SUSPENDED-SEDIMENT DATA IN THE UPPER RIO GRANDE DE LOIZA BASIN, PUERTO RICO

By Senén Guzmán-Ríos

U.S. GEOLOGICAL SURVEY
Open-File Data Report 88-324

Prepared in cooperation with the

PUERTO RICO DEPARTMENT OF NATURAL RESOURCES,
PUERTO RICO ENVIRONMENTAL QUALITY BOARD,
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY,
UNITED STATES ARMY CORPS OF ENGINEERS, AND THE
UNITED STATES DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE

San Juan, Puerto Rico

1989

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, *Secretary*

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, *Director*

For additional information write to:
Chief, Caribbean District, WRD
U.S. Geological Survey
GPO Box 4424
San Juan, Puerto Rico 00936

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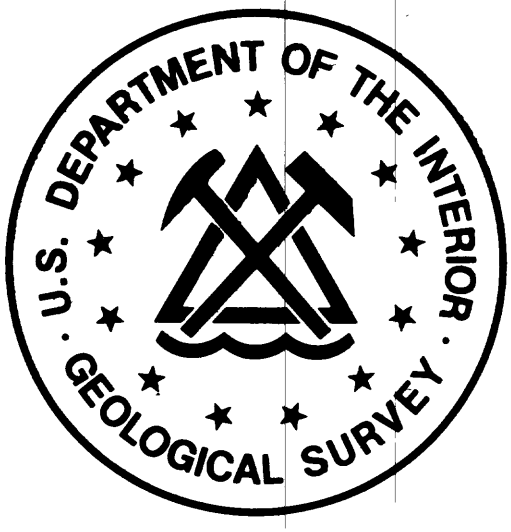
CONVERSION FACTORS

The following conversion table is included for the convenience of those who prefer to use the SI (International System of Units or metric units) rather than the inch-pound system of units. Concentrations of chemical parameters are given in milligrams per liter (mg/L), which are for the values presented numerically equal to parts per million (ppm). Specific conductance values are given in microsiemens per centimeter at 25 degrees Celsius (S/cm at 25 C).

Multiply inch-pound unit	By	To obtain metric units
	Length	
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
acre	4,047	square meter (m^2)
acre	0.4047	hectare (ha)
square mile (mi^2)	2.590	square kilometer (km^2)
	Mass Per Unit Time	
pound per cubic foot (lb/ft^3)	16.02	kilogram per cubic meter (kg/m^3)
short ton per day (short ton/d)	0.9072	metric ton per day (t/d) tonnes per day (td/d)
ton per square mile per year [$(ton/mi^2)/yr$]	0.3503	metric ton per square kilometer per year (t/km^2)/yr or (mg/km2)/yr
	Volume	
gallons (gal)	3.785	liters (L)
acre-foot (acre-ft)	1,233	cubic meter (m^3)
cubic foot (ft^3)	0.02832	cubic meter (m^3)
cubic yard (yd^3)	0.7646	cubic meter (m^3)
cubic mile (mi^3)	4.168	cubic kilometer (km^3)
million gallons (Mgal)	3,785	cubic meter (m^3)
	Volume Per Unit Time	
gallons per minute (gal/min)	0.06308	liters per second (L/s)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
million gallons per day (Mgal/d)	0.04381	cubic meter per second (m^3/s)
	Temperature	
degrees Farenheit (°F)	°C = 5/9 x (°F-32)	degrees Celsius (°C)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GEOLOGICAL SURVEY

SUSPENDED-SEDIMENT DATA IN THE UPPER RIO GRANDE DE LOIZA BASIN, PUERTO RICO

By Senén Guzmán-Ríos

ABSTRACT

This report covers the period from 1983 to 1986 and presents data on suspended-sediment transport from ten small- to medium-sized drainage areas in east-central Puerto Rico. The drainage areas range from 0.82 square miles to 89.8 square miles. Results are based on three years of data from a network of five daily-record stations and five partial-record stations.

A total of 2,114 sediment samples were collected and analyzed during the investigation. Instantaneous concentrations of suspended-sediment varied from 0 to 56,100 milligrams per liter. Instantaneous suspended-sediment loads ranged from 0 tons per day to 817,000 tons per day. A total of 152 suspended-sediment samples were analyzed for particle size distribution. Suspended-sediment in the streams is composed mostly of silt and clay. Sand content ranged from 6 to 80 percent during high flows.

INTRODUCTION

In 1983, the U.S. Geological Survey, Water Resources Division, in cooperation with the Puerto Rico Department of Natural Resources (PRDNR), Puerto Rico Environmental Quality Board (PREQB), Puerto Rico Aqueduct and Sewer Authority (PRASA), U.S. Army Corps of Engineers (USCOE), and the U.S. Department of Agriculture/ Soil Conservation Service (USSCS), started an investigation in an effort to answer the following questions concerning sediment transport in the Río Grande de Loíza basin.

1. Where and when is the sediment deposited?
2. Is the amount of sediment deposited during low stages the same as the amount resuspended during high flows?
3. How is suspended-sediment movement related to changes in flow conditions?

Description of the Problem

Fluvial sediment, a widely recognized pollutant of surface water, is reducing the efficiency and useful life of almost all reservoirs in Puerto Rico. Sediment tranported from the upper basin of the Río Grande de Loíza is eventually deposited in the bottom of Lago Loíza, a water supply reservoir (fig. 1). The reservoir is being significantly affected by the sediment deposition. This reservoir supplies about 50 percent of the water for the San Juan Metropolitan area (fig. 2).

Because of the importance of the basin for water supply, plans are being developed for dams on three tributaries: Río Grande de Loíza at Quebrada Arenas, Río Cayaguas at Cerro Gordo, and Río Valenciano near Juncos (fig. 1). The useful life of Lago Loíza and the design and construction of the three reservoirs will be greatly influenced by sediment transport and deposition.

Collection and analysis of suspended-sediment transport and deposition data in conjunction with landuse data can be used to implement mitigation practices in the basin in an effort to reduce erosion and sedimentation rates.

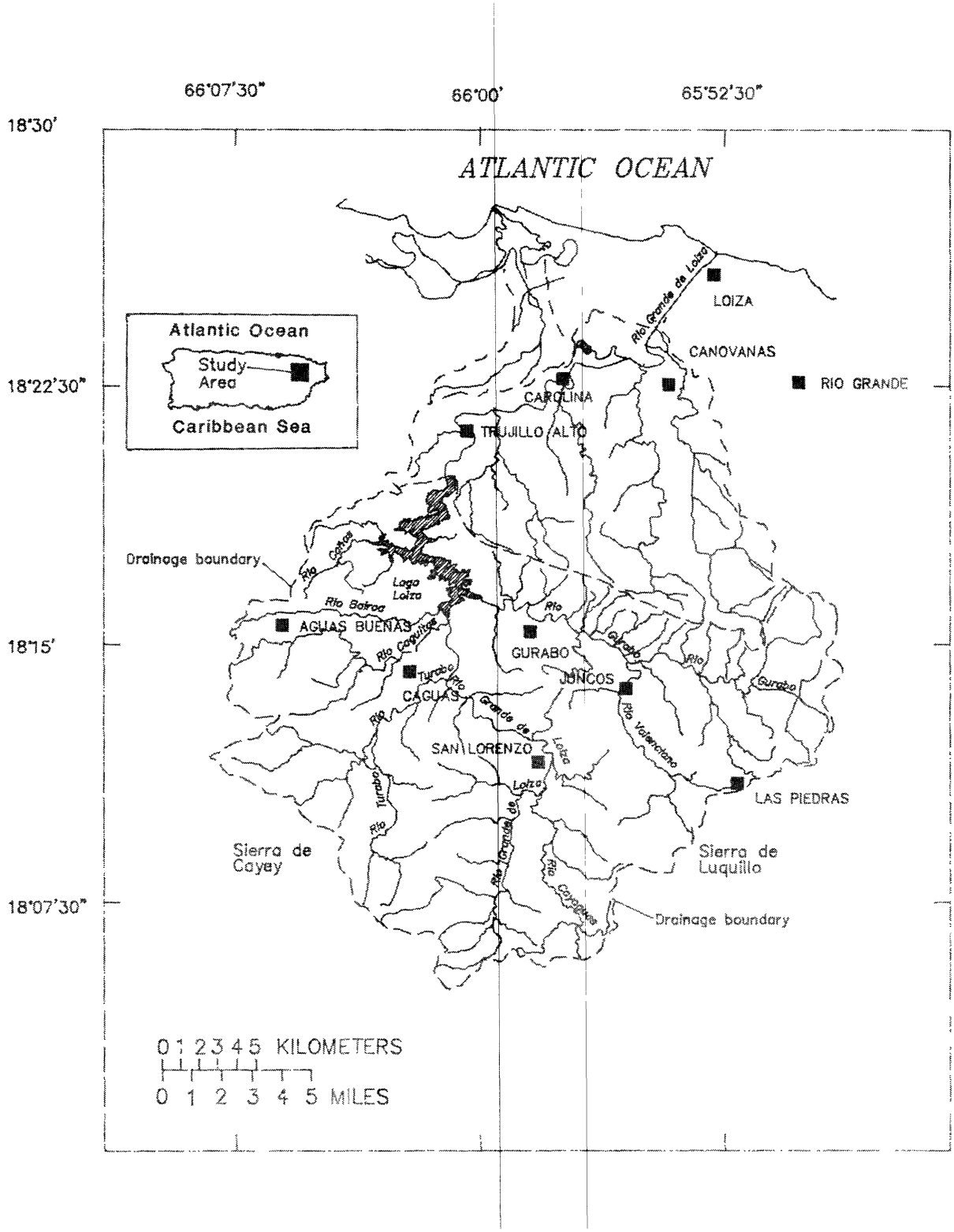
Purpose and Scope

The purpose of this report is to summarize the suspended-sediment data collected during the data collection phase of the study. Data from ten suspended-sediment stations are presented for the period of 1983 to 1986. The study area of 208 square miles extends from the headwaters of Río Grande de Loíza to the Lago Loíza. Data were collected from ten streamflow and suspended-sediment stations established along the main stream and selected tributaries.

A final interpretative report entitled "Sediment Transport and Yields in the upper Río Grande de Loíza Basin, Puerto Rico," will be published at the end of the investigation. In the final report, sediment transport and its delivery to Lago Loíza will be addressed.

Previous Investigations

No previous studies have been conducted to assess sediment transport in the upper part of the Río Grande de Loíza basin. Few sediment samples were collected at fixed stations along the basin prior to this study. However, some studies have been conducted on sedimentation in the Lago Loíza area (Quiñones-Marquez, 1980). Results indicate that sedimentation and channel-bed movement in the Río Grande de Loíza are constant threats to the useful life of Lago


66°07'30"
66°00'
65°52'30"
18°30'
18°22'30"
18°15'
18°07'30"
ATLANTIC OCEAN
Atlantic Ocean
Study Area
Caribbean Sea
LOIZA
CANOVANAS
RIO GRANDE
CAROLINA
TRUJILLO ALTO
Drainage boundary
Río Grande de Loíza
Río Canóvanas
Río Gurabo
Río Valenciano
Río Turabo
Río Cagüitas
Río Bairoa
Lago Loíza
AGUAS BUENAS
GURABO
JUNCOS
CAGUAS
SAN LORENZO
LAS PIEDRAS
Sierra de Cayey
Sierra de Luquillo
Drainage boundary
0 1 2 3 4 5 KILOMETERS
0 1 2 3 4 5 MILES

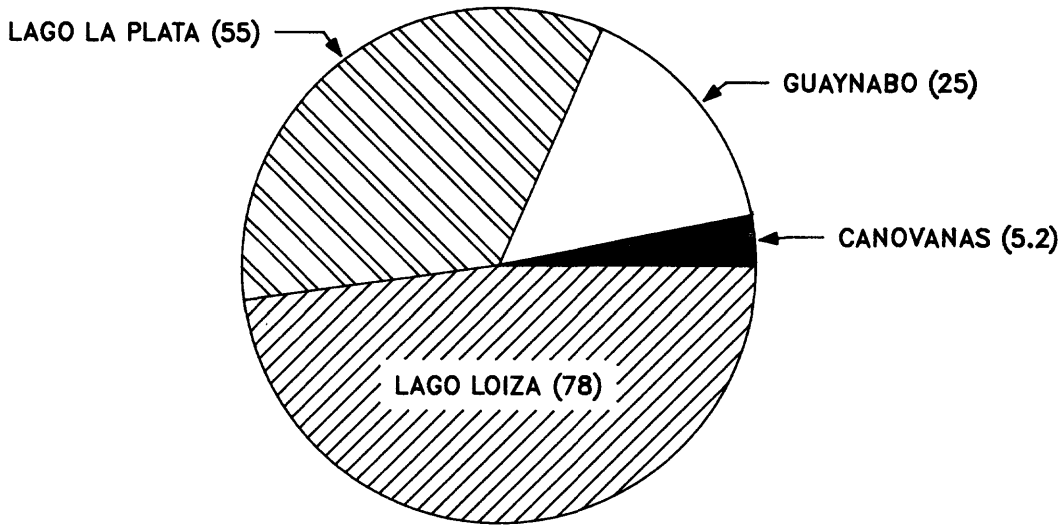


Figure 2.--Sources of water supply for the San Juan metropolitan area. Numbers in parenthesis are in million gallons per day.

Loíza. Some bathymetric surveys of Lago Loíza have been made by the U.S. Soil Conservation Service (Iivari, 1981). A recent sedimentation survey of Lago Loíza has shown a capacity loss rate of 1.8 percent per year (Quiñones-Marquez and others, 1987). Preliminary results of that study indicate that silts and clays transported from the upper basin account for most of the sediments deposited in the reservoir. However, recent coring of Lago Loíza by the U.S. Geological Survey (1989) has disclosed sand deposits throughout the upper 3 feet of bottom sediments.

DESCRIPTION OF THE STUDY AREA

The Río Grande de Loíza basin is the largest drainage basin in Puerto Rico. It is in east-central Puerto Rico (fig. 1) and is among the most developed watersheds on the island. Río Grande de Loíza, which is the largest stream in drainage area and third largest in water discharge in Puerto Rico, was dammed in 1953 to build a water-supply reservoir. Lago Loíza (also known locally as Lago Carraízo), is the only reservoir in the basin and one of the biggest water-supply sources on the island. It had a storage capacity of about 10,000 acre-ft in 1985 and supplied about 110 million gallons per day (Mgal/d) of raw water to the Sergio Cuevas public water supply filtration plant. Outflow from this plant to the San Juan Metropolitan area is reported to average 78 Mgal/d (fig. 2).

The basin is characterized by periods of intense rainfall during the relatively wet seasons from August to November and April to June. Relatively dry periods occur from December to March and from June to July. Mean annual rainfall ranges from 63 to 100 inches per year. Higher rainfall occurs in the headwater areas than in the alluvial valleys due to orographic effects. Data obtained from National Oceanographic and Atmospheric Administration (NOAA) for the period 1983 to 1986 are summarized in table 1.

The basin is also characterized by mountainous terrain covered by dense vegetation. The boundary of the upper basin is marked by the Sierra de Cayey in the southeast, while the Sierra de Luquillo, in the northeast, defines the middle-lower basin (fig. 3). Geologically, the basin is dominated by plutonic rocks, largely granodiorite and quartz diorite (Briggs and Akers, 1965). Locally those formations are deeply weathered. Lava, lava breccia, and tuff and tuffaceous breccia largely deposited in a marine environment occur in rest of the basin. Extensive alluvial valleys are found near Lago Loíza.

The total drainage area covered by the study is 208 square miles. The network of sampling stations and the area draining to each station are summarized in table 2.

The basin is largely agricultural and industrial. Sugarcane, until recently the principal crop, has been replaced by pastureland and truck-farm crops. Industrial activities are centered near Caguas, Las Piedras, and Juncos (fig. 1).

Table 1. Mean monthly rainfall, in inches, at locations in and near the Rio Grande de Loiza basin
[M, Missing data; -, Mean was not computed due to insufficient amount of data; *, All stations, except La Muda-Caguas and Trujillo Alto 2 SSW, are located in the Eastern Interior according National Oceanographic and atmospheric Administration (NOAA) map. These two stations are part of the Northern Slopes.]

Station Name*	Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
Caguas 1 W	1983	1.75	7.63	7.34	1.80	2.34	3.01	5.82	5.13	1.61	7.77	7.71	M
	1984	6.38	5.39	3.67	1.44	6.04	.35	.85	7.70	3.78	5.11	4.54	10.98
	1985	6.39	16.97	3.66	.52	1.90	6.42	3.66	11.08	2.82	2.09	5.99	8.39
	1986	21.00	9.53	1.78	1.09	3.15	1.73	10.59	16.67	2.55	.92	9.56	2.51
	1987	M	15.16	M	2.87	3.61	2.80	6.35	M	M	.22	2.32	5.69
	Mean	-	10.94	-	1.54	3.41	2.86	5.45	-	-	3.22	6.02	-
Cayey 1 E	1983	4.29	7.78	3.91	2.38	.63	3.74	5.76	4.87	6.59	6.11	6.68	2.83
	1984	1.66	4.12	2.43	3.24	3.70	.72	2.49	2.55	2.71	5.30	1.83	9.69
	1985	5.56	19.76	3.74	1.13	3.21	4.45	7.51	15.64	.51	4.10	4.14	7.35
	1986	24.43	7.28	1.86	2.38	1.33	2.22	8.34	15.38	2.49	1.89	7.09	3.82
	1987	4.22	10.79	2.95	3.57	3.63	1.50	4.61	5.72	6.33	5.45	3.12	3.55
	Mean	8.03	9.95	2.98	2.54	2.50	2.53	5.74	8.83	3.73	4.57	4.57	5.45
Cidra 1 E	1983	2.67	5.04	7.66	2.90	.81	3.90	5.29	8.53	1.83	6.68	6.92	5.26
	1984	2.95	4.84	3.68	3.31	4.91	.81	3.58	5.97	8.37	8.96	4.34	M
	1985	5.12	18.46	5.85	1.47	3.07	6.21	5.24	12.30	.12	3.42	3.48	7.19
	1986	22.40	8.61	1.46	2.36	1.63	2.61	5.07	18.57	2.23	M	6.35	3.08
	1987	1.77	10.35	3.59	3.64	5.63	.81	7.33	6.23	10.16	4.85	4.00	4.00
	Mean	6.98	9.46	4.45	2.74	3.21	2.87	5.30	10.32	4.54	-	5.02	-
Guavate Camp	1983	6.70	8.80	7.78	5.55	2.20	2.68	M	10.26	M	11.13	11.99	5.10
	1984	4.39	4.96	3.97	8.93	8.84	2.58	M	3.85	M	M	4.68	15.42
	1985	11.04	34.45	M	M	M	M	M	10.00	.13	8.22	5.07	10.23
	1986	M	M	M	M	M	M	M	17.85	7.36	3.83	8.32	2.86
	1987	6.58	14.89	M	M	M	8.37	M	8.75	4.74	2.29	2.97	3.34
	Mean	-	-	-	-	-	-	-	10.14	-	-	6.61	7.39
Gurabo Substation	1983	2.18	6.35	6.38	1.13	1.34	3.00	9.10	4.37	2.97	9.52	9.53	2.62
	1984	7.39	5.23	5.66	3.60	6.04	.90	2.03	5.15	5.27	5.34	2.86	7.78
	1985	6.05	9.79	3.21	.87	2.07	4.78	3.55	12.49	2.48	4.60	8.35	10.05
	1986	18.74	7.07	2.39	1.88	2.16	2.95	6.24	12.52	2.56	2.09	8.30	2.71
	1987	6.11	8.48	3.76	2.15	3.16	1.96	3.75	9.25	13.89	2.30	4.17	6.69
	Mean	8.09	7.38	4.28	1.93	2.95	2.72	4.93	8.76	5.43	4.77	6.64	5.97
Juncos 1 NNE	1983	5.68	3.93	1.86	3.13	.53	2.74	8.89	4.18	4.13	8.56	14.87	1.15
	1984	M	M	M	M	M	M	M	M	1.50	4.87	6.50	7.17
	1985	6.06	13.00	3.88	1.28	1.82	1.60	4.36	17.31	.35	6.69	4.67	11.34
	1986	20.68	6.38	1.96	2.19	1.39	3.16	5.52	13.47	4.23	3.71	7.13	1.91
	1987	4.43	7.78	2.18	3.39	3.23	3.05	6.27	7.94	12.62	2.76	1.92	5.14
	Mean	-	-	-	-	-	-	-	-	4.57	5.32	7.02	5.34
San Lorenzo 3 S	1983	8.22	10.85	6.77	4.69	1.79	6.92	7.60	7.39	11.08	19.10	13.07	9.25
	1984	4.98	11.78	6.35	4.83	8.96	2.21	3.17	9.64	13.12	8.89	6.76	14.17
	1985	10.80	18.35	7.58	2.64	4.41	7.34	9.94	19.49	1.31	13.73	6.95	15.36
	1986	26.39	6.16	7.36	4.38	2.18	6.05	7.89	17.72	8.55	6.66	11.02	6.10
	1987	9.11	8.72	4.88	6.34	4.92	3.83	5.45	8.98	14.86	6.67	5.01	5.17
	Mean	11.90	11.17	6.59	4.58	4.45	5.27	6.81	12.64	9.78	11.01	8.56	10.01
San Lorenzo Farm 2 NW	1983	6.58	5.98	4.26	2.00	.49	4.59	5.04	5.86	5.14	9.30	13.16	5.20
	1984	3.50	7.63	3.68	2.85	4.88	.55	1.13	5.91	9.56	5.20	5.61	8.84
	1985	4.29	14.24	4.06	1.58	2.47	7.74	5.26	15.94	.42	9.39	4.68	12.28
	1986	21.21	6.68	2.49	2.71	1.09	3.67	9.95	10.98	5.40	2.82	7.93	2.71
	1987	4.47	8.26	3.11	4.15	4.34	2.88	2.27	6.20	12.64	3.03	3.77	4.77
	Mean	8.01	8.56	3.52	2.66	2.65	3.89	4.73	8.98	6.63	5.95	7.03	6.76
La Muda - Caguas	1983	4.37	8.28	8.11	.47	1.55	1.93	5.86	M	1.04	11.36	8.16	4.33
	1984	11.36	8.16	4.33	1.49	4.27	.46	.00	6.87	5.74	12.48	4.35	8.20
	1985	8.47	10.63	6.56	3.24	3.90	6.91	4.67	7.69	2.76	2.88	7.00	7.05
	1986	19.13	10.02	2.54	2.77	.88	2.52	11.74	12.16	.33	6.89	11.01	1.32
	1987	7.71	9.33	3.54	M	7.02	1.91	9.17	11.64	8.68	6.11	7.23	4.44
	Mean	10.21	9.28	5.02	-	3.52	2.75	6.29	-	3.71	7.94	7.55	5.07
Trujillo Alto 2 SSW	1983	1.56	5.76	5.95	.97	.66	1.90	5.76	8.04	1.82	8.33	10.65	2.19
	1984	8.36	5.94	5.48	2.91	6.77	2.16	.61	8.27	3.21	5.95	4.11	13.90
	1985	7.48	8.05	7.07	3.24	3.70	5.51	2.80	7.57	11.11	4.72	7.48	10.10
	1986	13.83	9.36	1.78	2.84	1.61	2.28	5.28	11.48	1.61	4.30	7.51	1.75
	1987	4.88	8.73	2.86	2.69	4.47	4.02	13.29	M	10.76	2.88	6.29	5.72
	Mean	7.22	7.57	4.63	2.53	3.44	3.17	5.55	-	5.70	5.24	7.21	6.73

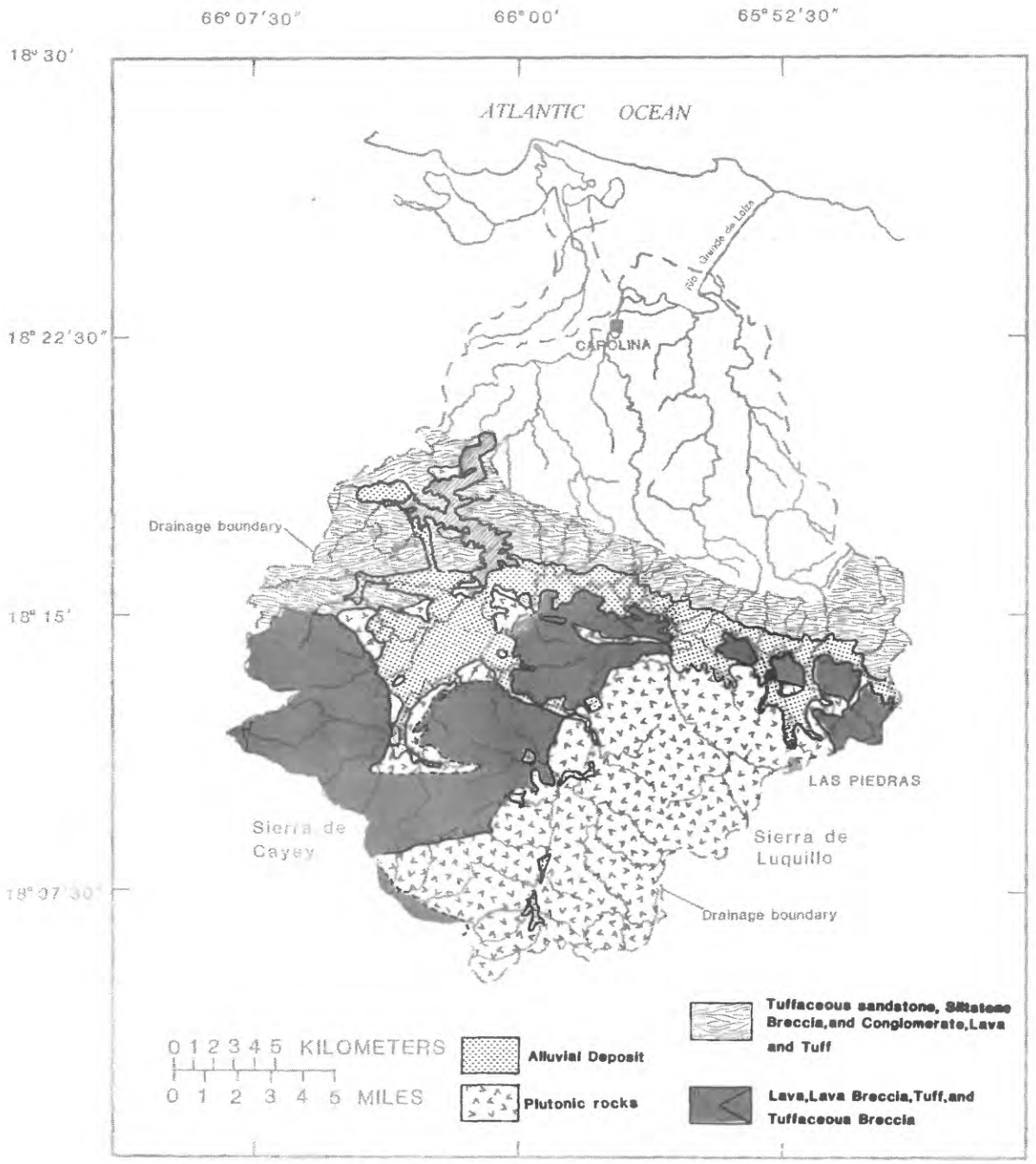


Figure 3.--Surficial geology of the study area

Table 2.- Streamflow and sediment sampling stations of the upper Río Grande de Loíza basin

Station Number	Latitude Longitude	Station Name	Drainage Area (square miles)	Elevation (feet)	Period of Record (month/year)
50050900	18°07'10"N 65°59'22"W	Río Grande de Loíza at Quebrada Arenas	6.00	640	10/77-Present
50051150	18°09'40"N 65°58'58"W	Quebrada Blanca at Jagual	3.25	459	01/84-Present
50051180	18°10'24"N 65°58'38"W	Quebrada Salvatierra near San Lorenzo	3.74	330	01/84-Present
50051310	18°09'13"N 65°57'20"W	Río Cayaguas at Cerro Gordo	10.2	490	10/77-Present
50053050	18°10'10"N 66°02'37"W	Río Turabo at Borinquén	7.89	430	12/83-Present
50055000	18°14'33"N 66°00'34"W	Río Grande de Loíza at Caguas	89.8	143	12/59-Present
50055650	18°14'08"N 65°52'12"W	Quebrada Caimito near Juncos	.82	310	01/84-Present
50056400	18°12'58"N 66°55'34"W	Río Valenciano near Juncos	16.4	320	01/71-Present
50056900	18°14'57"N 65°56'44"W	Quebrada Mamey near Gurabo	2.30	180	12/83-Present
50057000	18°15'30"N 65°58'05"W	Río Gurabo at Gurabo	60.2	137	10/59-Present

METHODS AND PROCEDURES

Many direct and some indirect measurements of streamflow and stage were made over a range of conditions to define the relationship between the elevation of the water surface (stage) and water discharge at each gaging station. This relationship, called a rating curve, is used to estimate instantaneous water discharge when only stage is known (Rantz and others, 1982). Stage values were obtained from automatic digital recorders (ADR) installed at each gaging station using a 15-minute recording interval. These 15-minute data were then used to compute mean daily streamflows.

