	153	406
9	373	113	73	59	34	27	20	125	300	200	142	364
10	279	112	70	56	33	26	22	313	430	195	133	333
11	267	107	70	56	35	25	22	595	2000	330	128	308
12	222	105	72	55	48	26	20	1100	640	205	130	304
13	204	104	67	53	40	32	21	610	390	335	120	1290
14	192	101	65	53	35	45	20	490	820	315	132	640
15	219	99	66	52	42	45	20	410	3600	255	132	415
16	995	98	67	50	41	36	19	1500	870	210	638	619
17	2800	123	117	54	43	30	19	520	2020	680	3220	640
18	322	104	111	52	49	29	19	429	880	2650	537	1590
19	176	96	72	49	41	29	19	300	370	7200	954	679
20	166	102	68	50	61	27	32	460	320	2100	2830	802
21	157	96	71	47	41	29	93	420	280	1450	2190	457
22	151	90	74	46	36	28	54	350	260	1210	628	374
23	151	90	99	46	34	28	41	350	250	1070	716	332
24	153	91	71	44	32	29	43	220	280	1800	2460	423
25	144	88	67	43	32	29	32	1400	600	660	1320	339
26	147	86	67	42	32	28	29	830	590	730	760	378
27	157	86	65	42	32	30	30	2600	335	810	530	314
28	156	84	60	40	32	29	164	1500	270	600	355	257
29	255	81	60	39	---	35	385	1200	310	470	325	378
30	570	79	61	39	---	43	249	1700	340	390	373	1450
31	358	---	59	39	---	31	---	470	---	335	4640	---
TOTAL	17918	3238	2280	1587	1070	943	1556	18828	19965	26250	25776	19719
MEAN	578	108	73.5	51.2	38.2	30.4	51.9	607	666	847	831	657
MAX	2800	170	117	76	61	45	385	2600	3600	7200	4640	1880
MIN	144	79	59	39	32	25	19	55	250	195	120	257
CFSM	8.12	1.52	1.03	.72	.54	.43	.73	8.53	9.35	11.9	11.7	9.23
IN.	9.36	1.69	1.19	.83	.56	.49	.81	9.84	10.43	13.71	13.47	10.30
AC-FT	35540	6420	4520	3150	2120	1870	3090	37350	39600	52070	51130	39110

CAL YR 1978	TOTAL	135109	MEAN 370	MAX 6700	MIN 37	CFSM 5.20	IN 70.59	AC-FT	268000	
WTR YR 1979	TOTAL	139130	MEAN 381	MAX 7200	MIN 19	CFSM 5.35	IN 72.69	AC-FT	276000	

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1870	220	137	88	51	41	30	90	522	183	1100	337
2	742	205	132	95	50	40	29	83	435	178	356	200
3	473	183	127	87	50	38	30	76	563	165	195	179
4	335	260	173	85	52	40	28	70	418	153	392	412
5	616	276	601	85	103	47	28	70	296	197	417	278
6	607	771	245	82	74	106	29	65	357	365	170	187
7	2820	1890	156	81	65	74	29	60	244	209	147	2340
8	1010	673	137	80	55	49	52	58	205	195	136	873
9	3280	442	132	78	53	42	144	56	207	190	138	366
10	1020	275	143	77	56	43	161	56	227	164	150	856
11	651	215	127	75	55	39	1470	74	682	198	122	461
12	3700	202	120	74	50	41	263	385	2590	147	119	377
13	751	192	116	75	51	38	92	224	665	137	142	306
14	1160	185	112	73	48	38	113	177	371	245	117	266
15	944	203	111	71	47	37	109	172	285	241	112	265
16	1360	169	110	71	46	33	416	351	247	559	114	226
17	526	551	108	68	46	35	203	238	358	210	110	188
18	381	277	108	64	45	35	90	448	765	163	123	175
19	327	183	104	63	44	34	75	4800	357	193	181	160
20	300	241	105	63	42	31	65	3500	239	146	222	159
21	482	226	103	60	42	32	64	685	224	444	148	174
22	315	429	101	60	42	31	55	352	259	259	113	357
23	257	283	100	59	42	32	52	3930	209	192	527	1050
24	300	305	112	57	44	33	54	2400	182	150	252	1200
25	250	201	111	57	41	33	391	719	1200	137	144	622
26	301	175	97	59	41	33	694	329	406	129	123	458
27	326	162	95	53	40	32	347	10600	243	157	115	538
28	241	156	92	52	39	44	240	3720	213	131	120	669
29	213	146	91	51	40	36	133	2750	196	118	465	444
30	423	148	91	50	---	33	103	1120	190	115	1620	2410
31	320	---	90	51	---	29	---	667	---	109	734	---
TOTAL	26301	9844	4187	2144	1454	1249	5589	38325	13355	6179	8924	16533
MEAN	848	328	135	69.2	50.1	40.3	186	1236	445	199	288	551
MAX	3700	1890	601	95	103	106	1470	10600	2590	559	1620	2410
MIN	213	146	90	50	39	29	28	56	182	109	110	159
CFSM	11.9	4.61	1.90	.97	.70	.57	2.61	17.4	6.25	2.80	4.05	7.74
IN.	13.74	5.14	2.19	1.12	.76	.65	2.92	20.02	6.98	3.23	4.66	8.64
AC-FT	52170	19530	8300	4250	2880	2480	11090	76020	26490	12260	17700	32790

CAL YR 1979 TOTAL 156026 MEAN 427 MAX 7200 MIN 19 CFSM 6.00 IN 81.52 AC-FT 309500
WTR YR 1980 TOTAL 134084 MEAN 366 MAX 10600 MIN 28 CFSM 5.14 IN 70.05 AC-FT 266000

50147800 RIO CULEBRINAS AT HIGHWAY 404 NEAR MOCA, PR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to September 1979 (discontinued).

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
DEC , 1978										
12...	1450	68	240	7.8	24.0	9.6	100	--	32	5.1
SEP , 1979										
19...	1230	564	246	7.3	25.5	7.7	110	8	36	4.1

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
DEC , 1978										
12...	12	.5	1.9	--	--	--	--	6.3	9.2	.1
SEP , 1979										
19...	8.2	.3	2.0	120	0	98	9.6	9.2	7.5	.1

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
DEC , 1978										
12...	36	--	--	ND	<20	<2	370	2	40	<20
SEP , 1979										
19...	21	147	224	--	--	--	--	--	--	--

ND Looked for but not detected.

RIO CULEBRINAS BASIN

50149100 RIO CULEBRINAS NEAR AGUADA, PR

WATER-QUALITY RECORDS

LOCATION.--Lat 18°24'03", long 67°09'40", at bridge on Highway 2, and 2.3 mi (3.7 km) northeast of Aguada Plaza.

DRAINAGE AREA.--97.0 sq mi (251.2 sq km).

PERIOD OF RECORD.--Water years 1958, 1970 to current year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT , 1978												
12...	1345	253	298	7.4	27.0	--	7.6	--	.9	40000	6000	5600
DEC												
14...	1425	89	260	7.9	24.5	--	8.4	--	2.8	1700	350	330
FEB , 1979												
13...	0900	E50	315	6.6	28.5	--	2.6	--	788	2600000	80000	260000
APR												
17...	1300	E35	564	6.9	29.5	--	.8	--	124	89000	8000	2300
JUN												
21...	1500	364	315	7.4	27.5	--	6.9	--	1.7	32000	6500	2600
AUG												
08...	1315	256	285	7.6	27.5	--	6.2	--	1.6	35000	4400	3100
NOV												
29...	1040	296	308	7.8	23.0	5.0	8.2	23	1.6	--	1000	470
JAN , 1980												
17...	1315	79	287	7.6	25.5	2.8	4.7	89	8.9	--	180000	10000
MAR												
27...	1030	16	365	7.5	31.0	.35	.2	88	44	--	140000	9000
MAY												
14...	1300	186	312	7.7	25.0	--	7.8	--	3.0	--	20000	9000
JUL												
17...	1225	351	248	7.6	26.5	17	7.5	36	2.8	--	140000	79500
SEP												
10...	0945	352	299	7.2	26.0	2.1	6.9	28	1.4	--	16000	2400

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978											
12...	130	4	41	5.5	10	.4	2.2	147	0	121	9.4
DEC											
14...	110	0	36	5.3	12	.5	2.0	149	0	122	3.0
FEB , 1979											
13...	120	0	40	5.8	13	.5	5.3	150	0	123	60
APR											
17...	240	14	73	13	22	.6	19	271	0	222	55
JUN											
21...	140	6	46	5.5	13	.5	2.2	160	0	131	10
AUG											
08...	120	0	39	5.0	9.7	.4	2.4	150	0	123	6.0
NOV											
29...	--	--	--	--	--	--	--	168	0	140	4.3
JAN , 1980											
17...	130	6	41	5.8	13	.5	4.9	147	0	120	5.9
MAR											
27...	--	--	--	--	--	--	--	200	0	160	10
MAY											
14...	130	0	43	5.5	11	.4	4.0	153	0	130	4.9
JUL											
17...	--	--	--	--	--	--	--	128	0	110	5.1
SEP											
10...	140	10	48	5.6	9.3	.3	2.8	162	0	133	16

E Estimated.

50149100 RIO CULEBRINAS NEAR AGUADA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978											
12...	10	10	.1	25	181	180	143	--	.97	.030	1.0
DEC											
14...	6.4	11	.1	34	185	180	44.5	--	.70	.010	.71
FEB , 1979											
13...	6.4	14	.1	35	249	194	33.6	--	.00	.030	.03
APR											
17...	4.3	27	.1	38	417	330	39.4	--	.00	.010	.01
JUN											
21...	13	13	.1	25	214	197	210	--	.79	.020	.81
AUG											
08...	11	10	.1	28	--	179	124	--	.74	.030	.77
NOV											
29...	--	--	--	--	--	--	--	--	.85	.030	.88
JAN , 1980											
17...	15	13	.1	33	--	198	42.2	14	.00	.000	.00
MAR											
27...	--	--	--	--	--	--	--	--	.00	.020	.02
MAY											
14...	18	12	.1	18	--	187	83.8	--	--	--	--
JUL											
17...	--	--	--	--	--	--	--	--	.74	.040	.78
SEP											
10...	9.5	10	.1	24	--	189	180	58	.77	.020	.79

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N03)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978											
12...	.060	.25	.31	1.3	5.8	.100	.050	--	--	--	--
DEC											
14...	.050	.17	.22	.93	4.1	.090	.070	1	--	<2	<20
FEB , 1979											
13...	.040	2.3	2.30	2.3	10	.190	.090	--	--	--	--
APR											
17...	.020	2.5	2.50	.01	11	1.20	.700	--	--	--	--
JUN											
21...	.080	.61	.69	1.5	6.6	.150	.120	--	--	--	--
AUG											
08...	.070	.29	.36	1.1	5.0	.160	.070	1	--	3	20
NOV											
29...	.010	.19	.20	1.1	4.8	.060	--	--	--	--	--
JAN , 1980											
17...	.000	.88	.88	.88	3.9	.200	--	--	--	--	--
MAR											
27...	.050	1.6	1.60	1.6	7.1	.230	--	3	100	0	6
MAY											
14...	--	--	--	--	--	--	--	--	--	--	--
JUL											
17...	.120	.30	.42	1.2	5.3	.160	--	--	--	--	--
SEP											
10...	.070	.28	.35	1.1	5.0	.180	--	1	100	1	22

50149100 RIO CULEBRINAS NEAR AGUADA, PR--Continued

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1978											
12...	--	--	--	--	--	--	--	--	--	153	121
DEC											
14...	ND	360	8	60	<.5	<1	ND	<20	--	2	.48
FEB , 1979											
13...	--	--	--	620	--	--	--	--	40	294	40
APR											
17...	--	--	--	170	--	--	--	--	60	143	14
JUN											
21...	--	--	--	--	--	--	--	--	5.6	163	160
AUG											
08...	7	3200	2	190	<.5	<1	ND	20	4.4	123	85
NOV											
29...	--	--	--	--	--	--	--	--	--	23	18
JAN , 1980											
17...	--	--	--	--	--	--	--	--	--	55	12
MAR											
27...	--	--	7	--	.1	0	0	--	--	78	3.4
MAY											
14...	--	--	--	--	--	--	--	--	--	359	161
JUL											
17...	--	--	--	--	--	--	--	--	--	520	493
SEP											
10...	--	--	11	--	<.1	0	0	--	--	171	163

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
DEC							
14...	1425	4	.0	0	.0	.0	.0
JUN							
21...	1500	5	.0	1	.0	.0	.0

DATE	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
DEC						
14...	.2	.0	.0	.0	.0	0
JUN						
21...	.0	.0	.0	.0	.0	0

ND Looked for but not detected.

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather record, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water years 1979-80

Station number	Station name	Location	Drainage area sq mi (sq km)	Period of record	Annual maximum Date	Gage height ft (m)	Discharge cu ft/s (cu m/s)
		Río Camuy basin					
50014000	Río Criminales near Lares, PR	Lat 18°17'57", long 66°49'22", left and right abutments on Highway 111 bridge, 3.6 mi (5.8 km) east of Lares.	4.68 (12.12)	1965-80	Sept. 17, 1979	10.74 (3.274)	3,390 (96.0)
					May 12, 1980	8.38 (2.554)	1,670 (47.3)
		Río Grande de Manatí basin					
50035950	Río Cialitos at Highway 649 at Ciales, PR.	Lat 18°20'18", long 66°28'28", on left bank 150 ft (46 m) upstream from bridge, on Highway 649, 0.4 mi (0.64 km) west of Ciales Plaza.	17.0 (44.0)	1969-80	May 14, 1979	11.64 (3.548)	6,850 (194)
					Sept. 30, 1980	10.99 (3.350)	6,140 (174)
		Río Piedras basin					
50049100	Río Piedras at Hato Rey, PR	Lat 18°24'34", long 66°04'10", on left downstream bridge on Avenida Piñero at Las Américas Expressway, and about 0.8 mi (1.3 km) southwest of Hato Rey.	15.2 (39.4)	1972-80	May 14, 1979	17.71 (5.398)	5,940 (168)
					Oct. 9, 1979	20.22 (6.163)	8,320 (236)
50049600	Quebrada Margarita at Caparra Heights, PR	Lat 18°24'33", long 66°06'18", at bridge on Franklin D. Roosevelt Avenue, near San Patricio Plaza, Ft. Buchanan and Highway 2 interchange, and 0.1 mi (0.2 km) south of Caparra Heights.	1.82 (4.71)	1972-80	Feb. 15, 1979	5.56 (1.695)	1,560 (44.2)
					Nov. 25, 1979	6.75 (2.057)	2,100 (59.5)
		Río Herrera basin					
50062500	Río Herrera near Colonia Dolores, PR	Lat 18°21'02", long 65°52'00", on left downstream bridge on Highway 958, 2.0 mi (3.2 km) south of Colonia Dolores, and 3.2 mi (5.1 km) southwest of Río Grande.	2.75 (7.12)	1966-80	Aug. 31, 1979	14.91 (4.545)	3,920 (111)
					Dec. 23, 1979	12.77 (3.892)	2,380 (67.4)
		Río Espíritu Santo basin					
50064700	Quebrada Boneta at Río Grande, PR	Lat 18°22'42", long 65°49'48", at bridge on Highway 3, 0.3 mi (0.5 km) south of Río Grande Plaza, and 0.4 mi (0.6 km) upstream from Río Grande.	0.77 (1.99)	1965, 1967-80	May 15, 1979	19.09 (5.819)	1,380 (39.1)
					May 14, 1980	13.13 (4.002)	240 (6.80)
		Río Daguao basin					
50073200	Río Daguao at Daguao, PR	Lat 18°13'42", long 65°40'39", at railroad bridge, 0.1 mi (0.2 km) downstream from bridge on Highway 3, 0.3 mi (0.5 km) east of Daguao, and 2.8 mi (4.5 km) upstream from mouth.	2.26 (5.85)	1965, 1967-80	May 14, 1979	12.47 (3.801)	1,600 (45.3)
					May 14, 1980	10.26 (3.127)	340 (9.63)
		Río Santiago basin					
50074000	Río Santiago at Naguabo, PR	Lat 18°12'57", long 65°43'41", at bridge on Highway 31, 0.3 mi (0.5 km) northeast of Naguabo, 0.4 mi (0.6 km) downstream from Quebrada Grande, and 2.2 mi (3.5 km) upstream from mouth.	4.99 (12.92)	1965-80	Aug. 31, 1979	16.07 (4.898)	7,300 (207)
					May 14, 1980	11.55 (3.520)	2,200 (62.3)
		Río Blanco basin					
50075500	Río Blanco at Florida, PR	Lat 18°14'27", long 65°46'06", at bridge on Highway 191, 0.2 mi (0.3 km) northwest of Florida, 1.4 mi (2.2 km) upstream from Quebrada Peña Pobre, and 3.7 mi (6.0 km) northwest of Naguabo.	11.0 (28.5)	1975-80	Aug. 30, 1979	79.66 (24.280)	15,900 (450)
					May 14, 1980	76.05 (23.180)	7,050 (200)

Annual maximum discharge at crest-stage partial-record stations during water years 1979-80--Continued