Suspended-sediment samples were collected one or two times per week at each station on a routine basis and more often during high flows when sediment-transport rates were assumed to be the highest. Streamflow measurements were made according to standard techniques described by Rantz and others (1982). Conventional U.S. Series depth-integrating DH-48 (low flow) or D-49 (medium and high flow) samplers were used to collect periodic samples of suspended sediment at various points in the cross-section (Guy and Norman, 1970). The water-sediment mixture was poured into an 8-liter churn splitter which mixed the sample. A 350-ml aliquot was taken from the churn splitter and poured into a sediment bottle. The bottle containing the sample was then transported to the laboratory and stored in a cool, dry, dark place for laboratory determination of suspended-sediment concentration and particle-size distribution. At extremely low flow, only one sediment bottle was filled, so sample splitting was not necessary.

In addition, automatic pump samplers were installed at five of the ten stations. The automatic sampler is a portable device capable of collecting 24 separate, sequential water-sediment samples or a single composite sample. It can be used for sample collection at set time intervals or at equal flow volumes. The samplers installed in the study area were programmed to collect the water-sediment samples above low flow and at time intervals of 5, 10, 30, and 60 minutes. The samplers utilized a peristaltic pump system to transport the sample from the stream to the sample bottle. The suction line was cleared before and after sampling. Once the 24 bottles were filled according to the desired time sequence, the samples were removed from the sampler casing and brought to the laboratory and stored for further

analyses. The sampler casing was then filled with new empty bottles and programmed again for the next event. All samples were supplemented with samples collected by Survey personnel during storms.

Determination of suspended-sediment concentrations was made by either evaporation or filtration method. In the evaporation method, sediment was allowed to settle in the bottom of the sample bottle and the supernatant liquid was decanted. The sediment was washed into an evaporating dish, dried in an oven, and later weighed. Similar steps were followed in the filtration method except that instead of washing the sediment into an evaporating dish, the sediment was filtered through a glass-fiber filter (mesh size of 0.4 micrometers) in a crucible, and the crucible with the sediment was then oven dried.

The concentration of suspended-sediment is equal to the ratio of the dry weight of sediment to the volume of water-sediment mixture. This concentration is computed as a weight to weight ratio and is expressed in ppm (parts per million). A conversion factor is used to convert ppm to mg/L (milligrams per liter) using the assumption that water density is equal to 1.000 g/mL (gram per milliliter) plus or minus 0.005, temperature is from 0° to 29 °C, specific gravity of suspended-sediment is 2.65, and the dissolved solids concentration is less than 10,000 parts per million (Guy, 1969). For suspended-sediment concentrations less than 15,900 ppm, the conversion factor is equal to unity (table 3).

Because suspended-sediment concentrations vary with water discharge, all values should be considered as instantaneous and representative only of the discharge at the given location and time. The data for each station are summarized in tables 4 to 13. These data were also used to develop the plots shown in figures 4 to 13.

Samples of suspended sediment, obtained at a point by automatic pump samplers must be calibrated with depth-integrated samples to assure that they are representative. The standard technique of collecting simultaneous suspended-sediment samples by depth integration and by automatic sampler was not undertaken in this study. Percent differences in concentration therefore could not be obtained for comparison of instantaneous conditions. In lieu of these standard calibration techniques, a more generalized scheme was adopted.

For the five stations with automatic pump samplers, calibration was achieved by establishing individual sediment ratings (water discharge versus sediment load) for the depth-integrated and automatic-pump samples at each station (fig. 14). By checking trends of standardized residuals from the linear (log-log) relation, 2 to 3 linear segments were created to define the sediment rating for each sample type. Discharge ranges for each of the linear segments were determined by a procedure of moving averages. Regression equations were then fitted to each segment.

Calibration of the automatic-pump samples was then accomplished by calculating the difference between the 'true' sediment load (from the depth-integrated rating) and the load obtained from the automatic-pump rating, and by adding this difference to the original load determined for the pump sample

Table 3. Conversion factors (C) for computation of sediment concentration in milligrams per liter when used with parts per million or the ratio (times 10^6) of the weight of sediment to the weight of the water-sediment mixture (Guy, 1960)

Ratio	C	Ratio	C	Ratio	C
0- 15,900	1.0	234,000-256,000	1.18	417,000-434,000	1.36
16,000- 47,000	1.02	257,000-279,000	1.20	435,000-451,000	1.38
48,000- 76,000	1.04	280,000-300,000	1.22	452,000-467,000	1.40
77,000-105,000	1.06	301,000-321,000	1.24	468,000-483,000	1.42
106,000-132,000	1.08	322,000-341,000	1.26	484,000-498,000	1.44
133,000-159,000	1.10	342,000-361,000	1.28	499,000-513,000	1.46
160,000-184,000	1.12	362,000-380,000	1.30	514,000-528,000	1.48
185,000-209,000	1.14	381,000-398,000	1.32	529,000-542,000	1.50
210,000-233,000	1.16	399,000-416,000	1.34		

(fig. 14). A summary of the equations, discharge ranges, and number of samples is given in table 14.

It is understood that the calibration procedure used in this study is not conventional. However, sediment ratings for depth-integrated and automatic-pump samples at 4 of the 5 stations are clearly different enough to provide confidence in the technique. Sediment rating of the fifth station (Río Turabo; station number 50053050) is matched closely, thereby requiring no calibration for the station.

Particle-size distribution of suspended sediment was determined by the sieve-pipet method (Guy, 1969). Sieves were used for sediment-particle sizes coarser than 0.062 mm (millimeters) and pipet was used for finer particle sizes. Sand was separated from the silt and clay by wet sieving with a 250-mesh (0.062 mm).

The sand fraction was separated into grain sizes finer than 1.0, 0.50, 0.25, 0.125, and 0.062 mm by wet sieving because of the difficulty in removing the remaining clay from the sand particles by other methods. Material retained in the sieve was washed into an evaporating dish, dried, and weighed. The material passing through the sieve was poured with its wash water onto the next smaller-sized sieve. The process was repeated for each size category until the 0.062 mm sieve was used. Material passing through the 0.062 mm sieve was added to the material obtained during initial separation of fines from sands and processed by the pipet method. All samples were then dried and weighed after decanting and filtering.

Particle-size distribution of suspended-sediment was determined as percentage of dry mass. The dry weight of each fraction was divided by the total weight of the sample and expressed as a percentage. Computations and average percentages are summarized in table 15.

Instantaneous suspended-sediment discharge (the time rate at which a dry weight of sediment passes through a section of a stream), was computed using the instantaneous water discharge, sediment concentration, and a conversion factor. The formula used was (Potterfield, 1972):

$$Qs = QwCsk$$

where

Qs = suspended-sediment discharge rate, in tons per day (tons/d),

Qw = instantaneous water discharge rate, in cubic feet per second (ft^3/s),

Cs = suspended-sediment concentration, in milligrams per liter (mg/L),

k = conversion factor of 0.0027.

The computed instantaneous sediment discharges for each station are summarized in tables 4 to 13. These data, in conjunction with the instantaneous water discharge, are then used to develop suspended-sediment transport curves (ratings).

The ratio of instantaneous water discharge to average water discharge (Qi/Qa) was used as a general indicator of the magnitude of individual storm events. The ratio was computed by dividing the water discharge recorded at the time the suspended-sediment sample was collected, by the average water discharge computed for the period of record for each individual station (tables 4-13). Average water discharge for each stations is shown in table 16.

The specific conductance of the supernatant liquid and temperature were determined for each sample and the results are summarized (tables 4 to 13).

RESULTS

A total of 2,114 suspended-sediment samples were collected and analyzed during the investigation. Because of probable sampling errors, 10 samples were discarded after being analyzed. From the total samples collected, 7 percent (152 samples) were analyzed for particle-size distribution. Extreme values for the 1984-1986 period are listed in table 16. It should be noted that the maximum water discharge does not necessarily correspond to the maximum suspended-sediment concentration and load.

Table 4. Suspended-sediment data for samples collected at station Rio Grande de Loiza at Quebrada Arenas
[US/CM, microsiemens per centimeter at 25 degree Celsius; CFS, cubic foot per second; MG/L, milligrams per liter; T/DAY, tons per day; Qi/Qa, ratio of instantaneous water discharge to average water discharge; ---, missing data]

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
FEB 14	1500	130	28	338	26	0.90
FEB 14	1600	130	28	425	32	.90
MAR 13	0945	152	9	0	0	.29
MAR 27	0915	163	7.2	1	.02	.23
APR 11	0900	158	7.5	2	.04	.24
APR 24	0915	162	6.5	1	.02	.21
MAY 17	1015	167	4.8	4	.05	.15
AUG 31	1540	149	15	50	2.0	.48
SEPT 12	1045	123	36	87	8.5	.12
SEPT 12	1100	123	34	96	8.8	1.1
SEPT 12	1130	123	31	83	6.9	1.0
SEPT 14	1130	99	89	146	35	2.9
SEPT 14	1135	99	79	137	29	2.5
SEPT 14	1140	99	75	134	27	2.4
SEPT 14	1145	98	72	129	25	2.3
SEPT 14	1150	98	73	127	25	2.3
SEPT 14	1155	98	73	139	27	2.3
SEPT 14	1200	98	74	130	26	2.4
SEPT 14	1205	98	72	124	24	2.3
SEPT 14	1210	98	70	126	24	2.2
SEPT 14	1215	98	68	146	27	2.2
SEPT 18	1500	112	55	49	7.3	1.8
SEPT 20	1230	89	114	167	51	3.7
SEPT 20	1245	86	123	192	64	4.0
SEPT 20	1300	86	138	304	113	4.4
SEPT 20	1315	85	160	453	196	5.1
SEPT 20	1330	81	295	1,000	796	9.5
SEPT 20	1340	81	298	924	743	9.6
SEPT 20	1345	79	300	1,020	826	9.6
SEPT 20	1350	79	305	1,040	856	9.8
SEPT 20	1355	71	309	1,060	884	9.9
SEPT 20	1400	71	314	676	573	10
SEPT 20	1405	71	330	838	747	11
SEPT 20	1410	71	346	692	646	11
SEPT 20	1415	70	362	1,080	1,060	12
SEPT 20	1420	70	413	813	907	13
SEPT 20	1425	64	464	907	1,140	15
SEPT 20	1430	62	515	1,090	1,520	17
SEPT 20	1435	70	581	1,520	2,380	19
SEPT 20	1440	56	650	1,000	1,760	21
SEPT 20	1445	58	717	865	1,670	23
SEPT 20	1450	58	710	1,050	2,010	23
SEPT 20	1455	58	702	1,150	2,180	23
SEPT 20	1500	54	694	1,060	1,990	22
SEPT 20	1505	54	626	1,160	1,960	20
SEPT 20	1510	54	558	879	1,320	18
SEPT 20	1515	54	490	911	1,210	16
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	1015	116	39	39	4.1	1.2
OCT 26	0945	120	43	46	5.3	1.4
OCT 29	1045	---	23	4	.25	.74
OCT 31	0930	136	22	14	.60	.71
NOV 5	1345	43	525	1,290	1,820	17
NOV 7	1330	93	146	66	26	4.7
NOV 7	1453	94	165	168	75	5.3
NOV 9	1057	126	77	26	5.4	2.5
NOV 13	1315	140	43	18	2.1	1.4
NOV 14	1045	142	40	20	2.2	1.3
NOV 15	1020	134	44	20	2.4	1.4
NOV 20	1350	145	28	4	.30	.90
NOV 23	0930	143	31	11	.92	1.0
NOV 26	1125	123	31	30	2.5	1.0
NOV 28	1015	150	23	12	.75	.74
NOV 30	1015	148	21	3	0.17	0.68
DEC 3	1115	136	25	10	.68	.80
DEC 5	1040	152	20	6	.32	.64
DEC 10	1241	156	17	1	.05	.55
DEC 12	1000	158	17	2	.09	.55
DEC 13	1020	160	16	4	.17	.51
DEC 17	1200	147	15	3	.12	.48
DEC 19	1048	150	14	2	.08	.45
DEC 20	1219	150	14	0	0	.45
DEC 26	0911	154	13	3	.10	.42
DEC 27	0935	158	12	4	.13	.39
JAN 8	1023	165	11	1	.03	.35
JAN 10	1050	160	10	2	.06	.32
JAN 15	1145	163	9.3	66	1.7	.29
JAN 17	0945	157	9.0	1	.02	.29
JAN 18	0900	155	8.7	1	.02	.28
JAN 21	0930	158	8.4	2	.05	.28
JAN 25	0845	165	7.8	2	.04	.25
JAN 28	0915	162	8.4	14	.31	.27
JAN 30	1019	162	7.8	3	.06	.25
FEB 1	1145	163	9.6	0	0	.31
FEB 4	1020	163	7.6	1	.02	.24
FEB 6	0950	173	7.8	2	.04	.25
FEB 8	1040	170	8.1	0	0	.26
FEB 14	0915	170	8.1	2	.04	.26
FEB 19	0935	170	8.7	5	.10	.28
FEB 20	0835	167	13	13	.42	.42
FEB 22	1015	153	9.0	3	.06	.29
FEB 26	0925	153	9.9	14	.35	.32
MAR 1	1010	144	17	9	.41	.55
MAR 5	1130	148	12	9	.29	.39
MAR 6	1205	158	14	73	2.8	.45
MAR 7	1100	131	33	24	2.1	1.1
MAR 11	0900	160	15	2	.08	.48
MAR 13	1105	166	14	3	.11	.45
MAR 15	0900	163	13	3	.10	.42
MAR 19	0945	142	18	5	.24	.58
MAR 20	0830	158	16	3	.13	.51
MAR 21	1025	160	15	2	.08	.48
MAR 25	1045	155	12	3	.10	.39
MAR 27	0921	160	12	2	.06	.39
MAR 29	1035	70	104	362	102	3.3
MAR 29	1040	70	99	84	22	3.2
APR 1	1010	145	12	4	.13	.39
APR 8	1056	150	9.0	4	.10	.29
APR 10	0847	150	8.1	1	.02	.26
APR 12	1030	145	9.9	4	.10	.32
APR 26	1115	115	24	11	.71	.77
MAY 14	1300	97	79	46	10	2.5
MAY 14	1315	86	74	40	8.0	2.4
MAY 14	1330	86	71	40	7.7	2.3
MAY 15	1915	67	328	704	623	10
MAY 15	1930	60	378	900	918	12
MAY 15	1935	51	370	1,140	1,140	12
MAY 15	1940	53	362	979	957	12
MAY 15	1943	53	360	849	825	12
MAY 15	2001	57	333	780	701	11
MAY 15	2007	57	342	714	659	11
MAY 15	2013	58	353	645	615	11
MAY 15	2017	56	382	668	689	12
MAY 15	2021	57	435	832	977	14
MAY 15	2028	70	521	1,100	1,550	17
MAY 15	2035	57	581	1,120	1,760	19
MAY 15	2041	56	588	903	1,430	19
MAY 15	2047	56	640	901	1,560	21

Table 4. Suspended-sediment data for samples collected at station Rio Grande de Loiza at Quebrada Arenas

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985-Continued						
MAY 15	2053	56	595	910	1,460	19
MAY 15	2107	55	497	784	1,050	16
MAY 15	2110	56	467	716	903	15
MAY 15	2114	56	427	749	864	14
MAY 15	2122	56	375	601	608	12
MAY 15	2130	75	332	668	599	11
MAY 15	2140	55	322	610	530	10
MAY 15	2150	55	309	528	440	9.9
MAY 18	1400	68	281	549	416	9.0
MAY 20	1345	136	48	13	1.7	1.5
MAY 28	1045	130	19	5	.26	.61
MAY 29	1135	236	17	8	.37	.55
JUNE 3	1025	131	14	3	.11	.45
JUNE 5	0930	120	14	4	.15	.45
JUNE 7	1055	135	16	1	.04	.51
JUNE 10	1200	144	15	10	.40	.48
JUNE 12	1145	148	12	3	.10	.39
JUNE 14	1025	150	14	86	3.2	.45
JUNE 20	1055	146	9.9	18	.48	.32
JUNE 24	1025	147	9.3	1	.02	.30
JUNE 28	1010	138	9.0	6	.15	.29
JULY 1	1145	132	11	16	.48	.35
JULY 5	1020	138	9.3	8	.20	.30
JULY 8	1045	135	8.7	11	.26	.28
JULY 15	1015	120	52	257	36	1.7
JULY 15	1030	115	46	682	85	1.5
JULY 15	1045	115	44	187	22	1.4
JULY 16	1150	90	164	425	188	5.3
JULY 16	1215	90	146	289	114	4.7
JULY 22	0950	125	16	4	.17	.51
JULY 29	1145	130	22	5	.30	.71
AUG 1	0925	142	13	4	.14	.42
AUG 6	1020	145	13	4	.14	.42
AUG 9	0925	140	11	4	.12	.35
AUG 12	1025	150	11	1	.03	.35
AUG 19	1200	130	11	4	.12	.35
AUG 23	1025	140	9.6	4	.10	.31
AUG 28	1235	100	61	28	4.6	2.0
AUG 30	1030	130	18	3	.15	.58
SEPT 3	1110	140	14	2	.08	.45
SEPT 6	1010	140	11	3	.09	.35
SEPT 9	1045	135	14	6	.23	.45
SEPT 12	1815	90	903	925	2,250	29
SEPT 12	1820	80	1,060	1,460	4,190	34
SEPT 12	1825	75	1,210	1,320	4,320	39
SEPT 12	1835	70	1,560	1,600	6,750	50
SEPT 12	1845	70	1,940	1,670	8,770	62
SEPT 12	1855	70	1,590	2,770	11,900	51
SEPT 12	1905	60	1,150	2,480	7,700	37
SEPT 12	1915	60	1,280	1,990	6,870	41
SEPT 12	1930	60	1,000	1,700	4,590	32
SEPT 12	1945	60	780	1,180	2,490	25
SEPT 12	2000	60	510	376	517	16
SEPT 12	2015	60	342	521	482	11
SEPT 16	1240	120	24	5	.32	.77
SEPT 23	1030	140	14	3	.11	.45
SEPT 24	1325	100	67	56	10	2.2
SEPT 25	0030	60	368	1,310	1,300	12
SEPT 25	0035	50	685	2,370	4,380	22
SEPT 25	0040	50	1,000	3,850	10,400	32
SEPT 25	0050	45	1,890	3,600	18,400	61
SEPT 25	0100	40	3,030	1,050	8,610	97
SEPT 25	0110	40	2,160	1,440	8,410	69
SEPT 25	0120	35	2,170	1,300	7,640	70
SEPT 25	0130	35	1,760	1,060	5,050	57
SEPT 25	0145	35	1,260	6,270	21,300	40
SEPT 25	0200	40	1,160	2,770	8,680	37
SEPT 25	0215	50	1,370	375	1,390	44
SEPT 25	0230	50	1,210	760	642	39
SEPT 25	0245	40	977	663	194	31
SEPT 25	0300	50	663	202	363	21
SEPT 25	0315	40	520	155	217	17
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 1	1515	70	281	1,550	1,180	9.0
OCT 1	1520	70	349	1,110	1,050	11
OCT 1	1525	70	430	820	953	14
OCT 1	1535	70	481	740	961	15
OCT 1	1545	70	634	533	913	20
OCT 1	1555	70	504	629	855	16
OCT 1	1605	70	442	684	816	14
OCT 3	1230	90	55	28	4.2	1.8
OCT 6	0600	40	446	905	1,090	14
OCT 6	0605	40	534	887	1,280	17
OCT 6	0610	40	622	764	1,280	20
OCT 6	0620	40	747	726	1,460	24
OCT 6	0630	40	891	536	1,290	29
OCT 6	0640	40	887	450	1,080	28
OCT 6	0650	40	859	345	800	28
OCT 6	0700	40	810	271	592	26
OCT 6	0715	40	733	233	463	24
OCT 6	0730	40	853	873	2,010	27
OCT 6	0745	40	1,260	2,190	7,440	40
OCT 6	0800	40	1,370	925	3,420	44
OCT 6	0815	40	1,330	742	2,660	43
OCT 6	0830	40	1,230	585	1,940	40
OCT 6	0845	40	1,230	145	481	40
OCT 6	0900	40	1,150	240	744	37
OCT 6	0930	50	1,150	540	1,680	37
OCT 6	1000	60	2,990	4,200	33,900	96
OCT 6	1030	40	2,910	2,280	17,900	94
OCT 7	1000	70	283	178	136	9.1
OCT 7	1005	70	279	183	137	9.0
OCT 15	1040	130	33	2	.18	1.1
OCT 21	1000	140	28	9	.68	.90
OCT 24	0805	80	1,410	3,510	13,400	45
OCT 24	0810	80	1,720	728	3,380	55
OCT 24	0815	80	2,040	376	2,070	66
OCT 24	0825	70	1,710	517	2,390	55
OCT 24	0835	70	1,400	358	1,350	45
OCT 24	0845	70	1,120	388	1,170	36
OCT 24	0855	70	902	416	1,010	29
OCT 24	1405	80	100	746	201	3.2
OCT 26	1615	65	722	9,610	18,700	23
OCT 26	1620	65	865	7,510	17,500	28
OCT 26	1625	50	1,010	6,000	16,400	32
OCT 26	1635	50	1,040	4,430	12,400	33
OCT 26	1645	45	977	3,030	8,000	31
OCT 26	1655	40	858	2,160	4,880	27
OCT 26	1705	40	748	1,640	3,300	24
OCT 26	1715	45	711	1,200	2,310	23
OCT 26	1730	50	739	854	1,700	24
OCT 26	1745	50	950	1,020	2,620	30
OCT 26	1800	50	774	840	1,760	25

Table 4. Suspended-sediment data for samples collected at station Rio Grande de Loiza at Quebrada Arenas

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
OCT 26	1815	50	605	816	1,330	19
OCT 26	1830	50	357	974	939	11
OCT 26	1845	50	328	737	653	11
OCT 31	1030	100	57	43	6.6	1.8
NOV 12	1105	70	18	4	.19	.58
NOV 14	1010	140	19	6	.31	.61
NOV 18	1055	140	50	47	6.3	1.6
NOV 22	0930	90	16	5	.22	.51
NOV 27	1240	140	12	3	.10	.39
DEC 2	1215	150	11	8	.24	.35
DEC 6	1035	150	11	4	.12	.35
DEC 9	1040	150	9.9	17	.45	.32
DEC 12	1125	140	18	6	.29	.58
DEC 16	1110	145	9.3	3	.08	.30
DEC 23	0940	150	9.3	5	.13	.30
DEC 27	0945	145	9.0	5	.12	.29
JAN 8	0925	150	7.1	9	.17	.23
JAN 13	1200	150	8.1	5	.11	.26
JAN 16	1150	150	7.2	7	.14	.23
JAN 21	1050	145	22	91	5.4	.71
JAN 27	1120	145	7.2	2	.04	.23
JAN 30	1140	150	7.0	1	.02	.22
FEB 3	1000	150	6.3	5	.08	.20
FEB 10	0945	160	5.8	1	.02	.19
FEB 13	1245	155	8.5	1	.02	.27
FEB 18	1210	150	8.5	3	.07	.27
FEB 24	0910	160	8.8	1	.02	.28
FEB 27	0925	170	8.7	4	.09	.28
MAR 3	1415	170	8.0	1	.02	.26
MAR 17	1040	170	8.3	7	.16	.27
MAR 20	0830	170	7.5	1	.02	.24
MAR 24	0945	165	7.2	1	.02	.23
MAR 31	1025	130	42	24	2.7	1.4
APR 10	0930	160	13	1	.04	.42
APR 14	1025	160	10	1	.03	.32
APR 21	1020	180	9.1	1	.02	.29
APR 28	1215	160	12	2	.06	.39
MAY 5	1015	150	13	4	.14	.42
MAY 8	1100	100	17	8	.37	.55
MAY 22	0935	160	109	454	134	3.5
MAY 22	0950	120	99	393	105	3.2
JUNE 2	1215	165	32	5	.43	1.0
JUNE 18	1000	160	19	6	.31	.61
JUNE 23	1035	170	16	2	.09	.51
JULY 1	1025	160	19	2	.10	.61
JULY 7	1200	155	17	32	1.5	.55
JULY 14	1230	170	13	3	.11	.41
JULY 29	1025	190	9.4	4	.10	.30
AUG 4	1115	170	11	4	.12	.35
AUG 12	1145	150	12	20	.65	.35
AUG 19	1000	170	8.0	5	.13	.25
AUG 26	1030	---	8.0	3	.06	.25
AUG 29	1030	---	126	110	37	4.0
SEPT 2	1130	---	13	3	.11	.41
SEPT 8	1040	150	9.7	7	.18	.31
SEPT 15	1150	175	8.0	13	.28	.25
SEPT 19	0920	160	6.7	7	.13	.21
SEPT 22	1235	150	12	9	.29	.38
SEPT 26	0945	120	23	13	.81	.41
SEPT 29	1055	145	10	8	.22	.25

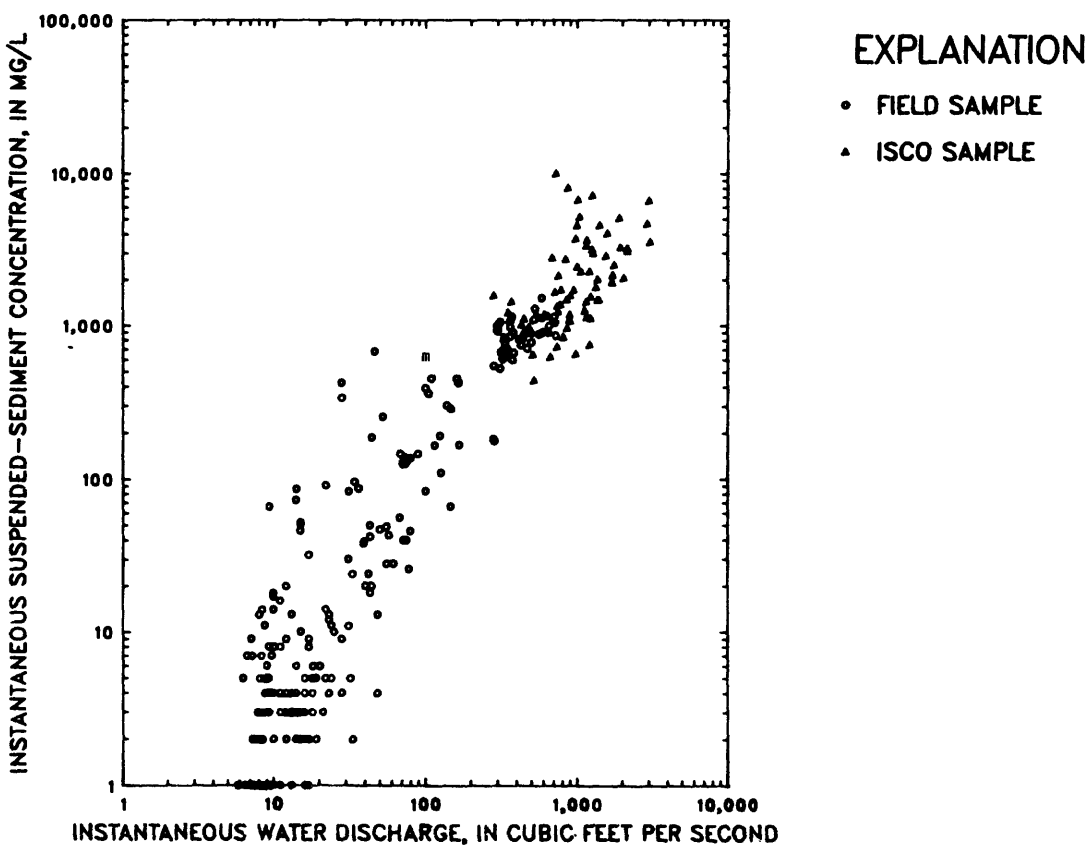


Figure 4.--Relation of suspended-sediment concentration to stream discharge for station Río Grande de Loíza at Quebrada Arenas.

Table 5. Suspended-sediment data for samples collected at station Quebrada Blanca at Jagual

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
SEPT 5	1500	90	e100	50,400	13,600	10
SEPT 5	1503	94	e100	43,100	11,100	10
SEPT 5	1510	117	e95	37,500	9,620	9.7
SEPT 5	1515	120	e95	37,100	9,500	9.7
SEPT 11	1500	263	1.9	84	.43	.20
SEPT 12	1200	256	3.6	294	2.8	.39
SEPT 12	1215	257	3.6	298	2.9	.39
SEPT 12	1245	260	3.4	256	2.4	.36
SEPT 13	1430	84	101	52,400	14,300	11
SEPT 13	1432	93	94	56,100	14,200	10
SEPT 13	1435	85	83	40,200	8,990	8.9
SEPT 13	1439	90	68	37,900	6,960	7.3
SEPT 13	1440	101	64	34,300	5,930	6.9
SEPT 13	1442	105	57	31,500	4,850	6.1
SEPT 13	1445	125	46	25,100	3,120	4.9
SEPT 13	1450	131	52	17,300	2,430	5.6
SEPT 13	1455	142	59	16,600	2,650	6.3
SEPT 13	1500	170	65	13,000	2,320	7.0
SEPT 13	1505	160	61	8,980	1,430	6.5
SEPT 13	1510	162	58	6,140	962	6.2
SEPT 13	1515	165	54	5,910	862	5.6
SEPT 13	1520	165	57	5,970	919	6.1
SEPT 13	1525	158	60	6,450	1,040	6.4
SEPT 13	1530	158	63	5,230	890	6.8
SEPT 13	1535	150	59	4,510	718	6.3
SEPT 19	1030	170	37	499	50	4.0
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	0945	217	4.7	305	3.9	.50
OCT 29	1000	---	2.3	8	.05	.25
NOV 5	1300	60	318	2,070	1,780	34
NOV 7	1535	112	126	648	220	14
NOV 7	1545	112	124	668	224	13
NOV 13	1220	20	8	20	.43	.86
NOV 20	1220	253	6.2	3	.05	.66
DEC 5	1000	258	4.3	1	.01	.46
DEC 17	1140	284	3.0	8	.06	.32
DEC 20	1119	266	1.7	2	.01	.18
JAN 10	1130	278	1.4	3	.01	.15
JAN 23	0943	276	1.1	1	0	.12
FEB 1	1102	293	1.1	5	.01	.12
FEB 8	1005	309	.88	4	.01	.09
FEB 22	0935	287	.94	9	.02	.10
MAR 7	1023	276	2.1	465	2.6	.22
MAR 13	0945	291	.94	9	.02	.10
MAR 21	0946	295	.88	12	.03	.09
APR 12	1000	270	.83	3	.01	.09
MAY 14	1130	151	12	2	.06	1.3
MAY 14	1145	152	13	2	.06	1.4
MAY 14	1200	154	11	162	4.8	1.2
MAY 15	1835	102	96	695	180	10
MAY 15	1845	106	87	406	95	9.3
MAY 15	1850	107	86	592	137	9.3
MAY 15	1900	105	83	924	207	8.9
MAY 15	1905	104	85	834	192	9.1
MAY 15	1910	100	88	1,040	247	9.4
MAY 15	1915	100	90	2,040	496	9.6
MAY 15	1920	94	103	1,840	512	11
MAY 15	1925	94	116	4,250	1,330	12
MAY 15	1930	100	128	1,120	387	14
MAY 15	1935	94	138	874	326	15
MAY 15	1950	90	156	1,100	463	17
MAY 15	2005	90	149	800	321	16
MAY 18	1515	86	236	1,700	1,080	25
MAY 18	1520	92	334	2,080	1,880	36
MAY 18	1525	86	431	1,920	2,230	46
MAY 18	1530	91	529	1,990	2,840	57
MAY 18	1535	75	498	1,580	2,120	53
MAY 18	1540	80	466	1,240	1,560	50
MAY 20	1300	184	20	8	.43	2.1
MAY 28	1000	204	4.9	4	.05	.52
JUNE 3	0940	215	3.3	32	.28	.35
JUNE 10	1110	230	2.8	4	.03	.30
JUNE 20	1145	240	2.0	19	.10	.21
JUNE 24	0955	240	2.3	4	.02	.25
JULY 1	1105	240	1.8	2	0	.19
JULY 15	0935	234	2.6	9	.06	.28
JULY 22	1135	216	2.5	6	.04	.27
JULY 29	1110	230	2.3	15	.09	.25
AUG 5	1150	235	1.5	10	.04	.16
AUG 19	1125	240	1.4	14	.05	.15
AUG 28	1310	205	3.7	23	.23	.40
SEPT 3	1000	225	3.9	21	.22	.41
SEPT 9	1005	216	4.3	25	.29	.46
SEPT 24	1115	195	27	338	25	2.9
SEPT 24	1130	195	25	224	15	2.7
SEPT 24	1200	210	24	107	6.9	2.6
SEPT 24	1245	210	24	112	7.3	2.6
SEPT 24	1500	210	13	80	2.8	1.4
SEPT 24	1555	220	12	104	3.4	1.3
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 7	1130	100	173	262	122	19
OCT 7	1125	100	171	282	130	18
OCT 7	1420	110	109	64	19	12
OCT 7	1430	120	106	105	30	11
OCT 31	0940	130	45	72	8.7	4.8
NOV 12	1030	200	17	530	24	1.8
NOV 18	1020	130	31	33	2.8	3.3
DEC 2	1325	250	1.7	1	.01	.50
DEC 9	1005	270	4.5	1	.01	.48
DEC 16	1035	250	3.9	1	.01	.42
DEC 23	0910	270	3.9	1	.01	.42
JAN 13	1120	260	3.1	1	.01	.33
JAN 21	1020	260	3.3	1	.01	.35
JAN 27	1140	260	2.2	1	.01	.24
FEB 3	0925	275	3.4	1	.01	.36
FEB 18	1235	260	3.0	1	.01	.32
FEB 26	0855	280	2.2	1	.01	.24
MAR 17	1010	290	1.7	3	.01	.18
MAR 24	0915	290	1.5	1	.01	.16
MAR 31	0950	270	2.1	6	.01	.23
APR 14	0940	290	1.5	1	.01	.16
APR 21	0950	300	1.7	2	.01	.18
MAY 1	1250	180	43	530	62	4.6
MAY 1	1300	160	34	429	39	3.6
MAY 1	1320	140	24	355	23	2.6
MAY 19	1330	190	5.3	4	.06	.57
JUNE 2	1240	225	2.8	4	.03	.30
JUNE 9	0940	220	5.3	199	2.8	.57
JUNE 9	1000	210	5.1	173	2.4	.55
JUNE 23	0955	280	1.9	3	.02	.20
JULY 1	1000	290	1.8	3	.02	.19
JULY 14	1255	260	3.6	24	.23	.39
AUG 4	1025	300	1.8	1	0	.19
AUG 19	0900	300	1.8	2	.01	.19
AUG 29	1000	130	39	132	14	4.2
SEPT 8	0955	255	1.4	0	0	.15
SEPT 29	1010	230	1.9	1	.01	.20

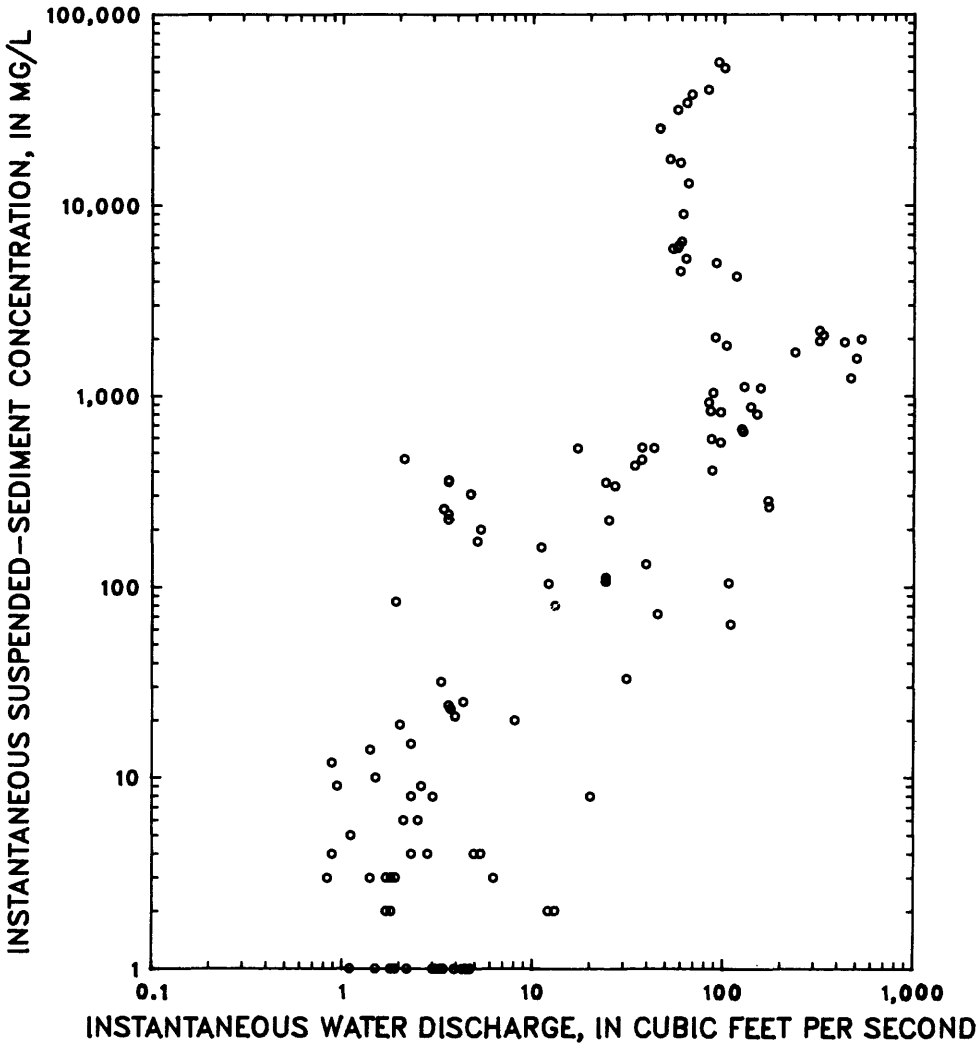


Figure 5.--Relation of suspended-sediment concentration to stream discharge for station Quebrada Blanca at Jagual.

Table 6. Suspended-sediment data for samples collected at station Quebrada Salvatierra near San Lorenzo

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
APR 24	1015	442	.93	1	0	0.12
MAY 17	1130	414	1.2	5	.02	.15
MAY 24	1108	---	1.1	21	.06	.14
MAY 25	1115	---	1.6	18	.08	.20
MAY 30	1101	259	16	74	3.2	2.0
MAY 30	1105	259	16	74	3.2	2.0
MAY 30	1110	259	16	77	3.3	2.0
JUNE 7	1242	265	9.4	42	1.1	1.2
JUNE 28	1240	354	1.4	0	0	.18
JULY 5	1420	188	38	71	7.3	4.8
JULY 5	1453	188	34	66	6.1	4.3
AUG 27	1115	318	4.2	4	.05	.53
SEPT 12	0955	318	12	116	3.8	1.5
SEPT 12	1030	313	10	85	2.3	1.3
SEPT 12	1100	319	8.5	82	1.9	1.1
SEPT 14	1110	168	112	223	67	14
SEPT 14	1135	170	102	198	54	13
SEPT 14	1205	175	93	190	48	12
SEPT 14	1235	176	85	170	38	11
SEPT 14	1305	193	79	148	32	10
SEPT 17	1513	253	20	81	4.4	2.5
SEPT 19	1100	223	30	67	5.4	3.8
SEPT 19	1115	228	31	72	6.0	3.8
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 24	0920	286	2.2	17	.10	.28
OCT 29	0935	---	2.1	1	.01	.27
NOV 5	1030	146	134	271	98	17
NOV 7	1630	137	111	153	46	14
NOV 7	1705	137	109	139	41	14
NOV 13	1140	318	3.2	35	.30	.40
NOV 20	1145	356	3.0	2	.02	.38
DEC 5	0930	356	4.0	1	.01	.51
DEC 17	1112	384	3.2	1	.01	.40
JAN 10	0950	413	2.2	0	.01	.28
JAN 22	0806	426	1.7	1	0	.22
FEB 11	1035	462	1.3	10	.04	.16
MAR 7	0900	408	2.3	4	.02	.29
MAR 25	1015	440	1.4	34	.13	.29
APR 15	1029	390	1.5	2	.01	.19
MAY 14	0915	267	2.1	2	.01	.27
MAY 15	1800	116	258	328	228	33
MAY 15	1815	119	239	282	182	30
MAY 15	1830	120	215	228	133	27
MAY 17	1300	148	503	3,300	4,480	64
MAY 17	1307	88	440	2,750	3,270	56
MAY 17	1315	88	369	2,350	2,340	47
MAY 17	1323	88	338	2,420	2,210	43
MAY 17	1330	85	311	1,410	1,180	39
MAY 17	1338	88	306	1,720	1,420	39
MAY 17	1345	88	300	1,780	1,440	38
MAY 17	1353	94	292	1,420	1,120	37
MAY 17	1400	90	285	1,460	1,120	36
MAY 20	1205	217	9.1	12	.29	1.2
MAY 28	0925	288	3.2	5	.04	.40
JUNE 3	0910	294	2.6	4	.03	.33
JUNE 10	1025	322	2.7	2	.01	.34
JUNE 20	1225	241	2.0	1	.01	.25
JUNE 24	0915	350	1.8	4	.02	.23
JULY 1	1040	350	1.4	2	.01	.18
JULY 15	0835	302	1.7	4	0.02	0.22
JULY 16	1250	230	9.8	82	2.2	1.2
JULY 22	1220	306	1.7	1	0	.22
JULY 29	1030	313	2.1	0	0	.27
AUG 5	1335	310	1.4	1	0	.18
AUG 12	0935	310	1.3	1	0	.16
AUG 28	1330	245	4.4	0	0	.56
SEPT 3	0930	275	4.2	5	.06	.53
SEPT 9	0920	250	6.2	18	.30	.78
SEPT 16	1125	235	7.4	4	.08	.94
SEPT 24	0945	310	21	110	6.2	2.7
SEPT 24	1000	320	23	147	9.1	2.9
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 7	1005	120	94	274	70	12
OCT 7	1010	120	93	178	45	12
OCT 7	1455	130	52	106	15	6.6
OCT 7	1525	130	48	88	11	6.1
OCT 15	0915	320	.77	1	0	.10
OCT 31	0905	160	56	121	18	7.1
OCT 31	0925	170	53	104	15	6.7
NOV 12	1010	330	19	97	5.0	2.4
NOV 18	0955	145	47	161	20	5.9
DEC 2	1340	370	2.9	2	.02	.37
DEC 9	0920	390	4.4	3	.04	.56
DEC 16	1010	370	3.7	5	.05	.47
DEC 23	0840	400	3.4	3	.03	.43
JAN 13	1055	385	2.9	5	.04	.37
JAN 21	0940	390	2.9	2	.02	.37
JAN 27	1210	410	1.9	2	.01	.24
FEB 3	0905	470	3.5	3	.03	.44
FEB 24	0840	430	1.3	1	.01	.16
MAR 3	1435	430	1.2	1	.01	.15
MAR 17	0940	410	1.6	1	.01	.20
MAR 31	0925	400	1.8	1	.01	.23
APR 17	1030	430	1.5	2	.01	.19
APR 21	0940	430	1.4	1	.01	.18
APR 28	1140	420	2.2	1	.01	.28
MAY 5	0940	420	1.6	1	.01	.20
MAY 14	1530	180	34	24	2.2	4.3
MAY 14	1550	200	33	41	3.7	4.2
MAY 19	1305	240	11	12	.36	1.4
JUNE 2	1305	300	4.1	6	.07	.52
JUNE 9	0830	220	96	715	185	12
JUNE 9	0840	190	117	788	249	15
JUNE 9	0850	160	117	887	280	15
JUNE 9	0900	150	95	1,040	267	12
JUNE 9	0915	140	78	773	163	9.9
JUNE 9	0930	160	63	529	90	8.0
JUNE 23	0925	380	1.8	1	0	.23
JULY 1	0940	410	1.9	2	.01	.24
AUG 4	1000	410	1.2	2	.01	.15
AUG 19	0900	420	1.3	0	0	.16
AUG 29	0920	160	88	295	70	11
AUG 29	0935	170	81	265	58	10
SEPT 8	0930	340	3.5	0	0	.44
SEPT 22	1320	380	1.5	2	.01	.19
SEPT 29	0930	330	1.8	6	.03	.23

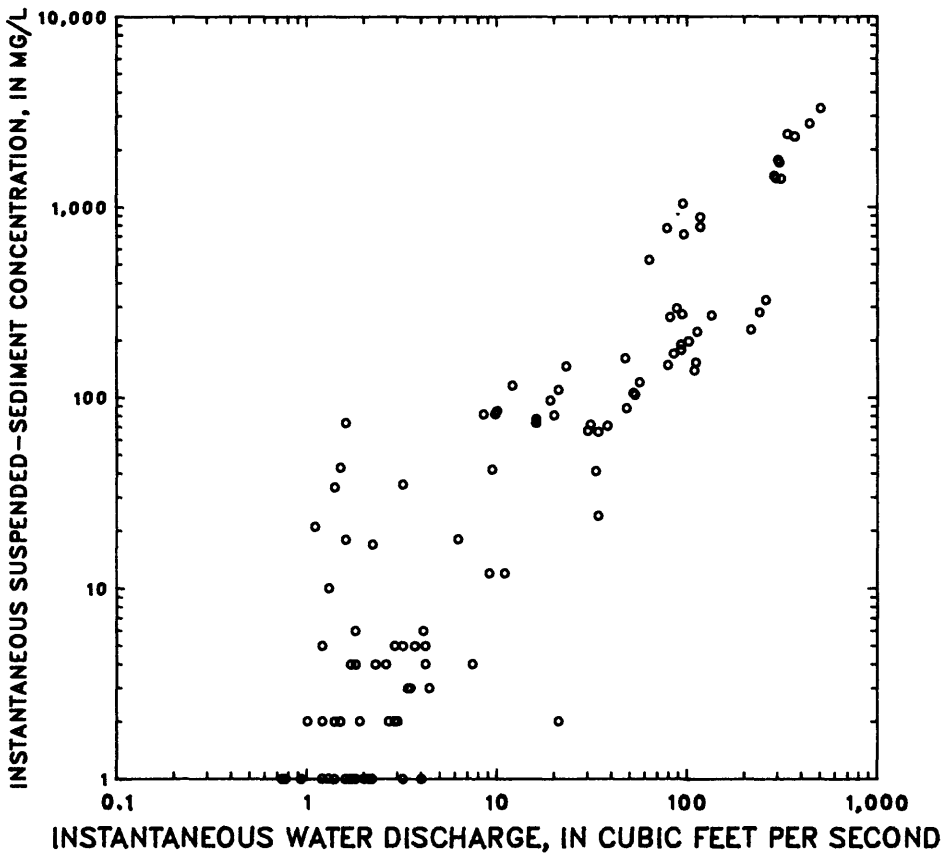


Figure 6.--Relation of suspended-sediment concentration to stream discharge for station Quebrada Salvatierra near San Lorenzo.