Station number	Station name	Location	Drainage area sq mi (sq km)	Period of record	Annual maximum Date	Annual maximum Gage height ft (m)	Annual maximum Discharge cu ft/s (cu m/s)
		Río Maunabo basin					
50091000	Río Maunabo at Maunabo, PR	Lat 18°00'24", long 65°54'19", at bridge on Highway 3, 0.4 mi (0.6 km) southwest of Maunabo, and 1.3 mi (2.1 km) upstream from mouth.	12.4 (32.1)	1965-80	Aug. 31, 1979	18.88 (5.755)	9,640 (273)
					Nov. 25, 1979	12.37 (3.770)	1,320 (37.4)
		Río Coamo basin					
50106500	Río Coamo near Coamo, PR	Lat 18°03'52", long 66°22'10", on right downstream abutment, on Highway 153, 1.5 mi (2.4 km) south of Coamo.	46.0 (119.1)	1960, 1965-80	Oct. 26, 1978	13.66 (4.164)	9,400 (266)
					Nov. 7, 1979	[a]7.00 (2.134)	[a]1,100 (31.2)
		Río Descalabrado basin					
50108000	Río Descalabrado near Los Llanos,	Lat 18°03'08", long 66°25'34", at bridge on Highway 14, 1.5 mi (2.4 km) west of Los Llanos.	12.9 (33.4)	1965-80	Oct. 26, 1978	11.91 (3.630)	6,020 (170)
					Nov. 7, 1979	6.30 (1.920)	665 (18.8)
		Río Bucaná basin					
50114400	Río Bucaná near Ponce, PR	Lat 18°02'18", long 66°35'12", on right bank at km 4.9, Highway 14, 2.5 mi (4.0 km) northeast of Degetau Plaza in Ponce.	25.6 (66.3)	1965-80	Aug. 31, 1979	10.69 (3.258)	8,800 (249)
					Sept. 22, 1980	7.01 (2.137)	3,370 (95.4)
		Río Portugués basin					
50115900	Río Portugués at Highway 14 at Ponce, PR	Lat 18°01'09", long 66°36'26", on left downstream side of Highway 14 bridge, 1.7 mi (2.7 km) downstream from Río Chiquito, and 0.6 mi (0.97 km) northeast of Degetau Plaza in Ponce.	18.6 (48.2)	1963-80	Aug. 31, 1979	14.71 (4.484)	7,550 (214)
					Oct. 7, 1979	10.36 (3.158)	2,930 (83.0)
		Río Tallaboa basin					
50121000	Río Tallaboa at Peñuelas, PR	Lat 18°03'02", long 66°43'19", on right bank, 350 ft (106.7 m) downstream from Highway 132 bridge, 0.6 mi (1.0 km) south of Peñuelas.	24.2 (62.7)	1959-80	July 18, 1979	9.40 (2.865)	14,100 (399)
					May 29, 1980	[a]6.00 (1.829)	[a]3,100 (87.8)
		Río Guayanilla basin					
50124500	Río Guayanilla at Guayanilla, PR	Lat 18°02'01", long 66°47'57", at bridge on Highway 114 (formerly Highway 2) 1.1 mi (1.8 km) northwest of Guayanilla Plaza, and 3.2 (5.1 km) from mouth.	20.8 (53.9)	1970-80	Aug. 31, 1979	13.18 (4.017)	[a]16,000 (453)
					July 21, 1980	6.12 (1.865)	[a]2,400 (68.0)
		Río Culebrinas basin					
50147000	Río Culebrinas at San Sebastián	Lat 18°20'08", long 66°59'46", at bridge on Highway 109, 0.9 mi (1.4 km) upstream from Río Guatemala, and 0.4 mi (0.6 km) southwest of San Sebastián.	16.7 (43.3)	1960, 1966-80	Aug. 31, 1979	18.82 (5.736)	6,700 (190)
					Aug. 30, 1980	18.18 (5.541)	6,260 (177)

a Approximately.
* Discharge undetermined.
\# Peaks not recorded.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water quality partial-record stations are particular sites where chemical-quality, biological and/or sediment data are collected systematically over a period of years for use in hydrologic analysis. The data are collected less than quarterly; usually one to three time a year.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TRANS-PAR-ENCY (SECCHI DISK) (IN)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
50010720 - LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS,PR (LAT 18 22 05 LONG 066 54 36)										
MAR . 1980										
29...	1720	1.60	195	8.1	27.0	53.0	8.9	K1	K2	--
29...	1730	16.0	263	7.5	25.0	--	1.4	--	--	--
JUL										
29...	1140	1.00	257	8.2	28.9	61.0	9.5	K9	K7	--
29...	1145	23.0	352	7.3	24.0	--	2.3	--	--	--
50010790 - LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18 23 56 LONG 066 55 23)										
MAR . 1980										
29...	1630	1.60	260	8.0	27.0	88.0	3.2	K1	0	150
29...	1640	62.0	158	7.5	24.0	--	.0	--	--	160
JUL										
29...	1050	1.00	310	8.3	29.5	66.0	8.6	39	0	120
29...	1055	72.4	341	7.1	24.0	--	.0	--	--	140
50020050 - LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18 08 21 LONG 066 44 35)										
MAR . 1980										
29...	1130	1.00	155	8.4	23.0	65.0	6.8	K1	0	69
29...	1140	79.0	180	7.0	20.0	--	.0	--	--	71
JUL										
30...	1220	1.60	148	7.8	25.0	54.0	8.7	K2	0	--
30...	1230	95.0	202	7.0	20.2	--	--	--	--	54

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE FET-FLD (MG/L AS HCO3)	CAR-BONATE FET-FLD (MG/L AS CO3)	ALKA-LINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
50010720 - LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS,PR (LAT 18 22 05 LONG 066 54 36)										
MAR . 1980										
29...	--	--	--	--	--	--	180	0	150	2.3
29...	--	--	--	--	--	--	--	--	--	--
JUL										
29...	--	--	--	--	--	--	138	--	113	1.6
29...	--	--	--	--	--	--	--	--	--	--
50010790 - LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18 23 56 LONG 066 55 23)										
MAR . 1980										
29...	17	53	3.8	5.4	.2	1.6	160	0	130	2.6
29...	6	58	3.4	5.1	.2	1.5	186	0	150	9.4
JUL										
29...	0	44	3.2	5.1	.2	1.6	150	--	123	1.2
29...	0	51	2.7	4.2	.2	1.5	174	--	143	22
50020050 - LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18 08 21 LONG 066 44 35)										
MAR . 1980										
29...	0	20	4.6	5.8	.3	1.0	84	0	69	.5
29...	0	20	5.1	5.8	.3	1.0	98	0	80	16
JUL										
30...	--	--	--	--	--	--	84	0	69	2.1
30...	0	15	3.9	5.2	.3	1.4	70	--	57	13

K = non-ideal count.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
50010720 - LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS,PR (LAT 18 22 05 LONG 066 54.36)										
MAR , 1980										
29...	--	--	--	--	--	0	.03	.010	.04	--
29...	--	--	--	--	--	--	--	--	--	--
JUL										
29...	--	--	--	--	--	3	.00	.000	.00	.000
29...	--	--	--	--	--	--	--	--	--	--
50010790 - LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18 23 56 LONG 066 55 23)										
MAR , 1980										
29...	7.1	8.1	.2	7.0	165	0	.01	.000	.01	--
29...	1.5	5.2	.1	20	187	--	--	--	--	--
JUL										
29...	8.2	8.2	.2	3.9	148	4	.00	.000	.00	.000
29...	7.3	6.5	.1	5.9	165	--	--	--	--	--
50020050 - LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18 08 21 LONG 066 44 35)										
MAR , 1980										
29...	3.1	5.3	.1	18	100	0	.00	.020	.02	--
29...	4.9	8.0	.2	8.5	102	--	--	--	--	--
JUL										
30...	--	--	--	--	--	--	--	--	--	--
30...	2.7	5.1	.1	16	84	--	--	--	--	--

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	BIOMASS CHLORO-PHYLL RATIO PLANK-TON (UNITS)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)
50010720 - LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS,PR (LAT 18 22 05 LONG 066 54 36)									
MAR , 1980									
29...	--	--	--	--	.020	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
JUL									
29...	.57	.57	.57	2.5	.020	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
50010790 - LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18 23 56 LONG 066 55 23)									
MAR , 1980									
29...	--	--	--	--	.010	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
JUL									
29...	.36	.36	.36	1.6	.020	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
50020050 - LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18 08 21 LONG 066 44 35)									
MAR , 1980									
29...	--	--	--	--	.030	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
JUL									
30...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TRANSPARENCY (SECCHI DISK) (IN)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
50025110		- LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO,PR (LAT 18 19 15 LONG 066 40 11)								
MAR . 1980										
25...	1030	1.00	197	7.8	24.5	30.0	10.9	K15	K1	--
25...	1040	52.0	195	--	24.0	--	--	--	--	--
JUL										
25...	1140	1.60	191	8.2	29.0	24.0	9.1	340	K4	--
25...	1145	66.0	208	7.2	26.0	--	.3	--	--	--
50027090		- LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18 20 09 LONG 066 40 04)								
MAR . 1980										
25...	1130	1.60	192	8.5	27.5	34.0	8.8	0	K1	77
25...	1140	79.0	169	6.8	23.5	--	--	--	--	71
JUL										
25...	1230	1.00	182	8.1	29.5	30.0	8.5	90	K15	76
25...	1235	82.2	196	7.0	25.1	--	.0	--	--	74
50039900		- LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY,PR (LAT 18 05 04 LONG 066 06 03)								
JAN . 1980										
08...	1240	1.00	85	6.6	22.5	66.0	6.6	--	--	--
08...	1300	25.0	94	--	21.5	--	6.4	--	--	--
MAR										
26...	1130	1.60	85	6.6	25.5	70.0	7.3	K3	K1	--
JUL										
23...	0900	1.00	104	7.8	27.0	50.0	10.0	20	K1	--
23...	0905	30.0	113	6.9	25.0	--	2.7	--	--	--

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
50025110		- LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO,PR (LAT 18 19 15 LONG 066 40 11)								
MAR . 1980										
25...	--	--	--	--	--	--	98	0	80	2.5
25...	--	--	--	--	--	--	--	--	--	--
JUL										
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
50027090		- LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18 20 09 LONG 066 40 04)								
MAR . 1980										
25...	2	20	6.5	13	.6	1.6	90	0	74	.5
25...	0	19	5.8	12	.6	1.8	99	0	81	25
JUL										
25...	0	20	6.4	11	.5	3.2	94	--	77	1.2
25...	0	20	5.8	8.9	.5	2.0	100	--	82	18
50039900		- LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY,PR (LAT 18 05 04 LONG 066 06 03)								
JAN . 1980										
08...	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--
MAR										
26...	--	--	--	--	--	--	40	0	33	16
JUL										
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--

K = non-ideal count.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
50025110 - LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO,PR (LAT 18 19 15 LONG 066 40 11)										
MAR , 1980										
25...	--	--	--	--	--	--	.00	.000	--	.110
25...	--	--	--	--	--	--	--	--	--	--
JUL										
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
50027090 - LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18 20 09 LONG 066 40 04)										
MAR , 1980										
25...	14	11	.1	22	133	55	.01	.000	.01	.000
25...	10	9.4	.1	21	128	--	--	--	--	--
JUL										
25...	13	10	.1	21	131	5	.25	.000	.25	.010
25...	9.5	9.5	.1	22	127	--	--	--	--	--
50039900 - LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY,PR (LAT 18 05 04 LONG 066 06 03)										
JAN , 1980										
08...	--	--	--	--	--	--	.13	.030	.16	.100
08...	--	--	--	--	--	--	--	--	--	--
MAR										
26...	2.3	8.4	.1	--	11	--	.00	.000	.00	.010
JUL										
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	BIOMASS CHLORO-PHYLL RATIO PLANK-TON (UNITS)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)
50025110 - LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO,PR (LAT 18 19 15 LONG 066 40 11)									
MAR , 1980									
25...	--	--	--	--	.300	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
JUL									
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
50027090 - LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18 20 09 LONG 066 40 04)									
MAR , 1980									
25...	.39	--	.40	--	.000	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
JUL									
25...	.57	.58	.83	3.7	.020	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
50039900 - LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY,PR (LAT 18 05 04 LONG 066 06 03)									
JAN , 1980									
08...	.31	--	.57	--	.010	--	--	--	--
08...	--	--	--	--	--	--	--	--	--
MAR									
26...	.10	--	.11	--	.100	--	--	--	--
JUL									
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TRANSPARENCY (SECCHI DISK) (IN)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
50039950 - LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18 04 39 LONG 066 06 19)										
JAN . 1980										
08...	1320	1.00	84	7.0	22.5	--	8.0	--	--	25
08...	1330	66.0	89	6.1	21.5	--	3.5	--	--	26
MAR										
26...	1200	1.00	86	6.8	24.5	82.0	7.1	K3	0	30
26...	1210	72.0	97	6.1	22.0	--	5.4	--	--	31
JUL										
23...	1000	1.00	106	7.7	27.0	82.0	10.1	0	K1	--
50044400 - LAGO LA PLATA NO.5 NR NARANJITO,PR (LAT 18 19 33 LONG 066 12 28)										
MAR . 1980										
28...	1020	1.00	337	8.6	26.0	40.0	15.2	K14	K6	--
28...	1030	45.0	310	--	22.5	--	--	--	--	--
JUL										
22...	1130	1.00	328	7.9	29.0	41.0	8.2	600	K17	--
22...	1140	33.0	312	6.9	24.0	--	.1	--	--	--
50044950 - LAGO LA PLATA #3 (LAT 18 20 18 LONG 066 14 01)										
MAR . 1980										
28...	0930	1.60	379	8.6	26.0	32.0	10.8	K7	0	130
28...	0940	62.0	424	6.8	22.5	--	.0	--	--	100
JUL										
22...	0930	1.00	318	7.4	28.5	53.0	5.6	K63	K1	--
22...	0940	79.0	307	7.2	23.0	--	.1	--	--	--

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
50039950 - LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18 04 39 LONG 066 06 19)										
JAN . 1980										
08...	0	5.1	3.0	8.2	.7	.8	34	0	28	43
08...	0	5.4	3.1	7.9	.7	.8	35	0	29	44
MAR										
26...	0	6.1	3.5	9.3	.7	.7	38	0	31	9.6
26...	0	6.5	3.7	8.3	.6	.7	54	0	44	69
JUL										
23...	--	--	--	--	--	--	--	--	--	--
50044400 - LAGO LA PLATA NO.5 NR NARANJITO,PR (LAT 18 19 33 LONG 066 12 28)										
MAR . 1980										
28...	--	--	--	--	--	--	160	1	130	.7
28...	--	--	--	--	--	--	--	--	--	--
JUL										
22...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
50044950 - LAGO LA PLATA #3 (LAT 18 20 18 LONG 066 14 01)										
MAR . 1980										
28...	23	31	13	17	.6	1.7	130	1	110	.5
28...	11	24	10	12	.5	2.0	110	0	90	28
JUL										
22...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--

K = non-ideal count.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
50039950 - LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18 04 39 LONG 066 06 19)										
JAN , 1980										
08...	4.4	8.9	.0	17	64	14	.13	.030	.16	.090
08...	2.7	7.8	.0	17	62	16	--	--	--	--
MAR										
26...	2.3	8.5	.1	19	68	--	.00	.000	.00	.000
26...	1.7	8.3	.1	18	74	--	--	--	--	--
JUL										
23...	--	--	--	--	--	--	--	--	--	--
50044400 - LAGO LA PLATA NO.5 NR NARANJITO,PR (LAT 18 19 33 LONG 066 12 28)										
MAR , 1980										
28...	--	--	--	--	--	0	.16	.000	.16	--
28...	--	--	--	--	--	--	--	--	--	--
JUL										
22...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
50044950 - LAGO LA PLATA #3 (LAT 18 20 18 LONG 066 14 01)										
MAR , 1980										
28...	13	19	.2	21	181	4	.00	.010	.01	--
28...	9.4	13	.2	20	145	--	--	--	--	--
JUL										
22...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	BIOMASS CHLORO-PHYLL RATIO PLANK-TON (UNITS)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)
50039950 - LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18 04 39 LONG 066 06 19)									
JAN , 1980									
08...	.48	--	.73	--	.010	--	--	--	--
08...	--	--	--	--	--	--	--	--	--
MAR									
26...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
JUL									
23...	--	--	--	--	--	--	--	--	--
50044400 - LAGO LA PLATA NO.5 NR NARANJITO,PR (LAT 18 19 33 LONG 066 12 28)									
MAR , 1980									
28...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
JUL									
22...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
50044950 - LAGO LA PLATA #3 (LAT 18 20 18 LONG 066 14 01)									
MAR , 1980									
28...	--	--	--	--	.110	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
JUL									
22...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50058800 - LAGO LOIZA #7 P R (LAT 18 19 29 LONG 066 00 47)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TRANSPARENCY (SECCHI DISK) (IN)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)
APR . 1980										
10...	1150	1.00	309	7.1	27.0	30.0	3.5	100	K16	100
10...	1155	35.0	326	6.8	26.0	--	.7	--	--	97
JUL										
24...	1150	1.00	237	7.5	29.7	17.0	5.7	41	58	70
24...	1155	35.0	188	7.0	26.0	--	.0	--	--	50

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
APR . 1980										
10...	0	24	10	25	1.1	2.2	130	0	110	17
10...	0	23	9.6	23	1.1	2.5	133	0	110	34
JUL										
24...	0	17	6.8	20	1.0	2.7	93	0	76	4.7
24...	0	12	4.9	14	.9	3.1	68	0	56	11

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
APR . 1980										
10...	18	24	.2	26	193	5	--	--	.36	--
10...	14	22	.2	25	185	--	--	--	--	--
JUL										
24...	14	19	.2	25	151	4	.29	.010	.30	.010
24...	11	14	.1	20	113	--	--	--	--	--

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHYTOPLANKTON, TOTAL (CELLS PER ML)	BIOMASS CHLOROPHYLL RATIO PLANKTON (UNITS)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L)
APR . 1980									
10...	--	--	--	--	.170	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
JUL									
24...	.68	.69	.99	4.4	.300	35000	.38	10.6	5.03
24...	--	--	--	--	--	--	--	--	--

PESTICIDE ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50058800 - LAGO LOIZA #7 P R (LAT 18 19 29 LONG 066 00 47)

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
JUL . 1980												
24...	1150	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00

DATE	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)
JUL . 1980												
24...	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	0	.00

K = non-ideal count.