Table 7. Suspended-sediment data for samples collected at station Rio Cayaguas at Cerro Gordo

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
FEB 14	1215	115	43	72	8.4	0.87
FEB 14	1235	115	42	66	7.7	.85
FEB 14	1238	---	42	74	8.4	.85
FEB 14	1241	---	42	73	8.3	.85
FEB 14	1244	---	42	76	8.6	.85
FEB 14	1247	---	42	86	10	.85
FEB 14	1250	---	42	97	11	.85
FEB 14	1253	---	42	86	10	.85
FEB 14	1255	---	42	74	8.6	.85
MAR 12	1345	137	24	1	.06	.48
MAR 27	0845	141	18	6	.29	.36
APR 11	1315	140	14	4	.15	.28
APR 24	1115	142	16	2	.09	.32
MAY 17	1245	148	12	4	.13	.24
AUG 27	1405	115	41	67	7.4	.83
SEPT 12	1540	115	61	126	21	1.2
SEPT 12	1600	115	61	122	20	1.2
SEPT 13	1120	127	44	66	7.9	.89
SEPT 18	1215	100	63	158	27	1.3
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	1118	112	72	243	47	1.5
OCT 26	1030	102	93	279	61	1.9
OCT 29	1125	112	44	35	4.2	.89
OCT 31	1000	123	41	29	3.2	.83
NOV 5	1410	35	1,210	4,200	13,800	24
NOV 7	1119	75	236	337	215	4.8
NOV 7	1218	75	220	327	294	4.4
NOV 9	1015	115	86	184	43	1.1
NOV 13	1350	124	51	46	6.3	1.0
NOV 14	1125	124	50	49	6.6	1.0
NOV 15	0955	116	60	98	16	1.2
NOV 20	1330	---	42	53	6.0	.85
NOV 23	0850	---	47	75	10	.95
NOV 26	1215	---	50	148	20	1.0
NOV 28	0925	---	39	45	4.7	0.79
NOV 30	0930	---	39	52	5.5	.79
DEC 3	1145	---	45	150	18	.91
DEC 5	1115	---	38	71	7.3	.77
DEC 10	1206	---	36	54	5.2	.73
DEC 12	1035	138	37	86	8.6	.75
DEC 13	1055	138	36	31	3.0	.73
DEC 17	1240	132	39	29	3.0	.79
DEC 19	1125	128	32	17	1.5	.65
DEC 20	1255	128	32	11	.95	.65
DEC 26	0838	128	33	57	5.1	.65
DEC 27	1004	137	33	33	2.9	.65
JAN 8	1050	137	28	10	.76	.57
JAN 10	1123	140	26	9	.63	.53
JAN 15	1100	149	25	7	.47	.51
JAN 17	1023	143	24	15	.97	.48
JAN 18	1000	140	25	12	.81	.51
JAN 21	1000	143	25	5	.34	.51
JAN 25	0800	140	24	10	.65	.48
JAN 28	0950	140	20	5	.27	.40
JAN 30	1100	140	19	6	.30	.38
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
FEB 1	1230	142	22	7	0.38	0.44
FEB 4	1100	141	17	7	.32	.34
FEB 6	1035	147	17	9	.41	.34
FEB 8	1110	145	15	13	.53	.30
FEB 14	1000	150	15	36	1.5	.30
FEB 19	1020	150	22	22	1.3	.44
FEB 20	0910	139	30	78	6.3	.61
FEB 22	1045	134	20	21	1.1	.40
FEB 26	1030	139	19	14	.70	.38
MAR 1	0924	134	18	30	1.5	.36
MAR 5	1100	139	14	11	.42	.28
MAR 6	1115	143	15	63	2.6	.30
MAR 7	1144	117	43	151	18	.87
MAR 11	0945	144	21	153	8.7	.42
MAR 13	0805	140	19	9	.46	.38
MAR 15	0830	145	20	9	.49	.40
MAR 19	0845	130	23	54	3.4	.46
MAR 20	0910	140	18	11	.53	0.36
MAR 21	1150	140	19	8	.41	.38
MAR 25	1145	145	17	8	.37	.34
MAR 27	1006	140	20	5	.27	.40
MAR 29	1116	65	453	1,450	1,770	9.2
MAR 29	1125	65	397	1,230	1,320	8.0
APR 1	0940	130	24	33	2.1	.48
APR 8	1026	135	22	19	1.1	.44
APR 10	0916	135	19	9	.46	.38
APR 12	1100	135	19	5	.26	.38
APR 26	1300	110	34	91	8.4	.69
MAY 15	1235	68	548	2,240	3,310	11
MAY 15	1240	65	652	1,840	3,240	13
MAY 15	1250	64	917	1,820	4,510	18
MAY 15	1255	64	1,080	2,510	7,310	22
MAY 15	1300	62	1,240	3,040	10,200	25
MAY 15	1305	60	1,390	3,790	14,200	28
MAY 15	1315	54	1,670	4,450	20,100	34
MAY 15	1330	52	1,910	3,780	19,500	39
MAY 15	1345	48	2,580	3,530	24,600	52
MAY 15	1400	48	3,240	5,080	44,400	65
MAY 15	1415	50	3,460	5,580	52,100	70
MAY 16	1100	74	175	298	141	3.5
MAY 16	1115	80	175	432	204	3.5
MAY 17	1325	67	765	892	1,840	15
MAY 17	1350	72	663	1,820	3,260	13
MAY 17	1450	74	495	1,070	1,430	10
MAY 17	1625	74	354	732	700	7.2
MAY 18	1100	36	2,100	4,530	25,700	42
MAY 18	1106	30	2,040	3,220	17,700	41
MAY 18	1115	30	1,920	3,350	17,400	39
MAY 18	1145	32	1,510	3,030	12,400	30
MAY 18	1200	30	1,380	3,870	14,400	28
MAY 18	1215	32	1,350	2,880	10,500	27
MAY 18	1230	38	1,190	2,860	9,190	24
MAY 18	1300	35	1,050	3,040	8,620	21
MAY 18	1330	37	861	3,350	7,790	17
MAY 20	1530	96	71	680	130	1.4

Table 7. Suspended-sediment data for samples collected at station Rio Cayaguas at Cerro Gordo

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985-Continued						
MAY 28	1035	132	52	101	14	1.0
MAY 29	1150	---	50	151	20	1.0
JUNE 5	1015	109	40	83	9.0	.81
JUNE 7	1010	122	37	31	3.1	0.75
JUNE 10	1255	135	37	28	2.8	.75
JUNE 12	1055	108	33	73	6.5	.67
JUNE 14	1000	130	30	33	2.7	.61
JUNE 20	0955	130	25	22	1.5	.50
JUNE 21	0945	140	26	40	2.8	.52
JUNE 24	1115	134	25	18	1.2	.50
JUNE 28	1055	126	24	28	1.8	.48
JULY 1	1230	122	27	67	4.9	.54
JULY 5	1110	125	24	33	2.1	.48
JULY 8	1140	128	24	21	1.4	.48
JULY 15	1120	82	132	1,800	641	2.7
JULY 15	1130	82	138	1,780	663	2.8
JULY 15	1145	82	143	1,760	680	2.9
JULY 15	1215	85	135	1,280	467	2.7
JULY 15	1235	84	145	1,970	771	2.9
JULY 22	1045	120	21	62	3.5	.42
JULY 25	1140	110	25	50	3.4	.50
JULY 29	1220	126	31	36	3.0	.63
AUG 1	1015	130	25	33	2.2	.50
AUG 6	1245	130	22	24	1.4	.44
AUG 9	1040	130	20	17	.92	.40
AUG 12	1125	125	20	15	.81	.40
AUG 16	1000	120	25	47	3.2	.50
AUG 19	1240	125	19	69	3.5	.38
AUG 23	1100	120	19	10	.51	.38
AUG 28	1130	---	99	343	92	2.0
AUG 30	1130	120	25	35	2.4	.50
SEPT 3	1210	130	24	28	1.8	.48
SEPT 9	1305	98	31	58	4.9	.63
SEPT 12	1835	70	1,950	3,390	17,800	39
SEPT 12	1840	65	2,260	3,990	24,400	46
SEPT 12	1845	60	2,580	5,970	41,600	52
SEPT 12	1855	60	2,610	5,900	41,600	53
SEPT 12	1905	70	2,520	6,670	45,400	51
SEPT 12	1915	65	2,300	6,380	39,700	46
SEPT 12	1925	60	2,280	6,280	38,700	46
SEPT 12	1935	60	2,270	6,560	40,200	46
SEPT 12	1950	60	2,250	6,920	42,100	45
SEPT 12	2005	60	2,200	5,570	33,100	44
SEPT 12	2020	60	1,920	6,910	35,800	39
SEPT 12	2035	50	1,750	6,720	31,800	35
SEPT 12	2050	55	1,560	4,220	17,800	32
SEPT 12	2105	55	1,430	3,500	13,500	29
SEPT 12	2120	60	1,260	3,030	10,300	25
SEPT 12	2135	60	1,110	2,450	7,350	22
SEPT 16	1440	130	32	48	4.1	.65
SEPT 25	0150	60	1,560	2,760	11,700	32
SEPT 25	0155	60	1,640	3,500	15,500	33
SEPT 25	0200	60	1,730	4,020	18,800	35
SEPT 25	0210	55	1,840	4,490	22,300	37
SEPT 25	0220	50	1,900	3,770	26,600	38
SEPT 25	0230	50	1,930	4,890	25,500	39
SEPT 25	0240	40	1,920	4,980	22,800	39
SEPT 25	0250	45	1,870	4,190	21,200	38
SEPT 25	0305	45	1,720	3,690	17,100	35
SEPT 25	0320	40	1,560	3,420	14,400	32
SEPT 25	0335	40	1,440	3,030	11,800	29
SEPT 25	0350	40	1,290	2,640	9,200	26
SEPT 30	1020	120	34	40	3.7	.69
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 3	1200	115	51	108	15	1.0
OCT 6	0900	50	1,230	1,870	6,220	25
OCT 6	0910	60	1,300	2,000	7,020	26
OCT 6	0920	50	1,340	2,150	7,790	27
OCT 6	0930	60	1,370	2,200	8,130	28
OCT 6	0945	50	1,380	2,400	8,930	28
OCT 6	1000	50	1,590	2,400	10,300	32
OCT 6	1015	50	2,500	3,090	20,900	50
OCT 6	1030	50	3,700	4,140	41,300	75
OCT 6	1045	50	3,850	4,400	45,700	78
OCT 6	1100	50	3,430	5,060	46,900	69
OCT 6	1115	50	3,140	6,270	53,100	63
OCT 6	1130	50	2,860	7,010	54,100	58
OCT 6	1200	50	2,910	7,090	55,700	59
OCT 6	1230	50	2,710	6,530	47,800	55
OCT 6	1300	50	2,640	5,680	40,500	53
OCT 6	1330	50	2,760	5,080	37,900	56
OCT 6	1400	50	2,330	4,460	28,100	47
OCT 6	1430	50	2,130	4,270	24,500	43
OCT 6	1500	50	2,490	4,560	30,700	50
OCT 6	1530	50	2,620	4,390	31,000	53
OCT 6	1545	40	2,500	4,230	28,500	50
OCT 6	1550	40	2,460	4,260	28,300	50
OCT 6	1555	40	2,430	4,350	28,600	49
OCT 6	1605	40	2,310	4,080	25,500	47
OCT 6	1615	40	2,140	3,800	22,000	43
OCT 6	1625	40	2,090	3,750	21,200	42
OCT 6	1635	40	2,040	3,620	20,000	41
OCT 6	1645	40	1,980	3,760	20,100	40
OCT 6	1700	40	1,860	3,700	18,600	38
OCT 6	1715	40	1,920	3,650	18,900	39
OCT 6	1730	40	2,240	3,930	23,700	45
OCT 6	1745	40	2,450	3,950	26,100	50
OCT 6	1800	30	2,620	4,220	29,800	53
OCT 6	1815	30	2,490	4,110	27,600	50
OCT 6	1830	30	2,370	4,000	25,600	48
OCT 6	1845	30	2,290	4,100	25,300	46
OCT 6	1915	30	2,050	3,790	21,000	41
OCT 6	1945	30	1,870	3,580	18,100	38
OCT 6	2015	30	1,730	3,000	14,000	35
OCT 6	2045	30	1,710	2,950	13,600	34
OCT 6	2115	30	1,810	3,000	14,700	37
OCT 6	2145	30	1,790	2,840	13,700	36
OCT 6	2215	30	1,660	2,640	11,800	34
OCT 6	2245	30	1,720	2,830	13,100	35

Table 7. Suspended-sediment data for samples collected at station Rio Cayaguas at Cerro Gordo

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
OCT 15	1115	120	27	33	2.4	0.54
OCT 18	1040	110	49	200	26	.99
OCT 24	0900	60	1,490	5,880	23,700	30
OCT 24	0910	60	1,610	3,040	13,200	32
OCT 24	0920	60	1,690	3,130	14,300	34
OCT 24	0930	60	1,730	3,070	14,300	35
OCT 24	0945	60	1,760	3,180	15,100	36
OCT 24	1000	60	1,600	3,000	13,000	32
OCT 24	1015	60	1,490	3,090	12,400	30
OCT 29	1230	60	313	1,140	963	6.3
OCT 31	1110	80	156	479	202	3.2
NOV 18	1135	90	134	254	92	2.7
NOV 12	1140	115	72	105	20	1.5
NOV 26	1020	120	42	36	4.1	.85
NOV 27	1140	120	47	29	3.7	.95
DEC 6	1125	130	42	76	8.6	.85
DEC 9	1120	120	36	29	2.8	.73
DEC 12	0945	120	73	239	47	1.5
DEC 16	1215	120	40	30	3.2	.81
DEC 23	1015	130	55	72	11	1.1
DEC 27	1020	130	41	32	3.5	.83
JAN 8	1045	130	34	26	2.4	.69
JAN 13	1240	130	35	29	2.7	.71
JAN 16	1055	130	38	23	2.4	.77
JAN 21	1140	130	62	38	6.4	1.2
JAN 27	1050	130	14	14	.53	.28
JAN 30	1100	130	21	30	1.7	.42
FEB 3	1050	130	17	12	.55	.34
FEB 13	1200	145	17	13	.60	.34
FEB 18	1135	140	24	17	1.1	.48
FEB 24	1015	140	16	13	.56	.32
MAR 3	1345	140	17	12	.55	.34
MAR 14	1125	150	25	3	.20	.50
MAR 20	0905	145	16	2	.09	.32
MAR 24	1015	160	17	6	.28	.34
MAR 31	1105	130	28	145	11	.57
APR 10	1025	140	23	25	1.6	.46
APR 14	1105	150	15	12	.49	.30
APR 17	0955	150	16	9	.39	.32
APR 21	1100	150	16	6	.26	.32
MAY 5	1055	135	24	47	3.0	.48
MAY 14	1445	90	134	272	98	2.7
MAY 14	1500	100	140	260	98	2.8
MAY 22	1030	140	19	74	3.8	.38
JUNE 2	1150	140	28	111	8.4	.57
JUNE 23	1120	150	24	37	2.4	.48
JULY 1	1120	150	34	24	2.2	.69
JULY 7	1115	140	34	45	4.1	.69
JULY 14	1200	155	28	44	3.3	.57
JULY 29	1055	160	21	25	1.4	.42
AUG 4	1155	150	20	24	1.3	.40
AUG 19	1030	160	14	27	1.0	.28
AUG 26	1120	170	13	17	.60	.26
AUG 29	1130	75	381	455	468	7.7
SEPT 8	1125	140	16	12	.52	.32
SEPT 15	1245	140	16	17	.73	.32
SEPT 19	1010	140	10	18	.49	.20
SEPT 22	1200	140	25	16	1.1	.50
SEPT 29	1135	130	14	15	.57	.28

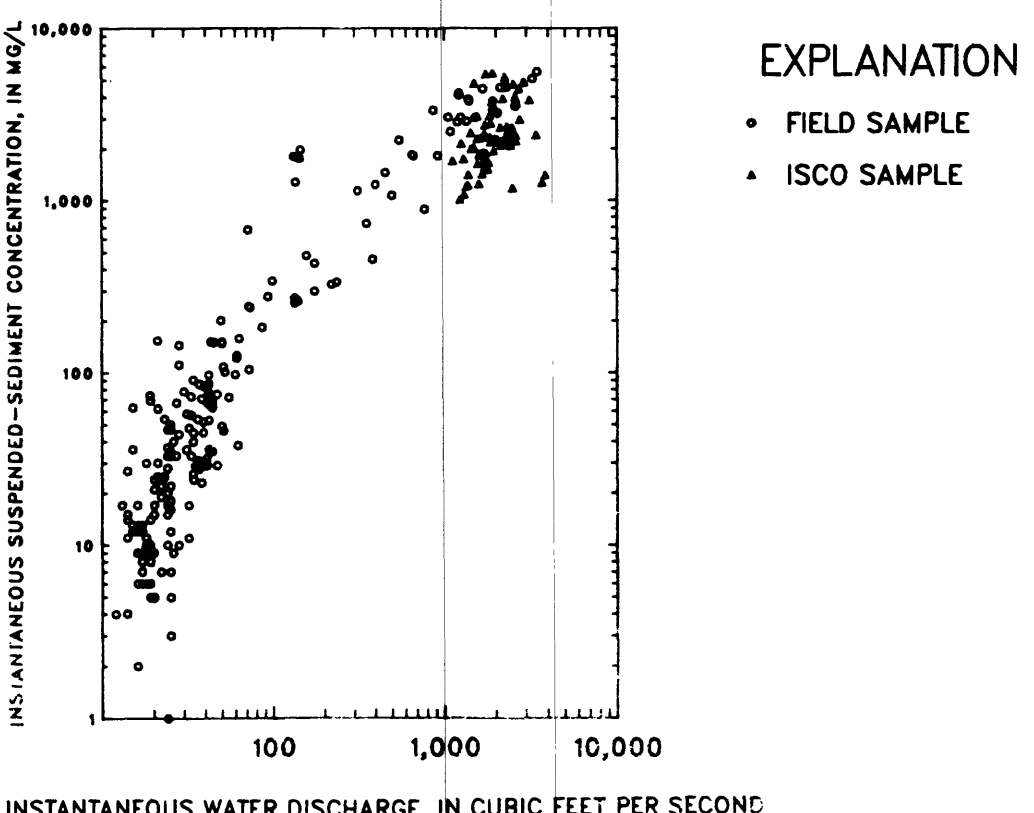


Figure 7.--Relation of suspended-sediment concentration to stream discharge for station Río Cayaguas at Cerro Gordo.

Table 8. Suspended-sediment data for samples collected at station Rio Turabo at Borinquen

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
FEB 16	1125	125	133	63	23	4.5
MAR 9	1030	172	14	0	0	.51
MAR 28	0815	184	17	3	.14	.62
APR 12	1015	177	9.0	3	.07	.33
MAY 21	1230	184	9.0	12	.29	.33
MAY 25	1330	---	39	20	2.1	1.4
MAY 30	1620	---	84	1,040	236	3.1
MAY 30	1622	103	83	1,220	273	3.0
MAY 30	1625	103	91	1,090	267	3.3
JUNE 12	1415	150	24	31	2.0	.88
JUNE 28	0945	179	10	0	0	.37
JULY 5	1220	113	151	156	64	5.5
JULY 5	1225	119	151	159	65	5.5
JULY 5	1325	122	127	125	44	4.6
JULY 5	1327	117	127	129	44	4.6
JULY 5	1330	118	126	137	47	4.6
JULY 11	1545	156	23	1	.06	.84
AUG 23	1515	---	7.4	4	.08	.27
SEPT 14	1430	120	36	283	28	1.3
SEPT 14	1445	121	35	287	27	1.3
SEPT 14	1500	122	33	281	25	1.2
SEPT 19	0915	108	90	308	75	3.3
SEPT 20	1005	89	183	536	265	6.7
SEPT 20	1010	89	176	636	302	6.4
SEPT 20	1015	85	171	558	258	6.3
SEPT 20	1020	85	165	543	242	6.0
SEPT 20	1025	89	160	512	221	5.9
SEPT 20	1030	89	155	500	209	5.7
SEPT 20	1035	90	151	445	181	5.5
SEPT 20	1040	90	148	621	248	5.4
SEPT 20	1045	90	144	619	241	5.3
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 22	1313	149	17	33	1.5	0.62
OCT 29	0900	---	14	15	.56	.51
NOV 13	1040	152	46	18	2.2	1.7
NOV 20	1050	155	20	5	.28	.73
DEC 5	0847	160	19	3	.15	.70
DEC 17	1025	159	15	9	.36	.55
JAN 11	0945	183	11	8	.24	.40
JAN 28	0835	178	8.8	4	.09	.32
FEB 11	0930	182	8.8	13	.31	.32
MAR 6	1357	182	99	870	232	3.6
MAR 6	1410	163	92	591	147	3.4
MAR 6	1415	168	92	527	131	3.4
MAR 6	1430	160	77	463	96	2.8
MAR 6	1445	152	68	398	73	2.5
MAR 11	0815	167	16	5	.22	.59
MAR 25	0405	175	11	6	.18	.40
APR 15	0955	160	8.2	1	.02	.30
MAY 15	0830	117	123	65	22	4.5
MAY 15	0840	117	261	358	252	9.6
MAY 15	0845	122	261	288	203	9.6
MAY 15	0850	115	261	398	280	9.6
MAY 15	0900	113	223	504	303	8.2
MAY 15	0915	107	241	768	500	8.8
MAY 15	0930	97	231	776	484	8.5
MAY 15	0945	92	223	800	482	8.2
MAY 15	1000	89	223	584	352	8.2
MAY 15	1015	92	221	632	377	8.1
MAY 15	1030	88	233	458	288	8.5
MAY 15	1100	88	202	385	210	9.4
MAY 15	1130	92	198	340	182	7.2
MAY 15	1755	91	270	276	201	9.9
MAY 15	1800	90	264	248	177	9.7
MAY 17	1023	85	3,370	4,700	42,800	123
MAY 17	1126	53	6,110	26,000	429,000	224
MAY 17	1130	45	6,110	28,600	472,000	224
MAY 17	1137	43	6,120	26,900	445,000	224
MAY 17	1145	43	6,130	20,300	336,000	224
MAY 17	1157	47	6,130	13,800	228,000	224
MAY 17	1200	47	6,130	11,800	195,000	224
MAY 17	1720	93	6,990	489	9,230	256
MAY 17	1725	95	6,990	314	5,930	256
MAY 17	1735	96	7,000	440	8,320	256
MAY 17	1750	102	7,100	478	9,200	260
MAY 20	1100	124	---	12	---	---
MAY 28	0810	127	23	26	1.6	.84
JUNE 3	0815	120	11	6	.18	.40
JUNE 10	0930	157	10	4	.11	.37
JUNE 24	0820	150	12	5	.16	.44
JULY 1	0935	135	12	4	.13	.44
JULY 8	0845	136	9.5	6	.14	.35
JULY 29	0940	148	13	8	.28	.48
AUG 5	0955	146	12	8	.26	.44
AUG 12	0845	150	9.1	8	.20	.33
AUG 18	1025	150	13	9	.31	.48
SEPT 3	0845	158	13	16	.56	.48
SEPT 16	1010	132	14	13	.49	.51
SEPT 24	1840	140	13	75	2.6	.48
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 6	1725	50	2,520	4,150	28,200	92
OCT 6	1730	50	2,640	4,870	34,700	97
OCT 6	1735	50	2,510	4,840	32,800	92
OCT 6	1740	50	2,380	4,520	29,000	87
OCT 6	1745	50	2,250	4,880	29,600	82
OCT 6	1750	50	2,120	4,160	23,800	78
OCT 6	1755	50	1,990	4,560	24,500	73
OCT 6	1800	50	1,860	5,340	26,800	68
OCT 6	1815	50	1,830	3,700	18,300	67
OCT 7	1715	100	379	950	972	14
OCT 21	0855	140	52	1	.14	1.9
NOV 12	0850	140	28	3	.19	1.0
NOV 18	0845	110	75	173	35	2.7
NOV 18	0915	110	75	351	71	2.7
DEC 2	1410	210	20	4	.22	.73
DEC 9	0835	160	19	9	.46	.70
DEC 12	1240	140	32	108	9.3	1.2
DEC 16	0925	145	17	6	.28	.62
DEC 30	0820	155	16	38	1.6	.59
JAN 13	1020	155	14	6	.23	.38
JAN 21	0845	155	13	3	.11	.48
FEB 3	0820	170	13	4	.14	.48
FEB 10	0845	160	12	1	.03	.44
FEB 18	0935	160	12	1	.03	.44
FEB 24	0755	170	8.4	2	.05	.31

Table 8. Suspended-sediment data for samples collected at station Rio Turabo at Borinquen

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
MAR 17	0910	170	7.0	2	0.04	0.26
MAR 24	0835	180	7.0	4	.08	.26
MAR 31	0835	160	11	9	.27	.40
APR 14	0855	170	9.4	3	.08	.34
APR 28	1045	150	16	33	1.4	.59
MAY 1	0855	140	20	33	1.8	.73
MAY 5	0850	170	12	6	.19	.44
MAY 8	1600	160	200	1,630	880	7.3
MAY 8	1605	110	500	2,140	2,890	19
MAY 8	1610	100	803	2,330	5,050	30
MAY 8	1620	100	1,310	3,680	13,000	49
MAY 8	1630	100	1,780	3,750	18,000	66
MAY 8	1640	100	1,710	3,350	15,500	64
MAY 8	1650	90	1,660	3,150	14,100	62
MAY 8	1700	90	1,610	3,110	13,500	60
MAY 8	1715	90	1,090	2,380	7,000	40
MAY 8	1730	90	888	2,230	5,350	33
MAY 8	1745	90	614	1,510	2,500	23
MAY 8	1800	90	445	1,110	1,330	17
MAY 8	1815	90	374	988	998	14
MAY 8	1830	100	330	814	725	12
MAY 8	1845	100	289	691	539	11
MAY 8	1900	110	271	604	442	10
MAY 8	1915	110	257	618	429	9.5
MAY 8	1945	130	209	412	232	7.8
MAY 8	2015	120	181	303	148	6.7
MAY 8	2045	130	152	260	107	5.6
MAY 8	2115	130	125	213	72	4.6
MAY 8	2145	130	113	181	55	4.2
MAY 8	2215	140	104	170	48	3.9
MAY 8	2245	140	95	153	39	3.5
MAY 13	0735	125	205	745	412	7.5
MAY 13	0740	105	263	2,040	1,450	9.6
MAY 13	0745	80	429	3,420	3,960	16
MAY 13	0755	75	963	10,200	26,500	35
MAY 13	0805	75	1,700	20,600	94,500	62
MAY 13	0815	75	1,990	16,800	90,300	73
MAY 13	0825	50	1,970	9,840	52,300	72
MAY 13	0835	60	1,660	13,000	58,300	61
MAY 13	0850	50	1,530	6,430	26,600	56
MAY 13	0905	50	1,140	3,980	12,200	42
MAY 13	0920	55	977	2,880	7,600	36
MAY 13	0935	60	733	3,170	6,300	27
MAY 13	0950	60	524	1,580	2,240	19
MAY 13	1005	70	437	1,640	1,940	16
MAY 13	1020	70	362	1,100	1,080	13
MAY 13	1035	70	326	808	711	12
MAY 13	1105	70	271	612	448	9.9
MAY 13	1135	80	231	396	247	8.5
MAY 13	1205	90	206	308	171	7.6
MAY 13	1235	90	181	258	126	6.6
MAY 13	1305	100	166	217	97	6.1
MAY 13	1335	100	146	176	69	5.3
MAY 13	1405	100	128	157	54	4.7
MAY 13	1435	100	116	141	44	4.2
MAY 18	0115	110	200	515	278	7.3
MAY 18	0120	110	210	920	522	7.7
MAY 18	0125	100	230	442	274	8.4
MAY 18	0135	80	315	1,180	1,000	12
MAY 18	0145	85	445	2,080	2,500	16
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
MAY 18	0155	80	434	1,630	1,910	16
MAY 18	0205	75	381	1,540	1,580	14
MAY 18	0215	70	318	1,430	1,230	12
MAY 18	0230	70	274	1,350	999	10
MAY 18	0245	70	234	1,340	847	8.6
MAY 18	0300	70	209	1,260	711	7.7
MAY 18	0315	70	187	969	489	6.8
MAY 18	0330	70	157	837	351	5.8
MAY 18	0345	70	141	681	259	5.2
MAY 18	0400	70	130	612	215	4.8
MAY 18	0415	70	128	417	144	4.7
MAY 18	0445	80	113	515	157	4.1
MAY 18	0515	80	107	266	77	3.9
MAY 18	0545	90	97	330	86	3.6
MAY 18	0615	100	87	219	51	3.2
MAY 18	0645	100	82	180	40	3.0
MAY 18	0715	100	75	157	32	2.7
MAY 18	0745	100	70	143	27	2.6
MAY 18	0815	100	66	124	22	2.4
MAY 31	0415	145	190	1,160	595	7.0
MAY 31	0420	135	200	1,030	556	7.3
MAY 31	0425	125	210	1,080	612	7.7
MAY 31	0435	100	230	1,090	677	8.4
MAY 31	0445	105	250	1,280	864	9.2
MAY 31	0455	105	270	1,700	1,240	9.9
MAY 31	0505	105	290	1,500	1,170	11
MAY 31	0515	100	234	1,390	878	8.6
MAY 31	0530	90	197	1,980	1,050	7.2
MAY 31	0545	85	169	1,960	894	6.2
MAY 31	0600	80	149	1,620	652	5.5
MAY 31	0615	80	133	1,460	524	4.9
MAY 31	0630	80	125	1,330	449	4.6
MAY 31	0645	80	116	1,220	382	4.2
MAY 31	0700	80	107	1,100	318	3.9
MAY 31	0715	80	97	938	246	3.6
MAY 31	0745	85	79	901	192	2.9
MAY 31	0815	85	64	728	126	2.3
MAY 31	0845	90	54	552	80	2.0
MAY 31	0915	90	49	440	58	1.8
MAY 31	0945	90	46	391	49	1.7
MAY 31	1015	100	39	324	34	1.4
MAY 31	1045	110	35	243	23	1.3
MAY 31	1115	110	33	238	21	1.2
JUNE 10	0130	150	200	2,290	1,240	7.3
JUNE 10	0135	110	375	4,090	4,140	14
JUNE 10	0140	110	496	5,020	6,720	18
JUNE 10	0150	110	718	5,820	11,300	26
JUNE 10	0200	110	916	14,600	36,100	34
JUNE 10	0210	90	985	9,940	26,400	36
JUNE 10	0220	80	920	9,840	24,400	34
JUNE 10	0230	80	728	9,230	18,100	27
JUNE 10	0245	80	501	7,870	10,600	18
JUNE 10	0300	80	374	5,740	5,800	14
JUNE 10	0315	80	300	5,060	4,100	11
JUNE 10	0330	80	254	3,690	2,530	9.3
JUNE 10	0345	80	234	3,220	2,030	8.6
JUNE 10	0400	80	197	2,520	1,340	7.2
JUNE 10	0415	90	163	2,250	990	6.0
JUNE 10	0430	90	157	1,780	754	5.6
JUNE 10	0500	95	130	1,310	460	4.8