PHYTOPLANKTON ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50010720 - LAGO GUAJATACA NO.3 NR MOUTH NR QUEBRADILLAS,PR (LAT 18 22 05 LONG 066 54 36)

DATE	MAR 29,80	JUL 29,80
TIME	1720	1140
TOTAL CELLS/ML	190000	14000
DIVERSITY: DIVISION	0.7	1.7
.CLASS	0.7	1.7
..ORDER	0.9	2.4
...FAMILY	1.0	2.4
....GENUS	1.0	2.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..ACHNANTHALES				
...ACHNANTHACEAE				
....ACHNANTHES	--	-	1600	12
..BACILLARIALES				
...NITZSCHIACEAE				
....NITZSCHIA	--	-	270	2
..EUPODISCALES				
...COSCINODISCACEAE				
....CYCLOTELLA	*	0	130	1
..NAVICULALES				
...NAVICULACEAE				
....NAVICULA	4900	3	2000	15
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...MICRACTINIACEAE				
....GOLENKINIA	--	-	130	1
....MICRACTINIUM	*	0	--	-
...OOCYSTACEAE				
....ANKISTRODESMUS	12000	6	6500#	48
....KIRCHNERIELLA	*	0	--	-
...SCENEDESMACEAE				
....COELASTRUM	3400	2	--	-
..ZYGNEMATALES				
...DESMIDIACEAE				
....COSMARIUM	--	-	930	7
....STAURASTRUM	*	0	--	-
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOMONADACEAE				
....CRYPTOMONAS	*	0	530	4
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	160000#	84	930	7
..OSCILLATORIALES				
...OSCILLATORIACEAE				
....OSCILLATORIA	7200	4	--	-
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....TRACHELOMONAS	*	0	130	1
PYRRHOPHYTA (FIRE ALGAE)				
.DINOPHYCEAE				
..DINOKONTAE				
...GLENODINIACEAE				
....GLENODINIUM	--	-	400	3
...PERIDINIACEAE				
....PERIDINIUM	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50010790 - LAGO GUAJATACA NO.1 NR DAM NR QUEBRADILLAS,PR (LAT 18 23 56 LONG 066 55 23)

	MAR 29,80	JUL 29,80
DATE		
TIME	1630	1050
TOTAL CELLS/ML	9300	42000
DIVERSITY: DIVISION	1.6	1.2
.CLASS	1.6	1.2
..ORDER	2.1	2.3
...FAMILY	2.4	2.3
....GENUS	2.6	2.3

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..ACHNANTHALES				
...ACHNANTHACEAE				
....ACHNANTHES	300	3	4100	10
..EUPODISCALES				
...COSCINODISCACEAE				
....CYCLOTELLA	180	2	960	2
..NAVICULALES				
...NAVICULACEAE				
....NAVICULA	1700#	18	2100	5
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...CHLOROCOCCACEAE				
....TETRAEDRON	300	3	--	-
...DICTYOSPHAERIACEAE				
....DICTYOSPHAERIUM	--	-	410	1
...MICRACTINIACEAE				
....GOLENKINIA	120	1	--	-
...OOCYSTACEAE				
....ANKISTRODESMUS	59	1	270	1
....KIRCHNERIELLA	--	-	*	0
...SCENEDESMACEAE				
....COELASTRUM	2800#	30	--	-
....CRUCIGENIA	--	-	550	1
....TETRASTRUM	240	3	--	-
..ZYGNEMATALES				
...DESMIDIACEAE				
....COSMARIUM	--	-	2300	6
....SPUNDYLOSIUM	650	7	--	-
....STAURASTRUM	59	1	--	-
CHRYSOPHYTA				
.CHRYSOPHYCEAE				
..OCHROMONADALES				
...OCHROMONADACEAE				
....CHROMONAS	--	-	1200	3
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	2800#	30	15000#	36
..NOSTOCALES				
...NOSTOCACEAE				
....NODULARIA	--	-	14000#	35
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....TRACHELOMONAS	59	1	--	-
PYRRHOPHYTA (FIRE ALGAE)				
.DINOPHYCEAE				
..DINOKONTAE				
...PERIDINIACEAE				
....PERIDINIUM	59	1	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50020050 - LAGO GARZAS NO.1 NR DAM NR ADJUNTAS,PR (LAT 18 08 21 LONG 066 44 35)

	MAR 29,80	JUL 30,80
DATE		
TIME	1130	1220
TOTAL CELLS/ML	160000	50000
DIVERSITY: DIVISION	0.6	1.3
.CLASS	0.6	1.3
..ORDER	0.8	1.6
...FAMILY	0.9	1.8
....GENUS	0.9	1.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..EUPODISCALES				
...CESCINODISCACEAE				
....CYCLOTELLA	3600	2	400	1
..FRAGILARIALES				
...FRAGILARIACEAE				
....SYNEDRA	--	-	1200	2
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...CHLOROCOCCACEAE				
....TETRAEDRON	2400	2	--	-
...DICTYOSPHAERIACEAE				
....DICTYOSPHAERIUM	1400	1	3800	8
...OOCYSTACEAE				
....ANKISTRODESMUS	5500	4	5700	11
....CHODATELLA	*	0	--	-
....FRANCEIA	*	0	--	-
...SCENEDESMACEAE				
....COELASTRUM	1700	1	--	-
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	*	0	--	-
..ZYGNEMATALES				
...DESMIDIACEAE				
....COSMARIUM	--	-	7500#	15
....SPUNDYLOSIUM	1700	1	--	-
....STAURASTRUM	*	0	*	0
CHRYSOPHYTA				
.CHRYSOPHYCEAE				
..OCHROMONADALES				
...OCHROMONADACEAE				
....OCHROMONAS	--	-	400	1
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOMONADACEAE				
....CRYPTOMONAS	--	-	400	1
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	140000#	88	30000#	60
..OSCILLATORIALES				
...OSCILLATORIACEAE				
....OSCILLATORIA	1400	1	--	-
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....TRACHELOMONAS	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)				
.DINOPHYCEAE				
..DINOKONTAE				
...PERIDINIALEAE				
....PERIDINIUM	*	0	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

50025110 - LAGO DOS BOCAS NO.3 AT WEST BRANCH NR UTUADO,PR (LAT 18 19 15 LONG 066 40 11)

DATE	MAR 25,80	JUL 25,80
TIME	1030	1140
TOTAL CELLS/ML	300000	250000
DIVERSITY: DIVISION	0.0	0.2
.CLASS	0.0	0.2
..ORDER	0.0	0.7
...FAMILY	0.0	0.7
....GENUS	0.0	0.7

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..FRAGILARIALES				
...FRAGILARIACEAE				
....SYNEDRA	--	-	4800	2
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...OOCYSTACEAE				
....ANKISTRODESMUS	--	-	2400	1
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	300000#	100	220000#	88
..OSCILLATORIALES				
...OSCILLATORIACEAE				
....OSCILLATORIA	--	-	24000	10
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....TRACHELOMONAS	*	0	--	-

50027090 - LAGO DOS BOCAS NO.1 NR DAM NR UTUADO,PR (LAT 18 20 09 LONG 066 40 04)

DATE	MAR 25,80	JUL 25,80
TIME	1130	1230
TOTAL CELLS/ML	320000	380000
DIVERSITY: DIVISION	0.2	0.1
.CLASS	0.2	0.1
..ORDER	0.2	0.9
...FAMILY	0.2	0.9
....GENUS	0.2	1.5

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..EUPODISCALES				
...COSCINODISCACEAE				
....CYCLOTELLA	6000	2	--	-
..FRAGILARIALES				
...FRAGILARIACEAE				
....SYNEDRA	--	-	4900	1
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOMONADACEAE				
....CRYPTOMONAS	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	310000#	98	250000#	65
....COMPHOSPHAERIA	--	-	29000	8
..OSCILLATORIALES				
...OSCILLATORIACEAE				
....LYNGBYA	--	-	57000#	15
....OSCILLATORIA	--	-	41000	11

NOTE: # - DOMINANT ORGANISM; ECL/L TC OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PHYTOPLANKTON ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50039900 - LAGO CARITE NO.3 ON RIO DE LA PLATA NR CAYEY,PR (LAT 18 05 04 LONG 066 06 03)

DATE	JAN 8,80	MAR 26,80	JUL 23,80
TIME	1240	1130	0900
TOTAL CELLS/ML	5200	47000	38000
DIVERSITY: DIVISION	0.3	0.2	1.1
.CLASS	0.3	0.2	1.1
..ORDER	0.7	0.3	1.4
...FAMILY	1.2	0.3	1.4
....GENUS	1.3	0.3	1.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)						
.BACILLARIOPHYCEAE						
..EUPODISCALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	*	0	1100	3
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHLOROCOCCACEAE						
....CLOSTERIDIUM	7000#	76	--	-	--	-
....TETRAEDRON	84	1	--	-	--	-
...DICTYOSPHAERIACEAE						
....DICTYOSPHAERIUM	--	-	*	0	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	1100	2	1500	4
....KIRCHNERIELLA	170	2	--	-	--	-
....OOCYSTIS	670	7	--	-	--	-
....SELENASTRUM	--	-	--	-	1800	5
...SCENEDESMACEAE						
....SCENEDESMUS	170	2	--	-	--	-
..ZYGNEMATALES						
...DESMIDIACEAE						
....COSMARIUM	750	8	280	1	--	-
....SPUNDYLOSIUM	--	-	--	-	7800#	21
....STAURASTRUM	--	-	--	-	4000	11
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	--	-	45000#	97	22000#	57
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	84	1	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)						
.DINOPHYCEAE						
..DINOKONTAE						
...GLENODINIACEAE						
....GLENODINIUM	250	3	--	-	--	-
...PERIDINIACEAE						
....PERIDINIUM	--	-	*	0	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PHYTOPLANKTON ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50039950 - LAGO CARITE NO.1 NR DAM NR CAYEY,PR (LAT 18 04 39 LONG 066 06 19)

DATE	JAN 8,80	MAR 26,80	JUL 23,80
TIME	1320	1200	1000
TOTAL CELLS/ML	7800	650000	31000
DIVERSITY: DIVISION	0.7	0.2	0.4
.CLASS	0.7	0.2	0.4
..ORDER	1.0	0.2	1.0
...FAMILY	1.4	0.3	1.0
....GENUS	1.5	0.6	2.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)						
.BACILLARIOPHYCEAE						
..EUPODISCALES						
...COSCINODISCACEAE						
....CYCLOTELLA	210	3	*	0	2300	7
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHLOROCOCCACEAE						
....CLOSTERIDIUM	5800$	74	--	-	--	-
...COCCOMYXACEAE						
....ELAKATOTHRIX	--	-	*	0	--	-
...MICRACTINIACEAE						
....GOLENKINIA	--	-	--	-	290	1
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	17000	2	1700	5
....KIRCHNERIELLA	140	2	--	-	--	-
....OOCYSTIS	340	4	--	-	1100	4
....SELENASTRUM	--	-	--	-	1400	5
...SCENEDESMACEAE						
....SCENEDESMUS	69	1	--	-	--	-
..ZYGNEMATALES						
...DESMIDIACEAE						
....COSMARIUM	410	5	4100	1	--	-
....SPONDYLOSIUM	--	-	--	-	15000$	48
....STAURASTRUM	--	-	--	-	9400$	30
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	--	-	620000$	89	--	-
....COCCOCHLORIS	650	9	--	-	--	-
....GOMPHOSPHAERIA	--	-	55000	8	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	69	1	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)						
.DINOPHYCEAE						
..DINOKONTAE						
...GLENODINIACEAE						
....GLENODINIUM	69	1	--	-	--	-

NOTE: $ - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PHYTOPLANKTON ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50044400 - LAGO LA PLATA NO.5 NR HARANJITO,PR (LAT 18 19 33 LONG 066 12 28)

DATE	MAR 28,80	JUL 22,80
TIME	1020	1130
TOTAL CELLS/ML	170000	30000
DIVERSITY: DIVISION	0.4	0.6
.CLASS	0.4	0.6
..ORDER	0.5	0.6
...FAMILY	0.5	0.7
....GENUS	1.3	0.7

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..EUPODISCALES				
...COSCINODISCACEAE				
....CYCLOTELLA	110000*	65	26000#	87
....MELOSIRA	46000#	27	--	
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...OOCYSTACEAE				
....ANKISTRODESMUS	1200	1	--	-
...SCENEDESMACEAE				
....SCENEDESMUS	7500	4	--	-
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CARTERIA	1200	1	--	-
....CHLAMYDOMONAS	1200	1	--	-
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOCHRYSIDACEAE				
....CHROOMONAS	--	-	510	2
...CRYPTOMONADACEAE				
....CRYPTOMONAS	1200	1	260	1
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	--	-	3100	10

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50057500 LAGO LUIZA AT P R.

DATE	APR 10,80	JUL 24,80
TIME	1040	1050
TOTAL CELLS/ML	28000	2500
DIVERSITY: DIVISION	1.9	1.6
.CLASS	1.9	1.6
..ORDER	2.4	2.7
...FAMILY	2.8	3.3
....GENUS	3.3	3.7

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..ACHNANTHALES				
...ACHNANTHACEAE				
....ACHNANTHES	--	-	14	1
..BACILLARIALES				
...NITZSCHIACEAE				
....NITZSCHIA	--	-	96	4
..EUPODISCALES				
...COSCINODISCACEAE				
....CYCLOTELLA	6300#	23	41	2
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...CHLOROCOCCACEAE				
....SCHROEDERIA	170	1	--	-
...COCCOMYXACEAE				
....ELAKATOTHRIX	340	1	--	-
...DICTYOSPHAERIACEAE				
....DICTYOSPHAERIUM	--	-	340	14
...MICRACTINIACEAE				
....PICRACTINIUM	850	3	--	-
...OOCYSTACEAE				
....ANKISTRODESMUS	680	2	96	4
....KIRCHNERIELLA	--	-	41	2
....OOCYSTIS	170	1	--	-
...SCENEDESMACEAE				
....ACTINASTRUM	--	-	110	4
....COELASTRUM	1400	5	--	-
....CRUCIGENIA	--	-	140	6
....SCENEDESMUS	--	-	150	6
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	1500	5	110	4
...VOLVOCACEAE				
....PANDORINA	--	-	270	11
CHRYSOPHYTA				
.XANTHOPHYCEAE				
..MISCHOCOCCALES				
...SCIADACEAE				
....UPHIOCYTIUM	--	-	27	1
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOCHRYSIDACEAE				
....CHROOMONAS	850	3	--	-
...CRYPTOMONADACEAE				
....CRYPTOMONAS	3200	12	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....AGMENELLUM	1400	5	--	-
....ANACYSTIS	4900#	18	400#	16
....COCCOCHLORIS	2900	10	14	1
..NOSTOCALES				
...NOSTOCACEAE				
....ANABAENA	--	-	210	8
..OSCILLATORIALES				
...OSCILLATORIACEAE				
....LYNGBYA	3100	11	--	-
....OSCILLATORIA	--	-	330	13
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....EUGLENA	--	-	27	1
....TRACHELOMONAS	--	-	14	1
PYRRHOPHYTA (FIRE ALGAE)				
.DINOPHYCEAE				
..DINOKONTAE				
...GYMNODINIACEAE				
....GYMNODINIUM	170	1	55	2

NOTE: # - DOMINANT ORGANISM; FOR 1/L TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

50058800 LAGO LOIZA #7 P R

DATE	APR 10,80	JUL 24,80
TIME	1150	1150
TOTAL CELLS/ML	18000	35000
DIVERSITY: DIVISION	1.7	0.8
.CLASS	1.7	0.8
..ORDER	1.8	1.5
...FAMILY	2.3	1.5
....GENUS	2.4	2.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (DIATOMS)				
.BACILLARIOPHYCEAE				
..EUPODISCALES				
...COSCINODISCACEAE				
....CYCLOTELLA	9200#	50	5300#	15
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..CHLOROCOCCALES				
...DICTYOSPHAERIACEAE				
....DICTYOSPHAERIUM	1200	7	--	-
...MICRACTINIACEAE				
....MICRACTINIUM	870	5	--	-
...OOCYSTACEAE				
....ANKISTRODESMUS	540	3	--	-
....CHODATELLA	--	-	230	1
....OOCYSTIS	220	1	--	-
...PALMELLACEAE				
....SPHAEROCYSTIS	1700	9	--	-
...SCENEDESMACEAE				
....CRUCIGENIA	--	-	920	3
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	330	2	230	1
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONADALES				
...CRYPTOMONADACEAE				
....CRYPTOMONAS	760	4	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..CHROOCOCCALES				
...CHROOCOCCACEAE				
....AGMENELLUM	430	2	--	-
....ANACYSTIS	2900#	16	17000#	50
..NOSTOCALES				
...NOSTOCACEAE				
....ANABAENA	--	-	7800#	23
..OSCILLATORIALES				
...OSCILLATORIACEAE				
....LYNGBYA	--	-	2300	7
....OSCILLATORIA	--	-	460	1
PYRRHOPHYTA (FIRE ALGAE)				
.DINOPHYCEAE				
..DINOKONTAE				
...GYMNODINIACEAE				
....GYMNODINIUM	110	1	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
50114400 - RIO BUCANA NR PONCE, PR (LAT 18 02 18 LONG 066 35 12)											
DEC , 1978											
07...	1135	--	398	8.2	25.0	5.6	170	--	53	9.6	14
JUL , 1979											
19...	0830	--	211	8.7	23.5	8.7	86		27	4.6	7.9
50115900 - RIO PORTUGUES AT HWY 14 AT PONCE, PR (LAT 18 01 09 LONG 066 36 26)											
DEC , 1978											
07...	1205	--	450	8.5	27.0	5.1	170	--	48	12	23
JUL , 1979											
19...	0800	--	213	8.5	23.0	5.4	84	--	26	4.7	8.8
50126000 - RIO DUEY NR YAUCO, PR (LAT 18 03 17 LONG 066 51 06)											
JUN , 1979											
14...	0945	80	524	7.6	26.5	7.7	220	--	60	18	27
JUL											
17...	1240	7.3	614	7.6	32.0	8.6	240	--	64	20	29

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	ARSENIC TOTAL (UG/L AS AS)
50114400 - RIO BUCANA NR PONCE, PR (LAT 18 02 18 LONG 066 35 12)										
DEC , 1978										
07...	.5	1.3	25	13	.1	23	--	--	--	--
JUL , 1979										
19...	.4	1.2	11	7.4	.1	21	138	80	--	1
50115900 - RIO PORTUGUES AT HWY 14 AT PONCE, PR (LAT 18 01 09 LONG 066 36 26)										
DEC , 1978										
07...	.8	1.9	32	27	.1	23	--	--	--	--
JUL , 1979										
19...	.4	1.4	11	9.9	.1	20	138	82	--	1
50126000 - RIO DUEY NR YAUCO, PR (LAT 18 03 17 LONG 066 51 06)										
JUN , 1979										
14...	.6	3.6	38	24	.1	23	362	--	--	--
JUL										
17...	.8	3.1	32	33	.2	23	327	264	6.5	1

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
50114400 - RIO BUCANA NR PONCE, PR (LAT 18 02 18 LONG 066 35 12)										
DEC , 1978										
07...	ND	<2	2	240	<2	20	--	--	--	ND
JUL , 1979										
19...	ND	2	30	17000	8	540	<.5	<1	ND	7
50115900 - RIO PORTUGUES AT HWY 14 AT PONCE, PR (LAT 18 01 09 LONG 066 36 26)										
DEC , 1978										
07...	<2	<2	4	430	3	50	--	--	--	30
JUL , 1979										
19...	ND	2	30	19000	8	470	<.5	<1	ND	40
50126000 - RIO DUEY NR YAUCO, PR (LAT 18 03 17 LONG 066 51 06)										
JUN , 1979										
14...	--	--	--	--	--	--	--	--	--	--
JUL										
17...	ND	2	2	480	3	160	<.5	<1	ND	20

ND Looked for but not detected.