Table 8. Suspended-sediment data for samples collected at station Rio Turabo at Borinquen

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
JUNE 10	0530	95	116	1,140	357	4.2
JUNE 10	0600	100	104	777	218	3.8
JUNE 10	0630	110	104	572	161	3.8
JUNE 10	0700	110	97	462	121	3.6
JUNE 10	0730	115	100	371	100	3.7
JUNE 10	0800	115	84	388	88	3.1
JUNE 10	0830	115	72	386	75	2.6
JUNE 10	0855	170	20	7	.38	.73
JUNE 23	0830	170	15	2	.08	.55
JULY 1	0840	180	11	3	.09	.40
JULY 14	0915	180	13	4	.14	.48
AUG 4	0900	190	17	2	.09	.62
AUG 12	0845	170	24	14	.91	.88
AUG 19	0800	190	20	3	.16	.73
AUG 28	1930	120	200	2,110	1,140	7.3
AUG 28	1935	120	202	1,050	573	7.4
AUG 28	1940	120	204	1,010	556	7.5
AUG 28	1950	120	205	1,120	620	7.5
AUG 28	2000	110	203	1,160	636	7.5
AUG 28	2010	110	199	1,280	688	7.3
AUG 28	2020	110	222	1,250	749	8.1
AUG 28	2030	110	271	1,190	871	9.9
AUG 28	2045	100	267	1,200	865	9.8
AUG 28	2100	100	289	1,050	819	11
AUG 28	2115	100	289	1,100	858	11
AUG 28	2130	100	267	1,370	988	9.8
AUG 28	2145	100	234	2,100	1,330	8.6
AUG 28	2200	100	224	2,290	1,380	8.2
AUG 28	2215	95	212	1,900	1,090	7.8
AUG 28	2230	95	271	1,520	1,110	9.9
AUG 28	2300	90	362	1,610	1,570	13
AUG 28	2330	90	296	1,900	1,520	11
AUG 28	2400	90	244	3,440	2,270	8.9
AUG 29	0030	90	257	4,280	2,970	9.4
AUG 29	0100	80	585	4,000	6,320	21
AUG 29	0130	80	1,570	4,020	17,000	58
AUG 29	0200	80	966	3,030	7,900	35
AUG 29	0230	80	600	2,370	3,840	22
AUG 29	0830	70	350	2,320	2,190	13
AUG 29	0835	70	341	1,450	1,340	12
AUG 29	0840	70	332	1,020	914	12
AUG 29	0850	70	305	963	793	11
AUG 29	0900	70	271	886	648	9.9
AUG 29	0910	70	250	824	556	9.2
AUG 29	0920	75	249	819	551	9.1
AUG 29	0930	75	215	790	459	7.9
AUG 29	0945	80	200	737	398	7.3
AUG 29	1000	80	181	617	302	6.6
AUG 29	1015	80	166	505	226	6.1
AUG 29	1030	80	154	403	168	5.6
AUG 29	1045	90	160	347	150	5.9
AUG 29	1100	90	149	284	114	5.5
AUG 29	1115	90	138	253	94	5.1
AUG 29	1130	100	125	222	75	4.6
AUG 29	1200	100	121	234	76	4.4
AUG 29	1230	100	113	197	60	4.1
AUG 29	1300	100	100	169	46	3.7
AUG 29	1330	100	92	150	37	3.4
AUG 29	1400	105	79	128	27	2.9
AUG 29	1430	105	70	111	21	2.6
AUG 29	1500	110	68	108	20	2.5
AUG 29	1530	110	66	110	20	2.4
SEPT 22	1015	170	6.6	7	.12	.24
SEPT 24	1115	140	201	585	318	7.4
SEPT 24	1120	140	168	701	318	6.2
SEPT 24	1125	140	150	717	290	5.5
SEPT 24	1135	110	178	1,030	495	6.5
SEPT 24	1145	110	261	873	615	9.6
SEPT 24	1155	110	117	740	234	4.3
SEPT 24	1205	110	190	1,010	518	7.0
SEPT 24	1215	120	175	964	455	6.4
SEPT 24	1230	120	160	994	429	5.9
SEPT 24	1245	110	146	1,170	461	5.3
SEPT 24	1300	110	118	1,290	411	4.3
SEPT 24	1315	110	116	1,350	423	4.2
SEPT 24	1330	110	100	1,250	338	3.7
SEPT 24	1345	110	79	1,170	250	2.9
SEPT 24	1400	110	77	1,080	224	2.8
SEPT 24	1415	110	92	976	242	3.4
SEPT 24	1445	110	113	922	281	4.1
SEPT 24	1515	110	118	964	307	4.3
SEPT 24	1545	110	111	822	246	4.1
SEPT 24	1615	110	163	743	327	6.0
SEPT 24	1645	110	136	854	314	5.0
SEPT 24	1715	110	111	677	203	4.1
SEPT 24	1745	110	84	471	107	3.1
SEPT 24	1815	110	64	382	66	2.3

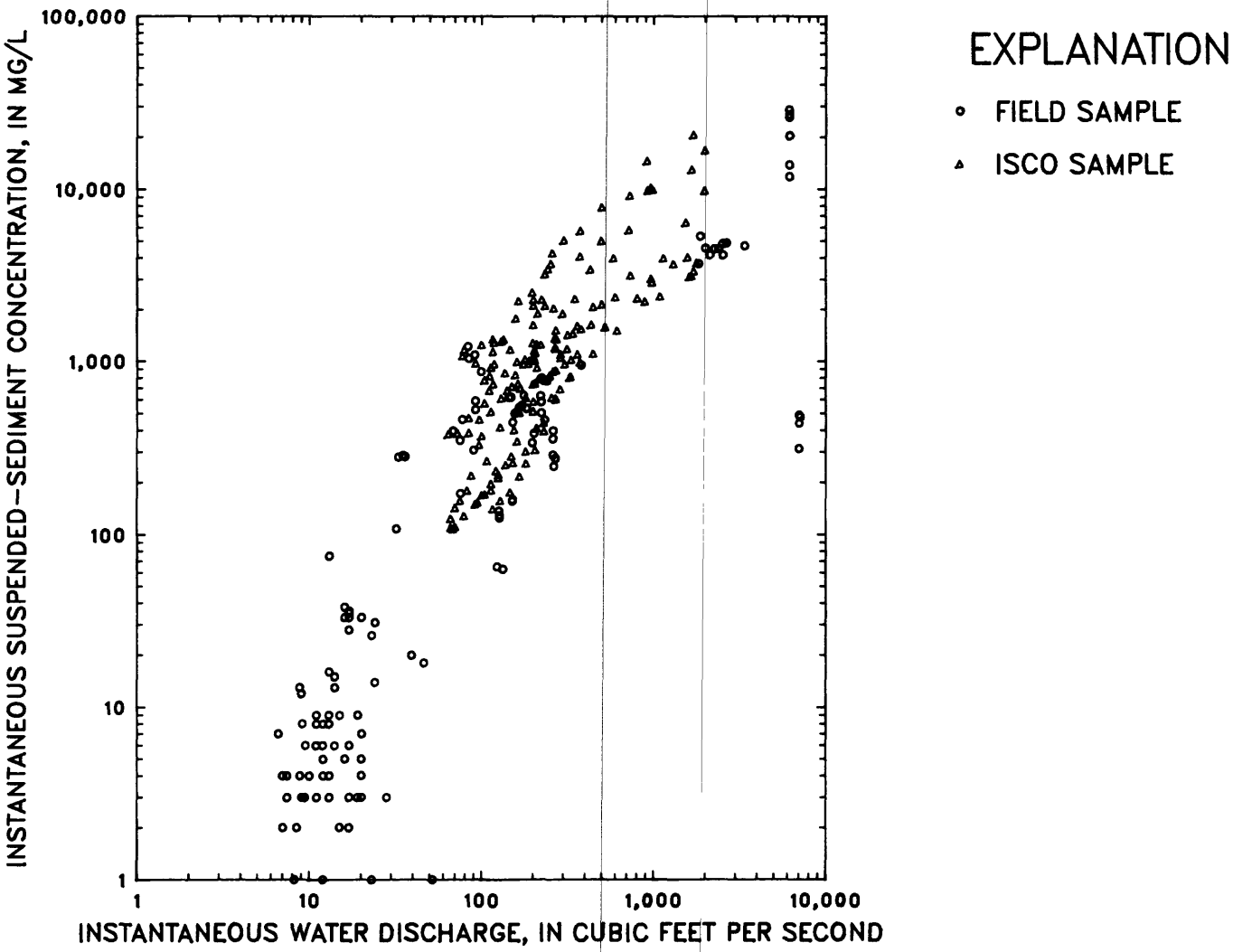


Figure 8.--Relation of suspended-sediment concentracion to stream discharge for station Rio Turabo at Borinquen.

Table 9. Suspended-sediment data for samples collected at station Rio Grande de Loiza at Caguas

[US/CM, microsiemens per centimeter; CFS, cubic foot per second; MG/L, milligrams per liter; T/DAY, tons per day; Qi/Qa, ratio of instantaneous water discharge to average water discharge; ---, missing data]

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
DCT 4	1300	202	152	125	51	0.68
FEB 16	1455	---	880	307	729	3.9
FEB 16	1510	---	856	312	721	3.8
FEB 16	1520	---	842	299	680	3.8
FEB 16	1530	---	825	299	666	3.7
FEB 16	1535	---	818	293	647	3.7
FEB 16	1544	---	807	290	632	3.6
FEB 16	1554	---	795	283	607	3.5
FEB 16	1604	---	783	289	611	3.5
MAR 28	0845	258	53	19	2.7	.24
APR 9	1130	251	43	21	2.4	.19
APR 26	1000	266	31	134	11	.14
MAY 22	0900	294	32	18	1.6	.14
SEPT 14	1055	128	2,650	2,310	16,500	12
SEPT 14	1100	117	2,600	3,520	24,700	12
SEPT 14	1105	120	2,570	3,700	25,700	12
SEPT 14	1110	113	2,540	3,450	23,700	11
SEPT 14	1115	109	2,480	2,680	17,900	11
SEPT 14	1120	117	2,440	2,610	17,200	11
SEPT 14	1125	109	2,410	2,450	15,900	11
SEPT 14	1130	109	2,360	3,800	24,200	17
SEPT 14	1135	105	2,320	2,700	16,900	12
SEPT 14	1140	109	2,290	2,680	16,600	12
SEPT 14	1145	109	2,220	2,220	13,300	9.9
SEPT 14	1150	105	2,170	340	1,990	9.7
SEPT 14	1155	108	2,130	2,120	12,200	9.5
SEPT 14	1200	117	2,090	1,930	10,900	9.3
SEPT 14	1215	111	1,940	1,820	9,530	8.7
SEPT 14	1230	117	1,850	2,060	10,300	8.3
SEPT 14	1245	111	1,730	1,080	5,040	7.7
SEPT 14	1300	109	1,640	1,510	6,690	7.3
SEPT 14	1315	107	1,530	1,570	6,490	6.8
SEPT 14	1330	107	1,450	1,190	4,660	6.5
SEPT 14	1345	107	1,380	850	3,170	6.2
SEPT 14	1400	109	1,310	1,040	3,680	5.8
SEPT 14	1430	109	1,180	1,130	3,600	5.3
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 22	1624	201	157	48	20	.70
OCT 29	1405	---	175	69	33	.78
NOV 5	1745	66	7,620	3,500	72,000	34
NOV 5	1745	68	7,620	2,480	51,000	34
NOV 5	1830	60	7,520	3,060	62,100	34
NOV 7	1110	114	1,960	280	1,480	8.8
NOV 7	1115	120	1,950	284	1,500	8.8
NOV 7	1120	125	1,940	258	1,350	8.7
NOV 7	1125	126	1,940	255	1,330	8.7
NOV 7	1130	120	1,930	258	1,300	8.7
NOV 14	0920	210	308	72	60	1.4
NOV 20	1635	226	228	10	44	1.0
DEC 5	1415	232	182	58	29	.81
DEC 7	1105	256	163	153	67	.73
DEC 19	1450	250	134	180	65	0.60
JAN 11	1435	260	109	102	30	.49
JAN 23	1210	270	77	76	16	.34
FEB 14	1230	280	58	80	12	.26
MAR 1	1147	218	100	518	142	.45
MAR 11	1300	256	70	56	11	.31
MAR 25	1315	265	56	66	10	.25
MAR 29	0830	120	2,110	2,220	12,500	9.4
MAR 29	0835	120	2,070	2,100	11,400	9.2
MAR 29	0840	125	2,030	1,900	10,400	9.1
MAR 29	0845	120	1,990	1,900	9,990	8.9
MAR 29	0855	120	1,900	1,700	8,720	8.5
MAR 29	0905	125	1,820	1,700	8,210	8.1
APR 10	1047	245	66	55	10	.29
MAY 15	1545	76	11,600	4,100	129,000	52
MAY 15	1555	73	11,300	4,400	134,000	50
MAY 15	1605	70	11,000	4,200	124,000	49
MAY 15	1615	73	10,500	3,300	93,600	47
MAY 15	1625	70	9,920	3,400	91,100	44
MAY 15	1635	74	9,310	3,200	80,000	42
MAY 15	1645	72	8,670	2,200	51,500	39
MAY 15	1655	70	7,400	2,800	56,300	33
MAY 17	1200	75	16,500	12,200	544,000	74
MAY 17	1205	90	18,200	11,200	550,000	81
MAY 17	1215	78	21,500	9,940	577,000	96
MAY 17	1220	61	22,600	10,200	653,000	101
MAY 17	1225	67	23,700	9,820	626,000	106
MAY 17	1230	68	24,800	10,200	683,000	111
MAY 17	1235	64	23,500	9,970	634,000	105
MAY 17	1240	66	22,300	9,930	597,000	100
MAY 17	1245	61	24,600	12,300	817,000	110
MAY 17	1250	60	23,700	8,610	551,000	106
MAY 17	1300	58	21,800	8,400	494,000	97
MAY 17	1316	58	19,400	7,400	388,000	87
MAY 17	1320	57	18,400	6,900	343,000	82
MAY 17	1330	57	16,100	6,600	287,000	72
MAY 17	1345	58	13,700	6,300	233,000	61
MAY 17	1400	58	11,600	5,660	177,000	52
MAY 17	1415	60	9,870	5,100	136,000	44
MAY 17	1430	63	8,450	4,700	107,000	38
MAY 17	1445	63	7,500	4,680	94,800	33
MAY 17	1500	70	6,760	3,120	57,000	30
MAY 17	1502	68	6,700	3,440	62,200	30
MAY 17	1515	70	6,270	3,660	62,000	28
MAY 17	1545	75	5,260	3,090	43,900	23
MAY 17	1600	75	4,870	2,410	31,700	22
MAY 17	1615	84	4,530	2,050	25,100	20
MAY 17	1630	78	4,280	1,990	23,000	19
MAY 17	1645	85	4,040	1,820	19,900	18
MAY 17	1700	84	3,870	1,740	18,200	17
MAY 17	1715	86	3,680	1,540	15,300	16
MAY 17	1730	89	3,540	1,370	13,100	16
MAY 17	1745	89	3,420	1,780	16,400	15
MAY 17	1800	90	3,350	1,090	9,860	15
MAY 17	1830	96	3,620	1,020	9,970	16

Table 9. Suspended-sediment data for samples collected at station Rio Grande de Loiza at Caguas

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985-Continued						
MAY 17	1845	104	4,410	1,200	14,300	20
MAY 17	1850	97	4,800	1,370	17,800	21
MAY 17	1855	96	5,190	1,470	20,600	23
MAY 17	1900	96	5,560	1,600	24,100	25
MAY 17	1905	103	5,860	1,830	28,900	26
MAY 17	1910	97	6,130	1,950	32,300	27
MAY 17	1915	97	6,410	2,080	36,000	29
MAY 17	1920	88	6,620	2,440	43,600	30
MAY 17	1925	88	6,840	1,590	29,400	30
MAY 17	1930	88	7,050	2,740	52,200	31
MAY 17	1945	85	7,380	2,920	58,200	33
MAY 17	2000	84	7,430	3,380	67,800	33
MAY 17	2030	84	7,320	2,220	43,900	33
MAY 18	1000	47	18,600	4,500	226,000	83
MAY 18	1030	44	16,700	3,700	167,000	75
MAY 18	1200	66	11,300	4,300	131,000	50
MAY 18	1230	55	9,440	3,700	94,300	42
MAY 18	1232	74	9,320	4,220	106,000	42
MAY 21	0825	172	395	28	30	1.8
MAY 29	0800	194	181	151	74	.81
JUNE 7	0805	175	129	20	6.7	.58
JUNE 14	0750	230	91	28	6.9	.41
JUNE 21	0815	225	79	45	10	.35
JUNE 28	0810	207	54	89	13	.24
JULY 05	0810	188	60	74	12	.27
JULY 16	0840	120	762	909	1,870	3.4
JULY 16	0900	120	731	918	1,810	3.3
JULY 16	0915	130	710	878	1,680	3.2
JULY 25	0800	170	165	99	44	.74
AUG 1	0805	216	85	19	4.4	.38
AUG 12	1325	202	48	10	1.3	.21
AUG 23	0830	200	52	58	8.1	.23
SEPT 6	0810	165	102	246	68	.46
SEPT 6	0820	170	100	290	78	.45
SEPT 6	0835	165	97	278	73	.43
SEPT 24	1740	190	507	460	630	2.3
SEPT 24	1750	200	501	462	625	2.3
SEPT 24	1755	200	498	440	592	2.2
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 3	1345	180	443	192	230	2.0
OCT 3	1350	180	440	192	228	2.0
OCT 6	1245	50	13,300	4,520	162,000	59
OCT 6	1315	50	12,200	5,650	186,000	54
OCT 6	1345	50	11,900	5,260	169,000	53
OCT 6	1415	60	12,600	4,220	144,000	56
OCT 6	1430	60	12,800	3,590	124,000	57
OCT 6	1445	50	12,300	3,660	122,000	55
OCT 6	1500	60	12,100	3,530	115,000	54
OCT 6	1530	50	11,800	3,190	102,000	53
OCT 6	1600	50	12,000	2,470	80,000	54
OCT 6	1630	50	14,900	2,800	113,000	66
OCT 6	1645	60	15,700	6,180	262,000	70
OCT 6	1700	60	17,600	9,220	438,000	79
OCT 6	1715	50	16,900	8,680	396,000	75

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 6	1730	50	16,900	6,840	312,000	75
OCT 6	1745	50	16,000	4,890	211,000	71
OCT 6	1800	50	15,600	4,220	178,000	70
OCT 6	1815	50	15,500	3,580	150,000	70
OCT 7	0845	100	6,800	1,280	23,500	30
OCT 7	0915	120	6,590	1,090	19,400	29
OCT 7	0945	100	6,170	973	16,200	28
OCT 7	1000	120	6,000	1,080	17,500	27
OCT 7	1045	100	5,810	952	14,900	26
OCT 7	1115	100	5,540	826	12,400	25
OCT 7	1145	100	5,350	822	11,900	24
OCT 7	1215	140	5,330	709	10,200	24
OCT 7	1245	130	4,910	647	8,580	22
OCT 7	1315	100	4,600	616	7,650	20
OCT 7	1345	130	4,330	601	7,030	19
OCT 7	1415	140	4,030	562	6,120	18
OCT 7	1445	120	3,870	488	5,100	17
OCT 7	1515	130	3,760	516	5,240	17
OCT 7	1545	120	3,570	424	4,090	16
OCT 7	1615	120	3,430	417	3,860	15
OCT 7	1715	120	3,520	480	4,560	16
OCT 7	1815	120	3,080	493	4,100	14
NOV 14	0800	180	288	185	143	1.3
NOV 29	0810	240	197	250	133	.88
DEC 6	0910	250	192	200	103	.86
DEC 19	0930	235	153	698	288	.68
DEC 27	0805	235	118	247	78	.53
JAN 16	1255	230	103	316	88	.46
JAN 30	1240	222	100	379	102	.45
FEB 13	0855	250	83	51	11	.37
FEB 27	1020	260	74	43	8.6	.33
MAR 20	1145	280	46	22	2.7	.20
APR 7	1235	230	100	53	14	.45
APR 17	1200	240	50	49	6.6	.22
APR 29	1615	100	3,750	3,180	32,200	17
APR 29	1630	100	5,400	3,700	54,000	24
APR 29	1645	100	7,270	5,830	114,000	32
APR 29	1700	100	8,930	5,960	144,000	40
APR 29	1715	80	9,370	4,860	123,000	42
APR 29	1730	80	9,290	3,850	96,600	41
APR 29	1745	80	8,970	3,500	84,800	40
APR 29	1800	80	8,590	3,020	70,000	38
APR 29	1815	80	7,830	2,990	63,100	35
APR 29	1830	80	7,250	2,780	54,400	32
APR 29	1845	80	6,700	2,630	47,500	30
APR 29	1900	80	6,200	2,490	41,700	28
APR 29	1915	80	5,630	2,500	38,000	25
APR 29	1930	90	5,200	2,400	33,700	23
MAY 1	0945	170	215	177	103	.96
MAY 8	0930	220	256	76	52	1.1
MAY 8	1645	100	5,380	885	12,900	24
MAY 8	1700	90	10,300	4,650	129,000	46
MAY 8	1715	80	13,900	6,700	262,000	62
MAY 8	1730	70	14,100	5,880	224,000	63
MAY 8	1745	70	13,200	5,500	196,000	59

Table 9. Suspended-sediment data for samples collected at station Rio Grande de Loiza at Caguas

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
MAY 8	1800	60	12,400	4,930	165,000	55
MAY 8	1815	60	11,500	4,290	133,000	51
MAY 8	1830	60	9,620	3,540	92,000	43
MAY 8	1845	80	7,970	3,480	74,900	36
MAY 8	1900	80	6,930	3,690	69,000	31
MAY 8	1915	80	6,020	3,700	60,200	27
MAY 8	1930	60	5,820	3,650	57,400	26
MAY 8	1945	70	5,580	3,810	57,400	25
MAY 8	2000	70	5,170	3,640	50,800	23
MAY 13	0815	110	4,450	1,411	17,000	20
MAY 13	0830	110	7,600	2,040	42,000	34
MAY 13	0845	110	10,600	2,600	74,400	47
MAY 13	0900	110	13,700	4,460	165,000	61
MAY 13	0915	100	15,200	5,190	213,000	68
MAY 13	0930	90	16,700	4,740	214,000	75
MAY 13	0945	90	16,300	5,550	244,000	73
MAY 13	1000	90	15,900	5,720	246,000	71
MAY 13	1015	90	14,400	4,620	180,000	64
MAY 13	1030	100	12,900	3,440	120,000	58
MAY 13	1045	100	11,400	2,740	84,200	51
MAY 13	1100	100	9,960	2,930	78,800	44
MAY 13	1115	100	7,850	3,200	67,900	35
MAY 13	1130	100	6,790	3,720	68,200	30
MAY 18	1300	80	4,450	2,050	24,600	20
MAY 18	1315	80	6,520	1,730	31,200	29
MAY 18	1330	80	8,480	1,720	39,300	38
MAY 18	1345	70	7,920	1,870	40,000	35
MAY 18	1400	60	7,360	2,020	40,200	33
MAY 18	1415	50	6,800	1,910	35,100	30
MAY 18	1430	50	6,240	1,890	31,900	28
MAY 18	1445	40	5,680	1,850	28,400	25
MAY 18	1500	40	5,120	1,870	25,800	23
MAY 18	1515	40	4,710	1,520	19,300	21
MAY 18	1530	40	4,300	1,510	17,500	19
MAY 19	1130	160	482	83	108	2.2
MAY 31	0615	160	4,450	982	11,800	20
MAY 31	0630	140	6,440	1,760	30,700	29
MAY 31	0645	140	5,780	4,910	76,600	26
MAY 31	0700	120	5,110	2,270	31,300	23
MAY 31	0715	100	4,800	1,980	25,600	21
MAY 31	0730	100	4,480	1,520	18,400	20
MAY 31	0745	100	4,170	1,520	17,100	19
JUNE 5	0830	240	132	41	15	.59
JUNE 26	1030	250	103	18	5.0	.46
JULY 7	1300	210	129	38	13	.58
AUG 12	1310	220	115	630	196	.51
SEPT 2	0930	230	222	136	81	.99
SEPT 15	0845	220	52	197	28	.23

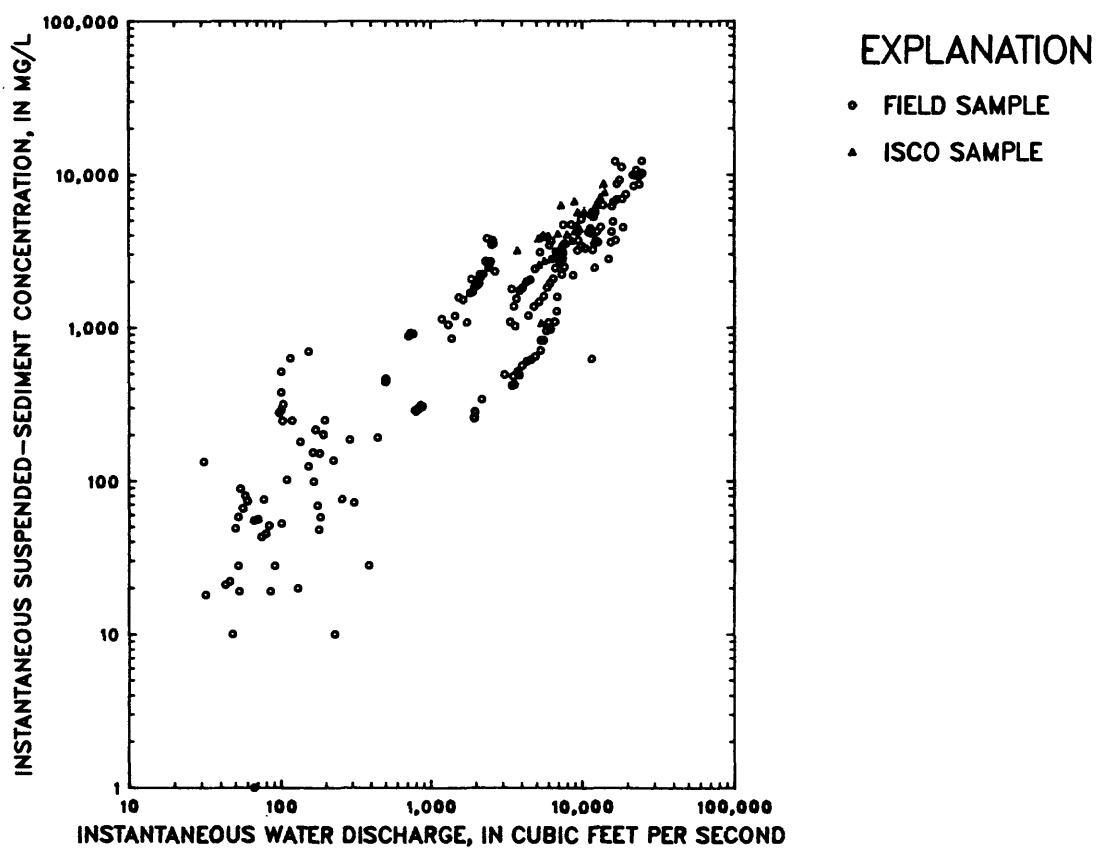


Figure 9.--Relation of suspended-sediment concentration to stream discharge for station Rio Grande de Loiza at Caguas.