Ground-Water Records

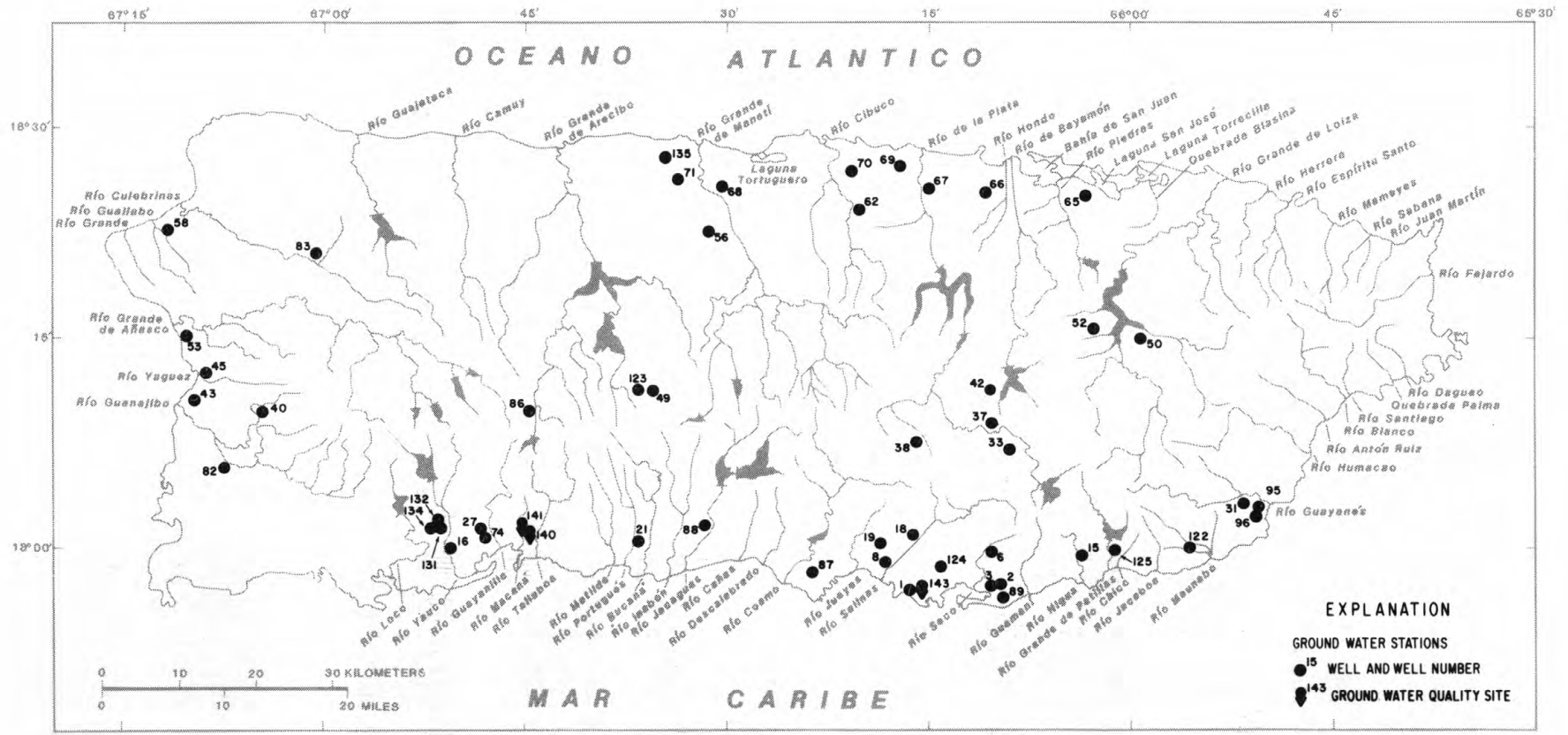

Figure 19.--Location of ground-water stations.

181305066355202. Local number, 49.
LOCATION.--Lat 18°13'05", long 66°35'52".
Owner: PR. Aqueduct & Sewer Authority.
Name: Jayuya 4.
AQUIFER: Recent alluvium.
WELL CHARACTERISTICS.--Drilled unused public supply well, diameter 16 to 12 in (41 to 30 cm), cased 16 in (41 cm) 0-30 ft (0-9.1 m), 12 in (30 cm) 0-60 ft (0-18.3), perforated 12 in (30 cm) 0-60 ft (0-18.3 m). Depth 100 ft (30.5 m).
DATUM.--Altitude of land-surface datum is about 1,400 ft (426.7 m) above mean sea level.
Measuring point: Lower edge of 0.75 in (1.9 cm) pipe, 1.3 ft (0.40 m) above land-surface datum.
REMARKS.--Observation well. Water levels affected by pumpage of nearby well. Discontinued Nov. 19, 1975, reactivated Mar. 16, 1977. Revised 1977 water year figures.
PERIOD OF RECORD.--August 1960 to Nov. 19, 1975, Mar. 16, 1977 to Oct. 11, 1979 (discontinued).
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 9.08 ft (2.77 m) below land-surface datum, Jan. 12, 1979; lowest water level measured 39.08 ft (11.91 m) below land-surface datum, July 16, 1962.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1977 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Mar. 16, 1977	16.92	Sept. 9, 1977	16.27	Apr. 12, 1978	16.64	Jan. 12, 1979	9.08
Apr. 6	16.87	Nov. 17	13.80	May 9	16.55	Apr. 18	14.52
May 5	16.50	Dec. 15	15.22	June 13	16.80	May 16	12.06
June 8	16.57	Jan. 11, 1978	18.67	July 14	14.00	June 13	11.67
July 21	15.80	Feb. 8	16.62	Sept. 13	14.32	July 26	13.84
Aug. 2	16.20	Mar. 26,	16.93	Oct. 12	9.50	Aug. 22	14.02
						Oct. 11	14.52

181038066441201. Local number, 86.
LOCATION.--Lat 18°10'38", long 66°44'12".
Owner: Joaquín Mattei - U.S. Geological Survey.
Name: Adjuntas.
AQUIFER.--Alluvium of Quaternary Age and volcanic rock of Eocene Age.
WELL CHARACTERISTICS.--Drilled test well, diameter 6 in (15 cm). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 1,460 ft (445.0 m) above mean sea level. Measuring point: Bottom edge of hole in 6 in (15 cm) casing, 1.45 ft (0.44 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--August 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 4.34 ft (1.32 m) below land-surface datum, Jan. 12, 1979; lowest water level measured 12.41 ft (3.78 m) below land-surface datum, Apr. 5, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	5.20	June 13, 1979	8.43	Nov. 27, 1979	11.69	July 16, 1980	11.50
Jan. 12, 1979	4.34	Jul. 26	10.18	Jan. 16, 1980	11.14	Aug. 6	11.30
Apr. 18	11.92	Aug. 22	10.67	Mar. 20	11.79	Sept. 10	9.78
May 16	9.64	Oct. 11	9.41	May 20	9.75		

181307066355001. Local number, 123.
LOCATION.--Lat 18°13'07", long 66°35'50"
Owner: P.R. Aqueduct & Sewer Authority.
Name: Jayuya 3.
AQUIFER.--Recent alluvium.
WELL CHARACTERISTICS.--Drilled for public supply well, diameter 10 in (25 cm) 0-27 ft (0-8.2 m), 10 in (25 cm) 27-100 ft (8.2- 33.5 m) perforated and all gravel packed.
DATUM.--Altitude of land-surface datum is about 1,400 ft (427 m) above mean sea level. Measuring point: Lower edge 0.75 in (1.90 cm) pipe on concrete pump base, 1.40 ft (0.43 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--Jan. 15, 1976 to July 21, 1977, Jan. 15, 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 10.73 ft (3.27 m) below land-surface datum, May 30, 1980; lowest water level a49.36 ft (15.04 m) below land-surface datum, Apr. 21, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15, 1980	14.95	Apr. 8, 1980	15.12	May 30, 1980	10.73	Aug. 27, 1980	14.89
Mar. 18	14.17	May 13	15.64	Jul. 22	14.89	Sept. 23	13.71

a Pumping.

RIO GRANDE DE MANATI BASIN

182231066312501. Local number, 56.
LOCATION.--Lat 18°22'31", long 66°31'25".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Montebello.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 12 in (30 cm) cased to 123 ft (37.5 m). Depth 215 ft (65.5 m).
DATUM.--Altitude of land-surface datum is about 656 ft (199.9 m) above mean sea level. Measuring point: 1.0 in (2.54 cm) hole in pump base, 1.7 ft (0.52 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--January 1960-1972, Apr. 21, 1975 to Apr. 17, 1979 (discontinued).
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 77.4 ft (23.6 m) below land-surface datum, Sept. 1, 1965; lowest water level measured c350.0 ft (106.7 m) below land-surface datum, Apr. 17, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	239.4	Dec. 1, 1978	251.7	Feb. 8, 1979	302.9	Apr. 17, 1979	c350.0
Nov. 7	238.6	Jan. 18, 1979	237.2	Mar. 19	348.2		

182548066300201. Local number, 68.
LOCATION.--Lat 18°25'48", long 66°30'02".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Manatí 2.
AQUIFER.--Unconsolidated deposits of Quaternary Age and limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 20 to 12 in (51 to 30 cm), cased 20 in (51 cm), 8-168 ft (2.4-51.2 m); 12 in (30 cm) 153-206 ft (46.6-62.8 m); perforated 20 in (51 cm) 80-168 ft (24.4-51.2 m), 12 in (30 cm), 153-206 ft (46.6-62.8 m). Depth 212 ft (64.6 m).
DATUM.--Altitude of land-surface datum is 31.41 ft (9.574 m) above mean sea level. Measuring point: Bottom edge of hole in 20 in (0.51 m) casing, 3.55 ft (1.08 m) above land-surface datum.
REMARKS.--Observation well. Lowest and highest water levels are pumping levels.
PERIOD OF RECORD.--October 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a22.50 ft (6.86 m) below land-surface datum, June 2, 1965; lowest water level measured a37.19 ft (11.3 m) below land-surface datum, Jan. 15, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 13, 1978	a32.07	Apr. 23, 1979	a28.84	Oct. 12, 1979	a27.12	May 6, 1980	a29.08
Nov. 7	a32.62	May 15	a28.77	Nov. 7	a26.22	June 2	a28.51
Dec. 1	a33.05	June 12	a27.99	Dec. 10	a26.20	July 2	a29.17
Jan. 18, 1979	a30.00	July 24	a29.83	Jan. 14, 1980	a27.97	Aug. 8	a29.26
Feb. 8	a35.02	Aug. 21	a28.75	Mar. 21	a28.46	Sept. 12	a29.29
Mar. 22	a34.40	Sept. 18	a26.33	Apr. 9	a28.66		

182603066333601. Local number, 71.
LOCATION.--Lat 18°26'03", long 66°33'36".
Owner: P.R. Aqueduct and Sewer Authority
Name: Florida Afuera, Barceloneta.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 12 in (30 cm), cased 0-150 ft (0-45.7 m). Depth 235 ft 71.6 m).
DATUM.--Altitude of land-surface datum is about 213 ft (64.9 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.9 cm) pipe in pump base, 3.0 ft (0.91 m) above land surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--March 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a176.7 ft (53.9 m) below land-surface datum, June 4, 1980; lowest water-level measured 226.9 ft (69.2 m) below land-surface datum, Apr. 4, 1963.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 13, 1978	a195.9	Mar. 22, 1979	a226.8	Aug. 21, 1979	a181.9	Apr. 9, 1980	a200.0
Nov. 7	a200.3	Apr. 22	a200.6	Oct. 12	a195.0	May 5	a200.1
Dec. 1	a200.4	May 15	a201.1	Nov. 7	a203.4	June 4	a176.7
Jan. 18, 1979	a200.6	June 12	a203.5	Dec. 10	a196.5	July 2	a200.4
Feb. 8	a226.4	July 24	a188.5	Feb. 19, 1980	a197.1	Aug. 8	a200.2
				Mar. 21	a199.8	Sept. 12	a199.4

a Pumping.
c Dry.

RIO GRANDE DE MANATI BASIN

182621066343301. Local number, 135.
LOCATION.--Lat 18°26'21", long 66°34'33".
Owner: Puerto Rico Land Authority.
Name: Lederle.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled agricultural water-table well, diameter 24 in (61 cm) cased 0-30 ft (0-9.1 m), diameter 16 5/8 in (42 cm) cased to 0-450 ft (0-137.2 m). Depth 550 ft (167.6 m).
DATUM.--Altitude of land-surface datum is 287.00 ft (87.478 m) above mean sea level. Measuring point: Top of shelter floor, 2.8 ft (0.85 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--November 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 282.1 ft (85.98 m) below land-surface datum, Nov. 26, 1979; lowest water level 283.7 ft (86.47 m) below land-surface datum, Nov. 1, 1978.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5		283.1	283.3	283.4	283.4	283.1	283.7	282.7	282.8	283.2	283.1	b 282.8
10		283.1	283.4	283.4	283.4	283.3	283.6	283.0	282.8	283.0	283.1	b 282.5
15		283.1	283.4	283.5	283.3	283.1	283.6	283.1	282.8	283.0	283.0	b 282.4
20		283.2	283.3	283.5	283.3	283.3	283.5	282.7	283.0	282.8	283.0	b 282.4
25		283.1	283.3	283.4	283.1	283.3	283.0	282.7	283.2	283.0	283.0	b 282.4
EOM		b 283.3	283.3	283.4	282.9	283.5	282.5	282.8	283.2	283.0	283.0	b 282.4

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	b282.4	282.5	282.4	282.7	282.9	282.9	282.9	282.9	282.9	282.9	282.9	283.0
10	b282.4	282.6	282.5	282.7	b 282.9	282.9	282.9	283.0	282.9	282.8	282.9	283.0
15	282.4	282.7	282.5	282.8	b 282.9	282.9	282.9	283.1	282.9	282.9	282.9	283.0
20	282.3	282.9	282.5	282.9	282.8	282.9	282.9	283.1	282.9	282.8	283.0	283.0
25	282.4	282.2	282.5	282.9	282.9	282.9	282.9	283.0	282.9	282.9	283.0	283.0
EOM	282.4	282.2	282.6	282.9	282.9	282.9	282.9	282.9	282.9	282.9	283.0	282.9

RIO CIBUCO BASIN

182446066194801. Local number, 62.
LOCATION.--Lat 18°24'46", long 66°19'48".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Vega Alta 1.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 12 in (41 to 30 cm), cased 16 in (41 cm) 0-50 ft (0-15.2 m), 12 in (30 cm) 0-110 ft (0-33.5 m). Depth 210 ft (64.0 m).
DATUM.--Altitude of land-surface datum is about 102 ft (31.1 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.90 cm) pipe in pump base, 1.0 ft (0.30 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--January 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a80.8 ft (24.6 m) below land-surface datum, Jan. 28, 1980; lowest water level measured 134.2 ft (40.9 m) below land-surface datum, Aug. 11, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	a107.0	May 13, 1979	a137.2	Nov. 7, 1979	a 81.3	May 13, 1980	a 96.8
Nov. 9	a107.0	June 12	a 93.2	Dec 10	a100.1	July 1	a104.5
Dec. 1	a107.0	July 24	a107.5	Jan. 28, 1980	a 80.8	Aug. 8	a100.8
Jan. 19, 1979	a102.6	Aug. 21	a104.9	Feb. 11	a 82.1	Sept. 22	a101.8
Apr. 17	a102.6	Oct. 12	a104.2	Mar. 5	a85.6		

a Pumping.
b Estimated.