Table 10. Suspended-sediment data for samples collected at station Quebrada Caimito near Juncos

[US/CM, microsiemens per centimeter; CFS, cubic foot per second; MG/L, milligrams per liter; T/DAY, tons per day; Qi/Qa, ratio of instantaneous water discharge to average water discharge; ---, missing data]

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
FEB 21	1017	369	.12	27	0.01	0.09
MAY 30	1245	346	.18	5	0	.14
JUNE 12	0925	340	.33	2	0	.25
JULY 5	1045	254	2.3	15	.09	1.8
AUG 28	1055	307	.56	65	.10	.43
SEPT 14	1145	278	1.5	32	.13	1.1
SEPT 14	1200	278	1.5	37	.15	1.1
SEPT 14	1230	278	1.5	43	.17	1.1
SEPT 19	1215	248	2.5	40	.27	1.9
SEPT 19	1300	243	2.5	36	.24	1.9
SEPT 19	1410	323	2.5	129	.87	1.9
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	1315	333	.71	2	0	.54
OCT 29	1245		.50	1	0	.38
NOV 5	1535	80	122	1,670	550	94
NOV 5	1555	80	116	2,470	774	89
NOV 7	1130	159	35	149	14	27
NOV 7	1215	165	29	101	7.9	22
NOV 7	1245	166	28	139	11	22
NOV 7	1315	163	29	127	10	22
NOV 7	1320	163	35	168	16	27
NOV 7	1325	160	41	245	27	32
NOV 7	1330	156	46	421	52	35
NOV 7	1335	150	49	518	69	38
NOV 14	1330	323	1.4	33	.12	1.1
NOV 20	1445	345	.88	7	.02	.68
DEC 5	1230	380	.39	2	0	.30
DEC 19	1308	374	.27	4	.01	.21
JAN 11	1250	385	.24	53	.07	.18
JAN 21	1130	368	.16	45	.04	.12
FEB 6	1200	423	.05	5	0	.04
MAR 7	1330	392	.14	2	0	.10
MAY 16	1300	190	11	26	.77	8.5
MAY 17	1300	124	38	373	35	29
MAY 17	1305	125	36	342	33	28
MAY 20	1400	243	4.2	12	.14	3.2
MAY 20	1720	248	3.5	12	.11	2.7
MAY 28	1410	264	.31	1	0	.24
JUNE 5	1145	396	.18	3	0	.14
JULY 15	1415	400	.50	2	.01	.38
JULY 16	1005	235	5.4	157	2.3	4.1
JULY 16	1015	235	4.2	145	1.6	3.2
JULY 16	1045	245	4.2	78	.88	3.2
JULY 22	1310	308	.31	1	0	.24
SEPT 13	1510	150	25	216	15	19
SEPT 30	1205	330	.71	17	.03	.55
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 3	0927	220	5.0	36	0.49	3.8
OCT 3	0928	220	5.0	40	.54	3.8
OCT 3	0929	220	5.0	49	.66	3.8
OCT 3	1025	220	5.0	24	.32	3.8
OCT 7	0830	130	91	750	184	70
OCT 7	0840	130	83	325	73	64
OCT 7	0850	130	77	622	129	59
OCT 7	0900	140	74	458	92	57
OCT 7	0915	160	71	449	86	55
OCT 7	0930	150	66	292	52	51
OCT 7	0945	160	61	266	44	47
OCT 7	1000	170	60	346	56	46
OCT 7	1030	160	59	282	45	45
OCT 7	1100	160	52	249	35	40
OCT 7	1430	170	43	137	16	33
OCT 24	1000	190	6.1	73	1.2	4.7
OCT 24	1010	170	8.6	482	11	6.6
OCT 24	1020	160	14	530	20	11
OCT 24	1025	140	18	786	38	14
OCT 24	1030	140	22	988	59	17
OCT 24	1035	160	28	1,130	85	22
OCT 24	1036	130	29	1,530	120	22
OCT 24	1040	100	34	1,420	130	26
OCT 24	1050	120	40	966	104	31
OCT 24	1100	110	34	771	71	26
OCT 24	1115	130	29	1,980	155	22
OCT 24	1145	140	18	1,040	50	14
OCT 24	1215	150	13	404	14	10
OCT 29	1008	170	7.7	146	3.0	5.9
NOV 12	1300	140	2.7	166	1.2	2.1
NOV 18	1325	240	3.1	45	.38	2.4
DEC 2	1000	360	.51	13	.02	.40
DEC 9	1325	360	.26	6	0.	.20
DEC 16	1410	370	.26	8	.01	.20
DEC 23	1210	375	.26	5	0.	.20
JAN 16	0905	375	.26	2	0.	.20
JAN 23	1015	370	.32	2	0.	.25
FEB 3	1240	360	.26	11	.01	.20
FEB 10	1245	365	.26	36	.02	.20
MAY 14	1325	185	14	48	1.8	11
JUNE 2	1015	290	2.2	16	.10	1.7
JUNE 5	1000	340	.40	349	.38	.31
JUNE 9	1010	340	2.6	332	2.3	2
JUNE 9	1110	275	2.0	144	.78	1.5
AUG 29	1220	180	14	75	2.8	11

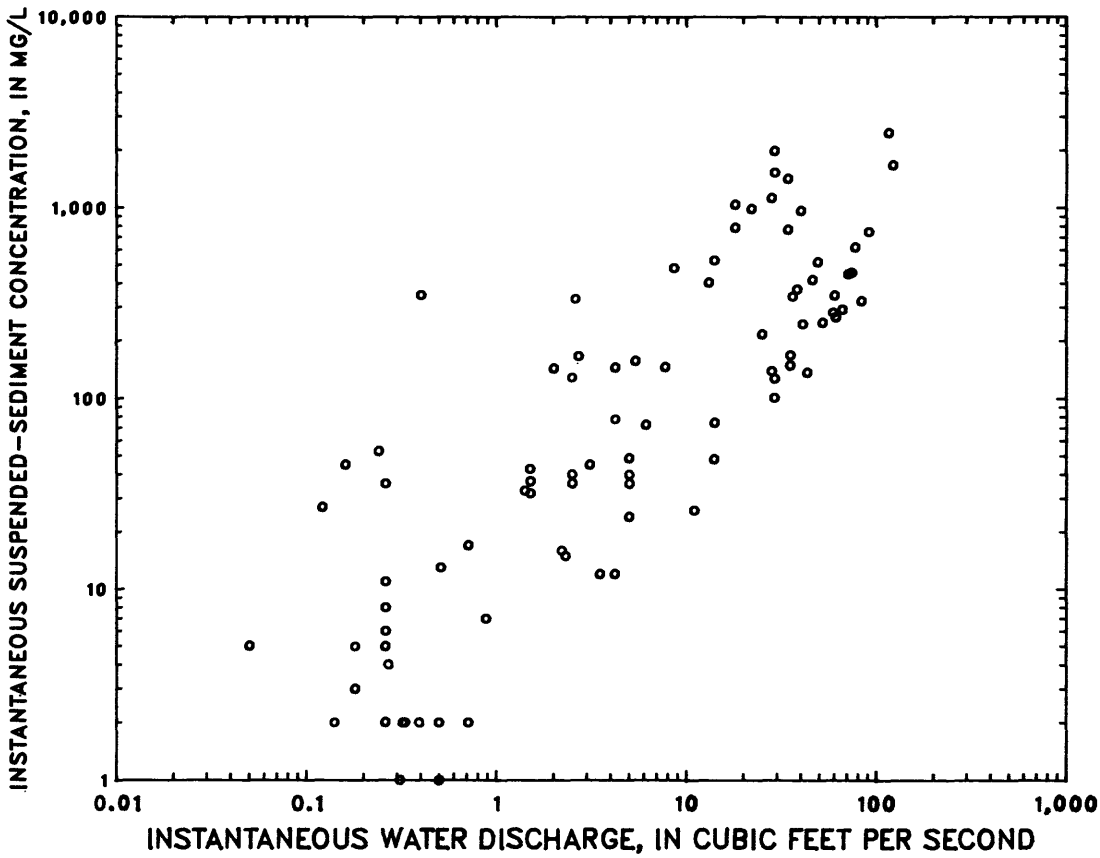


Figure 10.--Relation of suspended-sediment concentration to stream discharge for station Quebrada Caimito near Juncos.

Table 11. Suspended-sediment data for samples collected at station Rio Valenciano near Juncos

[US/CM, microsiemens per centimeter; CFS, cubic foot per second; MG/L, milligrams per liter; T/DAY, tons per day; Qi/Qa, ratio of instantaneous water discharge to average water discharge; ---, missing data]

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
NOV 22	1455	242	18	2	0.10	1.1
FEB 22	1005	280	16	33	1.4	1.0
MAR 13	1215	274	11	0	0	1.0
MAR 28	1145	276	9	5	.12	1.0
APR 10	0830	279	6.8	3	.06	.94
APR 25	1000	262	6	1	.02	1.0
MAY 16	1230	294	8.3	25	.56	1.2
SEPT 14	1145	84	846	700	1,600	1.2
SEPT 14	1205	98	743	747	1,500	1.1
SEPT 14	1220	90	682	704	1,300	.99
SEPT 14	1235	100	627	686	1,160	.91
SEPT 14	1248	108	574	631	978	.83
SEPT 14	1300	100	545	496	730	.79
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	1230	252	71	132	25	1.2
OCT 25	1300	247	67	180	33	1.1
OCT 26	1145	222	48	124	16	1.1
OCT 29	1200		35	12	.96	1.0
OCT 31	1050	228	30	40	3.2	.93
NOV 5	1525	79	265	1,400	1,000	.30
NOV 8	1655	183	123	48	16	.72
NOV 9	1312	210	117	35	11	1.0
NOV 13	1435	212	68	31	5.7	1.0
NOV 14	1224	220	64	32	5.5	.68
NOV 15	0900	195	80	106	23	.86
NOV 20	1415	232	41	166	18	.95
NOV 23	1020	226	64	50	8.6	1.4
NOV 26	1305	212	36	127	12	1.0
NOV 28	1115	232	33	66	5.9	1.0
NOV 30	1115	250	32	14	1.2	1.0
DEC 3	1035	240	50	46	6.2	1.2
DEC 5	1155	260	29	48	4.1	1.0
DEC 10	1107	255	26	46	3.4	1.1
DEC 12	1123	200	55	159	24	.25
DEC 13	1130	190	54	89	13	.91
DEC 17	1340	240	35	58	5.5	1.2
DEC 19	1207	240	25	56	3.8	1.0
DEC 20	1328	245	23	35	2.2	.45
DEC 26	1000	240	28	52	3.9	.54
DEC 27	1050	265	25	63	4.2	.49
JAN 8	1130	274	21	43	2.4	.41
JAN 10	1212	270	20	54	2.9	.39
JAN 15	1230	303	18	99	4.8	.35
JAN 17	1120	267	17	67	3.1	.33
JAN 18	1030	272	17	47	2.2	.33
JAN 21	1100	270	16	48	2.1	.31
JAN 25	0930	280	15	50	2.0	.29
JAN 28	1035	292	16	1	.04	.31
JAN 30	1145	293	17	1	.04	.33
FEB 1	1300	286	13	2	.10	.25
FEB 4	1200	286	13	1	.03	.25
FEB 6	1130	278	15	23	.74	.29
FEB 8	1220	296	11	3	.09	.21
FEB 14	1031	280	10	4	.11	.19
FEB 19	1100	305	22	4	.24	.43
FEB 22	1115	282	12	9	.29	.23
FEB 26	1120	272	12	7	.23	.23
MAR 1	1048	284	17	43	2.0	.33
MAR 5	1221	307	10	40	1.1	.19
MAR 6	1300	337	14	14	0.53	0.27
MAR 7	1240	307	45	77	9.4	.88
MAR 11	1030	319	13	10	.35	.25
MAR 13	1145	310	12	26	.84	.23
MAR 15	1000	310	11	4	.12	.21
MAR 19	1015	290	12	16	.52	.23
MAR 20	0945	310	11	5	.15	.21
MAR 21	1235	310	11	5	.15	.21
MAR 25	1215	310	9.7	4	.10	.19
MAR 27	1102	255	9.4	12	.30	.18
MAR 29	1234	150	160	388	167	3.1
MAR 29	1239	160	156	374	158	3.0
APR 1	1105	270	24	13	.81	.46
APR 8	1145	285	14	4	.15	.27
APR 26	1420	200	40	76	8.2	.78
MAY 15	0930	122	290	192	150	5.7
MAY 16	0945	133	237	212	136	4.6
MAY 16	1000	133	233	232	146	4.5
MAY 17	1435	98	914	827	2,040	18
MAY 17	1450	98	827	784	1,750	16
MAY 18	1630	72	2,060	1,320	7,340	40
MAY 20	1640	167	76	484	99	1.5
MAY 28	1320	189	58	14	2.2	1.1
MAY 29	0920	211	35	48	4.5	.68
JUNE 5	1115	194	21	2	.12	.41
JUNE 7	0918	205	22	2	.12	.43
JUNE 10	1340	216	21	15	.85	.41
JUNE 14	0905	235	17	5	.23	.33
JUNE 20	0845	235	49	10	1.3	.95
JUNE 21	0900	240	49	5	.66	.95
JUNE 28	1200	217	44	3	.36	.86
JULY 1	1325	210	59	33	5.3	1.2
JULY 5	1215	208	12	12	.39	.23
JULY 8	1250	207	16	22	.95	.31
JULY 15	1325	225	25	100	6.8	.49
JULY 25	0940	225	21	17	.96	.41
JULY 29	1310	225	21	11	.62	.41
AUG 1	1125	230	20	14	.76	.39
AUG 9	1140	260	23	15	.93	.45
AUG 16	0830	220	16	11	.47	.31
AUG 19	1340	215	25	8	.54	.49
AUG 23	1145	210	14	1	.04	.27
AUG 28	0935	160	62	134	22	1.21
AUG 28	1000	150	61	130	21	1.19
AUG 30	1250	230	39	11	1.2	.76
SEPT 3	1300	240	16	9	.26	.31
SEPT 9	1420	220	11	49	1.5	.21
SEPT 12	1830	150	541	1,530	2,240	10
SEPT 12	1835	150	577	1,550	2,420	11
SEPT 12	1840	140	612	1,920	3,180	12
SEPT 12	1850	130	844	1,700	3,880	16
SEPT 12	1900	120	1,230	1,910	6,350	24
SEPT 12	1910	120	1,610	1,610	7,010	31
SEPT 12	1920	100	1,940	2,030	10,600	38
SEPT 12	1930	110	2,280	1,360	8,350	44
SEPT 12	1945	110	2,940	1,620	12,900	57
SEPT 12	2000	110	3,690	1,320	13,200	72
SEPT 12	2015	120	4,150	1,180	13,200	81
SEPT 12	2030	110	3,910	1,060	11,200	76
SEPT 12	2045	110	3,560	1,060	10,200	69

Table 11. Suspended-sediment data for samples collected at station Rio Valenciano near Juncos

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985-Continued						
SEPT 12	2100	120	3,130	1,030	B,70D	61
SEPT 12	2115	120	2,BB0	1,2B0	9,950	56
SEPT 12	2130	120	2,790	1,210	9,110	54
SEPT 12	220D	110	2,B10	1,D20	7,740	55
SEPT 12	2230	120	3,040	855	7,020	69
SEPT 16	1615	210	32	32	2.B	.62
SEPT 24	1440	240	50	24	3.2	.29
WATER YEAR OCTOBER 19B5 TO SEPTEMBER 1986						
OCT 3	1110	1B0	90	178	43	1.8
OCT 6	0600	80	484	1,930	2,520	9.4
OCT 6	0605	B0	512	1,87D	2,590	10
OCT 6	0610	80	540	1,600	2,340	10
OCT 6	0620	80	616	2,880	4,800	12
OCT 6	0630	8D	712	1,930	3,720	14
OCT 6	0640	80	842	1,580	3,600	16
OCT 6	0650	80	964	1,460	3,810	19
OCT 6	0700	80	1,080	1,38D	4,020	21
OCT 6	0715	B0	1,270	1,200	4,130	25
OCT 6	0730	80	1,430	1,000	3,860	28
OCT 6	0745	80	1,600	1,270	5,470	31
OCT 6	0800	80	1,670	2,320	10,50D	32
OCT 6	0815	7D	2,100	2,480	14,100	41
OCT 6	0830	7D	2,650	2,38D	17,DOO	52
OCT 6	0845	70	3,220	2,480	21,600	63
OCT 6	0900	70	3,690	2,500	24,900	72
OCT 6	0930	70	3,800	1,760	18,100	74
OCT 6	1000	70	3,250	1,350	11,800	63
OCT 6	1030	70	2,890	1,98D	15,400	56
OCT 6	1100	70	5,410	1,720	25,100	105
OCT 6	1130	70	7,190	2,000	3B,800	140
OCT 6	1200	70	5,770	1,590	24,800	112
OCT 6	1230	70	4,350	1,150	13,500	85
OCT 6	1300	70	3,970	1,140	12,200	77
OCT 6	1320	14D	4,14D	380	4,250	81
OCT 6	1325	140	4,220	404	4,600	82
OCT 6	1330	140	4,290	419	4,850	84
OCT 6	1340	140	4,350	463	5,440	85
OCT 6	1350	130	4,400	514	6,110	86
OCT 6	1400	130	4,440	637	7,640	86
OCT 6	1410	130	4,420	662	7,900	86
OCT 6	1420	130	4,320	659	7,690	84
OCT 6	1435	130	4,100	809	8,960	8D
OCT 6	1450	13D	4,090	868	9,590	8D
OCT 6	1505	130	4,500	942	11,400	88
OCT 6	1520	130	5,260	898	12,800	102
OCT 6	1535	130	5,910	1,16D	18,500	115
OCT 6	1550	130	6,190	2,240	37,400	120
OCT 6	1605	90	6,040	3,080	50,200	118
OCT 6	1620	9D	5,600	4,200	63,500	109
OCT 6	1650	90	4,680	2,48D	31,300	91
OCT 6	1720	90	4,070	1,570	17,300	79
OCT 6	1750	90	4,750	1,240	15,900	92
OCT 6	1B20	90	5,220	2,920	41,100	102
OCT 6	1B50	65	4,900	5,740	76,000	96
OCT 6	1920	60	4,000	3,950	42,700	78
OCT 6	1950	80	3,200	3,460	29,900	62
OCT 6	2020	7D	3,010	2,140	17,400	59
OCT 7	1200	95	725	1,320	9,980	14
OCT 7	1205	95	725	78	153	14
OCT 7	1210	95	725	24	47	14
OCT 7	1220	95	711	32	61	14
OCT 7	123D	95	6B2	26	47	13
OCT 7	1240	95	604	47	76	12
OCT 7	1250	95	554	42	63	11
OCT 7	1300	95	534	1,17D	1,680	10
OCT 7	1315	95	505	59	81	10
OCT 7	1330	100	480	B3	107	9.0
OCT 7	1345	100	480	85	110	9.4
OCT 7	1400	100	440	52	62	8.5
OCT 7	1415	105	426	36	41	8.3
OCT 7	1430	105	407	26	28	8.0
OCT 8	1235	135	198	88	47	3.8
OCT 8	1331	135	188	95	48	3.7
OCT 15	1155	210	60	10	1.6	1.2
OCT 23	1315	150	501	1,350	1,820	9.8
OCT 23	1320	155	632	1,390	2,370	12
OCT 23	1325	175	763	1,270	2,620	15
OCT 23	1335	160	1,090	1,270	3,750	21
OCT 23	1345	155	1,530	570	2,350	30
OCT 23	1355	150	2,08D	1,260	7,100	40
OCT 23	1405	140	2,350	1,290	8,210	46
OCT 23	1415	130	2,380	1,160	7,440	46
OCT 23	1430	130	2,37D	1,000	6,40D	46
OCT 23	1445	120	2,120	735	4,210	41
OCT 23	1500	115	1,890	67B	3,460	37
OCT 23	1515	120	1,740	817	3,B40	34
OCT 23	1530	110	1,650	815	3,630	32
OCT 23	1545	110	1,580	749	3,200	31
OCT 23	1600	110	1,490	878	3,530	29
OCT 24	1255	100	540	795	1,160	10
OCT 24	1300	100	530	454	649	10
OCT 24	1305	100	506	399	545	10
OCT 24	1315	100	456	382	470	8.9
OCT 24	1325	100	434	337	396	8.4
OCT 24	1335	100	409	303	334	8.0
OCT 24	1510	100	463	202	252	9.0
OCT 24	1525	110	536	270	391	10
OCT 24	1540	110	714	287	553	14
OCT 24	1555	110	1,090	435	1,290	21
OCT 24	1625	100	1,810	1,110	5,440	35
OCT 24	1655	90	1,790	1,130	5,450	35
OCT 24	1725	75	3,860	1,790	18,600	75
OCT 24	1755	60	5,660	5,190	79,30D	110
OCT 24	1825	50	3,760	5,020	51,000	73
OCT 24	1855	50	2,910	2,640	20,700	57
OCT 24	1925	50	1,970	1,280	6,830	38
OCT 24	1955	60	1,950	987	5,200	3B
NOV 15	0900	100	494	2,090	2,780	9.6
NOV 15	0905	80	483	2,520	3,290	9.4
NOV 15	0910	80	472	2,120	2,700	9.2
NOV 15	0920	90	450	1,690	2,060	8.8
NOV 15	0930	100	430	1,520	1,760	8.4
NOV 15	1015	110	644	1,320	2,300	12
NOV 15	1030	110	921	2,080	5,180	18
NOV 15	1045	110	1,220	2,140	7,070	24
NOV 15	1100	100	1,520	2,150	8,830	30
NOV 15	1115	100	1,720	1,850	8,600	33
NOV 15	1130	90	1,920	1,770	9,200	37

Table 11. Suspended-sediment data for samples collected at station Rio Valenciano near Juncos

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
NOV 15	1145	90	1,740	1,570	7,360	34
NOV 15	1200	90	1,560	1,480	6,250	30
NOV 15	1230	90	1,260	927	3,150	24
NOV 15	1300	90	973	842	2,210	19
NOV 15	1330	90	780	730	1,540	15
NOV 15	1400	100	686	650	1,210	13
NOV 15	1430	100	610	464	764	12
NOV 15	1500	100	534	397	572	10
NOV 15	1530	110	480	354	459	9.3
NOV 12	1225	220	52	27	3.8	1.0
NOV 14	1140	270	43	24	2.8	.84
NOV 22	1125	230	41	11	1.2	.80
NOV 27	1045	220	31	7	.6	.60
DEC 2	1045	250	31	6	.6	.60
DEC 6	1215	240	31	13	1.1	.60
DEC 9	1200	250	26	13	.91	.51
DEC 12	0955	250	41	26	2.9	.80
DEC 16	1325	250	22	10	.59	.43
DEC 23	1120	250	22	7	.41	.43
JAN 8	1150	250	17	6	.28	.33
JAN 13	1345	250	18	4	.19	.35
JAN 16	0940	260	15	5	.20	.29
JAN 21	1225	255	21	6	.34	.41
JAN 23	1045	260	16	5	.22	.31
JAN 27	0935	270	14	14	.53	.27
FEB 3	1155	270	12	2	.06	.23
FEB 10	1210	270	12	2	.06	.23
FEB 13	1055	270	11	2	.06	.21
FEB 18	1045	260	12	3	.10	.23
FEB 27	0810	270	10	1	.03	.19
MAR 3	1245	280	9.4	2	.05	.18
MAR 17	1225	310	9.7	8	.20	.19
MAR 20	0945	290	9.1	2	.05	.18
MAR 24	1115	280	7.7	6	.12	.15
MAR 31	1210	260	33	91	8.1	.64
APR 3	1105	280	13	8	.28	.25
APR 10	1115	260	14	29	1.1	.27
APR 14	1210	290	10	4	.11	.19
APR 17	0900	290	9.1	6	.15	.18
APR 21	1150	290	8.5	4	.09	.16
APR 29	1535	230	744	1,050	2,110	14
APR 29	1540	220	1,410	3,250	12,400	27
APR 29	1545	210	2,070	3,020	16,900	40
APR 29	1605	130	2,580	2,830	19,700	50
APR 29	1615	130	2,700	3,040	22,200	53
APR 29	1625	130	2,740	2,750	20,300	53
APR 29	1635	110	2,680	3,250	23,500	52
APR 29	1650	110	2,420	2,250	14,700	47
APR 29	1705	130	2,090	1,840	10,400	41
APR 29	1720	110	1,780	1,470	7,060	35
APR 29	1735	120	1,580	1,490	6,350	31
APR 29	1750	130	1,390	1,320	4,950	27
APR 29	1805	120	1,230	1,190	3,950	24
APR 29	1820	130	1,077	1,110	3,220	21
APR 29	1835	140	991	968	2,590	19
APR 29	1850	130	888	863	2,070	17
APR 29	1920	130	726	754	1,480	14
APR 29	1950	140	596	639	1,030	12
APR 29	2020	150	496	494	661	9.7
MAY 5	1155	270	13	2	.07	.25

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
MAY 8	1215	270	21	104	5.9	0.41
MAY 10	1745	170	665	491	881	13
MAY 10	1750	180	719	603	1,170	14
MAY 10	1755	180	773	902	1,880	15
MAY 10	1805	175	848	873	2,000	16
MAY 10	1815	175	891	832	2,000	17
MAY 10	1825	155	901	710	1,730	18
MAY 10	1835	150	901	670	1,630	18
MAY 10	1845	140	891	712	1,710	17
MAY 10	1900	140	931	742	1,870	18
MAY 10	1915	1..	978	551	1,450	19
MAY 10	1930	135	994	450	1,210	19
MAY 10	1945	140	1,100	390	1,160	21
MAY 10	2000	135	1,050	394	1,120	20
MAY 10	2015	140	1,060	379	1,080	21
MAY 10	2030	140	1,050	373	1,060	20
MAY 10	2045	140	1,030	371	1,030	20
MAY 10	2115	140	916	305	754	18
MAY 10	2145	130	886	288	690	17
MAY 10	2215	130	822	246	546	16
MAY 10	2245	150	789	232	490	15
MAY 10	2315	150	761	167	342	15
MAY 10	2345	150	734	147	291	14
MAY 11	0015	150	708	432	826	14
MAY 11	0045	145	712	435	836	14
MAY 13	0300	120	587	1,810	2,870	11
MAY 13	0305	120	841	1,520	3,460	16
MAY 13	0310	120	1,100	1,480	4,400	21
MAY 13	0320	160	1,410	1,950	7,440	27
MAY 13	0330	160	1,540	1,630	6,770	30
MAY 13	0340	160	1,420	1,330	5,110	28
MAY 13	0350	145	1,390	1,050	3,940	27
MAY 13	0400	130	1,270	825	2,830	25
MAY 13	0415	130	1,130	706	2,150	22
MAY 13	0430	130	994	611	1,640	19
MAY 13	0445	130	871	558	1,310	17
MAY 13	0500	130	808	505	1,100	16
MAY 13	0515	130	708	559	1,070	14
MAY 13	0530	130	635	554	950	12
MAY 13	0545	140	512	525	726	10
MAY 13	0600	140	505	549	749	9.8
MAY 13	0630	140	449	482	584	8.8
MAY 13	0730	140	798	529	1,140	16
MAY 13	0800	140	1,610	723	3,140	31
MAY 13	0830	110	4,100	8,970	99,300	80
MAY 13	0900	110	3,790	4,400	45,000	74
MAY 13	0930	110	3,590	3,640	35,300	70
MAY 13	1000	110	2,740	2,360	17,500	53
MAY 22	1115	270	113	174	53	2.2
JUNE 2	1045	270	32	25	2.2	.62
JUNE 18	1100	250	53	31	4.4	1.0
JUNE 23	1215	260	25	14	.94	.49
JULY 1	1220	260	26	14	.98	.51
JULY 7	1020	250	35	63	6.0	.68
JULY 14	1115	260	16	2	.09	.31
JULY 29	1145	270	14	14	.53	.27
AUG 4	1240	280	14	14	.53	.27
AUG 12	1035	270	19	58	3.0	.37
AUG 19	1130	270	14	9	.34	.27
AUG 26	1205	260	10	2	.05	.19
SEPT 2	1240	270	17	38	1.7	.33
SEPT 8	1215	250	13	8	.28	.25
SEPT 15	1045	250	12	1	.03	.23
SEPT 22	1145	265	11	14	.42	.21
SEPT 29	1225	280	24	6	.39	.47

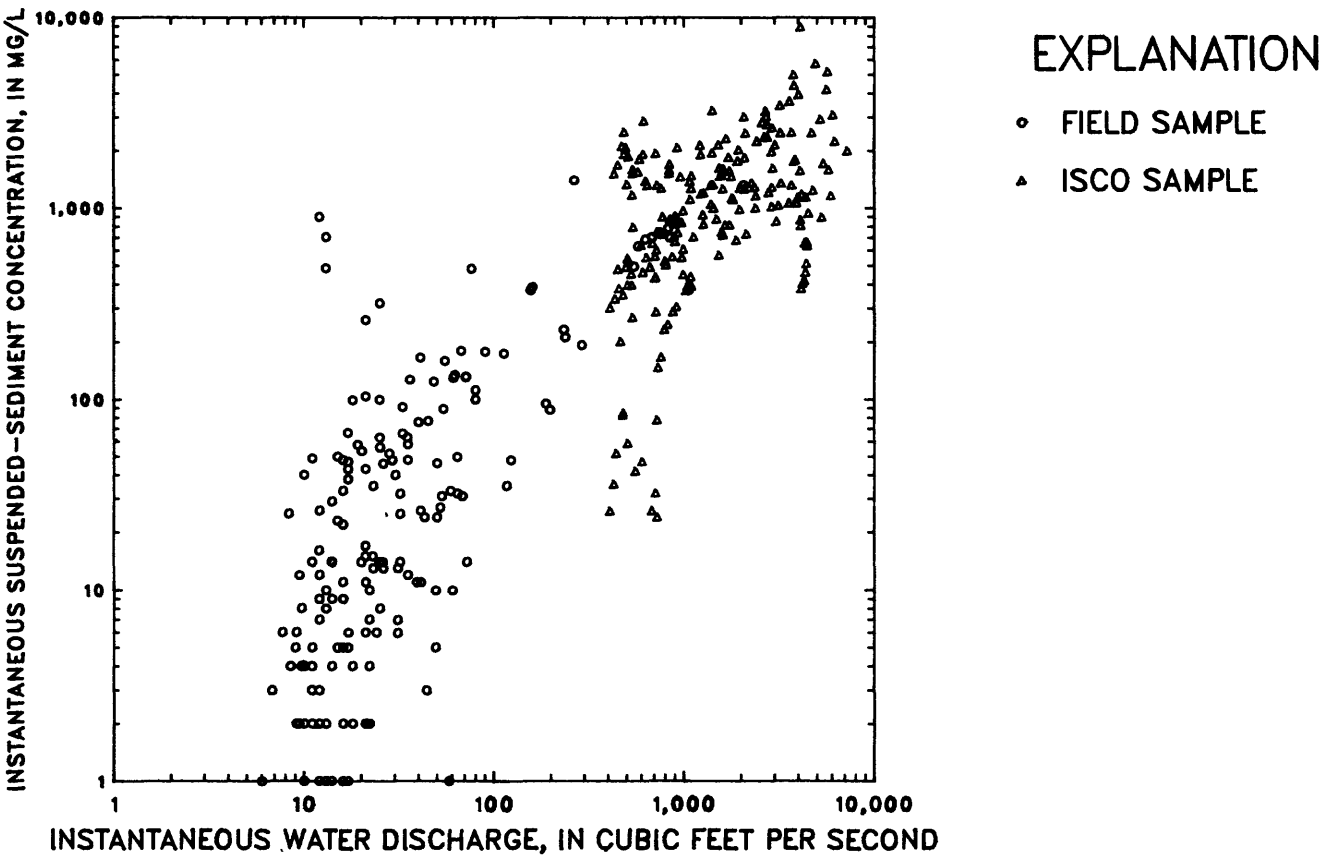


Figure 11.--Relation of suspended-sediment concentration to stream discharge for station Río Valenciano near Juncos.

Table 12. Suspended-sediment data for samples collected at station Quebrada Mamey near Gurabo

[US/CM, microsiemens per centimeter; CFS, cubic foot per second; MG/L, milligrams per liter; T/DAY, tons per day; Qi/Qa, ratio of instantaneous water discharge to average water discharge; ---, missing data]

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
FEB 9	1345	---	17	344	16	3.9
FEB 9	1410	---	18	382	19	4.1
FEB 9	1415	---	19	442	23	4.3
FEB 9	1430	---	19	531	27	4.3
FEB 9	1440	330	22	692	41	5.0
FEB 9	1515	303	27	706	51	6.1
FEB 9	1530	320	28	422	32	6.4
FEB 9	1545	337	25	395	27	5.7
MAR 8	1430	735	1	0	0	.23
MAR 26	1100	690	.51	4	.01	.12
APR 10	1115	698	.66	3	.01	.15
APR 25	1230	760	.45	0	0	.10
MAY 21	1430	705	.54	8	.01	.12
MAY 30	1440	442	5	81	1.1	1.1
MAY 30	1445	442	4	90	.97	.91
JULY 5	1430	583	2.4	6	.04	.54
AUG 28	1420	470	.38	54	.06	.09
AUG 30	0900	530	.28	62	.05	.06
SEPT 14	1315	520	2.3	56	.35	.52
SEPT 14	1330	510	2.2	60	.36	.50
SEPT 19	1410	334	9.3	104	2.6	2.1
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	1400	227	9	93	2.3	2.0
OCT 29	1325		3.1	96	.80	.70
NOV 5	1630	75	561	1,640	2,480	28
NOV 7	1515	220	44	141	17	10
NOV 7	1600	222	46	159	20	10
NOV 8	1508	403	6.7	70	1.3	1.5
NOV 8	1547	407	6.6	95	1.7	1.5
NOV 14	1425	595	2.4	87	.60	.54
NOV 20	1555	620	2	9	.05	.45
DEC 5	1305	620	1.6	3	.01	.36
DEC 19	1346	630	1.3	66	.24	.30
JAN 11	1311	660	1.1	86	.26	.25
JAN 21	1200	730	.79	83	.18	.18
FEB 14	1110	695	.54	7	.01	.12
MAR 11	1200	660	.89	2	.01	.20
APR 15	1207	650	.58	4	.01	.13
MAY 15	1830	108	254	676	464	58
MAY 15	1845	108	191	501	258	43
MAY 15	1900	107	156	403	170	35
MAY 15	1915	110	129	314	109	29
MAY 15	1930	111	112	316	96	25
MAY 15	1945	112	104	252	71	24
MAY 15	2000	126	102	226	63	23
MAY 16	1410	318	6.4	32	.55	1.4
MAY 17	1520	128	65	402	70	15
MAY 17	1525	120	63	372	63	14
MAY 18	1655	106	185	408	203	42
MAY 21	1010	480	2.1	13	.07	.48
MAY 29	1355	580	.89	11	.26	.20
JUNE 6	1120	564	.79	12	.26	.18
JUNE 12	1405	585	.66	10	.02	.15
JUNE 24	1300	540	.66	11	.02	.15
JULY 8	1345	540	.54	28	.04	.12
JULY 22	1425	495	.89	45	.06	.20
AUG 1	1325	595	.75	9	.02	.17
AUG 16	1225	550	.45	5	.01	.10
AUG 30	1440	550	.51	7	.01	.12
SEPT 9	1455	485	.84	8	.02	.19
SEPT 13	1423	180	---	114	---	---
SEPT 27	1500	390	4.9	137	1.8	1.1
SEPT 27	1505	370	5.5	173	2.6	1.2
SEPT 27	1515	310	6.7	227	4.1	1.5
SEPT 27	1520	310	6.1	234	3.9	1.4
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 6	1430	90	318	392	337	72
OCT 6	1445	80	339	445	407	77
OCT 6	1500	90	380	498	511	86
OCT 6	1510	80	490	707	935	111
OCT 6	1515	90	545	965	1,420	124
OCT 6	1515	80	545	968	1,420	124
OCT 6	1520	70	569	1,550	2,380	129
OCT 6	1525	70	593	1,360	2,180	135
OCT 6	1530	80	617	1,290	2,150	140
OCT 6	1535	80	604	1,360	2,220	137
OCT 6	1540	80	591	1,280	2,040	134
OCT 6	1545	80	578	1,160	1,810	131
OCT 6	1550	80	583	1,280	2,010	132
OCT 6	1555	80	588	1,280	2,010	134
OCT 6	1600	80	592	1,320	2,110	134
OCT 6	1605	80	559	1,300	1,960	127
OCT 6	1615	70	494	1,250	1,670	112
OCT 6	1630	70	412	1,030	1,150	94
OCT 6	1645	80	337	900	819	77
OCT 6	1700	90	302	798	651	69
OCT 7	1200	160	58	162	25	13
OCT 7	1215	160	57	137	21	13
OCT 7	1230	160	57	137	21	13
OCT 7	1245	160	57	142	22	13
OCT 7	1300	160	54	137	20	12
OCT 7	1315	170	53	122	17	12
OCT 24	0845	260	16	324	14	3.6
OCT 24	0850	260	18	105	5.1	4.1
OCT 24	0900	260	21	99	5.6	4.8
OCT 24	0935	250	25	115	7.8	5.7
OCT 29	0810	180	71	341	65	16
OCT 29	0818	210	75	356	72	17
OCT 29	0825	190	87	416	98	20
OCT 29	0835	190	93	528	133	21
OCT 29	0900	210	82	338	75	19
OCT 29	0930	230	72	501	97	16
NOV 14	0925	460	3.2	14	.12	.73
NOV 27	0940	510	2.8	9	.07	.64
DEC 6	1340	560	2.4	27	.17	.54
DEC 12	0925	575	2.4	4	.03	.54
DEC 23	1240	575	1.6	23	1.0	.36
JAN 16	0840	600	1.4	18	.07	.32
JAN 30	0925	600	1.3	34	.12	.30
FEB 10	1335	600	1.2	7	.02	.27
MAR 3	1150	600	.79	34	.07	.18
MAR 20	1020	600	.76	53	.11	.17
APR 3	1145	575	.70	7	.01	.16
APR 10	1210	450	1.2	6	.02	.27
MAY 1	1055	420	2.2	5	.03	.50
MAY 14	1255	230	11	58	1.7	2.5
JUNE 5	1025	300	12	276	8.9	2.7
JUNE 9	1150	350	21	228	13	4.8
JUNE 26	0945	675	.76	20	.04	.17
JULY 7	0905	600	.89	16	.04	.20
AUG 12	0955	525	.86	3	.01	.20
AUG 26	0940	675	.70	28	.05	.16
SEPT 15	0955	600	.57	9	.01	.13
SEPT 29	1325	575	.50	2	0	.11

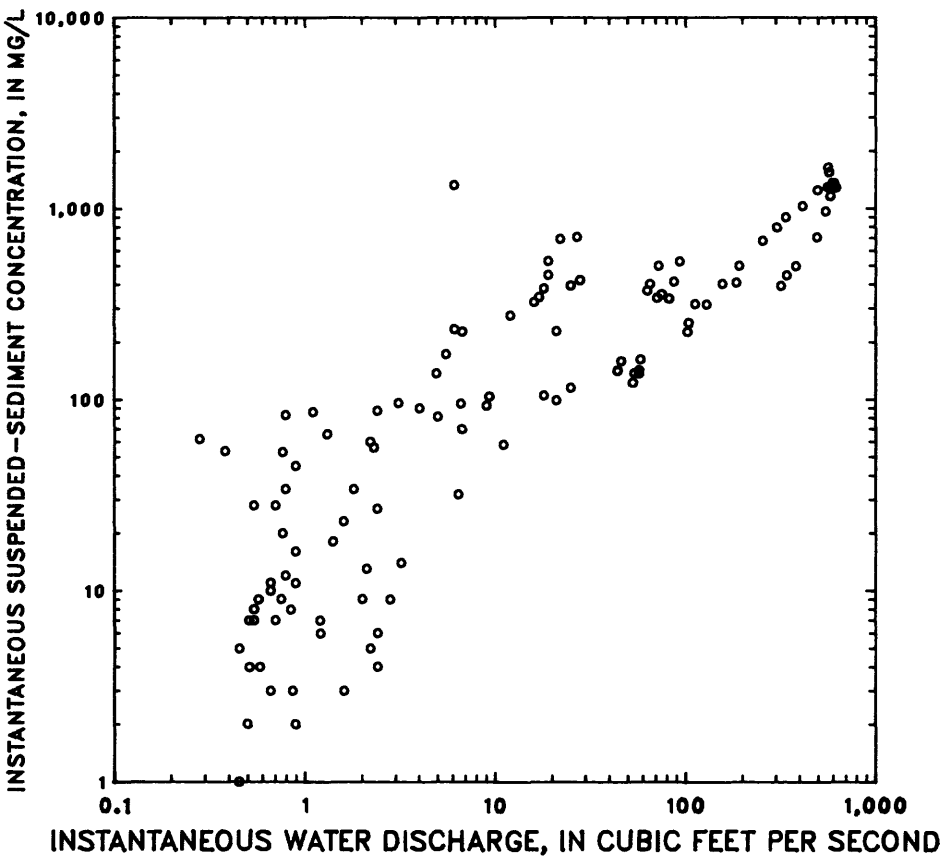


Figure 12.--Relation of suspended-sediment concentration to stream discharge for station Quebrada Mamey near Gurabo.

Table 13. Suspended-sediment data for samples collected at station Rio Gurabo at Gurabo

[US/CM, microsiemens per centimeter; CFS, cubic foot per second; MG/L, milligrams per liter; T/DAY, tons per day; Qi/Qa, ratio of instantaneous water discharge to average water discharge; ---, missing data]

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984						
FEB 21	1440	355	39	40	4.2	0.29
MAR 12	1200	382	25	3	.20	.19
MAR 26	1230	377	19	8	.41	.14
APR 10	1245	418	25	9	.61	.18
APR 26	1230	390	14	42	1.6	.10
MAY 16	1330	391	20	10	.54	.15
JULY 5	1424	188	332	268	240	2.5
JULY 5	1426	188	332	264	237	2.5
SEPT 4	1200	270	66	109	19	.49
SEPT 19	1500	---	269	179	130	2.0
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985						
OCT 25	1345	---	156	105	44	1.2
OCT 25	1430	252	154	156	65	1.1
NOV 5	1730	85	5,950	1,710	27,500	44
NOV 8	1020	204	472	253	322	3.5
NOV 8	1330	204	433	189	221	3.2
NOV 14	1440	320	206	50	28	1.5
NOV 20	1520	335	147	43	17	1.1
DEC 5	1340	336	73	57	11	.54
DEC 19	1423	338	55	62	9.2	.41
JAN 11	1359	370	52	66	9.3	.38
JAN 23	1130	387	31	100	8.4	.23
FEB 14	1140	412	21	46	2.6	.16
MAR 11	1230	346	34	57	5.2	.25
APR 15	1230	360	40	11	1.2	.30
MAY 15	1035	118	1,850	1,410	7,040	14
MAY 15	1100	120	2,160	1,400	8,160	16
MAY 15	1115	117	2,490	1,230	8,270	18
MAY 15	1130	112	2,920	1,660	13,100	22
MAY 15	1145	110	3,410	1,770	16,300	25
MAY 15	1200	101	3,920	2,010	21,300	29
MAY 15	1215	100	4,440	3,010	36,100	33
MAY 15	1300	82	6,040	2,600	42,400	45
MAY 15	1315	82	6,500	2,020	35,500	48
MAY 15	1330	78	6,850	1,630	30,100	51
MAY 15	1400	75	8,260	1,960	43,700	61
MAY 15	1430	83	11,900	2,500	80,300	88
MAY 21	0925	242	162	70	31	1.2
MAY 29	1310	279	61	9	1.5	.45
JUNE 5	1245	275	37	24	2.4	.27
JUNE 12	1305	288	42	20	2.3	0.31
JUNE 20	1325	306	42	109	12	.31
JUNE 28	0910	310	24	14	.91	.18
JULY 5	0905	282	21	54	3.1	.16
JULY 16	1335	---	301	575	467	2.2
JULY 25	0900	275	52	18	2.5	.38
AUG 9	1315	275	26	8	.58	.19
AUG 16	1155	280	27	10	.73	.20
AUG 23	0920	280	30	34	2.6	.22
SEPT 3	1410	320	34	16	1.5	.25
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986						
OCT 3	0840	210	202	560	305	1.5
OCT 3	0900	210	237	1520	973	1.8
OCT 3	0910	210	257	146	101	1.9
OCT 3	0930	210	293	170	134	2.2
OCT 3	0945	210	302	100	82	2.2
OCT 6	1300	65	11,500	1,390	43,200	85
OCT 6	1315	70	11,600	1,390	43,500	86
OCT 6	1330	65	11,800	1,570	50,000	87
OCT 6	1345	65	11,900	1,360	43,700	88
OCT 6	1400	70	11,800	1,550	49,400	87
OCT 6	1415	70	11,600	1,560	48,900	86
OCT 6	1430	70	11,600	1,390	43,500	86
OCT 6	1500	70	11,900	1,170	37,600	88
OCT 6	1530	60	12,600	1,360	46,300	93
OCT 6	1630	70	14,500	1,460	57,200	107
OCT 6	1700	60	15,600	1,420	59,800	115
OCT 6	1715	60	16,100	1,310	56,900	119
OCT 6	1730	60	16,600	1,320	59,200	123
OCT 6	1745	60	16,900	1,280	58,400	125
OCT 6	1800	60	17,200	1,270	59,000	127
OCT 7	1040	90	5,300	916	13,100	39
OCT 7	1045	80	5,230	873	12,300	39
OCT 7	1050	90	5,140	897	12,400	38
OCT 7	1055	90	5,070	902	12,300	38
OCT 7	1100	80	4,990	892	12,000	37
OCT 7	1105	80	4,910	860	11,400	36
OCT 7	1110	90	4,820	867	11,300	36
OCT 7	1115	80	4,740	849	10,900	35
OCT 7	1120	80	4,670	840	10,600	35
OCT 7	1125	80	4,610	876	10,900	34
OCT 7	1130	80	4,540	980	12,000	34
OCT 7	1135	80	4,470	872	10,500	33
OCT 7	1140	80	4,390	895	10,600	32
OCT 7	1145	80	4,320	861	10,000	32
OCT 7	1150	80	4,300	858	9,960	32
OCT 7	1155	80	4,270	826	9,520	32
OCT 7	1200	90	4,090	902	9,960	30
OCT 7	1205	90	4,010	867	9,390	30
OCT 7	1210	90	3,940	867	9,220	29
OCT 7	1215	90	3,860	888	9,250	28
OCT 7	1220	90	3,830	938	9,690	28
OCT 7	1225	90	3,800	942	9,660	28
OCT 7	1230	90	3,700	938	9,370	27
OCT 7	1235	90	3,640	916	9,000	27
OCT 7	1240	90	3,560	900	8,660	26
OCT 7	1245	90	3,480	866	8,140	26
OCT 7	1250	100	3,410	906	8,340	25
OCT 7	1255	90	3,330	840	7,550	25
OCT 7	1300	90	3,260	980	8,620	24
OCT 7	1305	90	3,200	873	7,540	24
OCT 7	1310	90	3,140	916	7,770	23
OCT 7	1315	90	3,080	955	7,940	23
OCT 7	1320	90	3,020	910	7,420	22
OCT 7	1325	100	2,970	873	7,000	22
OCT 7	1330	100	2,910	879	6,900	22
OCT 7	1335	100	2,860	876	6,760	21
OCT 7	1340	100	2,820	849	6,460	21
OCT 7	1345	100	2,770	881	6,590	20
OCT 7	1350	100	2,720	794	5,830	20
OCT 7	1355	100	2,680	793	5,740	20

Table 13. Suspended-sediment data for samples collected at station Rio Gurabo at Gurabo

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	STREAMFLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	Qi/Qa
WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986-Continued						
OCT 18	0930	280	130	31	11	7.0
OCT 31	1235	170	302	347	283	2.2
NOV 14	0855	200	178	85	41	1.3
NOV 27	0850	350	140	11	4.2	1.0
DEC 12	0905	350	67	10	1.8	.50
DEC 19	1010	360	59	14	2.2	.43
DEC 27	0840	360	48	14	1.8	.36
JAN 16	0815	400	31	32	2.7	.23
JAN 23	0850	380	33	11	.98	.24
JAN 30	0855	375	30	8	.65	.22
FEB 13	0945	400	25	39	2.6	.18
FEB 24	0810	380	23	13	.81	.17
MAR 20	1050	380	15	12	.49	.11
APR 3	1220	320	36	22	2.1	.27
APR 10	1245	300	43	42	4.9	.32
APR 17	1120	390	21	12	.68	.16
MAY 8	1320	250	42	50	5.7	.27
MAY 14	1215	120	965	378	985	7.1
MAY 14	1230	120	926	438	1,100	6.9
JUNE 9	1210	200	993	1,410	3,790	7.4
JUNE 9	1220	190	980	1,180	3,110	7.3
JUNE 9	1230	180	961	1,140	2,960	7.1
JUNE 9	1245	180	926	995	2,490	6.9
JUNE 26	0900	360	12	27	.87	.09
JULY 7	0840	220	13	146	5.1	.10
AUG 10	0930	280	20	43	2.3	.15
AUG 26	0915	380	11	0	0	.08
SEPT 2	1325	300	15	165	6.7	.11
SEPT 15	0925	340	9.4	5	.13	.07

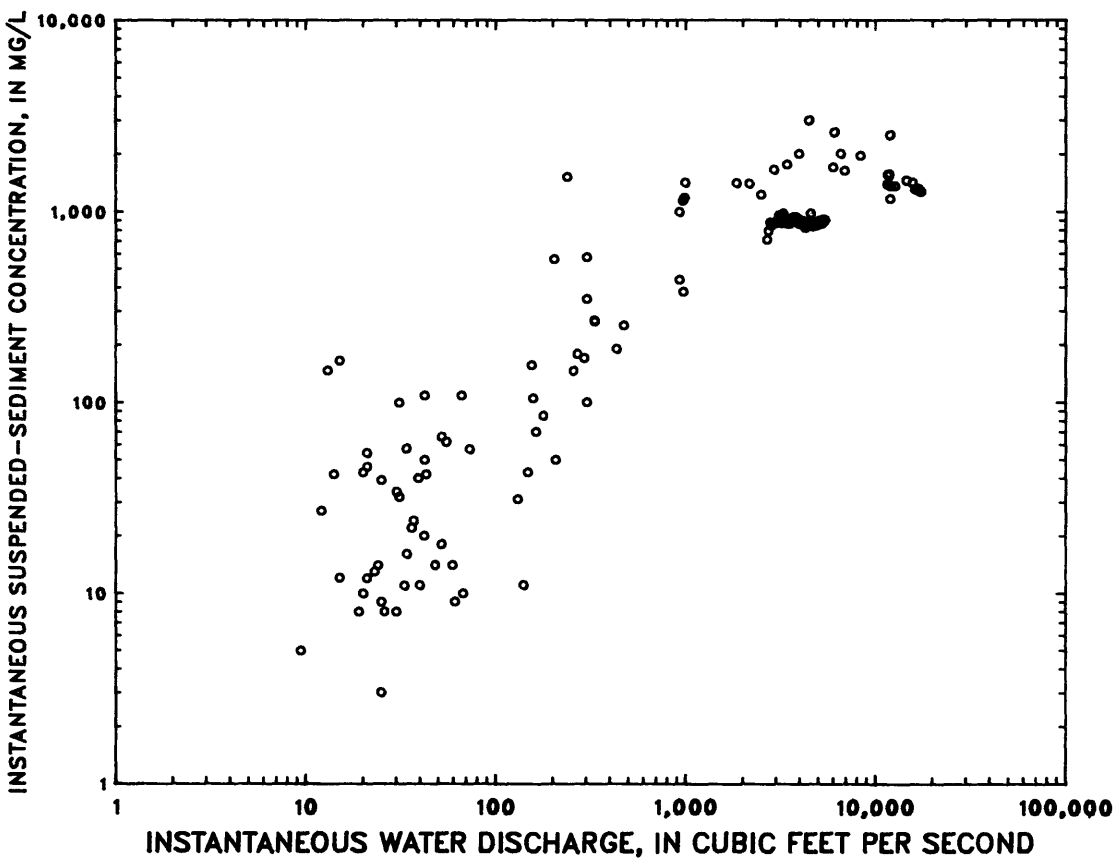


Figure 13.--Relation of suspended-sediment concentration to stream discharge for station Río Gurabo at Gurabo.