RIO CIBUCO BASIN

182647066201701. Local number, 70.
LOCATION.--Lat 18°26'47", long 66°20'17".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Sabana Hoyos.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in (20 cm), cased 0-90 ft (0-27.4 m), perforated. Depth 90 ft (27.4 m).
DATUM.--Altitude of land-surface datum is about 49 ft (14.9 m) above mean sea level. Measuring point: Top of casing wooden cover, 1.30 ft (0.40 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--February 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 21.33 ft (6.50 m) below land-surface datum, Oct. 26, 1976; lowest water level 31.10 ft (9.48 m) below land-surface datum, July 31, 1975.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	29.91	29.91	29.53	29.92	30.48	30.20	30.05	29.80	27.72	27.76	27.79	23.75
10	29.92	29.98	29.57	29.91	30.63	30.26	30.06	29.83	27.65	27.73	27.85	24.20
15	29.96	29.97	29.65	29.95	30.66	30.28	30.05	29.59	27.61	27.86	27.94	25.04
20	30.01	29.59	29.74	30.02	30.30	30.25	30.04	28.67	27.79	27.67	28.02	25.55
25	30.07	29.43	29.80	30.06	30.18	30.21	29.91	28.41	27.97	27.62	28.06	25.89
EOM	29.91	29.47	29.88	30.30	30.16	30.11	29.81	28.00	27.92	27.75	26.82	26.10

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	26.05	26.85	26.02	26.76	b 27.32	27.75	28.11	28.51	28.66	28.85	29.02	29.19
10	26.17	26.83	26.25	26.92	b 27.38	27.74	28.19	28.63	28.69	28.83	29.06	29.22
15	26.33	26.92	26.43	b26.97	27.43	27.82	28.19	28.72	28.72	28.85	29.08	29.23
20	26.47	26.94	26.59	b27.05	27.49	27.88	28.25	28.76	28.76	28.88	29.12	29.23
25	26.62	26.48	26.52	b27.14	27.58	27.95	28.30	28.79	28.80	28.94	29.14	29.22
EOM	26.75	25.75	26.62	b27.24	27.67	28.03	28.39	28.71	28.83	29.01	29.16	29.18

RIO DE LA PLATA BASIN

180707066084201. Local number, 33.
LOCATION.--Lat 18°07'07", long 66°08'42".
Owner: P.R. Aqueduct and Sewer Authority.
Name. Cayey 10.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 12 in (41 to 30 cm), cased 16 in (41 cm) 0-30 ft (0-9.1 m), 12 in (30 cm) 0-200 ft (0-61.0 m), perforated 30-200 ft (9.1-61.0 m), gravel packed 0-190 ft (0-57.9 m). Depth 220 ft (67.1 m).
DATUM.--Altitude of land-surface datum is about 1,280 ft (390.1 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.90 cm) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 1.49 ft (0.45 m) below land-surface datum, Jan. 18, 1961; lowest water level measured a169.2 ft (a51.6 m) below land-surface datum, Dec. 10, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	WATER level	Date	Water level
Oct. 3, 1978	a47.8	Apr. 19, 1979	10.5	Oct. 9, 1979	7.0	Apr. 10, 1980	8.8
Nov. 13	a54.3	May 22	a53.4	Nov. 26	6.6	May 7	9.1
Dec. 6	a57.0	June 20	a53.2	Dec. 27	7.3	June 12	a58.4
Feb. 7, 1979	a53.0	July 20	a52.7	Jan. 8, 1980	5.7	July 10	a59.0
Mar. 15	11.2	Aug. 20	7.8	Feb. 20	7.7	Aug. 12	a62.6
				Mar. 27	8.4	Sept. 19	a59.6

a Pumping.
b Estimated.

180853066095401. Local number, 37.
LOCATION.--Lat 18°08'53", long 66°09'54".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Barrio Rincón de Cidra.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled water supply water-table well, diameter 16 to 8 in (41 to 20 cm), cased 16 in (41 cm) 0-30 ft (0-9.1 m), 12 in (30 cm) 0-43 ft (0-13.1 m), perforated 0-43 ft (0-13-1 m). Depth 200 ft (61.0 m).
DATUM.--Altitude of land-surface datum is about 1,180 ft (359.7 m) above mean sea level. Measuring point: Lower edge at 0.75 in (1.90 cm) pipe, 1.9 ft (0.58 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--June 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 14.38 ft (4.38 m) below land-surface datum, July 20, 1979; lowest water level measured 62.87 ft (19.16 m) below land-surface datum, Jul. 5, 1961.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 3, 1978	25.19	Apr. 19,1979	25.18	Oct. 9, 1979	15.19	Apr. 2, 1980	23.43
Dec. 7	21.75	May 22	22.74	Nov. 26	17.32	May 20	23.40
Jan. 19, 1979	21.65	June 20	18.60	Dec. 27	18.38	June 4	22.51
Feb. 7	24.03	July 20	14.38	Jan. 8, 1980	18.52	July 2	23.48
Mar. 15	23.47	Aug. 20	17.21	Feb. 20	18.41	Aug. 6	23.34
				Mar. 10	26.74	Sept. 4	23.82

180823066154601. Local number, 38.
LOCATION.--Lat 18°08'23", long 66°15'46".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Barrio Robles.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 10 in (25 cm). Depth 82 ft (25.0 m).
DATUM.--Altitude of land-surface datum is about 1,980 ft (603.7 m) above mean sea level. Measuring point: Top of clean-out door sill, 1.80 ft (0.55 m) above land-surface datum.
REMARKS.--Recording observation well. Large fluctuations caused by pumping of nearby wells.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.60 ft (1.10 m) above land-surface datum, Sept. 6, 1960; lowest water level 51.47 ft (15.69 m) below land-surface datum, Sept. 30, 1977.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	48.75	47.00	46.28	b 41.80	38.45	36.93	35.80	34.72	37.47	28.27	25.62	11.13
10	48.40	47.11	46.55	b 41.10	38.26	36.80	35.80	34.10	b 31.50	28.30	27.24	13.77
15	48.45	46.73	46.06	b 40.40	37.93	36.60	35.62	b34.60	b 31.30	30.20	27.23	18.76
20	48.55	46.72	45.93	39.40	37.58	36.45	35.48	b33.10	31.42	24.37	22.32	17.92
25	47.62	46.56	45.77	39.12	37.24	36.08	34.80	34.80	32.77	27.84	22.29	18.74
EOM	46.73	46.37	42.52	38.75	36.98	35.70	35.06	37.00	17.89	26.83	11.68	12.65

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	16.52	14.17	13.41	14.08	16.11	15.02	16.48	18.40	20.73	22.38	24.27	25.66
10	17.60	13.94	11.88	15.00	15.52	13.80	17.30	19.38	20.48	22.69	24.52	25.95
15	18.48	16.32	14.24	15.03	14.77	13.06	17.20	19.73	21.09	23.00	24.64	26.13
20	18.50	16.01	14.91	15.43	14.00	12.80	17.19	20.01	21.12	23.53	25.05	26.53
25	18.14	13.18	11.10	15.81	13.43	12.70	17.51	20.54	21.91	23.86	25.39	26.51
EOM	15.31	11.00	13.22	15.93	13.23	15.20	18.12	20.40	22.13	24.20	25.61	26.11

b Estimated.

RIO DE LA PLATA BASIN

182518066144201. Local number, 67.
LOCATION.--Lat 18°25'18", long 66°14'42".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Campanilla.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 12 in (30 cm). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 390 ft (118.9 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.90 cm) pipe, 1.0 ft (0.30 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--March 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 28.50 ft (8.69 m) below land-surface datum, Oct. 12, 1979; lowest water level measured 49.90 ft (15.21 m) below land-surface datum, June 6, 1967.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	39.13	July 24, 1979	30.68	Dec. 10, 1979	31.39	May 13, 1980	35.92
Jan. 19, 1979	38.97	Aug. 21	33.06	Jan. 28, 1980	33.99	June 26	35.30
Apr. 17	33.97	Sept. 18	29.79	Feb. 11	33.34	July 10	35.39
May 15	33.92	Oct. 12	28.50	Mar. 5	34.26	Aug. 8	35.43
June 12	31.20	Nov. 7	32.85	Apr. 25	34.28	Sept. 22	35.45

182636066164201. Local number, 69.
LOCATION.--Lat 18°26'36", long 66°16'42".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Higuillar.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 10 in (25 cm). Depth 200 ft (61.0 m).
DATUM.--Altitude of land-surface datum is about 60 ft (18.3 m) above mean sea level. Measuring point: Airline hole in pump base, 1.1 ft (0.34 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 41.21 ft (12.6 m) below land-surface datum, July 3, 1958; lowest water level measured 58.89 ft (17.95 m) below land-surface datum, Oct. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	a53.08	June 12, 1979	a51.40	Nov. 7, 1979	a51.32	Apr. 25, 1980	a52.19
Nov. 9	a53.00	July 24	a51.40	Dec. 10	a52.21	May 13	a52.37
Jan. 9, 1979	a53.69	Aug. 21	a52.30	Jan. 28, 1980	a52.66	June 26	a52.50
Apr. 17	a53.51	Sept. 18	a49.14	Feb. 11	a51.27	July 10	a52.59
May 15	a52.60	Oct. 12	a54.61	Mar. 20	a51.84	Aug. 8	a52.97
						Sept. 22	a53.38

RIO DE BAYAMON AND RIO PIEDRAS BASINS

181047066091701. Local number, 42.
LOCATION.--Lat 18°10'47", long 66°09'17".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Cidra 2.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 13 in (33 cm), cased 0-64 ft (0-19.5 m), perforated 16-64 ft (4.9-19.5 m). Depth 92 ft (28.0 m).
DATUM.--Altitude of land-surface datum is about 1,340 ft (408.4 m) above mean sea level. Measuring point: Airline hole in pump base, 1,4 ft (0.43 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 12.30 ft (3.75 m) below land-surface datum, Dec. 27, 1979; lowest water level measured 56.32 ft (17.17 m) below land-surface datum, Apr. 1, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 3, 1978	14.56	Mar. 19, 1979	13.88	Aug. 20, 1979	13.35	Apr 2, 1980	14.12
Nov. 13	14.05	Apr. 19	14.34	Oct. 9	12.69	May 20	15.20
Dec. 6	14.02	May 22	12.97	Nov. 26	12.67	June 4	14.68
Jan. 19, 1979	14.65	June 20	13.19	Dec. 27	12.30	July 2	16.22
Feb. 7	14.09	July 20	12.90	Mar. 10, 1980	13.64	Aug. 6	16.45
						Sept. 4	17.33

a Pumping.

RIO DE BAYAMON AND RIO PIEDRAS BASINS

182506066030801. Local number, 65.
LOCATION.--Lat 18°25'06", long 66°03'08".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Hato Rey Central, McCracken well.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 15 in (38 cm), cased 0-205 ft (0-62.5 m), perforated 64-205 ft (19.5-62.5 m). Depth 205 ft (62.5 m).
DATUM.--Altitude of land-surface datum is about 33 ft (10.1 m) above mean sea level. Measuring point: Top of casing 3.4 ft (1.04 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 22.40 ft (6.83 m) below land-surface datum, Aug. 12, 1976; lowest water level measured 42.40 ft (12.92 m), below land-surface datum, May 13, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	a31.22	Apr. 3, 1980	a32.58	June 2, 1980	a31.49	Aug. 6, 1980	a31.80
Feb. 15	a34.69	May 5	a33.42	July 16	a31.00	Sept. 15	a31.50
Mar. 13	a30.47						

182547066110801. Local number, 66.
LOCATION.--18°25'47", long 66°11'08".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Sabana Seca.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well. Depth 130 ft (39.6 m).
DATUM.--Altitude of land-surface datum is about 75 ft (22.9 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.90 cm) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--June 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a42.58 ft (a12.98 m) below land-surface datum, Dec. 10, 1979; lowest water level measured 57.75 ft (17.60 m), below land-surface datum, Aug. 13, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	a47.05	June 12, 1979	a44.04	Dec. 10, 1979	a42.58	May 13, 1980	a45.45
Nov. 9	a48.30	July 24	a43.95	Jan. 29, 1980	44.08	June 26	a45.20
Jan. 19, 1979	a46.68	Aug. 21	a45.75	Feb. 11	a44.45	July 10	a45.30
Apr. 17	a46.18	Oct. 10	43.36	Mar. 6	a44.52	Aug. 8	a45.45
May 18	a45.24	Nov. 7	a43.78	Apr. 25	a45.07	Sept. 22	a45.47

RIO GRANDE DE LOIZA BASIN

181550065593201. Local number, 50.
LOCATION.--Lat 18°15'50", long 65°59'32".
Owner: Gurabo Agricultural Experimental Station.
Name: Gurabo.
AQUIFER.--Unconsolidated deposits of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 13 in (33 cm). Depth 145 ft (44.2 m).
DATUM.--Altitude of land-surface datum is about 148 ft (45.1 m) above mean sea level. Measuring point: Top of 12 in (30 cm) casing, 0.8 ft (0.24 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--December 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 12.65 ft (3.86 m) below land-surface datum, Sept. 9, 1975; lowest water level measured 44.38 ft (13.5 m) below land-surface datum, June 18, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 3, 1978	26.99	Apr. 25, 1979	30.14	Oct. 4, 1979	30.38	Apr. 2, 1980	30.40
Nov. 17,	25.60	May 21	28.72	Nov. 15	30.61	May 20	28.93
Jan. 10, 1979	25.39	June 18	29.83	Dec. 27	30.34	June 17	29.02
Feb. 7	24.62	July 27	31.22	Feb. 21, 1980	30.44	July 9	30.43
Mar. 19	24.82	Aug. 24	31.32	Mar. 17	30.80	Aug. 13	30.79
						Sept. 5	26.89

a Pumping.

RIO GRANDE DE LOIZA BASIN

181538066021301. Local number, 52.
LOCATION.--Lat 18°15'38", long 66°02'13".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Bairoa.
AQUIFER.--Unconsolidated deposits of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 10 in (41 to 25 cm) 0-69 ft (0-21.0 m), 79-100 ft (24.1-30.5 m), 110-116 ft (33.5-35.4 m), perforated 79-100 ft (24.1-30.5 m), screened 69-79 ft (21.0-24.1 m) and 100-110 ft (30.5-33.5 m); gravel packed to 113 ft (34.4 m). Depth 116 ft (35.4 m).
DATUM.--Altitude of land-surface datum is about 200 ft (61.0 m) above mean sea level. Measuring point: Airline hole in pump base, 1.4 ft (0.43 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +0.92 ft (+0.28 m) below land-surface datum, Nov. 15, 1979; lowest water level measrued a115.1 ft (a35.1 m) below land-surface datum, June 18, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 3, 1978	a74.71	Mar. 19, 1979	a81.60	Aug. 24, 1979	a78.39	Apr. 15, 1980	a79.95
Nov. 15	a75.99	Apr. 24	a80.90	Oct. 4	24.68	May 20	a81.83
Dec. 1	a81.45	May 21	a65.78	Nov. 15	+ .92	June 18	a81.97
Jan. 10, 1979	a81.39	June 18	a81.35	Dec. 18	a71.63	July 9	a81.08
Feb. 7	a77.52	July 27	a77.16	Feb. 21, 1980	a72.40	Aug. 13	a80.45
				Mar. 17	a77.35	Sept. 5	a81.48

RIO HUMACAO TO RIO SECO BASINS

175735066095901. Local number, 2.
LOCATION.--Lat 17°57'35", long 66°09'59".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Puente Jobos.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 21 in (53 cm). Depth 148 ft (45.1 m).
DATUM.--Altitude of land-surface datum is about 26 ft (7.9 m) above mean sea level. Measuring point: Bottom edge of 0.88 in (2.24 cm) pipe, 1.7 ft (0.52 m) above land-surface datum.
REMARKS.--Observation well. Lowest water level is a pumping level.
PERIOD OF RECORD.--February 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 2.85 ft (0.87 m) below land-surface datum, July 24, 1979; lowest water level measured 61.78 ft (18.83 m) below land-surface datum, Aug. 6, 1964.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	5.01	Mar. 22, 1979	5.30	Aug. 24, 1979	4.37	Apr. 14, 1980	4.37
Nov. 21	3.88	Apr. 23	5.95	Oct. 15	3.15	May 13	4.74
Dec. 18	5.00	May 25	5.48	Nov. 29	3.08	June 17	3.45
Jan. 16, 1979	3.20	June 19	4.60	Dec. 17	4.18	July 11	4.76
Feb. 22	5.74	July 24	2.85	Feb. 21, 1980	4.04	Aug. 14	5.29
				Mar. 27	4.34	Sept. 22	6.07

175734066100401. Local number, 3.
LOCATION.--Lat 17°57'34", long 66°10'04".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Jobos.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Bored unused artesian well, diameter 4 in (10 cm). Depth 16 ft (4.9 m).
DATUM.--Altitude of land-surface datum is about 25 ft (7.6 m) above mean sea level. Measuring point: Top of 5 in (13 cm) fitting, 0.5 ft (0.15 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--November 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 0.01 ft (0.003 m) below land-surface datum, Jan. 3, 1963; lowest water level: dry at 16 ft (4.9 m) below land-surface datum, many days during 1968 and 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	1.10	Mar. 22, 1979	1.61	Aug. 24, 1979	1.56	Apr. 14, 1980	1.38
Nov. 21	.57	Apr. 23	1.73	Oct. 15	.20	May 13	1.73
Dec. 18	1.50	May 24	.80	Nov. 29	.10	June 17	.35
Jan. 16, 1979	1.38	June 19	1.28	Dec. 17	.97	July 11	1.66
Feb. 22	2.06	July 24	.74	Feb. 21, 1980	.81	Aug. 14	2.00
				Mar. 27	1.31	Sept. 22	2.73

+Above land-surface datum.
aPumping.

175858066100201. Local number, 6.
LOCATION.--Lat 17°58'58", long 66°10'02".
Owner: Doctor Bruno.
Name: Juana 5.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (41 cm). Depth 173 ft (52.7 m) reported, 110 ft (33.5 m) measured.
DATUM.--Altitude of land-surface datum is about 127 ft (38.7 m) above mean sea level. Measuring point: Top of shelter floor, 3.0 ft (0.91 m) above land-surface datum.
REMARKS.--Recorder installed Jan. 25, 1962.
PERIOD OF RECORD.--November 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 26.20 ft (7.99 m) below land-surface datum, Dec. 10, 1979; lowest water level measured 65.95 ft (20.10 m) below land-surface datum, June 2, 1968.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	51.08	b47.40	40.50	40.69	40.19	40.93	43.50	44.14	47.09	45.57	42.10	39.63
10	51.34	b45.60	40.66	40.96	39.63	40.92	43.95	44.65	47.80	46.00	41.18	33.45
15	51.78	b43.80	40.79	41.28	39.74	40.75	b43.20	b 45.40	48.36	46.17	40.87	29.80
20	52.72	b42.10	40.49	41.59	38.50	40.64	b43.40	b 46.00	48.72	45.95	45.56	28.32
25	53.44	41.07	40.37	41.80	40.66	40.60	43.48	46.13	46.32	45.60	41.52	27.77
EOM	b50.20	40.58	40.53	40.39	40.62	42.45	43.72	46.52	45.55	45.15	40.05	27.37

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.22	26.66	27.37	b 28.40	b34.60	b 38.90	42.88	44.37	47.61	48.02	47.19	48.38
10	26.97	b26.97	26.35	b 29.20	b35.40	b 39.50	43.65	45.22	47.66	47.23	48.00	48.09
15	26.70	b27.05	26.77	b 30.30	b36.30	b 40.10	44.02	45.70	47.55	47.20	47.58	48.10
20	26.49	b27.00	27.02	b 31.40	b37.20	b 40.70	43.98	46.18	47.88	46.79	47.49	48.25
25	26.43	b26.85	26.92	b 32.40	b37.90	b 41.30	44.11	46.43	48.03	46.03	47.40	48.53
EOM	26.60	27.15	27.70	b 33.70	b38.30	42.14	44.34	47.10	48.81	47.25	48.07	48.40

175944066033601. Local number, 15.
LOCATION.--Lat 17°59'44", long 66°03'36".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Pitahaya 1.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (30 cm). Depth 181 ft (55.2 m).
DATUM.--Altitude of land-surface datum is about 130 ft (39.6 m) above mean sea level. Measuring point: Bottom of inspection door, 1.10 ft (0.34 m) above land-surface datum.
REMARKS.--Recording observation well. Water levels affected by pumping of nearby well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.00 ft (0.91 m) below land-surface datum, Oct. 7, 1970; lowest water level 43.90 ft (13.38 m) below land-surface datum, May 20, 1968.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	b 14.30	7.09	8.22	10.08	13.03	18.89	21.74	23.88	8.54	7.58	8.63	4.83
10	12.40	7.42	8.43	10.94	13.03	20.00	22.32	21.53	8.65	7.67	8.87	6.74
15	11.12	7.60	8.72	11.44	15.03	20.58	22.88	11.73	8.22	8.09	9.05	7.36
20	12.24	7.77	9.07	11.50	16.71	20.83	23.28	9.51	9.35	7.54	9.10	7.69
25	6.99	7.92	10.00	11.55	17.53	20.97	23.52	10.02	10.43	8.19	9.12	7.61
EOM	6.53	8.05	9.47	12.45	18.11	21.35	23.71	8.28	7.75	8.52	7.02	6.53

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	6.78	7.87	8.37	9.25	10.38	13.65	18.94	b 18.90	10.09	b 12.42	b 15.00	21.28
10	7.14	7.86	8.59	9.38	10.70	14.50	19.38	b 19.50	10.30	12.48	b 16.60	21.27
15	7.37	8.11	8.77	9.63	10.98	15.34	17.05	20.03	8.12	12.67	17.99	20.60
20	7.54	8.25	8.95	10.02	11.30	16.16	b 16.10	18.51	8.89	9.82	20.10	21.56
25	7.62	8.24	9.07	10.16	12.12	17.00	b 17.20	12.62	10.82	b 11.40	20.65	22.01
EOM	7.73	8.13	9.15	10.31	12.80	17.97	b 18.20	8.42	12.25	b 13.30	21.11	21.60

b Estimated.

180338065523301. Local number, 31.
LOCATION.--Lat 18°03'38", long 65°52'33".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Central Roig.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 20 in (51 cm), 0-120 ft (0-36.6 cm), 12 in (30 cm) 120-125 ft (36.6 -38.1 m), cased 0-125 ft (0-38.1 m), perforated 40-125 ft (12.2-38.1 m). Depth 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is about 41 ft (12.5 m) above mean sea level. Measuring point: Airline hole in pump base, 4.0 ft (1.22 m) above land-surface datum.
REMARKS.--Observation well. Drilled 5 ft (1.5 m) into rock. Affected by nearby pumping.
PERIOD OF RECORD.--July 1959 to August 1973; April 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 5.86 ft (1.79 m) below land-surface datum, Sept. 20, 1960; lowest water level measured a50.57 ft (a15.41 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 16, 1978	a37.22	May 18, 1979	a42.63	Nov. 16, 1979	a30.80	June 16, 1980	a24.51
Nov. 13	a34.07	June 18	a35.82	Dec. 17	a30.91	July 10	a37.35
Jan. 12, 1979	a40.47	Aug. 6	a27.47	Mar. 26, 1980	a46.62	Aug. 13	a36.94
Mar. 7	a44.66	Aug. 22	a33.14	Apr. 10	a45.84	Sept. 22	a43.49
Apr. 12	a47.83	Oct. 4	a29.46	May 12	a48.76		

175641066085101. Local number, 89.
LOCATION.--Lat 17°56'41", long 66°08'51".
Owner: Phillips Puerto Rico Core, Inc.
Name: Phillips observation well 3.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled test well, diameter 4 in (10 cm). Depth 114 ft (34.7 m).
DATUM.--Altitude of land-surface datum is about 6 ft (1.8 m) above mean sea level. Measuring point: Top of casing, 2.25 ft (0.69 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--October 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level +2.70 ft (+0.82 m) above land-surface datum, Jan. 9, 1973; lowest water level 2.50 ft (0.76 m) below land-surface datum, Oct. 13, 1974.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	1.28	.13	.48	.88	1.27	1.21	1.61	b 1.80	b 1.70	1.33	.72	+.54
10	1.36	.05	.61	.96	1.25	1.26	1.42	b 1.80	b 1.70	1.46	.65	+.15
15	.93	.21	.68	1.03	1.12	1.16	1.65	b 1.80	b 1.70	1.26	.79	.08
20	1.17	.20	.70	1.05	1.28	1.39	1.55	b 1.70	1.73	1.16	.93	.04
25	.24	.26	.76	1.17	1.14	1.30	1.63	b 1.70	1.83	.72	.63	+.06
EOM	+ .18	.48	.77	1.14	1.09	1.52	1.83	b 1.70	1.46	.72	.59	+.20

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	+.27	.33	.58	1.04	1.27	1.29	b 1.10	1.70	b 1.50	1.69	1.06	1.87
10	+.20	.22	.41	.31	1.58	1.32	b 1.20	1.65	b 1.40	1.66	1.74	1.75
15	+.12	.43	.40	.19	1.59	b 1.20	1.30	b1.65	b 1.40	1.52	1.75	1.82
20	.07	b .45	.89	.47	b1.10	b 1.10	1.45	b1.65	1.60	1.51	1.84	1.78
25	+.06	b .50	.80	.79	1.37	b 1.00	1.34	b1.60	1.88	1.73	1.81	1.56
EOM	.10	.52	.97	1.37	1.37	b 1.00	1.58	b1.50	1.89	1.75	1.82	1.54

+ Above land-surface datum.
a Pumping.
b Estimated.

180327065515301. Local number, 95.
LOCATION.--Lat 18°03'27", long 65°51'53".
Owner: P.R. Aqueduct and Sewer Authority.
Name: USGS TW-5 or Yabucoa 10.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in (15 cm) cased 0-108 ft (0-32.9 m), slotted 50-108 ft (15.2-32.9 m). Depth 120 ft (36.6 m).
DATUM.--Altitude of land-surface datum is about 26 ft (7.9 m) above mean sea level. Measuring point: Top of shelter floor, 3.0 ft (0.91 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--Apr. 25, 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 4.68 ft (1.43 m) above land-surface datum Aug. 31, 1979; lowest water level 19.36 ft (5.90 m) above land-surface datum, Sept. 28, 1980.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5								13.35	13.40	15.08	15.22	b15.60
10								12.69	14.82	15.10	15.92	b15.85
15								12.49	15.03	13.70	16.20	16.02
20								12.47	15.38	14.61	14.60	16.06
25							13.75	12.97	15.23	14.57	13.84	16.04
EOM							13.17	12.98	14.80	14.76	15.18	15.00

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	14.80	12.01	12.20	14.53	--	--	17.51	17.98	11.00	10.72	12.57	10.90
10	15.40	11.82	12.57	14.40	--	16.08	17.56	18.29	11.61	10.34	12.76	15.36
15	15.11	11.67	12.95	14.82	14.41	16.54	17.58	17.27	11.49	11.10	12.94	11.17
20	14.60	11.68	13.50	15.07	--	16.96	17.66	13.98	12.23	10.70	13.31	11.67
25	14.34	11.77	13.78	15.75	--	17.13	17.97	13.31	12.83	10.78	13.82	11.82
EOM	12.33	11.78	14.46	15.67	--	17.42	17.62	11.82	11.70	11.65	12.90	11.99

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.49	13.25	11.72	13.95	14.81	16.01	16.23	16.61	14.69	b16.37	b17.60	17.58
10	11.87	12.80	11.98	14.28	14.55	16.46	17.48	17.04	15.27	16.68	b17.70	18.34
15	12.06	12.64	12.25	13.75	14.99	16.17	15.97	16.45	15.61	17.01	18.02	18.65
20	11.92	13.05	12.88	14.33	15.56	15.58	16.35	15.83	b15.32	17.09	18.32	19.00
25	12.37	12.43	13.05	14.52	15.87	15.60	16.63	16.17	b15.67	b17.50	18.43	19.32
EOM	12.69	11.59	13.40	14.82	16.18	15.77	15.97	14.86	b16.02	b17.60	18.34	19.21

b Estimated.

180416065514101. Local number, 96.
LOCATION.--Lat 18°04'16", long 65°51'41".
Owner: P.R. Aqueduct and Sewer Authority.
Name: USGS TW-2 or Yabucoa 7.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 16 in (41 cm) cased 0-10 ft (0-3.0 m), cased 6 in (15 cm) cased about 0-183 ft (0-55.8 m), perforated 56-81 ft (17.1-24.7 m), 102-123 ft (31.1-37.5 m), 144-181 ft (43.9-55.2 m). Depth 181 ft (55.2 m).
DATUM.--Altitude of land-surface datum is about 25 ft (7.6 m) above mean sea level. Measuring point: Top of shelter floor, 2.6 ft (0.79 m) above land-surface datum to May 16, 1978, changed to 4.0 ft (1.22 m) above land-surface datum, thereafter.
REMARKS.--Observation recording well.
PERIOD OF RECORD.--Apr. 25, 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 17.88 ft (5.45 m) above land-surface datum, Oct. 16, 1979; lowest water level 28.29 ft (8.62 m) above land-surface datum Sept. 20, 1980.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5								25.81	23.53	22.58	20.09	--
10								25.94	23.37	22.31	20.98	--
15								25.89	23.29	20.91	21.57	21.10
20								25.75	23.10	19.82	--	21.32
25							25.88	25.75	22.60	19.20	--	21.75
EOM							25.98	24.85	22.75	19.65	--	23.89

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	23.28	--	20.88	b 20.40	--	23.62	26.84	28.11	16.43	--	--	18.32
10	23.83	--	21.10	19.72	--	23.93	26.80	27.35	16.23	--	20.07	17.87
15	24.10	19.12	21.29	19.88	22.01	25.31	27.09	26.45	16.45	--	20.69	17.72
20	23.32	18.22	21.79	20.30	20.42	25.99	27.71	25.02	--	--	20.11	19.12
25	--	18.30	b 22.14	20.78	20.15	26.57	27.58	22.71	--	--	19.78	19.22
EOM	--	20.10	b 21.25	--	21.32	26.75	27.88	18.98	--	--	19.60	19.75

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	19.88	18.44	19.91	b 21.70	22.34	b 24.70	25.14	24.86	24.06	25.49	b 25.90	26.15
10	19.06	18.77	20.74	b 21.80	22.28	b 24.90	25.56	26.11	24.00	25.57	b 25.90	26.90
15	18.16	19.08	20.35	b 21.10	22.91	b 25.10	25.27	27.30	24.19	25.58	25.68	27.82
20	18.80	19.32	21.20	b 21.40	22.70	b 25.30	24.77	27.56	24.75	25.70	26.31	28.29
25	18.45	19.33	21.61	b 21.40	23.84	b 25.50	24.47	27.56	24.70	b 25.80	27.45	26.60
EOM	18.77	18.83	b 21.70	21.53	24.40	25.53	24.84	25.22	24.26	b 25.90	27.59	26.08

b Estimated.

RIO HUMACAO TO RIO SECO BASINS

180026065544301. Local number, 122.
LOCATION.--Lat 18°00'26", long 65°54'43".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Maunabo Calzada.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled exploration well, diameter 4 in (10 cm). Depth 70 ft (21.3 m).
DATUM.--Altitude of land-surface datum is about 28.5 ft (8.7 m) above mean sea level. Measuring point: Top of shelter floor, 1.4 ft (0.43 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--December 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water-level measured 2.24 ft (0.68 m) below land-surface datum, July 8, 1976; lowest water level measured 12.38 ft (3.77 m) below-land surface datum, Aug. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 18, 1978	6.66	Apr. 25, 1979	6.03	Oct. 5, 1979	4.90	May 12, 1980	5.80
Nov. 14	6.19	June 4	5.20	Nov. 16	5.99	June 16	8.02
Jan. 11, 1979	4.67	June 20	6.55	Dec. 13	5.75	July 10	9.84
Feb. 12	5.45	Aug. 7	3.40	Mar. 26, 1980	9.39	Aug. 13	6.79
Mar. 7	5.71	Aug. 24	7.29	Apr. 10	6.39	Sept. 22	9.87

180010066004501. Local number, 125.
LOCATION.--Lat 18°00'10", long 66°00'45".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Patillas STP.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 in (41 cm), cased 0-45 ft (0-13.7 m); cased 12 in (30 cm) 0-49 ft (0-14.9 m); perforated 49-81 ft (14.9 -24.7 m). Depth 90 ft (27.4 m).
DATUM.--Altitude of land-surface datum is about 48 ft (14.6 m) above mean sea level. Measuring point: Bottom edge of 0.75 in (1.90 cm) pipe in concrete pump base 1.0 ft (0.30 m) above land-surface datum.
REMARKS.--Observation well. Water levels affected by pumping nearby well.
PERIOD OF RECORD.--January 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest waterlevel measured a30.42 ft (a9.27 m) below land-surface datum, Nov., 9, 1976; lowest water level measure a52.98 ft (a16.15 m) below land-surface datum, May 24, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 18, 1978	a48.16	Mar. 22, 1979	a48.10	Aug. 24, 1979	a40.78	Mar. 26, 1980	a49.80
Nov. 21	a41.35	Apr. 23	a48.55	Oct. 15	a35.10	Apr. 10	a48.39
Dec. 18	a47.90	May 24	a52.98	Nov. 29	a39.82	May 12	a48.64
Jan. 11, 1979	a48.25	June 19	a47.80	Dec. 17	a43.37	June 16	a50.84
Feb. 22	a48.62	July 24	a48.75	Jan. 15, 1980	a42.79	July 10	a46.90
						Aug. 13	a46.54

RIO SALINAS TO RIO JACAGUAS BASINS

175658066155401. Local number, 1.
LOCATION.--Lat 17°56'58", long 66°15'54".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Mar Negro.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Bored unused artesian well, diameter 3 in (8 cm). Depth 23 ft (7.0 m).
DATUM.--Altitude of land-surface datum is about 3 ft (0.91 m) above mean sea level. Measuring point: Top of 1.5 in (3.8 cm) pipe fitting, 3.2 ft (0.98 m) above land-surface datum.
REMARKS.--Observation well. Water levels affected by pumpage of nearby well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +1.83 ft (+0.56 m) above land-surface datum, Dec. 2, 1970; lowest water level measured 3.60 ft (1.10 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	1.68	Mar. 22, 1979	1.46	Aug. 21, 1979	.71	May 13, 1980	.24
Nov. 21	+.15	Apr. 23	1.12	Oct. 15	+.95	June 17	.02
Dec. 13	1.15	May 24	1.02	Nov. 29	+1.47	July 11	.43
Jan. 16, 1979	1.13	June 19	1.03	Dec. 17	+ .40	Aug. 14	.75
Feb. 22	.90	July 24	.37	Mar. 27, 1980	+ .04	Sept. 23	1.31

+ Above land-surface datum.
a Pumping.

175851066174601. Local number, 8.
LOCATION.--Lat 17°58'51", long 66°17'46".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Salinas 1.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 in (41 cm) to 13 in (33 cm); cased 16 in (41 cm) 0-32 ft (0-9.8 m), 13 in (33 cm) 25-120 ft (7.6-36-6 m); perforated 25-120 ft (7.6-36.6 m). Depth 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is about 29 ft (8.8 m) above mean sea level. Measuring point: Top of 1.0 in (2.54 cm) pipe in pump base, 1.2 ft (0.37 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 11.95 ft (3.64 m) below land-surface datum, Dec. 14, 1960; lowest water level measured 42.95 ft (13.09 m) below land-surface datum, Dec. 9, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	a35.77	Mar. 20, 1979	a32.48	Aug. 21, 1979	a27.32	Apr. 14, 1980	a29.24
Nov. 21	26.31	Apr. 23	a28.75	Oct. 15	a22.12	May 13	a33.44
Dec. 13	27.77	May 24	a28.36	Nov. 29	a22.50	June 17	a25.88
Jan. 16, 1979	a27.90	June 19	a27.36	Dec. 17	a24.50	July 11	a29.51
Feb. 22	a31.78	July 24	a26.00	Mar. 27, 1980	a29.50	Aug. 14	a35.02
						Sept. 23	a32.34

180044066153401. Local number, 18.
LOCATION.--Lat 18°00'44", long 66°15'34".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Cocos.
AQUIFER.--Alluvium of Quaternary Age and undifferentiated rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 12 in (41 to 30 cm), cased 16 in (41 cm) 0-40 ft (0-12-2 m), 12 in (30 cm) 0-53 ft (-16.2 m), perforated 32-53 (9.8-16.2 m). Depth 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is about 140 ft (42.7 m) above mean sea level. Measuring point: Top of 1.0 in (2.54 cm) pipe in pump base, 1.25 ft (0.38 cm) above land-surface datum.
REMARKS.--Observation well. Water level affected by nearby pumpage.
PERIOD OF RECORD.--September 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 14.67 ft (4.47 m) below land-surface datum, Sept. 20, 1960; lowest water level measured 79.17 ft (24.13 m) below land-surface datum, June 19, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980.
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 12, 1978	31.83	Mar. 20, 1979	24.49	Aug. 21, 1979	17.80	Apr. 14, 1980	24.87
Nov. 22	15.49	Apr. 24	26.07	Oct. 15	15.64	May 13	27.19
Dec. 13	17.09	May 23	27.32	Nov. 30	17.30	June 17	26.00
Jan. 16, 1979	18.32	June 19	21.74	Dec. 17	17.74	July 11	32.49
Feb. 22	20.65	July 24	17.42	Mar. 27, 1980	23.44	Aug. 14	32.14
						Sept. 23	33.21

180023066175301. Local number, 19.
LOCATION.--Lat 18°00'23", long 66°17'53".
Owner: U.S. Army.
Name: Theater 1.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 to 11 in (41 to 28 cm), cased 16 in (41 cm) 0-64 ft (0-19.5 m), 11 in 0-80 ft (0-24.4 m), perforated 16-64 ft (4.9-19.5 m). Depth 150 ft (45.7 m) reported, 86 ft (26.2 m) measured.
DATUM.--Altitude of land-surface datum is about 140 ft (42.7 m) above mean sea level. Measuring point: Top of 1.0 in (2.54 cm) casing liner, 0.85 ft (0.26 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--December 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 39.38 ft (12.00 m) below land-surface datum, Oct. 15, 1979; lowest water level 79.15 ft (24.12 m) below land-surface datum, Oct. 10, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	54.33	Mar. 20, 1979	50.72	Aug. 21, 1979	48.40	Apr 14, 1980	49.44
Nov. 22	47.32	Apr. 24	51.26	Oct. 15	39.38	May 13	50.48
Dec. 13	46.52	May 23	51.69	Nov. 30	39.89	June 17	51.39
Jan. 16, 1979	48.52	June 19	51.05	Dec. 17	40.54	July 11	51.57
Feb. 22	49.90	July 24	49.02	Mar. 27, 1980	48.70	Aug. 14	51.95
						Sept. 23	50.78

a Pumping.