Table 14. Summary of equations, discharge ranges, and number of suspended-sediment samples used for pump sampler data

[DY, shift (amount positive o negative) to be added to old sediment load value; Q, water discharge; ft^3/s, cubic feet per second; >, greater than; $\leq$, less or equal than; CL, calibrated or new sediment load value; L, old sediment load value; CAL, percent calibration (positive or negative) from old; CS, calibrated or new sediment concentration value; 0.0027, conversion factor]

Station number	Number of supended-sediment samples	Calibration Equation	Discharge ranges, in ft^3/s
50050900	73	$DY = (10^{1.4 \log Q - 0.685}) - (10^{1.73 \log Q - 1.464})$	$Q > 0$
051310	79	$DY = (10^{1.8 \log Q - 1.624}) - (10^{1.6 \log Q - 1.211})$	$Q > 0$
053050	192	$DY = 0$	$Q > 0$
055000	60	$DY = (10^{1.82 \log Q - 2.29}) - (10^{1.69 \log Q - 1.569})$	$Q > 0$
056400	197	$DY = 0$	$Q \leq 400$
		$DY = (10^{1.70 \log Q - 1.755}) - (10^{1.69 \log Q - 1.569})$	$400 \leq Q \leq 2,570$
		$DY = 0$	$Q \geq 2,570$

For all calibrated or new values:

$$CL = L + DY \qquad CAL = \left(\frac{L - CL}{L}\right)100 \qquad CS = \frac{CL}{0.0027\ Q}$$

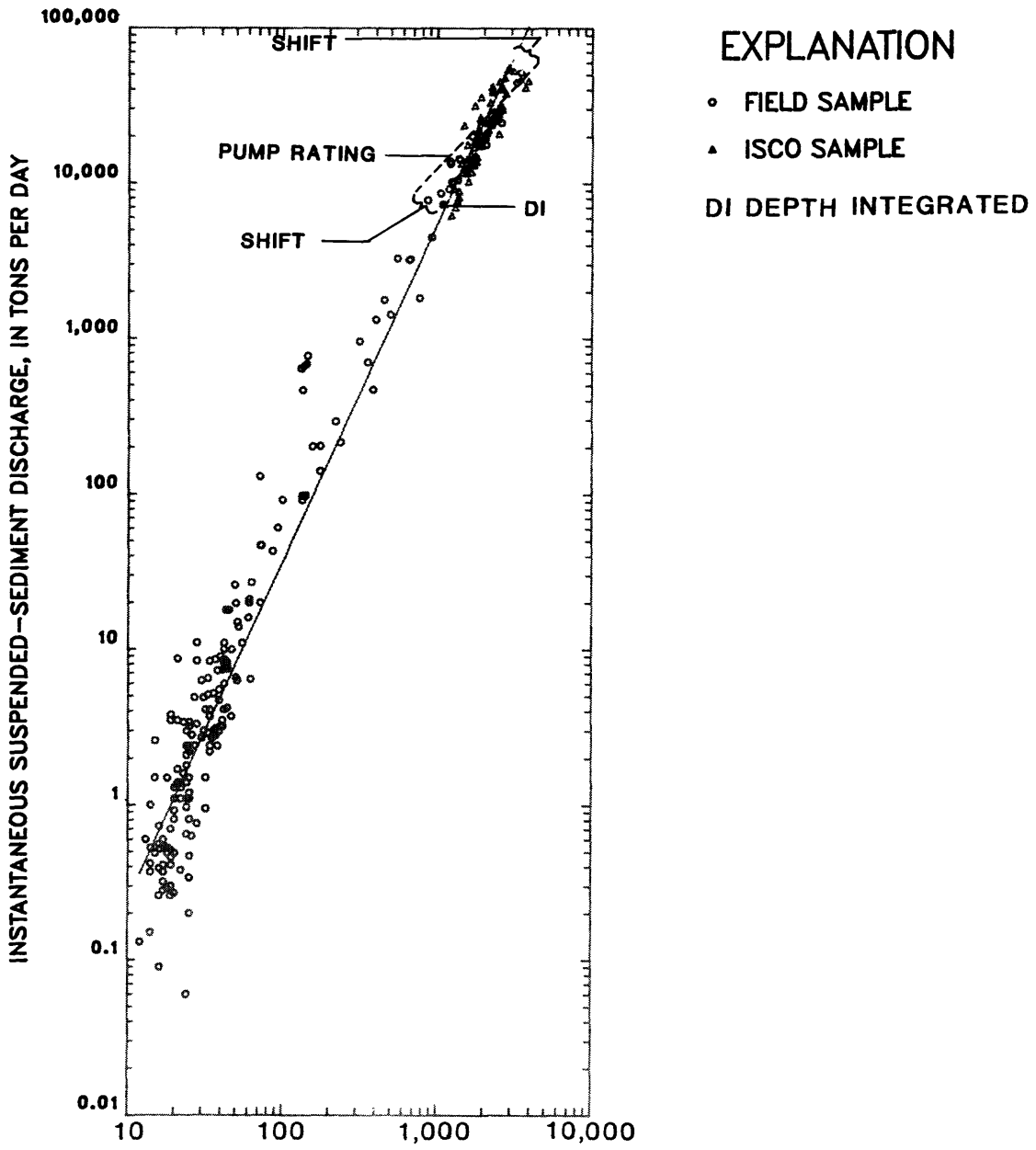


Figure 14,--Idealized plot of calibration procedure for pump-sampler data

Table 15. Particle-size distribution data from suspended-sediment samples collected at ten surface-water stations in Rio Grande de Loiza basin

[CFS, cubic feet per second; MG/L, milligrams per liter; T/DAY, tons per day; MM, millimeters; ---, missing data; e, estimated]

Date	Time	Stream Flow Instantaneous (CFS)	Sed. Susp. Conc. (MG/L)	Sed. Susp. Discharge (T/DAY)	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
50050900 Rio Grande de Loiza at Quebrada Arenas														
Water Year October 1984 to September 1985														
SEPT 25	0050	1,890	3,600	18,400	4	8	14	25	37	46	66	79	87	94
Water Year October 1985 to September 1986														
OCT 6	0745	1,260	2,190	7,440	4	6	15	26	33	34	54	66	78	87
OCT 6	1000	2,990	4,200	33,900	6	9	17	28	39	51	67	86	94	98
OCT 6	1030	2,910	2,280	17,900	8	14	24	35	51	62	86	90	97	98
OCT 26	1620	865	7,510	17,500	7	13	20	30	41	58	78	93	97	99
OCT 26	1635	1,040	4,430	12,400	10	15	24	37	51	60	74	84	90	99
			Average		7	11	19	30	42	52	71	83	90	96
50051150 Quebrada blanca at Jagual														
Water Year October 1983 to September 1984														
SEPT 5	1500	e100	50,400	13,600	30	41	54	71	83	89	96	97	97	98
SEPT 5	1503	e100	43,100	11,600	25	43	56	74	87	92	97	99	100	100
SEPT 5	1510	e95	37,500	9,620	33	44	57	73	85	92	97	99	100	100
SEPT 5	1515	e95	37,100	9,500	30	42	56	72	85	90	97	99	100	100
SEPT 13	1435	83	40,100	8,990	26	35	47	61	77	84	95	99	100	100
SEPT 13	1439	68	37,900	6,960	27	36	47	62	79	86	95	99	100	100
SEPT 13	1440	64	34,300	5,930	26	35	46	61	77	85	94	99	100	100
SEPT 13	1442	57	31,500	4,850	25	34	45	60	76	83	93	99	100	100
SEPT 13	1445	46	25,100	3,120	23	31	41	54	70	79	92	98	100	100
SEPT 13	1450	52	17,300	2,430	20	27	36	47	61	73	89	97	99	100
SEPT 13	1455	59	16,600	2,650	11	15	21	30	42	57	83	96	99	100
SEPT 13	1500	65	13,200	2,320	12	14	19	28	41	55	82	96	99	100
SEPT 13	1505	61	8,980	1,430	9	13	19	29	46	65	87	98	100	100
			Average		27	36	47	62	79	86	95	99	100	100
50051180 Quebrada Salvatierra near San Lorenzo														
Water Year October 1983 to September 1984														
SEPT 14	1115	112	223	67	45	64	75	80	84	93	97	98	99	100
SEPT 14	1135	102	198	54	46	60	75	82	90	93	98	99	99	100
Water Year October 1984 to September 1985														
MAY 17	1300	503	3,300	4,480	18	28	45	56	71	75	85	93	99	100
MAY 17	1307	440	2,750	3,270	19	29	44	61	70	75	84	92	98	100
MAY 17	1323	338	2,420	2,210	19	30	44	62	75	78	85	91	98	100
MAY 17	1345	300	1,780	1,440	31	39	46	69	77	85	89	93	98	100
			Average		30	42	55	68	78	82	89	94	98	100

Table 15. Particle-size distribution data from suspended-sediment samples collected at ten surface-water stations in Rio Grande de Loiza basin--Continued

Date	Time	Stream Flow Instan-taneous (CFS)	Sed. Susp. Conc. (MG/L)	Sed. Susp. Dis-charge (T/DAY)	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
50051310	Rio Cayaguas at Cerro Gordo													
				Water Year October 1984 to September 1985										
NOV 5	1410	1,210	4,200	13,800	15	24	35	46	61	70	81	90	96	99
NOV 5	1410	1,210	4,100	13,400	12	18	28	42	56	65	79	91	98	99
MAY 15	1300	1,240	3,040	10,200	12	18	28	53	62	70	88	95	98	99
MAY 15	1305	1,390	3,790	14,200	13	16	25	37	54	60	83	93	97	99
MAY 15	1315	1,670	4,450	20,100	15	20	31	49	64	75	87	94	96	98
MAY 15	1330	1,910	3,780	19,500	9	12	22	36	52	71	81	88	93	96
MAY 15	1345	2,580	3,530	24,600	12	13	24	38	56	67	82	91	96	99
MAY 15	1400	3,240	5,080	44,400	7	11	20	33	45	55	72	83	89	94
MAY 18	1100	2,100	4,530	25,700	6	8	17	24	33	37	55	76	91	98
MAY 18	1106	2,040	3,220	17,700	1	12	23	35	45	52	67	83	92	98
MAY 18	1145	1,510	3,030	12,400	11	15	27	38	50	58	75	86	96	99
SEPT 12	1935	2,270	6,560	40,200	8	13	29	42	59	68	89	99	100	100
SEPT 12	2020	1,920	6,910	35,800	11	18	28	48	63	69	92	98	100	100
SEPT 12	2035	1,750	6,720	31,800	11	20	31	50	68	74	92	99	100	100
				Water Year October 1985 to September 1986										
OCT 6	1115	3,140	6,270	53,100	7	9	16	31	45	50	79	95	99	100
OCT 6	1200	2,910	7,090	55,700	8	16	23	38	54	62	77	94	99	100
OCT 6	1230	2,710	6,530	47,800	10	16	29	39	50	57	77	95	99	100
OCT 6	1300	2,640	5,680	45,500	12	18	31	42	57	62	73	95	99	100
				Average	10	15	26	40	54	62	79	91	97	99
50053050	Rio Turabo at Borinquen													
				Water Year October 1984 to September 1985										
MAY 17	1023	3,370	4,700	42,800	2	13	21	32	48	59	72	86	94	99
MAY 17	1126	6,110	26,000	429,000	6	9	12	16	21	43	61	96	99	100
MAY 17	1130	6,110	28,600	472,000	8	12	16	16	28	55	69	86	98	100
MAY 17	1137	6,120	26,900	445,000	6	10	15	20	25	38	51	84	97	99
MAY 17	1145	6,130	20,300	336,000	8	12	23	33	45	56	79	96	99	100
MAY 17	1157	6,130	13,800	228,000	9	16	25	35	48	56	76	91	97	100
MAY 17	1200	6,130	11,800	195,000	14	21	32	46	58	66	85	96	99	100
				Water Year October 1985 to September 1986										
OCT 6	1730	2,640	4,870	34,700	8	13	16	27	34	39	51	64	78	94
OCT 6	1755	1,990	4,560	24,500	11	17	27	38	48	55	65	78	92	99
OCT 6	1800	1,860	5,340	26,800	11	17	26	36	46	51	60	72	87	97
OCT 6	1815	1,830	3,700	18,300	12	21	28	42	53	66	76	86	94	99
MAY 13	0800	1,700	20,600	94,500	4	6	9	13	17	20	26	39	68	91
MAY 13	0810	1,990	16,800	90,300	4	8	12	16	22	25	30	42	68	93
MAY 13	0820	1,970	9,840	52,300	6	10	17	24	31	37	47	60	85	98
MAY 13	0830	1,660	13,000	58,300	4	7	10	15	20	23	31	43	68	93
JUNE 10	0140	496	5,020	6,720	10	19	30	44	60	70	83	91	95	99
JUNE 10	0200	916	14,600	36,100	9	17	36	36	44	68	81	93	98	100
JUNE 10	0210	985	9,940	26,400	12	22	33	47	60	84	96	99	100	100
JUNE 10	0220	920	9,840	24,400	11	18	29	41	55	80	95	100	100	100
JUNE 10	0230	728	9,230	18,100	12	22	32	43	58	78	93	100	100	100
JUNE 10	0245	501	7,870	10,600	13	23	34	48	64	87	99	100	100	100
JUNE 10	0345	234	3,220	2,030	16	24	39	58	81	88	97	99	100	100
AUG 29	0030	257	4,280	2,970	9	13	23	35	52	67	86	98	100	100
				Average	9	15	22	33	44	57	70	83	92	98

Table 15. Particle-size distribution data from suspended-sediment samples collected at ten surface-water stations in Rio Grande de Loiza basin--Continued

Date	Time	Stream Flow Instan-taneous (CFS)	Sed. Susp. Conc. (MG/L)	Sed. Susp. Dis-charge (T/DAY)	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
50055000		Rio Grande de Loiza at Caguas												
					Water Year October 1984 to September 1985									
NOV 5	1745	7,620	3,500	72,000	20	27	34	40	42	53	66	83	92	98
NOV 5	1830	7,520	3,060	62,000	15	23	32	45	59	67	83	94	97	100
MAY 15	1545	11,600	4,120	129,000	5	9	19	30	46	59	77	92	98	99
MAY 15	1555	11,300	4,400	134,000	6	11	19	28	43	56	72	89	96	99
MAY 15	1605	11,000	4,200	125,000	9	12	23	33	48	59	79	90	96	99
MAY 15	1615	10,500	3,280	93,600	9	15	27	40	59	68	83	95	98	99
MAY 15	1625	9,920	3,400	91,100	10	17	27	42	58	71	85	95	98	99
MAY 15	1635	9,310	3,200	80,400	11	16	27	47	58	69	86	95	98	99
MAY 15	1645	8,670	2,220	51,500	16	23	35	51	68	75	88	97	99	100
MAY 15	1655	7,400	2,820	56,300	14	22	34	50	67	74	88	95	98	99
MAY 17	1200	16,500	12,200	544,000	9	15	20	29	38	69	83	96	99	100
MAY 17	1205	18,200	11,200	550,000	13	21	30	41	55	73	87	96	99	100
MAY 17	1215	21,500	9,940	577,000	16	24	33	46	60	79	90	97	99	100
MAY 17	1220	22,600	10,700	653,000	9	14	21	30	39	74	85	94	98	99
MAY 17	1225	23,700	9,820	626,000	12	19	26	36	48	76	88	96	99	100
MAY 17	1230	24,800	10,200	683,000	10	17	25	34	44	73	85	93	99	100
MAY 17	1235	23,500	9,970	634,000	9	17	28	39	56	74	88	95	99	100
MAY 17	1240	22,300	9,930	597,000	8	15	24	37	48	71	87	95	98	99
MAY 17	1245	24,600	12,300	817,000	8	17	26	38	50	74	89	97	99	100
MAY 17	1250	23,700	8,610	551,000	10	17	30	43	59	75	89	96	99	100
MAY 17	1300	21,800	8,400	494,000	7	12	21	30	43	76	88	94	98	98
MAY 17	1316	19,400	7,400	388,000	10	19	32	44	60	82	92	97	100	100
MAY 17	1320	18,400	6,900	343,000	12	19	22	44	59	87	94	96	99	100
MAY 17	1330	16,100	6,600	287,000	14	22	35	46	64	82	92	98	99	100
MAY 17	1345	13,700	6,300	233,000	13	21	36	49	64	81	92	98	99	100
MAY 17	1400	11,600	5,660	177,000	13	21	31	50	63	79	93	98	100	100
MAY 17	1415	9,870	5,100	136,000	13	21	35	52	70	80	94	98	100	100
MAY 17	1430	8,450	4,700	107,000	12	23	31	45	69	78	91	97	99	100
MAY 17	1445	7,500	4,680	94,800	12	21	32	46	66	80	93	98	99	100
MAY 17	1500	6,760	3,120	57,000	13	20	30	53	67	84	94	98	99	100
MAY 17	1502	6,700	3,440	62,200	12	18	33	54	72	84	93	98	99	100
MAY 17	1515	6,270	3,660	62,000	22	31	41	53	76	88	96	99	100	100
MAY 17	1545	5,260	3,090	43,900	16	25	40	56	77	86	96	99	100	100
MAY 18	1000	18,600	4,500	226,000	15	23	35	50	65	75	89	91	99	99
MAY 18	1030	16,700	3,700	167,000	16	23	30	52	64	71	83	95	98	99
MAY 18	1200	11,300	4,320	131,000	10	11	24	33	45	52	72	88	96	99
MAY 18	1232	9,320	4,200	106,000	14	27	28	43	49	52	78	93	98	100
					Water Year October 1985 to September 1986									
OCT 6	1245	13,300	4,520	162,000	10	16	25	37	50	58	79	94	99	100
OCT 6	1430	12,800	3,590	124,000	11	17	24	34	46	52	71	91	98	100
OCT 6	1645	15,700	6,180	262,000	10	15	19	33	46	55	74	96	99	100
OCT 6	1700	17,600	9,220	438,000	9	15	23	32	45	62	76	96	100	100
OCT 6	1715	16,900	8,680	396,000	8	16	25	35	47	60	75	92	99	100
OCT 6	1730	16,900	6,840	312,000	11	19	29	40	52	63	78	94	99	100
OCT 6	1745	16,000	4,890	211,000	14	22	32	46	60	69	86	97	100	100
OCT 6	1800	15,600	4,220	178,000	12	20	27	39	51	59	76	93	99	100
OCT 6	1815	15,500	3,580	150,000	14	24	35	49	61	72	87	98	100	100
APR 29	1645	7,270	6,290	123,000	13	20	29	46	69	86	94	99	100	100
APR 29	1700	8,930	5,960	144,000	12	15	25	39	60	78	94	98	100	100
APR 29	1715	9,370	4,860	123,000	13	17	36	41	63	80	93	99	100	100
MAY 8	1715	13,900	6,990	262,000	13	21	32	46	62	80	95	99	100	100
MAY 8	1730	14,100	5,880	224,000	14	15	34	48	63	77	92	99	99	100
MAY 8	1745	13,200	5,500	196,000	13	22	33	47	59	70	90	99	100	100
MAY 8	1830	9,620	3,540	92,000	16	24	38	53	72	80	94	99	100	100
MAY 13	0845	10,600	2,600	74,400	16	27	40	58	78	85	98	99	100	100
MAY 13	0915	15,200	5,190	213,000	11	19	27	40	51	62	82	88	99	100
MAY 13	0945	16,300	5,550	244,000	7	13	19	27	36	43	63	94	100	100
				Average	12	19	29	43	58	73	87	96	99	100

Table 15. Particle-size distribution data from suspended-sediment samples collected at ten surface-water stations in Rio Grande de Loiza basin--Continued

Date	Time	Stream Flow Instan-taneous (CFS)	Sed. Susp. Conc. (Mg/L)	Sed. Susp. Dis-charge (T/Day)	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
50055650 Quebrada Caimito near Juncos														
Water Year October 1984 to September 1985														
NOV 5	1555	116	2,470	774	25	26	38	53	65	82	91	96	98	99
Water Year October 1985 to September 1986														
OCT 24	1115	29	1,980	155	32	40	52	81	93	94	97	99	100	100
				Average	28	33	45	67	79	88	94	98	99	100
50056400 Río Valenciano near Juncos														
Water Year October 1984 to September 1985														
SEPT 12	1835	577	1,550	2,400	11	17	29	49	68	74	89	98	100	100
SEPT 12	1920	1,940	2,030	10,600	11	16	26	41	58	69	84	96	100	100
Water Year October 1985 to September 1986														
OCT 6	0620	616	2,340	4,800	10	11	19	28	35	41	58	84	99	100
OCT 6	0800	1,670	2,320	10,500	10	14	21	30	38	46	63	88	99	100
OCT 6	0815	2,100	2,500	14,100	10	14	20	28	38	44	62	85	98	100
OCT 6	0845	3,220	2,480	21,600	14	17	23	32	44	50	68	89	98	100
OCT 6	1620	5,600	4,200	63,500	8	8	15	26	36	38	66	80	98	100
OCT 6	1850	4,900	5,740	76,000	5	8	13	21	32	41	64	86	98	100
OCT 6	1920	4,000	3,950	42,700	9	14	22	31	47	56	77	92	98	100
OCT 6	1950	3,200	3,460	29,900	7	18	20	32	42	48	79	93	98	100
APR 29	1540	1,410	3,200	12,400	14	25	32	35	70	83	96	99	100	100
APR 29	1545	2,070	3,020	16,900	14	20	32	47	65	78	94	99	100	100
APR 29	1635	2,680	3,250	23,500	13	18	23	40	56	65	79	95	99	100
APR 29	1720	1,780	1,470	7,060	26	33	47	67	81	90	---	---	---	---
MAY 13	0300	587	1,810	2,870	24	27	41	62	82	84	98	99	100	100
MAY 13	0830	4,100	8,970	99,300	4	6	9	14	20	27	45	76	97	99
				Average	15	20	29	41	55	62	78	92	99	100
50056900 Quebrada Mamey near Gurabo														
Water Year October 1985 to September 1986														
OCT 6	1535	604	1,360	2,220	23	26	43	60	64	77	90	94	97	99
				Average	23	26	43	60	64	77	90	94	97	99
50057000 Rio Gurabo at Gurabo														
Water Year October 1984 to September 1985														
MAY 15	1300	6,040	2,600	42,400	16	23	30	44	58	78	90	93	98	99
MAY 15	1315	6,500	2,020	35,500	21	31	42	47	68	77	84	90	98	99
MAY 15	1400	8,260	1,960	43,700	26	30	42	55	66	71	77	81	90	96
MAY 15	1430	11,900	2,500	80,300	26	33	45	63	79	85	92	94	97	98
Water Year October 1985 to September 1986														
OCT 6	1330	11,800	1,570	50,000	26	36	52	71	79	82	93	96	98	100
OCT 6	1400	11,800	1,550	49,400	29	38	50	66	88	92	97	98	99	100
OCT 6	1415	11,600	1,560	48,900	27	40	53	71	85	86	92	93	99	100
OCT 6	1430	11,600	1,390	43,500	28	36	51	74	84	86	95	97	98	100
OCT 6	1530	12,600	1,360	46,300	27	37	53	71	84	88	97	99	99	100
OCT 6	1630	14,500	1,460	57,200	24	31	48	63	81	88	98	99	100	100
OCT 6	1700	15,600	1,420	59,800	32	40	56	73	86	92	98	100	100	100
				Average	26	34	47	63	78	84	92	95	98	99

Table 16.--Average water discharge for stations in the Río Grande de Loíza basin.

Station Number	Discharge, in ft^3/s	Station Number	Discharge, in ft^3/s
50050900	31.1	50055000	224
051180	9.18	055650	1.32
051180	7.92	056400	51.3
051310	49.5	056900	4.43
053050	27.6	057000	135

Table 17.--Extreme values of water and suspended-sediment data for the upper Rio Grande de Loiza basin for the 1984,1985 and 1986 water years (mg/L, milligrams per liter,tons/d, tons per day, % ,percent)

Station Number	Samples Collected	Particle size analysis	Maximum Concentration, in mg/L	Minimum Concentration, in mg/L	Maximum Load,in tons/d	Minimum Load,in tons/d	Maximum Percent Sand, in %	Minimum Percent Sand, in %
50050900	309	6	10,000	0	54,200	0.20	66	38
50051150	124	12	56,100	0	14,300	.01	45	8
50051180	114	6	3,300	0	4,480	0	25	7
50051310	276	18	5,580	1	52,100	.06	75	37
50053050	321	23	28,600	0	472,000	.06	80	12
50055000	261	57	12,300	0	817,000	1.3	57	12
50055650	90	2	2,470	1	774	0	18	6
50056400	361	16	8,970	0	99,300	0	73	10
50056900	122	1	1,640	0	2,480	0	23	23
50057000	138	11	3,010	0	80,300	0	29	8
Total	2,116	152						

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