175829066232201. Local number, 87.
LOCATION.--Lat 17°58'29", long 66°23'22".
Owner: Francisco Alomar.
Name: Alomar 1.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well. Depth 112 ft (34.1 m).
DATUM.--Altitude of land-surface datum is about 35.32 ft (10.77 m) above mean sea level. Measuring point: Top of recorder shelter floor, 4.0 ft (1.22 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--April 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 8.45 ft (2.58 m) below land-surface datum, Dec. 10, 1970; lowest water level 49.18 ft (14.99 m) below land-surface datum, July 27, 1974.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	44.49	b 36.40	35.20	35.19	35.00	36.59	b 37.20	37.93	33.85	31.63	31.50	25.35
10	43.34	b 35.40	b36.10	35.36	35.61	37.93	b 36.00	38.01	33.34	31.06	32.42	21.75
15	43.86	b 34.50	37.23	35.30	35.98	37.75	b 37.00	37.78	32.92	32.40	34.02	20.81
20	44.14	33.67	36.98	35.94	36.43	37.71	37.98	37.30	32.48	30.85	32.77	20.88
25	42.97	34.57	36.60	35.80	36.61	37.84	36.97	35.55	32.25	30.12	33.12	20.62
EOM	b37.40	35.00	36.92	34.94	36.48	b38.00	36.62	34.44	32.70	30.30	29.93	21.55

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	20.49	21.00	20.27	21.99	22.49	23.55	25.10	26.95	26.35	28.83	30.80	33.08
10	20.19	21.05	20.94	22.13	22.67	23.10	25.92	27.49	26.35	29.38	31.89	33.38
15	20.12	21.48	21.51	22.30	22.97	24.22	b25.92	27.65	27.08	29.70	32.52	33.38
20	20.67	21.46	22.07	22.04	23.05	24.50	b26.20	27.75	27.67	29.90	32.55	34.14
25	20.65	20.49	21.71	22.59	22.82	24.70	b26.45	28.03	28.11	31.02	32.61	34.31
EOM	20.42	19.97	21.76	22.80	23.40	25.20	26.60	26.72	28.12	30.99	33.20	34.48

180052066305001. Local number, 88.
LOCATION.--Lat 18°00'52", long 66°30'50".
Owner: Luce and Co.
Name: Hacienda Potala.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 19 in (48 cm). Depth 143 ft (43.6 m).
DATUM.--Altitude of land-surface datum is about 15 ft (4.6 m) above mean sea level. Measuring point: Top of shelter floor, 2.20 ft (0.67 m) above land-surface datum.
REMARKS.--Observation well. Water levels affected by pumpage of nearby well. Station discontinued, Jan. 1,1973. Reactivated, Apr. 15, 1976.
PERIOD OF RECORD.--May 1968, January 1973; April 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 4.50 ft (1.37 m) below land-surface datum; Feb. 26, 1971; lowest water level measured 37.89 ft (11.55 m) below land-surface datum, July 16, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	25.52	Mar. 15, 1979	20.86	Aug. 20, 1979	15.87	Feb. 14, 1980	15.78
Nov. 20	18.95	Apr. 18	31.77	Oct. 15	12.78	May 13	14.24
Dec. 5	18.01	May 22	25.13	Nov. 30	14.82	June 12	13.52
Jan. 16, 1979	17.88	June 15	22.88	Dec. 18	14.66	July 11	11.10
Feb. 20	18.29	July 18	19.22	Jan. 10, 1980	15.62	Aug. 6	7.65
						Sept. 9	18.52

b Estimated.

RIO SALINAS TO RIO JACAGUAS BASINS

175822066134801. Local number, 124.
LOCATION.--Lat 17°58'22", long 66°13'48".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Coquí 2.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 12 in (40 to 30 cm), cased 16 in (40 cm) 20-40 ft (6.1-12.2 m), 12 in (30 cm) 2-20 ft (0.61-6.1 m); perforated 20-118 ft (6.1-36.0 m). Depth 118 ft (36.0 m).
DATUM.--Altitude of land-surface datum is about 26 ft (7.9 m) above mean sea level. Measuring point: Airline hole in pump base, 2.2 ft (0.67 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--April 24, 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured a9.25 ft (a2.82 m) below land-surface datum, Nov. 29, 1979; lowest water level measured a54.70 ft (a16.67 m) below land-surface datum, July 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	a24.45	Mar. 22, 1979	a38.30	Aug. 24, 1979	a28.00	Apr. 14, 1980	a38.93
Nov. 21	a16.68	Apr. 23	a38.48	Oct. 15	a11.85	May 13	a37.91
Dec. 13	a38.27	May 24	a21.45	Nov. 29	a 9.25	June 17	a18.00
Jan. 16, 1979	a36.62	June 19	a27.72	Dec. 17	a11.82	July 11	a29.90
Feb. 22	a38.65	July 24	a13.54	Mar. 27, 1980	a38.47	Aug. 14	a23.14
						Sept. 23	a33.96

RIO INABON TO RIO LOCO BASINS

175922066495901. Local number, 16.
LOCATION.--Lat 17°59'22", long 66°49'59".
Owner: Sucesión Lluveras.
Name: Central San Francisco.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 20 in (51 cm). Depth 185 ft (56.4).
DATUM.--Altitude of land-surface datum is about 30 ft (9.1 m) above mean sea level. Measuring point: Top of shelter's wooden base, 4.06 ft (1.24 m) above land-surface datum.
REMARKS.--Recording observation well (Nov. 9, 1960 to Mar. 23, 1965). Water levels affected by pumpage of nearby wells.
PERIOD OF RECORD.--November 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 1.43 ft (0.44 m) below land-surface datum, Dec. 22, 1960; lowest water level measured 35.76 ft (10.90 m) below land-surface datum, Mar. 7, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 4, 1978	15.73	Mar. 15, 1979	16.57	Aug. 16, 1979	7.42	Mar. 5, 1980	11.50
Nov. 14	9.02	Apr. 16	13.88	Oct. 10	5.33	Apr. 2	11.08
Dec. 4	8.49	May 15	14.86	Nov. 28	4.43	May 16	9.14
Jan. 17, 1979	8.27	June 11	5.28	Dec. 13	5.00	July 17	10.38
Feb. 13	12.10	July 17	7.58	Jan. 21, 1980	5.95	Aug. 8	12.31
				Feb. 13	7.45	Sept. 11	12.10

180057066361101. Local number, 21.
LOCATION.--Lat 18°00'57", long 66°36'11".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Alhambra.
AQUIFER.--Ponce Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 20 in (51 cm), cased 300 ft (91.4 m), perforated 80-300 ft (24.4-91.4 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 53 ft (16.2 m) above mean sea level. Measuring point: Bottom edge 1.5 in (3.8 cm) pipe in concrete pump base, 0.7 ft (0.21 m) below land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--November 1958 to August 10, 1972; January 17, 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 17.43 ft (5.31 m) below land-surface datum, Dec. 14, 1960; lowest water level measured 97.61 ft (29.75 m) below land-surface datum, Aug. 8, 1967.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 11, 1978	a45.50	Mar. 15, 1979	a55.50	Aug. 14, 1979	a46.72	May 13, 1980	a41.45
Nov. 17	a44.03	Apr. 16	a56.89	Oct. 12	a38.28	June 12	a39.45
Dec. 5	a45.50	May 24	a60.92	Nov. 30	a41.73	July 11	a54.68
Jan. 18, 1979	a45.21	June 15	a52.25	Dec. 18	a42.14	Aug. 7	a41.80
Feb. 14	a49.45	July 19	a46.27	Jan. 10, 1980	a49.92	Sept. 9	a41.58

a Pumping.

180150066474901. Local number, 27.
LOCATION.--Lat 18°01'50", long 66°47'49".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Quebradas.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 to 12 in (41 to 30 cm), cased 16 in (41 cm) 0-40 ft (0-12.2 m), 12 in (30 cm) 0-120 ft (0-36.6 m), perforated 40-120 ft (12.2-36.6 m). Depth 120 ft (36.6 m).
DATUM.--Altitude of land-surface datum is about 59 ft (18.0 m) above mean sea level. Measuring point: Top of 1.0 in (2.54 cm) pipe in pump base, 1.1 ft (0.34 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--November 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 25.72 ft (7.84 m) below land-surface datum, Oct. 8, 1959; lowest water level measured 75.1 ft (22.89 m) below land-surface datum, June 27, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 4, 1978	a53.10	May 15, 1979	a52.32	Nov. 28, 1979	a29.17	Apr. 2, 1980	a37.75
Jan. 11, 1979	a46.75	June 11	a46.13	Dec. 13	a30.55	May 16	a36.72
Feb. 13	a51.30	July 17	a38.11	Jan 21, 1980	a32.72	June 12	a35.80
Mar. 15	a52.17	Aug. 16	a32.42	Feb. 13	a34.13	July 17	a37.67
Apr. 16	a48.04	Oct. 10	a28.98	Mar. 5	a35.10	Aug. 14	a38.72
						Sept. 10	a41.57

180110066473501. Local number, 74.
LOCATION.--Lat 18°01'10", long 66°47'35".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Guayanilla.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 16 in (41 cm), cased 0-103 ft (0-31.4 m), perforated 39-103 ft (11.9-31.4 m). Depth 102 ft (31.1 m).
DATUM.--Altitude of land-surface datum is about 34 ft (10.4 m) above mean sea level. Measuring point: Airline hole in pump base, 3.0 ft (0.91 m) above land-surface datum.
REMARKS.--Observation well. Drilled to 195 ft (59.44 m), plugged back to 102 ft (31.1 m).
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 8.56 ft (2.61 m) below land-surface datum, Oct. 21, 1960; lowest water level measured 90.50 ft (27.58 m) below land-surface datum, Aug. 13, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 4, 1978	a64.89	May 15, 1979	a61.00	Nov. 28, 1979	a15.33	June 12, 1980	16.20
Jan. 11, 1979	a57.62	June 11	a69.90	Dec. 13	a15.15	July 17	a54.50
Feb. 13	a56.18	July 17	a65.90	Jan. 21, 1980	a15.27	Aug. 14	a57.15
Mar. 15	a60.21	Aug. 16	a15.80	Feb. 13	a15.48	Sept. 10	a55.63
Apr. 17	a57.97	Oct. 10	a15.15	Mar. 5	a16.49		

180058066502701. Local number, 131.
LOCATION.--Lat 18°00'58", long 66°50'27".
Owner: Union Carbide Corporation.
Name: Yauco 1 or UCC 2.
AQUIFER.--Alluvium of Quaternary Age and limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled observation well, casing slotted 20-145 ft (6.1-44.2 m), open hole below 145 ft (44.2 m). Depth 156 ft (47.6 m).
DATUM.--Altitude of land-surface datum is about 66 ft (20.1 m) above mean sea level. Measuring point: Top of 3 in (0.08 m) pipe, 2.5 ft (0.76 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--August 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 0.46 ft (0.14 m) below land-surface datum; June 14, 1979; lowest water level measured 44.95 ft (13.70 m) below land-surface datum, May 20, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 17, 1979	6.58	June 14, 1979	.46	Dec. 13, 1979	6.95	May 16, 1980	12.35
Feb. 13	14.19	July 17	8.23	Jan. 21, 1980	7.71	June 11	7.19
Mar. 15	14.66	Aug. 16	8.40	Feb. 13	9.23	July 17	11.12
Apr. 16	15.60	Oct. 10	4.83	Mar. 5	11.40	Aug. 8	11.30
May 15	16.39	Nov. 28	5.90	Apr. 2	10.70	Sept. 11	13.84

a Pumping.

180133066503301. Local number, 132.
LOCATION.--Lat 18°01'33", long 66°50'33".
Owner: Pittsburg Plate Glass 4.
Name: Yauco 2.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled observation well, cased 20 in (51 cm) 0-20 ft (0-6.1 m), 12 in (30 cm) perforated pipe 20-84 ft (6.1-25.6 m), 10 in (25 cm) perforated pipe 84-190 ft (25.6-57.9 m). Depth 190 ft (57.9 m).
Datum.--Altitude of land-surface datum is about 75 ft (22.9 m) above mean sea level. Measuring point: Top of shelter floor, 2.35 ft (0.72 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--July 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level +0.12 ft (+0.04 m) below land-surface datum, July 19, 1979; lowest water level 36.91 ft (11.25 m) below land-surface datum, June 27, 1974.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	23.37	7.94	8.92	8.32	6.82	7.33	8.27	b 8.82	b4.45	5.52	5.33	b1.40
10	22.25	8.62	9.17	8.23	7.32	7.42	8.46	b 8.92	b3.95	5.84	5.48	b2.70
15	21.18	8.63	8.97	8.10	7.54	8.28	8.37	b 8.98	4.03	5.90	5.55	b3.20
20	19.99	8.63	8.64	6.83	7.45	8.17	b 8.52	b 7.05	4.82	3.47	5.48	3.40
25	17.78	8.22	8.32	6.65	b 7.07	8.61	b 8.63	b 6.05	5.20	4.61	5.18	3.66
EOM	7.37	8.67	8.37	6.57	b 7.10	8.17	b 8.74	b 4.90	5.38	5.13	5.69	3.38

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	3.84	b 3.90	4.25	4.52	4.68	4.90	9.49	10.22	6.07	8.68	b11.40	b 12.55
10	4.01	b 3.90	4.37	4.50	4.71	4.96	9.53	10.92	6.48	8.90	b11.80	b 12.70
15	3.98	b 3.90	4.40	4.57	4.74	5.70	8.65	11.67	7.05	9.42	b11.95	12.89
20	3.94	b 4.00	4.37	4.71	4.81	6.60	9.18	11.93	7.58	10.05	b12.10	13.20
25	b 3.60	b 4.00	4.46	4.70	4.79	7.67	9.81	11.26	8.07	b10.40	b12.25	13.22
EOM	b 3.80	4.15	4.47	4.73	4.94	8.74	9.64	5.78	8.35	b10.90	b12.40	b 12.10

180120066503201. Local number, 134.
LOCATION.--Lat 18°01'20", long 66°50'32".
Owner: Union Carbide Corporation.
Name: Yauco 4 or UCC 1.
AQUIFER.--Alluvium of Quaternary Age and limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled observation well, casing slotted 20-140 ft (6.1-42.7 m) open hole 140-163 ft (42.7-49.7 m). Depth 163 ft (49.7 m).
DATUM.--Altitude of land-surface datum is about 87 ft (26.5 m) above mean sea level. Measuring point: Top of 3 in (0.08 m) pipe, 3.4 ft (1.04 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 7.90 ft (2.41 m) below land-surface datum; June 14, 1979; lowest water level measured 37.84 ft (11.53 m) below land-surface datum, June 27, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	26.95	Apr. 16, 1979	13.82	Nov. 28, 1979	8.79	May 16, 1980	14.59
Nov. 14	12.60	May 15	10.44	Dec. 13	9.43	June 12	10.78
Dec. 5	13.65	June 14	7.90	Jan. 21, 1980	9.90	July 17	13.30
Jan. 17, 1979	13.45	July 17	10.78	Feb. 13	9.96	Aug. 8	13.55
Feb. 13	13.08	Aug. 16	10.13	Mar. 5	10.13	Sept. 11	16.31
Mar. 15	13.16	Oct. 10	8.70	Apr. 2	12.58		

+ Above land-surface datum.
b Estimated.

180933067050801. Local number 40.
LOCATION.--Lat 18°09'33", long 67°05'08".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Rosario.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 16 to 12 in (41 to 30 cm), cased 16 in (41 cm) 0-30 ft (0-9.1 m) 12 in (30 cm) 0-60 ft (0-18.3 m); perforated 12 (30 cm) 10-60 ft (3.0-18.3 m). Depth 105 (32.0 m).
DATUM.--Altitude of land-surface datum is about 164 ft (50.0 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.90 cm) pipe, 2.7 ft (0.82 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--July 1960 to November 1971; May 1973; March 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 7.91 ft (2.41 m) below land-surface datum, Nov. 6, 1974; lowest water level measured 37.30 ft (11.37 m) below land-surface datum, May 7, 1973.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	a11.71	Mar. 27, 1979	a13.53	Aug. 16, 1979	a13.27	Mar. 6, 1980	a13.25
Nov. 9	a12.99	Apr. 17	a14.32	Oct. 10	a12.16	May 9	a15.67
Dec. 5	a13.26	May 17	a12.65	Nov. 20	a12.40	June 5	a15.25
Jan. 18, 1979	13.30	June 13	a10.50	Dec. 12	a13.48	July 10	a10.63
Feb. 14	a14.32	July 25	a14.09	Jan. 23, 1980	a15.06	Aug. 14	a13.47
				Feb. 14	a14.23	Sept. 17	a14.55

181018067091601. Local number, 43.
LOCATION.--Lat 18°10'18", long 67°09'16".
Owner: Mayaguez Sugar Co.
Name: Central Rochelaise.
AQUIFER.--Volcanic rocks of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (30 cm), cased 0-45 ft (0-13.7 m), perforated 0-45 ft (0-13.7 m). Depth 80 ft (24.4 m).
DATUM.--Altitude of land-surface datum is about 7 ft (2.1 m) above mean sea level. Measuring point: Top of 12 in (30 cm) casing, 1.9 ft (0.58 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--August 1959 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +0.50 ft (+0.15 m) above land-surface datum, Nov. 20, 1979; lowest water level measured 2.70 ft (0.82 m) below land-surface datum, Apr. 15, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	+0.30	Mar. 21, 1979	1.10	Aug. 16, 1979	+ .35	Mar. 6, 1980	.19
Nov. 8	+ .40	Apr. 17	1.57	Oct. 10	+ .47	May 9	.15
Dec. 5	+ .20	May 17	.58	Nov. 20	+ .50	June 5	.00
Jan. 17, 1979	.46	June 13	+ .30	Dec. 12	+ .37	July 10	.00
Feb. 14	.56	July 18	+ .27	Jan. 23, 1980	.38	Aug. 13	.35
				Feb. 12	.30	Sept. 17	.00

180532067062401. Local number, 82.
LOCATION.--Lat 18°05'32", long 67°06'24".
Owner: U.S. Geological Survey.
Name: Cabo Rojo.
AQUIFER.--Limestone of unknown age.
WELL CHARACTERISTICS.--Drilled test well, diameter 6 in (15 cm), cased 0-300 ft (0-91.4 m); perforated 170-300 ft (51.8-91.4 m). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is abourt 64 ft (19.5 m) above mean sea level. Measuring point: Hole in shelter floor, 3 ft (0.91 m) above land-surface datum.
REMARKS.--Recording observation well.
PERIOD OF RECORD.--October 1967 to June 10, 1979 (discontinued).
EXTREMES FOR PERIOD OF RECORD.--Highest water level 8.00 ft (2.44 m) below land-surface datum, Oct. 2, 1970; lowest water level 16.57 ft (5.05 m) below land-surface datum, June 22, 1977.

LOWEST WATER LEVEL IN FEET BELOW LAND SURFACE DATUM,
ON 5TH, 10TH, 15TH, 20TH, 25TH AND LAST DAY OF MONTH.
WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.23	9.82	10.77	12.13	13.93	14.31	14.69	15.34	12.23			
10	10.67	9.65	11.13	12.65	13.59	14.12	14.88	15.35	12.25			
15	11.17	8.70	11.46	12.87	13.66	14.61	15.08	14.26				
20	10.74	9.55	11.51	13.37	14.17	14.50	15.85	11.85				
25	9.55	9.42	11.75	13.28	13.84	14.42	15.61	11.46				
EOM	8.94	10.18	12.00	13.82	14.26	14.50	15.40	12.02				

+ Above land-surface datum.
a Pumping.

181233067083201. Local number, 45.
LOCATION.--Lat 18°12'33", long 67°08'32".
Owner: Cervecería India, Inc.
Name: Well 1, Mayaguez.
AQUIFER.--Alluvium of Quaternary Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (30 cm), cased 0-82 ft (0-25.0 m). Depth 82 ft (25.0 m).
DATUM.--Altitude of land-surface datum is about 23 ft (7.0 m) above mean sea level. Measuring point: Top of wood cover, 0.9 ft (0.27 m) above land-surface datum.
REMARKS.--Observation well. Affected by nearby pumping.
PERIOD OF RECORD.--1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 9.41 ft (2.87 m) below land-surface datum, Sept. 15, 1977; lowest water level measured 29.97 ft (9.13 m) below land-surface datum, Jan. 20, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	11.32	Mar. 21, 1979	13.82	Aug. 16, 1979	13.75	Feb. 12, 1980	13.10
Nov. 8	10.30	Apr. 17	10.87	Oct. 10	12.87	Mar. 20	13.48
Dec. 5	10.99	May 17	12.92	Nov. 20	11.74	Apr. 3	15.40
Jan. 17, 1979	11.46	June 13	12.62	Dec. 12	12.00	May 2	15.27
Feb. 14	13.22	July 18	13.19	Jan. 23, 1980	10.30	Aug. 12	15.67
						Sept. 11	12.03

181522067090901. Local number, 53.
LOCATION.--Lat 18°15'22", long 67°09'09".
Owner: P.R. Ports Authority.
Name: Mayaguez Airport.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply water-table well, diameter 8 in (20 cm), cased 0-114 ft (0-34.8 m), perforated 82-114 ft (25.0-34.8 m), open hole 114-353 ft (34.8-107.6 m). Depth 353 ft (107.6 m).
DATUM.--Altitude of land-surface datum is about 20 ft (6.1 m) above mean sea level. Measuring point: Slot in pump base, 0.4 ft (0.12 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--October 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level 0.96 ft (0.29 m) below land-surface datum, Oct. 5, 1978; lowest water level 8.70 ft (2.65 m) below land-surface datum, Feb. 14, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATION

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 5, 1978	0.96	Apr. 17, 1979	6.60	Nov. 20, 1979	7.60	May 2, 1980	4.90
Nov. 8	2.26	May 17	5.10	Dec. 12	2.93	June 5	2.66
Dec. 5	3.48	June 13	2.63	Jan. 23, 1980	4.35	July 17	2.49
Jan. 17, 1979	4.71	July 18	2.09	Feb. 12	4.64	Aug. 12	2.83
Feb. 14	8.70	Aug. 16	2.38	Mar. 20	5.27	Sept. 11	2.12
Mar. 21	5.00	Oct. 10	1.74	Apr. 3	5.59		

182228067113301. Local number, 58.
LOCATION.--LAT 18°22'38", long 67°11'33".
Owner: P.R. Aqueduct and Sewer Authority.
Name: Aguada.
AQUIFER.--Limestone of Tertiary Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 20 in (51 cm) to 12 in (30 cm), cased 20 in (51 cm) 0-40 ft 0-40 ft (0-12.2 m), 12 in (30 cm) 0-60 ft (0-18.3 m), perforated 40-60 ft (12.2-18.3 m). Depth 160 ft (48.8 m).
DATUM.--Altitude of land-surface datum is about 30 ft (9.1 m) above mean sea level. Measuring point: Lower edge of 0.75 in (1.90 cm) pipe in pump base, 1.90 ft (0.58 m) above land-surface datum.
REMARKS.--Observation well. Piezometric head measured for highest water level.
PERIOD OF RECORD.--January 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured +0.81 ft (+0.25 m) above land-surface datum, Sept. 12, 1975; lowest water level measured 83.53 ft (25.46 m) below land-surface datum, Aug. 7, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1978	+0.02	Nov. 19, 1979	.75	Feb. 12, 1980	2.20	June 4, 1980	.85
Nov. 3	1.17	Dec. 11	1.18	Apr. 3	3.94	July 17	+ .12
Jan. 17, 1979	3.28	Jan. 17, 1980	2.44	May 2	2.37	Aug. 12	.50
						Sept. 10	+ .09

182018066593201. Local number, 83.
LOCATION.--Lat 18°20'18", long 66°59'32".
Owner: P.R. Water Resources Authority.
Name: San Sebastián.
AQUIFER.--Volcanic rock of Eocene Age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in (15 cm). Depth 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is about 230 ft (70.1 m) above mean sea level. Measuring point: Top of casing, 2.40 ft (0.73 m) above land-surface datum.
REMARKS.--Observation well.
PERIOD OF RECORD.--May 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured 21.95 ft (6.69 m) below land-surface datum, Apr. 15, 1976; lowest water level measured 40.20 ft (12.25 m) below land-surface datum, July 21, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 12, 1978	28.06	Feb. 2, 1979	29.26	Dec. 13, 1979	28.98	May 1, 1980	28.47
Nov. 7	29.07	June 21	26.82	Jan. 15, 1980	29.73	May 29	26.45
Dec. 15	30.08	Oct. 11	27.67	Feb. 20	30.18	July 16	28.77
Jan. 16, 1979	30.00	Nov. 19	29.73	Mar. 20	30.46	Aug. 6	28.64
				Apr. 3	29.65	Sept. 4	28.26

+ Above land-surface datum.

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

STATION NUMBER	DATE OF SAMPLE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
175825066142500	78-10-04	53.90	880	7.5	26.5	300	77	26	80	2.0	1.0
Fortuna 1	78-10-18	68.20	970	7.8	18.0	--	--	--	--	--	--
	78-11-15	88.60	900	7.1	24.0	--	--	--	--	--	--
	78-11-29	91.30	940	7.3	25.0	--	--	--	--	--	--
	78-12-13	48.80	800	7.3	26.0	--	--	--	--	--	--
	78-12-27	23.00	940	8.6	26.0	320	75	31	68	1.7	1.1
	79-01-16	83.20	900	7.6	27.0	320	77	30	76	1.9	1.1
	79-02-02	90.80	940	7.4	26.0	280	70	25	74	1.9	1.0
	79-02-14	84.30	800	7.4	26.0	290	72	26	72	1.9	1.0
	79-02-28	40.30	840	7.3	26.0	280	71	25	71	1.8	1.0
	79-03-14	73.90	875	7.4	25.8	280	71	25	70	1.8	1.0
	79-03-28	82.70	815	7.7	26.5	290	73	26	72	1.8	1.0
	79-04-11	52.30	864	7.4	26.5	270	71	23	75	2.0	1.4
	79-04-25	52.00	795	7.4	26.0	270	69	23	81	2.2	1.2
	79-05-09	40.50	784	7.5	27.0	250	67	21	80	2.2	1.5
	79-05-23	84.50	777	7.6	26.5	290	73	27	75	1.9	1.3
	79-06-06	20.40	770	7.5	27.0	290	76	25	60	1.5	1.3
	79-06-20	80.40	842	8.8	27.0	280	72	25	69	1.8	1.5
	79-07-11	36.80	931	7.3	27.0	290	72	26	78	2.0	1.0
	79-07-24	16.90	772	7.1	28.5	300	77	25	58	1.5	1.1
	79-08-08	89.50	850	7.6	29.0	300	76	26	75	1.9	1.0
	79-08-21	83.90	900	--	27.0	290	76	25	72	1.8	1.1
	79-09-11	8.70	784	7.6	26.0	290	77	23	56	1.4	1.1
	79-09-25	86.00	760	7.4	25.0	280	71	25	65	1.7	1.0
	79-10-10	14.90	864	7.0	27.5	280	72	25	68	1.8	1.0
	79-10-23	22.00	950	7.0	27.5	270	70	24	64	1.7	1.0
	79-11-28	84.90	873	7.3	27.0	260	66	23	73	2.0	1.1
	79-12-12	7.14	679	7.1	26.5	300	77	27	73	1.8	1.0
175839066151500	78-10-04	48.00	800	7.3	26.5	310	81	25	56	1.4	1.0
Fortuna 5	78-10-18	85.90	900	6.8	24.0	--	--	--	--	--	--
	78-10-31	22.50	850	7.4	25.5	--	--	--	--	--	--
	78-11-15	31.10	840	7.0	21.0	--	--	--	--	--	--
	78-11-29	48.90	905	7.2	25.0	--	--	--	--	--	--
	78-12-13	52.50	900	7.2	26.0	--	--	--	--	--	--
	78-12-27	26.40	880	8.2	25.8	310	78	28	52	1.3	1.2
	79-01-16	22.70	820	7.3	27.9	290	74	26	50	1.3	1.1
	79-02-02	42.30	820	7.0	25.0	280	75	23	54	1.4	1.0
	79-02-14	45.80	750	7.6	26.0	280	75	23	56	1.5	1.0
	79-02-28	20.80	780	7.0	26.0	280	74	23	53	1.4	1.0
	79-03-28	50.20	786	7.4	26.5	270	73	22	51	1.3	1.0
	79-04-11	24.40	777	7.3	26.5	280	74	23	50	1.3	1.4
	79-04-25	24.10	716	7.4	26.0	280	75	23	53	1.4	1.1
	79-05-09	26.60	738	7.2	26.5	290	76	24	54	1.4	1.2
	79-05-23	26.50	718	7.3	26.5	290	75	24	57	1.5	1.3
	79-06-06	59.40	738	7.2	26.5	280	74	24	59	1.5	1.5
	79-06-20	23.90	770	6.9	27.0	280	73	24	54	1.4	2.0
	79-07-11	21.20	960	7.2	27.0	280	73	24	60	1.6	1.0
	79-07-24	24.20	768	7.0	27.0	280	75	23	54	1.4	1.1
	79-08-08	48.20	780	7.5	29.0	280	76	23	59	1.5	1.4
	79-08-21	20.20	690	--	27.0	300	81	24	52	1.3	1.1
	79-09-11	45.60	795	7.4	26.5	290	77	24	58	1.5	1.2
	79-09-25	9.50	780	7.3	25.0	270	71	22	51	1.4	1.0
	79-10-10	6.47	817	6.9	27.5	270	72	22	54	1.4	1.1
	79-10-23	7.32	817	7.0	27.5	280	74	23	49	1.3	1.1
	79-11-28	33.50	854	7.0	27.0	280	74	23	54	1.4	1.1
	79-12-12	4.25	776	6.9	26.5	300	80	25	58	1.5	1.1
180151066454400	78-10-06	--	700	6.9	25.0	300	89	19	32	.8	1.7
Magas 12	78-11-15	--	710	7.1	25.0	--	--	--	--	--	--
	78-11-29	--	710	7.3	24.0	--	--	--	--	--	--
	78-12-13	--	750	7.2	25.5	--	--	--	--	--	--
	78-12-27	--	740	7.9	25.0	280	83	18	28	.7	1.7
	79-01-17	--	670	7.6	26.0	280	84	18	27	.7	1.7
	79-02-02	--	600	7.2	24.0	260	76	16	28	.8	1.6
	79-02-14	--	630	7.3	25.0	250	76	15	27	.7	1.6
	79-02-28	--	690	7.4	25.5	270	80	17	32	.8	1.6

WATER QUALITY DATA, WATER YEARS OCTOBER 1978 TO SEPTEMBER 1980

STATION NUMBER	DATE OF SAMPLE	BICARBONATE FET-FLD (MG/L AS HCO3)	ALKALINITY FIELD (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
175825066142500	78-10-04	--	--	--	46	48	38	500
Fortuna 1	78-10-18	410	340	10	--	45	38	512
	78-11-15	410	340	52	--	48	39	484
	78-11-29	410	340	33	--	49	38	499
	78-12-13	370	300	30	--	52	37	510
	78-12-27	--	--	--	40	43	38	501
	79-01-16	--	--	--	42	47	38	499
	79-02-02	--	--	--	45	46	36	526
	79-02-14	--	--	--	44	46	37	499
	79-02-28	--	--	--	44	46	36	512
	79-03-14	--	--	--	44	45	36	502
	79-03-28	--	--	--	43	44	37	510
	79-04-11	--	--	--	50	37	37	520
	79-04-25	--	--	--	53	40	37	521
	79-05-09	--	--	--	57	42	35	517
	79-05-23	--	--	--	44	48	--	523
	79-06-06	--	--	--	37	45	--	486
	79-06-20	--	--	--	46	48	--	525
	79-07-11	--	--	--	45	51	--	516
	79-07-24	--	--	--	39	41	34	492
	79-08-08	--	--	--	37	47	37	494
	79-08-21	--	--	--	35	50	37	510
	79-09-11	--	--	--	36	49	--	457
	79-09-25	--	--	--	31	51	35	511
	79-10-10	--	--	--	40	52	36	458
	79-10-23	--	--	--	42	51	35	500
	79-11-28	--	330	--	40	52	--	512
	79-12-12	--	--	--	39	53	--	506
175839066151500	78-10-04	--	--	--	46	52	35	469
Fortuna 5	78-10-18	380	310	96	--	49	35	478
	78-10-31	370	300	24	--	45	34	478
	78-11-15	330	270	53	--	59	36	457
	78-11-29	370	300	37	--	51	36	464
	78-12-13	370	300	37	--	51	35	458
	78-12-27	--	--	--	37	45	34	444
	79-01-16	--	--	--	42	55	35	454
	79-02-02	--	--	--	35	47	33	445
	79-02-14	--	--	--	35	46	33	430
	79-02-28	--	--	--	29	42	33	439
	79-03-28	--	--	--	39	46	32	461
	79-04-11	--	--	--	32	41	32	217
	79-04-25	--	--	--	35	43	32	459
	79-05-09	--	--	--	35	43	33	463
	79-05-23	--	--	--	47	55	--	479
	79-06-06	--	--	--	39	48	--	478
	79-06-20	--	--	--	49	54	--	476
	79-07-11	--	--	--	52	61	--	475
	79-07-24	--	--	--	38	46	35	454
	79-08-08	--	--	--	29	46	34	458
	79-08-21	--	--	--	29	47	34	477
	79-09-11	--	--	--	36	50	33	6460
	79-09-25	--	--	--	44	55	34	471
	79-10-10	--	--	--	47	59	35	467
	79-10-23	--	--	--	41	50	32	473
	79-11-28	--	300	--	38	53	--	487
	79-12-12	--	--	--	42	54	--	496
180151066454400	78-10-06	--	--	--	53	48	21	406
Magas 12	78-11-15	280	230	36	--	40	21	384
	78-11-29	280	230	22	--	36	21	365
	78-12-13	280	230	28	--	35	21	366
	78-12-27	--	--	--	44	33	19	350
	79-01-17	--	--	--	45	36	21	370
	79-02-02	--	--	--	42	33	20	323
	79-02-14	--	--	--	46	38	20	371
	79-02-28	--	--	--	51	42	21	378

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office).

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

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

MARGIN INDEX

To use, bend book and follow margin index label to page with black edge marker.

October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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